A Code of Practice

for the Design and Construction
of Marinas and Yacht Harbours

in conjunction with

The Marina Operations Manual

7th edition

7th edition

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Revised 2013

A Code of Practice

for the Design and Construction of Marinas and Yacht Harbours

This document and its appendices are intended as a guide to best practice. It is acknowledged that the circumstances at each marina are different and therefore prescriptive regulation would not be appropriate or practical. Where it is not possible or practical to meet the ideal provisions laid out in this Code the principles should still be applied, albeit with appropriate modification. It is not suggested that this code is applied retrospectively.

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CHAPTER ONE MARINA OPERATIONS

INTRODUCTION

Industry history

Marinas offer a lifestyle for leisure boaters and in some cases non-boaters alike. They can often act as a catalyst and focal point for marine developments.

Documents are known to exist demonstrating the use of recreational vessels during the Ancient Egyptian history. It is more commonly known that a vessel was used for leisure purposes in 1660 when King Charles II of England was presented with a yacht called 'Mary' by the Dutch, which he sailed enthusiastically on the River Thames, London. More leisure craft of all sizes materialised which were kept in dock yards and mooring buoys up creeks and rivers.

The first Yacht Club was incorporated in the early 18th century; The Royal Cork Yacht Club in 1720 was followed by Royal Thames in 1775 and The Royal Yacht Squadron in 1815.

The first 'marina' was a single line of floating pontoons moored on the River Dart in 1958, followed by Port Hamble, near Southampton in 1964. There was a very slow take up for berths until boaters acknowledged their convenience. Thereafter demand for berths increased substantially.

Although the first 'notice of meeting' was recorded in 1965, The National Yacht Harbour Association (N.Y.H.A.) was not registered with Companies house until May 1982. At this time it formed a close working relationship, in co-operation with the Ship and Boat Building National Federation (S.B.B.N.F.) now the British Marine Federation (B.M.F.).

Their mission statement comprised: assisting the membership, addressing political issues with regard to the construction and operation of marinas, organising meetings, outings and social events, together with producing a quarterly publication "Fore and Aft".

Their membership expressed a need for an industry guideline in the design, construction and operation of marinas and so the first edition of this Code of Practice was drafted and published in 1977. As a guide to good practice, copies have been distributed globally to those who were interested in marina operation and development.

Once again, by request from its members N.Y.H.A. developed The Gold Anchor Award Scheme in 1988, a voluntary assessment programme focused on customer service and facilities of Marinas. This was relaunched in 2011 and is integrated with this Code of Practice.

Through this code and the Gold Anchor Award Scheme, N.Y.H.A. attracted interest from international marina operators, so in 1990 changed its name to The Yacht Harbour Association (T.Y.H.A.). It operates as a not for profit, limited company which is led by a representative 'Council' of marina operators and suppliers.

Updates to this Code and the Guidance

In preparing this 7th edition, updates to legislation, industry practice, technology and the marina market have been included.

The document has been subject to wide consultation with a cross section of marina operators and independent experts. Their comments have been incorporated as appropriate. This is in addition to TYHA members, whose comments were considered by the review committee. Specific consultees include:

- Marina operators with knowledge and experience of accidents and legal challenges
- Marina builders and designers
- Dredging contractors
- Boat builders
- The Environmental Health Department of Southampton City Council
- An independent marina health and safety expert; Peter MacGregor, CMIOSH (Chartered member of the institution of institution of Occupational Safety and Health) RSP (Registered safety practitioner) MIEW (Registered expert witness)
- An independent fire prevention and control expert; Peter MacGregor, F.I.Fire.E (Fellow of the Institution of Fire Engineers)
- A pyrotechnics expert
- A legal committee which reviewed and updated the template berthing licence;
- The Royal Yachting Association
- The British Marine Federation
- Evaluated by international experts of the Recreational Navigation Commission (RecCom) of PIANC www.pianc.org
- An independent marina consultancy; Marina Projects Ltd www.marinaprojects.com
- An independent legal practice; Dorade Law www.doradelaw.com
- Ultimately approved by the Yacht Harbour Association management council

Status of this code

This document and its appendices are intended as a guide to best practice. It is acknowledged that the circumstances at each marina are different and therefore prescriptive regulation would not be appropriate or practical. Where it is not possible or practical to meet the ideal provisions laid out in this Code the principles should still be applied, albeit with appropriate modification. It is not suggested that this code is applied retrospectively.

Compliance with this Code of Practice does not absolve operators from the provisions of national or local authorities, or compliance with statutory regulations, byelaws and other legislation in force in their area or country where the marina development is located.

Be aware that statutory regulations and legislation in your country may override the guidance offered in this document.

Although great care has been taken to ensure the accuracy of this 7th edition, The Yacht Harbour Association and its associated advisers cannot be held responsible for any errors or omissions. Nor for any incidents arising as a result of these guidelines and therefore will not accept any liability whatsoever for any loss or damage arising from the use or reliance on any part of this code.

The supporting TYHA Marina Manual complements the Code of Practice, providing marina operators with generic advice and examples about how they might operate a marina and boatyard.

Implementation

This code and its appendices are directed towards potential and existing marina operators, owners and developers in the UK. There is an expectation that it will be used as a point of reference in different countries however it is emphasised that specific local issues and legislation should always be taken into consideration such as geography, market and government policy.

UK regulatory authorities, industry associations and insurers have a strong expectation that marina operators will comply with the Code, and it may be used against them in case of accident or loss:

The Code does not contain new legal obligations, but includes amongst other things, references to the legal duties in the UK which already exist as such, failure to comply with this code is not an offence in itself moreover the Code represents ideal circumstances.

Acknowledgement and thanks

The Yacht Harbour Association wishes to acknowledge and thank the organisations and individuals who gave such a considerable amount of time and expertise:

Members of TYHA Management Council, Members of the Code of Practice Subcommittee, Marina Projects Ltd, Dorade Law (Nick Horton), Walcon Marine, The Recreational Navigation Commission of PIANC, The Green Blue, The British Marine Federation, The Royal Yachting Association, Southampton City Council – Regulatory Services Division, EOD Contracts, Peter MacGregor Risk Management Consultant – CMIOSH, F.I.Fire.E, RSP, MIEW and Van Oord dredging.

DEFINITIONS

Access bridge:	The structure which provides access from shore to the floating elements of the marina.
Attenuator:	Device for reducing wave energy and hence wave height.
Accelerated low water corrosion:	A form of corrosion that appears and grows quickly in maritime steel structures – particularly tidal areas. It is a metabolic process that eventually forms sulphuric acid which eats through the steel. ALWC usually appears on steel around the level of lowest astronomical tide – therefore not visible at most states of the tide.
Alongside berthing:	Usually an extended linear berthing area with access to shore often used for temporary berthing where length and size can be an issue.
Beam:	Maximum width of the vessel including any fixtures and fittings (B).
Berth:	The area of water that has been allocated to the customer to moor his/her boat (sometimes referred to as 'slip').
Black water:	Wastewater discharged by the heads of a vessel.
Boatyard:	A facility usually near the water for the service, storage or lifting of vessels.
Breakwater:	A protective barrier structure to reduce the intensity of wave action or deflect currents.
Bridgehead:	The structure at the top of the Access bridge.
Bund:	An enclosure designed to hold at least 110% of the contents of a liquid storage vessel, tank or drums without their being able to escape.
Bunkering:	The act or process of supplying a ship with fuel.
Channel:	Unobstructed waterway used for navigation.
Chart datum:	The Datum used on charts for the specific area.
Channel width:	The unobstructed width of a navigation channel or fairway.
Cill:	A barrier at the entrance to a marina basin to retain the depth of water where there are significant changes in water level.
Craning bay:	A dedicated area used by cranes and marine hoists to lift both small and large craft, to remove and replace masts or to handle any heavy objects for repair or maintenance. There should be barriers and notices indicating that only authorised personnel can enter.

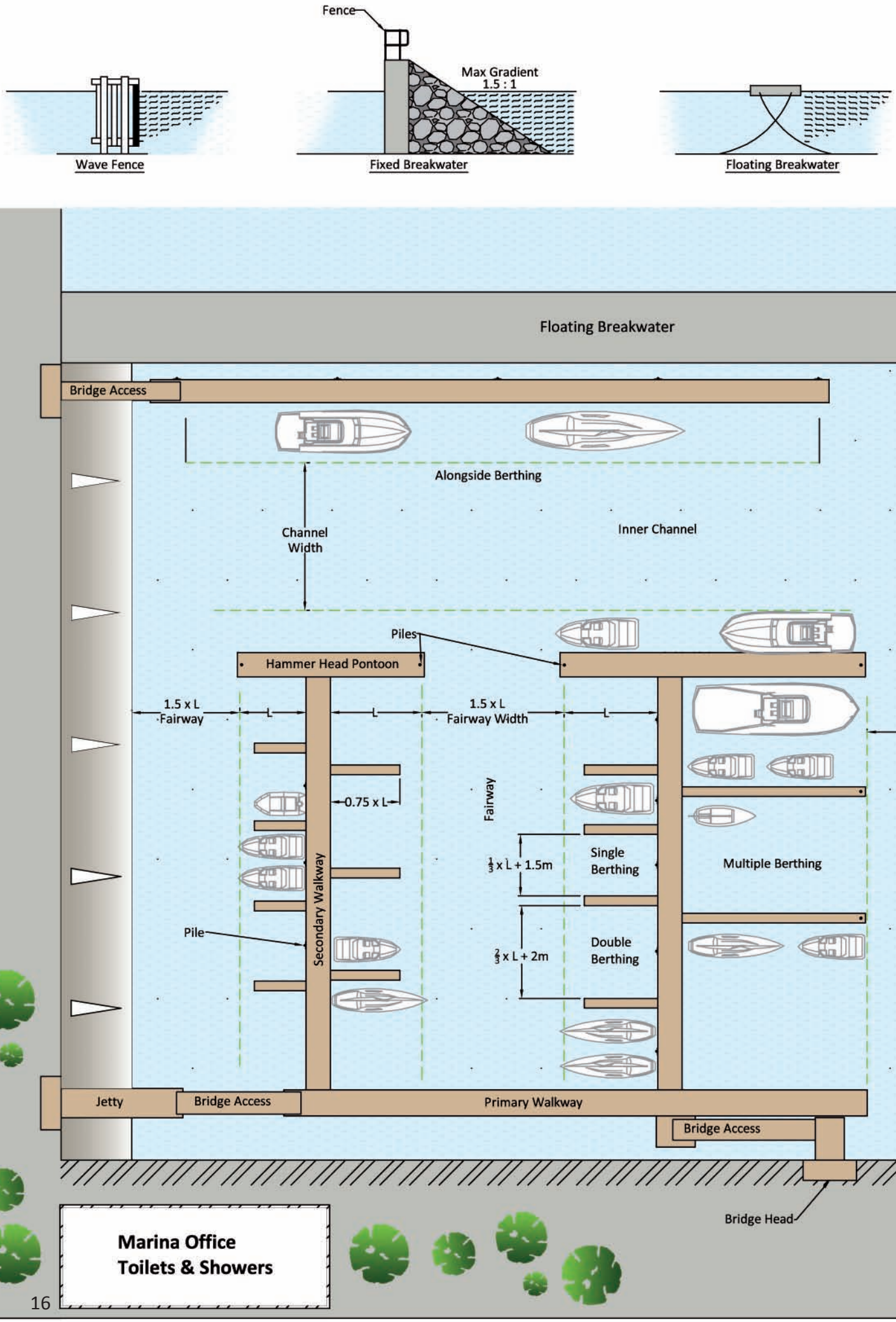
Dead load:	The weight of the pontoon structure including cables, water pipes (full), fuel lines (full) and any other fixtures and fittings.
Depth:	The depth of water below chart datum.
Double berth:	A berth for two vessels between fingers.
Draft:	The distance of lowest part of the vessel from the waterline (D).
Dredging:	Dredging includes the use of any device to remove material from the sea, river or lake bed.
Entrance channel:	A channel that allows adequate space to navigate between the harbour and the rivers or seaway.
Fairway:	The navigation area between rows of berths or piers.
Family bathroom:	A spacious washroom which provides privacy for a family or persons who may be in need of help from an assistant or caregiver. It can accommodate adults and their children of any gender simultaneously or disabled users where space does not allow for a separate facility. Typically it would include baby changing facilities.
Fetch:	The distance over open water from the yacht harbour across which waves can be generated.
Finger:	A fixed or floating projection from a main walkway upon which craft can be moored.
Fixed berth:	Berthing structure rigidly mounted on the sea, river or lake bed.
Fixed finger:	A finger pontoon which is permanently fixed in position to the Fundus and does not rise or fall with the water levels, normally used where water levels do not significantly rise or fall.
Fixed walkway:	A Walkway which is a permanent structure, fixed in position and does not rise or fall with the water level.
Flexible mooring system:	A method of attaching any type of mooring to the Fundus which can expand and contract according to the wave climate and water level.
Fixity:	The level below soft sediment which changes to a more solid material, where a pile can be fixed or gripped.
Floating berths:	Berths that are accessed by walkways and fingers that are buoyant.
Floating breakwater:	A heavyweight floating pontoon structure to reduce the intensity of wave action within the marina.
Floating finger:	A finger Pontoon which is floating and capable of rising and falling with the water level and therefore any vessel which is attached to it. Normally used where the water level changes regularly and to a significant degree.

Floating pontoon:	A Pontoon which is floating and capable of rising and falling with the water level and therefore any vessel which is attached to it.
Freeboard:	The distance from still water to the main deck level.
Fundus:	The seabed or land that is normally covered by water.
Grey water:	Wastewater generated from domestic activities such as laundry, dishwashing and bathing.
Hammer head pontoon:	A pontoon which is perpendicular to the end of a walkway.
Hardstanding:	An open, suitably surfaced area used for storage of boats and other materials.
H.A.T. & L.A.T.:	The Highest and Lowest Astronomical Tide levels are the highest and lowest levels which can be predicted to occur under average meteorological conditions and any combination of astronomical conditions. These levels will not be reached in every year but higher and lower water levels may occur as a result of meteorological conditions.
Inner channel:	A channel within the yacht harbour that allows navigation between the entrance channel and the fairway.
Jetty:	A fixed or floating structure projecting into navigable water from a quay or land-mass.
kN:	kilo-Newton is a unit of force with a mass of 1,000 newtons. 1 metric tonne exerts a downward force of approximately 9.8 kN.
Lock:	A structure which is designed to allow vessels to navigate in and out of a marina basin where there is a high tidal range at any state of the tide.
Live load:	The load applied to a structure which is over and above the weight of the structure itself. In context, the 'Live Load' on a pontoon structure is the number of people, bags, trolleys and anything else on the pontoon. A pontoon live load at 2.5kN/m2 (250kg/m2) equates to approximately 3.5 people each weighing 71.42kg standing on one square metre of pontoon decking, or 100 people stood on a single 11.5m long x 2.5m wide pontoon.
L.O.A:	Length Overall. The length of a vessel including bowsprits, anchors, stern davits and appendages (L).
Main walkway:	See Primary walkway.
Marina:	A facility for the berthing of pleasure craft providing direct walkway access to each boat, an adequate depth of water at all times, car parking, toilet facilities, services and other amenities.
Marine hoist:	A device used to lift and transport vessels.

Mix:	The chosen type and number of boats of different sizes that are to be accommodated.
Mooring:	One or more secured anchors with buoyed riding chain or similar to which craft or pontoons may be secured.
Multiple berthing:	Pontoons arranged in such a way that boats of varying sizes can be berthed and still have clear navigation.
Navigation area:	The part of a yacht harbour or marina used by vessels to access a berth.
Permanent berth holder:	Refers to the licencee of a berth normally based on a term of 365 days. The licencee is likely to use this marina or yacht harbour as the primary home for their vessel.
Pier:	A single main walkway with or without fingers.
Pontoon:	A structure to provide landing or mooring facilities.
Primary walkway:	Main access to secondary walkways and berthing pontoons.
Quay or Wharf:	A solid, stationary, man-made landing structure lying alongside or projecting into navigable water.
Reasonable measure:	A balance between cost and benefit, where safety measures can be ruled out because they involve grossly disproportionate sacrifices.
Sediment:	All matter that settles to the bottom of the sea/river bed.
Secondary walkway:	A means of access, connecting other parts of the marina to the main walkway. These will not provide access to another walkway.
Sewage pump-out:	A mechanical pumping facility to transfer stored sewage from vessels to the main sewer.
Significant wave height:	Also known as ‘Hs’; the average wave height from crest to trough of the highest one third of all waves measured over a period of time.
Single berth:	Space for only one vessel between fingers.
Stern to mooring:	A method of securing a vessel to a mooring where the Stern is directly facing a pontoon system and the bow is secured to a floating or fixed mooring. This method is often associated with areas of limited tidal range e.g. the Mediterranean.
Straddle carrier:	A mobile hoist to lift boats from or lower boats into the water.
Super yacht:	Recreational vessel over and above 80 feet or 24 meters L.O.A. (also referred to as Mega Yacht).

Swinging mooring:	A method of securing a vessel to a floating or fixed mooring by the bow only, allowing the vessel to swing in the direction of the wind or water flow (whichever is stronger).
Trot mooring:	A method of securing a vessel to a mooring, where the stern and bow are attached to a floating or fixed mooring and with no direct access to the shore.
Vessel (Marine):	A vehicle designed for transportation on water.
Visiting leisure vessel:	Typically dealt with through a short term agreement. A vessel with an alternative home port, visiting for an average period of between 1 and 14 days. As a general rule a visit will be less than 30 days and with no return during that same voyage.
Walkway:	Any form of direct, fixed or floating access to craft lying afloat.
Wave fence:	A solid or low permeability screen, normally vertical and usually extending from at least 1 metre below LAT and 1 metre above HAT, acting as a barrier to waves.
Wave height:	The vertical distance between a wave crest and the preceding trough ‘H’.
Wave length:	The length between the wave crest and the following wave crest, measured in seconds ‘Tp’.
Wave period:	The time for two successive wave crests to pass a fixed point.
Wind rose:	A symbol graphically depicting the distribution of wind direction and speed at a certain location.
Yacht harbour:	A safe haven for recreational vessels.

MARINA DESIGN AND CONSTRUCTION


Fence
Max Gradient
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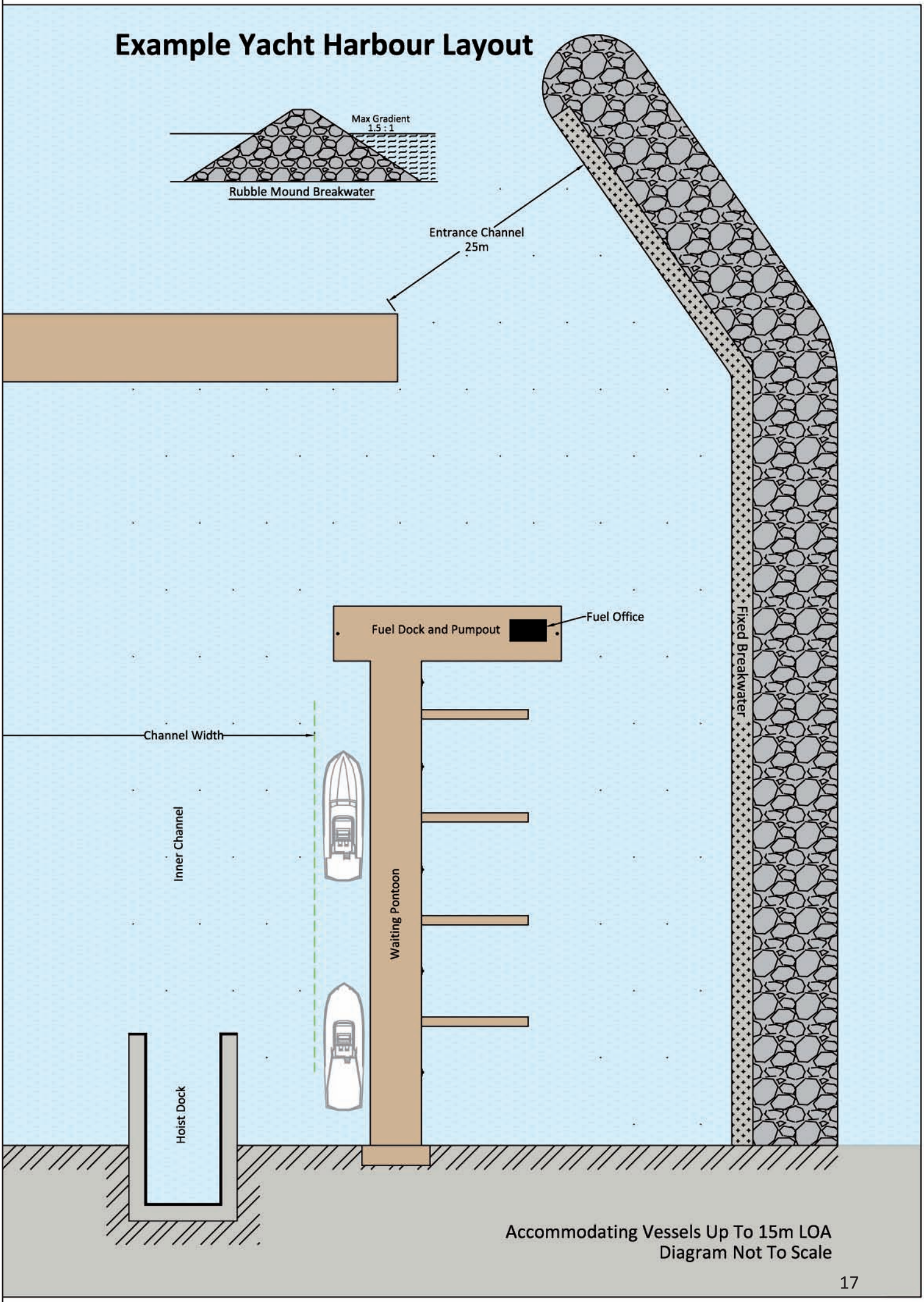
Wave Fence
Fixed Breakwater
Floating Breakwater
Floating Breakwater
Bridge Access
Alongside Berthing
Channel
Width
Inner Channel
Piles
Hammer Head Pontoon
1.5 x L
Fairway
L
L
1.5 x L
Fairway Width
L
0.75 x L
Fairway
Single
Berthing
Multiple Berthing
⅓ x L + 1.5m
Secondary Walkway
Pile
Double
Berthing
⅔ x L + 2m
Jetty
Bridge Access
Primary Walkway
Bridge Access
Bridge Head
Marina Office
Toilets & Showers

Example Yacht Harbour Layout



Accommodating Vessels Up To 15m LOA
Diagram Not To Scale

1 PRELIMINARY TASKS

The design of a marina or yacht harbour is a complex, specialist operation usually carried out by a team of professionals including marine environmental and coastal engineers and other consultants, preferably lead by an expert Marina Designer. This section outlines the necessary tasks, which may form part of an operational feasibility study and an environmental impact assessment if it is required.

1.1 General:

1.1.1 It may be beneficial to carry out feasibility work in two phases:-

Phase 1: Gather sufficient information, including that outlined above to assess whether the proposal is feasible. This should include the work outlined in 1.1.3 – 1.1.5.

Phase 2: If it is decided to proceed, a full and detailed survey should be pursued as described in section 1.2 – 1.10.

1.1.2 Ideally a marina site should have as much land as there is water including channels and fairways. Take into consideration the future growth in vessel size and boat mix (e.g. in the 1970's it was possible to accommodate 70 typical boats per hectare not considering super yachts, it is currently possible to accommodate 50 boats per hectare).

1.1.3 Before starting the design, operators should decide upon the market they wish to attract i.e. the size and mix of the preferred type of boat.

1.1.4 An inspection of the design site and adjoining land use should be carried out, taking into consideration the environment together with the location of any existing buildings and structures.

1.1.5 Check whether the site is exposed to prevailing winds and waves and if there is a requirement for dredging.

1.2 Surveys:

1.2.1 A land grid survey for the total project that includes all hydrographic and terrestrial information. Survey Datum levels should relate to a recognised Datum, preferably Chart Datum (CD).

1.2.2 Landside topographical surveys are most likely to be prepared by reference to an Ordnance Datum (OD). The difference between OD and CD is shown on Admiralty Charts and Tide Tables.

1.2.3 A Hydrographic Survey which includes all of the proposed site, the approach channel route and any adjacent waters, so an accurate appropriate assessment can

be made of wave climates, currents, adequate depths and any effect that the works may have on adjacent foreshores due to the movement of materials.

1.2.4 A Terrestrial Survey which shows any adjacent land areas that may be involved in the project or affected by the works and all existing structures such as sea walls, jetties, slipways, drains and storm water outlets etc.

1.2.5 A Geotechnical Survey giving accurate information on the materials contained in the seabed. If possible it should include sub-strata investigation in the form of boreholes. This is required for environmental reasons and to obtain the most economical design for the following:-

1.2.5.1 Securing piles or flexible moorings.
1.2.5.2 Sheet piled walls and quays.
1.2.5.3 Stone revetments.
1.2.5.4 Any areas that may be filled for car parks, hard-standings etc.
1.2.5.5 Information that has to be provided to obtain statutory licences.
1.2.5.6 Dredging operations.
1.2.5.7 Sediment movement assessments.
1.2.5.8 Structural stability of edge works, considering possible earthquake events.

1.2.6 Although it is not a preliminary task, an “as constructed” survey would be recommended on completion of the works.

1.3 Wind:

1.3.1 Wind design data can be obtained from the relevant British Standard BS5400 or National equivalent.

1.3.2 Prepare a wind rose for the proposed site showing both typical wind speeds and the prevailing wind direction.

1.3.3 Record the distance of the fetch over which the wind blows for all sectors.

1.4 Waves:

1.4.1 Types of waves include:

1.4.1.1 Wind blown waves
1.4.1.2 Ocean swell
1.4.1.3 Wash from passing vessels

1.4.2 The wave climate can be affected by:

1.4.2.1 Ocean swell, direct exposure or the “bending” of the wave direction around headlands or the ends of breakwaters.
1.4.2.2 Refraction and shoaling affect wave characteristics.
1.4.2.3 Diffraction and reflection from walls and other structures.
1.4.2.4 The effects of islands or land masses along the line of a fetch.

1.4.3 The details of any of these phenomena that may affect the design site should be noted and recorded accordingly.

It is important to include both the maximum wave height (H), significant wave height (Hs) and the period (Tp).

1.4.4 Accurate information and apposite studies can be obtained from coastal engineers who will carry out either computer or physical modelling or install a wave rider recording buoy.

1.5 Tides and Water Levels:

1.5.1 Tidal data can be obtained from the local Port Authorities or the Hydrographic Office. Information should include:

1.5.1.1 Highest astronomical tide HAT.
1.5.1.2 Lowest astronomical tide LAT.
1.5.1.3 Storm surges resulting from meteorological events or long periods of excessive wind.
1.5.1.4 Floods from rivers or excessive periods of rain.
1.5.1.5 The effect of global warming.

1.6 Currents:

1.6.1 These are due to the effect of tidal difference or the natural flow of rivers.

1.6.2 Measurements can be taken with flow meters.

1.7 Sediment Movement:

1.7.1 Marine works will affect the movement of materials along the coast or river. Designers should be aware of appropriate assessments including Environmental Impact Assessments and advise when they may be required by the statutory bodies.

1.8 Existing Features and Structures:

1.8.1 Detailed assessment of the following should be investigated:

1.8.1.1 The owners of the freehold.
1.8.1.2 The owners of the Fundus and whether they have any mineral rights.
1.8.1.3 The location and structural integrity of existing structures both on the land, on the water or in the water.
1.8.1.4 Are there any rights of way?
1.8.1.5 Have the buildings any restrictions with regard to planning or architectural heritage.
1.8.1.6 The effect of the development on any of the neighbour's land or existing structures.
1.8.1.7 The location of underground or underwater obstructions and services.

1.8.1.8 The levels of existing buildings with respect to the effect of surge or the effect of global warming.

1.9 Consents:

1.9.1 A number of consents from different bodies will be required before a new development can proceed. These vary according to the country and even within that country. Developers and designers should use their best endeavours to ensure requirements of all relevant authorities are complied with.

1.9.2 The main statutory regulations involved in the UK are outlined below but additional consents or licences may be required from a local harbour authority or the owner of the seabed. Check specific national and local legislation and codes.

1.9.3 This is a complex process, various consents are required as well as a project specific assessment. National trade associations such as the British Marine Federation (BMF) are likely to provide guidelines for local consents.

1.10 A typical list of some of the tasks which will be beneficial are shown in Table 1:

Table 1 Site Specific Detail. Name of site: . . . . . .

NO:	ITEM	COMMENTS
1	Site access – suitable for crane & articulated trucks	
2	Sheltered or exposed	
3	Max. fetch (km)	
4	Direction of max. fetch	
5	Max. wave height	
6	Max. wave period	
7	Possible reflected waves	
8	Current flow rate	
9	Max. wind speed	
10	Direction of prevailing wind	
11	Tidal range	
12	Water depth at low water	
13	Low water level	
14	Highest water level	
15	Quay wall level/bank seat level	
16	Drying	
17	Pontoon design live load	
18	Bridge length	
19	Disabled access	
20	Miscellaneous	
	General remarks	

2 PONTOON LAYOUT DESIGN

If readers are in any doubt as to how the following guidelines should be interpreted they should obtain advice from experienced marine consultants, engineers and marina designers with adequate Professional Indemnity insurance.

2.1 The Boat Mix:

2.1.1 The first consideration when designing the layout of a new or existing yacht harbour is to decide the "size and type" of the vessel that will be using the facility and/or the target market the developer wishes to attract.

2.1.2 Allow for future requirements remembering the demand for accommodating larger craft is an increasing trend.

2.2 Orientation of Berthed Craft:

2.2.1 Wherever possible boats should be orientated into the prevailing wind or tide whichever is the greater.

2.2.2 Craft of the same length should be located either side of a fairway, rather than each side of a walkway.

2.3 Channel Widths:

2.3.1 The location and width of the channels is contingent upon its exposure to wind, waves and currents together with the size and the number of boats to be accommodated in the harbour.

2.3.2 The optimum width for an Entrance Channel is 30 metres but this should be not less than the greatest of the following:

2.3.2.1 5B metres where B is the beam of the widest boat in the marina.

2.3.2.2 (L + 2) metres where L is the length of the longest boat in the Harbour.

2.3.2.3 An entrance with locks or tidal flaps may have different dimensions for economic and practical reasons.

2.4 Inner Channels:

2.4.1 The ideal minimum width of an inner channel is 20 metres or 1.5L whichever is greatest. The width of a channel is measured from the outboard side of any craft that are berthed on either side of the said channel.

2.4.2 If there are any strong cross winds or currents, the minimum width should be increased.

2.5 Fairway Width:

2.5.1 The minimum clear width of a fairway is 1.5 L where L is the L.O.A. of the largest boat which is accommodated on either side of the fairway. The width is defined as the clear measurement between the extremities of the berthed vessels.

2.5.2 The width can be reduced to a minimum of 1.3 L if the accommodated craft are all power boats and the yacht harbour is sheltered in non-tidal flowing waters.

2.5.3 Where sites have substantial tidal flows or exposed wind conditions, the fairway width should be increased to 2 L or even 2.5 L.

2.5.4 For piers and fingers secured by flexible moorings, the minimum fairway width should be 2 L.

2.5.5 Where boats are berthed “stern to” to the walkways without fingers, the fairway width should be 2 L.

2.5.6 If there is a plurality of multi-hulls, the secondary channels and fairways should be increased to 25m or 2 L whichever is the greater, where L is the length of any craft within this specific area.

2.6 Berth widths:

2.6.1 For craft up to 20m L.O.A. the clear width between finger pontoons should be no less than B + 1.5m for single berths and B1 + B2 + 2.0m for double berths where B, B1 and B2 are the maximum beams of the craft accommodated in the berth, including their fenders.

2.6.2 For craft greater than 21m the clear width between finger pontoons should be no less than B + 2m for single berths and B1 + B2 + 3m for double width berths where B, B1 and B2 are the maximum beams of the craft accommodated including their fenders and tenders.

2.6.3 Consideration should be given to including timber fender piles between double berths to avoid damaging neighbouring craft.

2.7 Walkway and Finger Dimensions:

2.7.1 The walkway width should consider the number and size of boats, as well as the level of pedestrian activity:

2.7.1.1 It is recommended that Primary walkways have a minimum width of 2.5m but preferably 3m, especially for piers which are longer than 120m. For areas of heavy pedestrian use consider widths of greater than 3 meters.

2.7.1.2 It is recommended that the width of Secondary walkways provide at least 1.5m for short walkways at 50 meters or less, at least 2m for walkways between 50 and 120 meters and a minimum width of 2.5m for walkways over 120 meters.

2.7.1.3 The width of walkways and fingers used by disabled persons in wheelchairs needs to comply with regulations for disabled access (See RYA Sailability for more information).

2.7.1.4 If it is proposed to use golf carts, consider using wider walkways to allow two carts to pass each other.

2.7.2 Berth-holders craft should be moored so that pulpits, anchors and bowsprits do not overhang the walkways.

2.7.3 The length of finger berths should be a minimum of 0.75L (length of boat secured to them) but ideally 0.85l.

2.7.4 Finger widths are shown on the Tables 2A & 2B:

Table 2A: Minimum Finger Widths

MARINA WITH FLOATING PONTOONS	
Boat Length (m)	**Finger Width (m)**
Up to 9	0.650
10 – 12	1.000
13 – 15	1.400
16 – 20	2.000
Over 20	2.500

Table 2B: Minimum Widths for Fixed Piers

MARINA WITH FIXED PONTOONS	
Pontoon Type	**Width (m)**
Fingers and Short Walkways	0.600
Long Walkways which may include Fingers	0.900

2.7.5 Fingers longer than 12m should include an end pile.

2.8 Freeboard:

2.8.1 The pontoon freeboard for boats up to 20m should not be less than 500mm. For boats greater than 20m consideration should be given to increasing the freeboard to 650mm or even 750mm for larger craft.

2.8.2 Some exceptions for this include:

2.8.2.1 Pontoons designed for the use of dinghies and other small craft.

2.8.2.2 Facilities for rowing and canoeing clubs – see Marina Design -Section 3.11.

2.9 Access for Disabled Persons:

2.9.1 Give consideration to providing facilities for disabled persons in accordance with current accessibility Regulations. Whilst designers and operators are not obliged to comply with the contents therein, they must apply common-sense and do as much as they can for disabled visitors and yachtsmen. More information can be obtained from:

2.9.1.1 PIANC - Disability access guidelines for recreational boating facilities (WG14) www.pianc.us/workinggroups/docs_wg/reccom-wg14.pdf

2.9.1.2 RYA Sailability www.rya.org.uk/programmes/ryasailability

2.9.1.3 The Equality and Human Rights Commission or from their website www.equalityhumanrights.com

2.9.2 Items include:

2.9.2.1 Dedicated landing pontoon.

2.9.2.2 Special disabled hoists.

2.9.2.3 Ramps and toilets to other facilities.

2.9.2.4 Car park spaces near the access bridge.

2.9.3 Specific detailed disabled requirements have been published by MDL Ltd and the RYA (On-shore facilities for sailors, a design guide of facilities for disabled users, 1998).

2.10 Ramps and Gangway Access Bridges:

2.10.1 These should have a gradient no greater that 1 in 4. The width of the bridge should be as wide as possible to allow for trolleys and pedestrian access in both directions. Special consideration will need to be given if bridges are to be used by golf carts or other vehicles.

2.10.2 The gradient for bridges to comply with the regulations for disabled access should be designed by reference to either the PIANC Publication “Disabled Access for Recreational Boating Facilities” or the RYA Document “Sailability” which state that this should not be less than 1:10. However, this may not be practical and common sense must prevail for the design and construction of this facility.

2.10.3 Consideration should be given to installing simple ridges measuring up to 25mm x 12mm x 350mm and located no more than 300mm away from the bridge edge.

2.10.3.1 As an alternative to ridges, inserts and/or non slip decking may be used.

2.10.4 It is recommended to provide security gates as part of the design of access ramps and gangways. Ensure that gates are installed on a staged level platform, preferably located at the top.

3 LOADS

3.1 The Scope of Design Work:

3.1.1 The fixed and floating elements of a Yacht Harbour will be affected by environmental conditions, such as wind, waves, currents, any live loads that may be applied and the dead load of the structure.

3.1.2 It is recommended that the structural design takes into account all the above situations, ensuring that the loads can be transferred from the structure to the piles or anchors securing the facility. It should have sufficient integral strength to withstand any offset loads and still remain stable.

3.1.3 **This section is for information purposes**. It is strongly recommended that an engineer experienced in marina design carrying adequate Professional Indemnity insurance carries out these calculations, specifically for the preferred location.

3.2 Dead Load:

3.2.1 This will include the self-weight of the entire structure including floats, fabricated or integral deck, cleats, bollards, service modules, "bolt on" hardware, pipes (loaded), cables and the weight of access bridges which will be applied to the landing pontoon. Together with any special items such as transformers, kiosks, and hoists for disabled persons, bearing in mind the latter could be an eccentric load. The floats need sufficient submerged volume to provide the required freeboard.

3.2.2 Make an allowance for any water absorption that may occur during the expected life of the materials used to construct the float.

3.3 Live Load:

3.3.1 Live load applications include: people, trolleys, golf carts and plant used by operatives working on berthed craft. These loads are shown in the following Table 3 in kilo-Newton's per square metre.

Table 3: Minimum Live Loads

PONTOON TYPE	kN per m^2
Heavily used walkways	2.5
Primary walkways	2.0
Secondary walkways	1.5
Fingers for craft < 11m	0.75
Fingers for craft 12m – 20m	1.00
Fingers for craft > 20m	1.30

3.3.2 In exceptional circumstances such as boat show events, further consideration should be given to the load capacity of those pontoons.

3.3.3 The uniformly distributed loads applied to walkways should be applied to an area calculated from the full length of the floating structure by the width measured between the service ducts or 300mm from the edge of the walkway if ducts are not included.

3.3.4 The live load applied to fingers should be applied over the full width of the structure.

3.4 Live Load on Gangways and Bridges:

3.4.1 **Restricted Access** – A uniformly distributed load of 2.5 kN per sq.m or a concentrated load of 2.5 kN whichever has the most adverse effect. Unless there is an intention to use golf carts or other vehicles when the loads that apply to public access should be used (see 3.4.2). The handrail or balustrade loading is 0.74 kN per metre.

3.4.2 **Public Access** – A uniformly distributed load of 4 kN per sq.m or a concentrated load of 4 kN whichever has the worst adverse effect. This load will have to be increased to 5 kN if it is to comply with BS5400 (bridges). The handrailing or balustrade loading is 1.5 kN/m.

3.4.3 If balustrades or handrailings are required to ensure a safe access to the main walkway, an applied load of 1.5 kN per metre should be used.

3.5 Live Load on Fixed Structures:

3.5.1 A uniform distributed load of 4kN or a concentrated load of 4kN whichever has the most adverse effect.

3.6 Berthing Loads:

3.6.1 The forces applied by a vessel coming alongside can be calculated by resolving that force into perpendicular and alongside force. The perpendicular velocity is recommended not to be less than 0.3 meters per second.

3.7 Wind Loads:

3.7.1 The design wind speed will have been determined during the preliminary investigations described in Section 1. The loads applied to the structure from the moored vessels are “derived” from the relevant Code BS5400. The loads are based on the steady hourly wind speed rather than gusts.

3.7.2 The total wind load is applied when all accommodated boats are berthed in the yacht harbour, however shielding factors are permissible.

3.7.3 Prevailing wind direction and typical speeds in the locality can normally be provided by the local airport operator or in the UK by reference to relevant British Standards or Eurocode.

3.8 Loads created by Waves:

3.8.1 The loads applied to the structure by waves are cyclic, caused by a combination of viscous drag and inertia change. The structure should be designed for a minimum horizontal load of 2 kN/m^2.

3.9 Loads created by Current and Tidal Flow:

3.9.1 The maximum flow will have been obtained during the preliminary investigations. The drag forces created by tidal flow are derived from BS6349 (Maritime Structures).

3.10 Unexpected Environmental Loads:

3.10.1 The design of the structures should take into account the following:

3.10.1.1 Flotsam and Jetsam moved by currents becoming entangled in the structures. The load is calculated by assuming that the debris mat could be as deep as 0.7m.

3.10.1.2 Ice - The most serious load is during periods of thaw when large masses can affect the horizontal load applied to the floating structure.

3.10.1.3 Excess surge, for example swell, and wash from passing ships or anything else which is out of the ordinary.

3.11 Eccentric Loads Affecting Stability:

3.11.1 Floating pontoons have to be designed to withstand the application of eccentric loads and have a metacentre that remains above the structure's centre of gravity.

3.11.2 The minimum freeboard of the flotation unit when tilted should not be less than 50mm and the whole of the underside of the floats should always remain submerged.

3.11.3 Pontoons for canoeists and rowing clubs require a minimum width of 2.5m and should be constructed with continuous flotation.

4 ANCHORING SYSTEMS

4.1 General:

4.1.1 There are rigid systems using vertical piles and flexible systems using chains or elasticated ropes connected to ground anchors or concrete blocks.

4.1.2 All systems need to be designed to take the total of all the environmental loads that will be applied to the vessels or floating structures, plus an adequate additional allowance. These loads will be transferred through the floating structure to the piles.

4.1.3 If feasible and where permitted on planning and environmental grounds, piles are considered the most practical method; experience has shown the annual maintenance costs are less when the floating elements have little or no horizontal movement.

4.1.4 Flexible moorings are often used when there is a rock or hard sub-strata and/or when the water is deep.

4.1.5 Chains can be used for individual swinging moorings or buoyed fore and aft trot moorings.

4.2 Pile Systems:

4.2.1 Pile types include:

4.2.1.1 Sawn or hewn Greenheart.
4.2.1.2 Greenheart logs.
4.2.1.3 Universal columns.
4.2.1.4 Steel tubes with a minimum wall thickness of 12mm.
4.2.1.5 Reinforced concrete.

4.2.2 These can be located externally or internally if the pontoon design can be modified without reducing its inherent strength.

4.2.3 The linings of the pile guides will include low friction, hard wearing pads (Schlegel or similar) or nylon rollers.

4.2.4 When calculating the length of the pile consider the following factors:

4.2.4.1 An allowance for surge and sea level rise from global warming.
4.2.4.2 The tidal rise and fall.
4.2.4.3 The freeboard of the floating structure.
4.2.4.4 At least one third of its length driven into satisfactory sub-strata or below the established “fixity” in soft ground, after the necessary geotechnical considerations.

4.2.5 The size of the pile will depend on the bending moment that it can withstand when the pontoon system is at its maximum height above “fixity”.

4.2.6 The maximum span of the pile locations is calculated from the structural capability that the floating pontoon can sustain or the spacings of the total pile requirement, whichever is the least.

4.2.7 With the exception of concrete and timber piles, it is recommended that all piles are protected by a suitable and approved paint system.

4.2.8 Piles could also be protected by incorporating a snug fitting and capped H.D.P.E. (high density polyethylene) tube that is placed over the pile and driven into the seabed by at least one metre.

4.2.9 If piles are unprotected, there is a greater possibility of accelerated low water corrosion. In this case pile thickness would be reduced and allowance for this should be taken into consideration.

4.3 Flexible Mooring Systems:

4.3.1 The mooring lines will be either chain or elasticated rope secured to anchors, concrete sinkers or a ground chain system that can take the full horizontal load without moving from the sea bed.

4.3.2 If a concrete block is used, it should have a minimum weight of 4 tons in the air If a concrete block is used, it should have a minimum weight of 4 tons in air (around 2.5 tonnes when submerged). The block should be as flat as possible to avoid being a hazard at low tide. If possible it should be constructed with a slightly domed (concave) base to create a suction force. Multiple weights arranged in tandem may be considered if insufficient resistance can be obtained from a single block.

1.1.1 Load calculations will determine the required chain size however it is recommended that the chain will be marine grade 30 with a minimum diameter of 19mm. Its length should be at least 3 times the water depth at HAT to ensure the anchor stays in place.

1.1.2 Ensure that any elasticised rope system is installed in accordance with the manufacturer’s specification.

1.1.3 If at all possible ensure that the anchor points are robust and located opposite each other, so that the horizontal loads are balanced and there is no internal bending moment applied to the pontoon system.

1.1.4 Locate the connection points on the opposite side of the walkway from the anchor to ensure that keels do not foul the chain or the elasticated rope.

1.1.5 All shackles should be galvanised, mild steel, tested and certified. Dee and bow shackles will have a lifting pin greater than the standing part and should be seized with stainless wire or similar.

1.1.6 Swivels will be one size greater than that of the chain and could be fully forged.

1.1.7 It is recommended that stainless steel used for shackles and swivels is specified to grade 316 or preferably 316L.

1.1.8 It is recommended that inspection and maintenance is carried out annually before use.

4.4 Fore and Aft Piled Moorings:

1.2.1 It is recommended that piles are of a sufficient size and diameter to take the full horizontal load. If the change in water depth is greater than 1.5 metres, the bridles to the individual pontoons or vessels are secured to a ring located on a vertical horse-rail on the pile, and be of sufficient length to cover at least three quarters of the tidal range.

4.5 Fore and Aft Chain Trot Moorings:

1.3.1 The ground chain should be secured to the lake, river or sea bed by suitably sized concrete blocks, screw anchors or anchors suitably sized and designed.

1.3.2 The rising chain may be marine grade 30 with a minimum diameter of 19mm. Its length should be at least 3 times the water depth at HAT.

1.3.3 The chain bridles to the mooring buoys should have a minimum diameter of 12mm and include a swivel at the junction with the ground chain and a swivel at the mooring buoy.

1.3.4 The buoy should be sufficient in size to support the total weight of the bridle chain when at its highest level and preferably have an eye above the buoy for use by the vessel crew.

1.3.5 It is recommended that all shackles are seized with stainless wire or similar.

4.6 Swinging Moorings:

1.4.1 If individual moorings are located where there are adverse tide and wind conditions, there should be at least 2m between the boats at full extent in opposing directions.

1.4.2 The chain will be marine grade 30 with a minimum diameter of 19mm. Its length should be at least 3 times the water depth at HAT.

1.4.3 Provide swivels at both ends of the chain.

1.4.4 Check that mooring buoys have sufficient buoyancy to take the full weight of the chain when at its highest level and preferably incorporate a large ring above the buoy, perhaps with a small rope bridle for ease of pick-up.

1.4.5 If the mooring dries out or is located in shallow water it may be worth considering using a lighter riser chain. A heavier one tends to centre the vessel over the block or eye bolt and may cause damage.

5 FLOATING PONTOON SYSTEMS

5.1 General:

Designers and purchasers should address the following criteria when considering the type of floating pontoons that they propose to use in a Yacht Harbour:

5.1.1 The design should be simple and “user friendly” rather than too complex and such that worn and damaged parts can be replaced easily.

5.1.2 The noise generated by wave action or pedestrian use can be a nuisance to berth holders and should be kept to an absolute minimum.

5.1.3 The specification of the materials used must be able to withstand the local climate and the risk of damage by fire.

5.1.4 Deck materials should be hard wearing, especially when used commercially and be self draining and easily cleaned. The surface should be resistant to ultra-violet and be grit free.

5.1.5 A recommendation for the longevity of the system should be obtained from the supplier together with evidence of the annual maintenance costs.

5.2 Decks:

5.2.1 The most common materials used for decking comprise:

5.2.1.1 Tropical hardwood
5.2.1.2 Treated softwood
5.2.1.3 Chequer plate or steel mesh
5.2.1.4 Fibre reinforced plastic – non-slip
5.2.1.5 Recycled plastics – non-slip
5.2.1.6 Concrete
5.2.1.7 Aluminium

5.2.2 Consider using sustainably sourced timber, certified by bodies such as the FSC (Forestry Stewardship Council).

5.3 Floats:

5.3.1 Types of floats include, plastic (polyethylene), fibreglass, concrete, rota moulded polyethylene, steel or aluminium.

5.3.2 Unless the outer-skin is virtually damage proof, floats should contain core material that has water absorption of not greater than 5% by volume. The protective coating should be resistant to ultra violet rays and salt water. Some artificial materials can promote electrolytic action.

5.3.3 Floats should be virtually maintenance free with stainless steel fixings, and skin materials should be suitably reinforced and preferably half-hour fire resistant.

5.4 Structural Frame:

5.4.1 The most common materials for the structural frame of pontoons are steel galvanised to the current British Standard, concrete, marine grade aluminium and timber.

5.4.2 The structure must be capable of transferring imposed loads to the piles or moorings. The design and choice of material should take full account of the site conditions, wind loadings, berthing forces and fatigue loading, to minimise the risk of damage to the structures and the boats.

5.4.3 If the system comprises flexible joints between the units, the diameter of the connecting bolts must be capable of sustaining the applied loads with a safety factor of 3:1.

5.4.4 All connections between pontoons should be made in such a way so as not to generate noise, and be readily accessible for maintenance checking and replacement as necessary. Durability is important. Fixings must be adequately seized to resist loosening under cyclical loading.

5.4.5 If the system is of a rigid design, the walings must be adequately fixed to transfer all the inherent cyclical loads.

5.4.6 Finger pontoons should be capable of removal and adjustment either infinitely or at a regular and acceptable modular spacing. With the variability of boats' beams during the life expectancy of a pontoon system, unrestricted adjustment of finger pontoons has obvious advantages.

5.4.7 The pontoon system should ideally include adequate cleats, bollards or mooring rings sited in such a position to facilitate safe berthing of the accommodated vessel.

5.4.8 Preferably, fingers up to 7.5m should include a minimum of 2 cleats per side, fingers of 8m to 12m should include a minimum of 3 cleats per side. For boats greater than 12m provide adequate mooring points along the finger, using at least 4 cleats each side.

5.4.9 At least one cleat should be provided on the walkway between double loaded finger berths. Alongside berths should include cleats at a minimum of 3m centres.

5.4.10 The ends of the fingers must be "user friendly" and well protected, not to cause damage to vessels approaching or leaving their berth.

5.4.11 It is recommended that the ends of fingers must be round with a suitable fender. If finger ends have an angular construction, consider installing energy absorbing fenders around the corners.

5.5 Material Specifications:

5.5.1 Concrete must have a minimum compressive strength of 40 KN per square metre. If mild steel or any ferrous material is used for reinforcement, it should have a minimum cover of 60mm. If the reinforcement has insufficient cover spalling is likely to occur and that will reduce the strength of the structure and its appearance. There is an option to hot dip galvanize the steel or consider the use of stainless steel. In this case the cover could be reduced to 45mm.

5.5.2 Aluminium must be of a marine grade 6061, 6062, 6068 or the local equivalent.

5.5.3 Steel needs to be galvanised in accordance with the relevant BS EN 150 1461 appropriate standard. For added protection shot blast the steel prior to galvanising.

5.5.4 The Timber Research and Development Association (TRADA) can give advice on appropriate quality and usage.

5.5.4.1 **Hardwood** – Should be durable and straight grained with minimal knots. A commonly used example is Yellow Balau.

5.5.4.2 **Soft wood** – Should be pressure treated with a suitable preservative in accordance with the supplier's instructions. Be aware that the strength in bending is less than hardwood so it must be thicker or the spacing of the spines reduced.

5.5.4.3 Efforts should be made to ensure wood is purchased from sustainable rainforests i.e. Forest Stewardship Council (FSC) certified.

5.5.4.4 The EU Timber Regulation (2013) prohibits placing timber on the EU market if it was illegally harvested.

6 ENVIRONMENTAL CONDITIONS

6.1 General:

The environmental conditions within a yacht harbour should meet the following criteria where possible:

6.1.1 Accommodate the needs of the customers and regulatory authority.

6.1.2 All practical measures taken to minimise impact on the natural environment, particularly from oil and fuel spills, the discharge of black water and trade effluent from wash down activities. These may include:

6.1.2.1 Where practical, oil and fuel should be located more than 10 meters from the water.

6.1.2.2 Oil and fuel should have a secondary containment either by a 110% bund or a second skin.

6.1.2.3 There should be designated waste areas with appropriate facilities for berth holders to dispose and recycle waste associated with boat use.

6.1.3 No damage should be caused to berthed vessels due to wave action.

6.1.4 All structures, piles and mooring systems are secured at all times.

6.1.5 The key environmental issues for consideration are:

6.1.5.1 Waves entering the harbour.

6.1.5.2 Wind loads.

6.1.5.3 The effect of currents.

6.1.5.4 The quality of the water.

6.1.5.5 The containment and disposal of gel coat peelings, blasting materials and contaminated water.

6.2 Conditions for Inland Waterways

6.2.1 Inland Waterways experience a variety of conditions. These range from a water level change of only a few millimetres with minimal flow, in some favoured locations to a torrent either emptying excess water from flood-plains into the system or a failure of the waterway infra-structure draining water on to the surrounding land. These conditions will affect the levels of land based structures and the working height of pontoons.

6.2.2 Water quality can vary from high salinity to polluted water with a high organic content; all having major impact on the design of water immersed structures.

6.2.3 New inland developments will benefit from an expert local opinion.

6.3 Waves:

6.3.1 Guidelines exist for parameters of comfort, safety or even limit levels of agitation under storm conditions, the can be summarised by:

6.3.1.1 The significant wave height (Hs) for normal annual conditions must not exceed 0.3m with a period (Tp) of 2 seconds.

6.3.1.2 For designers using conditions created by storms of an occurrence of 1 in 50 years - the waves should not exceed (Hs) of 0.4m with a period (Tp) of 2.5 seconds.

6.3.1.3 If the predicted wave climate exceeds these parameters, it must be reduced by a suitable wave attenuator or breakwater.

6.4 Water Depth:

6.4.1 Ideally the dredged or natural depth should be at least 0.5m more than the draught of the deepest craft using the harbour below lowest astronomical tide (LAT).

6.4.2 Extra depth should be allowed if there is excessive wave action at the entrance channel caused by wash and 'drawdown' from passing vessels.

6.4.3 It may be expedient to over-dredge during the construction period to allow for siltation which may take place in subsequent years.

6.4.4 If it is not practical or too expensive to obtain the recommended depths, consider constructing a sea lock or cill.

6.4.5 If craft go aground, there may be damage due to interaction between the boat and pontoons.

6.4.6 Refer also to signage in Marina Design - Section 12 - Navigation Aids.

6.5 Water Quality:

6.5.1 Relevant statutory authorities monitor water quality in coastal and inland marinas. It is important to maintain high standards and observe local and national regulations. Yacht harbours and marinas that have dirty water, together with flotsam and jetsam are unpleasant for berth-holders and visitors.

6.5.2 Ideally marina operators should provide:

6.5.2.1 An oil/fuel spill kit available capable of containing spills on the water.

6.5.2.2 Pollution emergency plans.

6.5.2.3 Drainage plan.

6.5.2.4 Environmental policy.

6.5.2.5 Sewage pump-out facilities.

6.5.3 Operators should aim to participate in the ICOMIA Clean Marina programme to improve the quality of their yacht harbour. This can be achieved as part of the Gold

Anchor Award Scheme (see Marina Operations - Section 18 for details), benefits will include:

6.5.3.1 Raising the company image.
6.5.3.2 Improving berth-holder relationship.
6.5.3.3 Increased confidence by the local authorities.
6.5.3.4 Minimise the possibility of environmental incidents.
6.5.3.5 Compliance with relevant Health and Safety Regulations.

6.5.4 It is desirable that the water is free to circulate within the marina. Ideally there should be gaps between the floats so water can circulate within the basin and if practical locate pipes in the break water to create an exchange of water between the marina and the surrounding water courses.

6.5.5 An analysis of the water flow is recommended using flow meters or environmentally friendly coloured dyes.

6.5.6 Each yacht harbour or marina needs a site specific Environmental Management Plan with staff thoroughly trained in Environmental Management Practices. Writers of the plan should refer to:

6.5.6.1 The Green Guide for Marinas - www.thegreenblue.org.uk/greenguide
6.5.6.2 The Marine Toolkit - www.marinetoolkit.co.uk
6.5.6.3 Marina Operations Manual – Section 12 - Pollution Prevention.

6.5.7 They should also:

6.5.7.1 Remember that prevention is better than cure.
6.5.7.2 Keep a clean and tidy site with regular “clean up” events to target litter.
6.5.7.3 Inform berth-holders what they can do to help.
6.5.7.4 Keep a stock of non-phosphate cleaners and other relevant products.

6.6 Port Waste Management Plan:

6.6.1 Coastal marinas and yacht harbours must prepare a “Port Waste Management Plan” either individually or as part of a larger harbour directive. The Port Waste Management Plan should be submitted to the Maritime and Coastguard Agency for approval.

6.6.2 UK Inland marinas may have to prepare a similar plan for their Local Authority.

6.6.3 It is not good practice to install waste bins on the pontoons or fixed piers. Aim to provide bins or similar near to the access bridge head. If this is not practical provide clear signage indicating where disposal bins are located.

6.6.4 If there are areas of the marina where waste is likely to be generated, provide convenient bins.

6.6.5 Be aware of Pollution Prevention in Marina Operations Manual – Section 12.

7 DREDGING

Maintenance dredging is necessary at many marina facilities. This is often a costly and time consuming exercise, but necessary for the effective operation of a marina which is prone to siltation.

7.1 Dredging equipment

The equipment required varies widely in size and type according to the broad spectrum of marine circumstances. Dredgers are mainly water-based but can also be land-based machines. The variety of dredging equipment, can normally be classified as follows:

7.1.1 Mechanical dredgers:

7.1.1.1 Backhoes.
7.1.1.2 Grab dredgers.

7.1.2 Hydraulic dredgers:

7.1.2.1 Stationary suction dredgers.
7.1.2.2 Cutter suction dredgers.
7.1.2.3 Trailing suction hopper dredgers.

7.1.3 **Low impact dredgers** – designed to ensure that contaminants are not re-mobilised and/or released into the water column, where they may detrimentally affect aquatic life E.G. the Auger dredger, HAM291 or a backhoe with environmental bucket/clamshell.

7.1.4 **Hydrodynamic dredging** – such as water injection dredging: The silt/fine sand is re-liquefied by low-pressure injection of water. The layer thus formed is a liquid denser than water, which flows under the forces of nature present in the area, these would essentially be the friction force of the current flow together with the gravitational force of the bed slope. Over time the density layer will develop and merge back into the natural sediment transport system. It is unlikely that measurable deposits will return. Within the confines of the area, the layer formed will flow principally under the gravitational force of the bed slope only.

7.2 Consents and dredging licensing (UK)

7.2.1 Dredging is governed by an international convention to protect the environment. Details of this can be found from the Central Dredging Association at www.dredging.org.

7.2.2 In the UK dredging activity requires an MMO licence, regardless of whether separate disposal is necessary or not.

7.2.3 Part 4 of the Marine and Coastal Access Act (MCAA) includes a list of 13 marine dredging activities which require a marine licence. Operators should be prepared to allow at least 6 months and where there are any significant issues (usually environmental) allow 12 months from application to obtaining the licence.

7.2.4 Some dredging contractors offer assistance with reviewing the documentation to help ensure the application covers the most economical method. They deal with the MMO on a more regular basis and may be able to offer advice.

7.2.5 Various limited exemptions for licensing do exist and these vary according to government policy and location.

7.2.6 The overriding advice is to start the application process for this licence as early as possible.

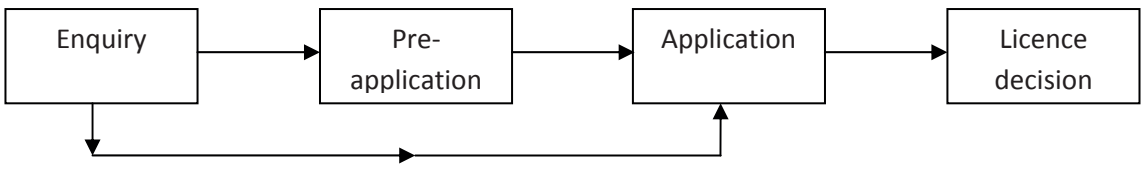
7.2.7 Current licensing requirements and exemptions are detailed online through the following organisations:

7.2.7.1 Marine Management Organisation (England)
7.2.7.2 Marine Scotland (Scotland)
7.2.7.3 WAG Marine Consents Unit (Wales)
7.2.7.4 Department of Environment for Northern Ireland / Northern Ireland Environment Agency (Northern Ireland)

7.3 MMO Process Overview

7.3.1 In April 2011 a new licensing service was introduced that enables applicants to apply, pay for and track the progress of their licence applications online. This includes making online licence variation requests and submitting licence returns. This is accessible through the MMO website www.marinemanagement.org.uk.

7.3.2 The MMO handle the entire marine licensing process, from initial queries through the pre-application, application, licence decision and post-consent monitoring (if applicable) stages.



8 ADMINISTRATION OFFICE & FACILITIES

Every marina requires office accommodation for its operating and administrative staff and should be in full view of all the berths if practical. This should be well sited and easily found by crews of visiting yachts and visitors arriving by land. There should be adequate signs indicating the location of the Harbour Office.

8.1 Consider the follow when designing the marina office:

8.1.1 Sign posting is important.

8.1.2 It is helpful to be in an obvious location for visitors who are not familiar with the site.

8.1.3 The office dimensions will normally correlate with the size of the marina, the boat mix and the number of staff required to service it.

8.1.4 Provide suitable accommodation in the marina office such as a reception, manager's office, staff welfare, drying room, mail handling and stores etc.

8.2 In addition, operators should consider including any or all of the following facilities:

8.2.1 A chandlery that includes the sale of clothing, liquor and basic food stuffs.

8.2.2 Additional marina security office for vulnerable areas of the marina.

8.2.3 Club or bar facility which may include a restaurant or wine bar.

8.2.4 Boat care and valeting service.

8.2.5 Sea School which could ideally be accredited by the Royal Yachting Association (RYA).

8.2.6 Boat sales, brokerage and charter office.

8.2.7 On-shore storage facilities.

8.2.8 A suitable boat hoist or crane.

8.2.9 Engine repairs including outboards.

8.2.10 A concierge service.

8.2.11 A boatyard operation (see Boatyard Operations).

9 SUPER YACHT FACILITIES

Operators or marina owners who are considering providing a super yacht facility should have a good understanding of the super yacht industry, as well as the customer services complexity required to facilitate the larger vessels; as well as the requirements of those on board and the owner, captain and crew. Before embarking on the design, decide on the size of the craft, the clientele activity (home port, charter destination etc.) and the market that the developers wish to attract.

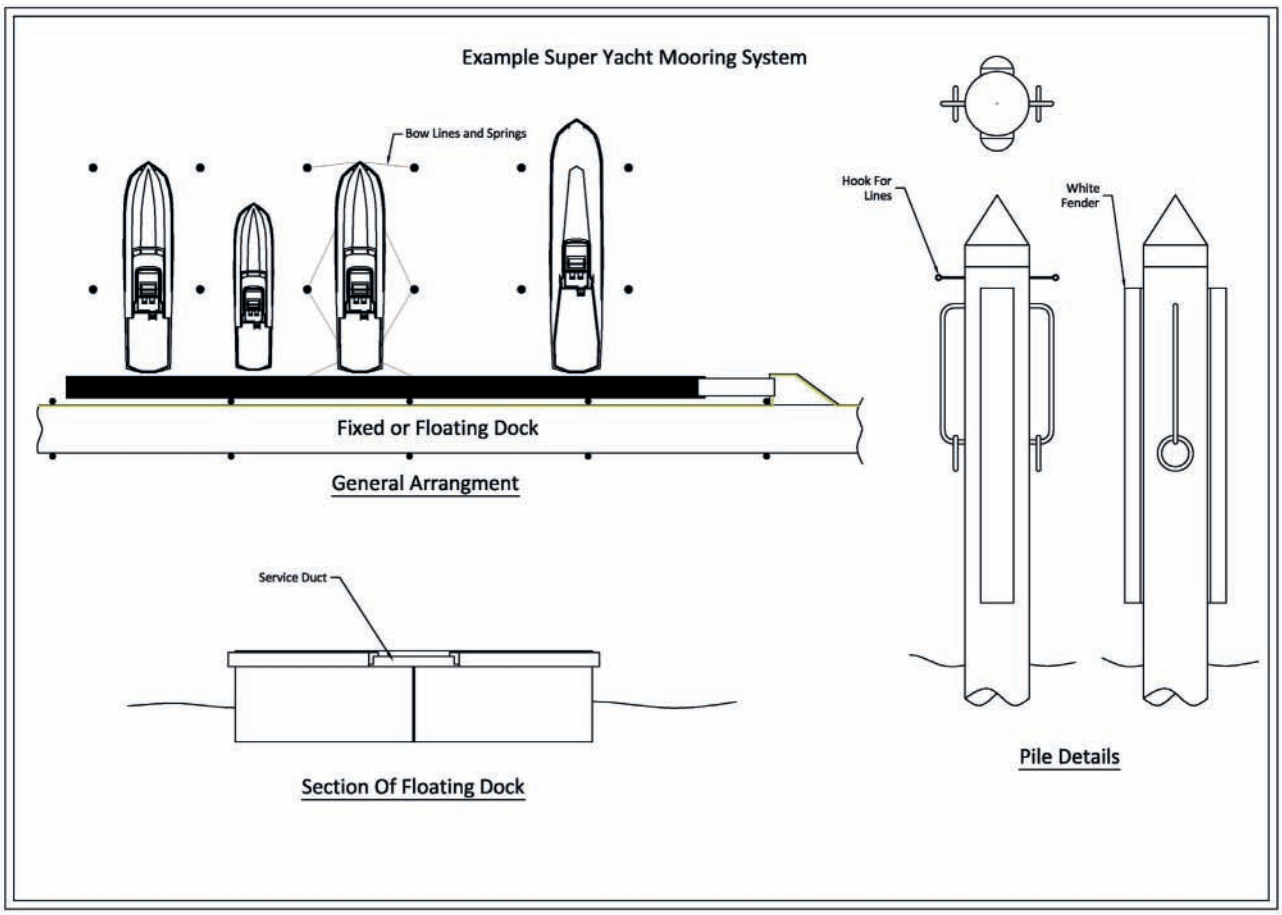
9.1 Infrastructure

9.1.1 Access bridges will be wide and designed to facilitate golf carts and delivery trucks.

9.1.2 If finger piers are used for alongside berthing they should be wide enough for pedestrians to pass fixed access stairways, golf carts and include extra piles to take the increased wind load.

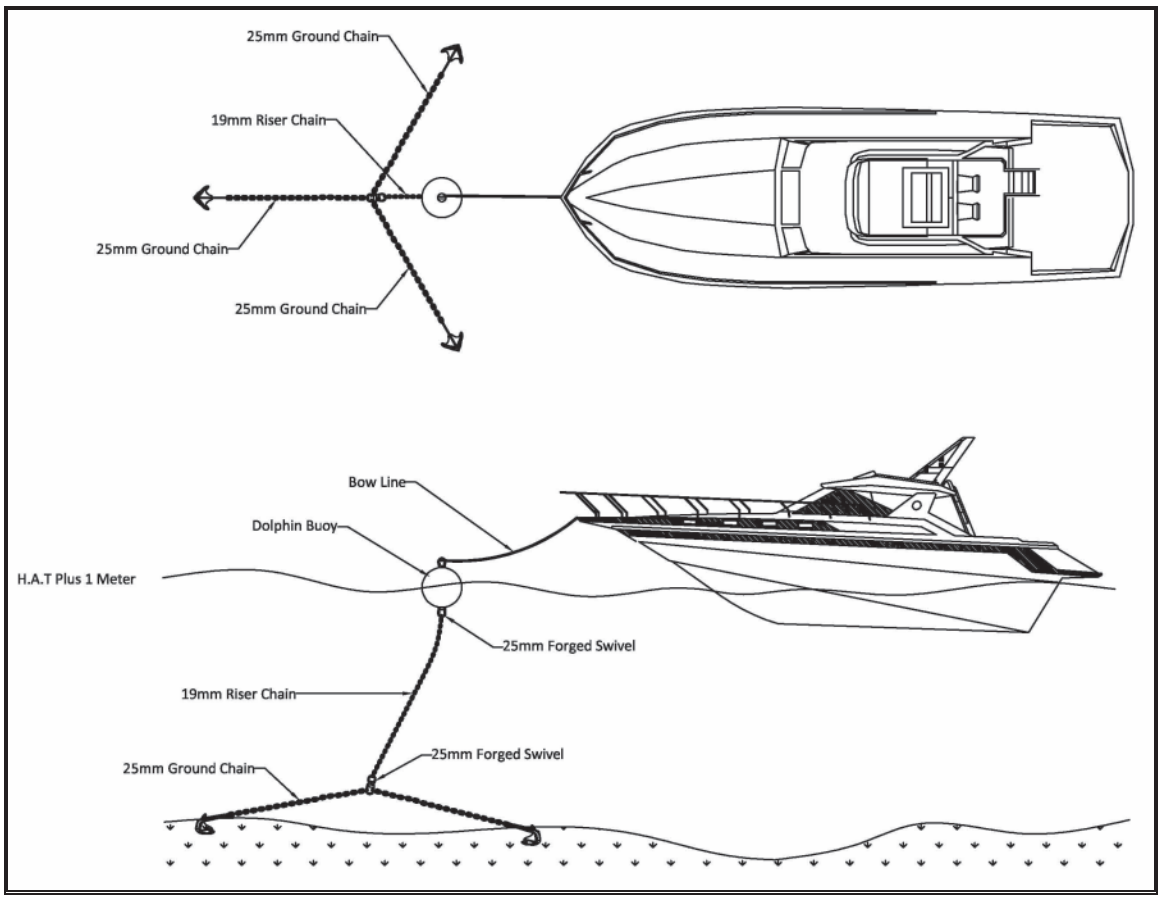
9.1.3 Super yachts can also be berthed stern-to on fixed or floating piers where only piles are used to secure the vessel. The design and number and number of piles should be calculated based on the specific conditions and requirements (See Diagram 3).

Diagram 3: Example of a super yacht piling system



9.1.4 Alternately use of a dolphin buoy where the yacht berths stern-to a robust and secure floating pontoon or rigid pier. The buoy will be secured by three ground chains, with an anchor on one end and a swivel on the other. The riser chain should be long enough not to submerge the buoy at HAT, plus a small tolerance and connected to another swivel which in turn is connected to the dolphin buoy. In the case of a stern-to mooring to a floating pontoon there will be a limit on the maximum size of vessel that can be accommodated which is likely to be in the region of 30 meters.

Diagram 4: Securing a dolphin buoy (stern-to mooring)



9.1.5 The wind loads may be high, therefore take care when applying a shielding factor. Craft can be away from their berths for long periods.

9.1.6 The design of the fixed or floating piers and walkways should be capable of transferring the high wind loads from the bollards and cleats to the securing piles.

9.1.7 Consider a minimum pontoon or pier freeboard of 700mm – 750mm.

9.1.8 A large car park should be designed for the use of heavy lorries (trucks) making regular deliveries of fuel, provisions, stores, furniture and other goods.

9.1.9 Some super yachts require a large area to manoeuvre. When considering the location of the preferred layout, consideration should be given to optimising the use of the water space.

9.2 Utilities

9.2.1 A Three phase supply of electricity will be required for a minimum of 63 Amps and up to 1,000 Amps or beyond. Be aware that voltage and socket types vary on either sides of the Atlantic.

9.2.2 Potable water consumption is likely to reach several thousands of litres each day. The supply should be capable of providing this volume to yachts in situ. It should also be metered and carefully monitored by the marina management.

9.2.3 It is beneficial for the water service supply pipe to have a large diameter and a minimum of 3 bars pressure maintained at the bridgehead.

9.2.4 A Port Waste Management Scheme may be in operation, agreed by the local authority.

9.2.5 Consider a grey and black water pump out facility at a suitable location or at each berth.

9.2.6 Operators often supply both gas oil and petrol either from fixed dispensers on a dedicated fuel dock or at the berth itself referred to as 'in-berth fuelling'. It is worth considering a mobile system that can be connected to convenient locations along the main supply. The diesel should be provided in a pipe with a minimum diameter of 70mm, the petrol supply pipe will typically have a smaller diameter. In both cases high speed delivery pumps are important.

9.3 Access and egress

9.3.1 **Vessels -** Provide adequate manoeuvring space with a turning circle which has a minimum diameter of 1.5L of the largest craft accommodated. Consideration should also be given to the influence of the environmental conditions.

9.3.2 **Pedestrians -** Consider the level of privacy and security that will be expected by the owners. This could be achieved by providing private access for berth holders and a separate one for the public. Both equipped with a suitable and separate security system.

9.3.3 **Vehicles -** Site access gates should be sufficiently wide to allow both cars and large lorries. The facility should accommodate golf carts and hand trolleys for the use of berth holders and delivery drivers.

9.4 Security

9.4.1 There will be a great deal of focus on the level of security. Commercial yachts and their managers will be operating to an International Safety Management System (ISM) and may seek to ensure that the facility complies with the International Ship and Port Security (ISPS) code.

9.4.2 The design of all types of access points should be robust and controlled by an accepted type of security system.

9.4.3 The facility should consider CCTV coverage on the water and shoreside whilst taking into account the expectations for owners' privacy.

9.4.4 Management should consider enhanced security for the owners and other VIP's who may be visiting.

9.5 Services

The level of services and increased demand from Super Yacht crew and Owners cannot be underestimated. Consider some of the following services:

9.5.1 An outlet to provide day to day supplies.

9.5.2 Provisions such as food and beverage.

9.5.3 A flower delivery service.

9.5.4 A storage facility or warehouse onshore to accommodate items for:

9.5.4.1 Everyday use of marina management.
9.5.4.2 Individual use of berth holders.
9.5.4.3 Tenders and other personal craft or effects.

9.5.5 A post and delivery room.

9.5.6 A maintenance and repair workshop for most trades. If this is not available provide a conspicuous notice as to where this is located and how far away it is.

9.5.7 Facilities which bring value to both owners and crew including:

9.5.7.1 A lounge for the use of captains ONLY.
9.5.7.2 A dedicated bar that can allow the crews from other super yachts to socialise amongst themselves in an affordable and relaxing atmosphere.

9.5.8 Other facilities which are worth considering include:

9.5.8.1 A gymnasium.
9.5.8.2 A tennis court.
9.5.8.3 A swimming pool.
9.5.8.4 A volley ball court.
9.5.8.5 A helicopter landing pad.
9.5.8.6 A landing strip or information with regard to the capacity and location of the nearest airport.

Further guidelines are provided in the PIANC Design and Operational Guidelines for Super Yacht Facilities (WG134).

10 FUEL BERTH

Fuel sale is a specialist activity requiring specialist storage and dispensing facilities. Expert advice should be sought for their installation and licensing requirements including compliance with exclusion zones and the Weights and Measures act 1985.

10.1.1 A special berth should be set aside for the sale of petrol and diesel fuel, available from metered pumps. Ideally, this should be situated as far away as possible from any surrounding residential properties to minimise disturbance from associated odours.

10.1.2 Specific consideration should be given to the Weights and Measures act 1985.

10.1.3 Fire protection criteria and requirements must be taken into account:

10.1.3.1 Provide suitable fire extinguishers and first-aid kits at the fuel berth.
10.1.3.2 Abide by statutory rules and regulations, especially for the sale of gas oil.
10.1.3.3 A prominent notice should be displayed forbidding smoking, naked lights and the use of mobile phones or any transmitting equipment around the fuel pumps.

10.1.4 Ideally a fuel berth would include:

10.1.4.1 A sewage pump out.
10.1.4.2 An oil spill kit with emergency instructions
10.1.4.3 An oily rag disposal point.
10.1.4.4 An adequate fresh water supply with sufficient length of hose.
10.1.4.5 A kiosk for the sale of drinks, confectionery and ice.
10.1.4.6 A prominent notice indicating services available, opening hours; and prohibiting mooring against the berth except while using those services.

10.1.5 The typical marina fuel pump will dispense between 20 and 40 litres per minute however fast flow pumps can supply over double that amount. Flow rate is determined by the diameter of the supply pipe and the supply pressure which can be increased through an inline pump.

10.1.6 If installing a pressurised fuel system take into account the associated risks and if the alternative gravity feed would be sufficient.

10.1.7 Consider the fuel requirements of the target market. On a typical 15 metre power boat this may be approximately 1,000 litres, while a 50 metre super yacht may hold approximately 100,000 litres depending on the individual specification of the vessel. There is also likely to be demand for very small petrol outboard engines with tanks as small as 1 litre.

10.1.8 Consider the delivery logistics for refilling fuel storage tanks and the likely demand during peak periods for refuelling.

10.1.9 Guidelines for the installation pipework are available from the Association of Petroleum Explosives Administration (APEA).

10.1.10 Lubricating oils and liquefied petroleum gas should be stored at a safe distance.

10.1.11 Tanks must be bunded in accordance with statutory requirements.

11 BREAKWATERS

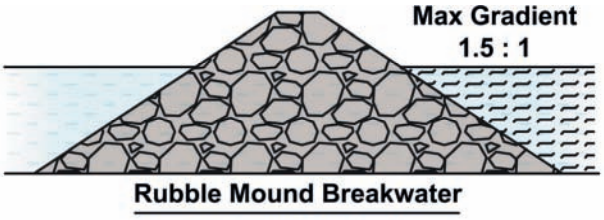
The loads applied to breakwaters and their ability to provide a satisfactory wave climate for the users of a yacht harbour is a specialised subject, the design should include the possibility of overtopping and require landscape protection.

It is recommended that professional advice is sought to ensure the design is "fit for purpose" and the type of construction is both suitable and financially viable for the specific site where it is to be constructed.

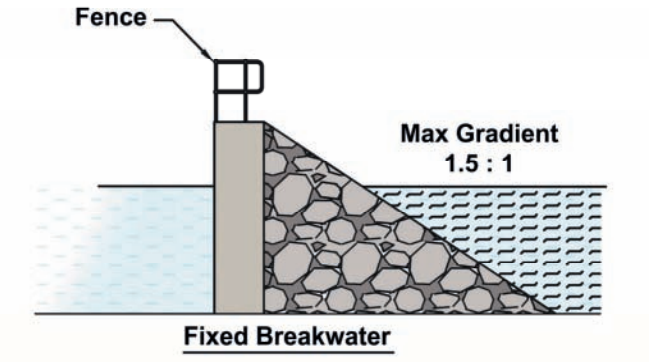
This section describes the various types of breakwaters that can be used to protect a yacht harbour, it does not outline the design criteria.

11.1 The various types of breakwaters used to protect yacht harbours comprise of:

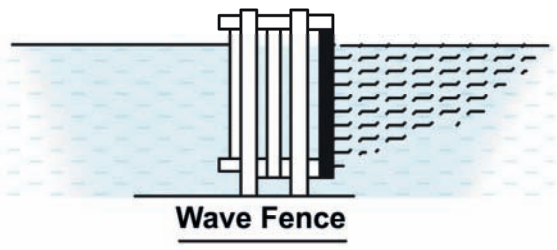
11.1.1 Rock faced rubble mounds.



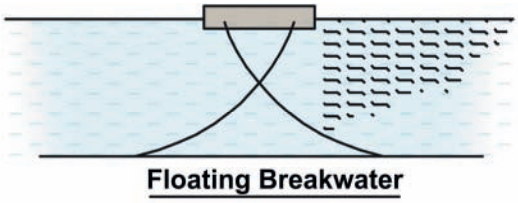
11.1.2 Sheet piled or concrete wall.



11.1.3 A wave fence.



11.1.4 Floating wave attenuators (be aware that floating attenuators only have a small range of wave attenuation).



11.2 The criteria which should be used for each type depends on water depth, wave climate, seabed characteristics, the cost and available space.

11.3 The slope of a rubble mound breakwater is determined by the sizes of the incoming waves. They should include armour protection and the weight of the rocks in the rock armouring should be capable of withstanding the wave energy.

11.4 A protective barrier should be provided if there is a risk of members of the public slipping down the breakwater.

11.5 The sheet piling or concrete wall should be designed to the relevant standards for marine structures.

11.6 A wave fence needs to be designed to take the full force of the incident waves taking into consideration the wave climate and water levels.

11.7 The wave heights and periods are subject to the fetch and duration of the storm winds which are categorised into annual, 1 in 50 years and 1 in 100 years. An adequate risk assessment should be executed to identify the correct project design conditions.

11.8 Guidance on waves and breakwaters can be obtained from the relevant British Standard BS6349 and other publications issued by PIANC. It is important that the design is carried out by a professional coastal engineer.

12 NAVIGATION AIDS

These are an important part of a marina therefore their design and installation should be adequate and approved by the local Harbour Authority and Trinity House (UK).

12.1 Ensure that suitable lights and beacons are clearly visible to assist approaching strangers to navigate safely into the yacht harbour. These are intended to:

12.1.1 Define the line of approach or departure.

12.1.2 Identify the entrance.

12.1.3 Mark any shallows or banks that are covered at high tide.

12.1.4 Identify any floating or fixed structures that may be a hazard to navigation. These should be identified by providing either two vertical green or red lights that are 1m apart and at least 1.5m above the deck level.

12.1.5 Provide a traffic light system to control the entry and exit of vessels using busy harbours, locks or entrances managed by a cill.

12.2 Navigation aids should be regularly maintained and serviced.

12.3 If level indicators are provided to show depths over a cill or other obstruction, ensure they have large characters not less than 250mm high and clearly indicate whether they are in imperial or metric units depending on the country.

More information is available from Trinity House www.trinityhouse.co.uk

13 UTILITY SERVICES – WATER

When undertaking the design and installation of utilities on marinas, consideration should be given to its unique environment and different Regulations that are applicable. In addition to the practice below it is recommended that advice be obtained from an experienced marine related specialist and marina designer because utilities regulations associated with marinas and waterside developments are in many cases different to on-land installations.

13.1 Install suitable outlets within 20 metres of every berth.

13.2 Design the water system to provide an adequate flow rate from each water outlet in the event of 25% of the outlets being used simultaneously.

13.3 In circumstances where freezing temperatures are probable, pipework should be lagged to avoid burst pipes and unnecessary leaks. This is a requirement of some UK water companies.

13.4 Where possible all pipework should be manufactured to Water Regulations Advisory Scheme (WRAS) approval and be fully U.V. stabilised. (UK)

13.5 For a typical 300 berth marina, an adequate water supply pipe leading to the heads of pontoons is likely to be between 50mm and 70mm. This can then be reduced to smaller diameter pipes as the supply splits off with 22mm piping typically used to lead to the outlets on the individual bollards.

13.6 Bridgehead water pressure should ideally be maintained at a minimum of between 2 and 3 bars.

13.7 Supplying several cubic meters of water to the pontoons each day is considered normal during in peak season (1 cubic meter = 1,000 litres) but this varies according to climate, boat mix and the market which the marina serves.

13.8 It is advisable to install a specialist flexible pipe complete with stainless steel connections where the pontoon pipework system joins the land.

13.9 The water system should be provided with a main isolation valve, which should be positioned in an accessible location.

13.10 Secondary isolation valves and system drain-off valves are recommended to assist in the maintenance and the drain-down of systems.

13.11 To avoid back wash into the water system, fit outlets with double check, non return valves.

13.12 If water hoses are being provided, specific attention must be paid to local water authority requirements appertaining to avoidance of contamination and the quality of the hose.

13.13 Water should only be used in accordance with any restrictions that are in force at the time and comply with the marina rules and regulations. The continuous washing down of

berthed craft should be discouraged for economic reasons, especially during periods of drought.

13.14 Owners and occupiers of marinas in the UK have the legal duty to ensure that the systems satisfy HSE regulations to prevent Legionella disease in particular. Advice for complying with Water Regulations is available mainly through the Water Regulations Advisory Scheme at www.wras.co.uk and in particular Control of Substances Hazardous to Health Regulations 1999, Regulation 7 and 9 Health and Safety at Work etc. Act 1974.

13.15 In general, proliferation of Legionella bacteria may be prevented by:

13.12.1 Avoiding water temperatures of between 20°C and 45°C . This can be achieved by delivering water to the point of mixing at either below 20ºC or above 55ºC.

13.12.2 Store hot water at 60ºC or above.

13.12.3 Legionella bacteria die at temperatures above 60ºC and will not multiply at temperatures below 20°C but will remain as a potential threat to the system.

13.12.4 Avoiding water stagnation, which may encourage the growth of biofilm.

13.12.5 Avoiding the use of materials in the system that can harbour or provide nutrients for bacteria and other organisms.

13.12.6 Maintaining the water system in a hygienic condition, to avoid the build-up of sediments that may harbour bacteria and provide a nutrient source for them.

13.12.7 The use of a suitable water treatment programme where it is appropriate and safe to do so.

13.12.8 Ensuring that the system operates safely, correctly and is well maintained.

13.16 Environmental best practice

13.13.1 Provide an isolating valve near the top of each access bridge to save water.

13.13.2 Install a meter to monitor the amount of water used, determining any leaks as well as usage patterns .

13.13.3 Sewerage charges should not be applied by water companies to water supplies on pontoons, consider installing sub meters and a zero sewerage charge should be applied on water used for pontoons.

13.17 Water Shortage

13.17.1 If a UK water company introduces a hose-pipe ban but excludes non-domestic supplies in their policy, boat owners should be able to continue filling their fresh water tanks but should not be washing their boats down for reasons other than those in the interest of health and safety.

13.17.2 The interpretation of this policy will vary according to the localised water supplier and marina operators should agree acceptable practice with their supplier (commercial operators are likely to be able to continue washing boats down under the non-domestic exemption, but this should also be confirmed with the supplier).

14 UTILITY SERVICES - ELECTRICITY

As with all utilities including water, it is recommended that advice is obtained from an experienced marine related specialist and marina designer.

14.1 General:

14.1.1 It is the owners and/or operators decision to determine the level of services that should be provided for the berth-holders (See 14.1.4).

14.1.2 Formal inspections on marina installations should be carried out at least annually in accordance with BS 7671 section 709.

14.1.3 Compliance with BS EN60092-507 is required for electrical installations of pleasure craft. Socket-outlets should comply with BS EN 60309-1 above 63 A and BS EN 60309-2 up to 63 A.

14.1.4 It is recommended before finalising the location of the modules and cable requirements, a survey be carried out to determine the type of vessels that will be using the berths. This should be prepared in accordance with the design mix (Marina Design - Section 2.1) together with the estimated number of visitors.

14.1.5 The demand for electrical power is likely to increase and therefore design the supply capacity and cable sizes taking into consideration future requirements.

14.1.6 The most commonly used outlet is 16 amp 220/240 volt which is often supplied at every berth, but this can increase to 32 amp or 63 amp and then through to a possible 400/440 volt 3 phase 1,000 amp supply for a single berth where super yachts are accommodated.

14.1.7 The diversification of the electrical loads is an important issue, give consideration to:

14.1.7.1 The number and size of electrical outlets.
14.1.7.2 The location, climate and any “air conditioning” requirements.
14.1.7.3 The type and style of berthed vessels.
14.1.7.4 Extra loading imposed by events and visitors.
14.1.7.5 Possible faults in the equipment.

14.1.8 The power requirement at a yacht harbour is subject to the diversification factor. As a guide, the power requirement is:

Table 4: Power requirement at a yacht harbour

Boat size	Power requirement per vessel
Less than 12 meters	1.5 KVa
13 meter to 25 meters	2.5 KVa
Greater than 25 meters	3 KVa minimum

14.2 Safety Protection and Good Practice

14.2.1 Over current Protection:

14.2.1.1 Electrical sockets should be individually protected using the correctly rated miniature circuit breaker (MCB) or Residual Current Breaker with Overcurrent (RCBO) which is a combined overload and fault current device.

14.2.1.2 The trip rating for a miniature circuit breaker should never exceed the load capability of the electrical socket it is protecting.

14.2.2 Faulty Current:

14.2.2.1 Electrical sockets should be individually protected using a 30milliamp residual current device (RCD) or (RCBO) which is a combined overload and fault current device.

14.2.2.2 Sockets should be protected individually by an RCD with an isolation switching device installed for a maximum of 4 sockets.

14.2.2.3 RCBO devices will be commonly used in bollards as opposed to separate RCD's and MCB's, an RCBO combines the functions of an RCD and MCB in one 2 modular switch.

14.2.2.4 The equipment must be located near the socket outlets to provide the user with immediate access to their own protective device.

14.2.3 Service Modules:

14.2.3.1 Socket outlets, MCBs, RCDs or RCBOs should be housed in a purpose designed pedestal or bollard which is able to sustain a harsh environment and which has a minimum weather-proof rating of IP.44.

14.2.3.2 Wiring regulations in BS7671 number 709.553.1.13 states that socket outlets rated at IP.44 shall be placed at a height of not less than 1 meter above the highest water level. In the case of floating pontoons or walkways only, this height may be reduced to 300mm above the highest water level provided that the appropriate additional measurements are taken to protect against the effects of splashing. Sockets located lower than this may require additional protection as shown on table 6.

14.2.3.3 This degree of protection should be increased if there is any danger from spray, wash or other environmental attack.

14.2.3.4 Seal any holes to prevent the ingress of water which could cause corrosion.

14.2.3.5 If water outlets are included, barriers with suitable weather-proofing should be installed.

14.2.3.6 Pedestals should include warning labels indicating the voltage and operating instructions.

14.2.3.7 Pedestals can be used for footway lighting.

14.2.3.8 In order to avoid any hazard due to long connections cords, a maximum of four socket outlets shall be grouped together on one bollard or enclosure.

14.2.4 Earthing Procedures:

14.2.4.1 T.N/C–S (formally P.M.E.) earthing systems are not permissible on marinas.

14.2.4.2 An independent T.T. earth to ground protection is recommended using an unbroken secondary bonding system. This circuit should include access bridges, pontoon metal work, mains positions, distribution panels, pedestals and bollards, footway lighting, sewage pump-outs, in fact anything that could transmit an electrical current.

14.2.4.3 The secondary bonding must be clearly identified using a green and yellow cable.

14.2.5 Cables:

14.2.5.1 All wires and cables should be of a multi strand style sufficiently protected to allow for the continual movement of the pontoons.

14.2.5.2 Use fine strand flexible where any floating system joins the land. Refer to ERP insulated H.07RN-F or BS6007.

14.2.6 Shore Isolator:

14.2.6.1 Select one specific location for the isolation and overall protection of the electric system. If possible this should be located near the bridgehead and housed in a secure, fire resistant enclosure with a weather proofing of IP.65.

14.2.6.2 All mains position and distribution panels should be clearly labelled to show the housed voltage, together with operating instructions.

14.2.6.3 The internal panels should be capable of accommodating all distribution, sub-circuit cabling, localised circuit protection devices, metering and with space for future expansion.

14.2.6.4 Intermediate barriers should be provided to prevent accidental contact when the doors are open. They should offer protection of at least IP2X or IPXXB.

14.2.6.5 Installing an internal low wattage heater within the shore isolator will help to prevent condensation and corrosion.

14.2.6.6 All new installations should be tested and issued with a relevant Completion Certificate valid for 1 year.

14.2.6.7 All marina and waterside electrical systems should be inspected and tested annually resulting in a relevant test report. It is the responsibility of the owner/operator to act upon the findings of the report and carry out all the necessary remedial works in order to make the installation safe. There is a risk of invalidating insurance cover in the event of an electrical accident if the electrical system is not annually inspected and maintained in line with current regulations.

14.2.7 The IP ratings international standard IEC 60529 as laid out in Table 5, defines the degree of protection provided by enclosures of electrical equipment with regard to:

14.2.7.1 Persons against access to hazardous parts inside the enclosure.
14.2.7.2 The equipment inside the enclosure against ingress of solid foreign objects.
14.2.7.3 The equipment inside the enclosure against harmful effects due to the ingress of water.

Table 5: IP (Ingress Protection) Rating Table – i.e. IPx^{1}x^2

IPx^1	Solids (1st number)
0	No protection
1	Protected against objects > 50mm (hands)
2	Protected against objects > 12mm (fingers)
3	Protected against objects > 2.5mm (tools/wires)
4	Protected against objects > 1mm (small tools)
5	Protected against dust, limited ingress
6	Totally protected against dust
7	N/A
8	N/A

IPx^2	Liquids (2nd number)
0	No protection
1	Protection against dripping water or condensation
2	Protection against water spray 15 degrees from vertical
3	Protection against water spray 60 degrees from vertical
4	Protection against water splashing from all directions
5	Protection against low pressure jets of water
6	Protected against high pressure water jets and heavy seas
7	Protection against the effects of immersion (up to 1 meter)
8	Protected against immersion

14.2.7.4 The inspector, being a competent person should apply engineering judgement when deciding upon intervals between inspecting and testing an installation. In accordance with Chapter 62 of BS7671, the recommended maximum period between inspections and testing for marina installations is 1 year. Inspections should be carried out with the appropriate tests in Chapter 61 of BS7671.

14.3 Recharging for electricity:

The rules relating to recharging berth holders for electricity in the UK and many other countries globally are as follows:

14.3.1 Berth holders can be charged for electricity consumed by them and their craft, provided the unit price of electricity that they pay does not exceed the unit price paid by the Marina or yard owner. However a service charge can be applied representing the cost of providing an electricity supply to a particular berth or mooring. That charge can be:

14.3.2.1 A flat fee.

14.3.2.2 A unit fee based on the consumption by that craft and its berth holders.

14.3.3 Invoices should show both items separately, including:

14.3.3.1 The cost and number of units of electricity consumed and the unit cost showing the lower rate of VAT (UK).

14.3.3.2 The cost of providing the electricity infrastructure at the standard rate of VAT (UK).

14.4 UK VAT on Electricity supplies

14.4.1 Electricity and gas regulator Ofgem set Marina consumption of electricity at the current standard rate of UK VAT because the operator is not using the electricity for domestic purposes nor is it likely to be supplied with less than 1000 kilowatt hours per month. Therefore the Marina does not qualify for a 'reduced rate' supply.

14.4.2 When the Marina operator recharges the supply to customers, the supply of the electricity does qualify for the reduced rate supply as it is either for domestic purpose OR relates to a supply of less than 1,000 kilowatt hours. Thus the supply is currently set at the reduced rate of 5%.

14.4.3 There is no profit as such for the marina owner. UK VAT is paid and recovered by the Marina owner and then charged to the customer at the correct rate.

15 MARINA ILLUMINATION

Footway lighting is essential and a UK legal requirement even if it is decided not to include any utility services on the floating or fixed pontoons.

15.1 General lighting throughout the development should include:

15.1.1 Traffic and pedestrian routes within the campus such as roadways, paths and pontoons.

15.1.2 Dry docks and maintenance berths.

15.1.3 Storage areas.

15.1.4 Access ramps and bridges, quaysides and temporary hazards.

15.2 Before designing the lighting equipment to cater for the above requirement, a typical Risk Assessment in accordance with the UK Health and Safety at Work Regulations 1999 should be carried out for the safety of the employees, berth-holders, visitors and include the provision of emergency lighting in the event of a power failure.

15.3 Lighting should be suitable and “fit for the purpose”. Therefore it is good practice to consider:

15.3.1 The lighting on pontoons to ensure it does not dazzle navigators entering the marina.

15.3.2 The potential nuisance to neighbours.

15.3.3 The risk of it being obscured by the stacking of materials or other cause.

15.3.4 Trip hazards of temporary lighting cables.

15.3.5 The erection of flood lights may require planning permission.

15.3.6 Enforcing a regular maintenance programme ensuring the lights are clean, that bulbs are replaced and all equipment is properly maintained.

15.3.7 Installing light sensors or timers so that lights are not on unnecessarily.

Table 6: Minimum UK lighting regulations - 'Lighting at Work – HSG38, 1997'

Activity	Average illuminance (lux) 1x	Minimum measured illuminance (lux) 1x
Movement of people, machines and vehicles	20	5
Movement of people, machines and vehicles in hazardous areas & rough work not requiring any perception of detail	50	20
Work requiring limited perception of details	100	50
Work requiring perception of detail	200	100
Work requiring perception of fine detail	500	200

15.3.8 Consider the requirement in the UK to provide emergency lighting under the Regulatory reform Order (Fire) 2005.

16 MARINA HARDWARE

These bolt-on extras are essential for safety reasons, give the marina credibility and provide addition comfort for berth-holders.

16.1 The electric modules should be robust, colourful and adequately signed showing the voltage that is provided. Technical details of the content of the electrical modules are shown in Marina Design - Section 14 - Utility Services - Electrical.

16.2 Water points and hose-reels should be robust and continually checked for dripping taps.

16.3 Emergency cabinets:

Emergency cabinets are typically available in two sizes. They should be intelligently located along main walkways at a minimum spacing of 50m (or so that one can be reasonably seen from every location) and in such a position to reduce the chance of damage by boats and their unstowed anchors when manoeuvring in and out of their berths.

They may include:

16.3.1 First aid box.

16.3.2 Fire extinguishers – see Marina Operations – Section 9.

16.3.3 A means of cutting moorings lines in the event of an emergency.

16.3.4 A red led light to show its location at night.

16.3.5 It is recommended to install a system that when a cabinet door is opened it sets off a fire alarm that is audible locally and wholly visible to the Marina Office.

16.4 **Safety ladders:**

Apply common sense when preparing a risk assessment for the provision of safety ladders, taking into consideration the following points:

16.4.1 Constructed in bright colours (i.e. fluorescent yellow or red).

16.4.2 Include hand supports at least 350mm above the deck.

16.4.3 The bottom rung should be at least 1 meter below the water surface.

16.4.4 Ladders should ideally be fixed to main walkways, distributed no further than 50 meters apart with a minimum ratio of 1 per 30 berths.

16.4.5 Consideration should be given to providing additional ladders at high activity areas such as fuel berths and hoist docks.

16.4.6 Operators should carefully assess the risks of employees and customers falling into the water and mitigate the risk where appropriate; this may include highlighting the locations through the marina handbook.

16.4.7 Appropriate and obvious signage should be used to draw marina users' attention to the locations of safety ladders such as a tall flag.

16.4.8 So that it can be seen by someone in the water, consider using fluorescent signage to indicate the location of safety ladders, on adjacent piles.

16.5 Footway lighting is a UK legal requirement - see Marina Design - Section 15. The lights should be located so as not to impair navigator's night vision.

16.5.1 Footway lights can be incorporated within the electric modules.

16.6 The location of lifebuoys should be based on a suitable risk assessment. They can be located on items of marina hardware or have their own stands. As a guide provide 1 lifebuoy for every 30 berths on every pier or a minimum of 1 within 60 meters along main walkways, or so that one can be reasonably seen from every location.

16.6.1 Lifebuoys should have floating throw lines attached.

16.7 Cleats and bollards should be securely bolted to the structural part of the pontoon system.

16.7.1 Their design should be such that they can sustain a snatch load depending on effective condition of work and of 3 tons minimum.

16.8 Suggested minimum cleat requirements:

16.8.1 2 per side for fingers up to 7½m.

16.8.2 3 per side for fingers from 8m to 12m.

16.8.3 4 per side on fingers accommodating boats greater than 12m.

16.8.4 One cleat on the main walkway between the boats accommodated in double berths.

16.8.5 Cleats at 3m centres for alongside berthing and on visitor pontoons.

16.9 **Bollards** for larger vessels capable of taking a snatch load of 5 tons (or greater depending on the size of the vessels) should be located near the pile guides. Consider appointing an expert engineer to calculate snatch loads for larger vessels.

16.10 Pile caps should be securely fixed to the top of the pile. These are aesthetically helpful to the piles and prevent the pile itself being fouled by birds if the pile cap is conical or includes a vertical pin.

16.11 **Berth numbers** should be easily visible, especially by approaching visiting craft and located at the end of the finger and at the main walkway.

16.12 **Pier numbers** or letters should be visible to both visitors and berth-holders.

16.13 **Visitor berths** if provided should be clearly marked.

16.14 **Signage** should be provided with the aid of pictograms with the sizes of symbols being reasonable for their purpose (guidelines are available in ISO 7001 and ISO 7010).

16.14.1 If text is used in the signage present important instructions in two or three common languages (where applicable).

16.14.2 At the top of the exit bridge, they should be adequate in size and visibility for staff, customers and visitors.

16.14.3 Signage can also be in the form of a large map at key points throughout the facility, indicating:

16.14.3.1 What to do in the event of an accident.
16.14.3.2 A 'You are here' indicator.
16.14.3.3 Marina contact details and opening hours.
16.14.3.4 Location of an emergency telephone and 24/7 assistance.
16.14.3.5 Location of the Marina Office.
16.14.3.6 Location of Toilets and showers.
16.14.3.7 Location of waste and recycle area.
16.14.3.8 Location of any oil spill kits.
16.14.3.9 Location of safety equipment.
16.14.3.10 Any other important building or location.

17 TOILETS & SHOWERS

17.1 Coastal Marinas:

17.1.1 Facilities should be provided on the following scale either ashore or on the fixed or floating pontoons. Where practicable, these facilities should be situated no more than 300 metres from the furthest access bridge. The minimum requirement is:

Table 7: Toilet Accommodation for Coastal Marinas

Facility	Male	Female
W.C's	1 per 50 berths	1 per 75 berths
Urinals	1 per 75 berths	-
Wash Hand Basins	1 per 50 berths	1 per 75 berths
Showers	1 per 75 berths	1 per 75 berths
Deep Sinks	1 in each block	1 in each block

17.1.2 A unisex family bathroom which is compliant with equality regulations is also very popular and should account for at least 1 of the washroom facilities.

17.2 Inland Waterway Marinas:

17.2.1 In addition to pump out and chemical disposal facilities an inland waterways marina should provide:

Table 8: Toilet Accommodation for Inland Marinas

Facility	Male	Female
W.C's	1 per 100 berths	1 per 75 berths
Urinals	1 per 100 berths	-
Wash Hand Basins	1 per 75 berths	1 per 75 berths
Showers	1 per 100 berths	1 per 100 berths

17.2.2 For reasons outlined in paragraph 17.1.2 above, the unisex bathroom should account for at least 1 of the washroom facilities.

17.3 Disabled facilities

17.3.1 Toilets suitable for the use of disabled persons should be provided if practical.

17.3.2 At least some of the doorways should be more than 925mm wide, including the entrance.

17.3.3 Within the cubicle or washroom facility enough space should be provided for a 1,525mm turning circle.

17.3.4 The top of a wall mounted basin should be at least 750mm from the floor.

17.3.5 Disabled shower facilities should be made available where possible measuring at least 1,700 mm x 1,700mm.

17.3.6 More information can be obtained from:

17.3.6.1 PIANC - Disability access guidelines for recreational boating facilities (WG14) www.pianc.us/workinggroups/docs_wg/reccom-wg14.pdf.

17.3.6.2 RYA Sailability www.rya.org.uk/programmes/ryasailability.

17.3.6.3 The Equality and Human Rights Commission or from their website www.equalityhumanrights.com.

17.4 Depending on the weather conditions pre set showers and wash hand basin temperatures should be set at between 36ºC and 38ºC and no more than 41ºC.

17.5 Hot water temperatures that do not cause scalding are ideal for the Legionella bacteria to grow in a water system, but hot water temperatures that kill the Legionella bacteria will cause scalding.

17.6 Suitable disposal units should be provided in each female toilet block.

17.7 Include as much as possible of the following: soap, hand dryers or towels, hot running water, toilet paper and lavatory brushes.

17.8 All facilities should have suitable and sufficient lighting, being not less than 110 lux (10 lumens per square foot) together with adequate permanent ventilation which needs to be maintained regularly.

17.9 A very high standard of cleanliness should be adopted. This will encourage regular and careful use.

17.10 Marina staff should be encouraged to use the toilet facilities and carry out spot checks at regular intervals to ensure the facilities are clean.

17.11 Access should be made using either a PIN code, a key, plastic or magnetic card or similar.

17.12 Notices should be displayed concerning the disposal of “polluting matter” in the toilet and directions showing where this operation can be carried out.

17.13 A launderette with dryers is a desirable feature in any large marina:

Table 9: Launderette Recommendations

Washing machine	2 per 300 berths
Dryers	2 per 300 berths

17.13.1 A sink and draining board should be included in each launderette.

17.14 Shower heads should be designed so they can be removed and regularly descaled to prevent the spread of Legionella.

18 CAR PARKING

If possible, allow adequate land to construct car parks for berth holders, staff, contractors and visitors vehicles.

18.1 If a marina caters mainly for vessels on passage, or if there are already adequate parking facilities available nearby, it is possible to make a case for a reduction of parking spaces within the marina boundaries.

18.2 Requirements for car parking varies according to the boat mix, marina market and location, for example a marina based on a small island will need fewer parking spaces because customers will arrive by public transport and aircraft.

18.3 Coastal Marina:

18.3.1 Take into consideration the following provisions:

18.3.1.1 0.33 to 0.5 car spaces per typical berth.
18.3.1.2 A car parking space for each vessel over 40 feet.
18.3.1.3 A car parking space for each employee parking or tenant's employee parking.
18.3.1.4 Car parking spaces for each charter vessel operating from the marina.
18.3.1.5 Additional spaces allocated to facilities such as bars, restaurants and tenants.
18.3.1.6 Duality of use e.g. peak tenant demand during the week and customer demand at weekends.

18.4 Inland Waterways Marina:

18.4.1 The total recommendation for Inland Waterway marinas is 1 car parking space for every 3 berths.

18.5 If possible the staff car park should be private and separate from the berth-holders.

18.6 Each car parking space should be not less than 4.8m x 2.4m.

18.7 Car parking areas may be used for boat storage out of season.

18.8 It is good practice that drainage systems are provided for car parks larger than 800m^2 in area or with 50 or more car parking spaces. This should also incorporate an oil separator.

18.9 Access to car parks may be controlled by key, plastic or magnetic card, PIN number or similar.

18.10 When a marina car park is some distance away from the access to the pontoon system, it is recommended that a loading/unloading short term parking space is provided close to that access. Control will be necessary to prevent long term use of that space.

18.11 Due consideration should be given to accommodating disabled parking. As a guide, allow:

18.11.1 Between 3% and 6% of the total car parking should be allocated for disabled users. Disabled spaces are 50% wider than standard car parking bay. Based on 4.8m x 2.4m standard bay, a disabled bay would be 4.8m x 3.6m.

18.11.2 A slightly roughened tarmac gives a good surface for wheelchairs, crutches and for those with visual impairments.

18.11.3 Spaces should be specifically allocated to disabled persons, located close to the marina office or their allocated berth if appropriate.

18.11.4 A ramp onto any kerb is recommended.

18.12 Trolleys should be provided at the rate of 1 per 20 berths to help berth-holders move their provisions to and from their boats. The type of trolley should be suitable to traverse both access ramps and the pontoon system. A coin slot system has been found useful in order to ensure trolleys are returned and a dedicated compound for trolleys contributes to a more satisfactory appearance.

18.12.1 A warning notice should be displayed which states

CHILDREN SHOULD NOT BE ALLOWED TO RIDE IN TROLLEYS

19 SECURITY

19.1 Marina security needs to be carefully considered at the planning stage. Standards of fencing and the location of access points require thorough investigation, together with the impact of any public access or private rights-of-way across the site.

19.2 A high standard of security should be maintained with, if possible, a 24 hour watch-keeping programme. On site living accommodation for staff is most helpful, special arrangements must be made for the staff which are on duty alone.

19.3 Access to the pontoons from vessels presents a significant security risk.

19.4 The use of a key pad or magnetic fobs to control access gates to the pontoons or doors to the toilets, showers and launderettes is recommended.

19.5 Good lighting within the marina complex greatly assists security, whilst also providing a valuable amenity to berth-holders. Lighting can be incorporated within service modules on piers (See Marina Design - Section 15 - Marina Illumination).

19.6 A great deal of valuable advice is available from the Local Crime Prevention Officer, who should be consulted at the planning stage and later asked for his recommendations in respect of individual aspects of security.

19.7 Closed circuit television cameras with night vision and recording capability together with radio alarm systems fitted in both craft and in buildings are useful additional aids to security, taking into account boater’s privacy. Access to the marina by water is an area which should be covered by CCTV.

The Marina Operations Manual

CHAPTER ONE

MARINA OPERATIONS

This manual compliments the Code of Practice for Design and Construction of Marinas and Yacht Harbours. It provides generic advice and examples as to how a marina and boat yard should be managed together with tips for operators if they wish to prepare their own individual marina manual.

1 HEALTH & SAFETY GUIDELINES

Compliance with the Regulations and Directives issued by the Health and Safety Executive (HSE) is both a legal and moral responsibility for everyone, but in particular owners and managers. A breach of Regulations can result in substantial fines or even a prison sentence.

The Health and Safety aspects around working marinas and boat yards will vary from site to site, therefore every location will require its own interpretation of what is required. All marina owners, operators and their employees have a duty of care for persons who enter their premises including visitors and trespassers.

1.1 Responsibilities may be summarised as follows:

1.1.1 To promote and support the Health and Safety aspects of the entire facility and its users.

1.1.2 To identify any risks associated with the safe operation of the marina and boatyard.

1.1.3 To put into place controls to either nullify those risks or minimise them as far as practically possible by providing relevant mitigation measures such as signage to raise awareness.

1.1.4 To maintain and constantly supervise the ongoing aspects of Health and Safety matters.

1.1.5 To ensure that their clients and tenants are aware of their responsibility whilst on the premises.

1.1.6 Any accident or incident that occurs should be recorded in the company accident book, this includes tenants.

1.1.7 To notify the Health and Safety Executive (HSE) or the Local Authority Health and Safety Department of any serious incident under RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995).

Note:

As of 6th April 2012, RIDDOR's over-three-day injury reporting requirement has changed. The trigger point has increased from over three days' to over seven days' incapacitation (not counting the day on which the accident happened). Incapacitation means that the worker is absent or is unable to do work that they would reasonably be expected to do as part of their normal work.

1.2 In carrying out the above, the marina operator should do their best to:

1.2.1 Ensure a safe environment for all persons within the boundary of the marina.

1.2.2 Ensure that the image and reputation of the marina is maintained.

1.2.3 Operate as safe as necessary, not necessarily as safe as possible.

1.3 Statutory Health and Safety Requirements (UK):

1.3.1 Health and Safety at Work Act 1974: This is an 'enabling act' with the aim of securing health and safety in the work place. Regulations under the Act place more specific duties on employers than employees. **Section Three of the 1974 Act** specifically requires every employer to ensure, so far as is reasonably practicable, that he/she takes the necessary steps to **ensure the safety of non-employees** effected by his/her activities.

Section seven of the 1974 Act places an obligation on every employee to take reasonable care for his own health and safety and that of any other person who might be affected by his acts.

1.3.2 The Management of Health and Safety at Work Regulations 1999 (previously 1992): These were made under the 1974 Act. They require that health and safety is suitably managed so as to control risks effectively and present no harm to people. **The Regulations require that adequate and suitable assessments of work related hazards should be carried out to determine the preventative and protective steps that must be taken.**

They require employers to have access to competent advice, to monitor and review their systems, to have emergency procedures and to provide information and training. **They have major implications for the many inland water and coastal sites operators, whose activities have a bearing on the public as well as employee safety.**

1.3.3 The Health and Safety (First Aid) Regulations 1981: These were also made under the 1974 Act, and are mainly concerned with the provision of first- aid employees. The Regulations set out the range of numbers and training of first-aiders and the type of equipment that should be provided.

1.3.4 Public Health Act 1936: This is an 'enabling act' offering local authorities the power to regulate water users by enforcing bye-laws (for example, to prohibit swimming).

1.3.5 Occupiers Liability Act 1957: This states that the occupier must take **reasonable steps to ensure the safety of visitors** to his/her land or premises. **This duty is particularly onerous where children are concerned. The occupier owes the duty of care not only to visitors but also to trespassers.**

1.3.6 The Health and Safety (Safety Signs and Signals) Regulations 1996: This implements the European Directive 92/58/EEC, which came into force in April 1996. This standardizes safety signs throughout member states of the European Union. The Regulations require employers to use safety signs where there is a significant risk to the health and safety of their employees; that has not been avoided or

controlled by the methods required under other relevant law. This should only be used when it can help reduce the risk.

1.3.7 Operators should be aware that a new BSI standard has been developed specific to water safety signs. The standard BS 5499-11:2002 recommends that any new signage should conform to this standard in the future and that a regular review of existing signage is carried out. Signage in need of repair or with poor legibility/clarity of image should be replaced and all others should be subject to programmed replacement.

1.4 Other Occupational Health and Safety Duties (UK):

1.4.1 Operators to whom the 1974 Act applies also have various duties, including the recording, notification and investigation of accidents to the enforcing authority (e.g. HSE or local authority Environmental Health departments). The appropriate enforcing authority must be notified, where a member of the public has drowned or has been taken to hospital for medical treatment e.g. following a near drowning incident.

1.4.2 Common Law Duty of Care:

Responsible bodies have powers to affect preventative measures and the site owner must ensure that all facilities and equipment are suitable and safe to use. Under common law, liability to negligence may arise from the breach of fundamental duty, known as a **"duty of care". ** The duty is described as follows and applies to members of the public as well as operators.

1.4.3 Section 3 of the 1974 Health and Safety at Work Act states: ''It shall be the duty of every employer and self employed person to conduct their undertaking in such a way in so far as is reasonably practicable to prevent non employees being effected by work activities" (i.e. coning /taping off a boat hoist area).

1.4.4 Section 2 (1) states: ''you must take reasonable care to avoid acts or omissions that you can reasonably foresee that might be likely to injure your neighbour'' (i.e. carry out risk assessments and work place monitoring).

1.4.5 To avoid a civil claim of negligence UK marina operators will need to demonstrate that they have:-

1.4.5.1 Safe plant and equipment
1.4.5.2 Safe systems of work (method statements)
1.4.5.3 Competent trained staff
1.4.5.4 A safe work place
1.4.5.5 A safe environment

1.4.6 It is the duty of everyone to take reasonable care. This can be defined as **"what the reasonable man/woman would have foreseen as being necessary". ** A certain level of risk is acceptable and it is expected that safety measures will be applied "as far as is reasonably practicable". In other words, practicable measures have to be technically feasible and the costs in time, money and effort are reasonable.

1.4.7 In the case of safe management of inland and coastal water sites**, the duty of care means the burden of taking adequate precautions falls on the site operator. A risk assessment of the facility and equipment should be undertaken and an appropriate safety measure adopted.** A *Safety Plan* and the normal operating procedures document, together with an emergency action plan should be completed and then monitored and reviewed at regular intervals. Before devising a water safety strategy, hazards must be identified, risk determined and findings recorded. This is a legal requirement under the Management of Health and Safety Regulations 1999. **The duty of care is extended to protect people even from their own ill-judgement or wilful abuse of facility or equipment.**

1.4.8 Other Health and Safety and Environmental Regulations and Summary:

Attention is drawn to the various Regulatory Orders that you must comply with (if applicable) when running a marina. Detailed guidance can be obtained from the HSE web site.

1.4.9 Port Marine Safety Code

The UK Department for Transport has issued the Port Marine Safety Code. This applies to the Duty Holder at all UK Harbour Authorities who is responsible for the safety of marine operations in their waters and approaches. It provides guidance specifically relating to safety in Ports and can be downloaded on the following link:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/38728/port-marine-safety-code.pdf

It is issued in conjunction with a guide to good practice on Port marine operations.

http://www.dft.gov.uk/mca/gtgp_aug_2009.pdf

1.4.10 Accident Investigation by Health and Safety authorities

Operators should be aware that in there is a memorandum of understanding between the MCA, the HSE and the Marine Accident Investigation Branch which is used to determine which agency should lead in an accident investigation. Entitled:

"Memorandum of Understanding between the Health and Safety Executive, the Maritime and Coastguard Agency and the Marine Accident Investigation Branch for health and safety enforcement activities etc at the water margin and offshore"

This document can be sourced from the HSE website www.hse.gov.uk.

2 HEALTH AND SAFETY REGULATIONS (UK)

2.1 The following items are statutory UK Regulations and apply to any marina based in the UK. Other countries however have different Health and Safety regulations:

2.1.1 Risk Assessment

2.1.1.1 Health and Safety at Work etc. Act 1974 Management of Health and Safety at Work Regulations 1999

2.1.2 Accident/Incident Reporting and Investigation

2.1.2.1 Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 1995

2.1.3 Health Safety and Welfare on Company Premises

2.1.3.1 Workplace (Health Safety and Welfare) Regulations 1992

2.1.4 Fire

2.1.4.1 Fire (Regulatory) Reform Act (order 2005)

2.1.5 Diving

2.1.5.1 Diving at Work Regulations 1997

2.1.6 Asbestos

2.1.6.1 Asbestos (prohibition) Regulations 1992
2.1.6.2 Control of Asbestos in the Air Regulations 1990
2.1.6.3 Asbestos (Licensing)Regulations 1983 (Amended 1998)
2.1.6.4 Control of Asbestos at Work Regulations 2012

2.1.7 Construction

2.1.7.1 Construction (Design and Management) Regulations 2007

2.1.8 Confined Spaces

2.1.8.1 Confined Spaces Regulations 1997

2.1.9 Consultation with Employees

2.1.9.1 Health and Safety (Consultation with Employees) Regulations, 1996

2.1.10 First Aid

2.1.10.1 Health and Safety (First Aid) Regulations, 1981. Approved code of practice and guidance

2.1.11 Employment of Young Persons

2.1.11.1 Management of Health and Safety at Work Regulations 1999

2.1.12 Hazardous Substances

2.1.12.1 Control of Substances Hazardous to Health Regulations 2002

2.1.12.2 Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972
2.1.12.3 Dangerous Substances and Explosive Atmospheres Regulations 2002

2.1.13 Use of Equipment
2.1.13.1 Provision and Use of Work Equipment Regulations 1998

2.1.14 Manual Handling
2.1.14.1 Manual Handling Operations Regulations 1992

2.1.15 Protection of the Public
2.1.15.1 Occupiers Liability Act 1957
2.1.15.2 Management of Health and Safety at Work Regulations 1999

2.1.16 Control of Contractors
2.1.16.1 Health and Safety at Work etc Act 1974
2.1.16.2 Management of Health and Safety at Work Regulations 1999
2.1.16.3 Construction (Design and Management) Regulations 1994

2.1.17 Personal Protective Equipment
2.1.17.1 Personal Protective Equipment at Work Regulations 1992

2.1.18 Working with Electricity
2.1.18.1 Electricity at Work Regulations 1989

2.1.19 Waste Disposal
2.1.19.1 Environmental Protection Act 1990
2.1.19.2 Waste (England and Wales) Regulations 2011
2.1.19.3 Hazardous Waste (England and Wales) Regulations 2005
2.1.19.4 The Special Waste (Scotland) Regulations 1996
2.1.19.5 Hazardous waste (Northern Ireland) Regulations 2005
2.1.19.6 Control of Substances Hazardous to Health Regulations 2002
2.1.19.7 Controlled Waste Regulations 1992
2.1.19.8 Special waste Regulations 1996
2.1.19.9 Carriage of dangerous Goods and use of Transportable Pressure Equipment Regulations 2004

2.2 Additional legislation which may be applicable in certain situations:

2.2.1 Lifting Operations
2.2.1.1 Lifting Operations and Lifting Equipment Regulations 1998

2.2.2 Noise at Work
2.2.2.1 Noise at Work Regulations 2005

2.2.3 Working alongside Roads
2.2.3.1 Road Traffic and Street Works Act 1974

3 RISK ASSESSMENT – OPERATIONS

Operators with 5 or more employees are obliged to undertake and record suitable and legible risk assessments. These will cover all areas where people are at risk from the activities of the marina, its staff and the users.

They should identify who is at risk, distinguish between hazards and those that are a significant risk, record what workplace precautions and risk control systems are in place and ensure they are understood by the operatives.

3.1 A statement of safety policy should be prepared to embed risk management into organisational practice. It is best to make this short so it is more likely to be read, but it should cover:

3.1.1 Commitment from the Chairman, Board and Managers making clear the importance of the co-operation between management, staff and boat owners.

3.1.2 The importance of regular maintenance of equipment.

3.1.3 Nominating a responsible person as the Health and Safety Officer.

3.1.4 Fire precautions and First Aid.

3.1.5 A system for recording and reporting accidents.

3.1.6 A commitment that risk assessments are regularly reviewed.

3.2 To manage and monitor risk control procedures. Marinas are also strongly advised to draw up a Safety Management System, which would comprise:

3.2.1 The Health and Safety policy.

3.2.2 The organisation responsible for implementing the policy.

3.2.3 Planning the implementation of the policy.

3.2.4 Training policy and programme.

3.2.5 Measuring safety performance and reporting outcomes to the Manager as well as use of accident books.

3.2.6 Regularly reviewing performance so that lessons are learned from all the relevant experiences.

3.3 Responsibility is ultimately with the marina, therefore sub contractors should be issued with a permit to work and berth holders must be made aware of this fact. In addition the following should be in place:

3.3.1 Sign in sheet.

3.3.2 Proof of insurance.

3.3.3 Method statement.

3.3.4 Risk assessment to cover issues such as working at heights and with substances or materials of high temperatures.

3.3.5 Working at height and hot works present a particular risk.

3.4 The Health and Safety Executive provide simple guidance on assessing and mitigating risks on the website www.hse.gov.uk. The following 5 steps will help appropriately assess the risks at a marina:

3.4.1 Identify hazards

3.4.2 Decide who might be harmed and how

3.4.3 Evaluate the risks and decide on precaution

3.4.4 Record findings and implement them

3.4.5 Review the assessment and update if necessary

3.5 The following definitions help when identifying risks:

3.5.1 A hazard is anything that may cause harm, such as chemicals, electricity, working from ladders, an open drawer etc.

3.5.2 The risk is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.

Table 11: Example risk assessment provided by the Health and Safety Executive

Organisation name:

What are the hazards?	Who might be harmed and how?	What are you already doing?	Do you need to do anything else to manage this risk?	Action by whom?	Action by when?	Done
Slips and trips	*Staff and visitors may be injured if they trip over objects or slip on spillages*	*We carry out general good housekeeping. All areas are well lit including stairs. There are no trailing leads or cables. Staff keep work areas clear, eg no boxes left in walkways, deliveries stored immediately, offices cleaned each evening*	*Better housekeeping is needed in staff kitchen, eg on spills*	*All staff, supervisor to monitor*	*01/01/2014*	*01/01/2014*

4 LONE WORKER POLICY

There will be times when a berthing master or a member of staff finds that they are alone or have limited help. Management have a duty of care to assess the risks and prepare a company policy for this probability and find time to discuss this issue with all members of the staff.

The following paragraphs are an example of the policy that may be implemented in the case of lone workers:

4.1 An employee is a lone worker when he/she:

4.1.1 Is the only person in the office or

4.1.2 Has to leave the office, leaving only one or two staff members on duty.

4.2 When there is only one person on duty.

4.2.1 Before leaving the office, especially at night, this employee should contact either his line manager, the nearest marina or even the police, if there is no one else to call, advising them of his predicament and make an arrangement that he will make contact every hour until he/she is safely back at his place of work. At the same time the lone worker will let the chosen person know where he/she is going and how long he/she thinks they will be away.

4.2.2 When leaving the office the lone worker should be wearing a self-inflating life jacket, have a mobile phone and a hand held VHF radio or similar and be in possession of a torch and a whistle.

4.2.3 If, in the unlikely event that the chosen colleague has NOT received a call within the agreed time frame, he should alert the marina management team and maybe the police to investigate.

4.3 When there is more than one person on duty.

4.3.1 Before leaving the office the employee who is planning to leave the office alone should find the staff member who is still on duty and advise him where and why he is going out and how long he is likely to be. He/she will arrange to call his colleague every hour until he returns to the office.

4.3.2 If, in the unlikely event, the lone worker does NOT call within the agreed time frame, the employee who is still in the office will alert the marina management team and maybe the police to investigate.

4.3.3 When leaving the office the lone worker should be wearing a self-inflated life jacket, have a mobile phone and a hand held VFH radio or similar and be in possession of a torch and a whistle.

5 LIFE SAVING & SAFETY EQUIPMENT

The provision of safety equipment and procedures are based upon a risk assessment. Safety equipment and procedures would normally include, but would not be limited to the following:

5.1 Means of escape from the waters of the marina should be available by the provision of fixed escape ladders on walkways, on a ratio of 1 to 30 berths or a minimum of 1 within 25 meters of any walkway in the marina (Refer to Marina Design - Section 16 for details).

5.2 Portable ladders may be provided in addition to fixed ladders, but should not replace the requirement for fixed ladders.

5.3 Minimise the extent to which ropes, wires, chains and electrical leads cause a tripping hazard on pontoons or walkways. Train staff on the dangers of handling ropes, wires and chains, so as to avoid crushing injuries especially to fingers.

5.4 Lifebuoys, with floating lines 10m long attached, should be provided where necessary, but on a minimum ratio of 1 lifebuoy to 30 berths or a minimum of 1 within 60 meters depending on the type of berthing orientation.

5.5 All roads and paths providing access to the marina should be surfaced and maintained in such a manner as to minimise the risk of accidents.

5.6 Spilt fuel, fish oil, fungi and mould all pose hazards and should be cleared at all times. Sand, grit or salt should be applied to walkways but in particular bridges during heavy frost conditions and warning notices clearly displayed.

5.7 Suitable and sufficient lighting should be provided to pontoons, walkways, jetties, quaysides and grounds (See Section 15 of the Code of Practice – Marina Illumination).

5.8 Ideally work boats would be equipped with:

5.8.1 A life jacket for each person aboard.

5.8.2 A life buoy with line.

5.8.3 A 2 kilo powder extinguisher.

5.8.4 A grapnel attached to a wire hawser.

5.8.5 A basic oil spill kit.

5.8.6 A means of getting onboard from the water.

5.8.7 If proceeding outside the marina and/or out of sheltered water:

5.8.7.1 An anchor and suitable warp or chain.

5.8.7.2 Coastal flare pack and VHF radio or cellular telephone.

5.8.7.3 Engine operated or portable pump (Refer to Marina Operations – Section 9 - Fire Control).

5.8.7.4 Some alternative form of communication.

5.9 In the case of workboats in the UK, operators should be aware of, and comply with, local regulations applied by harbour or navigation authorities. Vessels operating outside of Maritime Coastguard Agency Categorised waters (as defined in MSN 1827) may also need to comply with additional MCA requirements.

5.10 Staff should be trained in the administration of First Aid. Medical boxes, properly stocked, should be available on pontoons or in harbour offices.

5.11 Lifejackets should be available at the marina office and worn by the staff at all times when they are working on or alongside water.

5.12 Signage should be provided with details on where to find an emergency telephone.

5.13 Employees should be trained as to complying with the usage, storage and disposal of substances that are covered by the "Control of Substances, Hazardous to Health Regulations". Up to date COSHH records are required and made available to staff (See also Marina Operations - Section 12 - Pollution Prevention).

6 RISK ASSESSMENT – FIRE

6.1 Under the Regulatory Reform Order (Fire) 2005 Marina Operators are required to undertake a Fire Risk Assessment for all building's facilities under their control (including the marina) and to ensure similar Fire Risk Assessments are produced by their tenants.

6.2 Where there is shared use the Landlord (Marina operator) is responsible for the common areas and the tenant for those areas under their demise, it is the Marina Operators responsibility to coordinate all Fire Risk assessments on their site so that they combine into an effective Fire Plan for the site.

6.3 It is very likely the local Fire Safety Officer will visit the site following a fire to review the effectiveness of the existing Fire Risk Assessment and controls.

6.4 The Fire Safety Office can take similar actions to that of a Health and Safety inspector, namely serve an improvement notice and/or prohibition notice restricting the use of part or all of the building until such remedy is achieved. Prosecution may follow if the inspector believes there has been criminal negligence and someone has been injured – i.e. due to locked or blocked Fire doors, Fire Extinguishers not working and so on.

6.5 The Fire Risk Assessment should include the following details and information:-

6.5.1 Sources of ignition, fuel and people at risk, including issues that might affect fire-fighters.

6.5.2 Protection from lightning and structural features that might allow fire to spread.

6.5.3 Means of escape from a fire.

6.5.4 Means of detecting and advanced warning of a fire together with the location of the fire fighting equipment.

6.5.5 Training in the use of extinguishers and instruction of emergency plans and fire drill.

6.5.6 A plan showing the location of fire hazards, fuel and electric isolation valves, fire-fighting equipment and the fire assembly points and exit routes.

6.6 Fire Assessments should be reviewed annually or after an event which may change them. The documents must be kept with the Fire Log Book which includes details of fire drills, the testing of fire equipment and fire training records. They will be kept in a location that is readily available to the Fire and Rescue Authority with whom there should be a close liaison, so they have knowledge of any specific risks of your site.

6.7 Attention is drawn to the Regulatory Orders which must be complied with in the safe running of a marine related facility, these are listed in Marina Operations – Section 2.

6.8 Further guidance can be obtained from the HSE website www.hse.gov.uk.

7 FIRE PREVENTION

7.1 Fires should be prevented so far as reasonably practicable, reducing the dependence on controlling them. As part of the Fire Risk Assessment the following points should be considered:

7.1.1 All walkways should be kept clear at all times.

7.1.2 Ensure there is no accumulation of rubbish or overgrown vegetation.

7.1.3 Maintain a clear access route for the Fire and Rescue vehicles to get within reach of the fire.

7.1.4 Provide alternative and adequate means of escape from all buildings.

7.1.5 Installing a telephone with public access. The location of which is clearly indicated throughout the marina. For example outside the marina office.

7.1.6 Clearly identify the location of isolation valves and switches on a site plan as well as emergency access codes for gates where required. Notify the local Fire and Rescue Authority of this information by way of a map or emergency document.

7.1.7 The local authority may require a suitable workboat to be made available at all times for the transport of firemen and their equipment to any swinging, piled or trot moorings that are within the jurisdiction of the marina.

7.1.8 Arrange for ALL personnel, whether part-time or full-time to be fully instructed and regularly drilled in fire control procedures, the use of equipment and the colour coding of specific types of extinguishers.

7.1.9 All the fire prevention and control disciplines should be discussed with the local Fire Authority who may recommend that fire drill practice be carried out with the local Fire Brigade.

7.1.10 Marina operators should be aware that boats in the marina may have petrol engines and gas cylinders on board, this constitutes a fire risk.

7.1.11 The materials for fixed and floating structures should have a degree of fire resistance.

7.1.12 Ensure that all the Regulations for the storage of fuel, gas and other hazardous material described in Marina Operations - Section 12 - Pollution Prevention have been complied with and understood.

7.1.13 Gas installations and storage areas must be clearly marked, together with a notice stating that “No smoking or naked lights” should be used in their vicinity. They must not be located over pits, depressions in the ground or within bund walls.

7.1.14 Cylinders should be stored upright in cages or approved ventilated buildings, ensuring that propane and butane have not been interchanged.

7.1.15 Prepare a Fire Risk Assessment for details see Marina Operations - Section 3.

7.1.16 A record of such instructions and the assessments should be noted in the Fire Log and the relevant Health and Safety Records.

7.1.17 The local fire service should be provided with a map of your facility including the location of any fire fighting equipment and hazardous areas. The fire service should also be provided with a means to access through locked gates.

7.2 Be aware of the following fire precautions:

7.2.1 The joint TYHA and BMF General Conditions of Berthing, Mooring and Storage Ashore require berth-holders to observe certain fire precautions. These include the provision on board of a British Standard approved fire extinguisher.

7.2.2 Customers should not be permitted to store gas cylinders or tanks containing fuel in storage lockers ashore.

7.2.3 Vessels in the marina should only be refuelled at the refuelling berth or by marina personnel, with the exception of closed fuel containers being placed aboard and the replenishment of fixed outboard motor tanks, not exceeding 5 litres capacity, when they are secured aboard.

7.2.4 The refilling of fuel tanks below deck should be forbidden. Deck filling pipes should be installed.

7.2.5 Batteries should not be left on charge in boats unless adequate ventilation is provided to ensure dissipation of the gases involved.

7.2.6 Incandescent heaters and fan heaters should not be left switched on unattended. Only properly guarded, low wattage “black” heaters may be left on, and if this is done, then marina staff should be informed.

7.2.7 In the event of any unsafe or leaking fuel or gas installations being detected on any unoccupied boat in the marina, immediate rectification should be carried out by the operator and the berth-holder informed forthwith of the circumstances and the remedial action taken.

7.2.8 Under the Petroleum Acts and the Regulations made thereunder, petrol tank and pump installations and storage facilities for “petroleum spirit” in cans have to be approved and/or licenced by local authorities. “Petroleum Spirit” is defined by its flash point, not its chemical composition and therefore includes cellulose paints, thinners and many other industrial solvents and resins. Yacht Harbour operators should consult their local authority’s Petroleum Officer before making any arrangements to store these and similar materials.

7.2.9 Gas oil (diesel engine fuel) and derv fuel are not controlled by the Petroleum Acts, but see Marina Operations - Section 12 (oil storage on the site) relating to their storage ashore. Storage of liquefied petroleum gas ashore must conform to the current Code of Practice issued by the Liquefied Petroleum Gas Industry Technical Association (UK) and to any Home Office or Health and Safety Executive for directions or recommendations.

7.2.10 Suitable and sufficient facilities should be provided on site for the disposal of waste oil. See also Marine Operations - Section 12.

For more information on general fire safety visit www.gov.uk/firekills a leaflet is provided for Fire Safety on Boats https://www.gov.uk/government/publications/fire-safety-on-boats

8 TIME EXPIRED PYROTECHNICS (TEP)

8.1 Premises must be registered with the local authority if they are intended to store no more than the following quantities of pyrotechnics (except for private use):

8.1.1 30 kgs of Hazard Type 1 or 2 explosives.
8.1.2 100 kgs of Hazard Type 3 explosives.
8.1.3 250 kgs of Hazard Type 4 explosives.

8.2 Most consumer fireworks, shotgun ammunition, marine distress flares etc are Hazard Type 4 explosives. If in any doubt consult the supplier.

8.3 If operators wish to store more than the above quantities of pyrotechnics, up to a maximum of 2,000 kgs of any Hazard Type, then they need to apply to the local authority for a Licence with an exemption being made for temporary storage.

8.4 A safe system must be planned and implemented. Flares which have exceeded their "use-by date" should be disposed of in accordance with the Port Waste Management Plan. General precautions and best practice which should be observed include:

8.4.1 The storage of TEP's should be considered and addressed in the company Risk Assessment. If the assessment is carried out at a time of year when there are no pyrotechnics on the premises, then the person carrying out the risk assessment should be told that pyrotechnics are present at certain times of the year.

8.4.2 Store Pyrotechnic articles away from flammable liquids (petrol, oils) and materials (paper, plastics, clothes).

8.4.3 The quantity of TEP's being stored must be monitored and stock levels controlled.

8.4.4 No smoking should be permitted in the vicinity of stored pyrotechnics.

8.4.5 Keep away from heating devices (radiators, space heaters etc.).

8.4.6 Keep away from damp.

8.4.7 Restrict numbers of staff with access to TEP store.

8.4.8 A maximum of 25 kilograms of TEP's should be stored at any one time.

8.4.9 Do not store TEP's on escape routes in case of fire.

8.4.10 Keep articles in closed transport packaging such as (UN boxes), yellow plastic drums (as supplied by manufacturers), ammunition box, pyro cages with fibreboard. Storage should be marked up with Hazardous Materials sign.

8.4.11 Keep packaged pyros in locked storage cupboards or cabinets and mark the doors of the cabinet/ cupboard with a Hazardous Materials sign.

8.4.12 <u>If no Hazardous materials or TEP's are being stored, the sign must be removed from the entrance / door to storage compartment i.e. cupboard, filing cabinet.</u>

Diagram 4: Hazardous materials sign

<table>
<tr><td rowspan="2"> 
</td><td>Hazardous Materials</td></tr>
<tr><td>Class 1.4: Explosives</td></tr>
</table>

8.5 Disposal

8.5.1 Time Expired Pyrotechnics should be disposed of in a safe and legal manner.

Various businesses provide a suitable disposal service for TEP's and the marina should be able to provide that information *e.g. EOD Contracts Ltd provide a disposal service at a discounted rate for TYHA / BMF members* www.eodcontractsltd.com.

9 FIRE CONTROL

9.1 Control

9.1.1 In the event of a fire occurring anywhere on the premises, IMMEDIATELY call the fire brigade and raise the alarm. Fires on boats can get out of control very quickly and require professional attention. Thereafter alert the staff and proceed to the incident site to:

9.1.1.1 Ensure there are no persons aboard the vessel or within the buildings.
9.1.1.2 Use best endeavours to prevent the fire from spreading and exercise judgement in the handling of the fire.
9.1.1.3 Prevent injury to staff and others.
9.1.1.4 Keep the access clear.
9.1.1.5 Ensure that all the communication systems are operating satisfactorily.
9.1.1.6 Remove adjacent craft to avoid the possible spread of the fire.
9.1.1.7 Dampen all neighbouring structures using salt water or fresh water.
9.1.1.8 Use foam to control a fibreglass fire.
9.1.1.9 Be aware of the proximity of gas bottles and fuel tanks.
9.1.1.10 Await the arrival of the Fire Brigade.
9.1.1.11 Tackling the fire is the priority but marina operators should also consider using a boom or containment mechanism to ensure that the polluted water does not leave the marina which could lead to prosecution.

9.1.2 Marinas which are unmanned at night, should make the following procedures known to customers:

9.1.2.1 On no account should a customer fight a fire unless it is a very small fire.
9.1.2.2 A 999 or 112 call to the Fire Brigade should be made at the earliest opportunity.
9.1.2.3 A call to the marina emergency telephone number (which should be prominently displayed) should be made immediately after calling the Fire Brigade.
9.1.2.4 Customers should proceed to the designated assembly point and alert as many other customers as possible.
9.1.2.5 An individual should be designated to guide the Fire Brigade on arrival.
9.1.2.6 Priority must be given to saving lives and not equipment.

9.2 Recommended Equipment:

9.2.1 6kg dry powder extinguishers with a rating of 34A – 30 BC should be contained in a suitable emergency cabinet.

9.2.1.1 For new marinas or where extinguishers are being replaced consider installing a 6kg foam extinguisher as opposed to dry powder.

9.2.1.2 Dry powder extinguishers can create a lot of mess and in some cases unnecessarily causing damage to sensitive equipment. Dry powder extinguishers are also sensitive to damp conditions.

9.2.2 The recommended maximum distance between fire extinguishers is 30 meters or 1 fire extinguisher for every 15 berths (or so that one can be reasonably seen from every location) taking into consideration different types of mooring i.e. super yachts moored stern-to as opposed to linear.

9.2.3 At least one workboat should be equipped with an engine of sufficient power to place an adequate jet of water into a burning boat. The reinforced suction hose must be of sufficient length to pump out a craft when the fire has been extinguished and be fitted with a strum box.

9.2.4 A portable fresh or salt water pump with adequate power.

9.2.5 A mobile foam making pump kept in an accessible location on the marina or at the bridgehead.

9.2.6 Adequate extinguishers of the correct type and rating at 2 locations adjacent to each bunkering installation for fuel and gas.

9.2.7 A first aid kit clearly visible and available at each bunkering station.

9.2.8 A pressurised fire hydrant within easy reach of the bridgehead.

10 MARINA OFFICE ADMINISTRATION

All marina staff should be friendly, helpful and make both berth-holders and visitors feel welcome.

10.1 The marina office reception area should contain a conspicuous notice board that ideally displays:

10.1.1 Daily information on tides and meteorological forecasts.

10.1.2 Gale warnings, if in operation.

10.1.3 Time of sunrise and sunset.

10.1.4 Relevant notices to mariners.

10.1.5 Wind speed and direction instruments.

10.1.6 Telephone number and address of the local Coastguard.

10.1.7 Information on local amenities, doctor, dentist, taxis, vet etc.

10.1.8 Services on offer to owners and visitors.

10.1.9 The names of the berthing masters or duty manager.

10.1.10 Marina Regulations, Health and Safety policy statement and Environmental policy.

10.1.11 Legible copies of the Company's standard terms of Business for boatyard work, for mooring terms and storage ashore.

10.1.12 Details of the operator: name of limited company, registered office details etc.

10.1.13 Position of oil spill response kits.

10.1.14 First aid provision – address and telephone number of Accident and Emergency Hospital.

10.1.15 The location of waste disposal.

10.1.16 Price lists for berthing rates and services.

10.1.17 Bus and train timetables.

10.2 Other useful facilities may include:

10.2.1 VHF radio (absolutely necessary in coastal sites).

10.2.2 Facility to access the Internet including Wi-Fi with coverage at every berth.

10.2.3 A service for the sale of ice and/or soft drinks machine.

10.3 Marinas may have staff working alone, especially at night. Managers have a duty of care to their staff and adequate procedures must be in place, or alarm systems in use, to enable lone workers to be contacted regularly (hourly) or for lone workers to summon help for their own safety (See Marina Operations – Section 4 for a sample policy).

10.4 Marinas and boatyards have to renew certificates of training, for plant and machinery, for electrical inspections etc. It is recommended that a diary system for all date sensitive items is maintained to reduce the possibility of lapses.

10.5 Documentary evidence of the training and qualifications of marina and boatyard staff should be maintained.

11 INSURANCE

11.1 It is recommended that Operators should include, in their berthing agreement, a paragraph requiring customers to notify the Marina Office of their insurance company, the policy number and renewal date. It is further recommended that the minimum Third Party insurance cover should be at least £3,000,000 (or national equivalent) for marinas and contractors, and £2,000,000 (or national equivalent) for leisure boat owners.

11.2 For visiting yachts the requirement for insurance as a condition of berthing should be drawn to their attention either by means of a notice or by presenting them with a document detailing the marina rules and the requirement for insurance.

11.3 It is important to differentiate between the various types of Liability and Indemnity insurance that are needed for various Professionals, Contractors and Sub-Contractors who may wish to visit and/or work on/at your premises at the request of a berth-holder, tenant, main contractor or the marina owner and his staff.

11.4 All of them should be asked to show evidence of their current Third Party Liability insurance to an acceptable level.

11.5 If in doubt about the nature or level of any risk and therefore the Limit of Indemnity, ask your Insurance Broker or Advisor.

11.6 The category levels can be different for the same operation if the method used to complete the work is more or less hazardous. In these situations the Health and Safety and/or Risk Assessment Manager will need to make an assessment of exposure levels. Any finding made by the Health and safety and/or Risk Assessment Manager should be recorded in writing.

11.7 It is not feasible to assess the risks for every eventuality for each visiting tradesman or contractor in advance; it is important therefore to ask each to provide a detailed description of the work they will undertake during each visit or contract.

11.8 Annual berth holder contracts should ideally include details of the boat's insurance company, amount of 3rd party cover, policy number and renewal date.

12 ENVIRONMENT & POLLUTION PREVENTION

Regulations for this are controlled by the Environment Agency in England and Wales, SEPA in Scotland and the Northern Ireland Environment Agency in Northern Ireland (See also Marina Operations – Section 1 – Health and Safety).

12.1 General:

12.1.1 Marina operators have to comply with all legislation relating to environmental protection and pollution prevention. Ignorance of the law as it affects your business is no excuse in the result of a pollution incident or environmental damage. National environmental protection agencies will be able to provide more detailed advice on the specific issues affecting marinas, including The Green Blue in the UK.

12.1.2 Environmental audits can be useful in identifying areas where improvements in practice can lead to cost savings as well as being better for the environment. The development of an environmental policy statement may also be a logical step after such an audit. This can be used as a positive marketing tool and as evidence of good practice to organisations, such as financial institutions and insurance companies.

12.1.3 In the UK, the Environmental Protection Act 1990 prohibits the discharge of polluting materials into 'controlled waters', defined as watercourses, canals, estuaries, lochs and coastal waters out to the three mile limit. The Act gives the national environmental protection agencies the power to prosecute offenders for deliberately or accidentally causing pollution to these waters.

12.1.4 Other statutory agencies, such as local councils or harbour authorities also have powers to make bye-laws preventing the discharge of 'polluting matter' into waters within their areas of jurisdiction.

12.1.5 Contact The Green Blue for:

12.1.5.1 Free environmental guidance for your business in the UK.
12.1.5.2 Guidance on what you need to do to comply with environmental law and protect the environment.
12.1.5.3 Ways to save money by using your resources more efficiently.

12.2 Sewage Disposal from Holding Tanks:

12.2.1 Sea toilets must not be used in marinas, unless they are discharging into a holding tank. Berth-holders should be advised to use shoreside facilities whenever possible. The best encouragement is to provide comfortable and clean toilets situated as close as possible to the access bridges.

12.2.2 Where equipment is provided for pumping out the contents of holding tanks, the facilities should have sewage suction pipes with quick action or threaded couplings, together with all the necessary fittings to connect to deck flanges having 2.5cm

British Standard Pipe (B.S.P.) female threads (ISO 4567, BS MA 84). Effluent should be discharged into the public sewer where possible. If this is not available, it should be kept in a holding tank until disposed of by an approved waste contractor.

12.2.3 The berth and equipment used for pumping out sewage tanks should be indicated by the approved ISO symbol.

12.3 Disposal of Chemical Toilet Contents:

12.3.1 Suitable and sufficient provision should be made for emptying chemical toilets. Disposal sites should be clearly marked and facilities should be provided adjacent to each point for washing out the containers and swilling down the drain after disposal.

12.3.2 Chemically treated sewage should not be discharged into small sewage treatment plants, holding tanks or any other alternative to the main public sewer.

12.4 Port Waste Management Planning:

12.4.1 Normally, it is not the responsibility of the marina operator to produce this plan, however the marina facility should be mentioned within it; outlining details of waste management onsite.

12.4.2 The Port Waste Management Plan should be used by the marina in staff training.

12.4.3 The Directive, Port Reception Facilities for Ship Generated Waste and Cargo Residues (2000/59/EC) was transposed in the UK by the Merchant Shipping (Port Waste Reception Facilities) Regulations 2003 and revokes the Merchant Shipping (Port Waste Reception Facilities) Regulations 1997 to prevent waste produced on board ships from getting into the sea.

12.4.4 The basic elements of the Directive are that those who operate shore side facilities have an obligation to provide facilities to enable vessels to land waste for disposal and to avoid dumping of waste at sea they must produce a waste management plan and submit it to the Maritime and Coastguard Agency (MCA).

12.4.5 It is important that waste receptacles are made easily available to berth holders, that they are suitable for their purpose and that they are regularly emptied, especially in warmer climes. Bulk refuse containers provided ashore must be of sufficient size and in sufficient numbers as to receive items such as cartons, domestic waste, non-hazardous scrap from boats and all rubbish arising from chandleries, shops, workshops and offices. They should be covered and effective in containing wet materials and light materials that can be blown in the wind, as well as being resistant to rain, spray and proofed against dogs, rodents and birdlife.

12.4.6 Operators can also take action to encourage their berth-holders to separate wastes at source and recycle what they can, e.g. paper, glass bottles, etc. Consider putting designated wheelie bins near pontoons to encourage recycling of specific items as well as the disposal of general waste. Specialised materials, engine oil, oil filters, old batteries and paint tins should be kept apart and disposed of via dedicated routes.

These and other hazardous wastes found in a municipal waste container will make the entire contents “hazardous”.

12.4.7 The various containers for waste should be situated as close to pontoon accesses and boatyards as practicable, but ideally fenced in a compound to prevent them becoming unsightly.

12.5 International Catering Waste:

12.5.1 The segregation of ship produced food waste, depending on the country of origin, is very difficult. Small marinas and moorings (outside of a larger port waste management plan) which only handle UK and occasional EU traffic do not have to fulfil the EU requirements on food waste where it would normally be treated as Category 1 international catering waste.

12.5.2 DEFRA consider international catering waste as being that which is sourced outside of the EU with the exception of Norway, Iceland, San Marina, Vatican City, the Channel Islands and the Isle of Man. While the EU recommends treating all food waste as if it was from outside the EU there is a recognition that this would be costly and impractical for small marinas and clubs. These landing places should provide facilities for disposal of food wastes through their general handling of rubbish.

12.5.3 All facilities must treat all food waste in the same way with respect to the requirements of the Animal Health Order, as if it was from outside the UK and the EU. DEFRA have confirmed that international catering waste is a category one waste (highly hazardous waste) under the Animal By-Products Regulation EC/1774/2002 and must be collected, stored and transported in an approved sealed container and disposed of at an appropriate licenced waste disposal facility.

12.5.4 Banks, slipways, walkways, car parks and all other parts of the premises must be kept clear from litter. Flotsam should be removed at frequent intervals from all waters within the yacht harbour.

12.6 Disposal of Oily Waste:

12.6.1 Suitable and sufficient facilities should be provided on site for the disposal of waste oil and oily bilge water and should be clearly marked. These should take the form of bunded banks with sealed tanks to store waste oil, to dispose of filters and oily waste before being taken to a recycling centre or a licenced waste contractor. In the UK, the Oil Bank Helpline can be contacted on 08708 506506 for information.

12.6.2 British operators should note that the Environmental Protection Act 1990 places a duty of care on the marina operator to ensure that the person removing waste oil and oily waste from the premises recycles or disposes of it in accordance with the law.

12.7 Oil Storage on Site:

12.7.1 Above ground storage tanks which hold materials likely to cause pollution if inadvertently discharged (e.g. diesel fuel oil) must be surrounded by a watertight bund wall of sufficient height to contain the fuel tank capacity plus 10%. The floor must also be impervious or a purpose-built double walled tank must be used. Both the tanks and the pipework must be protected against failure, accidental impact and vandalism.

12.7.2 Each bunded area should be provided with a controlled means of drainage to enable rainwater or cooling water to be run off periodically. Any pipes which pass through the bund wall should be effectively sealed to prevent liquid escaping around them. Every drain valve should have its outlet sealed by a screw plug.

12.7.3 The minimum distance between small storage tanks should be 1 metre to allow for inspection and maintenance as well as fire-fighting.

12.7.4 Underground tanks should be installed in accordance with the Home Office Code of Practice for petroleum storage tanks. A licence from the local authority is required for the storage of petrol, but not for gas oil, LPG or paraffin.

12.7.5 All floating fuel points with tanks on shore should have failsafe cut-off valves to avoid pollution.

12.7.6 New Regulations for the storage of white diesel (Derv) will be issued in the near future.

12.7.7 All oil and fuel should be kept a minimum of 10 meters from the water where possible.

12.8 Fuel Spillage and Pollution Incidents:

12.8.1 In the event of any significant pollution, the yacht harbour management should inform the appropriate harbour and environmental regulatory authorities immediately.

12.8.2 The UK pollution hotline is 0800 80 70 60.

12.8.3 In the UK, coastal local authorities are required to produce oil spill contingency plans for incidents in their areas of jurisdiction. Yacht harbour operators should be involved in the development of such plans, along with harbour authorities and environmental regulatory bodies. Recommended equipment and materials for dealing with pollution incidents should be on site or on call with instructions for use accompanying them. Marina staff should be trained in their active use if possible. In sensitive locations, oil booms should be kept on site and be available for immediate use.

12.8.4 ‘Spill Kits’ should be of an appropriate size for the marina, if operating a fuel berth for example a larger spill kit should be used. The rule of thumb is to have a boom that is 1.5 times longer than the biggest boat in the marina.

12.8.5 Spill kits should contain absorbents and other materials, kept readily available to contain and remove any spillage that has occurred, either directly onto the water or the ground. Contaminated absorbents must be disposed of safely to a licenced waste disposal site.

12.8.6 Detergents should not be used on oil spills on the water, as this forces the spill to the water bed. Suitable spill kits should always be available next to the fuel berth and deployed to absorb any spilt fuel.

12.9 Antifouling:

12.9.1 In the UK and many other countries the environmental authorities have a requirement to install precautions against discharge of antifouling liquids into the water course. Washing down areas on shore which drain into the yacht harbour should do so via some form of interception to collect harmful materials.

12.9.2 Consent from the national environmental regulator to discharge water into a water body should be sought or a trade effluent licence if the water is sent to the foul drain. A filtration system or settlement in sediment tanks are both important considerations, as is a system which recycles the washdown water for further use.

12.9.3 In the case of these filtration systems, tanks and filters should be cleaned regularly and antifouling particles should be disposed of as hazardous waste through an approved site.

12.10 Hazardous Substances:

12.10.1 Boat maintenance materials, such as antifouling and other substances considered as hazardous should not only be used with care, but also disposed of in the same manner. The Environmental Protection Act 1990 imposed a duty of care on waste producers and introduced waste management licences to ensure that hazardous substances are transferred to authorised persons for proper disposal.

12.10.2 For further information on the disposal of hazardous wastes, please refer to your national environmental agency.

12.11 Non EU food waste

12.11.1 The Disposal of Catering Waste from International Means of Transport - EEC Regulation No 1774/2002 - The Products of Animal Origin (Third Country Imports) (England) No4 Regulations 2004. The Dept of Environment, Food and Rural Affairs require that food waste from vessels that have travelled to Non EU Countries (with some exceptions) must not be disposed of as general garbage. Such waste must be disposed of separately. Most visiting vessels with Category 1 food waste will be Superyachts, or race yachts (from USA) without stopping off at an EEC port.

12.11.2 Marinas which accommodate vessels in this category should provide separate waste reception facilities for non EU food waste and both berth holders and visitors requiring use of such facility are asked to enquire at the marina office.

13 NOISE ABATEMENT

This section includes important information on Health and Safety issues (See Marina Operations - Section 1).

13.1 Noise amounting to a nuisance may arise from:

13.1.1 Public Address Systems.

13.1.2 The slapping halyards of sailing craft.

13.1.3 Audio apparatus and radios.

13.1.4 Boat engines and generators.

13.1.5 Loud hailers.

13.1.6 Marina plant.

13.1.7 Inconsiderate behaviour of berth-holders, guests and the excessive use of tenders.

13.1.8 Car and boat alarms.

13.1.9 Entertainment noise from clubs, restaurant or bar facilities within the marina.

13.2 The joint TYHA and BMF General Conditions of Berthing, Mooring and Storage Ashore are designed to manage unnecessarily noisy berth-holders and their guests.

13.3 All machinery should be adequately silenced. Static plant should be effectively screened.

13.4 Public address systems must be directionally aligned to avoid causing annoyance beyond the confines of the marina.

13.5 Berth-holders expect to be able to enjoy their craft in peaceful surroundings without inconsiderate behaviour by others. It is the responsibility of the marina management to “educate” unruly berth holders in the interest of the quiet enjoyment by the others.

14 SUPPLY OF GAS OIL IN THE UK

EU law dictates the level of duty imposed on the sale of Diesel, this varies according to what it is used for:

14.1 Overview of The EU Energy Products Directive:

14.1.1 The full rate of duty applies to fuel used for "the purposes of navigation", this is reflected in UK law as "fuel for propelling" of private pleasure craft;

14.1.2 Red diesel at the rebated rate of duty can be used for domestic purposes aboard a boat such as heating, lighting electricity generation, refrigeration, air conditioning or hot water;

14.1.3 Customers purchasing fuel are required to make a declaration about their fuel usage;

14.1.4 Fuel suppliers must be Registered Dealers in Controlled Oils (RDCO's) and return any duty collected to HMRC.

14.2 HMRC accepts a typical split of 60% for propulsion and 40% for domestic use reflects most usage, however where a purchaser knows that the propulsion use varies from the above apportionment split or a craft clearly has no domestic use, the actual intended ratio of usage must be declared.

14.3 Responsibilities of Fuel Suppliers

14.3.1 Companies must be registered as a supplier of fuel to private pleasure craft users under the RDCO scheme. A simple notification form is available to RDCO's along with instructions for completion and return. RDCO's will receive a RDCO certificate and are required to return the duty collected to HMRC on an annual basis.

14.3.2 It is important that RDCO's which supply fuel to private pleasure craft keep records of the supplies and duty due.

14.4 Example calculations for 100 litres of Red Diesel based on a 60/40 split

14.4.1 The price of red diesel is assumed to be 70 pence per litre (ppl) which includes 11.18 ppl duty already paid to the fuel supplier. This is intended to be an illustration only. The proportion split between propulsion and domestic usage will vary. VAT is charged at the current reduced rate of 5% on fuel for propulsion and domestic use.

14.4.2 Fuel used for propulsion (i.e. 60%)
60 litres @ 70 ppl = £42.00
60 litres @ 46.81 ppl = £28.09 (additional duty to be applied)

Propulsion Total = £70.09

Fuel used for domestic purposes (i.e. 40%)
40 litres @ 70 ppl = £28.00

Subtotal: £98.09
VAT @ 5% = £4.90
Transaction Total = £102.99

14.5 Responsibilities of the Fuel Purchaser

14.5.1 It is the responsibility of the fuel purchaser to make a declaration in writing about the amount of fuel being purchased for propulsion. A simple declaration that incorporates the following wording will be required.

14.5.2 "I declare that only 60% of the fuel purchased will be used for propelling a private pleasure craft".

14.5.3 HMRC is aware that accounting methods and systems vary from supplier to supplier, for example, some may wish to print the declaration on invoice slips or till receipts. Others may wish to prepare a simple form for signature by the customer.

14.5.4 The Declaration must be signed and dated by the purchaser. The RDCO supplier must ensure that the purchaser's name and address is noted in their normal records.

14.5.5 This process can be simplified for regular customers who can make one annual declaration covering all their transactions for a period of up to one year.

14.5.6 The RDCO has a duty of care when selling or delivering controlled oil and must therefore take all reasonable precautions and exercise reasonable care to ensure that they only make supplies to customers who have a legitimate use for that oil. (See HMRC Notice 192).

14.6 Commercial Usage

14.6.1 Suppliers of red diesel to commercial craft are completely unaffected by this duty and can supply to commercial users at the fully rebated rate of duty.

14.6.2 The definition of "private pleasure craft" for the purposes of the Energy Products Directive and the purchase of red diesel in the UK is defined in the Directive as:-

"Any craft used by its owner or the natural or legal person who enjoys its use either through hire or through any other means, for other than commercial purposes and in particular other than for the carriage of passengers or goods or for the supply of services for consideration or for the purposes of public authorities"

14.6.3 This definition is the criteria by which commercial usage is assessed. Set out below is the BMF understanding of how this will be applied to various types of boat operation.

14.6.3.1 **Hire Boats/Day Boats** - Likely to be regarded as pleasure usage because the Hirer will be deemed a natural or legal person who enjoys its use.

14.6.3.2 **Bareboat Charter** - Likely to be regarded as pleasure usage because the Hirer will be deemed a natural or legal person who enjoys it use.

14.6.3.3 **Skippered Charter** - Classed as commercial where the Charter company provides a Skipper as this may equate to the supply of services for consideration.

14.6.3.4 **Sailing School Training Courses** - Classed as commercial as this equates to the supply of services for consideration.

14.6.3.5 **Yacht Delivery** - Classed as commercial if the delivery is by professional crew.

14.7 Residential Boats

14.7.1 HMRC recognise the status of residential boat owners whose primary residence is their boat. Some of these will be at fixed moorings or moved a very short distance from permanent moorings to fuel. If owners live aboard the craft permanently and hold certain documentation such as houseboat licence, residential mooring licence, council tax bill in respect of the mooring or other documentation that provides proof of permanent residency they may purchase all fuel at the rebated rate. Owners will be required to make and sign a Declaration that zero percent of the fuel is for propelling purposes. It will be the responsibility of the residential boat owner to ensure they hold the requisite documentation should HMRC wish to check the validity of the declaration made in these circumstances.

14.7.2 Continuous cruisers may not declare zero percent under these arrangements, even if they reside permanently on their craft. They must declare their actual intended usage.

15 LIENS & RIGHTS OF SALE (UK)

15.1 In broad terms, where a vessel is “bailed” – or entrusted to a marina or boatyard operator, the operator has a duty to exercise 'reasonable' care in safekeeping and managing the vessel. The operator must return the vessel when requested by the customer, unless there are unpaid bills or expenses. In such circumstances the operator has the right to exercise a lien and, subject to compliance with certain conditions, has a limited right to sell the vessel.

15.2 Unpaid Marina or Storage Fees

15.2.1 From an English legal perspective there are three main options immediately available to stop a vessel leaving with bills unpaid. They are as follows in order of seriousness:

15.2.1.1 Exercising a lien by the landlord;
15.2.1.2 Arresting the vessel through the Admiralty Court (if it is a passage making craft);
15.2.1.3 Securing a 'Freezing Order' from a Court against the owner and hence the vessel.

15.2.2 An example in practice could be when a vessel appears likely to be sold or removed without payment, an operator should immediately consider securing the vessel. Depending on the physical layout of the premises; this might include blockading, chaining or even lifting it out.

15.2.3 At this point, and provided that the debt is substantial and the vessel is in good condition the operator might also consider the possibility of commencing an Admiralty claim against the vessel or a securing a Freezing Order against the owner. The action taken at this point is likely to be informed largely by the size of the debt, the size, type and value of the vessel, its condition and the financial position of the owner. If assets are not a problem for the owner an operator would probably consider taking security on land or other property rather than getting further involved with the vessel. In order to get a freezing order there needs to be direct and credible evidence that the owner is deliberately trying to evade payment and hide or disperse his assets and there are serious consequences for getting the evidence wrong in such a case.

15.2.4 Legal advice should be taken when pursuing this course of action.

Further guidelines are available to TYHA members by calling +44 1784 223 817 or emailing tyha@britishmarine.co.uk.

16 RESIDENTIAL BERTH HOLDERS GUIDELINES

16.1 Many marina and boatyard businesses accommodate residential berth holders when circumstances permit, with some businesses catering exclusively to this market. This is normally linked with location and proximity to employment, providing residential berthing should be a strategic management decision which takes local circumstances into consideration.

16.2 There are no agreed rules on the management of residential berthing at marinas, however it can occur in any marina even without the management realising. Conscious planning and management is recommended, taking a view on each of the following guidelines. This note does not cover all eventualities as circumstances at marinas vary so significantly, it applies to boats and houseboats in 'off-line' berths only i.e. within a marina.

16.3 Possible opportunities created by accommodating residential berths:

16.3.1 Residential berths are a selling point for a marina.

16.3.2 A reliable source of business with a known demand for residential berths.

16.3.3 Premium rates may be chargeable depending on location, services and facilities.

16.3.4 If managed well, can create a busy community and pleasant atmosphere at the marina.

16.3.5 An opportunity for increased sales in chandlery, fuel, laundry, pump out and convenience store.

16.3.6 Tenants and local businesses will benefit from the berth holders custom.

16.3.7 If berth holders pay UK council tax there may be the opportunity to arrange domestic refuse collection.

16.3.8 Additional security at the marina – this is normally effective up to 10% of residential occupancy.

16.3.9 In tidal marinas, drying berths may be suitable because navigation is less frequent and is more likely to be planned well in advance.

16.3.10 Onsite accommodation for staff and tenants.

16.4 Possible threats created by accommodating residential berths:

16.4.1 Accommodating a large percentage of residential berth holders may introduce significant management challenges which differ from recreational mooring, such as resident children, pets, sickness, government benefit payments, use of bankside etc.

16.4.2 Fire risk will increase with residential berth holders regularly cooking onboard and running solid fuel burners, this must be taken into consideration.

16.4.3 It can be morally, legally, financially and practically difficult to eject a residential boat particularly with a family in occupancy. This could also cause negative PR through official media and online forums and berth holders associations. Plan to avoid these circumstances and deal with them if they arise.

16.4.4 Residential berth holders will have high expectations for the places in which they live.

16.4.5 Unseaworthy and unsightly craft need to be managed and where possible provide assistance to help them improve. The cost of removal and scrapping can be very high and debt management is a risk, particularly where the owner does not have a reliable income.

16.4.6 It is important to consider disputes between berth holders and to have a process to avoid/resolve any problems.

16.4.7 A berth holders association of residents can be a powerful lobby, it is best to interact with this group and manage the relationship proactively.

16.5 Operational points for consideration:

16.5.1 Additional wear and tear of facilities will be experienced, including utility bollards, first aid, oil spill kits, toilets and showers and refuse collection.

16.5.2 Be aware that some owners may have pets, it is therefore worth planning how to deal with animal waste. Also consider if pets would be a deterrent or attraction for potential and existing customers.

16.5.3 Allocating positions within the marina needs to be planned as certain areas may be more appealing than others.

16.5.4 Customers need to dry their washing and may seek to hang it out around the deck of their vessel.

16.5.5 There will be a greater demand on parking facilities and residential berth holders may expect allocated spaces, particularly if a premium tariff is applied.

16.5.6 By offering a separate and specific agreement for residential moorings, the implications of such a customer are accepted by the marina management and any consequences are likely to be planned for i.e. procedures may be in place to request photos of the vessel and sea safety checks/ hull, engine surveys prior to issuing a berthing licence.

16.5.7 It is important to retain operational and legal control of the whole marina and all the boats berthed within it.

16.5.8 Residential berth holders will expect to receive post. Consider installing allocated post boxes or an alternative local PO Box service.

16.5.9 Ensure all the marina facilities operate during the winter months, particularly the water supply in freezing temperatures.

16.5.10 If both leisure and residential berth holders share the same marina it may be necessary to separate the two as they have different needs and expectations.

16.5.11 Toilets and showers may be used more than with recreational customers particularly during winter months.

16.5.12 Pump out and Elsan units should be provided and well maintained.

16.5.13 Shoreside storage may be required to keep personal possessions off pontoons and to store items such as tools, bikes and fuel.

16.5.14 Berth holders may want telephone, data and television connections supplied through utility bollards or wirelessly.

16.5.15 Try to ensure that vessels always have a working engine, otherwise it will be difficult to remove/eject them if necessary.

16.5.16 Consider 'capping' the number of residential licences issued, having a finite number makes the occupancy more manageable. Once capacity is reached it is then possible to adjust mooring rates based on supply and demand.

16.6 Legal and statutory notes:

16.6.1 Berth holders could start to live on their boats without notifying the marina. This may be due to financial or domestic reasons. To help manage this, berthing licences need to make the marina policy clear. As a starting point establish a definition for "residential use" in your marina as there is no universally recognized definition of the term.

16.6.2 UK residential berth holders should be advised that they are liable for council tax.

16.6.3 Some vessel insurance policies have exclusions for claims when the boat is used as a houseboat during the layup period; it's important to be certain that every residential boat is properly insured, including for wreck removal costs. If in doubt ask for a formal letter of confirmation from the insurers or insurance brokers.

16.6.4 There is a considerable body of UK consumer protection legislation and practice which applies to residential sites. It is therefore very important to have clear and fair contractual terms for residential status, including what is expected from these customers. The Office of Fair Trading's guidance on static, residential caravan sites is a useful resource as many of the same considerations apply.

16.6.5 If a residential berth holder falls behind with payments it is likely to be much more difficult and costly to secure payment by a sale of the boat than it would be for a non-residential owner; monitor the condition and value of residential vessels and keep debt management under tight control.

16.6.6 Consider issuing different tariffs and conditions for berth holders depending on their requirements.

16.6.7 This may mean charging an additional fee if the berth holder is going to live aboard or stay for more than a set period i.e. 28 days.

16.6.8 If customers are not specifically residential berth holders, they should be able to provide proof of residence elsewhere i.e. Council tax bill.

16.6.9 A suitable means of escape for residential berth holders must be planned in detail, particularly in flood risk areas.

16.6.10 Head leases, council restrictions and any planning restrictions should be checked before contemplating residential permits in your marina.

16.6.11 Tidal marinas are usually subject to additional regulation by Harbour Acts and may need additional marine consents. In most tidal marinas it is possible to take proceedings in the Admiralty Court by having a boat arrested and sold, which is not possible in inland waters.

16.6.12 UK residential berth holders are likely to want to register on the electoral role and will be required to pay council tax; this may reduce the rateable value of a marina business, however this can be appealed through a Valuation Officer.

(legal information provided by Dorade Law, 2012)

16.7 Planning permits

16.7.1 Any residential use of boats in excess of 28 days is likely to require planning permission. However, this type of use at marinas often starts in a small way and results in little or no perceptible change to recreational use. In practice, the Local Authority is like to be concerned when residential use becomes established and starts to change the character of the marina or as a result of queries, from officials, berth holders or local residents.

16.7.2 Expert advice should be sought at this stage as the approach of local authorities varies from place to place and each marina will have its own planning issues and history.

(planning information provided by Southern Planning Practice, 2012)

17 MARINA TRAINING & QUALIFICATIONS

There are a number of pathways for marina training and certification through the Global Marina Institute (GMI) www.globalmarinainstitute.net and PIANC (the International Navigation Association).

Marina Designers can benefit from participating in the international program provided by PIANC. Details of the Marina Designer Training Program (MDTP) are on www.pianc.org/reccomMDTP.php.

Marina managers training is provided through the GMI and follows a process where candidates are asked to demonstrate knowledge, skills and experience in their chosen field, the following qualifications are recognised throughout the world.

17.1 Training pathways:

Marina Operatives

17.1.1 The Marina Operatives Course is a modular programme, specifically designed with the requirements of a modern marina in mind. It will enable your staff members to train in all areas of the business whilst on-the-job. The candidate will work through a series of modules in the course workbook, covering areas such as Customer Care, Marina and Plant Maintenance, Berthing Administration, Boat Handling and Safety. Modular activities and tasks are signed off by the candidate's line manager to ensure training meets the standards and requirements of your marina.

17.1.2 The modular format of the course means that it can be undertaken at any pace – fitting in with both work commitments and staff ability and experience. The candidate has a maximum of 18 months to complete the course.

17.1.3 On completion of the course, your candidates will be issued with a certificate, to confirm that they are proficient in all topics covered in the course. The course workbook can then be kept as an excellent reference guide for the candidate to use in the future.

IMM – Intermediate Marina Management school

17.1.4 This four-day course is run by the British Marine Federation and accredited by the Global Marina Institute and is designed to provide marina personnel in a supervisory or management position with fast-track training in the critical issues in marinas. It is also an essential course in a career path leading to the globally recognised Certified Marina Manager, Certified Marina Operator and Certified Marina Professional qualifications.

17.1.5 Leading speakers will present a wide variety of topics including:

17.1.5.1 Leadership Development
17.1.5.2 Health and Safety
17.1.5.3 Budgeting and Accounting
17.1.5.4 Environmental Management
17.1.5.5 Maritime Law
17.1.5.6 Customer Service

17.1.6 The course is aimed at managers, supervisors and foremen who have had at least one full year of experience working at this level.

AMM – Advanced Marina Management school

17.1.7 The updated AMM course has been designed as a pathway towards Certified Marina Operator (CMO), Certified Marina Manager (CMM) and Certified Marina Professional (CMP) Certification. The course consists of 2 days of core subjects after which students split into a 1.5 day CMO stream or a 2.5 day CMM/CMP stream.

17.1.8 Each day is packed with a range of learning opportunities, including formal classes and lectures, informal discussions, field trip to nearby marinas, group projects, marina/boatyard industry networking and evening classes and discussions.

17.1.9 Applicants must have a minimum of three years relevant management experience.

17.2 Certification pathways

CMO – Certified Marina Operator

Pre-requisites:

17.2.1 Applicants must experience managing either a small marina facility (under 100 vessels) or as an assistant or operations manager, during the 3 years you must have done all of the following:

17.2.1.1 Managed a marina or have 3 years operational experience with an annual gross operating revenue of at least £300,000.
or
Managed a marina with at least 50 boats in berths, mooring and/or dry stack.
17.2.1.2 Be currently in the marina business.
17.2.1.3 Be an active member of a trade association (TYHA, Assomarinas, MIA etc).
17.2.1.4 Completed the Marina Operators strand in the AMM course.
17.2.1.5 Can satisfy the review committee that your experience passes the 14 point test (see CMO handbook).

CMM – Certified Marina Manager

Pre-requisites:

17.2.2 Applicants must have 5 years Marina Management experience; during the five years you must have done all of the following:

17.2.2.1 Manage a marina operation with an annual turnover of at least US $1,000,000/ £600,000 / €750,000.
or
Manage a marina with at least 100 berth/moorings/drystack.

17.2.2.2 Spend at least 60% of your time on, financial planning, marketing and customer relations and people management.

17.2.2.3 Manage at least 6 employees.

17.2.2.4 Be an active member of a trade association.

17.2.2.5 Completed the Advanced Marina Managers School.

17.2.2.6 Can satisfy the review committee that your marina management experience passes the 18 point test (see CMM Handbook).

CMP – Certified Marina Professional

Pre-requisites:

17.2.3 Applicants must have a minimum of 5 years managerial experience with the last three years at the time of application being in the Marina Industry either:

17.2.3.1 Within a Marina Operation including: engineering, finance, design, marketing, Senior Manager.
Or
Within a Marina Construction & Development company including: Pontoons, Dry stack.

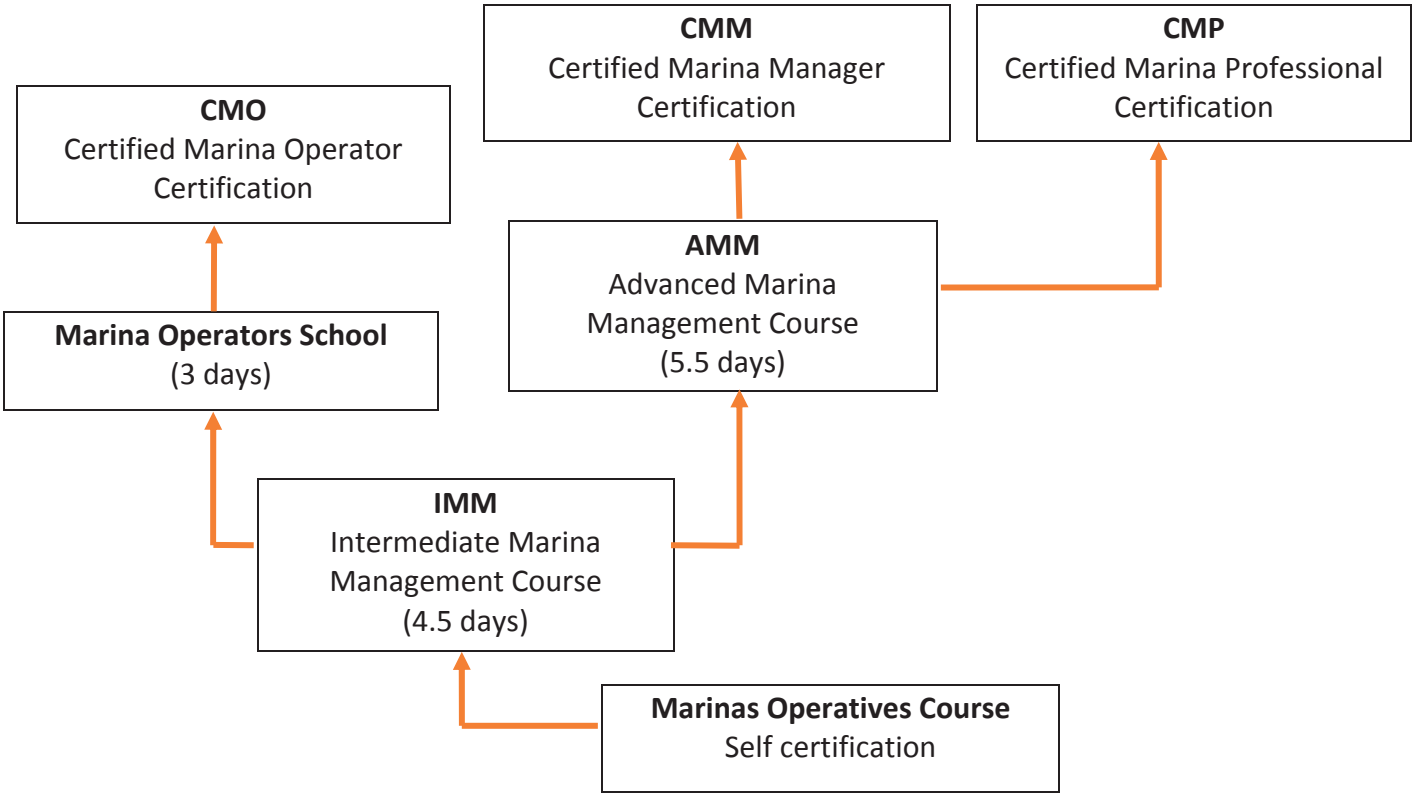
17.2.3.2 Membership of an appropriate professional body or marine trade association

17.2.3.3 Completion of Advanced Marina Management School within the past 5 years

17.2.3.4 Evidence of the applicants' business/companies position within the marina industry including at least two successful projects or activities the business/company has carried out within the marina industry within the last five years

17.2.3.5 Submission of a management report on a topic provided to applicants by GMI. Applicants will be provided with a choice of three topics that relate to your experience within the marina industries

17.3 Marina career pathways



18 MARINA ACCREDITATION

Marina accreditation serves to provide an assurance of quality to boating customers as well as an overall audit of the marina management, facilities and services.

18.1 **The Gold Anchor Award Scheme** - The Yacht Harbour Association operates the Gold Anchor Award Scheme. This assesses marinas throughout the world issuing a Gold Anchor rating from 0 to 5 which is valid for 3 years. The higher the number, the better the marina performs in the following 3 perspectives:

18.1.1 **Existing berth holders** – Berth holders are surveyed and the results & feedback is used to assess how the berth holder perceives the facility and service.

18.1.2 **Potential customers** – 3 Mystery shopping audits are conducted on participating marinas. The marina is scored on friendliness, first impressions, facilities and professionalism.

18.1.3 **Marina expert** – An experienced and specifically trained marina professional conducts a detailed audit of the marina, its services, facilities and management and provided a detailed report and action plan as well as a score.

18.1.4 **Final score** - The totals of the above 3 tests are combined to establish a total score and a final Gold Anchor rating.

18.1.5 **Action plan and assessment follow up** – Each assessment includes a detailed report and action plan laying out what improvements are necessary to achieve a higher rating. There is a period of time then allocated to completing this process before the assessment is concluded and the rating issued and publicised.

For a full set of criteria and application details visit www.goldanchor.org

TYHA Gold Anchor Award Scheme

QUALITY ASSURED BERTHING

18.2 **ICOMIA Clean Marina programme** – The Yacht Harbour Association is part of the ICOMIA Clean Marina programme and assesses marinas against the clean marina criteria within the Gold Anchor Award Scheme. This programme is an international standard based on the following basic environmental criteria:

18.2.1 Compulsory environmental audits every 3 years or less.

18.2.2 Documented emergency (pollution and fire) plans.

18.2.3 Ready accessibility of absorbent materials (for spills & emergencies).

18.2.4 Waste segregation (glass, domestic, hazardous, aluminium, paper).

18.2.5 Clearly designated and signposted waste container location (to prevent / minimise littering).

18.2.6 Incorporation of waste recycling programmes and practices.

18.2.7 A waste water management plan.

18.2.8 Containment in boat washing areas (no emissions).

18.2.9 Containment for boat maintenance (no emissions to water or ground).

18.2.10 Staff trained in environmental best practices.

18.2.11 Customers & boat users informed about environmental best practices.

CHAPTER TWO

BOATYARD OPERATIONS

1 REGULATIONS

1.1 Access:

1.1.1 Public access into workshops and working areas is strongly discouraged.

1.1.2 All working areas of the boatyard and marina should be kept in a clean and tidy condition at all times with special care given to public areas.

1.1.3 Machinery that is left unattended should be capable of being isolated or locked so that tampering cannot take place.

1.2 Alcohol:

1.2.1 The use of alcohol and drugs should be prohibited for all staff at work.

1.3 Authorisation of Work:

1.3.1 To provide a suitable service for customers, subcontractors will require access to the site. Permission to work should be sought from the yard manager and their Professional Indemnity insurance should be checked to ensure it meets with the company policy (See Marina Operations Manual - Section 3).

1.3.2 A signed acceptance of work should be agreed between the contractor and the customer who authorised it.

1.4 Boat Maintenance:

1.4.1 Boat owners who are undertaking maintenance of their own vessel whilst it is in the boatyard should advise the yard manager.

1.5 Boatyard Terms and Conditions:

1.5.1 The boatyard Terms of Business and its Health and Safety Policy should be adequately displayed in the yard office, entrance and in the boatyard so that customers can refer to them.

1.6 Disposal of Rubbish:

1.6.1 All residues should be disposed of appropriately and in accordance with the Port Waste Management Plan (See Marina Operations Manual - Section 12 the Port Waste Management Scheme).

1.6.2 Used oil, batteries, anti-freeze, anti-fouling and zinc anodes should not be disposed of as part of the general waste content. These items should be recycled where appropriate and disposed of via approved Waste Management Contractors in accordance with the Port Waste Management Plan.

1.6.3 Appropriate signs should be displayed indicating disposal points (See Marina Operations Manual – Section 12).

1.7 Electrical Leads:

1.7.1 Electrical leads should not be trailed in a dangerous or hazardous manner and should comply with requirements laid down by HSE and company policy.

1.8 Emergency Equipment:

1.8.1 It is recommended that the boatyard has adequate emergency equipment such as pumps, grapple and steel hawser and oil spill kit and that the staff are properly trained in the various emergency procedures.

1.9 **Fire Extinguishers** (See also Marina Operations Manual - Section 9):

1.9.1 Fire extinguishers should be available for all types of fire in the boatyard and workshops whether owned by the marina or others.

1.9.2 Staff should be properly trained in the use of extinguishers. Appliances should be placed in easily accessible locations so they can be readily used in an emergency.

1.10 Fire Precautions and Drills:

1.10.1 Training and liaison with the local fire service, together with the necessary safety audit should be carried out on a regular basis (See Marina Operations Manual, Section 6).

1.11 First Aid:

1.11.1 First Aid training, together with an Accident Book and adequate supplies of First Aid equipment should be made available at the boatyard and workshops.

1.12 Gas Installation:

1.12.1 Boat owners should have their gas systems checked regularly by a professional to avoid leakages and explosions.

1.12.2 Gas inspections, repairs and installations must be carried out by a suitably qualified gas engineer with a current certificate and insurance.

1.13 Health and Safety (Marina Operations Manual – Section 1):

1.13.1 All staff members are required to wear personal protective equipment and work to safety guidelines laid down by the company, Health and Safety, and Control Of Substances Hazardous to Health (COSHH).

1.14 Keys:

1.14.1 A set of boat keys should be requested from the owner in the case of an emergency and in order that inspection can take place on launching.

1.15 Lighting (See also Marina Design – Section 15):

1.15.1 Lighting should be adequate to ensure visibility of the boatyard and that it is safe for employees and customers.

1.16 Noise:

1.16.1 Due consideration should be given to local residents and customers when operating machinery during the working day and in particular at weekends.

1.16.2 Owners and their crew should be informed of any local restrictions in force by the HSE and company policy. This should also be noted by DIY owners.

1.17 Portable Electrical Equipment:

1.17.1 All portable electrical equipment should be checked for leakage and damage by a qualified and certified electrical engineer.

1.18 Radio Operation:

1.18.1 It is a requirement that all radio operators have the requisite licence.

1.19 Records:

1.19.1 Detailed records of weekly and monthly maintenance checks should be recorded and available for inspection in accordance with safety legislation.

1.20 Security:

1.20.1 The boatyard has a duty of care to ensure that there is adequate security for the boats stored ashore and all reasonable steps should be taken to avoid vandalism.

1.21 Storage of Hazardous Materials:

1.21.1 Guidelines by the Health and Safety Executive should be adhered to and all relevant documentation, Risk Assessments and COSHH Assessments should be readily available for all staff and appropriate authorities to examine (See Marina Operations Manual – Section 1).

1.22 Surveyors:

1.22.1 If there is any doubt about the work required on a vessel the expert advice of a marine surveyor should be sought.

1.23 Trailers:

1.23.1 If trailers are left on boatyard premises, they should be locked or clamped with a lock approved by the insurer and made clear that the trailer is stored at the owner's risk.

1.24 Training and certification:

1.24.1 All employees and subcontractors should be suitably trained and qualified for the work they are carrying out, wearing the appropriate Personal Protective Equipment (PPE).

2 OPERATIONS

2.1 Antifouling and painting:

2.1.1 The application and removal of antifouling paint from the underside of boats should be carried out in the correct manner taking into consideration good environmental practice.

2.2 Electrics:

2.2.1 This work should only be carried out by properly trained, certificated and authorised personnel in accordance with manufacturers' requirements.

2.3 Engine Maintenance:

2.3.1 Owners or crew should not be encouraged to carry out work on engines other than for minor maintenance. Adequate ventilation and extraction systems should be provided if engines are being run under cover or indoors.

2.4 Fibreglass Repairs:

2.4.1 Adequate measures should be taken to protect staff and customers from exposure to fibreglass and dust with chemicals being containerised.

2.5 Launching and Inspection:

2.5.1 When a vessel has been launched, an inspection should be carried out externally and internally when the boat is returned to its mooring or berth to ensure that it is water tight.

2.6 Lifting and Hoisting:

2.6.1 Ensure the yard surface is suitable for manoeuvring marine hoists.

2.6.2 The lifting or moving of any vessel must not take place with any person onboard.

2.6.3 Company risk assessments and the health and safety policy should specifically include lifting and hoisting, working under live loads and working at height.

2.6.4 If mobile cranes are hired, ensure that there is a safe working area around the crane and that a check is made with the crane hire firm to determine who is responsible for insuring the vehicle from the time that it leaves its yard.

2.7 Outboard Engines:

2.7.1 If outboards are run ashore, due consideration should be given to noise and if outboards are run inside workshops, adequate ventilation systems should be in place, together with a carbon monoxide detection system.

2.7.2 When outboards engines are being stored the petrol tank should be emptied to minimise the fire hazard.

2.8 Peeling of Gel Coat, Shot and Slurry Blasting:

2.8.1 This should be carried out within an enclosed area using suitable sheeting.

2.9 Refrigeration Systems:

2.9.1 Fridges, deep freezers and air conditioning units should be installed to manufacturers' requirements.

2.10 Removal of Masts:

2.10.1 Some insurance providers require the removal of masts during winter storage.

2.10.2 This should only be carried out by an experienced rigger.

2.11 Rigging Repairs:

2.11.1 All rigging repairs should be carried by trained and experienced riggers.

2.12 Scaffolding / ladders around Boats:

2.12.1 Scaffolding, stages, ladders and steps should be properly secured. Customers should provide their own ladders and use them at their own risk. These ladders should be secured when not in use to prevent unauthorised access.

2.12.2 Users of ladders and scaffolding should be aware of the 'working at height regulations'. Their use being subject to a risk assessment, ladders should be tagged and subject to regular inspections with a central ladder register maintained.

2.12.3 Marina Operators should remove all ladders which are unfit for purpose and use padlocks to secure company ladders.

2.13 Washing Down Area:

2.13.1 A form of filtration system should be installed to separate anti-fouling from wash down water before it enters the harbour or estuary, and that the residue, when settled, is removed on a regular basis by an appropriate contaminated waste contractor.

2.13.2 Discharge into the harbour water is subject to a discharge consent (See Marina Operations Manual - Section 12).

2.14 Welding, Fabrication and Grinding:

2.14.1 These trades are considered to be particularly hazardous and dangerous. They should be carried out by properly trained personnel and only when approved by the marina manager with due consideration to other users of the boatyard.

2.14.2 Adequate measures should be taken to protect staff and customers from exposure to radiation, fumes and filings. These can cause considerable staining and damage to fibreglass boats.

2.15 Working on Boats and Sea Trials:

2.15.1 When working on a customer's boat, all due care and diligence should be carried out to ensure that the boat is left as it was found. This would include pointing out any defects or damage to the customer before the work commences, so as to eliminate any doubt of damage caused by lifting or work carried out on the boat.

2.15.2 Should be conducted by two competent and authorised personnel carrying the relevant safety equipment. Personnel should abide by the boatyard policy and local bye-laws and have the appropriate experience and qualifications for sea trial circumstances.

3 STORAGE OF BOATS ASHORE

3.1 Preparation

3.1.1 Owners should be notified that it is best practice to remove all sails, spray hoods and dodgers before storing for the winter. Give consideration to the period of time ashore as well as seasonal weather conditions. No boat should be stored ashore with any furling jib hoisted or mainsail still on the boom.

3.1.2 The docking plan and any specific handling instructions supplied by the owner or agent, for a vessel should be checked prior to lift out or block off.

3.1.3 All crane and hoist drivers should be suitably trained and certificated in line with any applicable statutory requirements.

3.1.4 Properly designed cradles should be used wherever possible. They should be in good condition and selected based on their ability to withstand normal, local weather conditions.

3.1.5 Where possible, attention should be given to the prevailing wind direction when planning the layout of the hard standing.

3.2 Cradles and lay-up

3.2.1 The keels of craft ashore should rest on a substantial bearer which is an integral part of the cradle. The keel, where design allows, should be restrained from moving sideways.

3.2.2 Boat cradles should be secured by a horizontal solid crossbar in preference to boat legs for long time hard standing of yachts, especially for wintering.

3.2.3 The pads should be of adequate area to avoid point loading the hull and must be angled to line up with the hull. Their position should take into consideration the structure and weight distribution of the vessel.

3.2.4 Where appropriate the legs should be positioned to align with bulkheads and be capable of adjustment.

3.2.5 Beaching legs may be sufficient for short term purposes but should not be regarded as adequate for long term use.

3.2.6 Support systems can be undermined by wind induced vibration, regular checks should be made to ensure correct tightness of wedges and props, and a record kept of such inspections.

3.2.7 Consideration should be given to securing light displacement craft to their cradle and to the ground in exposed positions.

3.2.8 Where appropriate the weight of the vessel should be taken on the keel which should rest on wood or some other suitable non-metal surface.

3.2.9 To improve the stability of the cradle, use shores or other supports.

3.2.9.1 Ideally shores should be placed as close as possible at the perpendicular to the tangent of the point where the shore touches the hull (i.e. where the shore is just as likely as to slip upwards as down).

3.2.9.2 Attention must be paid to seeing the foot of the shore will not move.

3.2.9.3 Bilge keel boats should be adequately supported fore and aft.

3.2.10 Props, blocks and other traditional means of support can be used and cross braced if required, where this is the sole means of support, and provided that their use is part of the established practice of the yard or marina. Suitably trained and competent staff should be available to install them. Vessels should be kept as low as is possible.

3.3 Care and checks while ashore

3.3.1 Boat covers if fitted must be in good condition, close fitting and well secured with ropes passed under the vessel, but not secured to props or cradles.

3.3.2 All craft and particularly those with large, open cockpits and other undrained areas should be checked regularly for excess accumulation of water by the boatyard:

3.3.2.1 Owners must be advised to care for their own vessels and insure them. Boatyards should accept no responsibility for theft or damage.

3.3.2.2 In general, boarding any vessel requires an owner's consent; this may however be provided for in the marina terms of business or berthing agreement.

3.3.3 Cradles should be lifted and carried, not dragged, to a new position in the boatyard. Dragging cradles causes them considerable damage.

4 DRY STACKING OF BOATS

4.1 Design and Construction:

4.1.1 Consideration should be given to the type, size, weight and number of boats to be stored, allowing for adjustments to be made to accommodate the size of vessels being stored over the lifetime of the racking system.

4.1.2 Professional advice should be sought on the design and construction of the system.

4.1.3 Local planning permission may be required.

4.1.4 Consideration should be given to the stability of the ground and the type of foundation required to carrying the weight of the racking system when fully loaded.

4.1.5 Wind loadings on the fully loaded rack should be calculated and if possible the rack should be constructed in a sheltered location.

4.1.6 The provision of electricity points on outdoor racks should be considered for vessels in winter storage. Indoor racks should ensure that all vessels have an isolator switch which is off at all times.

4.1.7 Even inside, racks may have to support boats filled with water from fire extinguisher sprinklers.

4.2 Dock Facilities

4.2.1 Access with a fully loaded forklift should be on suitable hard level surfaces.

4.2.2 A suitable dock, capable of carrying the load on the forklift truck and its load is required. Particular attention must be given to the load placed on the sea wall.

4.2.3 A specialist in the supply of negative lift forklift trucks should be consulted to recommend the size and type of forklift required.

4.3 Operation:

4.3.1 All relevant staff and personnel in the area should be trained and certificated and wear personal protective equipment as specified in Health & Safety legislation and company policy.

4.3.2 Suitable cradles should be provided for each vessel and care should be taken to avoid point loading hulls on the cradle.

4.3.3 Care should be taken not to overload the forklift, the combined weight of the vessel, cradle and any bilge water should be considered before attempting to lift the vessels.

4.3.4 No personnel or owners should be allowed onboard during lifting operations.

4.3.5 The operation of the loaded forklift should be at low speed and accompanied by a qualified banksman where necessary.

4.3.6 It is important to ensure that bilge bungs are removed and that any covers fitted to vessels allows rain water to drain freely away before proceeding to the racking area. Accumulation of rain or bilge water will overload the rack or cradle and cause damage to the vessel.

4.3.7 Vessels being raised should be checked for loose objects on deck before lifting.

4.3.8 The hand brake of the fork lift must be applied when lifting and lowering vessels.

4.3.9 Bilge bungs should be refitted before launching and vessels checked for leaks before leaving the dock.

4.3.10 It is recommended that staff are given refresher training at regular intervals and all equipment should be regularly inspected and serviced as recommended by the manufacturers.

CHAPTER THREE

TEMPLATE BERTHING LICENCE

1 BROKERAGE ACCESS FEE GUIDLEINES

1.1 Marina and boat yard operators are entitled to charge their customers additional fees for additional services. The fee should be reasonable and should relate to the service provided. Access to vessels ashore and afloat, which includes parking and various customer services are generally considered to be services with a value attached.

2 INTRODUCTION FOR TEMPLATE BERTHING LICENCE

This draft licence can be used as a template for marina owners and operators to produce a document that is suited to their particular business.

2.1 This licence has been prepared by a committee of legal professionals in England with expertise from the Marina industry. It has also been approved and adopted by the Yacht Harbour Association management council. If using this outside the UK, advice should be sought from a legal professional from that particular country.

2.2 Marina operators are advised to have an Agreement with their customers with regard to the conditions that are required for berthing or storing their craft.

2.3 This usually takes the form of a licence containing the Terms and Conditions for the use of the company's facilities.

2.4 Security of Tenure

2.4.1 The template licence provided in the Appendix does not allow owners to obtain security of tenure over the berths they are on.

2.4.2 The terms provide for a licence (2.1), an end date (2.2), no exclusive use of the berth (5.1) and that the operator may use the berth when not in use by the owner (7.1).

2.4.3 To reinforce this clause consider taking advice from a legal professional and consider adding the following clauses to the Company Regulations (where applicable):

2.4.3.1 Any licence to berth, moor or store ashore confers on the Owner no security of tenure of the berth, mooring or storage facility.

2.4.3.2 Vessels are to be maintained in a seaworthy condition and shall have a working means of propulsion.

2.4.3.3 Any change to the Company Regulations or any change to an agreement between the Company and the Owner shall be in writing. No warranty, condition, description, term or representation is given or to be implied by anything said or written in the negotiations between the parties or their representatives, prior to the changes being recorded in writing.

2.4.3.4 No waiver by either party of any breach of any provision of the agreement to berth, moor or store ashore (the "Agreement") shall be deemed to be a waiver of any preceding or succeeding breach of the same or any other provision of the Agreement.

2.5 If changes to the licence are implemented by the marina operator, they could wait until renewal of the annual agreement for each owner. When renewing contracts operators should state:

2.5.1 This new Licence re-states and supersedes any previous contract between the Company and you, the Owner and any such contract shall cease to be of any continuing effect. No warranty, condition, description, term or representation is given or to be implied by anything said or written in the negotiations between the parties or their representatives prior to the granting of this Licence.

2.6 If any other bye-laws are applicable they should be provided as an addendum as stated in clause 15.2, the berth holder should also sign and date these annually.

3 TEMPLATE OF BERTHING LICENCE (UK)

The Yacht Harbour Association Ltd.

Berthing, Mooring and/or Storage Ashore Licence

Signature of this Licence by the Company and the Owner creates a legally binding contract for Berthing, Mooring and/or Storage Ashore at the yacht harbour, marina, boat yard, mooring or any other facility for launching, navigating, mooring or berthing a vessel operated by the Company subject to The Yacht Harbour Association Berthing, Mooring and/or Storage Ashore Licence Standard Terms and Conditions Version March 2012 ("the Conditions") which the Owner acknowledges he has read and understood and which form an integral part of this Licence.

COMPANY:	***(insert marina name here)***
Owner:	
Name of Owner:	
Full home address:	
Invoice address if different from above:	
Contact telephone number:	
E-mail address:	
VESSEL:	
Name of vessel:	
Make:	
Type: e.g. sail/motor	
Keel configuration: e.g. bilge/fin & skeg/long keel	
Hull colour:	
Age of Vessel:	
Length Overall:	
Beam:	
Draught:	
Weight:	
Engine:	
DETAILS OF SERVICES:	
Berthing/Mooring/Storage Ashore	
START DATE:	
END DATE:	
CHARGES:	
SPECIAL TERMS: (IF ANY)	
Company Regulations attached (if applicable):	YES/NO
Signed by the Owner Full Name: Signed: Date:	Signed by Full name: For and on behalf of the Company Signed: Date:

The Yacht Harbour Association Ltd.

The Yacht Harbour Association

Berthing, Mooring and/or Storage Ashore Licence

Standard Terms and Conditions

1 DEFINITIONS

Where the following words appear in these Conditions, the Licence and the Company's Regulations they shall have these meanings:

Alongside Berth means a berth where a Vessel of appropriate draft may be secured, with access to the shore without the need for a dinghy or tender.

Berth means the space on water or land from time to time allocated to the Owner by the Company for the Vessel during the term of this Licence

Company shall mean **[Company Name],** the Company or any of its agents to whom the application for berthing is made which may be one or more of its associated companies, concessionaires, tenants and assignees for the operation of the boat repair yard, brokerage or other harbour facility.

Harbour shall include a yacht harbour, marina, mooring or any other facility for launching, navigating, mooring or berthing a vessel.

Length Overall (LOA) means the overall length of the space occupied by the Vessel including any fore and aft projections, temporary or permanent.

Licence shall mean the Licence signed by the parties including these Standard Terms and Conditions.

Owner shall mean the person or company named on the front of this Licence, any charterer, master, agent or other person for the time being in charge of the Vessel, excluding the Company.

Pontoon means a moored and decked floating structure providing landing or mooring facilities.

Premises means all the land, adjacent water and buildings occupied by or under the control of the Company, including docks, slipways, pontoons, jetties, quays, piers, mudberths, sheds, lofts, workshops, hardstanding, roadways and car parks.

Regulations mean those regulations (if any) made by the Company as the same may be amended from time in accordance with clause 15, which the Company in its absolute discretion, considers necessary to enable the Company or those using the Premises to comply with applicable legal requirements or for the safety or security or good management of the Harbour or Premises.

Storage Ashore Accommodation means the land space temporarily allocated to the Owner from time to time by the Company for the storage ashore of the Vessel during the term of the Licence.

Vessel shall include any form of craft, boat, ship, yacht, dinghy, multihull, or other marine structure which is in the care and control of the Owner.

2 **THE LICENCE**

2.1 The Berth at the Harbour or Premises shall be licenced for the period and at the Charges specified in the Licence.

2.2 This Licence shall not be automatically renewed but will end at the End Date specified in the Licence if not terminated sooner by the Company or by the Owner under the provisions of Clauses 8 or 10.

3 **LIABILITY, INDEMNITY AND INSURANCE**

3.1 The Company shall not be liable for any loss or damage caused by events or circumstances beyond its reasonable control (such as severe weather conditions, the actions of third parties not employed by it or any defect in a customer's or third party's property); this extends to loss or damage to Vessels, gear, equipment or other property left with it for work or storage, and harm to persons entering the Premises or the Harbour and/or using any facilities or equipment.

3.1.1 The Company shall take reasonable and proportionate steps having regard to the nature and scale of its business to maintain security at the Premises, and to maintain the facilities and equipment at the Premises and in the Harbour in reasonably good working order. But in the absence of any causative negligence or other breach of duty on the part of the Company, Vessels, gear, equipment and other property are left with the Company at the Owner's own risk and Owners should ensure that their own personal and property insurance adequately covers such risks.

3.1.2 The Company shall not be under any duty to salvage or preserve an Owner's Vessel or other property from the consequences of any defect in the Vessel or property concerned unless it shall have been expressly engaged to do so by the Owner on commercial terms. Similarly the Company shall not be under any duty to salvage or preserve an Owner's Vessel or other property from the consequences of an accident which has not been caused by the Company's negligence of some other breach of duty on its part. However the Company reserves the right to do so in any appropriate circumstances, particularly where a risk is posed to the safety of people, property or the environment. Where it does so it shall be entitled to charge the Owner concerned on a normal commercial charging basis and, where appropriate, to claim a salvage reward.

3.1.3 Owners may themselves be liable for any loss or damage caused by them, their crew or their Vessels and they shall be obliged to maintain adequate insurance including third party liability cover for not less than £2,000,000, and cover against wreck removal and salvage, and, where appropriate, Employers' Liability cover to at least the statutory minimum. The Owner shall be obliged to produce evidence to the Company of such insurance within 7 days of a request to do so.

3.1.4 The Owner shall, and shall procure that his crew, members of his family comply with all applicable laws when using the Company's Harbour and Premises.

4 **ADDRESS DETAILS AND SUBSEQUENT CHANGE OF DETAILS**

4.1 The Owner must supply to the Company in writing, details of the Owner's home address. This address must be a different address to the address of the Harbour. The Owner shall be obliged to produce evidence to the Company of such home address within 7 days of a request to do so.

4.2 The Owner must notify the Company in writing of the details of any change of names of the Vessel or change of address or telephone number of the Owner.

5 **BERTH ALLOCATION**

5.1 The physical layout of every Harbour and Premises and the varying needs and obligations of the Company and its customers requires that the Company retains absolute control of Berth allocation within the Harbour and Premises. Accordingly the Owner shall not be entitled to the exclusive use of any particular Berth but shall use such Berth as is from time to time allocated to him by the Company.

6 **PERSONAL NATURE OF THE LICENCE**

6.1 This Licence is personal to the Owner and relates to the Vessel described in the Licence. It may not be transferred or assigned to a new Owner or to a different Vessel, either temporarily or permanently, without the express written consent of the Company and;

6.2 Within 7 days of any Licence for the sale, transfer or mortgage of a Vessel subject to this Licence the Owner shall notify the Company in writing of the name, address and telephone numbers of the Purchaser, Transferee or Mortgagee, as the case may be.

7 **USE OF BERTH BY COMPANY WHEN VACANT.**

7.1 The Company may have the use of the Berth whilst it is left vacant by the Owner.

8 **TERMINATION**

8.1 The Company shall have the right (without prejudice to any other rights in respect of breaches of the terms of this Licence by the Owner) to terminate this Licence in the following manner in the event of any breach by the Owner of this Licence;

8.1.1 Having regard to the nature and seriousness of the breach and the risk it poses for the financial or other security of the Company and/or of the Company's customers and if the breach is capable of remedy, the Company may serve notice on the Owner specifying the breach and requiring him to remedy the breach within a reasonable time specified by the Company. Where the breach is serious or poses an immediate risk or threat to the health, safety or welfare of any other person or property the time specified for remedy may be immediate or extremely short. If the Owner fails to affect the remedy within that time, or if the breach is not capable of remedy, the Company may serve notice on the Owner requiring him to remove the Vessel from the Harbour or Premises immediately.

8.1.2 If the Owner fails to remove the Vessel on termination of this Licence (whether under this Condition or otherwise), the Company shall be entitled:

8.1.2.1 to charge the Owner at the Company's 24 hour rate for overnight visitors for each day between termination of this Licence and the

actual date of removal of the Vessel from the Harbour and Premises; and/or

8.1.2.2 at the Owner's risk (save in respect of loss or damage directly caused by the Company's negligence or other breach of duty during such removal) to remove the Vessel from the Harbour and Premises and thereupon secure it elsewhere and charge the Owner with all costs reasonably arising out of such removal including alternative berthing fees.

8.1.3 Any notice of termination under this Licence shall, in the case of the Owner, be served personally on the Owner or sent by registered post or recorded delivery service to the Owner‘s last known address and in the case of the Company shall be served at its principal place of business or registered office.

9 RIGHTS OF SALE AND OF DETENTION

9.1 Where the Company accepts a Vessel, gear, equipment or other goods for repair, refit, maintenance or storage the Company does so subject to the provisions of the Torts (Interference with Goods) Act 1977. This Act confers a Right of Sale on the Company in circumstances where a customer fails to collect or accept re-delivery of the goods (which includes a Vessel and/or any other property). Such sale will not take place until the Company has given notice to the customer in accordance with the Act. For the purpose of the Act it is recorded that:

9.1.1 Goods for repair or other treatment are accepted by the Company on the basis that the customer is the owner of the goods or the owner's authorised agent and that he will take delivery or arrange collection when the repair or treatment has been carried out.

9.1.2 The Company’s obligation as custodian of goods accepted for storage ends on its notice to the customer of termination of that obligation;

9.1.3 The place for delivery and collection of goods shall be at the Company’s Premises unless agreed otherwise.

Advice regarding the Act may be obtained from the Citizens Advice Bureau, Law Centre or any firm of Solicitors

9.2 Maritime Law entitles the Company in certain other circumstances to bring action against a Vessel to recover debt or damages. Such action may involve the arrest of the Vessel through the Courts and its eventual sale by the Court. Sale of a Vessel may also occur through the ordinary enforcement of a judgment debt against the Owner of a Vessel or other property.

9.3 The Company reserves a general right (“a general lien”) to detain and hold onto the Owner’s Vessel or other property pending payment by the Owner of any sums due to the Company. If the Licence is terminated or expires while the Company is exercising this right of detention it shall be entitled to charge the Owner at the Company’s 24 hour rate for overnight visitors for each day between termination or expiry of this Licence and the actual date of payment (or provision of security) by the Owner and removal of the Vessel from the Harbour and Premises. The Owner shall at any time be entitled to remove the Vessel or other property upon providing proper security, for example a letter of guarantee from a Bank or a cash deposit, sufficient to cover the debt with interest and, where the debt is contested, a reasonable provision for the Company’s prospective legal costs.

10 **TERMINATION BY OWNER**

10.1 This Licence may be terminated on 16 weeks' written notice by the Owner to the Company. In this event the Company will be entitled to recalculate the charge for the Berth using the rate or rates that would have been applicable to the actual period of the Licence instead of the annual rate; the amount so calculated not to exceed the annual charge originally contracted for berthing. If this recalculation results in a balance payable to the Company then the Owner shall be required to pay that balance before removing the Vessel from the Harbour or Premises. If there is a balance in favour of the Owner the Company shall pay it to the Owner upon the Vessel's departure from the Harbour or Premises

GENERAL RULES

11 **VESSEL MOVEMENTS**

11.1 The Company reserves the right to move any Vessel, gear, equipment or other goods at any time for reasons of safety, security or good management of the Harbour and Premises.

11.2 A copy of the Company's scale of charges for Vessel movements will be provided to the Owner before they enter into a Licence with the Company. Where a specific date or tide range for relaunch of the Vessel has been agreed between the Owner and the Company at the time of slipping or lifting out (or arrival by land) this charge alone will be payable for the launch. However where the Owner requests a different date or tide range the Company reserves the right to charge the Owner for the cost of moving other vessels to gain access to the launch point and for any attendant expenses, such as crane hire. The Company will provide the Owner with an estimate of such costs and charges prior to incurring them.

11.3 Vessels shall be berthed or moored by the Owner in such a manner and position as the Company may require and unless otherwise agreed adequate warps and fenders for the Vessel shall be provided by the Owner

11.4 No vessel, when entering or leaving or manoeuvring in the Harbour, shall be navigated at such a speed or in such a manner as to endanger or inconvenience other vessels in the Harbour.

Advisory note: Owners, their guests and crew are advised that Vessels are at all times subject to any speed restrictions and byelaws of Harbour and navigation authorities and the requirements and powers of regulatory authorities, including but not limited to the Maritime and Coastguard Agency and The Health and Safety Executive; there may be criminal penalties for the breach of such restrictions, requirements and Byelaws.

12 **COMMERCIAL USAGE**

12.1 No part of the Company's Harbour or Premises or any Vessel or vehicle while situated therein or thereon shall be used by the Owner for any commercial purpose, except where the Owner has sought and obtained prior written Licence from the Company.

13 **STORAGE.**

13.1 Dinghies, tenders and rafts shall be stowed aboard the Vessel unless the Company allocates a separate berth for them.

14 **PARKING**

14.1 Subject always to the availability of parking space Owners and their crew may only park vehicles on the Premises in accordance with the directions of the Company.

15 **REGULATIONS**

15.1 The Owner shall at all times observe the Company's Regulations and in particular:

15.1.1 The Owner shall provide and maintain at least one fire extinguisher, which is approved and manufactured to EN3 standards for portable fire extinguishers, and ensure it is fit for purpose for the vessel and ready for immediate use in case of fire.

15.1.2 Owners shall refuel only at the designated fuelling berth and are to vacate the berth when the fuelling operation is completed. Where fuel is required to be transferred in portable containers, the Company reserves the right to refuse the use of any container deemed unfit for the purpose.

15.1.3 Owners shall be prohibited from the discharge of sewage within the Marina; such discharge may result in termination by the Company of this Licence and ejection of the Owner from the Marina.

15.2 The Company shall supply the Owner with a copy of the Regulations current at the time of the Licence. The Company reserves the right to introduce new Regulations on grounds of legal requirement or for the safety or security or good management of the Harbour or Premises, and to amend such regulations as from time to time shall be necessary. Such Regulations and any amendments to them shall become effective on being displayed on the Company's public notice board or other prominent place at the Company's Premises, and the Company shall have the same rights against the Owner for a breach of the Regulations as for a breach of the terms of this Licence.

Advisory note: Owners, their guests and crew are advised that their conduct and that of their vessels is likely to be regulated and governed at various times by statutory, local authority and harbour regulations which may be more extensive than those of the Company and the breach of which may result in criminal penalties.

16 **ACCESS TO PREMISES/WORK ON THE VESSEL**

16.1 Subject to Clause 16.2 no work shall be done on the Vessel, gear, equipment or other goods while on the Premises without the Company's prior written consent other than minor running repairs or minor maintenance of a routine nature by the Owner, his regular crew or members of his family not causing nuisance, or annoyance to any other customer or person residing in the vicinity, nor interfering with the Company's schedule of work, nor involving access to prohibited areas.

16.2 Prior written consent will not be unreasonably withheld where:

16.2.1 The work is of a type for which the Company would normally employ a specialist sub-contractor; or

16.2.2 The work is being carried out under warranty by the manufacturer and/or supplier of the Vessel or any part of the equipment to which the warranty relates.

16.2.3 Notwithstanding the foregoing, during periods of work by the Company on the vessel, neither the Owner nor his invitees shall have access to the Vessel without the Company's prior consent, which shall not be unreasonably withheld.

17 **HEALTH, SAFETY AND THE ENVIRONMENT**

17.1 Attention is drawn to the Company's relevant Health, Safety and Environmental policy, as amended from time to time. The Company shall supply the Owner with a copy of the Policy current at the time of the Licence. Any amendments shall be displayed on the Company's public notice board or other prominent place at the Company's Premises and further copies shall be available on request. The Owner, his regular crew, members of his family and/or any person or company carrying out work on the Vessel, with the permission of the Company, must comply with the Company's Health, Safety and Environmental Policy.

17.2 The Owner, his crew, members of his family and any person carrying out work on the Vessel is responsible for reporting to the Company all accidents involving injury to any person or damage to any public or private property that occur in the Harbour or on the Premises as soon as possible after they occur.

17.3 No noisy, noxious or objectionable engines, radio, or other apparatus or machinery shall be operated within the Harbour or Premises so as to cause any nuisance or annoyance to any other users of the Harbour or Premises or to any person residing in the vicinity and the Owner undertakes for himself, his guests and all using the Vessel that they shall not behave in such a way as to cause any nuisance or annoyance to any other users of the Harbour or Premises or to any person residing in the vicinity. Halyards and other rigging shall be secured so as not to cause such nuisance or annoyance.

17.4 No refuse shall be thrown overboard or left on the pontoons, or car parks or on any other part of the Premises, or disposed of in any way other than in the receptacles provided by the Company or by removal from the Company's Harbour and Premises. The Company's further directions regarding waste management shall be posted on the Company's Public Notice Board or other prominent place and copies will be available from the Company on request.

17.5 Oily bilge water must not be discharged into the marina as well as any black water.

17.6 The Owner shall, and shall procure that his crew, members of his family comply with all applicable laws when using the Company's Harbour and Premises.

18 **Law & Jurisdiction**

18.1 This Licence and any non-contractual obligations arising out of, or in connection with, this Licence shall be governed by and construed in accordance with English law.

18.2 Each of the parties irrevocably agrees that any and every dispute (and any non-contractual obligations, as aforesaid) arising out of or in connection with this Licence shall:

18.2.1 if one party acts as consumer (meaning a natural person acting for purposes outside of a trade, business or profession), be subject to the non-exclusive jurisdiction of the English courts; or

18.2.2 Where no party acts as consumer, be subject to the exclusive jurisdiction of the English courts.

19 **DISPUTE RESOLUTION SCHEME**

19.1 The BMF and the RYA recommend that disputes arising out of or in connection with this Licence, when they cannot be resolved by negotiation, be submitted with the written agreement of the parties, to mediation under the BMP's Dispute Resolution Scheme. Details of the Scheme are available at www.britishmarine.co.uk/drs.

USEFUL WEBSITES

Aseanarean Bluewater Alliance	the-aba.com
Assomarinas (Italian Marine Industry Association)	www.marinas.it
Association of Petroleum Explosives Administration	www.apea.org.uk
Blue flag	www.blueflag.org
British Marine Federation	www.britishmarine.co.uk
British Standards Institute	www.bsonline.bsi-global.com
Canal and River trust	www.canalrivertrust.org.uk
Disabled Rights Commission	www.drc-gb.org
Environment Agency	www.environment-agency.gov.uk
Environment and Heritage Service	www.ehsni.gov.uk
Fédération Française des Ports de Plaisance	www.ffports-plaisance.com
Gold Anchor Award Scheme	www.goldanchor.org
Global Marina Institute	www.globalmarinainstitute.net
ICOMIA	www.icomia.com
PIANC	www.pianc.org
Scottish Environment Protection Agency	www.sepa.org.uk
The Green Blue toolkit	www.marinetoolkit.co.uk
The Green Blue – Green Guide	www.thegreenblue.org.uk/greenguide
The Royal Yachting Association	www.rya.org.uk
The Yacht Harbour Association	www.tyha.co.uk
Which Marina	www.whichmarina.com

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