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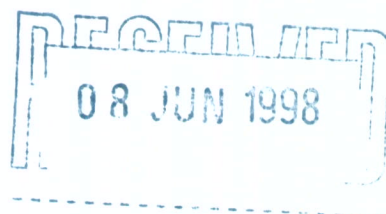
# CASTLE TIORAM

PART 3 -

AN UNDERWATER SURVEY AT CASTLE  
TIORAM, IN LOCH MOIDART



519



*An Underwater Survey to compliment the GUARD survey on  
behalf of ARP Lorimer & Associates for Anta Estates*

*carried out by*

*Glasgow University Archaeological Research Division*

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*PART 3 -*

AN UNDERWATER SURVEY AT CASTLE  
TIORAM, IN LOCH MOIDART

*by*

David A McCullough

and

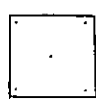
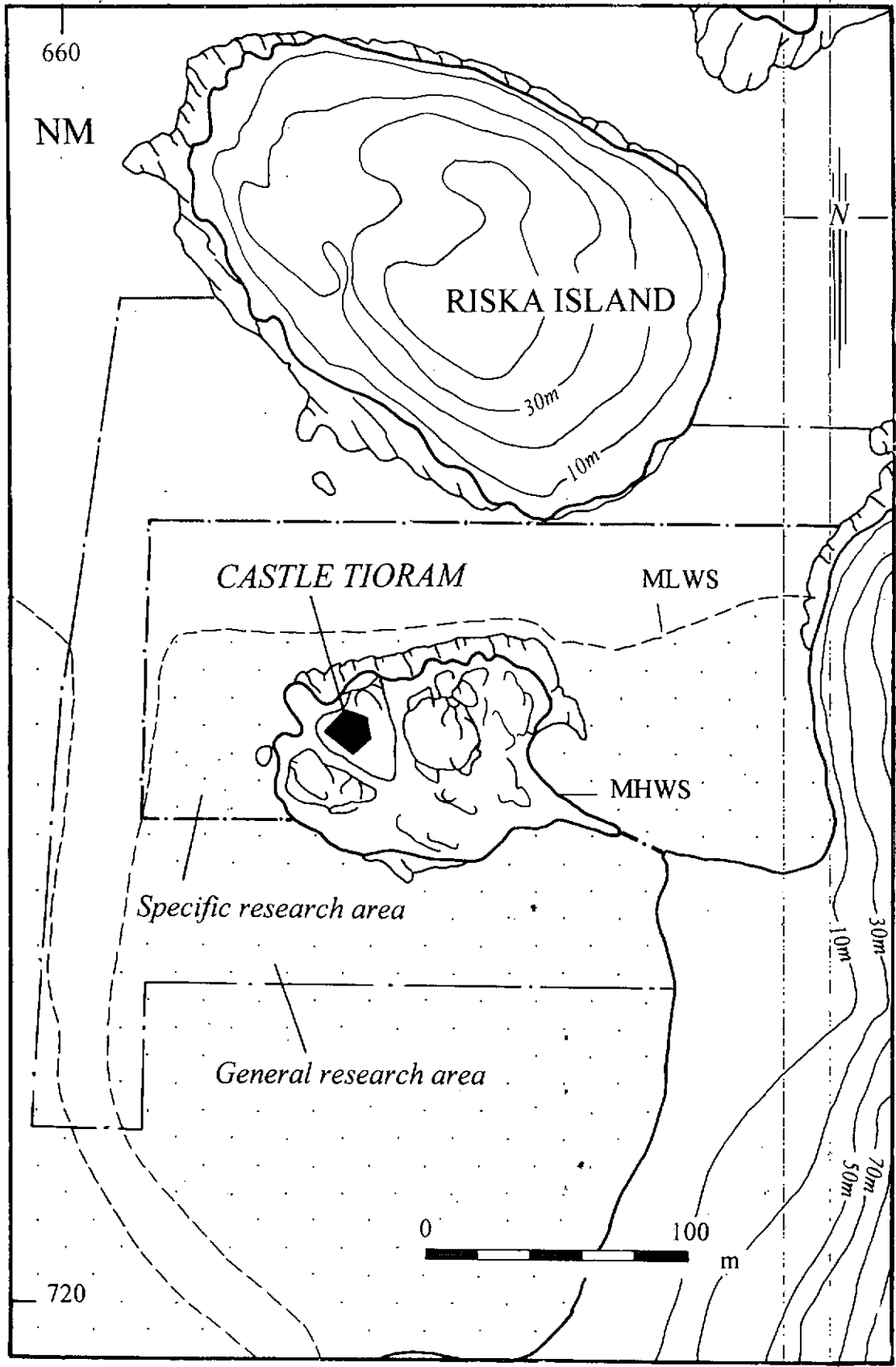
Marcia Taylor

*1998*

Glasgow University Archaeological Research Division

Glasgow

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Sand and mud

MLWS

Mean low water springs

MHWS

Mean high water springs

## 1.0 Summary

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A preliminary underwater survey of the waters around Eilean Tioram was undertaken in November 1997 by a team of postgraduate students from the Department of Archaeology at the University of Glasgow. The main objective of this independent research was to make a preliminary assessment of the potential for the survival of structural features, artefacts, anthropogenic sediments or other cultural material relating to the occupation of Castle Tioram. A team of three divers made two logged dives on the north side of the island. Recorded features included an extension of land-based midden material, building rubble and roof slates, a 19th-century pottery vessel and the timbers and metalwork of an abandoned jetty.

## 2.0 Objectives

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The object of the present survey was to locate and identify submerged features and artefacts which relate to Castle Tioram, on Eilean Tioram, Loch Moidart. In doing so, we hope to be able to provide data which may aid in the identification of architectural features and contribute to our knowledge of the inhabitants of the castle. In addition to this basic survey, recommendations on further research into the submerged environment of Eilean Tioram will be proposed. Finally, a more general objective is to show that a combined research design involving maritime and terrestrial archaeologists is essential in investigating any cultural manifestation within the maritime cultural landscape.

Figure 1:  
Areas of  
research interest.

## 3.0 Theoretical Research Basis

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This joint study of terrestrial and submerged archaeology falls into the realm of *amphibian archaeology*. The term *amphibian archaeology* can be applied to the intensive study of the lacustrine, riverine and coastal marine environment in tandem with the adjacent terrestrial environment. The result is a combined-complementary research design, the objective being to investigate the archaeological resource in the most complete way possible, using every available avenue of inquiry (McCullough 1997).

## 4.0 Methodology

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The survey methods were constrained by duration (one day) and by the resources available to the survey team. (All equipment was either owned by the crew members or hired by them.) Thus, the extent of the survey was very limited, but it was useful in delineating areas of interest (see Figure 1) and providing some basic ideas as to what might be encountered during a more thorough investigation.

A loose swim line survey was employed along the north coast of the island. This involved three divers, spaced at 5 m intervals, swimming along an west → east transect. As this was a non-destructive survey, no activities were performed which compromised the integrity of the site. The bottom sediments were probed, however, in order to determine their composition and to feel for buried materials. When cultural material was encountered it was briefly described by the surveyor and marked on a map so that it could be easily relocated if further investigation is undertaken. (Ideally, this should be done using compass bearings taken on known transit points.) No photo record was maintained during this survey, though it is recommended that this be included in any future work.

Dive logs were maintained by all members of the survey team, to record progress and to ensure that all diving activities were conducted in a controlled fashion. The dive logs also provide a positive/negative results map in the field.

## 5.0 Admiralty Data for Loch Moidart

For general information on this area refer to *British Admiralty chart 2207*. The following local description is from the Hydrographic Office publication, *West Coast of Scotland Pilot* (1995: 287, 9.142).

Loch Moidart which lies in an opening of the coast between Farquhar's Point (56° 47'N, 5° 53'W) and Rubha nan Clach Dearga, 1¼ miles NE, is a picturesque loch with sandy beaches between rocky headlands, which dries out over most of its area. The entrance is obstructed by Eilean Shona leaving narrow channels to the N and S of the island which are available for small craft only. Anchorage can be obtained in the South Channel."

As the specific area of interest lies in the South Channel of Loch Moidart, only hydrographic data relevant to the investigation of this area will be presented here. The *West Coast of Scotland Pilot* (1995: 287, 9.146) provides the following information on the South Channel:

**Loch Moidart.** Tidal streams, which set fairly strongly in both North Channel and South Channel, begin as follows:

<i>Interval from HW Ullapool</i>	<i>Remarks</i>
+0530	In-going stream begins
-0050	Out-going stream begins

A steep sea which is created in the entrance when the out-going stream sets against a W wind has maximum effect during departure from the Loch.

**South Channel** provides the main entrance and affords the best anchorage facilities for small craft in a basin 7 cables within the entrance, as shown on the chart (#2207), 1½ miles W of Castle Tioram (ruins). However, both channels are tortuous with drying rocks close on both sides and less depths than charted, due to silting, which have been reported in South Channel. In view of this and the strong tidal streams, local knowledge is essential.

A jetty, 2 piers and a slip are available for landing within the South Channel.

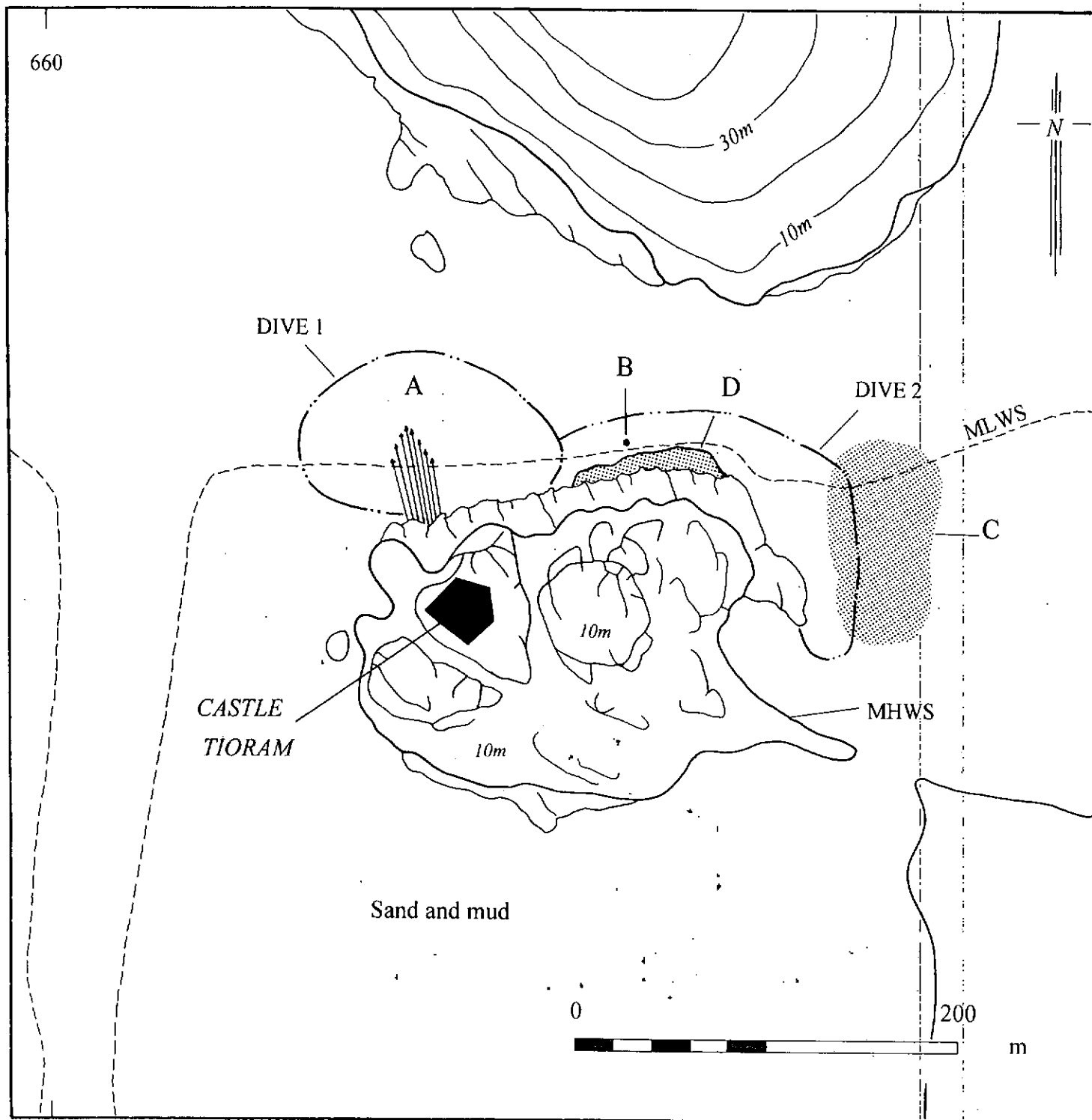
#### 5.1 *Field Observations on the Tidal Stream*

Observations of the tidal stream directly affecting Eilean Tioram, during the short duration of the survey (one turn of the tide), seem to indicate a channel running east/west, directly to the north of the castle. The tidal stream runs quite strong during the in-going and out-going streams; it also runs at varying depths. During our limited work here we experienced high tide level depths of approximately 10 m in the channel.

#### 5.2 *Archaeological Implications*

How these streams affect the coastal composition of Eilean Tioram is subject to interpretation. Most likely, they both erode and build up the silt and mud surrounding Eilean Tioram in seasonal or cyclical episodes. Current observations of the immediate vicinity of Castle Tioram seem to indicate that the silting processes are currently at a low depositional phase, especially when a comparison is made between the first edition Ordnance Survey map (Invernesshire, Sheet CXLVIII) and the latest Ordnance Survey map at 1:10,000 (Sheet NM 66 SE). The first edition Ordnance Survey indicates that the NNE outcrop of Eilean Tioram juts into the loch at MLWS, whereas on the modern map (OS Sheet NM 66 SE) a silt-and-mud strip of approximately 10-15 m is exposed at this same point. The current scenario seems to be better represented by the first edition Ordnance Survey map, at least in this aspect.

The importance of this geomorphological activity to the archaeological investigation of this area lies in the artefacts and features which may have been silted over in the past and could well be exposed during the current episode. In advance of undertaking any further investigation, it would be worth seeking the opinion of a coastal geomorphologist on this point.





## 6.0 Diving Log

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As the survey was executed during one day, the crew dive log can be included below, in full, to show the conditions and activities which were carried out.

### DATE

30 November 1997

### DIVE TEAM

Paolo Toniolo (PT)  
IANTD Nitrox/Gas Blender  
Marcia Taylor (MT)  
David A. McCullough (DAM)  
- IANTD Nitrox

### CERTIFICATION

PADI                      Divemaster-  
BSAC Sport diver  
PADI Advances Open Water

### DIVE 1 (see Figure 2)

**Tide** Slack Low

**Weather/water conditions** Chilly and calm, sunny with occasional clouds. Sea calm and smooth, no tidal stream running. Water temperature approx. 7°C

**Visibility** Varying from 0-4 m depending on the marine/freshwater interface; worst where the River Shin enters the South Channel of Loch Moidart, improving with depth.

**Survey equipment** 1m ranging rods - dive compasses

**Time in** 12.00                      **Time out** 13.20

**Bottom time** 1.20                      **Max depth** c 10 m

**Dive plan** Dive 1 was conducted as a loose line search along the north-west coast off Castle Tioram. The three members swam approximately 5 m apart on an west → east transect. Ranging rods were used to probe any areas which might have contained cultural material and as a rough scale for any finds.

**Observations and Results** The beginning of the dive was conducted in limited visibility due to a halocline caused by the meeting of fresh and salt water, especially in the shallows nearest the west coast of Eilean Tioram. The bottom composition seemed to be primarily of sand with silt and some gravel.

Figure 2:  
Areas  
investigated  
and locations  
of finds and  
observations.

- Directly to the North of the Castle, the bottom composition was of a very different character and seemed to comprise midden material. This was identified by an increase in gravel and the identification of some debris (a modern rifle cartridge, some large roof slates (?) and a darker appearance of the bottom sediment). This deposit continues into the tidal channel where it becomes indistinguishable from the surrounding sea bed. The depth where it occurred was noted as from 0-3.3 m. (**A** on the survey map)
- Continuing eastwards along the edge of Eilean Tioram there appeared to be some cut stone tumbled into the sea where the depth begins a sharp increase to 10 m at low tide. (**D** on the survey map)
- The conclusion of Dive 1 resulted in the location of a 19th-/early 20th-century basal fragment of a large, white glazed pot. (Positive identification was not possible during the survey. Basal diameter of approx. 250 mm, with a body diameter of approx. 300 mm at the break and a height to the break of approx. 300 mm.). This was found at a low tide depth of approx. 10 m. (**B** on the survey map)

The termination of Dive 1 was at a cleft by the northern coastal midpoint of Eilean Tioram. The dive team assembled here, discussed progress and rested while we planned a second dive.

DIVE 2 (see Figure 2)

**Tide** Mid-flooding to high. Very strong tidal stream.

**Weather/water conditions** Calm and chilly, but becoming increasingly cloudy with the light beginning to fade.

**Water temperature** Approx 6°C

**Visibility** 2-4 m

**Survey equipment** Submersible torches, dive compasses.

**Surface interval** 1:30

**Time in** 14:50

**Time out** 15.37

**Bottom time** 47 min

**Max depth** Approx 12 m

**Dive plan** Dive 2 was conducted as a drift dive due to the increasingly strong tidal stream running eastwards. This also necessitated that the survey crew stay in closer proximity to each other. The decreasing ambient light also made the use of torches necessary for survey and sub-surface communication.

**Observations and Results** Entering the water where we came out, we continued along the north coast of Eilean Tioram. As the bottom dropped to a high tide level of *circa* 11 m, we encountered the basal fragment of pot again (**B** above). After an examination of the area around the pot in the strong tidal conditions, we continued along the rocky coast of the north-east quadrant of Eilean Tioram. The bottom composition in this area was primarily of sand, until one reached the steeply sloping shore of Eilean Tioram which was composed of large stone tumble, boulders and bedrock. Once we rounded the north-east corner of the island we began to swim south towards the causeway following the contours of the bottom.

- Numerous fragments of iron railing (?) and fragments of planking were encountered here. A fragment of this planking was recovered for closer examination under better lighting. It measured approx. 0.3 m in length, and had a perforation at one end, next to a slightly raised ridge. Examples of both iron railing and planking could be observed laying on the bottom and protruding from beneath the sand and boulders which composed the sea bed. Most likely these are remnants of the former jetty. (**C** on the survey plan)

While completing this dive, it was noted by all crew members that the tidal influx from the south of the causeway was stronger than that from the main tidal stream of the South Channel, thus providing constant resistance as we headed south towards the causeway and the termination of our all too brief survey.

## 7.0 *Conclusions and Recommendations* —————

Within the limited scale of the underwater survey, it was not possible to explore the whole area of the waters around Eilean Tioram, or to fully investigate any of the finds or archaeological sediments which were observed. Indeed, this preliminary survey spawned questions which we feel can only be answered satisfactorily by a proper controlled underwater survey of this area. Nonetheless, the survey offered a glimpse of the high potential for co-operation between the terrestrial archaeologists and their maritime counterparts on a site which is significant to both.

Some of the areas where cultural material was identified have been demarcated on Figure 2. The single pottery vessel (B) indicates that there may well be other artefacts as yet undiscovered either buried in the sand or lying within rocky areas. Deep 'midden' sediments and building debris attest to quantities of material surviving underwater, relating both to the occupation of the Castle as a house and its maintenance as a structure. In particular, the fans of material extending from the north side of the island (A and D) are likely to incorporate building debris and possibly artefacts from various phases of rebuilding. In general, artefactual survival in underwater environments is greatly superior to that on land and there is a high potential for the survival of organic materials in particular (wood, leather etc). The break-up and dispersal of a modern jetty (C) indicates the potential for large timbers to be buried in the sea bed round about the island.

These observations are based solely upon a visual surface survey and depend entirely on what is revealed by the actions of the sea at the time. Further investigation might usefully employ remote sensing devices such as an underwater metal detector or a sub-bottom profile. A tight swim line search using surface control would also provide more complete and detailed coverage of the area of interest. This form of line survey could incorporate the simple but effective use of probes at regular intervals.

Any further underwater research should be tied directly into the ongoing archaeological survey and investigation of the Castle and the island itself. The results would be plotted and incorporated into the existing topographic survey of Eilean Tioram (Part 2 of the GUARD report series on the island). A simultaneous study of the coastal geomorphology of the island would reveal the changing character of the coastline through time. This would identify the processes involved in the erosion and deposition of silts and mud affecting the South Channel and in the area of the causeway.

In conclusion, we feel that a more intensive survey of Loch Moidart in the vicinity of Castle Tioram could well produce important information pertaining to the occupation of Eilean Tioram and its maritime significance which would be unobtainable from a terrestrial inquiry alone.

## 8.0 Acknowledgements

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## 9.0 References

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