# NEPTUNE 70

# 'Bringing History Home'

## *Expedition Plan*

***A Southsea Sub-Aqua Club Expedition***
***to Explore the Wrecks of the WW2***
***Allied Invasion of Normandy.***

***In collaboration with 'Dive into France' Scuba Ninjas***

**12th to 21st September 2014**

Southsea Sub-Aqua Club

**EXPEDITION PLAN**

# ‘Bringing History Home’

By Alison Mayor
Southsea Sub-Aqua Club
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## Introduction

This document sets out the aims and management of an expedition by Southsea Sub-Aqua Club to dive and record wrecks of associated with the maritime phase of WW2 Allied invasion of Normandy otherwise known as Operation NEPTUNE. This expedition was inspired by a BSAC Southern Region initiative (NEPTUNE 70) which seeks to encourage branches to investigate and dive wrecks associated with Operation Neptune in British waters.

Following an approach from a group of English speaking divers from France we are now embarking on a joint expedition to dive the WW2 Normandy wrecks with this group. ‘Dive into France’ is an English speaking resource for divers living or visiting France. This multinational and multicultural expedition will provide the opportunity for divers from a number of different nationalities and cultures to commemorate the events of D Day and the subsequent liberation of France.

This joint expedition has developed fairly quickly but plans are fairly well advanced. We have engaged widely with others including UKHO, with a view to exploring and recording a number of unidentified sites which may shed light on the what remains on the sea bed. We intend to share our findings with appropriate public bodies thereby adding to the public record of this historic event.

This document sets out the detail of the planned expedition from a Southsea Sub-Aqua Club (SSAC) viewpoint but also where the expedition joins forces with our fellow divers from the continent and beyond. Supporting documents will be developed as a part of this overall Project Plan and will be monitored and updated as necessary.

## Bringing History Home - Aims

The primary aims of this expedition project are to;

a) Dive and record the physical remains of known WW2 wrecks associated with the Invasion of Normandy including photographs, video, sketch and measurements where appropriate.
b) Using recent data kindly provided by the UKHO - locate, dive and record sites which have not knowingly been dived before. Photograph, video, sketch and measure where practicable.
c) Importantly - Produce a report of our findings and make available to UKHO, English Heritage and other interested stakeholders (veterans groups, museums etc)
d) Record marine life found at the dive sites
e) Undertake historical research associated with the sites visited and learn about the events and history associated with this significant period of history by visiting the Normandy Coast, invasion beaches and various museums etc.

f) Share our experiences with divers from other nations/cultures and promote the opportunities/benefits that come from with being a member of the British Sub-Aqua Club.
g) Promote the responsible/respectful diving by being sensitive to the feelings of those who lost family or comrades during the conflict.
h) Raise awareness of the Normandy Invasion through sharing of experiences and data by publishing articles, talks etc and various media opportunities
i) Working with various experts/organisations, continue to raise awareness within the general public of the enormous effort of the Allies in the Invasion of Normandy.
j) Develop/improve expedition planning and dive management skills at all levels but in particular at Dive Leader and Advance Diver levels.

**Bringing History Home - Objectives**

The Project objectives can be listed in 3 categories, those of the Expedition project itself, those of Southsea Sub-Aqua Club for the benefit of its membership and, in association with other organisations, promoting a greater understanding of the wrecks and their role in the Normandy Invasion through dissemination of the project findings to the general public and diving community through an 'outreach' programme.

**Expedition Project**

- To locate and positively record the unidentified wrecks identified by the UKHO (Chris Howlett) of being of specific interest.
- To produce a basic site map/plan for each site by reference to the position, orientation and size of the wreck(s).
- To record details of each of the wrecks in terms of their distinguishing features and condition etc including photographs and video.
- To research the circumstances of the wreck incident.
- To observe and record the typical marine life to be found on the wrecks.
- To work with the UKHO, English Heritage, D Day Museum and other interested parties to add to the public record of the events in 1944 through what remains today.

**Branch**

- To provide an opportunity to work together as a branch at all levels and 'dive with a purpose' with a rewarding outcome.
- To practice and improve diving skills and survey techniques at an individual and team level.
- To build on the success of earlier projects and foster an attitude of conscientious and respectful wreck diving.
- To make new friends by sharing the experience with members of a multinational and multi cultural group of divers – brought together by a common love of diving and respect for the history of the wrecks we will dive.

**Outreach**

- To make available a public record of our work through dissemination of the report to various public bodies and interested organisations.
- To publicise the results of our work as widely as possible and share the story of the Normandy invasion through our diving on the wrecks today.
- To work with other organisations and the general public to exchange information about wrecks and their part in the invasion of Normandy and the subsequent liberation of France under Operation Overlord.

- To raise awareness of recreational diving and expeditions and the profile of BSAC and Southsea SAC.

**Background**

2014 is the 70th anniversary of the largest ever maritime invasion. In June 1944 almost 7000 ships and craft from 8 navies had assembled along the south coast of England. Operation Neptune was the maritime phase of Operation Overlord - :the invasion of Normandy by sea and the liberation of France". Many vessels and lives were lost in the preparation for and execution of Operation Neptune on both sides of the English Channel as the Allied forces moved into France in what was to be a critical turning point in World War 2. There is still much evidence of this remarkable achievement on both sides of the Channel.

In early 2014 BSAC Southern Region launched the 'Neptune 70' initiative, with the aim to encourage Branches to research, dive and record wrecks with a connection to Operation Neptune. The intention was to give Branches the opportunity to learn about wrecks that have a D Day connection in British waters but also add to the public record by sharing the results of their dives with English Heritage and other interested parties. Initial interest in the scheme was high although many assumed that the project involved diving the wrecks in Normandy however at that stage it was intended to be wrecks in British waters.

Southsea Sub-Aqua Club has chosen to investigate and record the Mulberry Harbour components which remain in the Selsey/Portsmouth area as the Branch's contribution to Neptune 70 and successfully applied for a grant to undertake this work from the British Sub-Aqua Jubilee Trust. This survey work is scheduled to take place between the 16th and 25 August this year.

In April this year and as a result of the BSAC publicity generated about the Neptune 70 initiative I was approached by Catherine Connors, a member of a group of English speaking divers who are resident in France. Catherine was very excited about the Neptune 70 initiative and told me that although she was living and working in Paris she also has a house in Normandy just 10 minutes from Omaha beach. Catherine was keen to participate in Neptune 70 and to dive with British Sub-Aqua Club members and suggested a joint expedition to dive the wrecks associated with the invasion. Catherine's team are a multi-national and multi-cultural group of divers and we are delighted to have the opportunity to dive as a joint expedition. They host a Facebook and web site to provide information and advice to English speaking divers – Dive into France'.

Plans are almost complete and a team of 14 divers from Southsea Sub-Aqua Club will travel overnight to Normandy to arrive in France on Saturday 13th September with 5 days diving planned to start on 15th September. We have booked ferries from Portsmouth to Le Harve and plan to take 3 large vehicles.

Following the Channel 5 programme 'D Day's Sunken Secrets' an approach was made to the American team, supported by the UK Hydrographic Office (UKHO) which undertook detailed side scan surveys and wreck investigation of the whole of the Normandy invasion coastline. The full results of this survey have been made available to our teams and we have been working with Chris Howlett at the UKHO to identify which of the 350 wrecks discovered as part of the survey would be of most interest for us to investigate and report on. (See Diving the D Day wrecks)

A total of 23 divers will be diving each day - 14 from SSAC and 9 from Dive into France (Scuba Ninjas Catherine's group). Some of the Dive into France team are only diving part week so there will be 25 different divers involved. We will be staying in a large Gite accommodation and diving with a local French dive centre at Arromache. The site of the British invasion beach and the famous Mulberry B artificial harbour created ain days to support the invasion forces. The dive centre has two RIBs which will take us to the dive sites.

**Figure 1 Gite accommodation a short distance away from the Dive Centre**

A list of the divers (BSAC and Diving Into France) is at Annex A.

The local community has been engaged and following the final dive on Friday 19th a reception is planned in the village to be attended by the town mayor. We have been invited to attend a BBQ at Catherine's house on the Saturday before returning home on Sunday afternoon (21st September).

**Diving the D Day Wrecks**

Recreational scuba diving in France is well regulated and as a result there are certain additional considerations we need to cater for in order to dive, namely;

- Diver qualifications – In order to dive the Normandy wrecks divers need to be at the equivalent of CMAS ** level which equates to Sport Diver +10 certified/logged dives as a minimum.
- Certification from a doctor to say that the diver is fit and has no contraindications for diving. The doctor's certification needs to be signed within the last year.
- Safety equipment – a personal strobe, DSMB/reel,
- Personal insurance – recommended though not essential

Our group is very used to diving in low visibility and working closely with the tides of the English Channel and so have considerable experience of diving in these conditions.

We will be diving on a range of sites, from relatively shallow to more challenging 30-35m sites. We intend to bring our own equipment and dive using nitrox for the majority of dives. The relatively shallow depth of some of the wrecks does not necessarily mean that the diving will be routine. Areas of poor visibility and strong current mean that the diving can be challenging and hence the minimum level of experience stipulated by the Dive Centre. Divers will require good buoyancy and navigational skills.

The dive centre owner does speak some English however we will have the benefit of a number of French speaking divers as part of the larger group.


**Figure 2 Diving will be from the Asnelles dive centre near Arromache.**

The UKHO have kindly shared with us all the survey data from an intensive investigation carried out in 2013 and featured in the Channel 5 documentary programme D Day's Sunken Secrets. This is on the basis that we share any information gathered as a result as widely as possible. This extremely comprehensive and detailed survey has identified over 350 wrecks/anomalies and Chris Howlett (UKHO) has suggested a number of sites that he would be interested in us diving. Subject to tide, weather and distance we will endeavour to dive these site if possible.

## Data evaluation and reporting

This stage of the expedition will bring together all the information and data with the aim of providing firm evidence from which a number of conclusions may be drawn. The intention is to make available the findings of the project to as wide an audience as possible as well as form the basis of further work if needed.

- Using data from the dives - plot the measurements and produce a site plan and record the location, orientation and condition of the wrecks and any significant items of interest found.
- Compare data and photographs in order to establish age/type/model of wrecks.
- Confirm how/when the craft was lost.
- Report on marine life observed on the sites.

It is likely therefore that a number of days diving will be needed to complete the data gathering element of the survey project. We will aim to dive on both slack water opportunities – i.e. 2 dives per day but will depend on tide times and weather. It may be useful to explore the surrounding area if we have an opportunity

## Participants and Roles

14 SSAC divers have signed up for the project and key positions/roles are identified below;

- Project Management and survey planning – Alison Mayor.
- Dive Management & Health & Safety – Martin Davies and Tom Templeton.
- Research and recording/reporting, final reports - Alison Mayor
- Financial accounting, - Alison Mayor
- Training - Tom Templeton and Jim Fuller
- Marine Life specialist; Alison Bessell
- PR/Media/Web site, Alison Mayor, Martin Davies, Doug Carter.

The full details of all participants including those from our collaborative team members 'Diving into France' are set out in Annex A.

**Health and Safety considerations**

Vital to the success of the Project is the safety of all divers and participants for the duration of the survey. A Diving Risk Assessment (see Annex B) has been prepared in accordance with BSAC guidance and will be monitored and amended as additional hazards are identified. It will be a living document throughout the planning stage and during the diving operations. Dive management will –

- Confirm weather and general conditions ok for dive, slack water window and dive time.
- Overall dive brief including boat safety etc
- Safety Equipment check/ Diver equipment check (DSMBs, air, torches, slates etc)
- Establish buddy pairs depending on level of experience and capabilities.
- SEEDS brief (Safety Exercise Equipment Discipline & Signals.
- Buddy Checks
- Monitor throughout dive and record dive statistics (time depth air etc)
- Collect recorded data from each dive and analyse findings to establish accurate site map.
- Risk Register reviewed before and after each dive
- All safety equipment checked before each dive.
- A de-brief carried out after each dive.

All diving will be conducted in accordance with BSAC Safe Diving guidance and a Dive Manager will be appointed for each dive. A central list of next of kin details will be made and maintained.

A diving programme, has been prepared at C. Sample dive plans for a typical 2 dive day have been prepared, based on air and Nitrox (36% usage) These plans show the benefits of the Nitrox mix over air in terms of longer no stop diving on both dives.

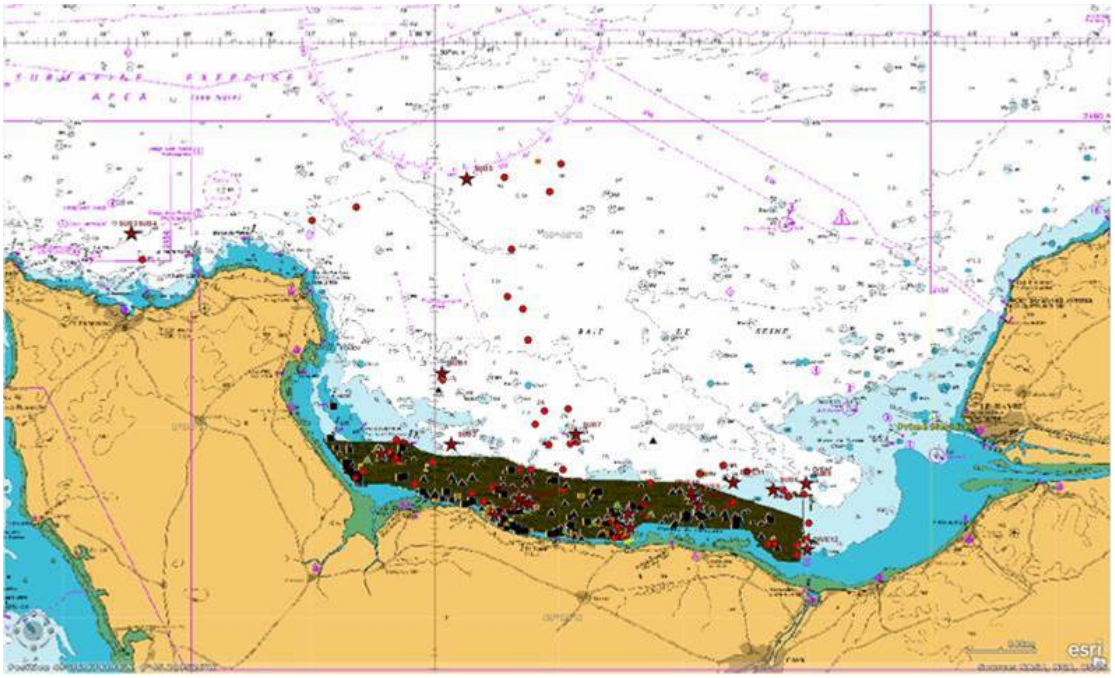



**Figure 3UKHO chart showing the area covered by the 2013 survey.**

## The Dive Sites

A list of dive sites has been agreed with the Dive Centre but there is the intention to dive a number of unknown/unidentified wrecks as suggested by Chris Howlett (UKHO). Depending on weather and tides these wrecks will be dived by part of the group in one of the 2 RIBs that are chartered for the diving.

The proposed list of the wrecks for Neptune week are:

1. Susan B Anthony
2. Empire Broadsword
3. Harpagus
4. Roseberry
5. Amsterdam - Fort Yale
6. Fort Norfolk
7. M39
8. HMS Lawford
9. Chaland or one of the LCT wrecks
10. A section of the artificial Mulberry B harbour

Some details of the wrecks are included in the attached Annex C.

In addition the following sites have been suggested by Chris Howlett in his email below for possible investigation;

> *Hello Alison, Catherine and Anthony,*
>
> *I have now, finally, managed to get hold of the data from the D-Day survey last year and can now look at it. If you are looking for some targets which are close to the shore, here are a few suggestions from my interest...*
>
> *Contact 32 at 49.384631, -0.564305 Identified as being a tank but it looks a bit odd.*

*Contact 246 at 49.395376, -0.887297 a bit far but interesting features of unknown type*

*Contact 221 at 49.385785, -0.860759 a bit far again but interesting unidentified feature*

*Contact 121 at 49.364283, -0.808717 still a bit far but a strange feature*

*Contact 213 at 49.373846, -0.677512 identified as a tank but it looks odd*

*Contacts 217 and 218 at 49.369069, -0.604975 these may be mooring shuttles, small craft used to help moor the whale bridges in the Mulberry Harbour. They may hold kite anchors and if so, Tim Beckett (the son of the kite anchor inventor Alan Beckett) would be very interested. Could be worth a dive to see.*

*Contact 32 at 49.384631, -0.564305 identified as being a tank but it looks odd. Maybe a clump anchor from a Phoenix caisson - if so will be a concrete cylinder.*

*Hope these give you some possible targets for an early dive*

*Cheers*

*Chris*

**Code of Conduct**

Having discussed the sensitivities surrounding diving on wrecks where many lives were lost both Catherine and I have agreed that we will draw up a code of conduct which will request all divers to abide by reminding them of the need to be respectful of the wrecks and not to tamper or remove any objects/artefacts. There is to be no wreck penetration during the expedition.

Similarly the Code of Conduct will recognise the nature of our collaboration – a truly multi-cultural / multinational group of divers and the need to consider others race/colour, gender, religious beliefs etc.

**Training and Experience Opportunities.**

There are two members of the Southern region Coaching team and a high proportion of Advanced Divers who will benefit from the learning opportunities presented by the expedition project in the event they wish to pursue their diving to First Class Diver. Also there are several Dive Leaders who are a significant way through their Advanced Diver training and will benefit in their experience of participating in a major expedition. Three members of the team are close to being signed off as Dive Leaders and if this is not achieved before the expedition starts then there may be the opportunity to finish their assessment during the trip. There will also be opportunities to learn and practice basic survey techniques.

**Financial estimate for the expedition**.

A financial estimate for the project has been prepared (see Annex D). The major elements of the total £6,901.00 of costs being ferry fares, diving and accommodation.

Ferry fares in the region of £1000 have already been paid at time of booking and deposits have been paid for the diving (952.20 Euro) and accommodation (675 Euro). Divers will also need to pay for meals/refreshments for the duration of the trip.

An application for BEGS funding is being made to BSAC HQ but no other financial assistance has been sought to date.

**Historical Research**

In order to assist with the underwater investigations and possible identification of wrecks, we plan to consult various subject matter experts and reference materials. We also intend to visit a number of museums and key places of interest whilst in France in order to gain a greater understanding of the events that took place in June 1944.

In particular we are keen to locate a Kite anchor used to secure Mulberry Harbour road sections both whilst in France but also in our Mulberry 70 project in Selsey.

**Communication and Outreach**.

Internal communications will be managed through regular briefings/meetings and also via the Club's Yahoo Group site. A expedition notice board has been set up at the Club house which has copies of presentations and interesting documents. Presentation will continue to be given to club members as required to inform of progress and work needed to make it a success.

Communications with Catherine and the Diving into France group will be via email and Facebook but also by phone as necessary.

A press release will be issued to local press/media and the SSAC web site (www.southseasubaqua.org.uk) will be regularly updated. Building on the success of earlier projects there is a good potential for continued public/media interest as well as the more specialised diving, archaeological, military and WW2 historical communities. This is a great opportunity to bring the activities of the club to peoples' attention and educate them in the results of the survey. This aspect will need to be carefully planned to make sure that the project, its findings, Southsea Sub-Aqua Club and the BSAC receive positive exposure as a result. We have recent experience of dealing with the publicity aspects in the local press and diving magazines/ publications. We also have an accomplished photographer and videographer who will be able to take video for tv etc and images for publication as well as recording the wrecks for the report. The PR and educational aspects of the Project are one of the key benefits and need to be maximised.

Early discussions have taken place with SCUBA editor Simon Rogerson who is interested in covering the expedition as a feature of the magazine. Interest has also been shown from a number of news and media companies, indeed two newspapers in the USA have already run a feature on one of the Diving into France participants. There is also the opportunity to reach out to the non-diving community particularly in such publications as Britain at War Magazine etc. Both Catherine and I have also been invited to speak at the 10th Irish Diving Conference in Tipperary next February to speak about our experiences.

**Outcomes, Documentation and Reports**

The following documents will be produced as a result of the project.

- Initial Report to the BSAC Expeditions officer within 2 months of the end of the expedition diving – ie by end of November 2014.
- Full Project report. Recording the programme of events, the actual data and information taken from the sites and the conclusions we have been able to draw from the information gathered during the whole expedition project. The report will include lessons learned through the execution of the project. The aim will be to complete the report by the spring of 2015 and will include
    - basic Site Plans,
    - survey results of the site and details of each wreck site.
    - Photographs and video of each of the wreck sites and diving activities.
    - Marine life survey observed throughout the expedition.
    - Results to support the possible identification of the wreck(s)
    - Diving log/record sheets and details of any incidents (hopefully none!).

  The report to UK Hydrographic Office, Ministry of Defence (Naval Heritage Branch). English Heritage, the National Monuments/Records Office, Receiver of Wreck, and D Day Museum.
- Articles for publication in magazines, newspapers etc local, historical and diving press.
- Final accounts for the Project.

The findings of survey and summary reports are to be included on the SSAC Web Site (www.southseasubaqua.org.uk ) so they will be freely available via the World Wide Web.

These documents will be a permanent record of our findings for years to come. Hopefully we will be able to draw some firm conclusions which will go some way to answering the many obvious questions that this site raises. It will also be a great achievement for the Branch in which all involved can be proud of.

**Summary**

Building on the experience and success of previous projects SSAC are keen to collaborate with a joint international expedition to dive the D Day wrecks of Normandy. We hope to add to the public record as a result of our diving and historical investigations and to promote the best of diving opportunities within a BSAC Branch. It will also be an opportunity to make new friends, develop diving and project management skills and learn more about this key period of World history..

Alison Mayor

Southsea Sub-Aqua Club BSAC 0009
Expedition Leader and BSAC Southern Region Projects and Expeditions Adviser
July 2014

Enclosures;
Annex A – Expedition participants SSAC and Dive into France teams
Annex B – Matix Risk Assessment
Annex C – Dive Plans and Sites
Annex D – Financial Estimate

**ANNEX A**

# EXPEDITION TEAM

| | SURNAME | FORENAME | GRADE | Nationality |
|---|---|---|---|---|
| 1 | Mayor | Alison | BSAC Advanced - CMAS*** | British (Southsea SAC) |
| 2 | Davies | Martin | BSAC Advanced - CMAS*** | British (Southsea SAC) |
| 3 | Watkins | Jennifer | BSAC Advanced - CMAS*** | British (Southsea SAC) |
| 4 | Watkins | Robert | BSAC Advanced - CMAS*** | British (Southsea SAC) |
| 5 | Carter | William Douglas | BSAC Dive Leader - CMAS** | British (Southsea SAC) |
| 6 | Barnard | Dawn | BSAC Dive Leader - CMAS** | British (Southsea SAC) |
| 7 | Mariamootoo | Roger | BSAC Dive Leader - CMAS** | British (Southsea SAC) |
| 8 | Bessell | Alison | BSAC Sports Diver - CMAS** | British (Southsea SAC) |
| 9 | Rayiru | Mark | BSAC Sports Diver - CMAS** | British (Southsea SAC) |
| 10 | Keating | Brendan | BSAC Sports Diver - CMAS** | British (Southsea SAC) |
| 11 | Mathers | Christopher | BSAC Dive Leader - CMAS** | British (Southsea SAC) |
| 12 | Bower | Derek | BSAC Dive Leader - CMAS** | British (Southsea SAC) |
| 13 | Fuller | Jim | BSAC Advanced - CMAS*** | British (Southsea SAC) |
| 14 | Templeton | Tom | BSAC Advanced - CMAS*** | British (Southsea SAC) |
| 15 | Connors | Catherine | FFESSM N2 - PADI Dive Master | Dive into France (Ireland) |
| 16 | Bambara | Kevin | FFESSM N3 | Dive into France (Burkina Faso Africa) |
| 17 | Spencer | David | FFESSM N2 - PADI Rescue | Dive into France (UK) |
| 18 | Normile | Patrick | CMAS Moniteur *** | Dive into France (Ireland) |
| 19 | Brady | Peter | CMAS Moniteur **** | Dive into France (Ireland) |
| 20 | Bolger | John | CMAS Moniteur** | Dive into France (Ireland) |
| 21 | Casquero Alvarez | Marta | CMAS N2 - Rescue Speciality | Dive into France (Spain) |
| 22 | Gauci | Anthony | FFESSM N4 | Dive into France (Wales) |
| 23 | Queenbourgh | Jemma | PADI Advanced | Dive into France (UK) |
| 24 | Grealish | Corinne | PADI Rescue | Dive into France (USA) |
| 25 | Piguet | Michel | FFESSM N2 | Dive into France (France) |

**ANNEX B**

# MATRIX RISK ASSESSMENT

| LOCATION | Diving Operations – Swimming Pool/Dive Site |
|---|---|

**ASSESSMENT CARRIED OUT BY:**

| NAME | SIGNATURE |
|---|---|
| Tom Templeton | |
| **DESIGNATION** | **DATE** |
| Vice Chairman Southsea Sub Aqua Club | 18 Dec 13 |

| SER No./ Location | AREA/ ITEM | HAZARD | WHO IS AT RISK | Probability / Severity | Risk Rating | CONTROL MEASURES | REDUCED RATING NO. | DATE CLEARED / REVIEW DATE |
|---|---|---|---|---|---|---|---|---|
| 001 | Dive Site | Traffic. Impact injuries from moving & stationary vehicles | All | 2<br>3 | 5 | Advice of hazard. Site briefing, supervision. Individuals to exercise care and maintain a good lookout | 4 (1+3) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 002 | Dive Site | Loading & unloading from vehicles. Sprains & strains from incorrect lifting. Crush injuries from dropped equipment. | All | 3<br>2 | 5 | Manual handling techniques and load sharing. Use of trolley for heavy equipment . Supervision during lifting activities. | 2 (1+1) **LOW** | 10 Sep 13<br>10 Sep 14 |
| 003 | Swimming Pool/ Dive Site | Slip, Trip and Fall. Sprains, impact fractures & drowning from slipping or tripping | All | 3<br>3 | 6 | Site briefing, advice & supervision. Non-slip floor all areas. Grazing of skin possible on contact with non slip surface. Uneven surfaces clearly marked. | 3 (1+2) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 004 | Swimming Pool/ Dive Site | Entry & Exit. Impact & crush injuries. Drowning | Divers | 2<br>3 | 5 | Advice & supervision of entry & exit by Instructors & Supervisor. Ensure appropriate depth of water for type of entry. | 3 (1+2) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 005 | Hard | Entry & Exit. Impact & crush | Divers | 2 | 5 | Physical assistance facing diver from seat to | 3 | 18 Dec 14 |

**ANNEX B**

| SER No./ Location | AREA/ ITEM | HAZARD | WHO IS AT RISK | Probability / Severity | Risk Rating | CONTROL MEASURES | REDUCED RATING NO. | DATE CLEARED / REVIEW DATE |
|---|---|---|---|---|---|---|---|---|
| | Boat/ Quayside | injuries from HEAVY fall to deck whilst fully kitted. Applies particularly to Technical OC and CCR Hypoxic Trimix divers with multiple stages sidemounted on entry, but is applicable to anyone suffering a Heavy fall. | | 3 | | point of entry. Consider fitting fins seated adjacent to entry point. MAIB recommendation 2013/245<br>In the event of a fall DELAY entry, de-kit and carry out a full secondary survey with particular emphasis on signs & symptoms of blunt force trauma to the abdominal area. If in any doubt ABORT the dive and seek medical advice. | (1+2)<br>**MEDIUM** | 10 Sep 14 |
| 006 | Dive Site | Poor in-water visibility. Buddy separation. Lost diver(s) | Divers | 2<br>3 | 5 | Use of Buddy lines. Abort dive if unsafe. Follow separation guidelines BSAC Safe Diving Practise | 2<br>(1+1)<br>**LOW** | 10 Sep 13<br>10 Sep 14 |
| 007 | Dive Site | Poor surface visibility. Separation from buddy or dive boat | Divers | 2<br>2 | 4 | Use SMB when safe to do so. Access to signalling equipment/ flares/PLB. Recall procedures briefed by dive manager | 2<br>(1+1)<br>**LOW** | 10 Sep 13<br>10 Sep 14 |
| 008 | Swimming Pool/ Dive Site | Equipment malfunction. Injury or death due to panic or rapid ascent | Divers | 2<br>3 | 5 | All equipment maintained within the manufacturers' guidelines (annually) and functionally tested before use. Cylinders in date for test and O2 service where appropriate. Equipment use to remain within designed operating envelope. | 2<br>(1+1)<br>**LOW** | 10 Sep 13<br>10 Sep 14 |
| 009 | Swimming Pool/Dive Site | Buoyancy control. Injury or death due to panic and rapid ascent<br>(Breath holding over as little as 1.4 metres at this depth (4m) will cause a lung over-expansion injury) | Divers | 3<br>3 | 6 | Close supervision by diving instructor and certified assistant to control buoyancy of students (RISK to buoyancy control, DANGER of breath holding) | 4<br>(1+3)<br>**MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 010 | Swimming Poo/Dive Site | Out of Air. Suffocation or drowning | Divers | 2<br>3 | 5 | Close supervision by diving instructor and certified assistant to monitor student cylinder air pressures (RISK of out of air emergency) | 4<br>(1+3)<br>**MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 011 | Swimmin | Hypothermia & hyperthermia. | Divers | 2 | 4 | Use correct size exposure protection to suit | 3 | 10 Sep 13 |

**ANNEX B**

| SER No./ Location | AREA/ ITEM | HAZARD | WHO IS AT RISK | Probability / Severity | Risk Rating | CONTROL MEASURES | REDUCED RATING NO. | DATE CLEARED / REVIEW DATE |
|---|---|---|---|---|---|---|---|---|
| | g Pool/ Dive Site | Cold water shock or dehydration/overheating | | 2 | | prevailing conditions. Modify exposure times & fluid intake accordingly | (1+2) **MEDIUM** | 10 Sep 14 |
| 012 | Swimming Pool/ Dive Site | Overhead Environment. No direct access to surface. Entrapment. Loss of visibility, safety line, exit & buddy | Divers | 3<br>3 | 6 | Avoid entry into overhead environment unless suitably trained and equipped. Distance line for penetration. Blue window. Appropriate finning techniques to avoid disturbing silt. | 4 (1+3) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 013 | Swimming Pool/ Dive Site | In-water Hazards. Impact & crush injuries, entrapment & drowning | Divers | 3<br>3 | 6 | Site briefing, advice & close supervision (incl gas consumption) by diving instructor and certified assistant. Pool to be clear of all hazards | 4 (1+3) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 014 | Dive Site | Sharp objects, fishing line & nets. Puncture wounds & entanglement | Divers | 2<br>2 | 4 | Site briefing, advice & supervision. Spatial awareness. Carry sharp knife and net/line cutters. | 3 (1+2) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 015 | Dive Site | Surface hazards. Impact & propeller injuries from boat traffic | Divers | 3<br>3 | 6 | Use of DSMB or shot on ascent. Advice on hazard. Buoyancy control, hand up first & 360 degree turn on surfacing. Coxswain awareness and policy of engine in neutral whenever divers are deployed and recovered | 4 (1+3) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 016 | Dive Site | Loss of shot line on decent or ascent. Loss of buddy, dive site or surface cover. Rapid ascent or descent, panic & injury | Divers | 2<br>3 | 5 | Correct use of shot iaw training. Briefing, advice & supervision | 4 (1+3) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 017 | Dive Site | Loss of surface cover. Engine failure. Missing divers resulting in hypothermia & drowning | Divers | 2<br>3 | 5 | Properly maintained & serviced engine. Coxswains trained in emergency engine repair.Operating with other vessels when possible. Use of SMB on non-wreck dives. Use of DSMB when not returning to shot. Access to signalling device eg PLB | 4 (1+3) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |
| 017 | Dive Site | 30m depth. Increased risk of DCI, burst lung, Nitrogen narcosis & drowning | Divers | 2<br>3 | 5 | No dives deeper than 30m unless for specific training or unless suitably trained & equipped. Strict adherence to decompression obligation and backup tables to be cut for each dive. Medical Oxygen provision. | 3 (1+4) **MEDIUM** | 10 Sep 13<br>10 Sep 14 |

**ANNEX B**

| SER No./ Location | AREA/ ITEM | HAZARD | WHO IS AT RISK | Probability / Severity | Risk Rating | CONTROL MEASURES | REDUCED RATING NO. | DATE CLEARED / REVIEW DATE |
|---|---|---|---|---|---|---|---|---|
| 018 | Dive Site | Current, tide & swell. Separation from buddy, dive site and surface cover. Rapid ascent or descent leading to panic, injury or death | Divers | 2 / 3 | 5 | Site check by Dive Manager before dive to include analysis of weather forecast and tidal information. Briefing, advice & supervision. Abort dive if unsafe | 4 (1+3) **MEDIUM** | 10 Sep 13 / 10 Sep 14 |
| 019 | Swimming Pool/ Dive Site | Increased risk due to lack of maturity, life experience and training | Children and vulnerable adults | 3 / 3 | 6 | CRB checks and increased awareness for instructors to respect the increased challenge to the young and vulnerable. Code of practice in place to ensure appropriate treatment. | 4 (1+3) **MEDIUM** | 10 Sep 13 / 10 Sep 14 |

**Annex C**

## DIVE PLANS AND SITES

The temperate water conditions of Normandy are very similar to those experienced along the South Coast of England although the tidal range is significantly larger. The diving operations will be dependent on weather and tidal conditions. The tide times for the area are as follows;

1594 Arromanches
49°21'N, 0°37'W France 15 September 2014 GMT Daylight Time (UTC + 01:00)
Data Area 1. Europe, Northern Waters and Mediterranean Version 3

| 15/09/2014 | | | 16/09/2014 | | | 17/09/2014 | | | 18/09/2014 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Time | Height | | Time | Height | | Time | Height | | Time | Height |
| High | 01:48 | 6.7 m | High | 02:45 | 6.3 m | High | 03:53 | 5.9 m | High | 05:18 | 5.7 m |
| | 14:10 | 6.6 m | | 15:08 | 6.2 m | | 16:20 | 5.8 m | | 17:47 | 5.7 m |
| Low | 08:53 | 2.0 m | Low | 09:36 | 2.5 m | Low | 10:41 | 2.9 m | Low | 12:10 | 3.1 m |
| | 21:17 | 2.2 m | | 22:10 | 2.6 m | | 23:30 | 2.9 m | | | |

| 19/09/2014 | | | 20/09/2014 | | | 21/09/2014 | | |
|---|---|---|---|---|---|---|---|---|
| | Time | Height | | Time | Height | | Time | Height |
| High | 06:53 | 5.8 m | High | 08:00 | 6.1 m | High | 08:39 | 6.5 m |
| | 19:11 | 5.9 m | | 20:05 | 6.3 m | | 20:39 | 6.6 m |
| Low | 00:54 | 2.8 m | Low | 02:02 | 2.5 m | Low | 02:56 | 2.1 m |
| | 13:28 | 2.8 m | | 14:29 | 2.4 m | | 15:19 | 2.0 m |

**Figure 4 Tidal data for Arromanches - source Admiralty total Tide.**

It is planned to undertake 2 dives per day. Indicative dive plans have been produced to reflect a typical diving day as a part of the survey exercise – using Nitrox 36% (using BSAC Nitrox tables). For twin set and Re-breather divers a longer dive time may be possible.

**Annex C**

## Dive Plan

## Dive Plan Nitrox 32% (MOD 36m PPO2 @ 1.44) level 1

**Dive 1**

| **CTC** | **A** | | | | |
|---|---|---|---|---|---|
| | **Depth** | **Dive time** | **9m stops** | **6m stops** | **Surfacing Code** |
| **Plan** | 30 | 25 | - | - | F |
| **Just Longer** | 30 | 30 | - | 1 | G |
| **Just Deeper** | 32 | 25 | | 1 | G |
| **Worst Case** | 32 | 30 | | 1 | G |

Surface Interval 5 hours

**Dive 2**

| **CTC** | B | | | | |
|---|---|---|---|---|---|
| | **Depth** | **Dive time** | **9m stops** | **6m stops** | **Surfacing Code** |
| **Plan** | 30 | 20 | | 1 | G |
| **Just Longer** | 30 | 25 | | 1 | G |
| **Just Deeper** | 32 | 20 | | 1 | G |
| **Worst Case** | 32 | 25 | | 3 | G |

In reality divers will have the opportunity to use decompression techniques or rebreather etc to extend bottom time though each diver will be required to agree their dive plan with the Diving Officer or his appointed dive manager. The minimum cylinder size will be 15L.

## Dive Sites


**USS Susan B Anthony**

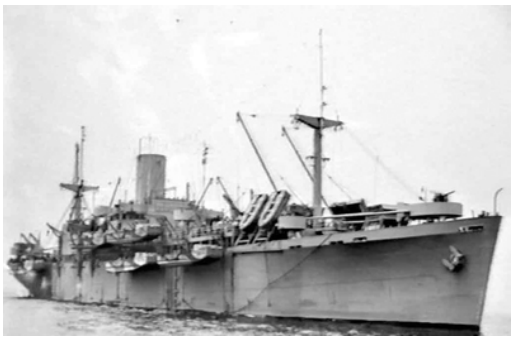
The Susan B Anthony was originally built as a combined cargo/passenger liner, the SS Santa Clara, then acquired by the US Navy, converted to a troop carrier and renamed Susan B Anthony after a women's rights activist. As a troop ship, the Susan B Anthony was fitted with gun platforms front and rear, strengthened davits for carrying landing craft, and many large windows and portholes replaced with grey featureless steel. On 7 June, one day after the landings, The Susan B Anthony ran into a mine that pierced the bottom of the number 4 hold. The ship now lies collapsed to port in 29 metres, but with the deck and remains of the superstructure mostly upright and standing 10 metres clear of the seabed in places. Interior bulkheads have decayed to leave just the more substantial ribs, providing cavernous areas to swim through beneath the superstructure. With the keel damaged by the mine explosion the stern has pretty much split from the rest of the wreck. At the other end of the ship the bows have fallen to port, with the gun platforms and guns still in place, though the anchor winch has broken loose and now rests amidst a pile of chain beneath one of the gun platforms.

**SS Empire Broadsword**

Empire Broadsword was a Type C1-S-AY-1 infantry landing ship built in 1943 as Cape Marshall. She was renamed Empire Broadsword before completion and entering into service for the Ministry of War Transport (MoWT). She had a short career, entering service in December 1943 and being sunk by a mine in July 1944.

Construction - The ship was built by Consolidated Steel Corporation, Wilmington, California as yard number 348. She was launched on 16 August 1943 as Cape Marshall. She was 396 feet 5 inches (120.83 m) long, with a beam of 60 feet 1 inch (18.31 m) and a depth of 35 feet (10.67 m). She was propelled by two steam turbines which drove a single screw via double reduction gearing. The steam turbines were manufactured by Westinghouse Electrical and Manufacturing Corp, Essington, Pennsylvania.

Career - The ship was transferred under the terms of lend lease shortly after being completed in 1943 under the name Empire Broadsword. She was chartered by the MoWT, and was operated under the management of Cunard White Star Line. The Empire Broadsword was mined and sunk off Normandy while supporting the allied invasion of Europe. Her position is 49°25′N 0°54′W. Seventy survivors were rescued by USS PC-1225. The wreck lies on its starboard side in 27 metres (89 ft) of water and is now a



dive site. Those lost on Empire Broadsword are commemorated at the Tower Hill Memorial, London.

**Harpagus**

English freighter sank in August 1944 by a mine in front of the Mulberry B at Arromanches. The site is marked by a buoy called "Harpagas" very close to the Phoenix caissons artificial harbour. Best known for bottles of whiskey it still contains.

**The Amsterdam**

The hospital ship sank on August 7 when she sustained injuries at Gold Beach. Her wreck lies at a depth between 20 and 27 meters to 6 miles north-east of Arromanches. The neighbouring wreck is called Fort Yale.

**HMS Lawford**

This American destroyer was torpedoed by the Luftwaffe June 8, 1944 and sank 12 miles northwest of Ouistreham. The wreck lies in three pieces and is spread over a hundred meters.

**Fort Norfolk**

This cargo Canadian steamer struck a mine June 24, 1944. The wreck lies between 24 and 32 meters. We rarely have the opportunity to admire a wreck as bright as this one because it is illuminated by light reflected from the blond sand.

**LMC**

Landing Craft Mechanised 35-115 tonnes, versatile landing craft capable of carrying tanks and soldiers.

**Landing Ship Tanks and Barges**


Landing ship par excellence, capable of depositing troops and tanks directly on to the beach. At least 4 in the area that can be dived by the same club.

**LCT**

Landing Craft Tank: Small landing craft tanks

**The M39**

Dredger torpedoed on June 24 It sank north of Courseulles at a depth of 20-26 meters.

**Mulberry B**

Pontoon - Sections of the British artificial harbour

**Annex D**

## Financial Estimate

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Normandy Expedition - Estimated costs** | | | | | | | |
| | | | | | | | |
| **Travel to and in France** | | | | | | | |
| | Ferry for 3 large vehicles (incl passengers) | | | £ | 921.00 | | |
| | Cabins/seats | | | £ | 200.00 | | |
| | Insurance & Breakdown | | | £ | 150.00 | | |
| | Fuel etc | £150 per vehicle | | £ | 450.00 | | |
| | | | | **£** | **1,721.00** | | £ 1,721.00 |
| **Diving** | Mon 15th to Fri 19th | | 20 Euro per dive | | | | |
| | 10 dives per person | | est £16 per dive | £ | 160.00 | | |
| | 14 divers | | | | | £ 2,240.00 | |
| | Misc diving cists (gas | | est £50 per diver | | | £ 700.00 | |
| | | | | | | **£ 2,940.00** | £ 2,940.00 |
| **Accommodation** | | | | | | | |
| | Sat 13th to Sun 21 | | 25 Euro per night | | | | |
| | 8 nights per person | | est £20 per night | £ | 160.00 | | |
| | 14 divers | | | **£** | **2,240.00** | | £ 2,240.00 |
| | | | | | | | |
| **Food / Refreshments etc** | | | | | | | |
| | 10 Days per person | | £20 per day | £ | 200.00 | | |
| | 14 divers | | | **£** | **2,240.00** | | £ 2,240.00 |
| | | | | | | | |
| | | | | **Total Estimated Cost** | | | **£ 6,901.00** |