The Carpow Logboat, Perth and Kinross

Terms of Reference for Archaeological Monitoring of excavation and lifting.

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1 Background

The discovery of a logboat at Carpow bank on the Tay estuary was first reported by metal-detectorists in August 2001. Initial visits by archaeologists from Historic Scotland (HS); the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS); and Perth Museum and Art Gallery (PMAG) confirmed the find was a logboat, and a subsequent radiocarbon dating has produced a date of around 1,000 BC. The vessel is situated in the inter-tidal zone on the south bank of the Tay estuary, near Abernethy. Access to the site is very limited, being dependant both on a low spring tide combined with a dry period of around two weeks (ensuring that the considerable volume of water in the River Tay is low). Subsequent evaluation, part-funded by Historic Scotland, has shown the vessel to be around 9.25m in length and around 0.9m wide. Further to evaluation the vessel was sand-bagged for protection and monitored periodically (Strachan 2004).

The proposed project will involve environmental work on the inter-tidal context of the vessel and the lifting of the vessel, followed by conservation by the National Museum of Scotland (NMS).

This purpose of this document is to allow competitive tendering for archaeological monitoring of excavation and lifting of the vessel.

2 Location

The boat (NMRS Ref NO21NW 161) is located on inter-tidal mudflats at NO 2001 1859, on Carpow bank on the south side of the estuary where the River Earn and the River Tay meet to form the head of the estuary proper (Fig. 1). The site, which is in the parish of Abernethy, has a number of environmental designations, including Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and RAMSAR Site.

The tidal amplitude of the Carpow Bank is seriously affected by the volume of water flowing downstream as result of rainfall/snow-melt. Experience has shown that only a combination of a low spring tide (with a predicted height less than 1 m OD at Dundee) will expose the vessel. A tidal window of around 3-4 hours can occur on a predicted low tide following a period of dry weather of around 1-2 weeks.

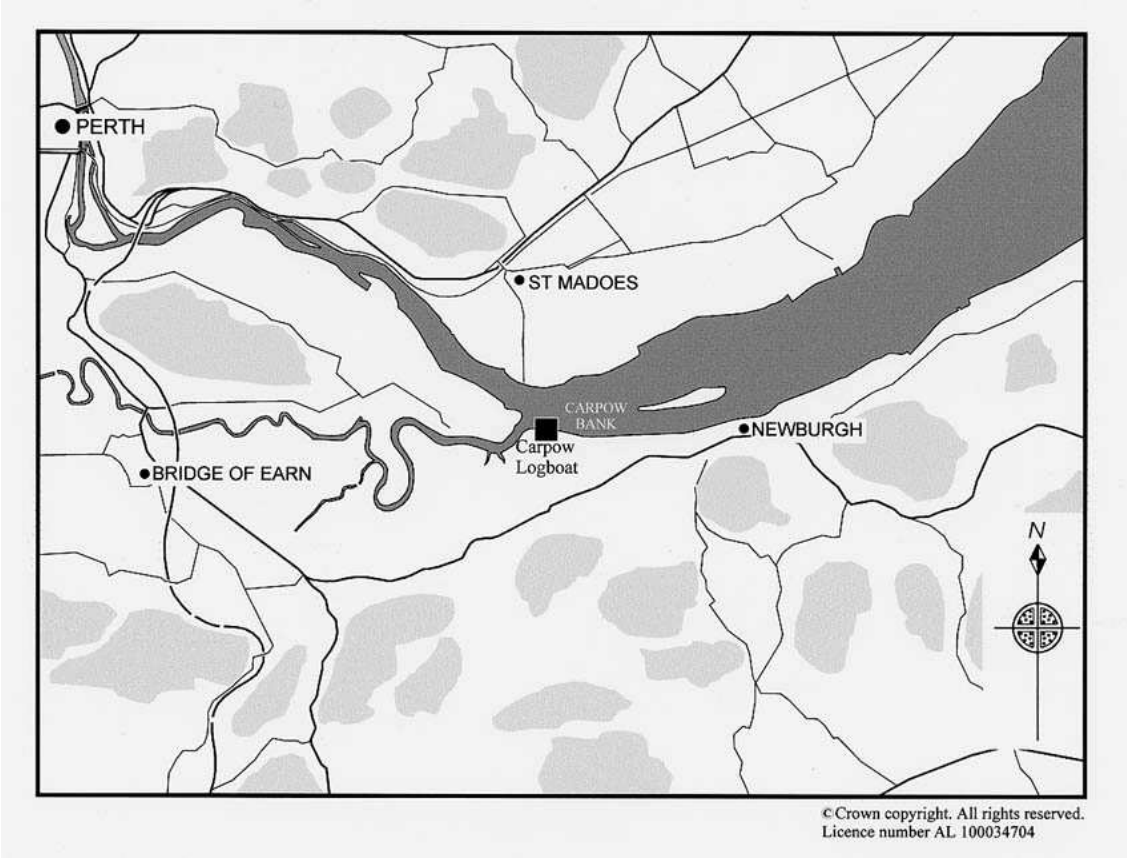

Fig. 1: Location of the Carpow bank on the Tay estuary.

3 Results of Evaluation work to date

3.1 Initial Assessment

During an initial inspection, it was clear that the vessel was aligned almost east to west with the assumed bow of the craft pointing upstream, and around 5m of the vessel was exposed.

The timber was found to be oak of reasonably high quality with only one knot being apparent at the exposed end. The exposed section of the vessel was found to be highly abraded with some signs of rot being evident, particularly on the tops of the sides. Splitting has occurred around the exposed end and the tops of the sides have fallen away in places to leave the sheers irregular. No associated structures or artefacts were identified and the presence of thickness-gauge holes could not be demonstrated. Given the partial exposure of the vessel, the form of the vessel could not be determined.

The stern of the vessel remained buried in sands, gravels and estuarine mud however, and so the aim of subsequent evaluation work was to i) establish the date of the vessel; ii) establish the full length of the vessel; and iii) establish the condition of the buried section of the vessel (see 3.2 -3.4 below).

3.2 Radiocarbon dating

A sample (Fig. 2) was taken from the bow of the vessel for radiocarbon dating and produced a radiocarbon age of 2885 ± 50 (AA-45634/GU9597). This produces a calibrated date of between 1220 to 910 BC (93% probability). This date, from the later part of the Bronze Age, makes the vessel only one of three in Scotland dating from the second/first millennium BC (Mowat *pers comm*), as the vast majority of logboats in the country are post-Roman to medieval in date.

3.3 Evaluation of length

An evaluation was carried out in October 2002 (SUAT 2002, Strachan and Glendinning 2002) and July 2003 (Strachan 2004) primarily aimed at identifying the total length of the vessel. The 2003 work involved the use of water pumps, allowing a trench to locate the stern of the vessel (Fig. 2 and photo 3). This proved the vessel to be c. 9.25 m long, with the top of the stern being buried around 0.75m beneath the estuarine sands/gravels.

Study of the plans and sections recovered from the evaluations (Fig 2), show that either there may be a break in the vessel, or that some distortion and warping of the vessel has taken place *in situ* over time. No finds or associated archaeological deposits were recovered from the site, the vessel being buried in a pocket of sands and gravels within the inter-tidal peat shelf.

3.4 Condition of the buried section

The 2003 work also revealed the buried portion of the vessel to be in excellent condition, having suffered little erosion from either tidal action or regular exposure to the air. Of particular interest is the fact that the vessel retains an *in situ* transom board, and it is suggested that this fairly rare occurrence could produce much new information regarding log boat construction in prehistory. For example, the transom-board itself is presumed to be a tangentially-cut plank, however, this could not be confirmed as the grain of the timber is obscured by a mineral deposit coating the buried part of the vessel. The transom-board was found to be c.6cm thick and tapered to a point where contact was made with the transom-groove (see stern board detail on Fig. 2).

3.5 Initial Environmental Assessment

The vessel is located amongst inter-tidal mud, sands and gravels on an eroding peat shelf. The peat would have originally formed a continual bed across the flats, however these are eroded into a series of isolated blocks of variable thickness. In some cases the peat exposures have been undercut by erosion leaving fossil stumps exposed. The peat deposits are likely to date from around 7,500 and 8,500 BP, based on dates obtained at Innernethy and Gordon (Cullingford *et al* 1980), both of which are within 1 km of the site. These dates provide a relative sea level index of *c*.3m OD, more or less

equivalent to the current level of the site. The deposits in the immediate vicinity of the boat contain *in situ* peat and more recent estuarine alluvium.

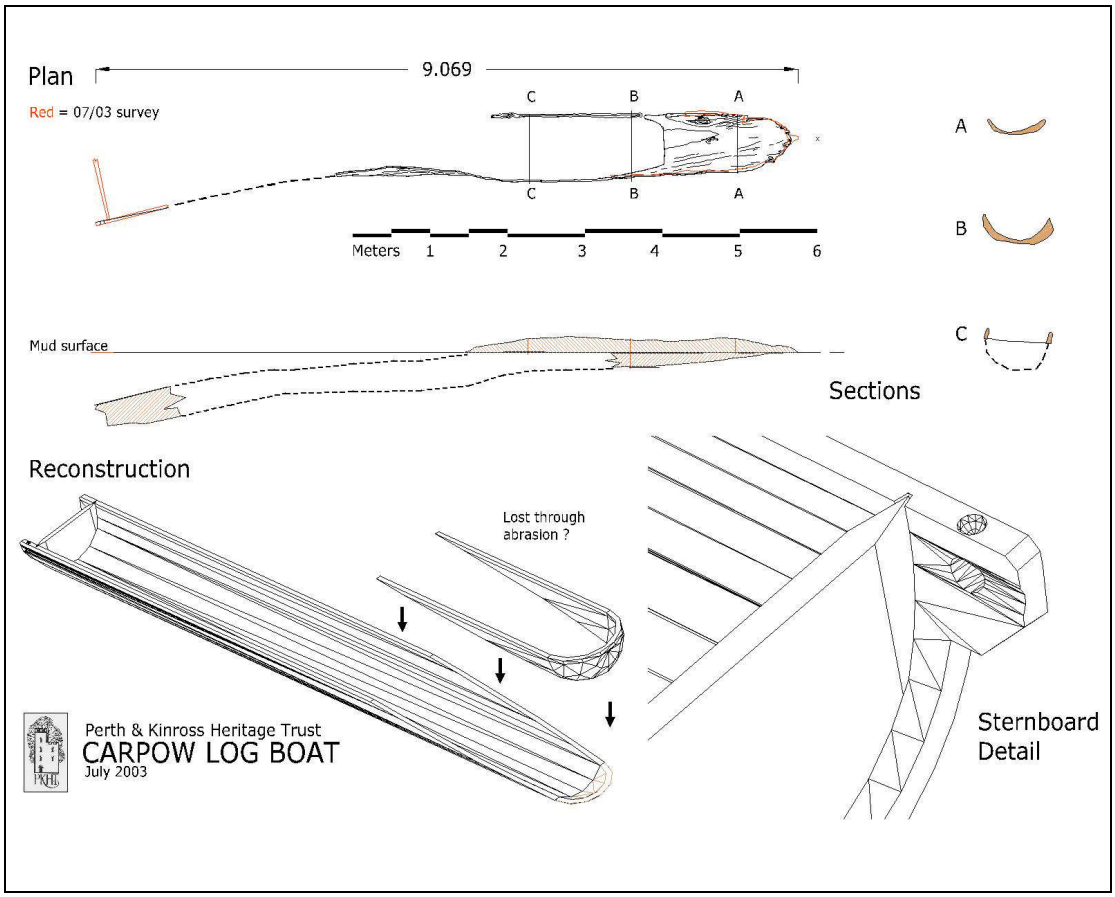

Fig 2: Plans and sections of the vessel.

4 Nature of Lifting Operation

Invitations to tender for the lifting and transportation of the vessel will be based on the following:

4.1 Excavation and Lifting of the vessel

An appropriate method for excavating the vessel, without damage, is required. It is suggested that this should involve the use of high volume/low pressure water pressure/suction at high tide. The deposits around the logboat will already have been loosened up by a team of archaeologists at low tide (allowing any associated finds/deposits to be located and recorded). A marine archaeologist will be provided by the Perth and Kinross Heritage Trust to monitor the excavation process.

Adequate support for the vessel is required to avoid its damage during lifting. It is recommended that consideration is given to a cradle operation, as used on the Confederate submarine HL Hunley in 2000 – see:

http://www.oceaneering.com/currentevents/MainItemPages/Hunley/Hunley.htm

The vessel should be moved from its current location and positioned on an appropriate vehicle for transportation. It is suggested that one of the piers at Newburgh (NO 234 186) or the slipway at Cairnie Pier (NO 1959 1918) could be used.

5 Requirement of work

A marine archaeologist, with appropriate diving qualifications, is required to monitor the above process, and it is suggested that tendering should be done on the basis of a daily rate and any necessary travel and accommodation expenses.

6 References

CFA	2002	Carpow Log Boat Project: Palaeoenvironmental Notes based on site visit 9/10/02. Unpublished report.
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Mowat, R.J.C.	1996	*The logboats of Scotland, with notes on related artefact types.* Oxbow Monograph 68, Oxford.
Strachan, D.	2001	Carpow Log Boat. Discovery and Excavation in Scotland 2, 74.
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Strachan, D. and Glendinning, B.	2003	Carpow Log Boat. Discovery and Excavation in Scotland 4,104.
Strachan, D.	2004	A Late Bronze Age logboat from the Tay estuary at Carpow, Perth and Kinross, *Tayside And Fife Archaeological Journal* 3, 90.
SUAT	2002	Archaeological Evaluation of Carpow Log Boat, Perth and Kinross. Unpublished DSR.

Appendix 1: Photographs

PHOTO 1: The stern of the vessel as revealed during the evaluation excavation.

PHOTO 2 (LEFT): Flooding of evaluation trenches following removal of estuarine deposits. **PHOTO 3 (RIGHT):** Sand-bagging of the vessel following excavation, and prior to monitoring.