



FORTH CORINTHIAN YACHT CLUB

FCYC Boatyard Fire Safety Risk Assessment



Introduction

This document has been produced as best practice to ensure safety from fire to persons and property within the club yard. It forms part of the clubs risk assessment portfolio and applies to all members, visitors and any person within the property boundaries.

There is no doubt that there is potential for serious injury and loss when boats are stored in close proximity to each other and steps should be taken to minimise the risk of such an event.



Description

The yard is located at

Middle Pier
Granton Harbour
Edinburgh
EH5 1HF



It comprises of a storage yard 73m x 31m giving an area of approximately 2100m². The yard is enclosed by a new, quality, galvanised 2m high steel fence which has 3 secured double gates and one pedestrian access gate. All members have keys for these gates.

Also located within the yard are 2 portacabin type buildings in a ground and first floor configuration. The lower floor is used as a toilet and shower block and the upper building is used as a meeting room with facilities to make hot drinks and microwave snacks. This upper floor is accessed via an external steel staircase. The buildings are provided with mains electricity, water, drainage and a phone line.

Other structures include three steel containers used as a small workshop and for storage, and an outboard engine shed.

The remainder of the yard is used for boat storage being especially full and tightly packed during the winter period. The yard has several electrical power points throughout. Water is provided by hose at a central point in the yard.

Assessment of risk

Risk Assessment for buildings within yard	
Persons at risk	All club members or visitors within premises. This can include all age ranges and levels of fitness.
Fire risk including fuel sources, ignition sources and likelihood of outbreak.	<p>The construction of the buildings are of steel presenting low risk fire from out with the building.</p> <p>Inside the building the contents of the upper portacabin are minimal consisting of a table and chairs with some kitchen units. Hot drinks and microwaved snacks can be prepared in this area. On about 2 occasions per year hot rolls are prepared using a portable hot plate. A PC and monitor are also installed.</p> <p>The lower floor consists of toilets, showers and changing facilities. The fire loading on both these levels is light.</p> <p>Ignition sources are limited with electrical failure being most likely.</p> <p>The remaining 2 buildings are steel containers. One is used for storage of outboard motors and mooring equipment. The other is used as a workshop with a bench and some electrical tools. The storage shed could have minimal amounts of flammable liquids within the outboard motors. Power is supplied to the workshop but not the storage container. Ignition sources are minimal. Security to all buildings is good reducing the likelihood of wilful fire raising.</p>
Measures taken to minimise risk, raise alarm and maintain a safe means of escape.	<p>A no smoking rule is enforced within all buildings.</p> <p>Good house keeping is practiced to eliminate storage of rubbish and combustible material.</p> <p>An interlinked smoke and heat detector would give adequate warning between the upper and lower levels in the event of fire.</p> <p>A fire blanket should be provided on the upper level with extinguishers available at the Fire Point.</p> <p>The door giving access to the upper level is in the centre of that level giving adequate means of escape via the external steel stairway.</p> <p>The container which stores the outboard motors should have a flammable liquid warning sign.</p> <p>“Fire action” notices should be provided throughout.</p>

Risk assessment for boat storage yard	
Persons at risk	All club members or visitors within premises
Fire risk including fuel sources, ignition sources and likelihood of outbreak.	<p>Although the yard is an open space it can be tightly packed with boats mostly of GRP or wood construction.</p> <p>Each boat contains its own supplies of fuel used for propulsion or heating. Most commonly these are diesel, petrol and LPG. While these are generally stored onboard in a manner so as to be “safe at sea” they do still present a risk of outbreak of fire and possible spread to other boats. The boats generally have combustible wooden interiors.</p> <p>Sources of ignition could include, electrical faults, cooking accidents, engine faults, accidents while work is being carried out onboard also acts of vandalism or wilful fire raising cannot be ruled out.</p>
Measures taken to minimise risk, raise alarm and maintain a safe means of escape	<p>Prevention of an outbreak of fire on a boat in the yard should be given an equal priority as when at sea. All boat owners should make themselves aware of the RYA guidance on fire safety of small vessels https://www.rya.org.uk/knowledge-advice/safe-boating/look-after-yourself/Pages/fire.aspx</p> <p>All boat owners should ensure safe storage of combustible materials both aboard, under and next to their boat.</p> <p>All members should ensure security to their boat and to the yard is maintained to limit opportunities for vandalism which could lead to wilful fire raising.</p> <p>A suitable Fire Point is located where the water tap is on the west end of the toilet block. The fire point should contain one 6kg dry powder extinguisher, one 9 litre water extinguisher, one air horn and one “Fire Action” notice. There is also a small hose at this point which could be used if safe to do so. It cannot be emphasised strongly enough that fire extinguishers are only suitable for small fires in the very early stages!</p>
Action in the event of fire.	<p>It is possible a small outbreak with the owner onboard would be dealt with using the boats onboard extinguishers. This should only be done without risk of injury or compromising escape from the boat which will be by descending a ladder. Should no one be on board and the fire is discovered by another member they should sound the alarm to alert other members. The Fire and Rescue Service should be called at the earliest opportunity so they are able to respond quickly and limit fire spread.</p> <p>Very careful consideration should be given before climbing a ladder to enter a boat with an extinguisher to try to extinguish a fire which could progress very rapidly without warning.</p> <p>Means of escape from the yard is provided by several gates around the perimeter fence.</p>

Review, Recording, Testing and Training.

The Fire Safety Risk Assessment should be reviewed after an incident, if it is felt that a change is required and after a reasonable period of time in our case every three years. Any review or revision should be recorded.

All equipment associated with fire safety should be tested annually by a competent person and the details recorded.

It should be incumbent on all club members to make themselves aware of the Fire Safety Risk Assessment and the Fire Safety Guidance for small craft provided by the RYA.

<https://www.rya.org.uk/knowledge-advice/safe-boating/look-after-yourself/Pages/fire.aspx>



Annex: Extract from RYA Guidance available online for fire safety aboard boats

Fire

Once a fire on board a boat really takes hold, it is unlikely that it will be successfully tackled. It is therefore essential to observe good fire safety practice to minimise the risk of a fire occurring. Prevention is far better than cure.

If a fire does occur, it is imperative that you have sufficient fire fighting equipment to hand and that you know how to use it, if the fire is to be extinguished quickly and effectively.

A fire requires three elements: a combustible material (fuel), oxygen and a source of ignition (heat). To extinguish a fire it must be permanently deprived of one or more of these three elements (heat, fuel or oxygen). How this is achieved will depend on the type of fire. Using the wrong extinguishing method can make the situation worse; the classic examples are the inferno caused by adding water to a chip pan fire and the dangers when attempting to extinguish an electrical fire with water.

Types of fire

The different types of fire have been classified into groups which are distinguished by a letter:

- A are fires involving solids such as paper, wood, bedding etc
- B are fires involving liquids such as oil and petrol
- C are fires involving gases
- D are fires involving metals
- F are cooking oil and fat fires

Electrical fires are not included within this list as once the electrical source has been isolated the combustible material fuelling the fire will fall into the categories above.

Fire extinguishing media

Different media are used to fight different types of fire. The most common media are water, dry powder, foam and CO₂.

Media	Advantages	Disadvantages	Suitable for fire groups
Water	Cheap Good cooling properties Non-hazardous	Should never be used on liquid, gas or electrical fires	Type A only
Dry powder	Versatile	Messy Corrosive Leaves a residue Effectiveness can be reduced by wind Can cause breathing difficulties	This is dependent on the type of powder with options of D only, B&C or A B C which is commonly found onboard boats
Foam	Good cooling properties Can create a heat barrier	Not suitable for electrical fires	A and sometimes B - suitability varies between different manufacturers
CO²	Does not cause damage or leave a residue Can be used on live electrical fires	Can cause cold injuries if used incorrectly Can cause an asphyxiant atmosphere if used in a confined space Disperses rapidly in open spaces	Most effective for small class B fires

As well as being classified for the types of fire they can tackle, fire extinguishers are categorised to indicate the size of fire they are suitable to tackle. For each type of fire there are specified test conditions for each level of extinguishing power.

The following is a greatly simplified explanation of the testing process, given to aid understanding of the fire ratings:

Type A fires: 5A, 8A, 13A, 21A, 27A

To test the fire fighting power for class A fires, a structure is built which is always 560mm high and 500mm wide. The length of the wooden sticks used to build the structure is the dimension that varies and this corresponds with the power indicated i.e. a length of 0.5m is used for a 5A extinguisher or 2.7m for a 27A extinguisher.

Type B fires: 21B, 34B, 55B, 70B, 89B, 113B, 144B, 183B, 233B

For type B fires, there are more variables. Of these variables it is the required volume of liquid for the test which is used to indicate the extinguisher's power i.e. 21B indicates that 21 litres of liquid are required.

Fire extinguisher ratings

The letter indicating the type of fire and number indicating the fire fighting capability are combined to create the fire extinguisher rating. Where a fire extinguisher is only capable of tackling 1 type of fire, it will only be marked with 1 rating e.g. 21A. If an extinguisher is capable of tackling more than one type of fire then it will be marked with the ratings for each type of fire e.g. 5A/34B or 13A/113B. They may also be marked with the weight or volume of product they contain. By combining the ratings of two or more extinguishers, a "combined fire rating" is created e.g. 2 x 5A/34B extinguishers would have a combined fire rating of 10A/68B.

Equipping private pleasure craft

The Recreational Craft Directive (RCD) stipulates that vessels built for the EU market when first sold must conform to ISO standard 9094 Fire Protection. The standard specifies minimum requirements for escape routes and the installation of fire fighting equipment and also provides guidance on fire detection.

The standard covers a practical degree of fire prevention and detection intended to give occupants of the craft sufficient time to escape from a fire on board. It should not be assumed that the application of the standard alone is sufficient, especially for older boats and those that pre-date the RCD.

Further means of fire fighting may still be necessary or may be required by law such as the UK Merchant Shipping Regulations specify the fire fighting equipment requirements for Class XII vessels (private pleasure vessels of 13.7m or more in length). Although the UK Merchant Shipping Regulations do not mandate fire extinguishers on private pleasure craft of less than 13.7m in the UK, fire fighting equipment is specified for boats which are required to have a valid Boat Safety Scheme certificate.

Where fire fighting equipment is not mandatory it does not mean it is not required. Any vessel that is constructed of, or carries any, flammable materials should carry appropriate equipment for extinguishing fires and it is up to the owner to decide what fire extinguishers are needed and where to locate them.

When making this decision consideration should be given to the amount of combustible material on board, where fire extinguishers might be needed and how they could be stowed. It must also be remembered that the typical operating time for a fire extinguisher is about 30 seconds, so to gain maximum benefit it is essential for everyone on board to know how to operate the extinguishers and how to use them effectively.

Although one large extinguisher will be more effective at tackling a fire than using several smaller ones in turn, on a 12m yacht, one big fire extinguisher stowed in the cockpit locker would not be ideal if a fire were to break out in the forepeak, especially in a rough sea.

Being trapped in the accommodation is the most immediate danger from fire on a boat, it is therefore good practice to stow fire extinguishers at the exits to each area of the accommodation i.e. by the door of each cabin and by the companionway/door to the deck, so you can fight the fire whilst keeping the escape routes clear. The key is finding the balance between an extinguisher that is small enough to use at sea, but large enough to knock down the fire whilst water or a larger extinguisher (as appropriate) is fetched. Extinguishers should be mounted securely in a location that is easily visible and accessible but where they will not be in the way of the day to day operation of the vessel.

The following is provided as a guide:

Approximate length of vessel	Number of fire extinguishers (consider one for each sleeping cabin)	Combined fire rating
under 7m (23ft)	2	10A/68B
7 - 11m (23-36ft)	2	13A/89B
11 - 13.7m (36-45ft)	3	21A/144B

On a small open boat with no cooker or internal combustion engine a single 5A/34B rated extinguisher may be sufficient. It should be protected from salt water e.g. sealed in a clear plastic bag (heat sealable bags are ideal for this and can be easily torn open if needed) or carried in a dry bag with your basic safety equipment. Remember to store the extinguisher away from the engine and fuel tank.

All fire extinguishers should be serviced, as directed by the manufacturer in the instructions, by a competent engineer to ensure that they operate effectively in an emergency.

Galley fires

If your boat has cooking facilities then a fire blanket close to hand will frequently be the most effective extinguisher. A fire blanket when used correctly will quickly suffocate the fire, as it starves the fire of oxygen. A fire blanket should be positioned so it can be easily reached, without needing to lean over the fire, and should be a manageable size.

Another important consideration is gas equipment installation. Advice on this subject is given on the gas page.

If you suspect a gas leak shut off gas at all shut off points, extinguish any flames and ventilate the vessel (including the bilges) until all trace of gas is gone.

Dedicated extinguisher for the engine bay

For boats with an inboard engine, consideration should be given to how a fire in the engine compartment would be tackled. It is preferable to be able to do this without allowing air to enter the engine space, as this could make the fire worse. A small hole through which a fire extinguisher can be aimed is one solution, but many owners choose to fit a dedicated automatic extinguisher in the engine bay. The fire rating required will depend on the space in question and advice should be sought from the manufacturer. For larger spaces there are specialist fire systems available, often using inert gasses as the fire extinguishing media.

Halon

Halon extinguishers were previously widely used on boats as they were effective on a wide variety of fires as well as being a very efficient extinguisher. Halon however has ozone depleting properties and has been banned since the end of 2003. Despite this, there are still some Halon extinguishers in existence. Should you have one it should be replaced and the Halon extinguisher should be disposed of through an approved channel.

Stowage of flammable liquids

In an ideal world there would be no flammable liquids on a vessel. The reality is that most boats will carry things such as spare diesel for the main engine, petrol for an outboard motor and perhaps chemicals for general maintenance. It is important that these are stowed in area that is well ventilated. Ideally petrol and other fuels will be kept in a dedicated locker that is vented outboard. All flammable liquids should be stowed upright and should be lashed or secured to prevent them moving about and rupturing the containers.