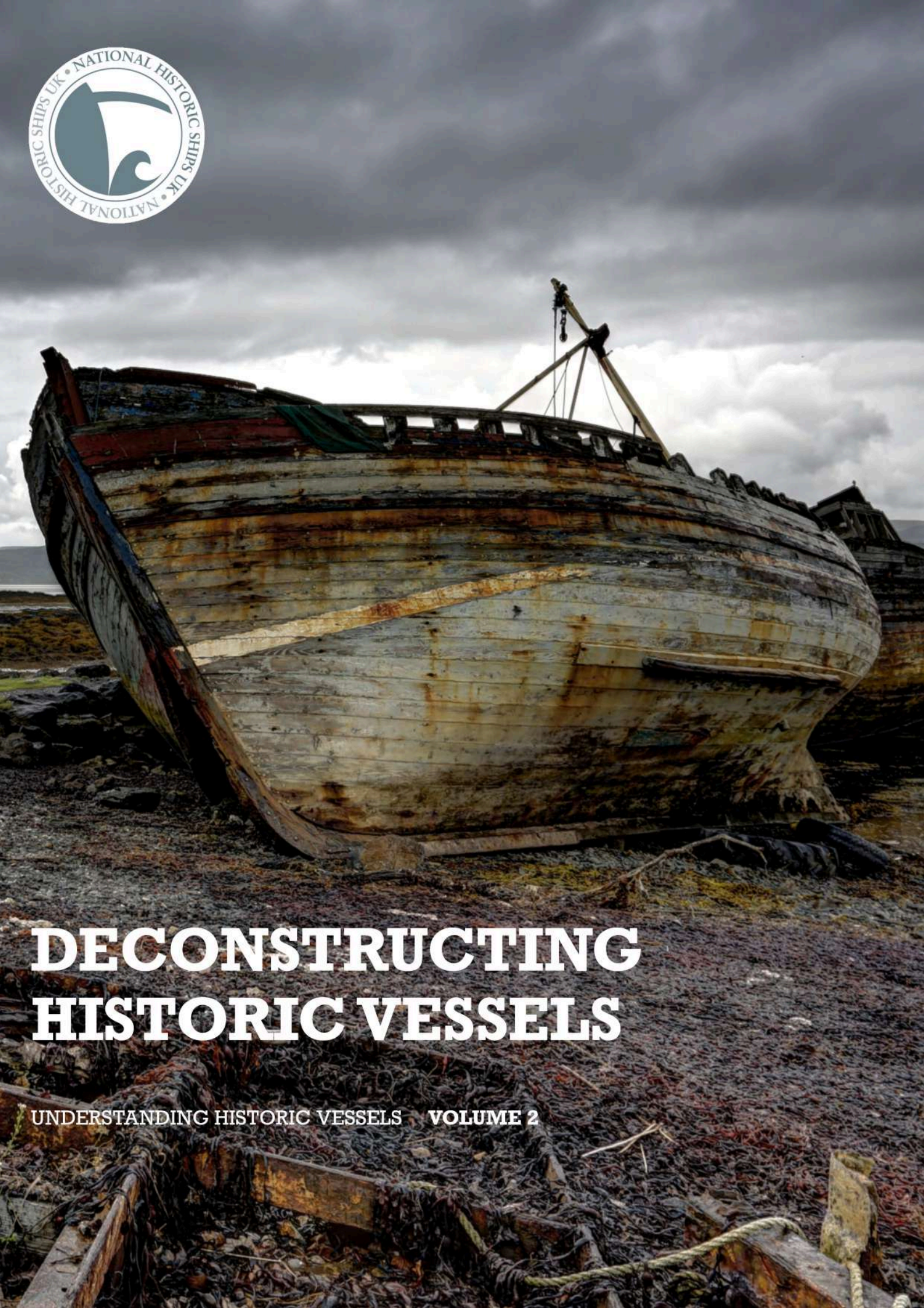

# DECONSTRUCTING HISTORIC VESSELS

UNDERSTANDING HISTORIC VESSELS **VOLUME 2**

# ACKNOWLEDGMENTS

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Cover image: 'Stranded' by Ruediger Zitt

# FOREWORD

When the Advisory Committee for National Historic Ships was formed in 2006, one of its first actions was to commission the three volume series *Understanding Historic Vessels*, covering the key topics of how to record, conserve and, in the worst case scenario, deconstruct a historic craft to maintain its significance. The principles set down in these guidance manuals raised the bar in terms of best practise, established greater consistency across the sector and developed a set of definitions by which vessel custodians, heritage professionals, funding bodies and government officials could determine the level and type of intervention carried out in any heritage project.

It is now 13 years since the publication of the first two volumes and I'm delighted with the way in which all three documents have been received and adopted, becoming seen as the new standard for historic vessels, not just in the UK, but overseas as well. However, during this time, technology has moved apace and there are now new, improved methods for recording a vessel which must be considered. These enable us to capture not only sufficient data to build a fully accurate replica, but also to make the ship accessible in virtual form once it has gone.

As part of our *Forward Plan 2019-2023*, we pledged to revisit and update *Recording* and *Deconstructing Historic Vessels*, to incorporate the latest methodology alongside a series of practical case studies. The inclusion of this piece of work as a priority in our 5-year plan reflects the challenges we face as a nation in managing vessels at risk, with no legislation in place to protect craft on the National Registers from loss and increasing pressures on custodians as a result of the economic climate.

In these difficult times, it is more important than ever that the principles in *Understanding Historic Vessels* are adhered to wherever possible to safeguard vessel significance. For those craft which it is deemed not possible to keep after every option has been explored, deconstruction should be seen as a positive solution which enables us to retain the best possible record of the vessel, along with any significant parts, rather than losing the entirety to scrap.

I hope the new editions of these volumes prove useful and, if they help guide the nation's surviving historic vessels into a new era, capturing a virtual image of any which can't be physically saved, we will have achieved our aim.

Hannah Cunliffe, Director, National Historic Ships UK

# ABOUT NATIONAL HISTORIC SHIPS UK

National Historic Ships UK (NHS-UK) is an independent, expert body funded by the Department for Digital, Culture, Media & Sport to provide objective advice to UK governments and local authorities, funding bodies, and the historic ships sector on all matters relating to historic vessels.

It is the successor to the Advisory Committee on National Historic Ships, established as a non-departmental advisory body in July 2006. In turn, that organisation followed on from the National Historic Ships Committee, which emerged from a seminar held in 1991 to discuss the problems facing the conservation of historic ships and vessels in the UK and the evident neglect of this important part of our heritage.

NHS-UK has a wide remit, looking not only at the immediate issues concerning historic vessels in the UK, but also addressing questions relating to their supporting infrastructure and potential to contribute in the wider economic, social and community context. It maintains the National Historic Ship Registers, which comprise: the National Register of Historic Vessels; the National Historic Fleet; the Overseas Watch List; the National Archive of Historic Vessels; and the UK Replica List.

The three-volume guidance publication *Understanding Historic Vessels* has been produced to highlight the main considerations in relation to the long-term conservation of vessels. The first volume, R*ecording Historic Vessels*, suggests methods for creating a record to ensure the essential characteristics of a vessel are captured, and for holding this information in formats that are accessible and, given present knowledge, future-proof.
This second volume, *Deconstructing Historic Vessels*, comprises a set of guidelines describing the steps to be taken leading up to the careful dismantling of a historic vessel which has come to the end of its days, how to explore every option before adopting this approach and what to do with the information (and in some cases recovered parts of the ship) emerging from this process. It should be read in conjunction with Volume 1 to ensure the appropriate recording mechanisms are put in place as part of the deconstruction process.

Volume 3, *Conserving Historic Vessels*, explains the key principles behind conservation, to help specialists and non-specialists alike develop an understanding of their project, its significance and select the most appropriate conservation route to adopt.

The volumes recognise the complexities of historic vessels and the differing circumstances of private owners and small trusts from those of larger charities, major museums, and national organisations. The approaches described are aimed at custodians of all kinds and take into account that financial limitations may preclude the use of extensive professional advice. These guidelines aim to be practical and achievable to encourage all owners to apply them at an appropriate level. Although the guidance has been specifically designed to address the need of vessels on the National Register of Historic Vessels, it is relevant for owners of any traditional craft, large or small.
To see the full range of services offered by NHS-UK or find out how to obtain copies of Volumes 1 and 3, visit
www.nationalhistoricships.org.uk

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# 1. THE IMPORTANCE OF RESPONSIBLE DISPOSAL

Historic vessels are conserved for many reasons. They can be beautiful objects and expressions of the shipwrights' art; they can be representatives of significant technological advances, or fine examples of a particular development in ship and boat design; they can be reflections of social or economic factors; they may have associations with heroism, famous incidents, notable people or with particular geographical areas. Whatever the reasons for their survival, vessels are material evidence of history and carry within their fabric information about their methods of construction and use, their careers, the phases of their development, their relevance today and their conservation needs.

Yet for most vessels, even those of an extremely high intrinsic historical importance, a time will come when the cost of conserving them or even simply keeping them intact becomes unaffordable. As man-made structures, they were not built to last forever: indeed many of them had an intended working life of not more than 30 years. Those that have well exceeded this may have become too expensive to maintain or too dilapidated for conservation. Owners who are unable to provide a sustainable future for their vessels will usually make strenuous efforts to save them, even if this means donating, selling or in some other way transferring them to other individuals or organisations. In some cases, they may not succeed in finding such parties, making the loss of the vessel, to a greater or lesser degree, inevitable.

The demise of a historic vessel diminishes the physical evidence of our maritime past. The loss will be felt most keenly by the owners, who will have strived, probably for many years, to secure a sustainable future. Once hope of this is gone, it may be difficult to summon the enthusiasm to deconstruct the vessel in the time-consuming way described here. However, by ensuring that the fullest possible record is created, the memory and knowledge of the vessel is preserved for other owners, for historians and for anyone passionate about our maritime heritage. Creating this legacy is a final act of respect, the results of which will benefit the historic ships community, and the nation as a whole.

# 2. ABANDONMENT VS, A FORM OF PRESERVATION

One of two fates typically awaits a vessel with no future: abandonment or demolition. However, there are responsible and irresponsible ways of dealing with both.

- **Passive Abandonment – Demolition by Default**

  The worst end for a vessel is passive abandonment, which hands her to nature (and often vandals) to demolish. Even if she is stripped of fixtures and fittings, there is usually no attempt to retain any of the vessel's fabric or stories for the future. Passive abandonment is most likely to happen when owners have limited or no resources, are unable to meet the costs of conservation, do not have the time needed for a more active process, or all of these. This route is almost always environmentally irresponsible. It is sometimes unavoidable but, particularly if no attempt has been made to thoroughly record the vessel beforehand, must be seen as a failure to preserve its intrinsic historical significance.

- **Active Abandonment – Preservation by Sinking**

  Abandonment does not have to be passive – a much more creative solution is active abandonment, which could be described as 'preservation by sinking'. Here a decision is taken to abandon a vessel in a particular place and certain circumstances for wider public and environmental benefits. The Purton Hulks in Gloucestershire are a collection of over 90 vessels deliberately beached during the twentieth century to stop the banks of the Gloucester Sharpness Canal being eroded by tides on the River Severn. These vessels, which would have been lost, now form the largest collection of maritime artefacts on the foreshore of mainland Britain. In recent years, they have been subject to detailed archaeological surveying and recording which would not have been possible had they been actively disposed of by their original owners.[1]

  Vessels can be positioned in tidal waters to form features and habitats which are revealed at low tide, or submerged completely, perhaps forming a reef. An example of the latter is HMS *Scylla*, the last frigate built in Devonport Dockyard (1970) which, in 2004, was sunk to form a diving reef off Whitsand Bay.[2] Abandoning vessels in this way can preserve them for a

[1]Friends of Purton, http://www.friendsofpurton.org.uk/

[2]HMS *Scylla* lies near to the wreck of the Liberty Ship SS *James Eagan Layne* which was beached and sunk in 1945.

longer period; it can allow continued access to the vessel in some form and, in the longer term, can deliver environmental gains.

Unlike passive abandonment, for which there may be little or no financial implications, costs and issues relating to preservation by sinking are of some magnitude: in the case of HMS *Scylla*, moving, decontamination and other costs were IN the order of £1.2m. Meticulous planning is needed to meet the various legislative and environmental demands that active abandonment brings and it will inevitably take considerable time to implement. Additionally, the vessel's construction characteristics (with wooden hulls in particular) have to be taken into account: vessels held together by ferrous fastenings will produce different issues and will probably collapse at a faster rate from those with non-ferrous fastenings. Their effects on the marine environment will also differ, particularly in terms of potential pollution.

On the other hand, the benefits can be considerable. The vessel will be given an extended life, delaying her complete loss and possibly allowing some access to divers, remote-controlled camera vehicles, glass-bottomed boats and, in the case of inter-tidal positioning, possibly by land. As HMS *Scylla* has demonstrated, the resulting carefully created environment can be highly beneficial for encouraging diversity in marine life. HMS *Scylla* is exceptional, and it is unlikely that Active Abandonment of this nature will become a widely used method of preservation. There would be no guaranteed statutory protection for such vessels: the protection of wrecks of historically important vessels and access to them is administered by Historic England, CADW and Historic Environment Scotland, and with responsibility for 53 protected wreck sites off England alone, they are unlikely to support the protection of deliberately wrecked shipping without a compelling reason. It is essential that consent from the national heritage organisation and all other relevant bodies (including the appropriate local navigation and harbour authorities) is in place before a vessel is actively abandoned in this way. There are also health and safety issues around deteriorating material, particularly for leisure divers, and there is a substantial cost attached to ensuring that vessels sunk deliberately for diving purposes are maintained in such a way that this activity can be undertaken safely.[3]

[3]Sadly, in 2007, two amateur divers died while exploring the interior of the HMS *Scylla* wreck and the National Marine Aquarium, which manages the site, currently advises divers against entering the ship.

Preservation by sinking will always be rare and can only be achieved with a considerable investment of time and money.

However, it is an ingenious solution and we would encourage anyone faced with the loss of a historic vessel to consider whether there is any creative means of active abandonment.

- **Demolition – Unconsidered Destruction**

  A more common and generally more environmentally acceptable fate for a future-less historic vessel is demolition, either in situ or in a breaker's yard. As with abandonment, there are passive and active forms of demolition. At its most extreme, the passive form can be described as 'unconsidered destruction' when she is broken up without an attempt to record her, to retain parts or fittings for interpretation and display, or to document how the demolition was undertaken. This is a very undesirable outcome which does nothing to ensure the preservation of information about the vessel.

- **Deconstruction – Preservation by Record**

  An alternative approach to demolition is deconstruction and preservation by record. This is achieved by a controlled dismantling programme based on a clear understanding of the significance of a vessel. The outcome will add to the mass of historical maritime knowledge and, where appropriate, ensure that technically and/or historically significant elements of the vessel are preserved for display and re-use in other vessels. It is not necessarily a cheap option. The dismantling of a vessel must be undertaken by people who specialise in and understand historic craft, preferably with knowledge of the particular type in question, and can therefore bring a mix of naval architectural and archaeological experience of how ships are analysed and taken apart. Health and safety considerations may also contribute to the high costs of this option, especially for larger ships. Owners or those responsible for the deconstruction programme must liaise with the relevant local authorities and environmental agencies to ensure that all regulatory and legislative requirements are met. These may include planning issues, the need for special licenses, and the importance of meeting requirements around the disposal of potentially environmentally damaging materials.

  Despite these issues, when a vessel has no sustainable future, NHS-UK strongly recommends deconstruction and preservation by record wherever possible so as to ensure the fullest record of a vessel is compiled.

  The level of recording before breaking up (and the approach

adopted when dismantling to allow further recording) should be appropriate to the characteristics of the vessel under consideration, with the approach reflecting the vessel's level of importance, based on the criteria encapsulated in the National Register of Historic Vessels' (NRHV) scoring system.[4]

- **Deconstruction – Preservation by Sectioning**
  Preservation by record may include the careful disassembly or cutting of the hull into pieces in order to preserve a significant proportion of the structure to convey something of the original shape, size and configuration of the vessel. Sectioning can be achieved by taking cross-sections of the vessel across the beam or along her length, or by removing and saving major features of the vessel such as deckhouses or the bridge, including large pieces of equipment. No matter how temporary the retention of such sections, it is always preferable to the complete loss of a vessel.[5] It is of course imperative to identify a willing recipient for the sections, to organise (and fund) transport and to secure funds for consolidation and stabilisation before the actual sectioning work commences.

Preservation by record is the essential course of action for all vessels in the National Historic Fleet which find themselves with no sustainable future. These vessels should be properly deconstructed and the information retained through the fullest possible record of all aspects of the ship.

Although a full deconstruction programme may not be feasible for all vessels on the NRHV, we strongly recommend that owners take whatever steps they can to preserve information, even if this is simply creating a photographic record supported by notes.[6] Whenever practical, some elements of the vessel should also be retained.

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[4]See Appendix B.

[5]*Turbinia*, Charles Parson's experimental craft, is an illuminating case study. Sectioned in 1927 by Hawthorn Leslie, the bow was transported to the Science Museum in London (where it was further reduced in size). The stern, used as an apprentices' shelter at Hawthorn Leslie's shipyard, was later retrieved and the two 'halves' reunited (although the midship section was lost forever). *Turbinia* is now restored on display in Newcastle's Discovery Museum (formerly the Museum of Science & Industry).

[6]See *Understanding Historic Vessels* volume 1 for guidance notes on recording.

# 3. DECLARING AN INTENTION TO DECONSTRUCT

Given the significance of vessels in the National Historic Fleet, owners or those responsible for them must inform NHS-UK when there appears to be no sustainable future for the vessel, so that advice can be given and options explored. Indeed, we encourage owners of all vessels on the National Register of Historic Vessels to contact us if their vessels have a similar predicament.

Once it has been fully established that neither the owner nor NHS-UK can identify any immediate future for the vessel, the owner should then make a formal public Declaration to Deconstruct. This must include not only a description of the vessel and her current state but also the reasons that have led to the decision to deconstruct, any timescale going forwards, conditions of sale, and where relevant, a nominal sale price. A template is included in Appendix A.

The purpose of the Declaration to Deconstruct is, through the widest possible promulgation on the NHS-UK website, social media and local/national press, to ensure that no final opportunity is lost to reach any parties that might be interested in taking on the vessel and thereby avoid deconstruction. Pro-active promotion of the Declaration is therefore extremely important and every effort should be made to interest the press in the issue via a friendly journalist. To facilitate this, a named point of contact for interviews should be provided and a selection of high-quality images showing the vessel in operation, as well as her current condition, should be made available.

Many owners resist the publication of a Declaration to Deconstruct feeling that it implies an acceptance that the vessel will not survive or some kind of failure on their part. In fact, it should be seen as a positive attempt to find an alternative solution rather than passively waiting for the inevitable to happen. The Declaration is also a formal record of the steps taken and organisations and individuals approached to try and avoid deconstruction.

In a very small number of instances, vessels facing deconstruction will be subject to protection under Listed Building legislation or fall within Conservation Areas or World Heritage Sites. It is therefore vital that the status of the vessel is fully understood, along with the responsibilities and requirements arising from local, national, European or international regulations and legislation.

If the vessel is owned by a museum or a museum trust, the Museums Association's adopted guidelines on object disposal from museum

collections must be followed (or the risk of de-registration be run). It is also good practice for other trusts and organisations to follow these guidelines. This structured approach is particularly important for the 'portable' maritime heritage objects found on board vessels. The Museums Association regularly refines its policy on disposal in order to reflect developing heritage demands and the latest technical advances: vessel owners will therefore need to ensure they are working from the current policy.

It is vital that a central email address or point of contact is established to which all responses to the Declaration are sent. This is particularly important in cases where several parties are involved – for example the vessel custodian, volunteers, the port authority or a boatyard owner. A process should also be determined for assessing and carefully considering the viability of any responses. In cases where promotion of the Declaration is successful in generating a number of alternative proposals, it is likely that these may be of varying quality. There is a temptation to jump at these, even accepting the first one simply to save the vessel. However, if no realistic long-term future for the vessel is being proposed this could end up creating a worse situation with the vessel visibly deteriorating in the hands of another. Therefore, it is important to review all responses systematically, prepare a short-list to investigate further and meet with any potential candidates in person. Depending on resources, it may be helpful to hire a professional to comment on the validity of the options put forward and carry out an initial appraisal. NHS-UK can also offer support during this process by advising on any written proposals received.

# 4. PREPARING A DECONSTRUCTION PLAN

Once the Declaration to Deconstruct has been made and a reasonable time (under normal circumstances, a minimum of two months but ideally up to six months) given to other interested parties to find an alternative future for the vessel, the owners should prepare a Deconstruction Plan. In cases where there is a need to fast-track, this can be done during the time allowed for public response so that, in the event that no alternative solution is found, the plan can be put straight into place. This will include and, if necessary, expand on the details in the Declaration to Deconstruct explaining the reasons why the decision has been made and the steps that were taken to ameliorate the need to deconstruct. It should also include the vessel's Statement of Significance[7] and indicate how this has informed the deconstruction plan.

The deconstruction plan should set out:

- the timetable for deconstruction, including receipt of any permissions
- details for re-locating any retained elements to storage and disposal of those elements which will not be retained
- the management arrangements and methodology through which the chosen route of deconstruction will be carried out
- any health and safety and environmental issues arising from the deconstruction programme and the steps being taken to ameliorate these to meet regulatory and legislative requirements
- risk assessments for members of the vessel team involved with the process (contractors should have their own documentation for this, although you may ask to see it)
- the disposal strategy for recyclable elements
- the identification of any samples, fittings and structure (including sections) to be retained
- the identified repositories for any samples, fittings and structure
- the identified repositories for the resulting archive
- the anticipated costs associated with the deconstruction process
- the plan for meeting these costs
- where the deconstruction will take place and whether the vessel will need to be moved. If so, how this will be done and by whom
- who will undertake different aspects of the deconstruction e.g. use of existing staff, professionals, an external agency, volunteers etc.

[7]The method for compiling a Statement of Significance is set out in *Understanding Historic Vessels* volumes 1 and 3.

# 5. FUNDING DECONSTRUCTION

While we urge owners to make every effort to identify sources of funding to help meet the costs of the deconstruction process, we recognise that grants and donations will be difficult to secure and very economical processes will normally be required. It is a question of finding the correct balance between retaining the right level of information and making the process achievable.

The costs of recording and deconstruction will vary according to the complexity of the vessel concerned. In many cases, additional resources would help owners undertake the task more effectively. In the past, NHS-UK has made awards from its Small Grants Scheme to assist in recording vessels prior to deconstruction, but this Fund now opens for applications less regularly due to diminishing resources. NHS-UK can also advise on other funding options and give pre-application support on bids. If grants are awarded, NHS-UK would expect to work closely with the funding body and the owners by agreeing and monitoring quality standards.

There is no one funding body whose remit covers work of this kind and it may be necessary to think creatively about how to cover the overheads. For example, there are a range of charitable foundations who might cover the cost of recording a vessel to preserve its history, pay for the use of digital technology in this process, or meet the overheads of transporting and conserving significant artefacts from that craft for public display. While it may be difficult to fund the actual dismantling of a vessel, if elements of recording her can be undertaken as a community engagement project, or used to inform the build of a replica as a skills training initiative, it may be possible to secure grant aid. Owners should also try local charitable funds, regional appeals and crowd-funding techniques.

# 6. PLANNING FOR DECONSTRUCTION

Research undertaken into the vessel's significance will have identified any elements of her fabric which warrant preservation or re-use in other vessels. These may include fittings, lights, switches, telegraphs, steering gear, rigging and basic materials such as frames and decking. In preparing for deconstruction, owners should establish how such elements are to be removed safely and preserved. If the owners do not intend to retain the elements themselves, all arrangements for the legal and physical transfer of these elements to a responsible third party should be in place before deconstruction commences. Contact should be made with local, regional and national museums and heritage centres to establish whether there is interest in retaining parts of the vessel and/or the vessel record. Owners of vessels who are registered museums must follow Arts Council England's approved guidelines on disposal. Subsequently, items not taken on through bodies such as these can be offered on the open market to third parties who own historic ships or have an interest in the sector. NHS-UK can advertise a list of available items through its website and social media, as well as directly contacting owners of similar craft.

# 6. RECORDING THE VESSEL DURING DECONSTRUCTION

The ideal is to ensure that, once the vessel no longer physically exists, there is still a record of her, or of her type, in sufficient detail that a model, replica and cross-section could be made, accurate in all particulars, including scantlings and construction method.

Owners' research into the significance of the vessel will have revealed how much information already exists both about the vessel and its type, and this will help to determine the appropriate level of recording. For example, if the builder's lines plans survive and the general configuration of the vessel has not been altered in a major fashion, then it is unnecessary to create another set of plans (so long as you are satisfied that the plans accurately reflect the vessel in her current configuration). If no such plans exist, a full survey may be necessary. However, a full measured survey for larger vessels can cost tens of thousands of pounds, meaning the level of recording will be determined by both the importance of the vessel and the amount of funding available. A full photographic survey, which would allow the creation of a computer-generated image of the vessel through photogrammetry (now or in the future), is a much less expensive option. A methodology for photographic surveys is set out in *Understanding Historic Vessels* Volume 1.

Important information about how a vessel is constructed – for example the scantlings of members – may be revealed as the vessel is dismantled. In cases where little or no information is known about the construction, consideration should be given to employing specialists to oversee the deconstruction and arrangements made to capture such information. In some cases (particularly ferrous metal vessels) the properties of the hull material will be important. Iron ships have different characteristics from steel ships and the mild steel of today is not the same that from the late 19th century, whilst pre-nuclear steel which has not been exposed to modern atmospheres has different properties from contemporary steel. Although scientific analysis is expensive, preserving samples keeps the option open for future investigations. It should not be assumed that materials are uniform (the sheer strake for example is often of higher strength than the rest of a vessel's side).

Consideration should be given to preserving physical samples of the vessel's fabric, for example cross-sections of exemplar components which not only give accurate dimensional information but also reveal the materials used.

Deconstruction will also indicate how the vessel has deteriorated, wood has rotted, metal has corroded, or GRP broken down. Such information can be invaluable in the development of better methods for the conservation of historic ships.

## 7. IMPLEMENTING THE DECONSTRUCTION PROGRAMME

In a perfect world, the deconstruction programme would be undertaken by appropriately qualified experts with experience of the characteristics of the vessel. In reality, many dismantling / demolition contractors do not possess such qualities and if this is the case, owners should work with the contractors to ensure that the deconstruction process is recorded and as much information as possible about the vessel captured. At its simplest, this could be a photographic and film record undertaken throughout the deconstruction process; at its best, this could be supported by a set of measured drawings of all components.

Deconstruction is likely to be in two parts. The first will involve the removal of fixtures and fittings for reuse, ideally in a sensitive and sympathetic manner that does the least possible damage to the parts; the second will be the dismantling of the hull and any other structures. In both cases, where the preparatory work has identified which parts are not required for display or the archive (or by the owner to keep), they could be sold to help pay for the work if this does not conflict with the owning institution's disposals policy. Good preparatory work will have identified the potential of these items for re-use in other projects, either current or expected in the future. Depending on the condition of the vessel, it may not be possible to implement deconstruction in the most naturally logical format and this may have to be determined instead by changes to the structure caused by dilapidation or other hazards. For example, in the case of PS *Ryde*, lying in an abandoned state on the banks of the River Medina on the Isle of Wight, the vessel has been subject to structural collapse and also contains significant asbestos which needs to be systematically removed using approved methods. The latter has resulted in environmental concerns, with the vessel sitting on a site of special scientific interest. Her engine has been highlighted as being of key heritage significance in any planned deconstruction, meriting future museum display, so that care will need to be taken to extract this intact and with minimal damage.

# 8. GUIDELINES ON THE DISPOSAL OF FIXTURES AND FITTINGS

## 8.2 To sell or not to sell

If a historically significant vessel has survived for more than 50 years, it is a good indication that considerable effort and resources have gone into preserving her. In particular, from the moment her working life ceased, all those have who worked on her have done so in the unstated expectation that the vessel would be preserved for generations to come. Clearly, if deconstruction is being considered, that expectation has evaporated and it may be difficult to maintain continued enthusiasm. However, the guardians of the vessel still have a duty of respect to the generosity of the past, particularly in the disposal of any fixtures and fittings.

Before deciding how to dispose of fixtures and fittings, the first step is to establish the legal status of every item on board. Have any items been loaned to the vessel? Are there any covenants relating to part of the vessel? Were any special arrangements made with donors? Where there is doubt, uncertainty or conflicting views, it may be necessary to take specialist advice.

Within the museum sector, there is a strong presumption against the sale of artefacts, which, in the case of historic vessels, would include fixtures and fittings. This is a world where great collections have been built on the generosity of donors and selling items might cause future givers, large and small, to think twice. For the majority of historic vessels, the situation is different. If deconstruction is being considered, it may be because the organisation responsible for her has fallen into debt. In such circumstances, there may be a legal duty to dispose of individual fixtures and fittings to the highest bidder. Furthermore, if any grants were given in support of the vessel, there may be a legal requirement to pay these back if the vessel is destroyed: selling the fixtures and fittings may be the only means by which grants can be returned.  Make a note on the vessel record of where any items are sold and who to, in case they can later be retrieved into a central collection.

## 8.2 Practicalities of disposals

All vessels will have some fixtures and fittings of interest to other vessel owners: the challenge is to manage this interest. The Declaration to Deconstruct will alert the historic vessel community (and the wider public) of the prospect of fixtures and fittings

becoming available but consideration must also be given to how best to communicate the intention to deconstruct and its consequences to others with an interest in the vessel – for example, friends' organisations. It is therefore vital to establish the following:

- who will act as the point of contact for all enquiries?
- is there a clear understanding with the company demolishing the vessel which items the owner is retaining for disposal elsewhere (including sections)?
- are arrangements in place for the storage of fixtures and fittings?
- are the locations of storage facilities for individual fixtures and fittings understood by all?
- are timetables in place for the removal of items from the breakers' yard, and
- are there contingency plans for an intended recipient of fixtures and fittings changing their minds?

## 8.3 Who benefits?

If there is a legal obligation to dispose of fixtures and fittings (and sections of the vessel) the owner has no choice over the recipient of the items – they must go to the highest bidder. However, if there is no legal obligation, NHS-UK urges owners to gift, or at least sell at a preferential price, fixtures and fittings directly to other historic vessel custodians. We know of no vessels awash with funds and gifts will mean that money can be spent elsewhere. If items are sold, we urge owners to sell directly to other historic vessel owners rather than through brokers. Advertising through NHS-UK's website or via other vessel associations, rather than simply selling on eBay, will also help ensure these specialist parts go to those who need them most.
There may be several expressions of interest in a particular fixture or fitting. We have no view on whether publicly or trust-owned vessels should have priority over privately owned vessels or vice versa, but we recommend that owners weigh up the following questions:

- on which vessel would the item be most historically appropriate?
- which vessel would offer the greater public access?
- are all contesting vessels in a sound financial state?
- which vessel has the greatest likelihood of long-term sustainability?

If you gift or sell items to other vessels at a discounted price you should satisfy yourself that the origin of these items is properly recorded and acknowledged by the vessel into which they will be incorporated. If they are 'lost', not only could future researchers of

either vessel be misled, but the deconstructed vessel will slip even further from memory. Once arrangements have been made for the transfer of ownership, a transfer title document should be drawn up, passing all responsibility and copyright to the new owner. A template can be found at Appendix C.

In exceptional circumstances, owners may wish to consider loaning fixtures and fittings to other vessels. This should only be undertaken where there is a demonstrable benefit – for example, making a temporary loan to one vessel until another, more appropriate one, is ready to take the items. Lending presents an administrative burden to both parties and lenders from a vessel about to be deconstructed must be confident that the borrowing organisation will be in existence for the length of the loan period, so that its condition can be monitored and the item safely returned. Loans should be for a fixed period and not used to wield influence over another organisation. Lenders should put in place a signed agreement stating all the conditions attached to the loan, such as its duration and insurance value: a template is given in Appendix D.

All disposals, loans and their recipients should be documented and incorporated into the Vessel Record, which should be lodged with an appropriate repository and a summary given to NHS-UK.

# 9. THE VESSEL RECORD

The Vessel Record will comprise all historic photographs, plans, models, logbooks, letters, bills and oral histories gathered during the course of custodianship of the vessel and during research undertaken to establish her significance. Added to this will be details of all recording work undertaken prior to and during the deconstruction of the vessel, and notes which give the location within the ship of any parts of the vessel which have been preserved. The record should also declare where all the preserved parts are being stored and, if appropriate, where they are displayed.

To be useful for future researchers, the Vessel Record should be accompanied by an index and inventory of its contents, enabling them to be accessed efficiently. Conservation standards should be considered to ensure the longevity of the record – advice can be found in *Understanding Historic Vessels* Volume 1.

## 9. 1 Depositing the record – the National Archive of Historic Vessels

When a vessel that is on the National Register of Historic Vessels reaches the end of its life, its register entry is automatically transferred to the National Archive of Historic Vessels, which is also held by NHS-UK. This database contains details of over 500 vessels previously on the National Register of Historic Vessels which have now been broken up, lost, sunk, or whose owners have been out of contact for a considerable period. When a vessel is archived, staff will review the vessel record or summary provided by its owner, as well as all details held on file, to ensure that an accurate and updated overview is given in the entry and links are provided to sources kept elsewhere. The vessel images accompanying the entry may include those generated as a result of recording, including through photogrammetry or laser scanning. Any report on the vessel's deconstruction can also be uploaded along with her statement of significance. The National Archive of Historic Vessels is, in many cases, the last accessible record of a craft that no longer survives and it provides a valuable tool for researchers, historians, enthusiasts and those looking to build a replica.

# 10. DECONSTRUCTION CHECKLIST

## 10.1 Prior to deconstruction

- Alert NHS-UK
- Publish a Declaration of Intent to Deconstruct and review responses
- Inform owners of similar vessels, if known (as potential recipients of equipment, fittings, etc.) or ask NHS-UK to assist with this
- Complete all research (including documentary and oral evidence)
- Formalise the assessment of vessel significance in a written statement
- Produce a 'working reference' copy of the research for use on the vessel during deconstruction
- Identify all items and structures significant or useful enough to be retained, find and agree locations where they will be stored, displayed or recycled and obtain commitments about how all costs of removal and transport will be met
- Identify a suitable archive for the Vessel Record
- Agree an appropriate deconstruction methodology (e.g. for numbering component parts of a structure to be retained)
- Check health and safety requirements
- Carry out a full Risk Assessment
- Make a reconnaissance visit to the site to identify any physical access problems, amenities and shelters and review the Risk Assessment in the light of what is found
- Obtain method statements from contractors
- Ensure all contractors – breakers, hauliers, crane operators, packers, etc. – understand the objectives of the deconstruction and which elements are to be retained
- Nominate the internal team (we recommend a minimum of three so that a rota can be arranged) who will attend the deconstruction process
- Identify the appropriate recording methodology
- Assemble appropriate equipment for recording
- Ensure enough packing materials are available for small items
- Check tides, weather and location
- Secure all permissions for access to site as well as to the vessel

## 10.2 During deconstruction

- Maintain a logbook and/or video log of the deconstruction process
- Check existing documentation for gaps which can be filled through deconstruction
- Review and re-emphasise the aims and objectives of the deconstruction to all contractors
- Review deconstruction methodology
- Review health & safety requirements
- Check all safety equipment regularly
- Identify a safe working area to compile notes and images and for temporary storage of items for retention

## 10.3 Post deconstruction

- Ensure all retained items and structures are securely despatched to new locations
- Write up all new findings, including the locations of retained items / structures
- Incorporate the write-up into the Vessel Record
- Transfer the Vessel Record to the appropriate archive with a summary sent to NHS-UK

# 11. AFTERWORD

Once the vessel is deconstructed and gone, with her fixtures and fittings dispersed and the vessel record complete and safely lodged, take time to consider what you have achieved. It will almost certainly have been an emotional and probably painful journey, but at least you have prevented the vessel disappearing without trace. You will have ensured that knowledge of her and her stories has not been lost, but is available for generations to come in the form of her Vessel Record and any retained parts. Given the circumstances, this is the best possible outcome that could have been achieved.

# Appendix A: Template for declaration to deconstruct

DECLARATION OF INTENT TO DECONSTRUCT REGISTERED HISTORIC VESSEL '*[vessel name]*'

*[Owning organisation or individual]* hereby announces the intention to commence deconstruction of the registered historic / National Historic Fleet vessel *[vessel name]* on *[date]* unless any alternative solution is put forward before this deadline.

*[short description (100 words or less) of the history and characteristics of the vessel]*

*[short description (100 words or less) of the current condition of the vessel, including any conservation work or repairs recently undertaken or in progress, plus date and brief details from last survey where appropriate. N.B. Survey Reports should be made available on request to interested parties]*

*[short description (100 words or less) on the reasons for deconstruction]*

*[identification (100 words or less) of possible future uses for the vessel if ownership is transferred]*

*[summary of steps taken, organisations approached, etc. to secure a future for the vessel]*

Records for this vessel are held by *[organisation / person]*. These include [*description of the records held]*. If deconstruction goes ahead, a formal entry will be created for the ship on the National Archive of Historic Vessels and held, in perpetuity, by National Historic Ships UK.

For further information about this vessel, please view her entry on the National Register of Historic Vessels which includes a Statement of Significance.

Any interested parties wishing to: make an offer for the ship or related fittings (price on application to reflect works carried out to date); propose a new end use or location; or provide further documentary and photographic evidence, should contact: [*organisation/ person and / or info@nationalhistoricships.org.uk]* as soon as possible and no later than *[date]*.

# Appendix B: National Register of Historic Vessels scoring system

In order to assess vessels for inclusion on the National Historic Fleet, NHS-UK uses a scoring system as a means of initial evaluation. The table on the following page sets out a series of core scores against which a vessel can be assessed. This methodology was published as part of a public consultation on the National Historic Fleet Review in 2014 and may be subject to change. Further specialist scores may also be added in relation to groups of vessels with unique characteristics.

| | | SCORE | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| 1 | *All vessels* | **Age** | Less than 50 years old | 50 – 99 years old | 100-149 years old | 150 – 199 years old | 200-249 years old | 250+ years old |
| 2 | *All vessels* | **Innovations (new ideas and techniques** | Contains no design innovation of importance / unknown builder and designer | Contains one important design innovation (plus 1point for known builder or designer) | Contains two or more important design innovations (plus 1point for known builder or designer) | Add one point for each named innovation (maximum 4 points) plus an additional point for known builder or designer. | | |
| 3 | *All vessels* | **Historical associations (people, events and operational area)** | No historical associations | Solely local significance | Solely regional significance | Regional significance with elements of national significance | National significance with elements of international significance (e.g. at least one rescue involving international shipping | Clear international significance (e.g. took part in Dunkirk evacuation) |
| 4a | *Vessels whose primary purpose is static preservation (afloat or ashore)* | **Level of originality (hull fabric / design features / vessel form / rig/ internal and deck fittings)** | No conservation principles applied / very little original fabric or features surviving | Vessel preserved / restored with introduction of considerable new materials | Vessel preserved / restored with substantial original fabric or features missing | Vessel preserved / restored with some loss of originality to all elements | Vessel preserved / restored with hull significantly intact but with some features missing or over restored | Vessel preserved with exceptional originality of fabric and key features of form and function intact |
| 5a | | **Condition** | Significant problems, fabric in extremely poor condition, or state unknown | Fabric in poor condition and declining | Unsatisfactory, fabric being inappropriately preserved or unstable | Visible improvement in condition of vessel stabilised, but with limited controls in place | Satisfactory, with any minor changes under control and monitored | Optimal - vessel stabilised and regularly monitored in appropriate environmental conditions |
| 4b | *Vessels whose primary purpose is operational use* | **Level of originality (hull fabric / design features / vessel form / rig/ internal and deck fittings)** | No conservation principles applied / little original material surviving | Significant reconstruction, adaptation or maintenance work which doesn't use like-for-like materials or changes vessel's appearance | Extreme reconstruction applied using conservation principles | Major reconstruction . Adaptation resulting in loss of key features or new material out-weighing old | Reconstruction or adaptation where key features have been accurately and sympathetically replicated using like-for-like materials without impact on form or function | All key features of form and function intact: no reconstructive work carried out other than maintenance / minor reconstruction or restoration work resulting in minimal introduction of new materials |
| 5b | | **Condition** | Very poor and deteriorating condition or state unknown | Significant localised problems | Vessel in need of repairs / significant re-fit / no maintenance policy | Vessel in good or stabilised condition / regular maintenance | Condition very good / any localised problems do not prevent operation / annual maintenance plan in place | Condition excellent and 5 year + maintenance plan in place |
| 6 | *All vessels* | **Rarity (based on number of other known vessels)** | 100 plus | 51-100 surviving examples | 11 - 51 surviving examples | 6 - 10 surviving examples | 2 -5 surviving examples | Unique survivor |

# Appendix C: Template for a transfer of title

## TRANSFER OF TITLE

| TRANSFER REFERENCE NUMBER |
|---|
| |

*[Name of organisation transferring item(s)]* hereby transfers the ownership of the items listed below to

*[Name of organisation/ individual receiving the item(s)]*

Method of transfer: gift / purchase / other (specify)

| Reference number | Description | Date |
|---|---|---|
| | | |

This/these item(s) have been transferred from the historic vessel *[vessel name and short description]*.

All reasonable efforts have been made to confirm that [*transferer*] has the right to transfer the item(s) to [receiver] but [*transferer*] cannot be held responsible for any subsequent claims of ownership.

Signed

On behalf of the transfer Date

On behalf of the recipient Date

One signed copy of the transfer of title should be given to the recipient, a second signed copy retained in the Vessel Record.

# Appendix D: Template for loan of items

## LOAN AGREEMENT

| REFERENCE NUMBER |
|---|
| |

*[Name of organisation lending item(s)]* hereby lends items listed below to

*[Name of organisation/ individual receiving the item(s)]*

| Reference number | Description | Value |
|---|---|---|
| | | |

Loan purpose — Loan venue / vessel

Loan period — Start date — End date

The lender asserts sole ownership of the items listed in this agreement and hereby agrees to lend the items to the above named borrower for the stated period. The Borrower has read the terms and conditions attached to this Agreement and agrees to be bound by them. The Lender agrees to honour these conditions

Signed

On behalf of the lender — Date

On behalf of the borrower — Date

# LOAN CONDITIONS

**Costs**

The Borrower is responsible for paying all the costs incurred by the Borrower and the Lender in connection with the loan of items. This includes:

- Insurance premiums (for commercial insurance or indemnity deductibles)Packing
- Case hire or case construction
- Transport, shipping and related costs incurred in transporting works to/from the Lender (including any transfers between venues)
- Travel, accommodation and subsistence costs of the Lender's representative visiting the venue to inspect the premises or condition of the item during of the loan if this is required

**Insurance**

The Borrower shall provide insurance cover for the item from the moment it leaves the Lender's property until its return. The value of the item will be agreed mutually. The Lender reserves the right to inspect the insurance document at any time.

**Acknowledgement**

The Borrower must recognise the Lender in any credits or publications.

**Cancellation or early termination of loans**

The Lender reserves the right to recall or cancel any loan in the event of an emergency, or if the Borrower undergoes a change of financial control impacting severely on the performance of the Borrower, or if the Borrower is in default of any obligation under the Loan Agreement, or if the Borrower has not remedied the default to the satisfaction of the Lender or if the default is a fundamental breach of the Agreement.

# Appendix E: Example of a declaration to deconstruct

(issued on 24th May 2019)

**DECLARATION TO DECONSTRUCT: NATIONAL HISTORIC FLEET VESSEL 'CALSHOT'**

With no viable alternative in place, the Tug Tender Calshot Trust (TTCT) reluctantly announces deconstruction as the likely outcome for the National Historic Fleet vessel *Calshot*, following an options appraisal into the future of the craft undertaken by a maritime expert commissioned by Southampton City Council earlier this year. *Calshot*, which has been issued with a final notice period for vacating her berth in Southampton Docks by Associated British Ports, is now being offered for sale at a nominal sum to anyone able to provide a sustainable long-term heritage solution.

*Calshot* was built in Southampton and launched in 1929 at the Thornycroft shipyard in Woolston. She was the largest tug and passenger tender built for Red Funnel and manoeuvred some of the great ocean liners, as well as carrying high numbers of passengers including world famous celebrities, film stars and politicians. During the Second World War, she tendered the home fleet in Scapa Flow, ferried American troops out of the Clyde and took part in the D-Day preparations acting as Headquarters Ship for the Juno area of the invasion force. She later worked out of Galway before returning to Southampton as a public exhibit.

*Calshot* is structurally complete and afloat. Much of her classic interior remains, with many original fixtures and fittings including her first class passenger saloon which provides a wonderful reflection of 1930s style. She is powered by two Dutch engines installed in 1964, which have been maintained and were last run in 2006. Her riveted steel hull shows no sign of water ingress but her superstructure has areas of weakness and corrosion, her masts are no longer in place and the deck requires replacing. Ultrasonic thickness measurements of the hull plating show little loss of steel, although the vessel no longer meets passenger carrying requirements and major works would be necessary to return her to operational use.

*Calshot* is a rare survivor of her type and one of only 212 vessels currently listed on the National Historic Fleet.

Any interested parties wishing to make an offer for the ship or find out further details, should email: sosCalshot@southampton.gov.uk as

soon as possible and no later than 1 July 2019. Emails sent to this address (including contact details) will be forwarded to a Maritime Expert who will evaluate the proposals.

Should no alternative solution be found by this date, plans for deconstruction will move forward and a formal entry will be created for the ship on the National Archive of Historic Vessels where its record will be held, in perpetuity, by National Historic Ships UK.

For further information about this vessel, please view her current entry on the National Register of Historic Vessels which includes a statement of significance: https://www.nationalhistoricships.org.uk/register/1/calshot.

Personal data: for information about how the Council handles your personal data, and how you can exercise your rights under the GDPR, please see our privacy policy (http://www.southampton.gov.uk/privacy).

# Appendix F: Example of an appeal for new ownership

The National Waterways Museum has one of the largest vessel collections in the UK and, over a number of years, has undertaken an in-depth review of the significance of each one of them. This culminated in a detailed report assessing the collection, grant aided by the Esmee Fairbairn Collections Fund. The aim of this review was to develop a long term and sustainable approach for the collection and, as an outcome, in 2019 it was announced that 13 vessels would be disposed of, preferably by rehousing but, if this proved impossible, by documented deconstruction. The following notice was issued by the Museum:

**Rehoming the Boats**
**National Waterways Museum Collection**

**Why is the Museum looking for new homes for some of its boats?**
The Canal & River Trust is responsible for the most comprehensive and important collection of inland waterways material anywhere in the UK. It has been Designated by Arts Council England as a collection of national significance and includes 68 historic vessels of which fourteen are listed on the National Historic Ships Register and 12 form part of the National Historic Fleet.

Despite dedicated staff and volunteers striving to find sustainable solutions, the challenges of looking after the Boat Collection have dogged the Museum for many years. In 2015 a report funded from the Esmée Fairburn Collections Fund reviewed the options for the care, conservation and display of the Boat Collection. Following rigorous conservation processes developed by National Historic Ships UK to better understand vessel significance, the report recommended disposal of a number of craft (either by rehoming or documented deconstruction) whilst maintaining the Collection's integrity in terms of its quality and representation. This would then allow the Canal & River Trust to better look after its collection by focussing future resources on caring for the most significant vessels.

**What boats are you removing from the Collection?**

Aries Star class wooden motor narrowboat ('small ricky') c1935
*Chiltern* - wooden motor narrowboat (stern only) c1946
*Marlyn* wooden motor gigboat c1940
*Marple* iron hull of ice breaker c1850
*Marsden* - iron hull of ice breaker early 20thc.
*Minstrel* – small boat c1940
*Shirley* – small powered leisure boat c1930
*Speedwell* wooden dumb barge c 1925
*Spindrift 3* – Royal Navy "Jollyboat" c1910
*Stratford* – small iron riveted boat from Stratford Canal c1930
*Ulla* clinker-built salmon fishing boat c1952
*Whaley Bridge* iron hull of ice breaker date unknown

**Why can't you just sell the boats or give them to anyone who will take them on?**

The Museums Association Code of Ethics, to which as an Accredited Museum we adhere, supports the responsible removal of items from museum collections so long as this meets legal and ethical requirements. In addition, there must be a clear rationale for each item to be re- homed.

As an Accredited Museum there is a responsibility on the Trustees to care for the Collection in such a way that it will be a benefit and inspiration for future generations to enjoy. Museums also frequently consist of objects which have been donated or bequeathed and naturally there is an expectation on the part of the donor that their gift will be seen and enjoyed for many generations to come.

All museums, have a duty to behave with due diligence in looking after their collections and any decision to remove an item must take this responsibility into account and ensure public confidence is maintained in the individual museum and the Museum Sector as a whole.

**Who has agreed to this?**

The Canal & River Trust Board of Trustees approved a policy for the National Waterways Museum to dispose of twelve historic boats in the National Collection. Next, we established an expert panel to rigorously consider each boat proposed and consider what might be the best option. The panel members are:
[list of names]

Once a new home has been identified, the Trustees will have the final say on the recommendations of the Expert Panel.

**How will you go about finding new owners for these boats?**

In the first instance, under the Trust's Policy and Museum Association guidelines, these vessels will be offered to accredited museums. The purpose being that as much as possible, museum collections should remain in the public domain. However, should a home not be found in another museum or relevant public body, then they can then be offered to individuals and private interested bodies.

However, for historic inland waterways vessels, the Canal & River Trust recognises that there are many enthusiasts some of whom are members of the Historic Narrow Boat Club who love and cherish their boats and who could provide the right loving home for these displaced vessels. The Trust also recognises its responsibility in finding the right home in a fair and transparent way and to achieve this we have set out criteria that have to be met by individuals when submitting an expression of interest form.

**Can't the boats go back to their original owners?**

The boats in our collection have come to us over the past 40 years. Many date back to the museum's opening in 1976. We will do everything we can to contact the original owners to tell them of our plans. Boats often come to us because their owner is no longer able to look after them. So it is unlikely that, even were we to be able to contact them, the original owner would be willing, or able, to take the boat back.

**Why are you giving the boats away and not selling them?**

The priority for the Canal & River Trust is to preserve as much the waterways heritage as possible. Many of the boats are in a very poor condition and are likely to be expensive to look after appropriately. In addition, the new owner will be expected to pay for the transport costs of the vessel. The Trust wants to ensure that the new owner has the capacity to take on this responsibility without the vessel remaining a burden to the waterways.

**What will you do if you can't re-home any of the boats?**

It may be that no other Museum or individual will be interested in taking them on or able to afford the costs in looking after them. If no interest is expressed, the boat will be recommended for documented deconstruction, a process by which the item is carefully recorded before being broken up so that any important information held by the boat, or parts of it, can be saved to broaden our knowledge and to hold that knowledge for future generations.

The Museum's curatorial team has specific expertise in recording historic vessels. Their recording project on *Gwendoline* is used by National Historic Ships as a case study in best practice and we have been shortlisted for a Living Waterways award for conservation. Their expertise will ensure a comprehensive record of each vessel is created.

**What about some of the other boats in the Collection? I might be interested in one of those.**

The current boats identified for re-housing have been selected because they are not integral to the collection and because we have sufficient documentation gathered together to enable us to continue with the disposal process. Later, there may be other boats that we are able to offer for re-homing.

**How do I express an interest in one of the boats in the current round?**

An Expressions of Interest Form can be downloaded from canalrivertrust.org.uk/nwm. Should you require more information, please contact the Museum at nationalwaterwaysmuseum@canalrivertrust.org.uk.

All applicants must show what plans they have for the vessel, how they will be care for it over the long term, what public benefit there might be, how these plans will be funded and what, if any, support will be needed from the museum. All expressions of interest will be considered anonymously by the panel before the final recommendation for the new home which will be made to the Board of Trustees for ratification.

Expressions of Interest should be returned to the Museum by 2nd November 2019.

# Appendix G: Example of deconstruction leading to partial replication

*Medway Queen* is a paddle steamer built in 1924 in Troon for service as a Thames passenger vessel. Originally coal-burning, she was converted to oil-fired steaming in 1938. Present at the Spithead Coronation Review of the Fleet at Spithead the previous year, she was requisitioned in 1939, serving as a minesweeper. She is one of the famous 'Dunkirk Little Ships' of 1940, rescuing around 7,000 men. Her last sailing as a strictly commercial vessel was in September 1963.

*Hoisting paddle wheel and shaft clear of hull. Later rebuilt and reinstalled (W. Davies)*

Several attempts were made to conserve her, but it was not until 1984 that she was brought back to Chatham from the Isle of Wight (where she had lain derelict after a short period as a nightclub). By the time the Medway Queen Preservation Society (MQPS) had obtained a grant to restore her, it was found that her hull had deteriorated beyond repair, finally having collapsed in places. It was agreed that she should be deconstructed with a view to retaining as much as possible to be re-incorporated into a replica hull. Already preserved ashore were the paddle box fronts, the funnel and engine room cuddy. Thus, a contract was let with a local engineering company, GPS Marine Contractors Ltd, under the title "The sympathetic dismantling of the Medway Queen at Damhead Creek."

The dismantling took place under difficult conditions at Damhead Creek, over some three months, and GPS moved the necessary equipment on site by barge, the scrap being taken to their base at Chatham as the tides permitted. The work was carefully supervised by MQPS volunteers, who photographed and numbered all the various components saved, up to some 300 individual items. It was not necessary to do dimensional checks on any aspect as a complete set of builder's steelwork drawings still existed, and were to be used to construct the replica hull.

All the recovered components were catalogued and stored. To the one surviving funnel was added a collection of steam machinery, the engine and paddle wheels, engine room piping, portholes, guardrails (although the bass rails around the compass platform were later

*Cleats removed for reuse, note numbering (W. Davies)*

stolen), as well as some of the decking which was retained and reconditioned. Using the surviving plans and the results of comprehensive photographic and naval architectural surveys undertaken before deconstruction, a new riveted hull was built (thanks to a Heritage Lottery Fund grant) and the reconditioned material re-installed where possible, although unfortunately not all the components proved capable of restoration. After five years of this work, she returned to Gillingham in 2013.

*The final steps. Note boiler seats remaining in situ on bottom plating. New ones will be made to suit replacement boiler (W. Davies)*

# Appendix H: Example of recorded deconstruction

*Gwendoline* was a wooden, motorised Yorkshire Keel, built in 1953 at Ledgard Bridge, West Yorkshire, by and for John Hargreaves, to carry coal along the Calder and Hebble Navigation to the Yorkshire power stations. One of the last examples to be built, she was operated until 1973 when she was sold and converted into a houseboat.

In 2001 she was recovered by the Boat Museum in Shipley in very poor condition and was kept partially submerged. As the Museum lacked sufficient funding to stabilise her, over the years large sections of external planking were lost to rot.

Margaret Harrison, then Collections and Interpretation Manager at the National Waterways Museum, and her team decided that high quality recording through a documented deconstruction process would be the best option for *Gwendoline* – the alternative was allowing her to continue to deteriorate, potentially losing all the evidence of her construction. A team with specialist skills was assembled including:

- a marine surveyor with experience of historic vessels (Michael Carter)
- traditional boat builders who specialised in wooden inland waterways craft (Malcolm Webster and Adrian Polglaze)
- a waterway historian/artist (Tony Lewery)

Their initial brief was to:

- record as much about the vessel as possible as she lay sunk.
- carry out a feasibility assessment on how to attempt to float the craft.
- carry out a pre-craning assessment on how to lift the craft.

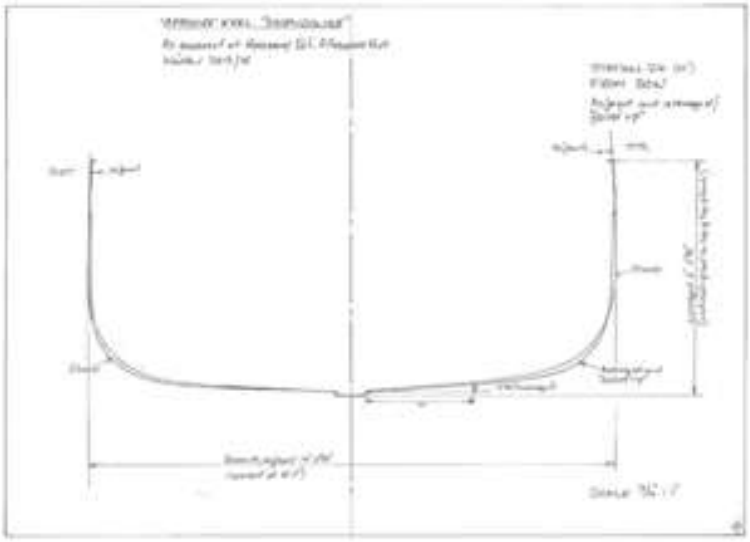
The initial study was undertaken in June 2017 and as a result the team became confident that the vessel could be re-floated and additional recording undertaken. A trial lift was undertaken the following month.

*Gwendoline* was craned out of the water in October 2017 and transported to an off-site store where she was supported on hard standing by wooden baulks. She was relatively level fore and aft, with the stem plumb, although the stern post leant some eight inches to port.

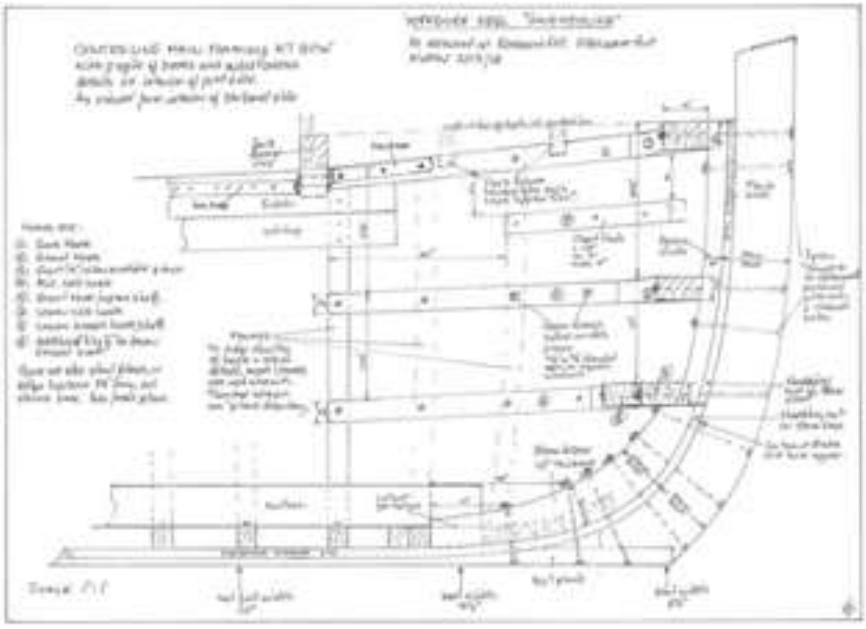
Recording continued until February 2018 with the aim of creating sufficient information, through narrative description, drawings, and photographs to provide a future boatbuilder with the best information possible to build an authentic replica.

A major challenge was to establish how *Gwendoline*'s current shape coincided with her 'as built' dimensions. There was clear distortion from hogging and sagging.

To measure hull shape, the vessel was "gridded" with string lines at regular intervals and from these vertical measurements were taken (a technique commonly employed by archaeologists). The resulting figures were transferred to the drawing board and adjustments made for the hogging and sagging. The final 'faired' lines plan represents a reasonable assessment of *Gwendoline* as built and is supported by extensive photography of the boat at the time of recording.



*Cross section showing the as-found shape and assumed as-built shape of the hull*



*Drawing showing bow main framing arrangement*

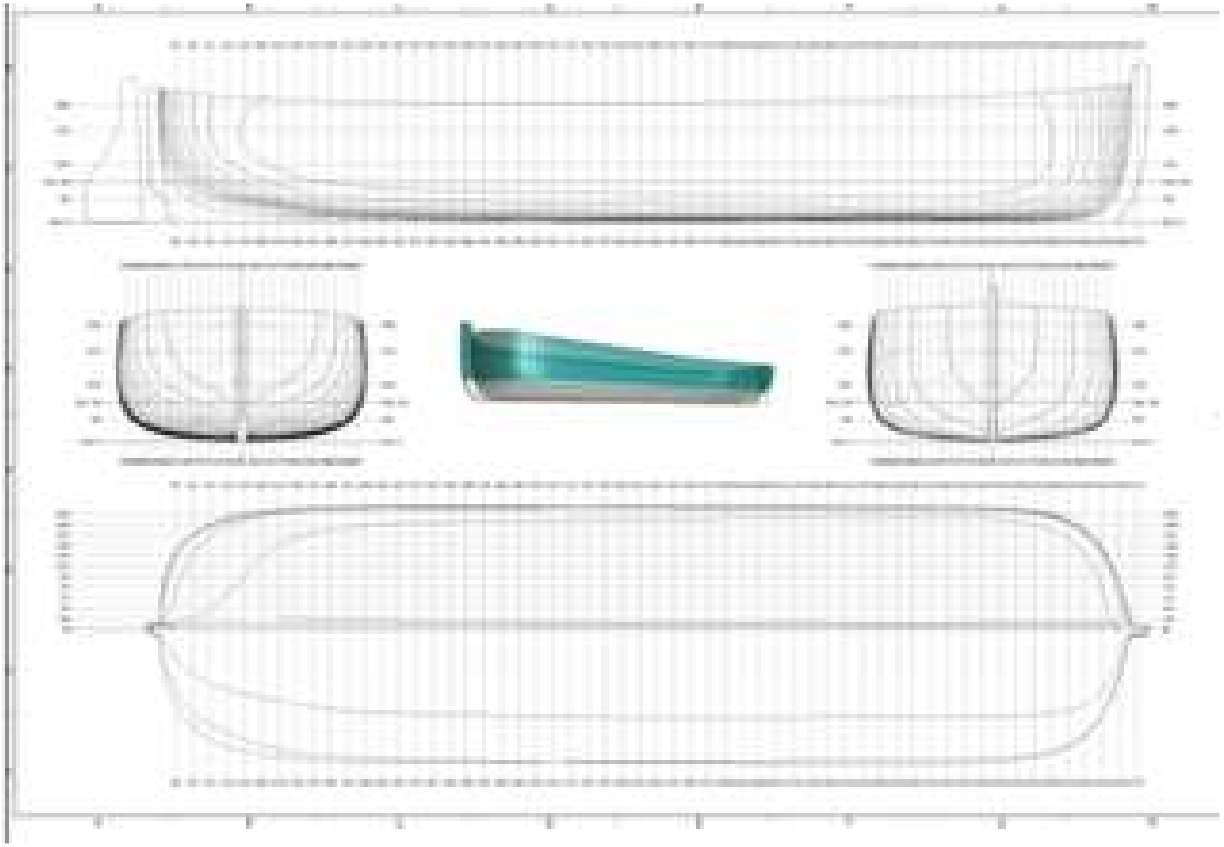
In addition to the manual recording of the vessel, the Museum also decided to create a digital 3D model of *Gwendoline* using photogrammetry and engaged Stuart Norton, a CAD specialist with considerable experience in recording historic vessels. Working with museum volunteers, Stuart took a large number of digital images, and processed them through the Agisoft package. He

produced two models: one while *Gwendoline* was in the water and one after she had been craned out. Using additional software, Rhino 3D and Delftship, Stuart was able to produce a lines plan of the barge.

*Photogrammetry model*

The final stage was for the boat recording team to work with Stuart to compare results and look at how both approaches could be used together to achieve the best results.

The comparison between the two techniques delivered some important lessons. Both had to make certain assumptions to compensate for the distortion of the vessel. However, those made by the measuring team proved the more reliable, probably because they had the benefit of being on site when making these assumptions. The Museum's conclusion was that although photogrammetry reduced the amount of time needed on-site to take measurements, to gain a full and detailed understanding of the vessel, the most effective and accurate way to carry out future modelling would be by using both techniques together.



*Lines plan produced from the photogrammetry*