

**Brodick Castle Fire Pond, North Ayrshire:
Archaeological Watching Brief**
Data Structure Report



by Joss Durnan

issued 16th January 2017

on behalf of Armitage Groundworks Ltd

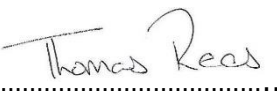
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Quality Assurance

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Signed  Date16th January 2017....

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

Checked  Date16th January 2017....

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Quality Assurance Data

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Introduction

1. This Data Structure Report has been prepared for Armitage Groundworks Ltd in support of archaeological monitoring works undertaken in the grounds of Brodick Castle, Arran. These works were in support of the planned refurbishment of the fire pond to the west of Brodick Castle. The archaeological works were designed to mitigate any adverse impact on the archaeological remains within the affected areas.
2. Rathmell Archaeology Ltd has been appointed by Armitage Groundworks Ltd to undertake the implementation of archaeological mitigation works in response to guidance given by West of Scotland Archaeology Service (WoSAS). The scope of these works has been agreed with WoSAS and the planning authority by the National Trust for Scotland (NTS) through a Written Scheme of Investigation (Rees 2016). All works undertaken comply with the agreed Written Scheme of Investigation (WSI).
3. The findings from these investigations will add to existing knowledge generated by previous archaeological works undertaken in and around Brodick Castle. For a full description of the historical background of the fire pond, refer to the WSI (*ibid.*). This Data Structure Report is designed to meet the requirements of the NTS.

Project Works

4. The programme of works comprised the monitoring of the clearing of vegetation and soil deposits around the fire pond to facilitate improvement works and topsoil stripping of an area immediately to the south of the estate road, on the eastern bank of the burn, to be used as a laydown area. The fire pond is located approximately 250m west of Brodick Castle, directly north of the estate road which runs over the Mill Burn (Figure 1). These works were undertaken on 19th September and 15th December 2016 using a 7-tonne 360-degree mechanical excavator.
5. At the time of the works, the fire pond was not functional and largely drained. It was roughly square in plan, measuring approximately 10m wide with sides rising to between 3m and 8m in height with a flat base (Figure 2). The north, west, and east sides of the pond were almost vertical, formed by natural bedrock into which the pond had been cut. The southern side was formed of bedrock and two retaining walls which channel the discharging water from the pond through the sluice gate. These retaining walls were composed of a foundation course of large undressed boulders with smaller roughly dressed boulders above. The walls were bonded together with mortar, and rose to approximately 3m in height (Figure 3).
6. The Mill burn entered the fire pond in its northwest corner at a height of approximately 4m and discharged through the sluice in the south, level with the pond's base, before continuing underneath the bridge carrying the estate road. The sluice gate was held in place by a cast iron crossbeam, itself bonded on either side to two brick buttresses built on top of the retaining walls (Figure 4).
7. A wrought iron estate fence, likely contemporaneous with the construction of the bridge, was in place on either side of that structure. The foundation stone of one of the fence posts was partly excavated on the north stretch of fence, facing the fire pond (Figure 10).
8. The aim of these works was to identify any archaeological features requiring investigation within the immediate vicinity of the fire pond prior to its refurbishment.
9. The difficult terrain presented by the fire pond limited the extent of the site which could be safely stripped of topsoil; as a result each locus is described as an 'area' rather than a 'trench'.
10. Area 1 was located immediately south of the estate road and measured 10m from east to west and 4.5m from north to south. This area was used as a lay-by for plant and materials used during the works. Area 1 was excavated to a depth of 200mm (Figure 5).
11. Area 2 was located immediately to the east of the fire pond and measured approximately 15m from east to west and 12.5m from north to south. This area varied in excavated depths to a maximum of approximately 500mm (Figure 6).

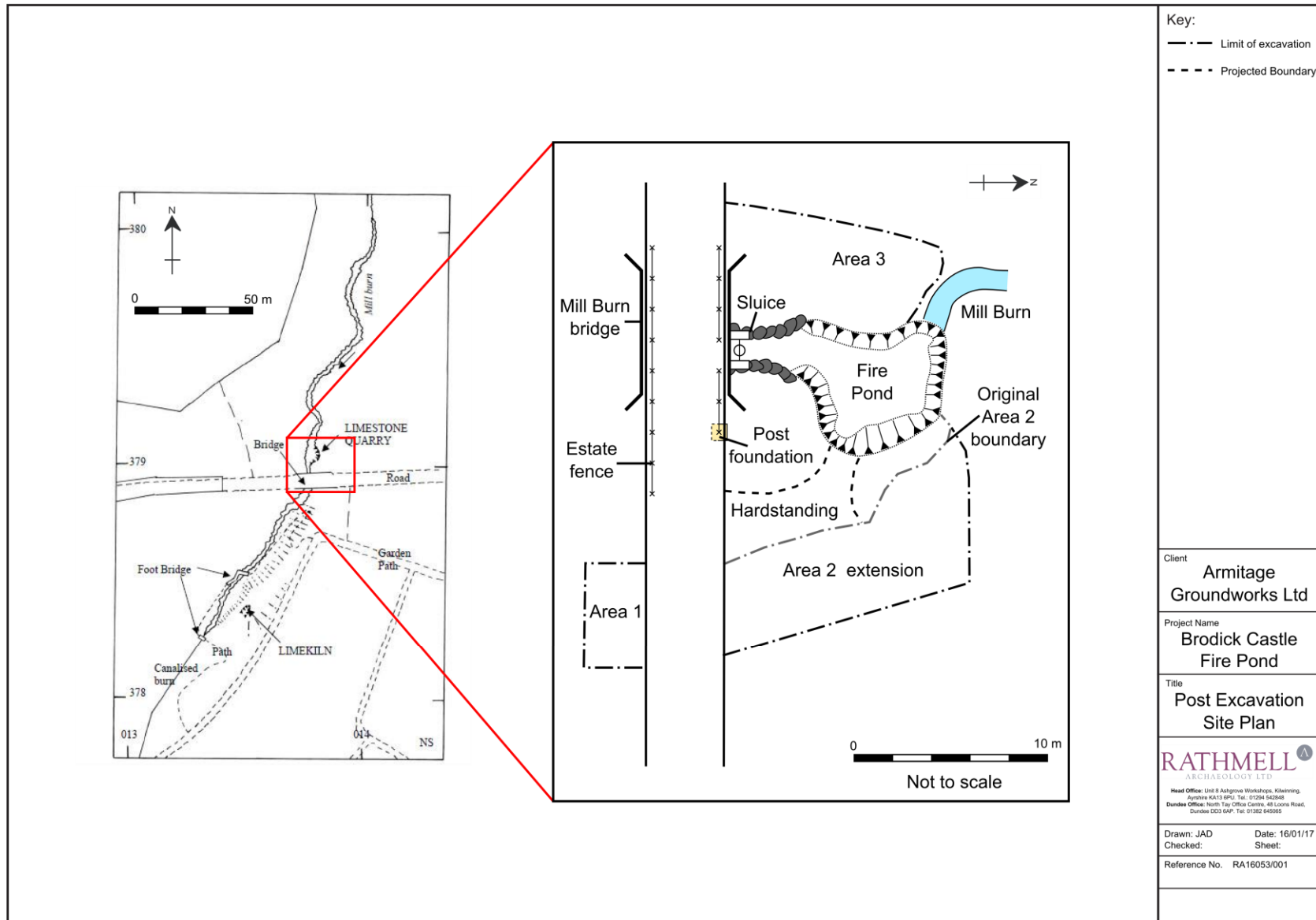


Figure 1: Post-excavation site plan (not to scale).



Figure 2: The fire pond viewed from the east during excavation.



Figure 3: Sluice gate and retaining walls viewed from the north.



Figure 4: Sluice gate location in relation to the retaining walls.



Figure 5: Post-excitation view of Area 1 from the northwest.



Figure 6: Post-excitation view of Area 2 (19th September 2016) from the south.



Figure 7: Area 3 during excavation.



Figure 8: Inaccessible area (far right, **(003)**) to the north of Area 2.

12. Area 3 was located immediately to the west of the fire pond and measured approximately 15m from north to south and 5m from east to west. This area varied in excavated depths to a maximum of approximately 2m (Figure 7).
13. An additional area to the northeast of the fire pond was partially stripped of topsoil and a loose sandy deposit **(003)**, likely a deposit of hillwash. Due to this area's proximity to the fire pond, however, the reach of the mechanical excavator was severely limited. Furthermore this narrow area could not be safely accessed on foot and so was visibly inspected from a safe distance in the adjacent Area 2. It was clear that considerable root action from surrounding trees and other vegetation had taken place; therefore this area will not be discussed further (Figure 8).

Findings

14. The clearing of vegetation prior to the commencement of these works helped to clarify the nature of the fire pond's construction and allowed the structure of the sluice to be more clearly discerned. Areas 2 and 3 revealed some much-disturbed and relatively modern archaeological features that probably relate to drainage around the fire pond, and the dumping of material at various stages.

Area 1

15. Area 1 was covered by particularly shallow topsoil, a friable mid greyish-brown clayey silt with occasional small sub-angular stone inclusions **(001)** reaching a depth no greater than 150mm. Beneath this was a layer of made ground composed of a friable mid reddish-orange slightly clayey silt with infrequent charcoal inclusions **(002)**. There was also a small outcrop of bedrock within the excavated area immediately adjacent to the road, suggesting that the soil deposits in Area 1 were quite shallow.

Area 2

16. The topsoil **(001)** in Area 2 was approximately 300mm deep. Beneath this was a friable mid orangish-brown mottled red/grey clayey silt **(004)**. This deposit was very mixed and appeared to have been disturbed at various stages. As a result it was interpreted as a mixed dump of different deposits and made ground, probably relating to the former hardstanding **(007)** access to the fire pond.
17. Two features were exposed within this area. These were: a circular ceramic drain (Figure 9) running from east to west, probably of late 19th or early 20th century date, and a modern 80mm plastic drain running from east-southeast to west-northwest. Both of these appear to run towards the eastern sluice wall, where they likely once discharged into the Mill Burn. Despite the apparent age of the ceramic drain, its location and route suggest that it probably postdates the construction of the fire pond, but predates the hardstanding area, which truncates the drain. These drainage features were not given context numbers due to their age and ubiquity on archaeological sites.
18. The hardstanding **(007)** was a shallow (50mm) spread of firm blackish-grey rubble in a clayey silt matrix. This deposit had indistinct edges and was likely laid down as a rudimentary area of hardstanding to facilitate access to the fire pond.
19. A large slab (400mm x 600mm x 200mm) anchoring the easternmost post of the stretch of wrought iron estate fence immediately south of the fire pond was also partly exposed by the removal of vegetation. The surrounding topsoil was removed by hand excavation and the slab left *in situ* (Figure 10).

Area 3

20. Area 3 was covered by topsoil **(001)**. This was present to a depth of 250mm in the northern half of the area. In the southern half, extending approximately 5m from the estate road, the topsoil **(001)** was a more thinly spread deposit, and difficult to discern due to dense vegetation.
21. Underlying topsoil **(001)** in the southern half of Area 3 was a spread of loose mid reddish-brown slightly clayey silt with frequent stone and decomposing plant material inclusions



Figure 9: Circular section ceramic field drain in Area 2.



Figure 10: Iron fence foundation stone and bridge retaining wall (right).



Figure 11: Context **(005)** during excavation.



Figure 12: Defunct 2" water main in Area 3.

(005). The northern half of Area 3 was characterised by an underlying layer of subsoil **(006)**: a firm brownish-pink silty clay with occasional stone inclusions (Figure 11).

22. Two features were present in Area 3. These were: a disused 2" cast iron water main, and a machine-cut pit measuring approximately 1m x 2m x 0.5m. The water main ran in a north-northeast to south-southwest direction, terminating in the north-northeast where it had been folded over (Figure 12).

Discussion

Area 1

23. Area 1 was noted as being in close proximity to the location of a gardener's cottage that formed part of a former walled garden west of Brodick Castle. However, no archaeological remains relating to the cottage were uncovered, and the shallow deposits in this area were not formed of demolition material. Instead the deposit **(005)** likely represents made ground relating to the construction of the estate road.

Area 2

24. The deposits in Area 2 were very mixed, suggesting this area has been disturbed frequently over time. It is likely that these deposits represent made ground being built up to facilitate construction of the disused hardstanding area, and the repeated dumping of material from a position on the hardstanding. The excavated area to the east of the hardstanding was comprised entirely of natural subsoil **(006)**, suggesting that only the area of ground to the west, between the hardstanding and the fire pond, was used as a dump.
25. It was evident that the ceramic field drain in this area had not been functional for some time, having been truncated by the hardstanding. The later plastic drainage pipe revealed during the initial works on 19th September 2016 was exposed further on 15th December 2016, showing that it ran parallel to the estate road (Figure 13). This feature may have served as a drain to carry water away from the road to be discharged into the Mill Burn.

Area 3

26. Very little activity was evident in this area, the topsoil lying directly on top of natural subsoil. The original function of the disused 2" water main could not be discerned. Lying within the topsoil **(001)** and being detached at both ends, it may have been discarded from elsewhere on the estate.
27. The loose rubble **(005)** comprised a significant organic component of decomposing plant matter. As a result this deposit was interpreted as a late-20th century dump of rubble and midden material.
28. The machine-cut pit was unexcavated during these works but likely served as a rudimentary sump to aid drainage from the estate road.

Sluice

29. The retaining walls of the sluice appeared to be of considerable age and may date from the original construction phase of the fire pond. The gate, constructed of brick and concrete elements, was likely a later addition. The sluice gate was non-functional at the time of inspection, but the retaining walls appeared substantial enough to still effectively channel the Mill Burn.

Recommendations

30. The excavations in Area 1 showed no impact on an archaeological features and, given that this area served as a temporary lay-by to be used only for the duration of the works relating to the fire pond, no recommendations are made.
31. Areas 2 and 3 showed evidence of having been disturbed both frequently and considerably during the 20th century. No archaeological features of significance were discovered, therefore no further archaeological works are recommended.
32. The sluice was found to be a much more substantial feature of the fire pond than initially



Figure 13: Extension of Area 2 excavated on 15th December 2016 showing plastic pipe running parallel to the estate road.



Figure 14: West-facing retaining wall of the sluice structure showing much-worn bonding material.

thought. The retaining walls are particularly noteworthy as they may relate to the original construction of the fire pond. Despite the apparent robustness of these walls, they were in a poor state of repair with very little bonding material remaining (Figure 14). It is suggested that any ongoing works should take measures to safeguard the historic fabric of the retaining walls.

33. The appropriateness and acceptability of our recommendations rest with North Ayrshire Council and their advisors, WoSAS.

Conclusion

34. This Data Structure Report has been prepared for Armitage Groundworks Ltd to report minor archaeological works undertaken in the grounds of Brodick Castle, Arran. These works were in support of the planned refurbishment of the fire pond to the west of Brodick Castle. The archaeological works were designed to mitigate any adverse impact on the archaeological remains within the affected areas.
35. In total, three areas were excavated to identify any archaeological features within the vicinity of the fire pond. The condition of the sluice was also assessed. No archaeological features of significance were found in the areas excavated.

References

Addyman, T and Oram, R, 2009. *Historic Building Survey and Analytical Assessment: 2006-8. Volume 1: General Report* Addyman Archaeology, unpublished report for the National Trust for Scotland.

Rees, T 2016. *Brodick Castle Fire Pond, Arran: Archaeological Mitigation – Written Scheme of Investigation*. Rathmell Archaeology, unpublished report for the National Trust for Scotland.

Appendix 1: Registers

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

Context Register

Context	Area	Type	Description	Interpretation
001	1 – 3	Deposit	Friable mid greyish-brown clayey silt with occasional small sub-angular stones. 50-200mm thick.	Topsoil
002	1	Deposit	Friable mid reddish-orange slightly clayey silt with infrequent charcoal flecks.	Made ground adjacent to estate road
003	2	Deposit	Loose light greyish-orange silty sand with frequent large tree roots.	Natural deposit / hillwash
004	2	Deposit	Friable mid orange-brown mottled red and grey clayey silt.	Mixed midden dump
005	3	Deposit	Loose mid reddish-brown slightly clayey silt with frequent medium (150-300mm) sub-angular stones and frequent decomposing plant material.	Rubble / midden dump
006	3	Deposit	Firm brownish-pink silty clay with occasional small-medium (100-300mm) sub-angular stones	Natural subsoil
007	2	Deposit	Firm blackish-grey rubble in a clayey silt matrix 50mm thick.	Area of hardstanding

Photographic Register

Image No.	Digital	Description	From	Date
1	4181	Pre-ex, lay-by	NW	19/9/16
2	4182	Pre-ex, fire pond, W side	S	19/9/16
3	4183	Pre-ex, fire pond, E side	SSW	19/9/16
4	4184	Working shot, fire pond, E side	SW	19/9/16
5	4185	Mid-ex, circular ceramic field drain (19 th -20 th Century)	SE	19/9/16

Image No.	Digital	Description	From	Date
6	4186	General shot showing location of ceramic field drain	ESE	19/9/16
7	4187	Post-ex, lay-by	NE	19/9/16
8	4188	N-facing section, bridge retaining wall and iron fence foundation	N	19/9/16
9	4189	Post-ex, fire pond, Area 2	SW	19/9/16
10	4190	Mid-ex, fire pond, Area 3	E	19/9/16
11	4191	Cast iron 2" water main (disused) running NNE-SSW	SSW	19/9/16
12	4192	General shot, fire pond	E	19/9/16
13	4193	General shot, fire pond	S	19/9/16
14	4194	W-facing retaining wall and sluice gate	N	19/9/16
15	4195	W-facing retaining wall and sluice gate	WSW	19/9/16
16	4196	E-facing retaining wall	E	19/9/16
17	4197	General shot, fire pond, showing burn entering pond (right) and retaining walls to sluice gate (left)	NE	19/9/16
18	4198	General shot, sluice gate and retaining walls from bridge	SSW	19/9/16
19	4199	General shot, retaining walls and sluice gate	NW	19/9/16
20	4200	General shot illustrating sluice in relation to bridge, retaining walls	NNW	19/9/16
21	4201	Post-ex, fire pond, W+E sides	E	19/9/16
22	4202	Post-ex, fire pond, W side. Burn entering pond and retaining walls visible.	ESE	19/9/16
23	312	Working shot – E end of Area 2	S	15/12/16
24	315	Post-ex shot of E end of Area 2	S	15/12/16
25	317	Post-ex shot of E end of Area 2	W	15/12/16

Image No.	Digital	Description	From	Date
26	322	Post-ex shot of E end of Area 2	S	15/12/16
27	323	General shot across Area 2	SE	15/12/16

Appendix 2: Discovery & Excavation in Scotland

LOCAL AUTHORITY:	North Ayrshire
PROJECT TITLE/SITE NAME:	Brodick Castle Fire Pond
PROJECT CODE:	RA16053
PARISH:	Kilbride
NAME OF CONTRIBUTOR:	Joss Durnan
NAME OF ORGANISATION:	Rathmell Archaeology Limited
TYPE(S) OF PROJECT:	Watching brief
NMRS NO(S):	NS03NW 102
SITE/MONUMENT TYPE(S):	Quarry (Period Unassigned) (Possible)
SIGNIFICANT FINDS:	None
NGR (2 letters, 8 or 10 figures)	NS 01378 37906
START DATE (this season)	19 th September 2016
END DATE (this season)	15 th December 2016
PREVIOUS WORK (incl. <i>DES</i> ref.)	None
MAIN (NARRATIVE) DESCRIPTION: (may include information from other fields)	<p>Archaeological monitoring work was carried out for Armitage Groundworks Ltd obo the National Trust for Scotland in the grounds of Brodick Castle, Arran. These works were in support of the refurbishment of the fire pond to the west of Brodick Castle. The archaeological works were designed to mitigate any adverse impact on the archaeological remains within the affected areas.</p> <p>In total, three areas were excavated to identify any archaeological features within the vicinity of the fire pond. The condition of the fire pond's sluice was also assessed. No archaeological features of significance were found in the areas excavated. Deposits comprised of multiple phases of 20th century dumped material.</p>
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	None
SPONSOR OR FUNDING BODY:	Armitage Groundworks Ltd
ADDRESS OF MAIN CONTRIBUTOR:	Unit 8 Ashgrove Workshops, Kilwinning, Ayrshire KA13 6PU
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ARCHIVE LOCATION (intended/deposited)	Report to West of Scotland Archaeology Service and archive to National Record of the Historic Environment

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