

BRITISH SUB-AQUA CLUB

EXPEDITION PLAN



Dorset Shipwreck Project

19 – 22 May 2018

Expedition Leader: Cameron Cromwell

Mob: [REDACTED]

Email: [REDACTED]

Expedition Aims

The aim of this expedition is to locate and identify at least one of several wrecks in the Portland Bill area. We will be following up on information obtained from the Shipwreck Project, which has identified a number of interesting but unconfirmed targets. Sadly the Shipwreck Project was closed down last year due to lack of support, so there is no longer a database in which to contribute. However, we will be comparing our information with information previously provided by the English Heritage and Wessex Archaeology.

The targeted shipwrecks have yet to be identified, most with considerable conflicting information and opinions as to the name of the ship. It will take detailed surveys and subsequent research and exchanging of information to put enough pieces together to confidently draw conclusions. Most wrecks were wooden, so the surveys will be of remaining contents of the ships, such as guns, mortars, and even some ivory tusks. See ***Appendix 1*** for a list of target wreck sites.

Through the Shipwreck Project there is detailed sonar data of objects recorded for the target shipwrecks. This information is proprietary to a small collection of individuals involved with the Shipwreck project and it is not available to the public. This is because of the significant cost and time associated with hiring a towed sonar to survey the coastline. Since then, some of the wrecks have been dived by individuals interested in 'just a visit and a look' without gathering any useful data. We will be building on the survey information by underwater searching, mapping, and identifying the remains of the wrecks to the fullest extent possible.

This will hopefully lead to the identification of at least one wreck through subsequent research or by sharing the information and encouraging subsequent investigations by divers.

The data will be collected with the aim of submitting a written article for publication in the BSAC magazine. As well as collecting and sharing of information, it is hoped that this expedition will actively promote further interest by other divers to continue with searching, surveying and supporting the identification of wrecks along the Dorset coast.

Area Overview/conditions



Area

The targeted dive sites are on either side of Portland Bill, which will allow us to move to one side or the other depending on conditions. All sites are within sight of land. Most of the wrecks are a result of storms blowing up from the South and driving the ships onto the rocks.

The average depth of the wrecks is 22 to 32 metres. Mixed gas diving is not necessary, although we will be seeking to extend bottom times as much as possible to survey and collect as much data as possible. Therefore diving on Nitrox is preferred.

Weather

The area is vulnerable to weather systems in the Atlantic and specifically low pressure systems typically to the West or Southwest of England. The dives sites are vulnerable to Southerly winds; however, dive sites have been selected on either side of Portland Bill so that if we have Easterly winds then we will operate on the Western side and vice versa.

In the event of Easterly or Westerly wind prevents diving anywhere except close in to land, we have the option to dive close to shore on either side of Portland Bill. There are remains of more commonly dived wrecks along the shore of either side. We would have the option to survey these wrecks to determine their current condition and compare them to the wreck's condition as described over the years. All dive sites are within sight of land and up-to-date Met Office weather forecasts will be obtained each morning. The Solent Coast Guard will be notified of our daily dive plan.

Current

This expedition will be closer to Neaps and sufficient slack time should be achievable. The two primary target sites (Lyme Bay Cannon Site and Brandy Wreck) located on either side of Portland Bill have extended slack periods and can be double dived within a certain six hour period. The other sites have a smaller slack time, some diveable on both sides of H.W. but at least one is diveable only on H.W slack. Therefore it will be important to carefully plan each day's timetables and ensure that we remained disciplined in our running times.

Tidal streams will be assessed against H.W. Weymouth using a Tidal Stream atlas between Portland Bill and St Alban's Head. This will be doublechecked with the local knowledge of the skipper when finalising the timetable for each day's diving.

Visibility

Visibility can vary considerably, from 1-10m. There can often be a variance between site locations around the Portland Bill. Therefore if visibility is particularly poor at one site, making it too difficult to achieve the intended survey results, we may find an alternative site with better visibility.

Temperatures

The average water temperature in the area for this time of year is 10-12deg C. Therefore divers should bring adequate thermal protection for extended dives at this temperature.

The average air temperature in the area for this time of year is 12deg C., but typically can vary from 9deg to 15deg C. Adequate warm clothing is needed while on the boat.

Diving Overview



Target Site Areas in circled areas

The primary target for surveying is the Lyme Bay Cannon site, located due West of Portland Bill. Should conditions become unfavourable for surveying this wreck (weather and/or visibility) the primary alternative target site will be the Brandy wreck to the East of Portland.

Four other sites: the Fog Wreck, the Anworth, the Arfon, and the Netley Appey, are back-up sites should they be required. The map above shows the areas where all potential sites are located, with approximate locations of the Primary target and first back up sites.

The plan is to focus on one site to gather as much meaningful information as possible ensuring the greatest chance of identifying the wreck. We will map as wide an area as possible until we believe we have identified the full extent of the wreck site. If we are satisfied that we have located all possible related objects before the end of the expedition we will move onto one of the other back up sites. We may also dive alternative sites when the primary slack times are not practical.

The expedition is based around 10 divers due to the amount of equipment (twin sets, rebreathers, and cylinders for 2nd dives, etc.)

We plan to do two dives per day. Bottom times will be extended (within Safety Guidelines) so as to maximise the survey results and improve the chances of being able to identify at least one wreck by the end of the expedition. For OC divers run times will likely be limited by available gas (maintaining rule of thirds discipline), but in some cases dive times will be limited by slack window. Rebreather divers will likely be limited by the slack windows.

Divers should anticipate some decompression requirements; however, it is intended that decompression dives will not exceed more than two days in a row. Using a good Nitrox mix is encouraged to maximise bottom time while minimising multiple decompression dives.

There will be a mix of OC twin set divers and CCR divers. To the extent possible CCR divers will be paired together and OC divers paired together.

Diver Details

Name	Club	Grade	CCR or Twinset	Sat 19 th	Sun 20 th	Mon 21 st	Tues 22 nd
Cameron Cromwell	Aldershot	AD/FCD Prep/AI	Twinset	1	1	1	1
Julian Gill	Aldershot	AD/OWI	Twinset	2	2	2	2
Geoff Downer	Aldershot	AD/OWI	Twinset	3	3	3	3
Dave Baker	Richmond	DL	Twinset	4	4	4	4
John Beirne	Richmond	DL/AOWI	Twinset	5	5	5	5
Dave Lock	iDive	FCD/NI	CCR	6	6	6	6
Martin Royal	Ipswich	AD/AI	CCR	7	7	7	7
John Taylor	Aldershot	DL/OWI	Twinset	8	8	--	--
Mark Saxby	Aldershot	DL/AOWI	Twinset	9	9	--	--
Guilhem Duprat	Richmond	DL	Twinset	10	10	--	--
Mark Paisey	East Cheshire	FCD/Area Coach/NI Prep	CCR	--	--	8	8
Simon Smith	Tyneside	FCD/NI Prep	CCR	--	--	9	9
Steve Batt	Guildford	FCD/NI prep		--	--	10	10

Travel

It is expected that divers will make their own travel arrangements to get to Portland and Weymouth. Ideally divers will car share with other divers travelling from the same area to help keep costs down.

Please try to arrive Friday evening in time for the project brief.

The meet point for Day 1 is the Wey Chieftain (see timetable below). The first dive is a little later because the available slack window for the primary site is too early to make, so we will be diving the alternative site in the morning, which has a later slack.

It may be necessary to meet somewhere different with adequate space for dry runs, unless we are able to complete them the prior evening. This will be determined and communicated by the next day's Dive Manager.

Expedition Outline Times (Initial Planning)

<u>Date</u>	<u>Time</u>	<u>Activity</u>	<u>Notes</u>
Friday, 18 th	2000	Meet & Expedition Briefing	Finalise survey technique + agree dive plans for Day 1
Saturday, 19 th	0730 0745 0845 1700 1830 1930	Meet at boat DM Brief + dry runs Ropes off Return to Port Dinner Expedition de-brief	Dave Lock Cylinder drop off Team Curry Cameron / Dave L
Sunday, 20 th	0600 0630 0700	Collect cylinders DM Brief Ropes off	John Taylor Mark Royal

	1700 1830 2000	Return to Port Expedition de-brief Dinner	Cylinder drop off Cameron / Mark Individual
Monday, 21 st	0630 0700 0730 1700 1830 2000	Collect cylinders DM Brief Ropes off Return to Port Expedition de-brief Dinner	John Taylor Geoff Downer Cylinder drop off Cameron / Geoff Team Curry
Tuesday, 22 nd	0730 0800 0830 1600 1700	Collect cylinders DM Brief Ropes off Return to Port Expedition de-brief	John Taylor Julian Gill Cylinder drop off Cameron / Julian

Note: It is likely that these times will be adjusted once the expedition is underway and we have a better feel for what is needed. If so, the Dive Manager for the Day will ensure any changes are communicated to everyone.

Although it is possible that we will return to port between dives it is better to assume we will not for the time being. Therefore food, water, sunscreen, spare gas, etc. should be brought onto the boat. The 1st dive of the day debriefed and the 2nd dive briefing while on the boat.

Accommodation

Rooms have been booked at Hotel Aqua as per the schedule below. Each diver must settle their account prior to departing.

Address: Hotel Aqua Castletown, Portland DT5 1BD

Phone: 01305 860269

Website link for location: <http://hotelaqua.co.uk/find-us/>

Hotel Aqua							
No.	Name	Fri 18th	Sat 19th	Sun 20th	Mon 21st	Tue 22nd	Room Pref
1	Cameron Cromwell	Yes	Yes	Yes	Yes		Twin
2	Julian Gill	Yes	Yes	Yes	Yes		Twin/Triple
3	Geoff Downer	Yes	Yes	Yes	Yes		Twin/Triple
4	Mark Saxby	Yes	Yes	Yes	Yes		Twin/Triple
5	Dave Baker	Yes	Yes	Yes	Yes		Twin/Triple
6	John Beirne	Yes	Yes	Yes	Yes		Twin/Triple
7	Dave Lock	Yes	Yes	Yes	Yes	Yes	Twin
8	Martin Royal	Yes	Yes	Yes	Yes	Yes	Twin
9	John Taylor	Yes	Yes				Twin
10	Guilhem Duprat	Yes	Yes				Twin/Triple
11	Mark Paisey			Yes	Yes		Single
12	Simon Smith			Yes	Yes		Twin/Triple
13	Steve Batt			Yes	Yes		Twin/Triple

Cost of accommodation is provided in '**Cost**' section below, page 12.

Food

Breakfast is included in the hotel price. Lunch and drinks will need to be taken on the boat because we will not be returning. Dinner will be up to individuals although we will aim for team dinners at least on Saturday and Monday night. There is pub food served at the hotel or across the street at *Breakwater Hotel*. There are also other restaurants and pubs nearby.

Food and water while out on the boat will be organised by one of the expedition divers. See *Appendix 4*.

DIVE LOGISTICS

Dive Boat

We will be using the Wey Chieftain IV, which is moored in Weymouth's historic Old Harbour, just opposite The Old Rooms pub – **Weymouth DT4 8TT**.



The boat is designed to carry up to 12 fully equipped divers, so with 10 divers we will have enough space to be comfortable.

The skipper is Richard Bright-Paul, mobile 0790 3730195, email weychieftain4@yahoo.com.

Parking

The parking immediately alongside the quay and in Hope Square has a one hour restriction. However, the parking is free and unrestricted in all the roads behind Hope Square. There are also numerous car parks behind Brewers Quay, in Nothe Parade and along the North Quay.

On days when we will be returning to our accommodations please try to car share to make logistics more straightforward.

Loading / Unloading

It is possible to bring your car alongside the boat by using a short ramp from the roadside to where the boat is moored. A designated diver (see Appendix 4) will be responsible for coordinating loading, diver locations on boat, kit and spare cylinder storage, and unloading. This is to help with efficiency of time to better keep to the important time table.

Toilets

There are public toilets just next to the Old Rooms pub (just 20m from the boat) which can be used when we are in port.

Gas

Day 1: Divers are requested to bring full cylinders with them, including decompression gasses for two dives. OC divers may choose to bring additional cylinders to 'top up' their twin sets. The second dive of the day will be adjusted as appropriate to accommodate the available gas of each buddy pair.

The maximum depth of the two primary target sites is 30M. Divers may determine their own Nitrox, bearing in mind the above PO₂ limits, and should ideally match their buddy. Divers should either plan on diving with Nitrox as back gas or Air with a rich Nitrox stage bottle for accelerated decompression. This is to safely maximise survey time per dive.

Day 2 – 4: Gas refills are available from the Old Harbour Dive Centre which is located approximately 80m along the Quayside from where we load/unload the boat. Large trollies are available to transport your bottles to/from the Dive Centre.

Dive Centre contact details are as follows:

Old Harbour Dive Centre, 11 Nothe Parade, Weymouth, DT4 8TX

Phone: 01305 760 888, Email: info@diveweymouth.com

Opening Hours: 09:30 to 16:30

Coordination of gas fills within available hours will be organised by one of the expedition divers. (*See Appendix 4.*) It will be necessary to arrange out of hours drop off with the dive centre. If this is not possible there are other gas fill stations in the area that may operate longer hours and typically accommodating if advanced arrangements are made.

Diver qualifications

- Minimum Dive Leader
- OC Accelerated Decompression Procedures preferred but not mandatory
- Twin set diver
- Or CC Diver to 30M

Diver safety

- We will follow BSAC safe diving practices.
- Maximum run times to be agreed with the Dive Manager and divers are expected to be disciplined enough to return to the surface on time.
- Maximum PPO₂ of 1.4; maximum decompression gas 1.6 but 1.4 encouraged.
- O₂ tracking and recorded max 80%.
- Scrubber duration to be accurately tracked and used conservatively
- All gas analysed by the diver using it and clearly labelled.
- Bottom gas rule of 1/3rd as reserve, Deco gas ½ as reserve.
- All diving pairs to send up a DSMB once they leave the bottom. Separated divers shall each send up a DSMB.
- A second yellow DSMB attached to the first DSMB, or any colour 2nd DSMB if agreed with DM, (rabbit ears) will be used to signal a problem. Slates with nature of problem written on them and attached to the emergency DSMB is recommended.

Equipment

All divers will use either OC twin set ideally (for extended bottom time and independent gas supply for safety) with 36% Nitrox or Closed-Circuit Rebreather with appropriate bailout.

In the event of foul weather, other than strong Southerly winds, whereby we decide to survey wrecks close to Portland Bill, twin set diving and/or stage bottles will not be necessary and single cylinder may be preferable. All other equipment requirements will be the same, e.g. distance line, tape measure, slate, camera, etc.

Expedition Kit

Charter Boat

- O₂ kit by Charter Boat
- Shotline x 2 provided by Charter Boat
- First Aid Kit by Charter Boat

Expedition Team

- 2nd O2 kit by Expedition Team
- AED by Expedition Team
- O2 Analyser by Expedition Team

Individual kit (come gassed for first dive including stages)

- Twin sets or CCR
- Compass
- Distance line/s
- Slate for recording survey data
- Red DSMB plus red spare + yellow DSMB
- Surface signal - whistle or horn
- Secondary surface signal eg flag or EPIRB
- Torch
- Knife / cutters
- Warm, protective, clothing for on the boat
- OC Divers – 2nd cylinder for topping up twin sets or diving shallower
- If you have, please bring:
 - Underwater camera
 - Measure stick for referencing in photos
 - Tape measure for use underwater

Expedition management

The Expedition Leader (EL) will assume overall responsibility for the expedition, including diver safety. The EL will delegate individual dive management responsibilities to other experience divers on a rotating basis (*see Appendix 4*). The EL will work with the Dive Manager to ensure overall objectives of the day are met. Dive Managers are responsible for coordinating with the skipper and getting is acceptance of the dive plan.

Other responsibilities (*see Appendix 4*) will be shared amongst divers to ensure greater efficiency because it will be important that we stick to the time tables. Likewise the Dive Manager will assign specific tasks for each diver. All divers on the expedition are experienced enough to carry out assigned tasks as required.

Navigation

The skipper of the Wey Chieftain is responsible for navigating to the GPS coordinates of the target site. Because the skipper is very experienced navigating in the areas and we will be within sight of land at all times, excepting a fog system or weather front catching up to us, navigation will primarily be pilotage. Nevertheless, passage plans will be prepared each day and maintained. If need be, we can use compass for navigating.

The below table provides an outline of the primary site and back up sites navigation.

Site	GPS Position	Distance *	Bearing Deg Mag (Reciprical)	Travel Time @ 15 Knots
Lyme Bay Cannon Wreck	50° 32.636 N 02° 31.110 W	1.4 Nm 3.0 Nm 2.8 Nm	161 (341) 215 (035) 311 (131)	5.5 min 12 min 11 min
Brandy Wreck	50° 32.835 N 02° 20.977 W	3.0 Nm	116 (296)	12 min
Fog Wreck	50° 29.672 N 02° 05.440 W	13.5 Nm	109 (289)	54 min
The Anworth	50° 31.615 N 02° 33.735 W	1.4 Nm 3.0 Nm 4.0 Nm	161 (341) 215 (035) 282 (102)	5.5 min 12 min 16 min
The Arfon	50° 29.820 N 02° 10.456 W	10.3 Nm	114 (294)	41 min

The Netley Abbey	50° 30.726 N 02° 06.498 W	12.7 Nm	105 (285)	51 min
------------------	------------------------------	---------	-----------	--------

* All bearings and distances start from Southern entrance to Portland Harbour

Wreck finding

The Wey Chieftain will proceed to the GPS location. Reference images of previous side scans are available and the GPS will be used to pinpoint a cluster of target objects. This is where a shot will be dropped to become the reference point for starting the survey. The GPS location of the shot will be recorded.

Shotlines

The shot will be a bendable grapnel. It is important that divers do not pull on shot when descending to avoid moving it from its recorded position. Most target objects are no larger than a gun and scattered across the seabed. The shotline will be top tensioned and no longer than required in order to keep it reasonably vertical for recording the GPS location of the buoy. The shotline will remain in place until the last pair surface on the last dive for that specific location or for the day.

The dive boat will remain mobile with the skipper and dive manager constantly watching out for DSMBs, divers and other boats.

It is also important to have good buoyancy control to avoid kicking up any silt and reducing visibility. Multiple pairs will be starting from the same position and moving off in different directions to conduct their area of the survey and take photos, so please maintain care and discipline.

Outline of Survey Technique

Because of the spread of the wreck and because all that remains is the contents of the ship of relative small size it will be necessary to complete a methodical, detailed, survey.

A central location will be identified in which the shot will be placed. The shot location will be recorded and become the reference point for which to commence the search pattern. Upon reaching the reference point (shot) the first pair of divers will descend 180 degrees and survey a two metre wide strip due West for 30 metres. The next pair of divers will survey the next two metre strip due west (2m to 4m from reference point). The next pair of divers will do the next two metre strip and so on.

The next survey will repeat this process to the South with each pair surveying a two metre strip to the East. Then the process will be repeated to the North with two metre strips surveyed to the West, followed by a survey to the East.

At 10 metres to the South and North of the reference point (shot), which is the furthest point of the survey, the location will be marked by a DSMB and recorded by the surface support. The same will be done for the furthest point surveyed to the West and East. These points will be used as reference points for selecting the next search pattern to ensure that it butts up against the previous search area without any gaps to ensure every square metre of the survey zone is surveyed.

Small premade pins and flags will be used to mark locations for clarity of what has been surveyed. Colour coding will likely be:

R1 (red) – the first reference point (shot location) from which the survey commences. R2 would be the next reference point and so on.

S1 (yellow) – first two metre mark due South of the reference point. S2 would mark the next two metre strips that are being surveyed by second team, then S3 for the third two metre strip and so on. A distance line will be used to identify a straight line due South.

N1 (yellow) – first two metre mark due North of the reference point. N2 would mark the next two metre strips that are being surveyed by second team, then N3 for the third two metre strip and so on.

O1 to O100+ (Green) – each team will be given a unique set of numbered flags to place near each object that is potentially part of the wreck. A unique number will be recorded against each object located and surveyed (in detail).

This flag system is intended to ensure full coverage without gaps or accidental duplication.

Appendix 5 provides a graphic illustration of the survey technique.

It is suspected that much of the wreck could be buried under the sand and therefore not visible during a visual survey. We hope to secure three underwater metal detectors to be used to detect the buried objects or satisfy ourselves that there is nothing there (either outcome will tell us something, although the former will, admittedly, be more exciting). Some moving of sand will be necessary to identify the objects. Therefore three buddy pairs will search for items while the other two buddy pairs will fan the sand away just enough to identify the buried object, if possible.

The actual survey techniques will be finalised in more detail on Friday evening and Saturday morning.

Reconnaissance

A rekkie took place with four divers on 31st March 2018 using an underwater metal detector (ELSEC 5000) to try and confirm if a) the detectors would suit the purpose and b) to see if we could determine the presence of metal objects under the sand. Unfortunately, visibility was so poor that we were unable to make it beyond the edge of the sandy part of the likely wreck area. However, the metal detectors did emit a clear audible sound when placed over a gun and a mortar found sitting on top of the reef, which confirmed their suitability.

Ascent & Decompression

Divers will ascend with one DSMB per pair (unless divers become separated then each should deploy a DSMB). The shotline will not be used for ascent. Divers will also be expected to send up a DSMB as soon as they drift off the intended survey site, either because the current has picked up or if divers inadvertently move away from the survey area, i.e. they get lost.

Because decompression procedures are likely throughout the expedition an 80% O2 drop bottle will be available if needed. The signal for the drop bottle is a second yellow DSMB attached to the first DSMB line (rabbit ears). The method for deploying the drop bottle will be explained during the day brief.

Emergencies

In the event of an emergency Solent Coast Guard will be contacted on Channel 16/DSC70. Solent Coast Guard will be apprised of our dive plan at the start of each day. Helicopter rescue is possible although the local helicopter service has been shut down so a responding helicopter would have further to travel. However, the boat is unlikely to be more than one hour from the nearest shore with road access for emergency services should this be necessary, depending on the nature of the emergency. In the event of an

emergency the DM or ADM will be responsible for managing the situation depending on which one is on the boat at the time. (On a boat full of ADV Divers and FC Divers there should be no shortage of competent rescue managers.) The boat will have a First Aid kit and an O2 kit and we will also bring our own O2 kit. Location and familiarisation with the kit will be covered during the day brief, likewise the best way to recover a casualty diver and procedures for a helicopter evacuation.

See **Appendix 6** for Local Emergency Services.

Wreck Protection

We will maintain a look but do not take policy on this expedition. Items will need to be touched in order to get accurate measurements, but otherwise should be left undisturbed. In some cases sand, stones and silt will need to be finned away to confirm objects picked up by metal detectors. This will be solely to aid in the identification of the wreck. Any changes to this policy will be strictly under the prior agreement with the Expedition Leader. All laws will be strictly adhered to and advice from appropriate organisations will be sought.

Costs

The below is an estimate of costs per diver excluding travel. The boat charge is confirmed as is the Malthouse. The Caravan is based on advertised prices (£550) for four people and will be confirmed. Gas fills are for OC only and assume nitrox back gas (36%) on each dive. Don't forget to bring extra money for a team curry one night.

Costs £	Total	* Per Person
Dive Boat Hire	2,240	224
Underwater Metal Detectors Hire x3	480	48
Wire flag markers purchase (4 packs)	60	6
Sub-total per person	2,780	278
Accommodation – Hotel Aqua		** 140
Food (lunch & dinner self-catering)		80
Gas Fills		*** 94
Parking		15
Total per person		607

* Based on 4 days. For those diving 2 days cost will be 50% of figures shown.

** Based on a twin room. Singles are £50ppn and triples are £29.70pppn.

*** Based on OC 1 x twin 12s + 1 x 15L at 32% per day using Old Harbour Dive Centre prices.

Costs have already been incurred as part of a rekkie to the primary site to determine possible survey techniques. This included the hire of one ELSEC 5000 Diver Handheld Metal Detector costing £62.40.

BSAC Expedition Grant Scheme

An application has been submitted requesting a BSAC Grant to help fund this expedition. We are requesting **£602**. If successful this grant money will be used to pay for the hiring of three underwater metal detectors for the project, the one metal detector hired on 31st March 2018, and the purchase of wire flag markers.

Appendix 1 – Wreck Information.

Primary Site: Lyme Bay cannon site

There dozens of targets derived from scanning the northeast part of Lyme Bay. Over 300 wrecks have been documented as having gone in on Chesil beach alone - it's a real trap in a storm with no place to go in a southwesterly. Of the many cannon sites in this sector, a particular one sits in 26m. There are two big guns sitting proud and last year a third was located 95% buried in the sand. It is likely there are more - and some underwater metal detecting may be required. The site is in the area where an East Indiaman is known to have sunk losing all but 4 hands. Ivory has been found at the site. However, the site is also littered with mortar shells which would seem odd for an inbound ship returning to the UK. There is also an anchor at the site and also found was an odd copper pin. It would seem to be part of the vessel, but a proper site map does not exist, and it is unlikely the full extent of the (probably fragmented) vessel is yet known. If we go back to available side scan data, we will doubtless find fragments around and about that may be linked to this ship. This area has an odd, extended slack and can be double dived within certain 6 hour periods.

1st Backup Site: Brandy Wreck

This appears to be a smallish naval vessel or armed merchantman. the name used for the site is derived from an 18th century onion bottle that came off the site when first discovered, but one other artefact was found from the site which Wessex Archaeology have dated as being from the 1600s. There is an amazing story concerning a 5th rate naval vessel lost in the areas in Cromwell's time - could this be it? Again there are cannon's, ballast stones, and anchors. The site seems relatively compact but there could be other items around or in the sand. We really need some proof to confirm age. If it does come from the 1600s it would be incredibly rare. It sits in 28m to the east of Portland, and so gets some shelter from westerlies. This site can also be double dived in another odd extended slack specific to this area.

Fog wreck

This site is believed to be really old. There some extremely unusual, early cannon at the site - one seems to be a breech-loader. Also a big anchor and what appear to be smaller signal cannon. Much of the site sits on solid rock, so there ought to be other items around. The anchor and guns sit about 70m apart. Could there be more of this site scattered around that would confirm age and identity? The site sits in 28m with just one slack either side of HW.

The Anworth

This wreck sits near to the UB74 and Frognor to the west of Portland. A bell has come off the wreck with Anworth on it, but there is no record of a vessel of this name being lost in the area. We do have the name of at least one candidate, which matches the site description and was lost somewhere in the area but has never been found. Could this be it? Where did that bell come from? The wreck sits in 34m and has rarely been dived. One slight disadvantage is that it can't be dived on the low water slack.

The Arfon

For years people have been diving a wreck commonly thought to be the Arfon, despite the fact that some of the key features never matched. Then a couple of years back two skippers in Swanage found HMT Arfon much closer to the coast. So what then is this wreck sitting in 34m? We have one possible candidate name.

The Netley Abbey

There is another wreck up to the east sitting in 38m. The site has had many names in the local books - Start, Hartburn etc., but these have all now been located elsewhere. This might be the Netley Abbey, but this has never really been confirmed. One researcher seemed to think this was lost further south. All conjecture until found.

Appendix 2 – Tidal Information / Sunrise & Sunset (All times are BST)

Date	Portland	Chesil Cove	Sunrise	Sunset
Saturday, 19 th	05:52 0.3 10:13 1.9 HW 15:06 0.3 22:32 2.9 HW	03:24 0.8 10:10 3.8 HW 15:45 0.8 22:37 3.9 HW	05:16	20:56
Sunday, 20 th	03:50 0.3 11:05 1.8 HW 16:03 0.5 23:22 1.9 HW	04:21 1.0 11:04 3.6 HW 16:43 1.0 23:35 3.7 HW	05:15	20:57
Monday, 21 st	05:20 0.4 12:05 1.6 HW 17:12 0.6	05:27 1.1 12:05 3.3 HW 17:48 1.2	05:14	20:59
Tuesday, 22 nd	00:20 1.7 HW 07:07 0.5 13:21 1.5 HW 18:41 0.8	00:37 3.5 HW 06:39 1.3 13:15 3.2 HW 19:03 1.4	05:12	21:00

Note: The detailed Tidal Streams Atlas available reference Weymouth tide times. Weymouth times are similar to Portland times, typically only minutes apart; however, we will use Weymouth tide times for final planning.

Appendix 3 – Slack water times

Dive Site	1st Slack	2nd Slack	Note
Lyme Bay Cannon Wreck	3-2 hours before HW	3-4 hours after HW	
Brandy Wreck	4-3hours before HW	2-3 hours after HW	
Fog Wreck	2 hours before HW	4 hours after HW	
The Anworth	3-2 hours before HW	---	
The Arfon	2 hours before HW	4 hours after HW	
The Netley Abbey	2 hours before HW	4 hours after HW	

Slack times are based on Tidal Streams between Portland Bill and St Alban's Head, by Peter Bruce and Gille Watson. These slack times will be checked against the local knowledge of the skipper when preparing the final timetable for the day.

Appendix 4 – Expedition Team Member Responsibilities

- Expedition Leader: Cameron C
- Dive Manager / Asst Dive Manager: (See table below)
- Equipment Manager: Julian Gill
- Gas Fill Coordinator: John Taylor
- Boat Load & Unload Coordinator: Dave Baker
- Boat Food & Water Coordinator: John Beirne

Name	Day 1		Day 2		Day 3		Day 4	
	Dive 1	Dive 2	Dive 1	Dive 2	Dive 1	Dive 2	Dive 1	Dive 2
Cameron Cromwell	EL	EL	EL	EL	EL	EL	EL	EL
Dave Lock	DM	DM						
Mark Royal			DM	DM				
Geoff Downer					DM	DM		
Julian Gill							DM	DM
Dave Baker	ADM	ADM						
John Taylor			ADM	ADM				
Mark Saxby					ADM	ADM		
John Beirne							ADM	ADM

Note 1: The Dive Manager (Dave Lock) for Day 1 and the Expedition Leader will work together to plan the first day’s dive in advance of the expedition.

Note 2: Given the number of divers in the water for extended periods of time there will be a diver with dive manager responsibilities in the boat at all times. The skipper will not be expected to assume this role but rather the dive manager will work with the skipper to ensure the safety of all divers. To achieve this, the Dive Manager and the Assistant Dive Manager will be in different buddy pairs with the Assist Dive Manager ideally being in the first wave so that s-he can relieve the Dive Manager to dive the last wave. Run times will need to be agreed to ensure both the DM and the ADM are able to dive within slack windows.

Note 3: Additional duties, such as shot line prep / deploy / recover, assigning buddy pairs, dive record keeping, assisting divers kitting up /de-kitting will be determined by the Dive Manager and briefed to the team prior to each day’s diving.

Job Descriptions

Expedition Leader (EL): Overall responsibility for all divers’ safety. Overall responsibility for achieving the expedition aims. Confirms suitable dive management is in place and ensures all logistical information is communicated and understood prior to and during the expedition.

Dive Manager (DM): Responsible for all divers’ safety for the duration of the day. Works with the Expedition Leader to prepare the detailed dive plan for the day and communicates it to the team ensuring that it is understood. Coordinates with the skipper and confirms his support of the dive plan for the day, including timetable, passage plans and diving emergency procedures. Assigns additional tasks/roles to expedition members as required.

Assist. Dive Manager (ADM): Assists the dive manager with ensuring safe diving and successful project execution. Helps ensure all dive details are logged, survey data is collected and covers for the Dive Manager when s-he is diving.

Equipment Manager: Ensures the following is present and working for each day's diving:

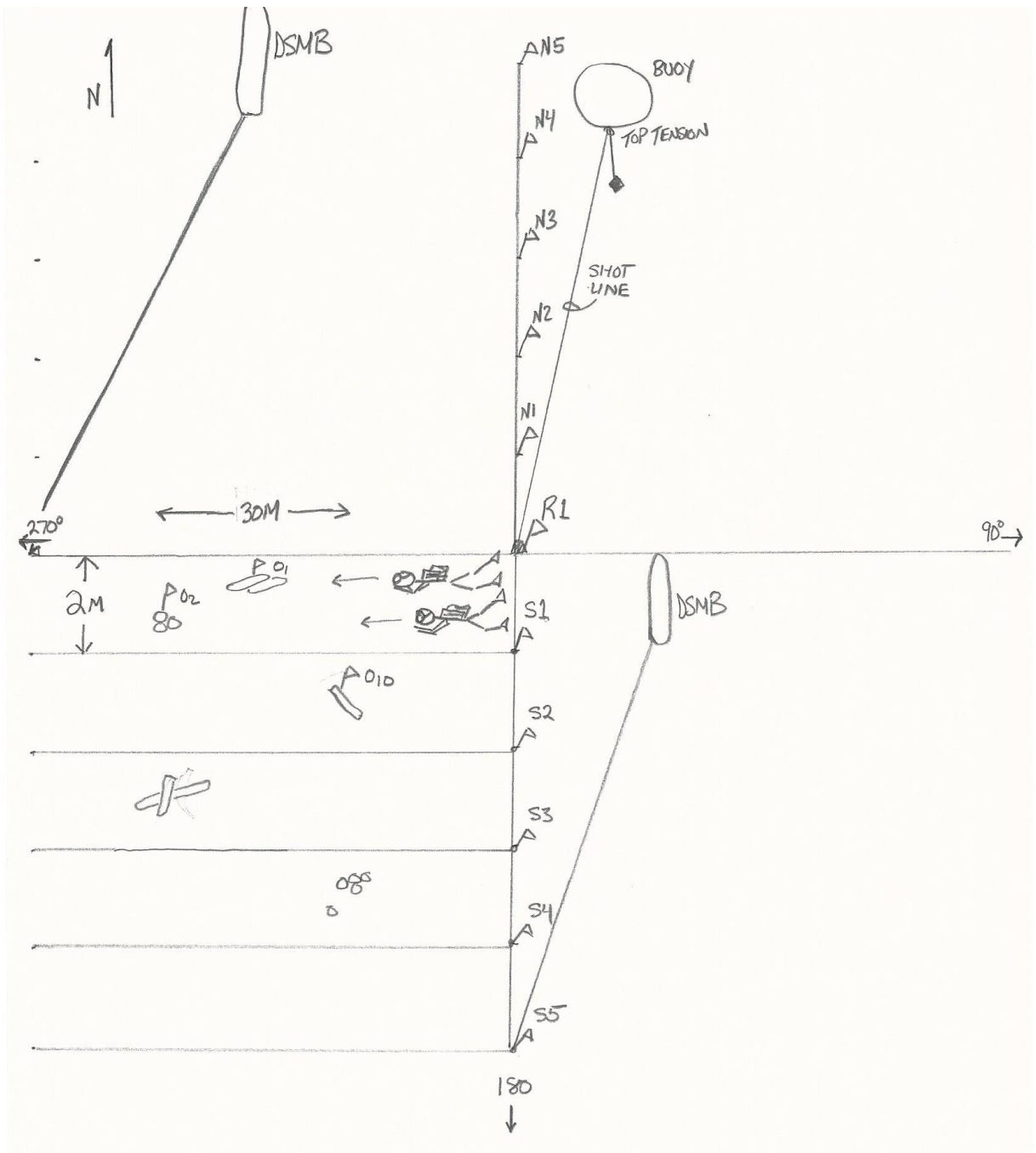
- O2 confirmed present , adequate & working (1 x vessel + 1 x expedition team)
- AED available and confirmed adequate charge
- First aid kit present & adequate
- Shot line present & suitable for intended depth and appropriate type of shot (confirm x2 if required by DM)
- Project specialist kit required:
 - Underwater metal detectors
 - Marker flags
 - Survey lines
 - Anything else confirmed by the EL and DM

Gas Fill Coordinator: Coordinates the drop off and collection of cylinders. Communicates between the Dive Manager/s and the Gas Filling station to ensure we have adequate gas for the next day's diving. Ensures bottles are all dropped off and collected for next day's diving. It will almost certainly be necessary to coordinate with gas filling station in advance since we may be departing and/or returning outside normal opening hours.

Boat Load & Unload Coordinator: Ensures the orderly and efficient loading and unloading of the boat by communicating to everyone on the method, assigns tasks, confirms seating and where extra cylinders and equipment are to be stored. Coordinates with skipper including overnight storage of kit. Coordinates with Gas fill Coordinator to ensure empty cylinders are unloaded/loaded quickly and efficiently since time may be of the essence.

Boat Food & Water Coordinator: Ensures everyone has food and drink for each day on the boat. Collects money and purchases sandwiches, snacks and plenty of water. Coordinate with skipper to ensure warm drinks are available. Don't be afraid to get other divers to help out.

Appendix 5 - Survey Technique Illustration



Appendix 6 – Local information

Emergency

At sea VHF 16 – Solent Coast Guard; land 999/112 ask for Coast Guard

Portland Harbour Radio: VHF Channel 17

Portland Harbour Master: VHF Channel 74

Details on nearest Category 1 Hyperbaric Chamber to dive site:

Name of chamber: The Diver Clinic – “Poole Hyperbaric Centre”

Address: 7 Parkstone Road Poole Dorset BH15 2NN

Diving emergency advice line: 07770 423637

Non-emergency enquiries: 01202 678278

24 hour cover: **Yes**

Chamber proximity to supporting hospital: Adjacent to Poole General

Name and address of supporting hospital: Poole General Hospital Longfleet Road
Poole Dorset 01202 665511

Chamber proximity to helicopter / winch point: 5 minutes

Time to mobilise chamber: 5 minutes

Category of chamber Category: **1**

Responsible health authority or trust: Dorset Health Trust