

# **Millport Marine Research Station, Great Cumbrae North Ayrshire: Archaeological Monitoring**

Data Structure Report



by Liam McKinstry

issued 22<sup>nd</sup> May 2015

on behalf of North Ayrshire Council

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## Quality Assurance

This report covers works which have been undertaken in keeping with the issued brief as modified by the agreed programme of works. The report has been prepared in keeping with the guidance of Rathmell Archaeology Limited on the preparation of reports. All works reported on within this document have been undertaken in keeping with the Institute for Archaeologists' Standards and Policy Statements and Code of Conduct.



Signed .....

Date 22<sup>nd</sup> May 2015.....

In keeping with the procedure of Rathmell Archaeology Limited this document and its findings have been reviewed and agreed by an appropriate colleague:



Checked .....

Date 22<sup>nd</sup> May 2015.....

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## Introduction

1. This Data Structure Report has been prepared for North Ayrshire Council in support of the construction works at the Millport Marine Research Station, Great Cumbrae (Planning Ref: 13/00729/PPP). These archaeological works were designed to mitigate any adverse impact on the archaeological remains within the development area.
2. North Ayrshire Council required a programme of archaeological works to be undertaken as a requirement of the issued planning consent (13/00729/PPP). The West of Scotland Archaeology Service (WoSAS), who advise North Ayrshire Council on archaeological matters, provided guidance on the structure of archaeological works required on site during excavation works.
3. Rathmell Archaeology Limited was appointed by the client, Portakabin Scotland, to undertake the development and implementation of archaeological mitigation works prior to the development of the site. The project works were outlined in a Method Statement (Williamson 2014), which was agreed with the West of Scotland Archaeology Service.

## Historical and Archaeological Background

### *The Marine Station*

4. Local amateur naturalist David Robertson, who the museum on-site is named after, was instrumental in the setting up of the marine station at Millport. Robertson was a largely self-educated and highly regarded amateur naturalist. In 1867 and 1868 Anton Dohrn, the founder of the Stazione Zoologica, visited David Robertson, to conduct marine biological studies on the west coast of Scotland. During this time the two men discussed the rationale for prospective marine stations. David Robertson was also credited with the move of *The Ark* from Granton, Edinburgh and its re-establishment as a laboratory on the Isle of Cumbrae in the Clyde in 1885.
5. *The Ark* was fitted out as a floating laboratory by the father of modern oceanography, Sir John Murray. He formed the Scottish Marine Station for 12 years from 1884 and on its move to the shore at Port Loy, Cumbrae it attracted a stream of distinguished scientists drawn by the richness of the fauna and flora of the Firth of Clyde. In 1894 David Robertson formed a committee to build a marine station in Millport and took over *The Ark*. Millport Marine Biological Station was opened in 1897 by Sir John Murray. Unfortunately *The Ark* was totally destroyed by a great storm on the night of 20th January 1900.
6. On 21st July 1904 *Scotia*, the ship of Dr William Speirs Bruce's Scottish National Antarctic Expedition, returned to her first Scottish landing site, on the Isle of Cumbrae at Millport. From this beginning the station was gradually built up to its present size. The original building proved too small for the purpose and an architectural copy was built alongside.
7. The Station was originally run by the Marine Biological Association of the West of Scotland, but in 1914 that became the Scottish Marine Biological Association (SMBA). Under the SMBA the Station had a long and distinguished history as a research laboratory with many world-famous scientists visiting Millport to work on their specialist projects. Particular mention should be made of Dr Sheina Marshall FRS who spent her entire working lifetime at Millport and was responsible, with her co-worker Dr A. P. Orr for classic studies on the planktonic copepod (water flea) *Calanus finmarchicus*, the principal foodstuff of the herring.
8. When the SMBA moved to Oban in 1970 the Universities of London and Glasgow took over the running of the facility as The University Marine Biological Station (Canmore ID: 292516). Glasgow University pulled out in 2011, and London at the end of 2013. The University Marine Biological Station Millport closed on 31st October 2013 with ownership transferring to the Field Studies Council (FSC) on 1st January 2014, reopening for field teaching in February 2014 under the name Millport Field Centre (see <http://www.ers.north-ayrshire.gov.uk/>).

### *Other Sites*

9. There are three sites associated with the research centre and of 19<sup>th</sup> to 20<sup>th</sup> century in

date. The research centre and associated structures all came under the *Coastal Zone Assessment Survey, Firth Of Clyde* (WoSAS Event ID: 768). The survey was one of a number of surveys funded by Historic Scotland to characterize the state of coastal erosion and the threat it poses to archaeology in Scotland. Surveyed in sections the areas relevant to Millport included Cowal, Ayrshire and all Great Cumbrae. Across the survey area the results provided 104 new sites, assessment of 195 known sites and recommendation of further survey of 20 sites and production of erosion maps for the survey area.

10. Located to the south of the research centre are several storage tanks and ancillary buildings (Canmore ID: 292517). Sited above the rocky shoreline to the southeast of the institute is a complex of maritime structures named 'Keppel Port' (WoSAS Pin: 54488). The complex includes a concrete slipway with iron rails that extend from a building into the sea and three single storey flat roofed buildings and a two storey command post.
11. Keppel Pier (WoSAS Pin: 54487) is located to the northeast of Keppel Port (WoSAS Pin: 54488). This pier is made of large wooden beams that extend out to sea from a building on an onshore concrete platform. The pier is 8m wide and runs for roughly 40m before it turns a right angle to make a 15m loading wharf, currently in use.
12. In 2002/3 all the sites were examined as part of the *Coastal Zone Assessment Survey of the Firth of Clyde* (Sneddon 2003). The sites were visited in December 2002 and their conditions noted as 'Good' and the erosion class of the coast at each point noted as 'Stable' (HS defined erosion classes).
13. Located to the west of the research centre along the headland is a cave (WoSAS Pin: 5225, Canmore ID: 40647). The cave (NS 1727 5450) is a natural fissure in the face of the cliffs forming Farland Hill and opening onto the Early Post-Glacial raised beach. At the entrance it is 1.9m wide and 3.0m high, the fissure continues 7.5m into the cliff, narrowing slightly but retaining its height.
14. Excavated by Dr A. P. Orr in the summer of 1933 (WoSAS Event ID: 146 – note Dr Orr was a researcher at the Marine Station) it yielded evidence of seasonal habitation which included two bone needles and a few pieces of lignite, possibly including a bracelet, associated with the Mesolithic period and specifically the Obanian culture from at least c. 6390 cal BC to well beyond 3000 cal BC.
15. Examined as part of the *Coastal Zone Assessment Survey of the Firth of Clyde* (Sneddon 2003). The site was visited in December 2002 its location was noted as '<100m from the coast' and the sites condition was noted as 'Fair' and the erosion class of the coast at this point is noted as 'Stable' (HS defined erosion classes).
16. The current development area is built on the same raised beach and wave cut platform of the former Holocene shoreline on which Farland Hill cave is sited. Concentrating on Ordnance Surveys of the development area, the *6-inch 1<sup>st</sup> edition Ordnance Survey* (1869) (Figure 1a) depicts the cliff and raised beach topography that the development area is currently sited. The area of 'Keppel Port' is labelled, there are no structural features and the 'Port' may refer to the beach forming a natural feature for mooring.

#### *Previous work*

17. While no known early archaeological sites are present within the development area, the presence of known sites within the nearby surrounding area suggests the potential for unknown early archaeological sites (Mesolithic) to be present.

#### **Project Works**

18. The programme of mitigation consisted of the archaeological monitoring of ground breaking works for three modular prefabricated buildings for the Millport Marine Research Station. Works undertaken by Rathmell Archaeology Limited were consistent with the terms described in the Method Statement (Williamson 2014). Monitoring, recording and excavation were carried out in conjunction with the terms of this document.
19. Archaeological monitoring works were undertaken intermittently from the 8<sup>th</sup> January 2015 to the 1<sup>st</sup> May 2015. Excavations were carried out by a 360° mechanical excavator.

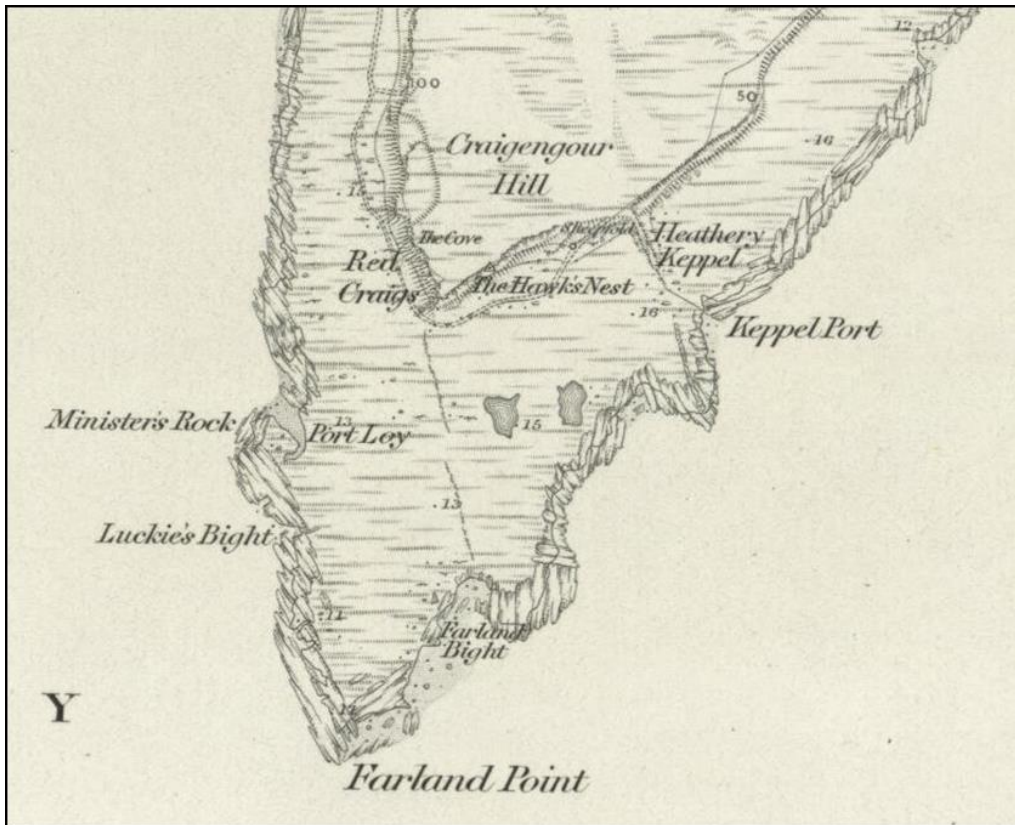


Figure 1a: 6-inch 1<sup>st</sup> edition Ordnance Survey (1869).



Figure 1b: 6-inch 2<sup>nd</sup> edition Ordnance Survey (1897).

20. Any potentially significant archaeological features, structures or deposits encountered were recorded by the archaeologist on site, using Rathmell Archaeology Limited standard method. All contexts, small finds and environmental samples were given unique numbers with bulk finds collected by context.
21. All works complied with West of Scotland Archaeology Service Standard Conditions, the Chartered Institute for Archaeologists' Standards and Policy Statements and Code of Conduct and Historic Scotland Policy Statement.

## Findings

22. The development area (Figure 2) was located to the immediate northwest of Marine Parade with construction works taking place to the east and south of the existing buildings at the Millport Marine Research Station. These works consisted of the reduction of the footprints for three modular prefabricated buildings, a carpark area and two access roads (one of these was temporary).
23. The topsoil covering the site consisted of mid orange-brown, silty sand with occasional small to medium sized stone inclusions. Within the topsoil (001) there were numerous disturbed patches which contained frequent modern brick and rubble inclusions. The underlying subsoil (002) consisted of mid orange-red sand/clayey sand with occasional gravel and small stone. In places throughout the site the subsoil was disturbed (004) containing frequent modern brick and stone rubble inclusions. The topsoil and subsoil was shallow and in places the underlying bedrock was visible. This bedrock (003) consisted of light orange/grey/red sandstone.

### *Building 1 and Access Road 2*

24. Building 1 was located in the most south westerly part of the site (Figure: 2). The building footprint was rectangular shaped and occupied an area of c.57.5m<sup>2</sup>. Due to the nature of the construction process, using modular prefabricated building sections, deep foundations were not required. Only the turf was removed over which a layer of type 1 aggregate was spread with support for the building coming from a series of shallow concrete pads. A temporary access road, access road 2, was set out between access road 1 and building 1. The road ran for c.20m and was c.2m wide. As with building 1 only the turf was removed which was then covered with a temporary layer of type 1 aggregate. No significant archaeological features were identified in either building 1's footprint or access road 2.

### *Building 2 and Surrounding Area*

25. Building 2 (Figure 3a) was located to the immediate north of the largest existing building at the marine research station. The building footprint was rectangular in shape and occupied an area of c.10m<sup>2</sup> within a surrounding area of c.56m<sup>2</sup> which was all cleared by machine. Though smaller than building 1 this building and the area surrounding it was excavated down to the natural subsoil (002) for stability reasons. No significant archaeological features were identified in either building 2 or the area surrounding it.

### *Carpark Area and Access Road 1*

26. The carpark area (Figure 3b) was located in the northern part of the site. It was rhombus shaped in plan and occupied an area of c.100m<sup>2</sup> though only c.70m<sup>2</sup> of that area was excavated down to the natural subsoil (002) and (004). Access road 1 ran in an approximate northwest-southeast before turning to a north-south direction from Marine Parade to the carpark area. The road route ran for 20m and had a width of 6m at the bell mouth and 2.5m along the majority of its route and was excavated to a depth of 0.6m. No significant archaeological features were identified in either the carpark area or in access road 1.



Figure 2: Site Layout





Figure 3a: Post excavation view of building 2 and the surrounding area. From the ESE



Figure 3b: Post excavation view of building 2 with the carpark area in the background. From the SW



Figure 4a: Post Excavation view of building 3 and surrounding area. From the SW



Figure 4b: Post excavation view of septic tank pit. From SW.

### *Building 3 and Surrounding Area*

27. Building 3 was located to the east of the existing marine research station. The building footprint consisted of two rectangular shaped parts linked by a trapezoidal shaped entrance hall/stairwell with the whole building structure occupying an area of c.90m<sup>2</sup> within a surrounding area of c.244m<sup>2</sup> which was all cleared by machine (Figure 4a). The building footprint and surrounding area were excavated down to the natural subsoil (002) and (004). Three service trenches were also excavated to the immediate southeast of building. Two of these were to house manhole covers, manholes 1 and 2, and a third large rectangular trench was cut into the underlying bedrock to a depth of c.4m to house a large septic tank (Figure 4b). No significant archaeological features were identified within the building footprint and its surrounding area or in the deeper service trenches.

### Discussion

28. No significant archaeological deposits or features were discovered during the monitoring of the ground breaking works at the Millport Marine Research Station. The disturbed area within the topsoil (001) and natural subsoil (004) contained what appeared to be modern 20th century debris. This material may well have been introduced into the site area during earlier construction at the Marine Research Station in the 20th century.
29. Though there were known sites close to the station; the modern sites of Keppel port (WoSAS Pin 54488) and pier (WoSAS Pin: 54487) and the Mesolithic site situated within a nearby cave located in the side of Farland Hill (WoSAS Pin: 5225), the 1st and 2nd edition Ordnance Survey show little in the way of buildings, infrastructure or agricultural activity until the latter part of the 19th century. It seems possible that the exposed nature of the headland at Farland point with its thin covering of soil over bedrock may have discouraged such activity until relatively modern times. Temporary activity may well have occurred in and around the site area in the Mesolithic or later prehistoric periods but the chances of its survival on the exposed headland would have been low except where it was sheltered such as at the nearby cave site.

30.

### Recommendations

31. The archaeological mitigation works did not reveal any significant archaeological material from within the development area.
32. As such it is the recommendation of Rathmell Archaeology Limited that no further works are appropriate. The appropriateness and acceptability of our recommendations rest with North Ayrshire Council and their advisors, the West of Scotland Archaeology Service.

### Conclusion

33. A programme of archaeological monitoring was carried out intermittently from the 8<sup>th</sup> January 2015 to the 1<sup>st</sup> May 2015 on behalf of Portakabin Scotland in support of the construction works at the Millport Marine Research Station, Great Cumbrae, North Ayrshire (13/00729/PPP).
34. In the course of the archaeological monitoring no significant archaeological features were uncovered.

### References

#### *Documentary*

Sneddon, D. 2003. 'Coastal Zone Assessment Survey: Firth of Clyde', GUARD

#### *Cartographic*

Ordnance Survey 1869 Six-inch 1<sup>st</sup> edition Argyllshire Sheet CCXVI

Ordnance Survey 1897 Six-inch 1<sup>st</sup> edition Argyll and Bute Sheet CCXVI.SW & SE

## Appendix 1: Registers

Within this appendix are all registers pertaining to works on-site during the watching brief.

### *Context Register*

Context No.	Area/Trench	Type	Description	Interpretation
001	All	Deposit	Mid orange-brown, silty sand with occasional small to medium sized stone inclusions. There were also frequent disturbed patches with modern brick and rubble fragments. Thickness range of 0.1-0.4m.	Topsoil (disturbed)
002	All	Deposit	Mid orange-red sand/clayey sand with occasional gravel and small stone inclusions. Thickness range of 0.15-0.30m.	Subsoil
003	All	Deposit	Light orange/grey/red sandstone	Bedrock
004	All	Deposit	Mid orange-red sand/clayey sand with occasional gravel and small stone and frequent modern brick and stone rubble inclusions	Subsoil (disturbed)
005	All	Deposit	Earthen bank to the N and NW of the carpark area.	Modern bank/boundary

### *Photographic Register*

Image No.	Digital	Description	From	Date
001	001	Bedrock in excavated area to the N of building 2	E	08/01/15
002	002	Excavated area to the N of building 2	S	08/01/15
003	003	Excavated area to the N of existing long building 2	E	08/01/15
004	004	Excavated area to the N of existing long building 2	E	08/01/15
005	005	Excavated area to the N of existing long building 2	S	08/01/15
006	006	Excavated area to the SW of building 2	N	08/01/15
007	007	Excavated area to the SW of building 2	E	08/01/15

Image No.	Digital	Description	From	Date
008	008	Deleted	-	08/01/15
009	009	Deleted	-	08/01/15
010	010	Deleted	-	08/01/15
011	383	Deleted	-	27/01/15
012	384	Pre excavation view of access road 2 with building 1 in background	ESE	27/01/15
013	385	Working shot of excavation of access road 1 leading to carpark area	SSE	27/01/15
014	386	View of excavated area of access road 1 leading to carpark area	SSW	27/01/15
015	387	Mid excavation view of carpark area	SSW	27/01/15
016	388	NW facing section of access road 1 leading to carpark	NW	27/01/15
017	389	View of building 2 footprint with carpark area in the background	W	27/01/15
018	390	View of building 2 footprint with area surrounding building 3 in the background	W	27/01/15
019	391	E facing section of access road 1 close to the largest existing building	E	27/01/15
020	392	Excavated area encompassing building 3 and the area to the E and NE of it	SW	27/01/15
021	393	W end of building 3 fully excavated	SW	27/01/15
022	394	Area around building 2 footprint and part of exiting boundary bank (005) fully excavated.	SE	27/01/15
023	395	W end of building 3 and surrounding area fully excavated	SW	27/01/15
024	396	W end of building 3 and surrounding area fully excavated	SW	27/01/15
025	397	Building 3 and surrounding area fully excavated	SSW	27/01/15
026	1251	View of building 1 and the cleared area around it	ESE	01/05/15
027	1252	Access road 1 and part of building 3 under construction	SE	01/05/15
028	1253	Building 3 under construction and cleared area to the E and SE of it.	SW	01/05/15
029	1254	Septic tank pit. Excavated through bedrock	SSW	01/05/15

Image No.	Digital	Description	From	Date
030	1255	Septic tank pit. Excavated through bedrock	S	01/05/15
031	1256	Septic tank pit. Excavated through bedrock	NE	01/05/15
032	1257	Septic tank pit. Excavated through bedrock	NE	01/05/15
033	1258	View of cleared area to the E and SE of building 3	NE	01/05/15
034	1259	Manhole pit 1, SE of building 3	NE	01/05/15
035	1260	Manhole pit 1, SE of building 3	NW	01/05/15
036	1261	Manhole pit 1, SE of building 3	NW	01/05/15
037	1262	Manhole pit 2, SE of building 3	NW	01/05/15
038	1263	Manhole pit 2, SE of building 3	NW	01/05/15
039	1264	Partially finished carpark area	S	01/05/15
040	1265	Partially finished carpark area	S	01/05/15
041	1266	Building 2 under construction	E	01/05/15

## Appendix 2: Discovery & Excavation in Scotland

<b>LOCAL AUTHORITY:</b>	North Ayrshire
<b>PROJECT TITLE/SITE NAME:</b>	Millport Marine Research Station
<b>PROJECT CODE:</b>	RA14060
<b>PARISH:</b>	Cumbrae
<b>NAME OF CONTRIBUTOR:</b>	Liam McKinstry
<b>NAME OF ORGANISATION:</b>	Rathmell Archaeology Limited
<b>TYPE(S) OF PROJECT:</b>	Watching brief
<b>NMRS NO(S):</b>	NA
<b>SITE/MONUMENT TYPE(S):</b>	NA
<b>SIGNIFICANT FINDS:</b>	None
<b>NGR (2 letters, 8 or 10 figures)</b>	NS 1765 5457x
<b>START DATE (this season)</b>	8 <sup>th</sup> January 2015
<b>END DATE (this season)</b>	1 <sup>st</sup> May 2015
<b>PREVIOUS WORK (incl. <i>DES</i> ref.)</b>	None
<b>MAIN (NARRATIVE) DESCRIPTION:</b> (may include information from other fields)	<p>A programme of archaeological monitoring was carried out intermittently from the 8th January 2015 to the 1st May 2015 on behalf of Portakabin Scotland in support of the construction works at the Millport Marine Research Station, Great Cumbrae, North Ayrshire (13/00729/PPP).</p> <p>No significant archaeological deposits or features were discovered during the monitoring of the ground breaking works at the Millport Marine Research Station.</p>
<b>PROPOSED FUTURE WORK:</b>	None
<b>CAPTION(S) FOR ILLUSTRS:</b>	None
<b>SPONSOR OR FUNDING BODY:</b>	North Ayrshire Council
<b>ADDRESS OF MAIN CONTRIBUTOR:</b>	Unit 8 Ashgrove Workshops, Kilwinning, Ayrshire KA13 6PU
<b>E MAIL:</b>	contact@rathmell-arch.co.uk
<b>ARCHIVE LOCATION (intended/deposited)</b>	Report to West of Scotland Archaeology Service and archive to RCAHMS Collections

## Contact Details

35. Rathmell Archaeology can be contacted at our Registered Office or through the web:

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e.: [contact@rathmell-arch.co.uk](mailto:contact@rathmell-arch.co.uk)

36. The West of Scotland Archaeology Service can be contacted at their office or through the web:

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