

**Brodick Castle Fire Risk Mitigation, Arran:
Archaeological Watching Brief**
Data Structure Report



by Liam McKinstry

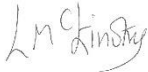
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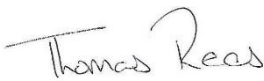
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Introduction

1. This Data Structure Report (DSR) has been prepared for the National Trust for Scotland (NTS) in support of archaeological monitoring of groundbreaking works undertaken in Brodick Castle and its grounds, Arran. These works were in support of fire risk mitigation works which included the installation of a new lift shaft, alarm system and lightning/grounding system within Brodick Castle. The fire risk mitigation project was delivered by Emtec Group with initial investigative works carried out by Armitage Construction. The archaeological works were designed to mitigate any adverse impact on the archaeological remains within the affected areas. Within this DSR, 'groundbreaking works' refers to any sub-surface work carried out either in the grounds of the castle, the castle courtyard or within the ground floor of the castle.
2. Rathmell Archaeology Ltd has been appointed by NTS to undertake the design and 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 NTS through a Written Scheme of Investigation (WSI) (Rees 2016). All works undertaken comply with the agreed 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 castle and grounds, refer to the Historic Building Survey (Addyman and Oram 2009), Conservation Management Plan (Easton and Moffat 2015), and WSI (Rees 2016). This DSR is designed to meet the requirements of the NTS.

Project Works

4. The programme of works comprised the monitoring of:
 - ❖ Initial evaluation in the form of hand excavated test pits (2016) (Areas A and B)
 - ❖ Hand excavation of a trench within the castle in Rooms 21 and 23 to receive a new lift shaft (Area A)
 - ❖ Machine excavation of an umbilical trench across courtyard for new utilities to the castle (Area B)
 - ❖ Machine excavation of a trench for a new boiler in Room 36 and Courtyard (Area B)
 - ❖ Hand excavation of a series of pits adjacent to the castle for new lightning/grounding system (Area C)
5. These works were undertaken between 28th September 2016 and 26th October 2017 using hand tools within the castle (Area A), and a 3-tonne 360-degree mechanical excavator in conjunction with hand excavation outwith the castle (Areas B and C). Figure 1 shows the locations of these areas in relation to the castle.

Location and works sequence

6. Initial evaluation through hand excavated test pits was carried out by Armitage Construction in 2016. One pit was excavated in the courtyard adjacent to Room 21 ('Area B') and the other was excavated within the interior of Room 21 ('Area A').
7. Area A comprised two rooms, Room 21 and Room 23 situated at the rear (NW) of the castle, on the ground floor of the 1844-46 phase of construction. Prior to excavation, the dividing wall between Room 21 and Room 23 was removed, with Room 21 excavated to a depth of 1.2m below the floor surface, and Room 23 to a depth of 1.3m before reaching natural subsoil. The final excavated depth reached 3m below the original floor surface.
8. The initial line of the utilities umbilical (Area B) ran in a southeast to northwest direction from Bobby's Buildings, across the courtyard, to a basement-level former plant room adjacent to Room 23. This was subsequently changed due to onsite design alterations with the umbilical trench now running in a north to south direction across the courtyard from Room 36 in Bobby's Building to the basement level beneath Room 20 in the castle.

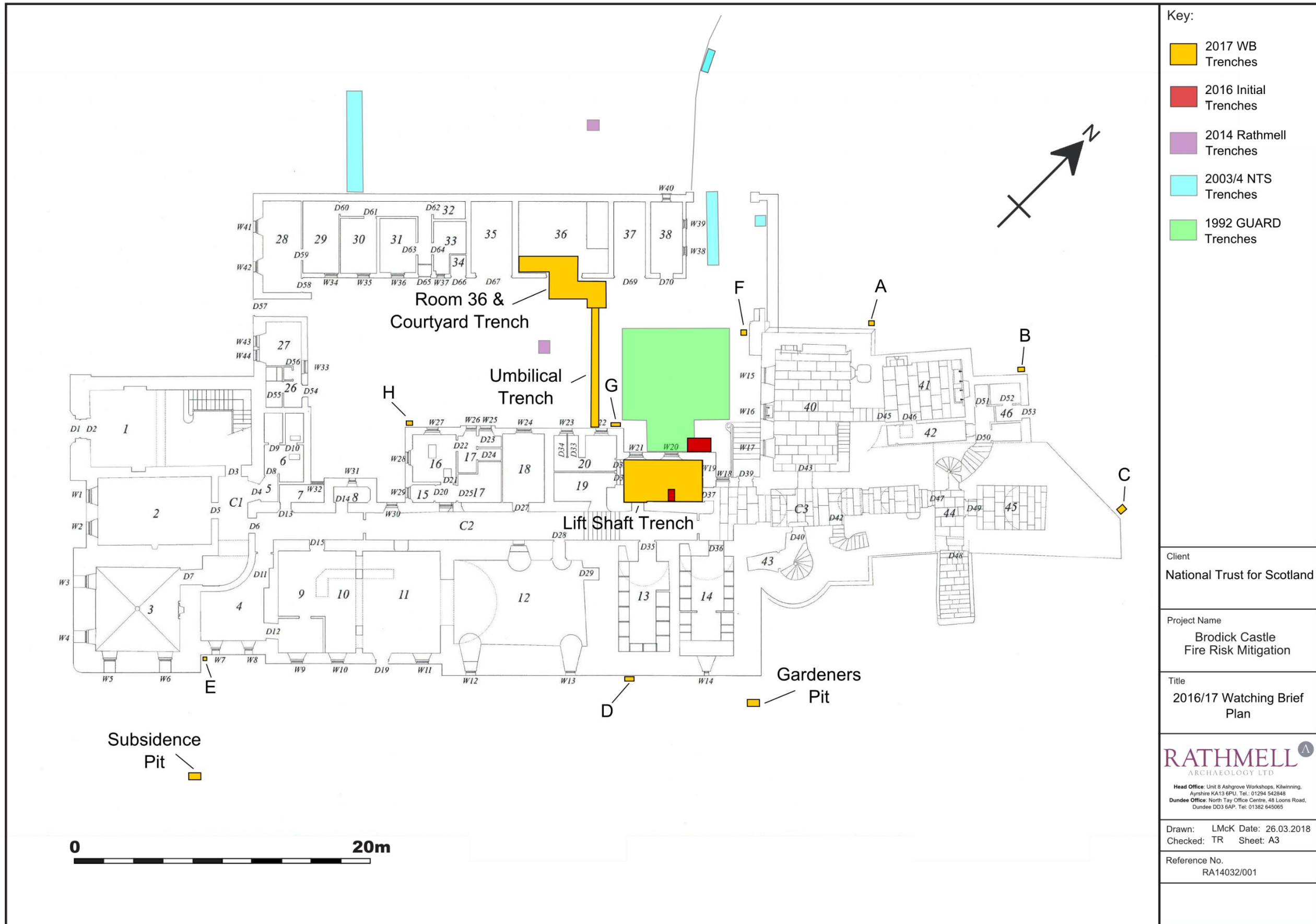


Figure 1: Plan of the excavated areas within Culzean Castle and its grounds (also shows previous works)

9. The site of the new boiler, which lay within Area B, was located in Room 36, within Bobby's Building. The main access doors of Room 36, which fronted onto the courtyard, were utilised so that the north to south running umbilical trench could access the new boiler.
10. Area C was actually a series of small pits which were located adjacent to the castle, both within the courtyard (Pits F-H) and in the castle grounds (pits A-E). Two other pits were also monitored. The first of these was a small pit excavated to investigate an area of ground subsidence close to Pit E and the other a small pit excavated by the castle grounds staff.

Findings

11. The monitoring of the initial test pits was carried out in 2016 and as such the numbering was different and the 'Context Register – Initial Test Pits (2016)' in Appendix 1 should be consulted. For all other parts of the findings consult 'Context Register - Main Fire Mitigation Works (2017)'.

Area A – Castle Interior

Initial Test Pit - Room 21 (2016)

12. The interior test pit located within Room 21 (Figure 1) was positioned against the room's southeastern wall. The pit measured 1m from northwest to southeast and 0.5m from northeast to southwest. The pit was excavated to a depth of 1.25m. The uppermost layer within the pit was the flooring which consisted of square red sandstone flagstones (008), each measuring 0.7m by 0.7m in extent with a thickness of 0.1m. The overall size of the floor surface within R21 was 4m from northeast to southwest and 3m from northwest to southeast. The surface overlay an infill layer of red sandstone rubble (009) which had a depth of 1.1m. This layer overlay the natural subsoil (010) which consisted of very firmly compacted, pink mottled grey sandy clay.

13. No significant archaeological features or artefacts were identified within the initial test pit.

Lift shaft Trench (Rooms 21 & 23)

14. The dividing wall between Rooms 21 and 23 had been removed in advance of the hand excavation of the lift shaft trench. The remnants of this wall [008] projected out 0.05m-0.01m from the northeastern and southwestern walls which had until recently divided Rooms 21 and 23 (Figure 2a). The wall would have been 0.33m wide and was abutted by flagstone surface (001) on both sides. A later raised concrete floor (007) was added to Room 21 which would also have abutted wall [008] and overlain the red sandstone flagstone floor (001) (Figure 2b). The concrete floor consisted of a rectangular shaped formed, poured, concrete platform with linoleum floor covering (Figure 2a). The concrete floor measured 3m from northwest to southeast and 1.5m from northeast to southwest and had a thickness of 0.2m. Wall [008], like the walls which made up Rooms 21 and 23, carried on below the current ground level to a depth of 1.7m-1.9m.

The lift shaft trench was excavated within the full floor plan of Rooms 21 and 23, covering an area which measured 4.5m from northeast to southwest by 3m transversely. The upper floor surfaces (007) and (001) were removed, revealing a foundation or bedding layer (002) which consisted of loosely compacted, pale yellow, fine gravel with mortar inclusions. The layer varied between 0.13m-0.17m in thickness. Beneath the foundation or bedding layer, the lower part of Rooms 21 and 23 had been infilled with a large deposit of red sandstone rubble (003) (Figure 2b). This consisted of loosely compacted, large red sandstone fragments with occasional smaller fragments filling some of the gaps. There were very occasional inclusions of slate and animal bone within the deposit. The layer had an average thickness of 1.1m within Rooms 21 and 23. This layer abutted the dividing wall between Rooms 21 and 23 [008], which continued beneath the floor levels, and the other walls which formed the two rooms. Underlying the layer of red sandstone rubble lay the naturally occurring subsoil (004) which consisted of very firmly compacted, pink mottled grey sandy clay with increasing numbers of larger stone and small boulder inclusions at depth. The layer had an excavated thickness of 1.5m within Rooms 21 and 23 (a depth of 2.7m-2.9m from the most recent/modern floor levels).



Figure 2a: Pre excavation view of Rooms 21/23 from the NE. Shows raised concrete surface (007).



Figure 2b: Mid excavation view of Rooms 21/23 showing wall [008] and rubble layer (003). From the NE.



Figure 3a: View of brick structure [009] and lead pipe (009). From the NW.



Figure 3b: Post excavation view of lift shaft trench at 3m from existing floor level. From the NE.



Figure 4a: Pre excavation view of the Courtyard and Bobby's Building. From the NE.



Figure 4b: Post excavation view of the umbilical trench in the courtyard. From the NW.

15. A service pipe (010) within a brick lined structure (009) had been located in advance of the main lift shaft trench excavation by means of a small, 0.5m by 0.5m, test pit in the southern corner of Room 23 (Figure 3a). The linear brick lined structure formed a right angle in plan. The structure was located under floor (001), deposit (002) and went through or was built within rubble (003). The structure had a width of 0.22m and a height of 0.5m. The lead pipe was located within a void within the brick lined structure. The pipe had a diameter of 0.05m and was located at a depth of 0.45m from the top of the most recent floor surface, (007). Small square holes had been cut into the lower foundations of Room 23's southwest and southeast walls. These holes were approximately 0.12m by 0.12m.
16. No significant archaeological features or artefacts were identified within the lift shaft trench.

Area B – Courtyard & Bobby's Building

Initial Test Pit (Courtyard)

17. The monitoring of the initial test pits was carried out in 2016 and as such the numbering was different and the 'Context Register – Initial Test Pits (2016)' in Appendix 1 should be consulted. For all other parts of the findings consult 'Context Register - Main Fire Mitigation Works (2017).'
18. The exterior test pit was located within the Courtyard (Figure 1) adjacent to Room 21. It was rectangular in shape and measured 2m from southwest to northeast and 1.2m from southeast to northwest. The uppermost layer excavated within the pit consisted of the existing tarmac/cobbled courtyard surface (001) which had a thickness of 0.05m. Beneath this lay a foundation or bedding layer (002) overlying made ground (003). Beneath this was what was interpreted, due to the limited size of the test pit, as bedrock (004) but seems more likely to be tightly packed boulders within the natural subsoil. A number of modern services (005) associated with the castle were identified as well as the foundations of the castle's northwest facing wall (006).
19. No significant archaeological features or artefacts were identified within the initial test pit.

Room 36/Courtyard Trench

20. A large trench (Figures 1 and 5a) was excavated within Room 36 in Bobby's Building which extended out into the courtyard and was eventually joined to the umbilical trench. This trench was required due to onsite design changes which moved the service pipes from the umbilical trench from entering Bobby's Building via its southeast facing wall to through the entrance into Room 36. The original trench within Room 36 was rectangular in plan and measured 4m from northeast to southwest and 2m from northwest to southeast with a maximum excavated depth of 0.9m. The trench was extended out into the courtyard for 2.85m, at a width of 2m, where it turned at a right angle for 1m where it joined the northwest end of the umbilical trench.
21. Within Room 36 the trench cut through the concrete floor (017) which consisted of a very firmly compacted concrete layer with moderate to frequent rounded/sub-angular grey stone inclusions (particular at the base of the layer). The floor had a thickness ranging between 0.15m-0.2m within Room 36. The concrete floor overlay a foundation or bedding layer (018) which consisted of moderate to firmly compacted, orange red sandy clay with very frequent small to medium sized sub-angular stone inclusions. The layer had a thickness which ranged between 0.15m-0.34m. The foundation or bedding layer overlay the natural subsoil layer (019) which consisted of firmly compacted, orange red sandy clay with occasional to moderate small to medium sized sub-angular stone and very occasional larger boulder inclusions. Within the Room 36 trench, this layer had an excavated thickness of 0.68m-0.7m.
22. The extension of the trench into the Courtyard cut through its tarmac surface (005) which had a thickness of 0.05m across its entire extent. Underlying the tarmac surface was a foundation or bedding layer (006) which consisted of loose to moderately compacted, light brownish-yellow sandy rubble with frequent bitumen inclusions. This layer had an excavated thickness of 0.2m to 0.35m and overlay the natural subsoil (019) which

consisted of firmly compacted, orange red sandy clay with occasional to moderate small to medium sized sub-angular stone and very occasional larger boulder inclusions. The natural subsoil had an excavated thickness range within the extension trench of between 0.64m-0.68m.

23. No significant archaeological features or artefacts were recovered from the trench in Room 36 or the extension of it into the Courtyard.

Umbilical Trench

24. The umbilical trench (Figures 1 and 4b) was excavated in the Courtyard and measured approximately 10m in length by 0.5m in width. The maximum depth reached within the trench was 0.9m. The uppermost layer cut by the trench was the existing tarmac surface within the courtyard (005) which had a thickness of 0.05m across the entire courtyard. Underlying this tarmac surface was a foundation or bedding layer (006) which consisted of loose to moderately compacted, light brownish-yellow sandy rubble with frequent bitumen inclusions. This layer had an excavated thickness of 0.15m to 0.34m. The foundation or bedding layer (006) overlay the natural subsoil (019) which consisted of firmly compacted, orange red sandy clay with occasional to moderate small to medium sized sub-angular stone and very occasional larger boulder inclusions. The layer had an excavated thickness of between 0.68m-0.73m.
25. A series of ceramic, plastic and metal service pipes (020) were located within the natural subsoil (019) within the umbilical trench. Most of these pipes were orientated in a northeast to southwest or northeast to southwest direction. The service pipes were located 0.35m to 0.5m below the existing ground surface within the courtyard. Of note was one service which was located within a brick-lined trench similar to that found within Room 23 within the castles interior (see [009] and (010) above). The service started at Bobby's Building and most likely terminated in the southeast up against an existing services access chamber which was adjacent to the original plant room (Room 20).

26. No significant archaeological features or artefacts were recovered from the umbilical trench.

Lightening Protection Test Pits (F-H)

27. A series of three small test pits (F-H) were hand excavated against the castle walls within the courtyard (Figure 1). Pit F was located against the castles southwest facing wall and measured 0.45m by 0.4m and had a depth of 0.3m. Pits G and H were located against the castles northwest facing wall and measured 0.35m by 0.7m and 0.4m deep and 0.35m by 0.4m and 0.35m deep respectively. All of these pits cut through the courtyards tarmac surface (005) and into the underlying foundation or bedding layer (006).
28. No significant archaeological features or artefacts were identified within any of these pits.

Area C – Castle Exterior

Lightening Protection Test Pits (A-E)

29. A series of five small test pits (A-E) were hand excavated within the castle grounds up against the castle walls (Figures 1 and 6a). Pits A-C were all positioned against the castle's northwest elevation (where Rooms 40-42 and 46 were located). Pit A measured 0.4m by 0.4m in extent and had a depth of 0.35m. Pit B measured 0.5m by 0.4m in extent and had a depth of 0.4m. Pit C measured 0.6m by 0.6m in extent and had a depth of 0.35m. All of these pits cut through a topsoil layer (011) which consisted of moderate to loosely compacted, mid to dark grey brown silty sand with occasional small stone and pebble and very occasional slate fragment inclusions. The topsoil layer had a thickness ranging between 0.35m to 0.4m. Only Pit A was excavated to a depth at which an underlying layer was revealed. This layer (012) consisted of moderately compacted, mid to dark grey brown silty sand with frequent brick fragment inclusions. The layer had a maximum excavated thickness of 0.03m. No archaeological features were identified within any of these pits.



Figure 5a: View of the trench in Bobby's Building and courtyard. From the SE.



Figure 5b: Pre excavation view of the castle grounds (SE side). From the ENE.



Figure 6a: Post excavation view of Pit A. From the NW.



Figure 6b: Post excavation view of Gardeners pit showing ceramic pipe (014). From the SE.



Figure 7a: Post excavation view of Subsidence pit showing grease trap [015]. From the S.



Figure 7b: View of the castle grounds (NW side) showing site contractor's office. From NW.

30. Pits D and E were all positioned within the grounds against the castle's southeast elevation (where Rooms 3, 4 and 9-14 were located). Pit D measured 0.7m by 0.4m in extent and had a depth of 0.4m. Pit E measured 0.35m by 0.3m in extent and had a depth of 0.4m. Both pits cut through topsoil layer (013) which consisted of moderate to loosely compacted, mid to dark grey brown silty sand with occasional small stone and pebble and very occasional slate fragment inclusions. The layer had a thickness of 0.4m. Neither of the pits reached any underlying layers or revealed any archaeological features.

Other Pits

31. The excavation of two other pits was observed during the course of the lightning protection works both of which were located within the castle grounds close to Test Pits D and E (Figure 1).
32. The first of these pits was excavated by the castles ground staff and measured 0.5m by 0.8m and had a depth of 0.4m. The pit cut through the grounds topsoil (013) and revealed an in situ brown glazed ceramic drainage pipe (014) (Figure 6b). The pipe orientated in a NW to SE direction off the southeast side of the castle. It had a diameter of 0.15m and was located at a depth of 0.1m from the existing ground surface within a disturbed topsoil and subsoil mix.
33. The second of these pits was excavated to by the ground staff to investigate an area of localised subsidence within a gravel path which skirted southeastern side of the castle. The pit cut through the existing gravel path material (016) which consisted of moderate to loosely compacted, light to mid grey brown clayey silt with moderate to frequent inclusions of mid grey sub-rounded/sub-angular gravel. The layer had an approximate thickness of 0.07m. Beneath the gravel material the cause of the subsidence was identified as being a damaged subsurface composite brick and metal structure [015] (Figure 7a). The structure consisted of a rectangular shaped brick lined pit with a metal bars incorporated into the inner face of the structure to create a grill. The main brick structure measured 0.8m from SW to NE and 0.53m from NW to SE. The structure had an excavated depth of 0.4m (though there was clearly more depth to the structure than was exposed). Lying within the centre of the structure was a corroded iron box with a protruding hoop attachment which appeared to have been deposited within the structure at a later date.
34. No significant archaeological features or artefacts were identified within any of these pits.

Discussion

Area A –Castle Interior

35. Rooms 21 and 23 were both part of the construction works carried out from 1844-46. This included the filling of the voids within each of these rooms with rubble deposit (003) to create the floor surfaces. It is also probable that the brick lined structure [009] with its associated lead pipe (010) was part of this process, although this is only because the large square shaped flagstone floor (001) and its associated foundation or bedding layer (002) had apparently remained undisturbed since their laying out in the 19th century.
36. The thick rubble deposit (003) within Rooms 21 and 23 probably represents material which was either discarded or left unused after the 1844-46 construction phase. This was subsequently used as infill to make up the void within the foundations, raising the floor level. The ground floor in this part of the castle was approximately 1m higher than the surface of the courtyard, which meant additional material had to be put in place to support the sandstone slab floor (001). There is also a possibility that some of this rubble represented discarded material from earlier medieval or post medieval phases of the castle which were dismantled during the 1844-46 construction, though no obvious moulded stones were observed during the removal of the rubble. The stone within the rubble deposit (003) was also badly degraded and worn so that no diagnostic pieces relating to any earlier construction phase could be confidently identified though there was evidence that some of the stone had been worked and dressed.
37. The most recent feature noted was within Room 23 where a rectangular concrete platform (007) was laid over the earlier red sandstone floor (001), abutting the 19th century wall

[008]. This platform was most likely laid at the same time as a set of concrete steps which led towards an opening in Room 23's southwest wall and into Rooms 19 and 20. No earlier features were noted within the excavation of the lift shaft trench.

Area B – Courtyard and Bobby's Building

38. An initial trench, an umbilical trench, three of the lightning protection test pits (F-H) and an extension to the trench within Bobby's Building were excavated within the courtyard. These excavations cut through the upper existing tarmac surface (005) with its underlying foundation or bedding layer (006) and into the underlying natural subsoil (019). Within Room 36 within Bobby's Building a trench was cut through the building's concrete floor (017) with its associated foundation or bedding layer (018) and again into the underlying subsoil (019).
39. It seems likely that all of the upper layers encountered, such as the courtyard tarmac surface and the floor of Room 36, as well as their associated foundation or bedding layers, were of a recent date, probably originating during the early 20th century, if not later, in the case of the Courtyard surface. The only subsurface features encountered were a series of modern looking services (020), mainly located within the umbilical trench or the extension to the Room 36 trench. The exception to this was a brick lined linear structure [009] housing a lead pipe (010): this was similar to one encountered in Room 23 within the castle's interior, making it part of the construction works carried out at the castle in 1844-46. No other features relating to the earlier medieval phase of the castle were identified within any of the excavations carried out within the Courtyard or Bobby's Building.

Area C – Castle Exterior

40. Of the three lightning protection test pits (A-C) excavated on the northwest side of the castle, only one (A) was excavated to such a depth that it revealed a layer which underlay the existing topsoil (011) within the castle grounds. This layer (012), which was a compacted and mixed layer of topsoil and fragments of ceramic building material, most likely relates to the construction works which took place from 1844-46 though later works undertaken during the 20th century cannot be ruled out.
41. The lightning protection test pits (D and E) excavated on the southeast side of the castle were only excavated into the existing topsoil within the grounds (013). The two other pits excavated by the castle's ground staff revealed an *in situ*, but broken, ceramic pipe and a subsurface composite brick and iron structure. Both of these features were associated with the castle. The former was a 19th century waste water or sewage pipe (016) and the latter a grease trap [015] both of which may have been installed during the construction works of 1844-46. A corroded iron box with a loop attachment, which was a later insertion to the grease trap, may have been an early grounding point for lightning tape.
42. No features relating to the medieval or post medieval phases of the castle were identified in any of the test pits excavated in the castle grounds.

Recommendations

43. The fire mitigation works at Brodick Castle involved excavations at locations which included: the Courtyard and Bobby's Building to the rear of the structure, various points around the castle's exterior, and an area located within the footprint of the castle building itself. These revealed evidence of an earlier phase of construction carried out in 1844-46 and later construction works carried out in the 20th century. No artefacts or features relating to the castle's earlier medieval and post medieval phases were uncovered in any of the fire mitigation works.
44. As such it is recommended that no further archaeological works are necessary with regards to the fire mitigation works. The appropriateness and acceptability of our recommendations rest with the representative of the National Trust for Scotland.

Conclusion

45. This Data Structure Report has been prepared for the National Trust for Scotland to report on fire mitigation works undertaken in Brodick Castle and its grounds, Arran. These works

were in support of the planned installation of a new lift shaft, alarm system, boiler and lightening protection within the castle. The archaeological works were designed to mitigate any adverse impact on the archaeological remains within the affected areas.

46. Three areas were monitored: the castle's interior where a new lift was to be installed; the castle courtyard and Bobby's building, where new subsurface services and boiler were to be installed; and lastly, in the castle grounds where new lightning protection was to be placed. During the monitoring of these works, only features relating to the 1844-46 building phase at the castle and 20th century building works were identified. No archaeological features or artefacts relating to the earlier medieval or post medieval phases at the castle were identified

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Appendix 1: Registers

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

Context Register - Initial Evaluation Test Pits (2016)

Context	Area	Type	Description	Interpretation
001	Courtyard (exterior test pit)	Deposit	Tarmac Surface which had a thickness within the excavated area of 0.06m. Overlies (002).	Existing tarmac surface within the castles courtyard
002	Courtyard (exterior test pit)	Deposit	Loosely compacted, layer of pale yellow, fine, gravel with mortar inclusion. The layer had a thickness of 0.05m. Underlies (001) and overlies (003).	Foundation or bedding layer for the existing courtyard surface.
003	Courtyard (exterior test pit)	Deposit	Loosely compacted, mid brown clayey silt and gravel layer with frequent small to medium sized stone (angular and sub-angular shaped) and occasional fragments of ceramic pipe drain, fragments of animal bone and white glazed earthenware (transfer printed) pottery sherds. Underlies (002) and overlies (004).	Layer of 19 th or 20 th century made-ground within the courtyard area.
004	Courtyard (exterior test pit)	Deposit	Red sandstone bedrock. Lay at a depth of 0.3m at the northwest edge of the trench and 0.7m at the southeast edge of the trench. Unclear if the bedrock had been cut <i>in situ</i> (for services) or if the undulations observed within it are naturally occurring. Underlies (003).	Naturally occurring bedrock underlying the castle.
005	Courtyard (exterior test pit)	Deposit	Narrow lead pipe running the length of the test pit at 0.48m out from NW trench edge. Located at a depth of 0.5m. The pipe had a diameter 0.03m.	Older sub-surface service pipe located within the castle courtyard possibly from the 19 th or 20 th centuries.
006	Courtyard (exterior test pit)	Deposit	Wall foundations. Stepped out 0.03m within the trenches SE side at ground level. Foundation within trench consisted of one course (though the wall continued upwards outwith the trench) of red dressed sandstone blocks which had a depth of 0.38m. The foundation stepped out a further 0.15m-0.23m at the base where it consisted of red sandstone rubble boulders (boulders measured 0.4m by 0.59m). The lower rubble boulder part of the foundation had a depth of 0.25m.	Foundation for the castles NW side facing towards the courtyard.

Context	Area	Type	Description	Interpretation
007	Courtyard (exterior test pit)	Deposit	Drainage pipe located within the western corner of the trench. The pipe was located at a depth of 0.3m from the existing ground surface and had a diameter of 0.08m.	Drainage pipe located within the castles courtyard most likely dating to the 19 th or 20 th centuries.
008	R21	Deposit	Interior floor layer of large square shaped red sandstone flagstones which measured 0.7m by 0.7m and had a thickness of 0.1m. The overall size of the surface within Room 21 was 4m from NE to SW and 3m from NW to SE. The surface overlay (009).	19 th century floor surface within Room 21.
009	R21	Deposit	Loosely compacted, layer of vacuous rubble which consisted of large red sandstone fragments with infrequent animal bone and wood inclusions. The layer had a thickness of 1.1m. The layer underlay (008) and overlay (010). The layer abutted the SE wall of Room 21.	Layer of rubble which formed possible foundation or bedding for floor surface (008) within Room 21.
010	R21	Deposit	Very firmly compacted, pink mottled grey sandy clay. The layer had an excavated thickness of 0.1m. The layer underlay (009).	Naturally occurring subsoil located beneath Room 21.

Context Register – Main Fire Mitigation Works (2017)

Context	Area	Type	Description	Interpretation
001	R21 / R23 (Lift Trench)	Deposit	Interior floor layer of large square shaped red sandstone flagstones which measured 0.7m by 0.7m and had a thickness of 0.1m. The overall size of the surface within Rooms 21 and 23 was 4.5m from NE to SW and 3m from NW to SE. The surface overlay (002).	19 th century floor surface within Rooms 21 and 23.
002	R21 / R23 (Lift Trench)	Deposit	Firmly compacted, dark grey clayey silt with moderate mortar and infrequent small stone inclusions. The layer had a thickness range of between 0.13m-0.17m. The layer underlay (001) and overlay layer (003).	Foundation or bedding layer beneath flagstone surface (001).
003	R21 / R23 (Lift Trench)	Deposit	Loosely compacted, layer of vacuous rubble which consisted of large red sandstone fragments with smaller sandstone fragments filling some of the gaps. There were very occasional inclusions of slate fragments and animal bone. The layer had a thickness of 1.1m within Rooms 21 and 23. The layer underlay (002) and overlay (004). The layer abutted the dividing wall between Rooms 21 and 23 [008] and the other walls which formed the two rooms.	Rubble deposit used to infill Rooms 21 and 23 most likely dating to the 19 th century.

Context	Area	Type	Description	Interpretation
004	R21 / R23 (Lift Trench)	Deposit	Very firmly compacted, pink mottled grey sandy clay. The layer had an excavated thickness of 0.5m within Rooms 21 and 23 (a depth of 1.7m-1.9m from the most recent/modern floor levels). The layer underlay deposit (003).	Natural subsoil located within Rooms 21 and 23.
005	Courtyard (Umbilical Trench, R36 Trench and Test Pits F-H)	Deposit	Tarmac Surface which had a thickness within the excavated area of 0.05m. Overlies (006). (Same as (001) in the initial test pit numbering).	Existing tarmac surface within the castles courtyard.
006	Courtyard (Umbilical Trench, R36 Trench and Test Pits F-H)	Deposit	Loose to moderately compacted, light brownish-yellow sandy rubble with frequent bitumen inclusions. The layer had an excavated thickness of 0.15m to 0.34m. Underlay courtyard surface (005) and overlay the natural subsoil (019).	Foundation or bedding layer for the existing courtyard surface.
007	R23 (Lift Trench)	Deposit	Rectangular shaped formed concrete platform with linoleum floor surface. The surface and concrete platform formed an upper floor surface over sandstone flagstones (001) and measured 3m from NW to SE and 1.5m from NE to SW and had a thickness of 0.2m.	Later (possibly 19 th century) concrete platform and linoleum floor surface within Room 23.
008	R21 / R23 (Lift Trench)	Structure	Remnants of red sandstone wall noted projecting 0.05m-0.01m from the NE and SW walls which had until recently divided Rooms 21 and 23. The wall would have been 0.33m wide and was abutted by flagstone surface (001) on both sides and raised concrete floor (007) on its SW side. Like the walls of Rooms 21 and 23, the wall carried on below the current ground level to a depth of 1.7m-1.9m (the base of the walls was not uncovered and continued into the subsoil (004)).	Possibly 19 th century dividing wall between Rooms 21 and 23. Most likely these rooms would at one time have been one room until divided in the 19 th century.
009	R23 (Lift Trench)	Structure	Small linear brick lined linear structure which forms a right angle in plan located in the S corner of R23. The structure was within a recent test pit within Room 23 which measured 0.5m by 0.5m. The structure was under floor (001), deposit (002) and went through or was built within rubble (003). Lead pipe (010) was located within the structure. The structure had a width of 0.22m and a depth of 0.5m.	Brick linear structure located within recent test pit (010).

Context	Area	Type	Description	Interpretation
010	R23 (Lift Trench)	Lead Pipe	Lead pipe which forms a right angle in plan was located in the S corner of R23. The pipe had a diameter of 0.05m. It was located at a depth of 0.45m from the top of the most recent floor (007) and small square shaped holes had been cut into the lower foundations of Room 23's SW and SE walls. These holes were approximately 0.12m by 0.12m. The pipe was located within brick lined structure (009).	Lead service pipe located within brick lined structure (009) in the S corner of Room 23. Possibly installed in the 19 th century at the same time as the creation of Rooms 21 and 23.
011	Castle Grounds (Test Pits A-C)	Deposit	Moderate to loosely compacted, mid to dark grey brown silty sand with occasional small stone and pebble and very occasional slate fragment inclusions. The layer had a thickness range of between 0.35m to 0.4m.	Existing topsoil layer within the castle grounds. The topsoil abuts the NW side of the castle (where rooms 40, 41, 46 and 45 were located).
012	Castle Grounds (Test Pit A)	Deposit	Moderately compacted, mid to dark grey brown silty sand with frequent brick fragment inclusions. The layer had a maximum excavated thickness of 0.03m.	Mixture of compacted topsoil and ceramic building debris. Could relate to 19 th century or later building or ground works at the castle.
013	Castle Grounds (Test Pits D-E and subsidence and gardeners pits)	Deposit	Moderate to loosely compacted, mid to dark grey brown silty sand with occasional small stone and pebble and very occasional slate fragment inclusions. The layer had a thickness of 0.4m.	Existing topsoil layer within the castle grounds. The topsoil abuts the SE side of the castle (where rooms 3, 4 and 9-14 were located).
014	Castle Grounds (Gardeners pit)	Ceramic Pipe	Large brown glazed ceramic pipe running in a NW to SE direction off the SE side of the castle. The pipe had a diameter of 0.15m and was located at a depth of 0.1m from the existing ground surface within a disturbed topsoil and subsoil mix.	19 th or early 20 th century ceramic water/drainage pipe which ran off the SE side of the castle.

Context	Area	Type	Description	Interpretation
015	Castle Grounds (Subsidence pit)	Structure	Composite structure which consisted of a rectangular shaped brick lined pit with a metal bars incorporated into the inner face of the structure to create a grill. The main brick structure measured 0.8m from SW to NE and 0.53m from NW to SE. The structure had an excavated depth of 0.4m (though it was clearly more depth to the structure which was not exposed). Lying within the centre of the structure was a corroded iron box with a protruding hoop attachment which appeared to have been deposited within the structure at a later date.	Composite brick and iron. Partially infilled, grease trap associated with the castle, possibly dating to the 19 th or 20 th centuries. The corroded iron box with its loop attachment may have been a reuse of the hole provided by the structure for a stay point, possibly for an early grounding point for lightning tape.
016	Castle Grounds (Subsidence pit)	Deposit	Moderate to loosely compacted, light to mid grey brown clayey silt with moderate to frequent inclusions of mid grey sub-rounded/sub-angular gravel. The layer had an approximate thickness of 0.07m. The layer partially overlay structure [015].	Existing path material which runs along the SE side of the castle. An area of topsoil (013) lies between the path and the SE side of the castle.
017	R36	Deposit	Very firmly compacted, concrete layer with moderate to frequent rounded/sub-angular grey stone inclusions (particular at the base of the layer). The layer had a thickness range of between 0.15m-0.2m within Room 36. The layer overlay (018).	Concrete floor within Room 36 which was part of Bobby's Building. The floor seems to be the original floor within that part of the building.
018	R36	Deposit	Moderate to firmly compacted, orange red sandy clay with very frequent small to medium sized sub-angular stone inclusions. The layer had a thickness of 0.15m-0.34m. The layer underlay concrete floor (017) and overlay layer (019).	Foundation or bedding layer for the concrete floor within Room 36 in Bobby's Building.
019	Courtyard and R36	Deposit	Firmly compacted, orange red sandy clay with occasional to moderate small to medium sized sub-angular stone and very occasional larger boulder inclusions. The layer had an excavated thickness range of between 0.68m-0.73m. The layer underlay concrete floor (017) and layer (006) and overlay layer (019).	Naturally occurring subsoil within the courtyard and Room 36 of Bobby's Building.
020	Courtyard and R36	Ceramic/ Plastic/ Metal Pipes	Series of ceramic, plastic and metal pipes located within the natural subsoil. The pipes were NE to SW and NE to SW running and located 0.35m to 0.5m from the existing ground/floor surface. The pipes were located within deposit (019).	19 th century to modern service pipes crossing the courtyard between parts of the Castle and Bobby's Building.

Photographic Register- Initial Evaluation Test Pits (2016)

Image No.	Digital	Description	From	Date
1	DSCN0015	Pre excavation view of external Courtyard test pit.	NW	28/09/16
2	DSCN0016	Pre excavation view of external Courtyard test pit.	NW	28/09/16
3	DSCN0017	Working view of external Courtyard test pit.	N	28/09/16
4	DSCN0019	External Courtyard test pit – Foundations at SE side	NW	28/09/16
5	DSCN0020	External Courtyard test pit – General shot	N	28/09/16
6	DSCN0021	External Courtyard test pit – SW facing section	SW	28/09/16
7	DSCN0022	External Courtyard test pit – General shot	SW	28/09/16
8	DSCN0023	External Courtyard test pit – General shot	W	28/09/16
9	DSCN0024	External Courtyard test pit – General shot	NW	28/09/16
10	DSCN0025	External Courtyard test pit – Foundations at SE edge	NW	28/09/16
11	DSCN0133	Internal Room 21 test pit – Pre Excavation.	NNE	04/11/16
12	DSCN0134	Internal Room 21 test pit – Post excavation	NE	04/11/16
13	DSCN0135	Internal Room 21 test pit – Post excavation	NE	04/11/16
14	DSCN0136	Internal Room 21 test pit – Post excavation	NNE	04/11/16
15	DSCN0137	Internal Room 21 test pit – View of the spoil from the excavation	ESE	04/11/16
16	DSCN0138	Internal Room 21 test pit – Post excavation	NW	04/11/16
17	DSCN0139	Internal Room 21 test pit – Post excavation	NW	04/11/16
18	DSCN0140	Internal Room 21 test pit – Post excavation	NW	04/11/16

Image No.	Digital	Description	From	Date
19	DSCN0141	Internal Room 21 test pit – Post excavation	NW	04/11/16

Photographic Register- Main Fire Mitigation Works (2017)

Image No.	Digital	Description	From	Date
1	IMG_8011	R21 and R23, pre-ex	NE	05/06/17
2	IMG_8012	R21 and R23, pre-ex	NE	05/06/17
3	IMG_8013	R21 floor, general	NE	05/06/17
4	IMG_8014	Removal of wall dividing R21 and R23, working shot	NE	05/06/17
5	IMG_8015	Removal of wall dividing R21 and R23, working shot	NE	05/06/17
6	IMG_8016	Removal of wall dividing R21 and R23, post-ex	NE	05/06/17
7	IMG_8017	Joint between dividing wall and outer (NW) wall	SE	05/06/17
8	IMG_8018	Joint between dividing wall and outer (NW) wall	SE	05/06/17
9	IMG_8019	Joint between dividing wall and inner (SE) wall	NW	05/06/17
10	IMG_8020	Joint between dividing wall and inner (SE) wall	NW	05/06/17
11	IMG_8021	Void left between dividing wall and first floor	SE	05/06/17
12	IMG_8022	Void left between dividing wall and first floor	NW	05/06/17
13	IMG_8023	Void left between dividing wall and first floor	NE	05/06/17
14	IMG_8024	Joint between dividing wall and inner (SE) wall, general	N	05/06/17
15	IMG_8025	Joint between dividing wall and inner (SE) wall, general	N	05/06/17

Image No.	Digital	Description	From	Date
16	IMG_8026	Joint between dividing wall and inner (SE) wall, general	E	05/06/17
17	IMG_8027	Joint between dividing wall and inner (SE) wall, general	E	05/06/17
18	IMG_8028	R23 floor, broken up floor surface	NE	05/06/17
19	IMG_8029	Exterior (NW) wall of R21 and R23	NW	05/06/17
20	IMG_8030	Exterior (NW) wall of castle showing access, R21, and R23	NW	05/06/17
21	IMG_8031	Courtyard, general	NE	05/06/17
22	IMG_8032	Brick-lined service trench underlying R23	NE	05/06/17
23	IMG_8033	R21 and R23, general	NE	05/06/17
24	IMG_8034	R21 floor, broken up floor surface	NE	05/06/17
25	IMG_8035	R21 floor, majority of surface removed	NE	05/06/17
26	IMG_8036	Castle exterior, general view	NE	06/06/17
27	IMG_8037	Castle exterior, general view	NE	06/06/17
28	IMG_8038	R21 floor, general	NE	06/06/17
29	IMG_8039	R21 showing difficulty of access with rubble	NE	06/06/17
30	IMG_8040	R21, floor material removed	NE	06/06/17
31	IMG_8041	R21 during early stages of (002) removal	NE	06/06/17
32	IMG_8042	R21 during early stages of (002) removal	NE	06/06/17
33	IMG_8043	R21 with (002) removed to 500mm	NE	08/06/17
34	IMG_8044	R21 end of day	NE	08/06/17
35	IMG_8045	Brick-lined service trench exposed in corridor C2	SW	09/06/17

Image No.	Digital	Description	From	Date
36	IMG_8046	Brick-lined service trench exposed in R23	NW	09/06/17
37	IMG_8047	Original donjon fabric (outer face visible in scullery)	NE	12/06/17
38	IMG_8048	Original donjon fabric (outer face visible in scullery)	NE	12/06/17
39	IMG_8049	R21 (002) mid-ex	NE	13/06/17
40	IMG_8050	R21 (002) end of day	NE	13/06/17
41	IMG_8051	Courtyard, utilities umbilical, mid-ex	S	14/06/17
42	IMG_8053	R21 (002) end of day	NE	14/06/17
43	IMG_8054	Courtyard, utilities umbilical mid-ex, general view	E	14/06/17
44	IMG_8055	R21 (002) end of day	E	15/06/17
45	IMG_8056	R21, exposed subsoil and original test pit base	NW	19/06/17
46	IMG_8057	R21, exposed subsoil and original test pit base	NW	19/06/17
47	IMG_8058	R21, exposed subsoil and original test pit base	N	19/06/17
48	IMG_8059	Foundation courses of former dividing wall between R21 and R23	NE	19/06/17
49	IMG_8094	R21/23, end of day progress	E	12/07/17
50	IMG_8095	R21/23, end of day progress	E	13/07/17
51	IMG_8096	R12/23, general view	E	14/07/17
52	IMG_8097	R23, cleaned subsoil base	E	14/07/17
53	IMG_8098	R23, cleaned subsoil / bedrock base	S	14/07/17
54	IMG_8099	R23, NW corner	SE	14/07/17
55	IMG_8100	R23, NW wall	SE	14/07/17

Image No.	Digital	Description	From	Date
56	IMG_8101	R23, NW wall	SE	14/07/17
57	IMG_8102	R23, SE wall showing brick and pipe	NW	14/07/17
58	IMG_8103	R23, brick and pipe – oblique	N	14/07/17
59	IMG_8104	R23, probable foundation cut for NW wall	SE	14/07/17
60	IMG_8105	R23, probable foundation cut for NW wall	SE	14/07/17
61	IMG_8106	R21 / 23, post-ex	NE	18/7/17
62	IMG_8107	R23, SW wall cut into subsoil	NE	18/7/17
63	IMG_8108	R23, post-ex, subsoil base. Foundation cut for NW wall visible	SE	18/7/17
64	IMG_8109	R23, subsoil base, pipe left floating <i>in situ</i> after brick removal	SE	18/7/17
65	IMG_8110	R21, working shot	NE	28/7/17
66	IMG_8111	R21, post-ex, all rubble (002) removed	E	28/7/17
67	IMG_8112	R21, SW wall showing wider foundation course	NE	28/7/17
68	IMG_3033	Utilities umbilical, SE end at access chamber adjacent	W	15/08/17
69	IMG_3034	Utilities umbilical, access chamber interior	W	15/08/17
70	IMG_3035	Brick lining of access chamber to be removed to join with utilities umbilical	NW	15/08/17
71	IMG_3038	Utilities umbilical, post-ex	NW	15/08/17
72	IMG_3039	Castle Courtyard, general shot	SW	15/08/17
73	IMG_3040	Access chamber, concrete cap to be left <i>in situ</i>	N	15/08/17
74	IMG_3041	Castle Courtyard, general shot	NE	15/08/17
75	IMG_3043	R21/23, lift shaft pit at c. 3m depth showing wall founds at c. 2m	NE	15/08/17

Image No.	Digital	Description	From	Date
76	IMG_3044	Brodick Castle, general view	E	15/08/17
77	DSCN0512	Grounding/lightning Test Pit A – Post Excavation	E	06/09/17
78	DSCN0513	Grounding/lightning Test Pit A – Post Excavation	NW	06/09/17
79	DSCN0514	Grounding/lightning Test Pit A – Post Excavation	NW	06/09/17
80	DSCN0515	Grounding/lightning Test Pit A – Post Excavation	NW	06/09/17
81	DSCN0516	Grounding/lightning Test Pit B – Post Excavation	N	06/09/17
82	DSCN0517	Grounding/lightning Test Pit B – Post Excavation	N	06/09/17
83	DSCN0518	Grounding/lightning Test Pit B – Post Excavation	NW	06/09/17
84	DSCN0519	Void	Void	06/09/17
85	DSCN0520	Grounding/lightning Test Pit B – Post Excavation	W	06/09/17
86	DSCN0521	Grounding/lightning Test Pit C – Post Excavation	N	06/09/17
87	DSCN0522	Grounding/lightning Test Pit C – Post Excavation	N	06/09/17
88	DSCN0523	Grounding/lightning Test Pit C – Post Excavation	N	06/09/17
89	DSCN0524	Grounding/lightning Test Pit C – Post Excavation	N	06/09/17
90	DSCN0525	Grounding/lightning Test Pit D – Post Excavation	NE	06/09/17
91	DSCN0526	Grounding/lightning Test Pit D – Post Excavation	E	06/09/17
92	DSCN0527	Subsidence Test Pit – Post Excavation	NW	06/09/17
93	DSCN0528	Subsidence Test Pit – Post Excavation	N	06/09/17
94	DSCN0529	Gardeners Test Pit – Post Excavation	SW	06/09/17
95	DSCN0530	Gardeners Test Pit – Post Excavation	S	06/09/17

Image No.	Digital	Description	From	Date
96	DSCN0531	Gardeners Test Pit – Post Excavation	S	06/09/17
97	DSCN0532	Grounding/lightning Test Pit E – Post Excavation	SE	06/09/17
98	DSCN0533	Grounding/lightning Test Pit E – Post Excavation	SE	06/09/17
99	DSCN0534	Grounding/lightning Test Pit F – Post Excavation	SW	06/09/17
100	DSCN0535	Grounding/lightning Test Pit F – Post Excavation	SW	06/09/17
101	DSCN0536	Grounding/lightning Test Pit F – Post Excavation	SW	06/09/17
102	DSCN0537	Grounding/lightning Test Pit G – Post Excavation	NW	06/09/17
103	DSCN0538	Grounding/lightning Test Pit G – Post Excavation	NW	06/09/17
104	DSCN0539	Grounding/lightning Test Pit G – Post Excavation	N	06/09/17
105	DSCN0540	Grounding/lightning Test Pit G – Post Excavation	N	06/09/17
106	DSCN0541	Void	Void	06/09/17
107	DSCN0542	Grounding/lightning Test Pit H – Post Excavation	NW	06/09/17
108	DSCN0543	Grounding/lightning Test Pit H – Post Excavation	W	06/09/17
109	DSCN0544	Grounding/lightning Test Pit H – Post Excavation	W	06/09/17
110	DSCN0545	Removal of concrete floor within Room 36 (new boiler room)	E	18/10/17
111	DSCN0546	Removal of concrete floor within Room 36 (new boiler room)	E	18/10/17
112	DSCN0547	View of large sandstone boulder within Room 36 trench	SE	18/10/17
113	DSCN0548	View of large sandstone boulder within Room 36 trench	SE	18/10/17
114	DSCN0549	View of large sandstone boulder within Room 36 trench	E	18/10/17
115	DSCN0550	View of large sandstone boulder within Room 36 trench	SE	18/10/17

Image No.	Digital	Description	From	Date
116	DSCN0551	View of large sandstone boulder within Room 36 trench	E	18/10/17
117	DSCN0552	Extending the Room 36 trench into Courtyard	E	19/10/17
118	DSCN0553	Extending the Room 36 trench into Courtyard	NW	19/10/17
119	DSCN0554	Extending the Room 36 trench into Courtyard (large boulder in view)	N	19/10/17
120	DSCN0555	Working shot within Room 36/Courtyard trench	SW	19/10/17
121	DSCN0556	Extending the Room 36 trench into Courtyard (end of day)	SE	19/10/17
122	DSCN0557	Extending the Room 36 trench into Courtyard (end of day)	SW	19/10/17
123	DSCN0558	View of large sandstone boulder within Room 36 trench	NNW	20/10/17
124	DSCN0559	View of large sandstone boulder within Room 36 trench	NNW	20/10/17
125	DSCN0560	View of large sandstone boulder within Room 36 trench	SSE	20/10/17
126	DSCN0561	Working shot within Room 36/Courtyard trench	E	23/10/17
127	DSCN0562	Working shot within Room 36/Courtyard trench	SE	24/10/17
128	DSCN0563	View of Room 36/Courtyard trench at the end of day.	W	24/10/17
129	DSCN0564	View of Room 36/Courtyard trench at the end of day.	E	24/10/17
130	DSCN0566	Working shot within Room 36/Courtyard trench.	N	25/10/17
131	DSCN0567	View of Room 36/Courtyard trench at the end of day.	NE	25/10/17
132	DSCN0568	View Baulk between excavation in Room 36/Courtyard trench and reopened umbilical trench	SW	26/10/18
133	DSCN0569	View Baulk between excavation in Room 36/Courtyard trench and reopened umbilical trench	SW	26/10/18
134	DSCN0570	View of original umbilical trench (partially reopened with service pipes showing)	SW	26/10/18
135	DSCN0571	NE facing section of Room 36/Courtyard trench	NE	26/10/18

Image No.	Digital	Description	From	Date
136	DSCN0572	NE facing section of Room 36/Courtyard trench	NE	26/10/18
137	DSCN0573	Post excavation view of Room 36/Courtyard trench	NE	26/10/18
138	DSCN0574	Post excavation view of Room 36/Courtyard trench	N	26/10/18
139	DSCN0575	Post excavation view of Room 36/Courtyard trench	N	26/10/18
140	DSCN0576	Post excavation view of Room 36/Courtyard trench	SW	26/10/18
141	DSCN0577	Post excavation view of Room 36/Courtyard trench	NW	26/10/18
142	DSCN0578	Post excavation view of Room 36/Courtyard trench	SSE	26/10/18
143	DSCN0579	Removal of baulk between Room 36/Courtyard trench and reopened umbilical trench	SSE	26/10/18
144	DSCN0580	Removal of baulk between Room 36/Courtyard trench and reopened umbilical trench	S	26/10/18
145	DSCN0581	Removal of baulk between Room 36/Courtyard trench and reopened umbilical trench	S	26/10/18
146	DSCN0582	Post excavation view of trench after removal of baulk between Room 36/Courtyard trench and reopened umbilical trench	SE	26/10/18
147	DSCN0583	Post excavation view of trench after removal of baulk between Room 36/Courtyard trench and reopened umbilical trench	SE	26/10/18

Appendix 2: Discovery & Excavation in Scotland

LOCAL AUTHORITY:	North Ayrshire
PROJECT TITLE/SITE NAME:	Brodick Castle Fire Mitigation
PROJECT CODE:	RA14032
PARISH:	Kilbride
NAME OF CONTRIBUTOR:	Liam McKinstry
NAME OF ORGANISATION:	Rathmell Archaeology Limited
TYPE(S) OF PROJECT:	Watching brief
NMRS NO(S):	NS03NW 2
SITE/MONUMENT TYPE(S):	Castle (14 th Century), Artillery Fortification (17 th Century), Country House (19 th Century)
SIGNIFICANT FINDS:	None
NGR (2 letters, 8 or 10 figures)	NS 01558 37866
START DATE (this season)	28 th September 2016
END DATE (this season)	26 th October 2017
PREVIOUS WORK (incl. <i>DES</i> ref.)	None
MAIN (NARRATIVE) DESCRIPTION: (may include information from other fields)	<p>Archaeological works were undertaken in support of the planned installation of a new lift shaft, alarm system, boiler and lightning protection within the castle. They were designed to mitigate any adverse impact on the archaeological remains within the affected areas.</p> <p>Three areas were monitored: the castle's interior where a new lift was to be installed; the castle courtyard and Bobby's building, where new subsurface services and a boiler were to be installed; and in the castle grounds where new lightning protection was to be placed. During the monitoring of these works, only features relating to the 1844-6 phase of building at the castle and later, 20th century, building works were identified. No archaeological features or artefacts relating to the earlier medieval or post medieval phases at the castle were identified</p>
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	None
SPONSOR OR FUNDING BODY:	National Trust for Scotland
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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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