CONSULTING CIVIL AND STRUCTURAL ENGINEERS

PRE-CONSTRUCTION INFORMATION FOR

PROPOSED NEW CLUBHOUSE & ANCILLARY WORKS AT SUSSEX YACHT CLUB, 88-89 BRIGHTON ROAD, SHOREHAM-BY-SEA
PHASE I

CONSTRUCTION (DESIGN & MANAGEMENT REGULATIONS 2015)

13 AUGUST 2018

Client: Sussex Yacht Club
88-89 Brighton Road
Shoreham-by-Sea
West Sussex
BN43 6RF

Principal Designer: HOP Consulting Limited
HOP House
41 Church Road
Hove
BN3 2BE

Ref: 14896/03/HOP/PCI/01

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Prepared by	Checked by	Approved by
Jon Orrell	**XXXXX**	**XXXXX**

1.0 DESCRIPTION OF THE PROJECT

1.1 Project Description

The works comprise of:

Some demolition of smaller buildings on the existing site to facilitate the works, with alterations to access ways on to the site, both pedestrian and vehicular.

There will be a short section of new river wall constructed to infill an existing slipway and landscaping. A new Clubhouse is to be constructed on piled foundations with elevated ground floor, in situ reinforced concrete frame up to first floor with the steelwork frame forming the first floor, walls and the roof.

[The existing Clubhouse is then to be demolished, new access ways completed and workshops and sheds constructed, at a later date once the new flood wall has been constructed as part of a separate Phase].

1.2 Programme Details

The project is planned to start in January 2019 and have a duration of 72 weeks.

The Principal Contractor will be given a minimum of a 4 week period between instruction and commencement of site works.

1.3 Details of Client, Principal Designer and Other Designers:

The Client is:
Sussex Yacht Club
88-89 Brighton Road
SHOREHAM-BY-SEA
West Sussex BN43 6RF

The Principal Designer (PD) is:
HOP Consulting Limited
HOP House
41 Church Road
HOVE
East Sussex BN3 2BE

The Principal Contractor is:

The Project Manager is:
Derek Copeman
c/o Sussex Yacht Club
88-89 Brighton Road
SHOREHAM-BY-SEA
West Sussex BN43 6RF

Other Designers:

Architects:
ECD Architects
Studio 3
Blue Lion Place
2237 Long Acre
LONDON SE1 4PU

M&E:
Delta Green
Well Cottage
Nash Street
GOLDEN CROSS
East Sussex BN27 4AB

Structural & Civil Engineers:
HOP Consulting Limited
HOP House
41 Church Road
HOVE
East Sussex BN3 2BE

1.4 Register of Designers

This Pre-Construction Information (PCI) pack has been produced at the beginning of this project. It is common that not all parties that adopt the 'Designer' duty holder status are known at the time of production. Examples include parties involved in Design and Build projects, Contractor Design Portions, Phased projects, internal fit out designers etc.

It is the PD's role to provide Designers with relevant parts of this Pre-Construction Information Pack. It is therefore imperative that the PD is advised of any designers who are appointed by other members of the project team including, in particular, the Employer and Principal Contractor.

The following register of Designers is therefore intended to be organic with additional Designers added, when they are appointed, as the project develops.

1.5 Workplace Considerations & Other Legislation

1.5.1 The overall development is used, in part, as a workplace. Health, Safety & Welfare Regulations 1992 apply.

1.5.2 Health and Safety Requirements

The safe execution of the works, whilst ensuring the safety of the site workforce and the safety of the general public or others who may be affected by the works.

Compliance with the Specification and Contract Drawings with regard to health and safety matters.

Compliance with all current legislation and best practice relating to this type of work.

1.5.3 Working Constraints, Permits and Authorisations

The Principal Contractor should comply with following: -

- Requirements of the Control of Pollution Act
- Requirements for traffic safety and as detailed in the Contract Documents and drawings
- Working Hours:
- Any plant being used within public areas will require a careful control.

1.5.4 Accident Reporting

All site related incidents and accidents, including those involving members of the public/others to be formerly recorded and reported to the Project Manager at the earliest opportunity.

1.5.5 Emergency Procedures

Contractor is to develop emergency procedures, appropriate to any foreseeable incidents / accidents and keep under review.

Arrangements to include for emergency services vehicles to access the works.

Contractor to detail his emergency procedures in the construction phase Health and Safety Plan.

1.5.6 Site Rules

The Principal Contractor must insure that all sub-contractors, workers, management and supervisors working on site have the appropriate skills, knowledge (training) and experience.

Working Operations – Measures required to minimise the generation of noise and dust, cutting of concrete members / materials and the like shall conform to the dust control systems given in the HSE information sheet CIS No54.

Contractor to detail site rules in Construction Phase Plan. There will also be a need to liaise with SYC regarding their boatyard operations and the use of the existing clubhouse.

1.5.7 Security Arrangements & Emergency Call Out

In addition to any measures determined by the Contractor, the whole of the working site shall be safeguarded from unauthorised access by the provision and maintenance of robust security fencing appropriate to screen the works and deter access.

The Contractor shall allow for call-out arrangements during non-working times to respond to emergencies arising within the works area and including site fencing.

Details of emergency call out arrangements with named personnel and telephone numbers shall be included in the Construction Phase Plan (CPP)

1.5.8 Co-ordination and Co-operation

The planning and management of the project (such as the resources and time being allocated to each stage of the project) and the arrangements to ensure there is cooperation between duty holders and the work is co-ordinated includes:-

1.6 Existing Information

Refer to Appendix II

2.0 LIAISON AND GENERAL MANAGEMENT REQUIREMENTS

2.1 Clients Special Requirements (Liaison and Co-operation)

The existing boatyard and water's edge will be in use throughout the course of the works. The existing clubhouse will also be in use, which will include from time to time special functions outside of the normal hours. Part of composing the detailed construction programme the contractor will need to liaise regularly and closely with the client (SYC) throughout the course of the works.

2.2 Specific Site Rules

As in 2.1 above it will be necessary to develop special and particular site rules for this site due to the mixture of uses throughout the course of the works.

2.3 Communication & Liaison

During the period of the contract, the PD will have two main functions. These are:

- Liaise with the Principal Contractor to ensure that the health and safety implications of the design may be considered.
- Liaise with the Principal Contractor to gather information for inclusion in the Health and Safety File.

The Principal Contractor will be required to contact the PD every two weeks during the construction period to provide an update on information for inclusion in the File. Where, in any four-week period the Principal Contractor considers that there is no information that the PD might require for inclusion in the File, he will confirm this in writing to the PD.

2.4 Security and Welfare

The Principal Contractor will provide and be responsible for the security of the working site and for provision of welfare facilities (toilets, mess room, drying room, etc) for site staff in accordance with the CDM Regulations.

2.5 Special requirements in relation to Health & Safety

The Principal Contractor (PC) should be able to confirm to the Client and the PD:

- Details of how health and safety will be managed during the construction phase, including details of how information and instructions will be passed to sub-contractors and how their activities will be co-ordinated.
- What procedures are in place for assessing and controlling risks associated with their activities, as required under the management of Health and Safety at Work Act.
- Unauthorised persons do not enter the site or parts of the site.
- All persons working on site must have received sufficient training to enable them to work safely, without risk to themselves or others.
- The PC will prepare and implement a Site Waste Management Plan in accordance with the Site Waste Management Regulations 2008.

3.0 ENVIRONMENTAL RESTRICTIONS AND EXISTING ON SITE RISKS

3.1 Safety Hazards

- Possible asbestos containing materials;
- Possible other deleterious materials due to historic uses of the site;
- Ground contamination including hydrocarbons and potential Tributyltin (TBT) and others;
- Working adjacent tidal waters;
- Working in the intertidal zone (environmental issues – note Marine Management Organisation (MMO) Licence;
- Risk of falling / drowning at unprotected edges;
- Working at height.

3.2 Access

Access off the adjacent Brighton Road is particularly difficult (see Section 4.4.2).

Note also mix of pedestrian, club members, boatyard users and general public. Access risks include both site works, users of the existing facilities and the general public. Avoid accessing tidal areas, especially the muddy foreshore, only by special permission.

3.3 Existing Services

Not all existing services have been isolated and the contractor should make thorough checks on site and with relevant authorities prior to proceeding in areas that may affect services.

3.4 Existing Structures

- Particularly old riverside walls.
- Old buildings and other low grade structures on the site.

4.0 SIGNIFICANT DESIGN & CONSTRUCTION HAZARDS – and how they need to be addressed

4.1 Assumptions & Methods

The Principal Contractor will be responsible for all method related risks.

4.2 Co-ordination of Design & Changes

General Co-ordination and design changes are to be dealt with within the design team as the project develops.

4.3 Significant Design Risks

- Piling and excavations in potentially contaminated ground;
- Tidally influenced groundwater;
- Risk of site flooding;
- Co-ordinating the works on site within an existing boatyard;
- Maintaining the boatyard in use throughout;
- Future flood defence works;
- Use of lime bearing mortars for flintwork;
- Working at height;
- Awkward balcony elements also at height;
- Large heavy roof elements;
- Internally raised ceilings and high level working;
- High level glazing (maintenance and safe access);
- Access to concealed gutters etc.;
- Installation of glass and glazing at high level.

4.4 Construction Risks

4.4.1 The Client must not let work commence until the PC has submitted an adequately resourced and developed Construction Phase Plan.

In addition to the Statutory Regulations noted elsewhere in the Pre-Construction Information, all parties should be familiar with the Construction (Health, Safety & Welfare) Regulations 1996.

4.4.2 <u>Site Specific Risks / Hazards</u>

The Sussex Yacht Club new Clubhouse project presents many interrelated and unusual hazards some of which are summarised below:

i) Working adjacent busy 'A' Road (Brighton Road).

This is a main thoroughfare between Shoreham and Brighton and can be exceptionally busy at any time of the day, particularly peak times. Additionally, visibility is poor along the roadway and pedestrian facilities inadequate. Construction operations will make the situation worse. Particular attention will need to be made to:

- Interface with the general public, both vehicles and pedestrians;
- Working in and around a 'live' working boatyard;

- Export and import of materials, equipment and services both to and from site. This is particularly relevant for larger or unusual loads for which turning areas are restricted. Careful planning needed.
- Please note also that boat deliveries might be expected from time to time and works will have to be carefully planned in conjunction with the Yacht Club to overcome this.
- Similarly, the phasing of the works (see Phasing Plan & Site Plan in Appendix III) will also require close attention and working with Sussex Yacht Club, with particular attention around busy times for lifting boats in and out of the water, delivery of vessels and avoiding conflicts safely.
- Both pedestrian and vehicle through routes will be disrupted and very careful consideration will need to be given to planning the changing works when the construction site is in operation.
- The existing Clubhouse will still be used by members and for functions both inside and outside of normal working hours.

ii) Working adjacent tidal waters

Water levels can vary considerably both in line with tidal predictions, but also may unexpectedly flood at times due to storm or low pressure barometric surges; excessive rainfall or other effects.

Please note that the site often floods during higher Spring Tides and special precautions will be necessary in this respect not only in terms of damage of flooding of the works, but existing edges become undefined when inundated and risk of drowning increases.

As a working boatyard, any edges adjacent tidal waters are of necessity unprotected (to facilitate boat handling) and consequently there is a continuous and unavoidable risk of falling or drowning.

iii) Contamination

The existing boatyard is likely to have pockets of contamination including not only hydrocarbons, solvents, but also anti foul such as Tributyltin (TBT). Care should be taken during excavations and avoid contamination of adjacent tidal water in the event of flooding.

Part of the works, (a new sea wall for the infill), are actually in tidal waters and will need to be carefully planned and the terms of the Marine Management Organisation (MMO) Licence adhered to. There is a Method Statement accompanying this documentation.

iv) **Demolition of Existing Structures** (see also Existing Information and Survey Details)

Demolition works in public areas and adjacent to the Public Highway require special attention and due notices and plans must be made to undertake this work as safely as possible and without danger to the public, operatives or others.

v) Access On Site
Although space is allocated and divided on site, this is restricted and there will inevitably be a crossover of vehicle and plant movements through land under joint usage (SYC and Contractors).

Particular attention will need to be given to craneage and delivery of heavy, long or unwieldly elements or materials.

vi) Working at Height & High Level Elements
(Both in and outside the building).

vii) Working with Cementitious Products
Including lime mortar.

viii) Large Roofing and Glazing Elements

ix) Temporary Stability of the Roof / First Floor Structure during Construction

x) Installation and Maintenance of High Level M&E Equipment

xi) Durability of Materials and Stability in this Exposed Environment (both Temporary and Permanent).

4.4.3 General Hazards & Requirements

Particular hazards and risks identified within the construction works include the following:

i) Site Offices/Working Areas
Must be maintained in a clean and tidy state. Arrangements must be made by the Contractor for storage and working areas, agreed with the Project Manager.

ii) Rubbish
All areas are to be cleared of rubbish, on a daily basis.

iii) Noise
Any pneumatic tools must be fitted with the means to reduce noise as far as is reasonably practical.

iv) Personal Protective Equipment

The use of personal protection equipment should be determined by the PC by assessing the risks involved. The following are examples of where PPE will be required. All PPE must comply with relevant British Standards.

- Safety helmets and foot wear
- Eye protection, hand protection as appropriate
- Respirators when working near bird excrement

Employees should ensure that they have been issued with the necessary protective equipment. **Failure to wear the protection as outlined in the CPP and instructed by the PC, may result in the individual being required to leave site.**

v) Site Power

Where power is drawn from the 240V mains supply, a suitable transformer must be used.

vi) Registers

All health and safety registers must be maintained by all contractors and be available for inspection.

vii) Alcohol

Alcohol is not permitted on site.

Contractors' employees must not consume alcohol during the course of normal and overtime duties. This includes all breaks.

Alcohol must not be consumed before coming on duty, such that it adversely affects their duties.

Failure to comply with these requirements must result in the immediate removal of the offending employee from the site.

Contractors guilty of repeated non-compliance with these requirements may have their contracts terminated.

viii) Smoking

Smoking is prohibited in all working areas.

ix) Control of Substances Hazardous to Health (COSHH 2002)

Prior to bringing any such substance on site, all contractors will provide full details of all potentially hazardous materials to be used on site, including an assessment of any risk to health, prevention and control measures, monitoring or training procedures.

4.4.4 Hot Works

The PC must implement a 'Hot Works' permit in a manner approved with the Client, prior to commencement.

5.0 THE CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2015 - CONSTRUCTION PHASE PLAN

The Client must ensure this plan is completed before construction work can start. The Principal Contractor must draw up the plan.

When drawing up the construction phase plan, you should consider the following topics. Information should be included in the plan where the topic is relevant to the work proposed. The plan sets out how health and safety is to be managed during the construction phase. **The level of detail should be proportionate to the risks involved in the project.**

1 Description of the Project

a) Project description and programme details including any key dates.
b) Details of Client, designers, Principal Designer, principal contractor and other consultants.
c) Extent and location of existing records and plans that are relevant to health and safety on site, including information about existing structures when appropriate.

2 Management of the Work

a) Management structure and responsibilities.
b) Health and safety goals for the project and arrangements for monitoring and review of health and safety procedures.
c) The management of the work including:
   i) the health and safety aims for the project;
   ii) the site rules;
   iii) arrangements to ensure cooperation between team members and coordination of their work, eg regular site meetings;
   iv) arrangements for involving workers;
   v) site induction;
   vi) welfare facilities; and
   vii) fire and emergency procedures.

3 Arrangements for Controlling Significant Site Risks

a) Safety risks, including:
   i) delivery and removal of materials (including waste*) and work equipment taking account of any risks to the public, for example during access to or egress from the site;
   ii) dealing with services – water, electricity and gas, including overhead power lines and temporary electrical installations;
   iii) accommodating adjacent land use;
   iv) stability of structures whilst carrying out construction work, including temporary structures and existing unstable structures;
   v) preventing falls;
   vi) work with or near fragile materials;
   vii) control of lifting operations;
   viii) the maintenance of plant and equipment;
   ix) work on excavations and work where there are poor ground conditions;

x) work on wells, underground earthworks and tunnels;
xi) work on or near water where there is a risk of drowning;
xii) work involving diving;
xiii) work in a caisson or compressed air working;
xiv) work involving explosives;
xv) traffic routes and segregation of vehicles and pedestrians;
xvi) storage of materials (particularly hazardous materials) and work equipment;
xvii) any other significant safety risks.

b) Health risks including:

i) the removal of asbestos;
ii) dealing with contaminated land;
iii) use of hazardous substances, particularly where there is a need for health monitoring;
iv) reducing noise and vibration;
v) work with ionising radiation;
vi) exposure to UV radiation (from the sun)
vii) any other significant health risks.

**Regulations made under the Clean Neighbourhoods and Environment Act 2005 are expected to require that from October 2007 all construction projects above a given value will be required to write and implement a site waste management plan (SWMP). The SWMP will record the amount of each type of waste that is expected to arise on site and whether it can be reused, recycled or needs to be disposed of. During construction the plan will be updated to map what happens against what was expected to happen, allowing lessons to be learned for future projects. Non-statutory guidance will explain the SWMP process in further detail.*

From the HSC publication 'Managing Health & Safety in Construction' Construction (Design & Management) Regulations 2007 – the Approved Code of Practice'

6.0 THE HEALTH & SAFETY FILE

6.1 General

The Health and Safety File should contain the information needed to allow future construction work. Information in the file should alert those carrying out such work to risks, and should help them to decide how to work safely.

It is the PD's role to prepare the Health and Safety file; however Clients, Designers, Principal Contractors and other Contractors all have a legal duty to supply the information necessary for compiling the file.

Only information likely to be significant for Health and Safety in future work need be included.

Briefly examples of the type of information required for the Health and Safety File is included in Appendix XI.

6.2 Information Format

In the spirit of aiding coordination and cooperation all documents are to be submitted electronically in portable document format (PDF).

APPENDIX I – DRAWINGS ARCHITECTS, STRUCTURAL & CIVIL ENGINEERS M&E ENGINEERS (AS ATTACHED LIST)

APPENDIX II – EXISTING INFORMATION – PLANS SHOWING SERVICES

NOTES

GENERAL NOTES :-

TOPOGRAPHICAL SURVEY HAS BEEN SUPPLIED BY THIRD PARTY, THEREFORE MIDLAND SURVEY LIMITED ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF THIS SURVEY.

THIS DRAWING HAS BEEN PRODUCED WITH A PLOT SCALE ACCURACY OF 1:200

SERVICE COVERS INDICATED WHERE VISIBLE. PIPE INVERTS / DETAILS SURVEYED FROM SURFACE INSPECTION ONLY. GENERALLY DAMAGED COVERS AND COVERS WITHIN HIGHWAYS WILL NOT BE LIFTED

OVERHEAD CABLES ARE INDICATED USING REMOTE SURVEY METHODS AND ARE SUBJECT TO SEASONAL VARIATION, AND SHOULD BE TREATED AS APPROXIMATE.

SERVICE COVERS LOCATED UNDER PARKED VEHICLES/MOBILE STRUCTURES MAYBE OMITTED.

BURIED SERVICE COVERS WILL NOT BE INDICATED.

UTILITY SURVEY KEY :-

HATCHED AREA
BOREHOLE
CPT
TRIAL PIT
HAND PIT
WINDOW SAMPLE

ELECTRIC CABLE
WATER PIPE
FOUL SEWER
STORM SEWER
COMBINED SEWER
DUCTS
CABLE TELEVISION
DATA CABLE
TELECOM CABLE
GAS PIPE
UNIDENTIFIED SERVICE
OTHER
CCTV
TRAFFIC LIGHT
OFFSET FILL
VENT
FUEL PIPE
GAUGE LINES
PIPE
ASSUMED ROUTE
TAKEN FROM RECORDS

DISCLAIMER :-

Electromagnetic techniques have been used in the location of underground services. The results are not infallible and trial excavations should be carried out to confirm service identification, positions and particularly depths, where these are critical. The completeness of the underground services information cannot be guaranteed.

This method of survey does not differentiate between live and dead services, and as such all services should be treated as live. This drawing may not include the location of all public services that may cross the site, therefore the relevant service drawings should be obtained from the appropriate utility company and used in conjunction with this drawing.

Private service pipes and cables in highways are not shown, but there presence should be anticipated.

Additional below ground structures or obstructions not shown on this drawing may be present. Reference should be made to historical plans and as-built drawings. Excavations in the vicinity of services should be carried out with due diligence ref: HSG47 document avoiding dangers from underground services

UTILITY NOTES

INCOMING SERVICE FEED TO BUILDING HAVE BEEN SHOWN, UNABLE TO TRACE SERVICES WITHIN CARRIAGEWAY DUE TO HEAVY TRAFFIC CONDITIONS.

UNABLE TO TRACE 0.025ø PE WATER FEEDS TO ELECTRICAL/ WATER OUTLETS. LOCAL KNOWLEDGE INDICATES WATER SUPPLY RUNS ALONGSIDE ELECTRIC, THEREFORE ROUTE SHOWN HAS BEEN ASSUMED AND SHOULD BE TREATED AS INDICATIVE.

UNABLE TO ROD GULLIES DUE TO HEAVY SILTING.

RADIO DETECTION SWEEPS HAVE BEEN CARRIED OUT WHERE POSSIBLE DUE TO STORED BOATS.

0 2 4 8 12 16 20

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Client	GEO-ENVIRONMENTAL
Project	SUSSEX YACHT CLUB, BRIGHTON ROAD, SHOREHAM ON SEA.
Title	UTILITY SURVEY
Date	JANUARY 2017
Scale	1:200@A1
Dwg No	27879 0
Surveyor	K.N
Checked	L.K.B

Revisions

TOPOGRAPHICAL (LAND) SURVEYORS / UTILITY SURVEYORS BUILDING MEASUREMENT SURVEYORS / 3D LASER SCANNING

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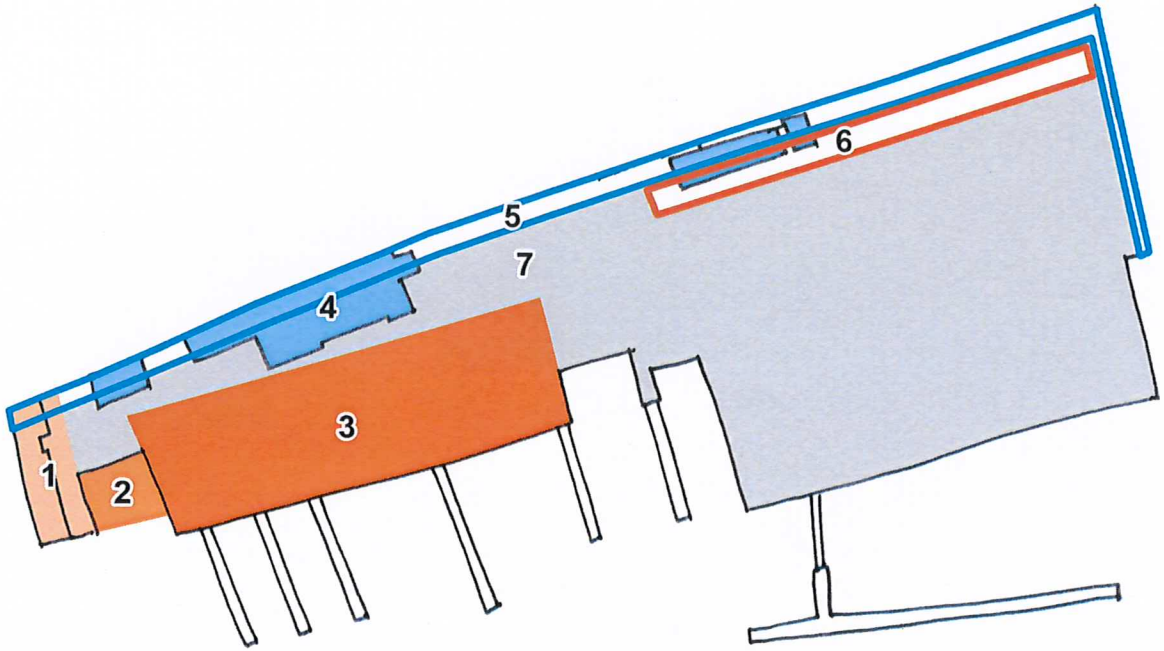
APPENDIX III – PHASING PLAN & SITE PLAN SHOWING ACCESS, WORKING AREAS & SOME HAZARDS



PHASE I : 1, 2 & 3

Project/Task No. 14896/04 Scale: AS SHOWN ORIGINAL DRAWING SIZE A1

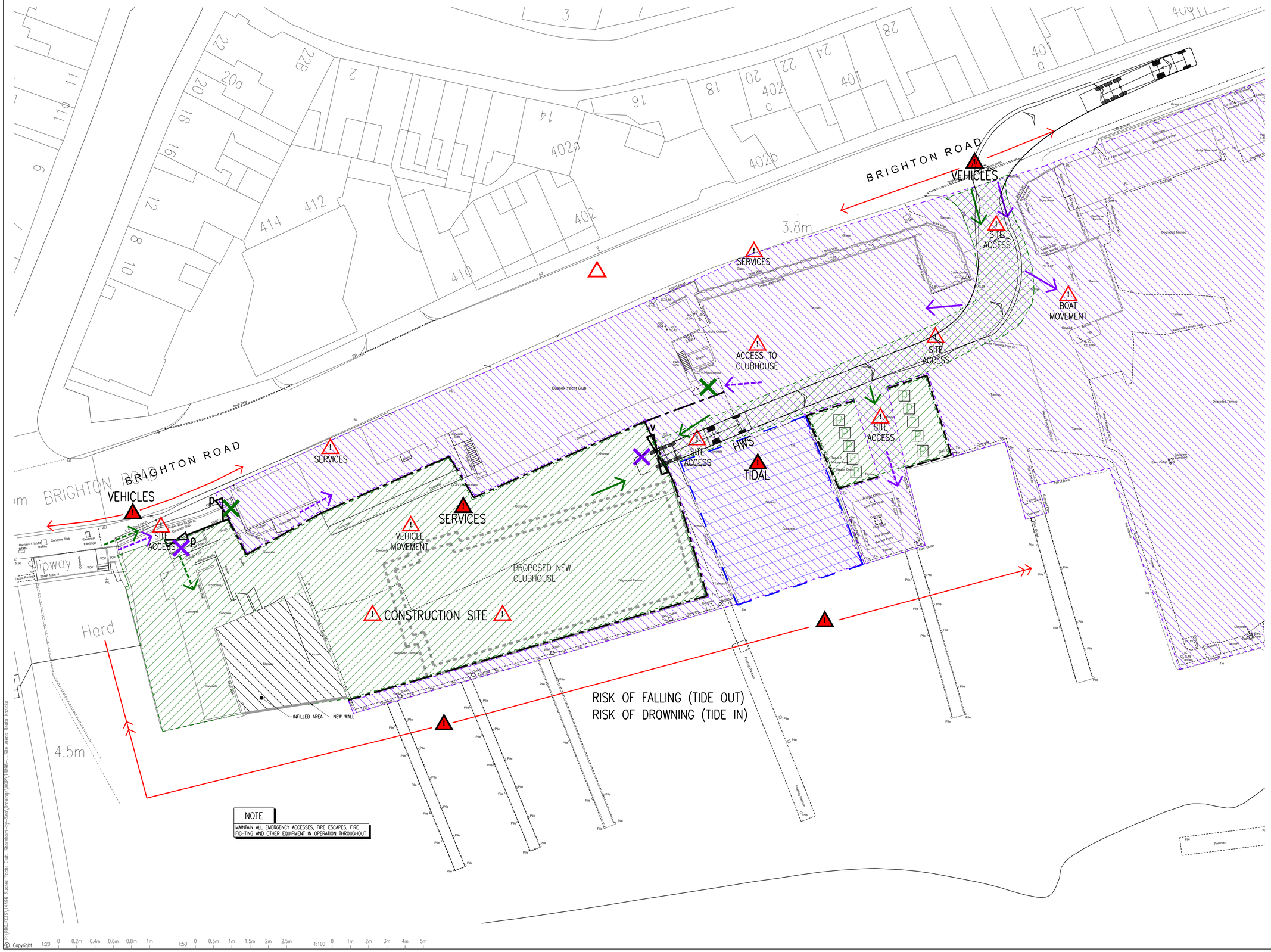
1. GENERAL

(i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.

(ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.

(iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.

(iv) The contractor is responsible for all temporary works and for the stability of the works in progress.



NOTE

MAINTAIN ALL EMERGENCY ACCESSES, FIRE ESCAPES, FIRE FIGHTING AND OTHER EQUIPMENT IN OPERATION THROUGHOUT



LEGEND

HAZARDS
- POTENTIAL HAZARD
- HAZARD
- SEVERE HAZARD

FENCING
- 2m HIGH SECURE FENCING
- 1.2m BARRIERS

ACCESSES
- SECURE GATE – CONTROLLED V=VEHICLE P=PEDESTRIAN
- NO ACCESS BY CONTRACTOR
- NO ACCESS BY CLIENT (SYC)
- CONTRACTOR ACCESS ONLY
- CLIENT (SYC) ACCESS ONLY
- CONTROLLED SHARED AREAS

DEDICATED VEHICULAR ACCESS FOR:
- CONTRACTOR
- CLIENT (SYC)

DEDICATED PEDESTRIAN ACCESS FOR:
- CONTRACTOR
- CLIENT (SYC)
- CONTRACTOR PARKING
- FOR USE DURING SPRING TIDES FOR BOAT MOVEMENTS

Description	By	Aprvd.	Date	Rev.
FIRST ISSUE	A.B.	JWO	22.03.18	P1

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title
SITE PLAN
SHOWING AREAS AND ACCESS

Project
NEW CLUBHOUSE

Client
SUSSEX YACHT CLUB

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CONSULTING CIVIL AND STRUCTURAL ENGINEERS
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Drawing No. 14896-04-HOP-XX-00-DR-C-0002 Status S0 Rev. P1

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APPENDIX IV – FORM F10

APPENDIX V – OUTLINE METHOD STATEMENT

APPENDIX VI – THE CONSTRUCTION PHASE PLAN (CONTENTS)

APPENDIX VII – HOP INFORMATION SHEET 59

HOPformation sheet **59**

Special attention is drawn to:
Construction (General Provisions) Regulations Part VIII 1961
Reg. 23 Transport by water
Reg. 24 Prevention of drowning

WORK OVER WATER

Work over, on, or near water presents an unusually difficult situation on two separate counts:

a) There is an ever present risk of men falling into water.
b) There is a complexity of legal obligations which vary almost district by district.

Legal Requirements
The Construction Regulations apply as for all other types of civil engineering and building site. The Dock Regulations, in certain circumstances, can also apply. These Regulations, which come within the scope of the Factories Acts, are administered by HM Factory Inspectorate.

In addition, the Merchant Shipping Act applies to pontoons, passenger-carrying craft, lifebuoys, etc. and the Coast Protection Act becomes applicable if the work involves any shore area. These Acts are administered by the Department of Trade.

Moreover, there are numerous bye-laws and local requirements applied, for example, by the Port Authorities (ports), Harbour Authorities (coastal works), British Transport Commission (canals), Local Authorities (inland lakes), Water Boards (reservoirs), depending on where the work is situated.

Work in a water-filled quarry would also be subject to the Mines and Quarries Act.

There is a multitude of variations, local exemptions and seeming peculiarities in the application of the law according to circumstances, conditions and area. Before starting on any job, therefore, which is over, on or near water and involves the use of almost any kind of craft, contractors are strongly advised to obtain the fullest information on local bye-laws and conditions. In cases of doubt, the nearest Marine Office of the Department of Trade and H.M. Factory Inspectorate are always most helpful in indicating what authorities need to be consulted.

Necessary Precautions
From any work place over, on or near waters, a man might slip, fall or be swept off his feet by some rapid rise of tide, strong current or swell from passing water traffic. The end result is the same - he falls into water with either the immediate risk of drowning and/or being carried away by the current.

Whether or not the man is injured by the fall, if he once begins to take in water, he can suffer acute physical damage in a mere matter of minutes.

Considerable effort has, therefore, to be made in the first place to prevent him from tripping, falling or being swept into the water, and if the worst does happen, then he has to be rescued in the shortest possible time before he can come to any further harm.

Site Precautions
Working platforms must be properly constructed and sufficiently stable to avoid tripping (e.g. pontoons carrying cranes, men and materials). Special attention is, therefore, required to good anchorage and ballasting; point loads near the edge should be assiduously avoided; due account should be taken of the variation of load at the different radii of crane jobs.

Gangways, platforms, etc must be of the correct statutory width and equipped with guard-rails and toeboards; they should be additionally secure to that they cannot become displaced or dislodges in conditions of swell or high winds.

Ladders must be sound, of sufficient length and strength and be securely lashed to prevent slipping. Safety nets and safety belts or harness must be used as appropriate. (See Section 7, “Working Places”. Pontoons may also be subject to the Merchant Shipping Act).

At all edges from which a man might fall into water, secure barriers or fences are required (see General Provisions Regulations).

In addition to these legal obligations, attention should also be paid to:

Ladders: where fitted to plant over water as a permanent fixture should be fitted with safety hoops.

Platforms, gangways: where erected above tidal water, decking boards should be secured so that they cannot become dislodged by rising water or high winds. Additional handhold is always advisable as a precaution against storms.

Safety nets: should be properly secured and slung sufficiently far above high water level for anyone caught in them to remain clear and so that free access by rescue craft is always possible.

Manufacturers should be consulted on what type of net best suits the kind of work to be carried out under the prevailing conditions (e.g. welding operations over salt water).

Warning notices: should be erected at all edges and boundaries near water and set so that they are easily seen by operatives approaching the danger point.

Site tidiness: is of special importance in minimising tripping hazards. Tools, ropes and other materials not in use should be put away: rubbish should be cleared up promptly. Materials awaiting use should be stacked compactly and, particularly on pontoons, not piled too high.

Slippery surfaces: are extremely dangerous and should be treated immediately. Seaweed, sea-slime and bird droppings should be cleaned off. Oily or greasy surfaces should be gritted. Icy or frosty surfaces should be treated with industrial salt or sand.

Drip trays: should be sand-filled and set beneath all machinery to prevent the development of oily, slippery surfaces and, especially on pontoons, to minimise fire hazards (see Section 5, “Fire Precautions”).

Illumination: is essential for night work and vital at all times in shafts, dark corners and stairways. An even spread of light is required to avoid deceptive shadows and glare. The area floodlit should always include the immediate water surface.

Weather conditions: the local weather forecast should be obtained and publicised at the beginning of each day’s work or shift. Rain, rising winds, fog, sea-mist, etc are all potential dangers.

Safety helmets: it is strongly recommended that they should be worn at all times since anyone struck on the head and then falling into water is at special risk. (See Section 1, page 1-13).

Footwear: types with non-slip soles are to be preferred (see Section 1, page 1-13). Rubber and thigh boots, once filled with water, act as dead-weight.

Flotsam: the water area near the work should be kept clear of flotsam. Boatmen should be instructed to report its presence.

Buoyancy aids: management should make every possible effort to encourage men whose work normally has to be performed over water of any real depth, to wear some form of buoyancy aid as standard practice.

There is, however, a problem here. Board of Trade approved life jackets are intended to be used, for example, by those who have to abandon a sinking ship. They are certainly too cumbersome and restrictive to be worn for working and, indeed, the Board of Trade would not expect them to be used for that purpose.

Without doubt, some form of buoyancy aid should be worn and, ideally these garments should:

1. Provide sufficient freedom of movement for men to be willing to wear and work in them.
2. Have sufficient buoyancy to bring a man to the surface, even if he is unconscious, and keep him afloat, face up if possible.
3. Be secure on the body.
4. Be readily visible.
5. Be capable of withstanding hard treatment.
6. Require minimum maintenance (mouth and CO_2 inflated types need frequent checking).
7. Not be prone to snagging under water.
8. Have clip-on, self-igniting lights.

The final choice can only be a compromise between freedom of movement and efficiency of flotation. The available range is wide but it is recommended that choice should only be made from those made to B.S. specification (B.S. 3595 revised 1969 refers) or from those at least approved by a recognised authority like the Ship and Boat Builders National Federation.

First-aid equipment: In addition to statutory requirements for first-aid boxed on the site generally, dressings and bandages should be available on pontoons, barges and near all landing places, irrespective of the numbers of men involved. A suitable stretcher should be reasonably accessible. Resuscitation equipment of the portable type should be readily accessible to the main working area over water and to normal landing places; it should be regularly checked and under the care and control of a trained first-aid attendant or " a responsible person". (See Section 4, pages 4-7 to 4-16).

There is a difference of opinion in medical circles on the relative merits of automatic breathing machines and mouth-to-nose or mouth-to-mouth artificial respiration. The question is discussed in "New Advanced First Aid" by PJ Roylance and A Ward Gardner published by Butterworth.

Spotlights (on swivels): should be fixed at strategic points to assist in locating a man in the water, wherever night work is intended.

Navigation lights: may be needed on working places afloat or situated hard by the water's edge or shore. A check should be made with the appropriate local authority. By the same token the installation of *foghorns* needs consideration.

Means of access water transport
The Construction Regulations require safe means of access to be provided to all working places (See Section 7).

Where working places are situated on water, and access is only possible by passenger carrying boats, these craft are subject to the Merchant Shipping Act.

Passenger-carrying craft must not be less than 14 feet (4.267 m) in length. Where craft are of sufficient size to carry more than 12 passengers at any one time, they must be surveyed at least once each year by the Board of Trade and a certificate obtained. Boats are only allowed to operate within a stipulated number of passengers according to size.

The Board of Trade make several classifications of craft according to purpose, with a schedule of live-saving and fire-fighting appliances laid down for each.

For example, a 30 foot (9.145 m) work boat, normally carrying 10 passengers and 1 crew, might have to be equipped with:

2 Inflatable life-rafts, each capable of carrying all on board i.e. 11 men
11 Board of Trade approved life jackets
2 Lifebuoys, one with self-igniting light and smoke marker signal, the other with buoyant heaving line attached
6 Red Star distress signals
2 Foam type fire extinguishers, 2 gallon (9.09 litre) size.

Rescue Equipment
Lifebuoys, with lifelines: of Board of Trade approved type, should be set at intervals along the workings. They may be either:

a) Cork interior with canvas covering, or
b) Polyurethane foam with rigid PVC cover.

The regular size is 30 inches (0.762 m) outside diameter, with a 90 foot (27.432 m) buoyant lifeline knotted at every 10 feet (3.048 m) to assist handhold i.e. long enough to allow for the state of the tide, height of working place to water, or for a man being carried downstairs by a current.

Both types are effective in salt or fresh water. They are reasonably light in weight but to avoid risk of injury to a man in the water, lifebuoys should be thrown as *near to him* as possible; if any tide is running they should be thrown on his upstream side.

If night work is to be carried out, standard Board of Trade type self-igniting lights should be fitted.

Daily checks should be made to ensure that all lifebuoys and lines are still in their proper place and that no repair work is required on them as the result of vandalism or other interference. Lines should be of a colour different from that normally used on site.

Grab lines: attached to the working place, or at other places downstream, and long enough to allow for the normal rise and fall in tide can be supplied to give a man something to grab in an emergency. They should be of buoyant type with a marker float at the free end. Trailing ends of undue length should be avoided so that there is no risk of boats being fouled.

Daily checks should be made to ensure that they are still in position and that their condition is sound.

Rescue boat: should be properly made and of sufficient length and beam to afford reasonable stability. Where conditions permit, there is much to be said for inflatable craft, since there is always a better chance of getting a man in-board without doing him injury. For work in tidal water or fast flowing river water, a power-driven craft is essential - with a fixed self-starting device on the motor. Engines of powered craft, when not patrolling, should be run several times a day to ensure full efficiency.

All rescue boats should carry three oars (one can always go overboard; one is often needed as a rudder). Rowlocks should be removable and on lines so that they can hang from the side without being lost.

Boats should be fitted with grab lines and carry at least one lifebuoy of approved Board of Trade type. Boat-hook, baler, anchor and line should be standard equipment. Two-way communication between boat and shore is always advisable. If night work is to take place, a powerful spotlight should be fitted.

Irrespective of size, it is a wise precaution to seek the advice of the Board of Trade Marine Surveyor on the suitability of the proposed rescue craft and its equipment.

Rescue boats should be manned continuously - and on patrol whilst work is in progress - by experienced boatmen who are qualified first-aiders. If possible, there should be two men to a boat so that one is free to attend to man in the water. Boatmen should always wear suitable buoyancy aids.

Whether first-aid treatment can be given on the rescue boat will depend on its size and the state of the rescued men. Boats at least should carry sterile wound dressings and some bandages, a sucker (some medical experts recommend Ambu, foot-operated type) for clearing a main's airway, and blankets. All first-aid equipment on board should have waterproof protection.

Rescue Routines

Even though:

1. The number of men at work is periodically checked to ensure that no-one is missing;
2. Men work in pairs so that there is always one to raise the alarm.
3. Each man is trained to be his own early warning system;

it is still essential that, in an emergency, everyone knows exactly what to do so that no time is lost in putting the rescue drill into operation, i.e. everyone is properly trained.

There ought, therefore, to be:

a) A set routine for raising the alarm:
b) A set rescue drill;
c) A set routine for getting people to hospital whether for check-up through immersion in polluted water or for treatment as the result of injury.

The first requirement should always be to get the rescued man, if only slight hurt, to the nearest point where assistance is available as quickly as possible. Therefore, all other things being equal, the speediest and safest way of getting a man out of the water should be laid down. With small craft, for example, it may be possible to bring a man in-board over the stern; with larger, powered craft, this will not be feasible because of the danger of fouling revolving propeller blades.

But various circumstances might combine to make impossible a straight-forward lifting operation out of the water - the man might be too heavy, fully clothed, in a state of panic or injured to the extent that it would be unwise to manhandle him. In cases like this the army practice might have much to commend it: the man is manoeuvred to port or starboard, near the bow, and a line, with hook and eye, is passed under his arms to secure him to the boat - from this position he

can be towed to the nearest landing point, the movement of the boat drawing his head clear of the water so that his breathing can remain unimpaired, and he is kept clear of revolving propellers.

These notes can only be pointer. The real routine can only be established from a sensible knowledge of the facilities available and due consideration of the prevailing local conditions.