

# Comparative Kingship: The evaluation of a series of 'nuclear'/complex hillforts

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## Project background

The Department of Archaeology at the University of Aberdeen is undertaking a Leverhulme funded project focusing on the early medieval kingdoms of Northern Britain and Ireland. The nature of societies existing beyond the Roman Empire's boundaries, in regions such as Ireland and Northern Britain, is one of the most contentious debates about late- and post-Roman Europe. While research has focused on broad-scale narratives concerning the transformations of the late Roman World that gave rise to the so-called successor states at the core of Europe, emerging evidence highlights that peripheral communities were more complex than previously characterised. Rather than being small-scale and poorly developed, these kingdoms were highly stratified, with complex strategies of rulership and governance. Though impacted by late Roman practices, these groups witnessed a very different genesis and development to those of central and southern Europe, yet to date, there have been no integrated and comparative studies of these early medieval societies.

The Comparative Kingship project adopts an innovative interdisciplinary focus designed to critically evaluate the nature of elite power in Northern Britain and Ireland in the first millennium AD. The project utilizes archaeological, historical, toponymic and paleoenvironmental methodologies along with Bayesian-modelled chronologies, to create a new synthesis of the dramatic changes that ultimately led to the formation of the state societies that existed beyond the edges of the Roman Empire.

A major element of the project is investigating the nature of the early medieval kingdoms of eastern Scotland and seats of power. One of the most significant changes in the early medieval period was the re-emergence of fortified enclosures and settlements (Alcock 2003, 179–199). In northern and western Britain our limited sources suggest that defended settlements were key manifestations of kingship. Clear evidence of wealth accumulation and redistribution is evident at these sites through the presence of high-status metalworking, evidence for trade and cattle-rich faunal assemblages. Yet

few of these sites have been identified with currently less than twenty confirmed early medieval forts known in Scotland, contrasting with the hundreds/thousands of known Iron Age forts and enclosures. The most commonly cited class of fortified site in early medieval Northern Britain is the so-called 'nuclear hillfort', a hilltop enclosure form that has long been seen as a classic element of our understandings of this period, yet few of these have been dated and the type itself has been questioned. This project aims to take a critical view of this category of fort and test through a number of keyhole investigations the validity of this typological definition and to test the occurrence of this category of sites in a number of geographical and historical contexts as befitting the comparative element of the Comparative Kingship project.

## **Nuclear Hillforts: Research Context**

Stevenson (1949) first used the term 'nuclear hillfort' to describe the fort on Dalmahoy Hill, Midlothian. This became the basis for his classification of these sites, which he described as comprising a central citadel or enclosure positioned at the summit of a hill, with outworks looping off from the summit down-slope. Stevenson (1949) argued that this created a hierarchical organization of space which became a key characteristic of this site type. Stevenson (1949, 191–195) suggested that they were royal strongholds of the early medieval period. Historical references for sites he identified as 'nuclear', such as Dundurn, Perthshire, Dunadd, Argyll and Bute and Dumbarton Rock, West Dumbartonshire, seemed to support Stevenson's interpretation.

Since Stevenson's seminal work, the concept of the 'nuclear fort' has been developed further, most notably by Feachem. Feachem (1955, 76-8) argued that 'nuclear hillforts' could be divided into two sub-categories; the traditional 'nuclear hillfort' and the 'citadel hillfort'. The latter was characterized as having free-standing earthworks that do not connect to the central citadel. The fort of Dumyat in Stirling was identified as the site type for this latter sub-category. However, Feachem in his later work (1966), questioned Stevenson's suggestion that nuclear forts were a purely early medieval construct and argued that at least some were abandoned Iron Age forts that were refortified in the early medieval period, thus showing multi-period development, but not necessarily continuity of use.

Later scholars such as Alcock argued for a very fluid definition of a nuclear fort arguing that any fort that showed a hierarchical organization was likely to be early medieval in date. Alcock added a greater number of sites to his definition of a nuclear fort including sites such as King's Seat, Dunkeld and Castle Craig, Tillicoultry (Alcock and Driscoll 1989, 209; 2003). Alcock believed that a hierarchical layout was the key feature (Alcock and Driscoll 1989). Alcock (1989, 221) also argued that the sub-categories ('citadel' and 'nuclear') developed by Feachem should be discarded due to their broad similarities and

use of a hierarchal organization of space. He supported the interpretation that these sites were elite strongholds and argued that if not entirely early medieval in date were important sites in the early medieval period, arguing that some kings/leaders may have had multiple nuclear forts dotted around the sub-divisions of their kingdom, residing in each when making circuits of their lands to collect tribute.

As it stands today, the 'nuclear hillfort' continues to be an oft mooted early medieval site type, despite the fact that there is still considerable debate regarding definition and chronology (Harding 2012; Toolis and Bowles 2017; Noble 2019). Some sites such as King's Seat, Dunkeld have indeed been identified as important early medieval seats, but others such as Moredun Top have not. Importantly the site types themselves, sites such as Dalmahoy and Dumyat have never been excavated to refute or confirm their morphological form as important chronological and status markers. Today we have a regularly used terminology for describing early medieval forts, but no confirmation of the validity of this category, nor if it is a valid typological category, nor a sense of how widespread this tradition was within the differing social, political and ethnic groups of early medieval Scotland.

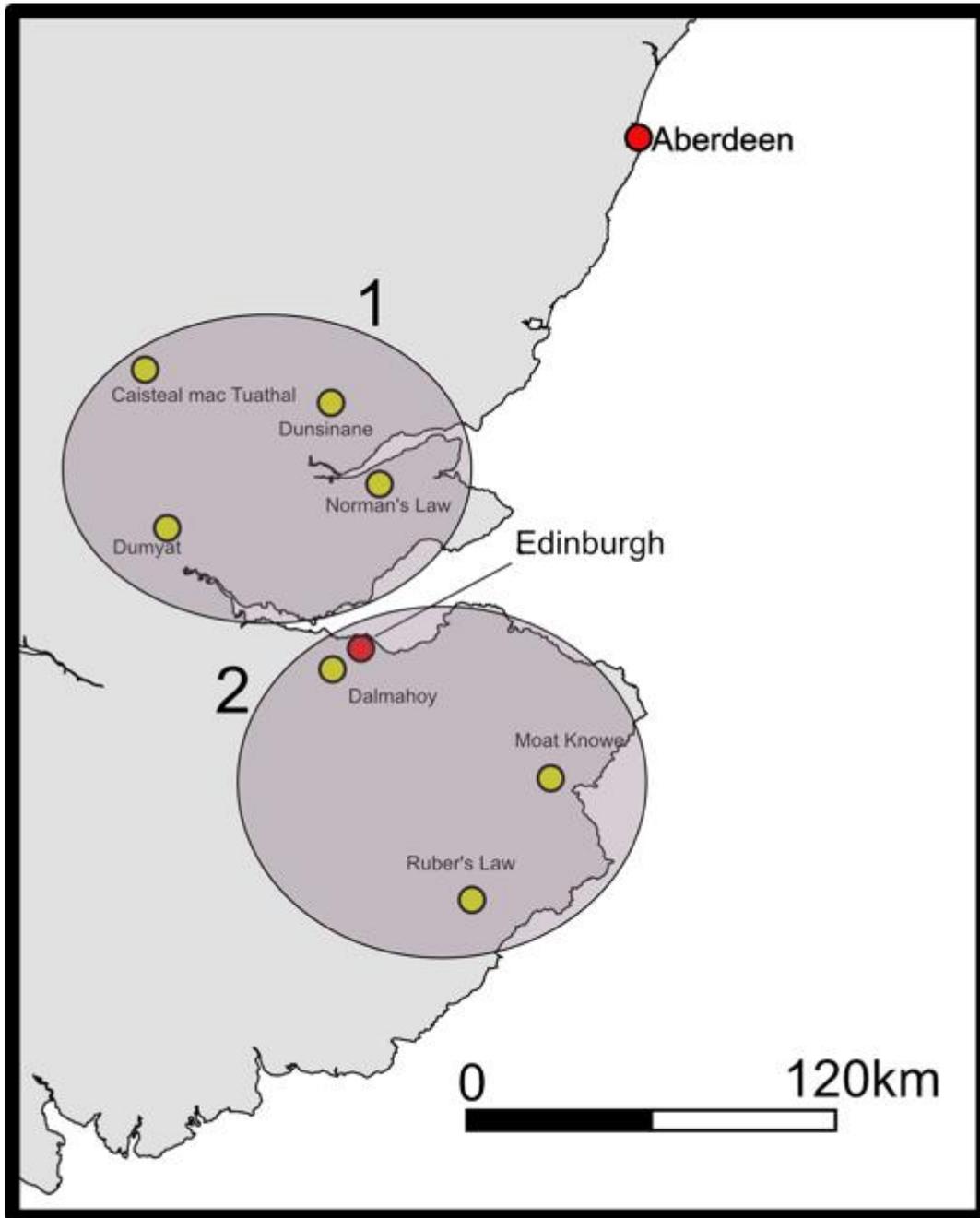


Figure 1 Case studies 1 and 2 and sites targeted.

This application proposes using evaluative keyhole excavation as recommended by ScARF to retrieve dating evidence from a series of sites that can be classified as nuclear form in two different case study regions (Figure 1):

- 1) an area of southern Pictland to build on the findings of project such as the Tay Landscape Partnership
- 2) southeast Scotland where the original typesite Dalmahoy lies along with closely comparable sites, but in a region that has no confirmed early medieval hillforts of this form.

## Case Study 1: Southern Pictland

Recent work by the Tay Landscape Partnership and the Living Lomonds Landscape Partnership has begun to flesh out the picture for early medieval power centres in southern Pictland with excavations at King's Seat, Dunkeld in particular confirming that this site, identified by Alcock as a nuclear fort does indeed date to the early medieval period and was a Pictish power centre of the first millennium AD. The Living Lomonds project at East Lomond has confirmed Late Roman to early medieval phases to a site long identified as a likely early medieval nuclear fort in Fife, albeit excavations to date have not tackled the chronology and character of the summit enclosures. The picture is complicated, however, by excavations by the Tay Landscape Partnership at Moredun Top that has shown a site identified by Feachem as being a 'citadel fort' of nuclear form is entirely Iron Age in date as far as excavation can show. Thus this project aims to test a number of sites in southern Pictland to increase our sample of forts that fit either Stevenson, Feachem and Alcock's definition(s) of a nuclear fort to more fully assess the validity of this category of evidence and to set the investigation of this category of evidence on a firmer foundation. Four sites have been identified in the southern Pictish case study to give balance and coverage to the various definitions and categories of forts of nuclear form identified by Stevenson, Feachem and Alcock. These forts are:

### Norman's Law

Norman's Law was identified by Feachem (1963, 125; 1966, 82) and by later scholars (e.g. Hanson and Maxwell 1983)) as a classic nuclear fort, strongly reminiscent of the layout of the site type Dalmahoy (See Case Study 2). Norman's Law has outworks looping off from a central citadel, Feachem (1963, 125) argued that the site sequence may have involved the construction or reconstruction of a central citadel in the early medieval period within outworks that may be Iron Age or multi-period, but no excavation has ever been conducted at the site. The site (**Figures 2,3,4,5**) (**Site Number: NO32SW 22; Canmore ID: 31814; NGR: NO 3053 2019**) is located at 285m OD, positioned on a southern facing craggy outcrop with extensive views of the Tay to the north. Previous surveys had recorded four enclosing elements occupying a total area of approximately 4.3ha, but recent photogrammetry survey

by the University of Aberdeen has revealed a much more complex series of up to eight enclosures with a total footprint of 6.42ha.

The photogrammetry survey provides sub-cm accuracy and reveals a complex series of earthworks. The summit enclosure (labelled as **NL1**) consists of a single 2.3m wide grass covered stone wall up to 0.45m high enclosing a total area of 0.15 hectares. Extensive scree deposits abutting the exterior face of the wall to the south suggest this enclosure would have been a substantial wall when constructed. There is a single entrance at the northeastern corner consisting of a simple 1.6m wide break in the wall. Within the interior of this enclosure is a modern cairn positioned at the highest point, as well as two recorded hut structures. A third structure has been identified by the photogrammetry survey.

A second enclosure projects from the northern side of the central fort and extends south, enclosing an area of approximately 0.4ha (**NL2**). This consists of a 3.7m wide grass covered stone wall that survives to a height of 0.3m. A single simple entrance gap is apparent at the northeast which measures 3.1m wide and is in-line with the entrance to **NL1**. There is no evidence of any hut structures inside the enclosure, with the only feature being the aforementioned scree from the central citadel wall.

Adjoining the eastern side of **NL2** is another grass covered stone wall surviving as a 3.7m wide scarp. This encloses an area of approximately 0.72ha and has two simple entrance gaps at the northeast and south. The southern example is the most prominent and comprises a 5m wide break. There are up to seven recorded structures within **NL3**, though photogrammetry survey has identified at least 18 possible examples in total.

A possible wall splits the fourth enclosure into what we term **NL4** and **NL5**. **NL4** encloses an area of 0.31 hectares. The enclosure sits on a natural terrace with a rampart that is built into the natural slope of the hill. There is a hut structure that is built overlying this wall, as well as a large structure located abutting the inner face. **NL5** is the largest enclosure in the fort, surrounding the southern and western side of the site and measuring approximately 2.9ha. Here again the bank consists of a grass covered stone wall up to 3.6m wide and 0.3m high. Thirteen structures have been recorded within the interior though photogrammetry has increased this to at least 18, with a concentration in the south and southeastern corner. Three additional hut structures overlay the wall indicative of continued occupation after the outer enclosure had gone out of use.

A possible sixth enclosure (**NL6**) has been identified south of **NL5**. A section of the rampart is covered by large amounts of gorse and forestry, so it is difficult to determine if it is a complete enclosure. There are no apparent features in the enclosure, and it measures 1.44 hectares. There is also a possible

seventh enclosure (**NL7**), surrounding the northern slope of the fort. The wall encloses an area of 0.48 hectares. Despite the scale of the enclosing earthworks there has been no recorded excavation at



Figure 2- Location of Norman's Law

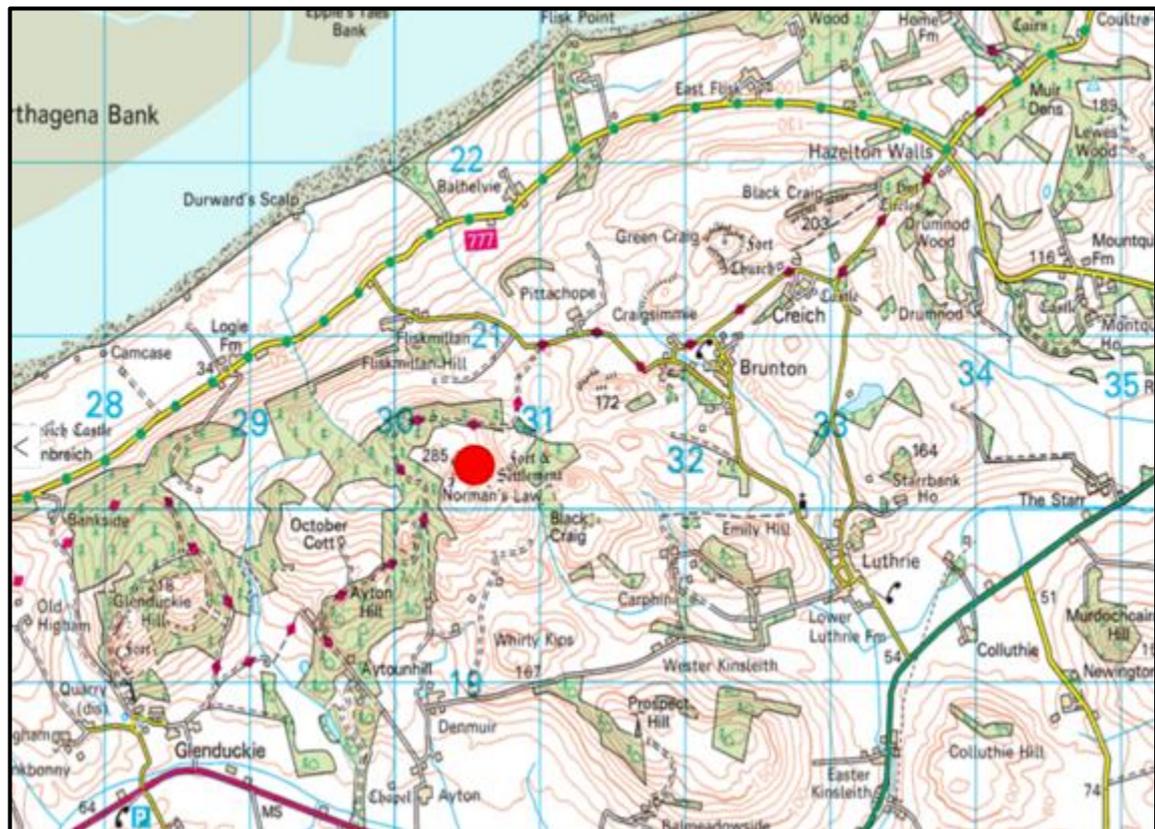


Figure 3- Location of Norman's Law

Norman's Law. A fragment of a shale bracelet was found by chance within **NL4**, but this could be of Iron Age or early medieval date.



Figure 4- Aerial Oblique of Norman's Law

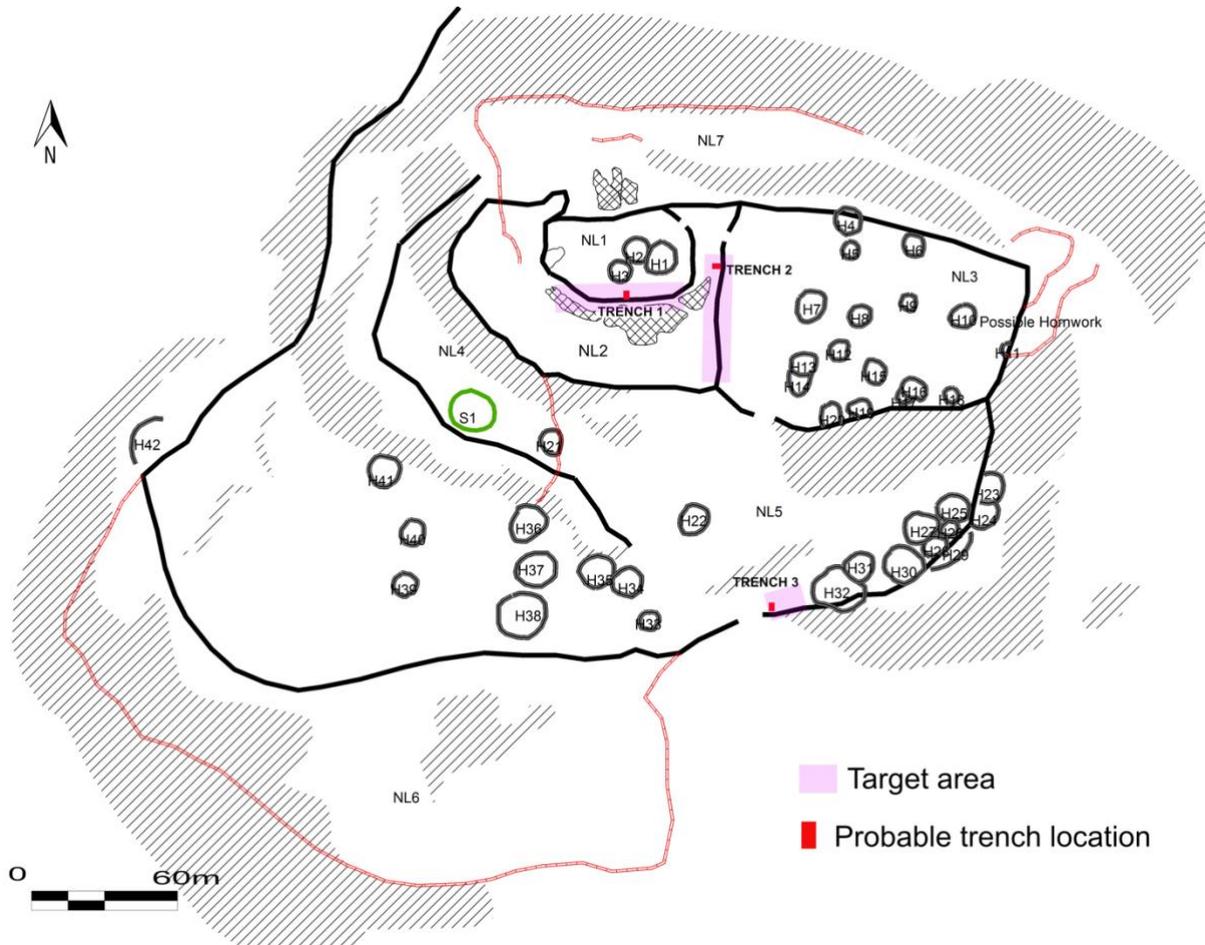


Figure 5- Plan of Norman's Law (Trenches labeled) © University of Aberdeen

## *Dumyat*

Dumyat was the site type for Feachem's sub-class of nuclear fort – the 'citadel fort'. Like Norman's Law there has not been any excavation of the main enclosures on site to provide a chronology to confirm or refute Feachem's identification or dating. The name Dumyat (**Fig. 6, 7, 8, 9**) (**Site Number: NS89NW 14; Canmore ID: 47117; NGR NS 8324 9736**) is considered by Watson (1926, 59) to represent Dun Myat, the fortress of the Maetae/Miathii. The Maetae were a local confederation of tribal groups that were probably located in the general area of Stirling, though the historical sources are vague to their exact location. Mentioned by the Romans as an indigenous people during the Iron Age, the survival of the name Dumyat might suggest this group continued into the early medieval period (Foster 2009, 16; 20).

As noted above Feachem (1955, 77) classified Dumyat as a 'citadel hillfort', and thus part of the same overall traditions as forts such as Norman's Law and Dalmahoy. The site consists of a free-standing citadel on the summit of the rocky crag surrounded by a series of outer defences that make use of outcrops and steep slope where possible. Feachem (1955, 77) suggested Dumyat may have again consisted of Iron Age phases with an early medieval 'ringfort' placed inside at a late phase of development. Despite being the site type, possible evidence of a wall connecting the citadel with the outworks may suggest that, rather than a citadel fort, this site could more appropriately be classified as a traditional 'nuclear hillfort' of Stevenson's definition. Dumyat shares similarities with other 'nuclear hillforts' like Dalmahoy Hill and Norman's Law in having a central citadel and descending external enclosures, though the size of the overall enclosing works at Dumyat is much less extensive than that of Norman's Law or Dalmahoy. The small size of the citadel (Dumyat- 0.03ha, Dalmahoy- 0.08ha, Norman's Law- 0.13ha) is also notable.

Understanding the fort at Dumyat has benefitted from a recent measured survey by AOC Archaeology, commissioned by Stirling Council Archaeologist Murray Cook. As noted in previous surveys the fort itself is crowned by the oval citadel enclosure (**DY1**) which is surrounded by two ramparts cutting off the western approach to the interior. The inner citadel encloses an area of approximately 0.03ha and comprises a band of stone rubble 4.5m wide. The outer two defenses are more substantial, enclosing an area of approximately 0.4ha and comprising a 5.5m wide spread of stone rubble (**DY2 & DY3**). A single entrance in the outer enclosures are noted on the western side, where the two ramparts join to flank the entrance passage. There are other, smaller walls recorded within the interior and abutting the western side of the outer ramparts which may be contemporary with the fort. Fragments of possible vitrified stones are identifiable within the inner and outer ramparts. The AOC survey also mapped the location of two ditches (**DY4 & DY5**) to the northwest of the fort (outside of the scheduled

area) and fieldwork in 2019 tested both of these features confirming they appear to be cut features augmenting natural hollows, suggesting that the total enclosed area of Dumyat may be more substantial than previously identified. Radiocarbon samples, funded by the Comparative Kingship project, from one of the ditches is currently being processed. An additional rampart was also noted further north (**DY6**). No excavation has been undertaken on the summit citadel and outworks to test the overall development of the site through time.



Figure 6- Location of Dumfries

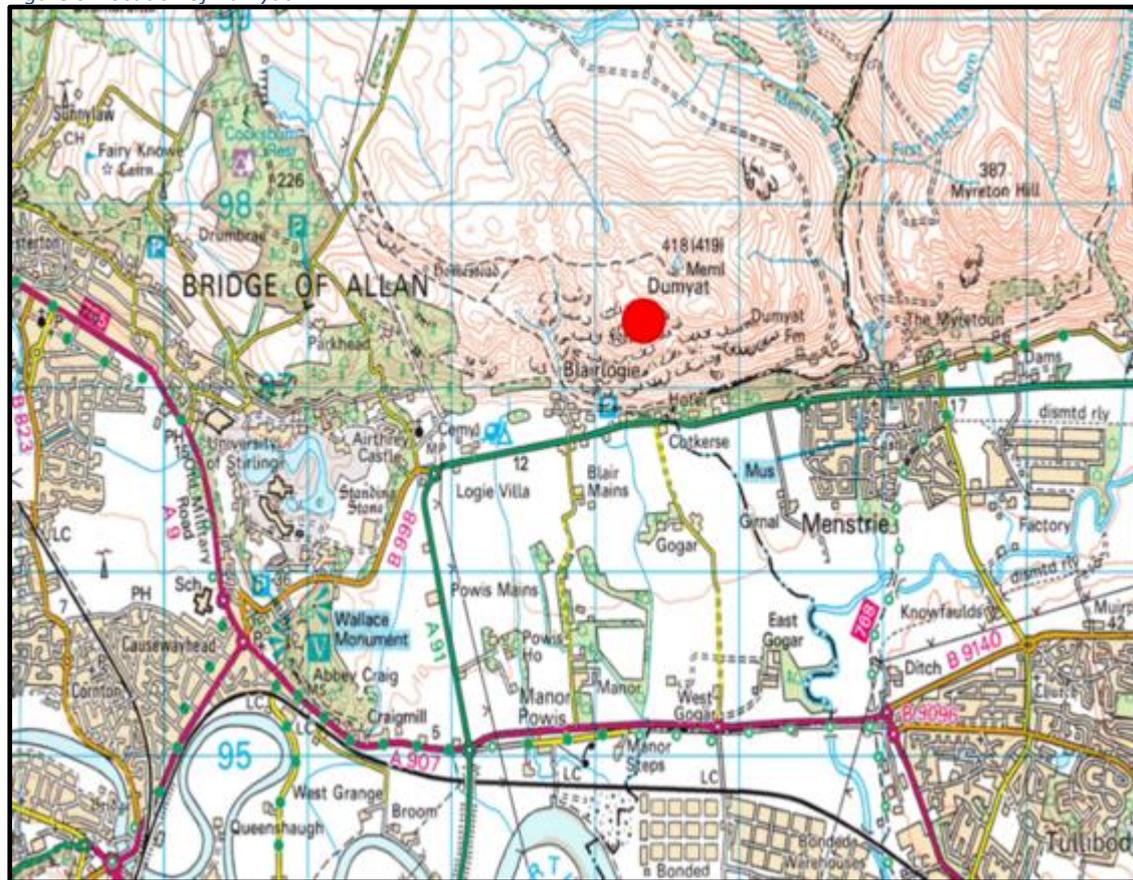


Figure 7- Location of Dumyat

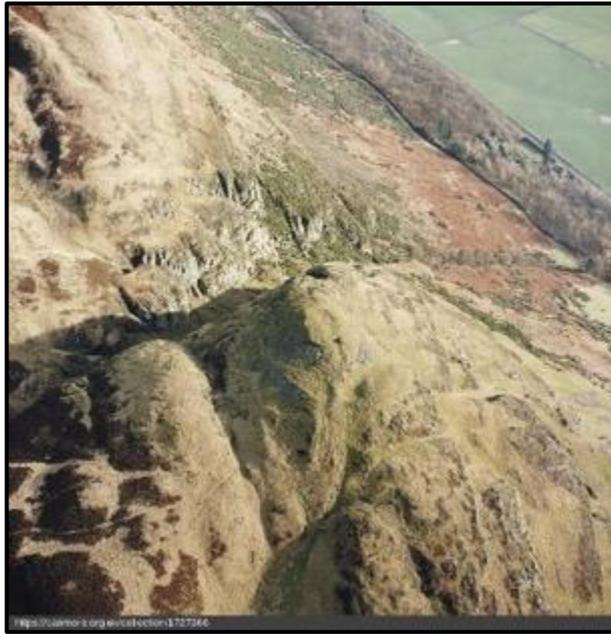


Figure 8- Aerial oblique of Dumat

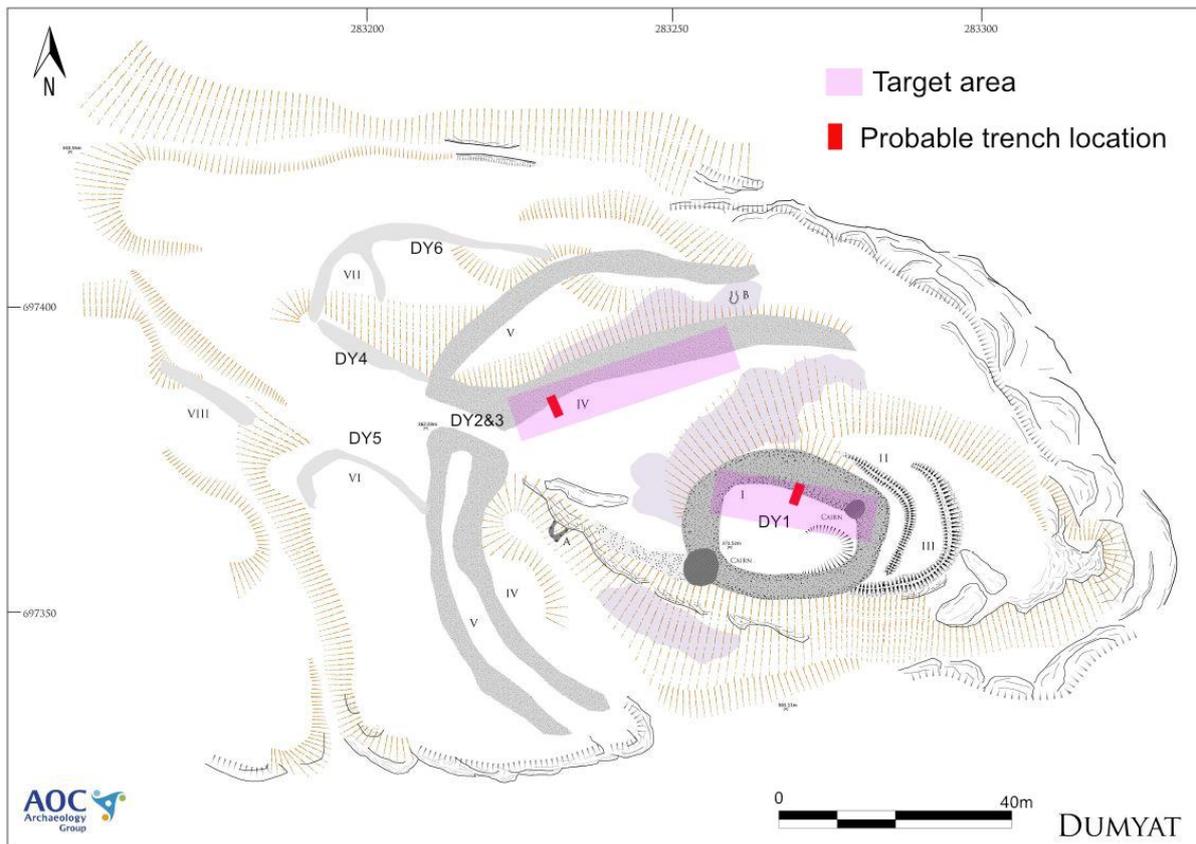


Figure 9- Plan of Dumat (Trenches labeled) (AOC 2019)

Two further sites have been identified by Alcock as having a hierarchical layout and likely to be of early medieval date:

### *Dunsinane Hill*

The fort at Dunsinane (**Fig. 10,11,12**) (**Site Number: NO23SW 1; Canmore ID: 30660; NGR NO 2139 3167**) appears to consist of a fairly typical Iron Age fort at its heart, but it has a series of looping outworks that display a hierarchical spatial organization and the larger enclosures are strongly reminiscent of the outworks of Norman's Law. Dunsinane is also a site that has historical early medieval associations. Dunsinane Hill is tentatively linked with *Dunsion*, which is mentioned in the Pictish Regnal Lists (Alcock 1981, 173–174). The site is also well-known for its association with Macbeth and is reputedly where he lost a major battle against Siward and Malcolm in 1054 AD. Some of the material culture from antiquarian excavation suggests both Iron Age, Roman Iron Age and early medieval occupation, but there has been no modern excavation of the site to provide a firm chronology for its development. At Dunsinane there are opportunities for reopening antiquarian trenches which will minimize impact on the preservation of deposits at the site, but will allow the overall chronology of the site to be assessed with keyhole intervention.

The site itself comprises a complex series of earthworks positioned at the summit of a prominent hilltop overlooking the flat plains to the north-east of Perth and a natural break in the upland terrain connecting this area with the confluence of the River Tay. The most impressive remains encompass a series of banks/ramparts enclosing a small area of some 0.17ha and surviving to 7m wide and 1.2m high (**DH1–DH4**). Outside the citadel on the southwestern side, a small stone bank is recorded enclosing a flat terrace some 0.24ha in size (**DH7**). Extending from the base of this terrace on the southern side is another denuded bank up to 7m wide and 0.2m high (**DH5**). This projects eastward, enclosing an additional area of approximately 1.4ha. Within this area there are a dozen or so recorded circular scoops or hollows. On the northern side of the central enclosure is another low-relief stone wall which extends from the northern part of the central fort and encloses an area of approximately 0.31ha (**DH6**). In total, the entire series of enclosing elements has a footprint of about 2.52ha. The looping enclosures are strongly reminiscent of the type of enclosures seen at sites such as Norman's Law and Dalmahoy, and DH6 appears to abut the central citadel suggesting it was a later addition.

There have been two antiquarian excavations at the site, the first around 1799 AD by James Playfair (Robertson 1799, 569–570) who put a section through the center of the fort and its inner rampart.

This intervention identified the inner and outer facing of the internal bank, as well as 'flagstones, charcoal and bones of several animals' (Wise 1859, 96). Another excavation took place in the 1850s in the southeastern portion of the interior (Wise 1859). The excavator reputedly discovered the 'base of a tower' and two chambered structures, as well as the skulls of four individuals and other human remains (Wise 1859, 98). The chambers also contained a quern stone, 'ashes and occupation debris'. During excavation near the gateway, a small bronze spiral ring of serpent design was also recovered, but overall little can be gained from assessing the antiquarian sources for chronology and characterization of the remains uncovered given how vague these early accounts are. In 2011, the chance discovery of a Roman coin, possibly of Carausius who reigned in 286–293 AD, and a fragment of grey slip probably Roman in origin, suggests activity at the fort around the beginning of the fourth century AD. A fragmentary Roman copper bowl and parts of another copper alloy object bought by the National Museum in 1867 are said to have been discovered 'close to Dunsinane Hill' (**Site Number: NO23SW 30**). These were found within an early medieval three-legged cauldron. The finds from Dunsinane suggest some Late Roman and perhaps early medieval activity, but without modern intervention there is no way of relating the finds to the sequence and dating of the ramparts, nor of assessing the antiquarian interventions that saw very limited publication.



Figure 10- Location of Dunsinane Hill



Figure 11- Location of Dunsinane Hill

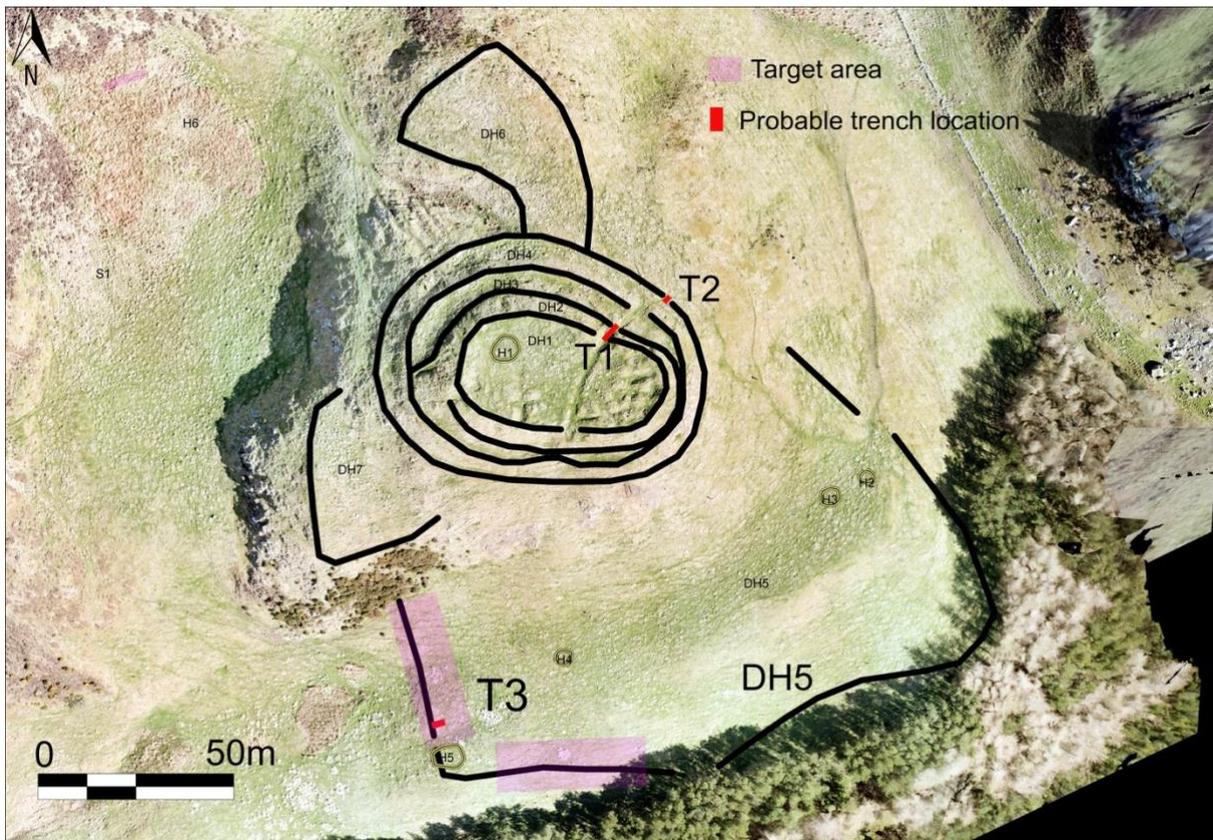


Figure 12- Drone derived photogrammetry model transcription of the plan of Dunsinane Hill (Trenches labeled) © University of Aberdeen

### *Caisteal Mac Tuathal (Drummond Hill)*

The final site in Case Study 1 is again one not considered in detail by Stevenson, Feachem or Alcock for until recently the character of the defences was unclear due to forest cover. The fort of Caisteal Mac Tuathal (Figures 13,14,15, 16) (Site Number NN74NE 30; Canmore ID 24911; NGR NN 7790 4764) sits on the NE shoulder of the namesake hill. Like Dunsinane there is circumstantial evidence to suspect early medieval activity here. The place-name and fort has been suggested to be connected to Tuathal, son of the bishop of Dunkeld, Argusto in the 9th century AD (Hutchieson 1889; Christison 1900). The fort overlooks the N end of Loch Tay with views of the Strath of Appin (Headland Archaeology 2011). It lies in a similar topographic and landscape situation to the early medieval fort of Dundurn which lies at the east end of Loch Earn, whereas Caisteal Mac Tuathal sits overlooking the eastern end of Loch Tay. The fort has a hierarchical organization with a central citadel with lower enclosures looping off of the central enclosure, and morphologically is similar to the nearby confirmed nuclear-style medieval fort at King’s Seat, Dunkeld.

Recent survey work commissioned by Forestry and Land Scotland have provided the most accurate plan to date of the surface remains (Figure 16). The central citadel (**CMT1**) is sub-rectangular with an inner enclosure that backs onto a prominent escarpment edge (Lock and Ralston 2017, **SC2627**). The wall measures between 2.9m and 3.3m in thickness (Lock and Ralston 2017, **SC2627**). To the north is an annexe enclosure (**CMT2**). Extending from the annexe enclosure and surrounding the central citadel on the west and south are two additional walls (**CMT3**). A large ditch provides further defences on the southwest. The ditch is c.8m wide and 1.5m deep. Caisteal Mac Tuathal has seen no excavation of any kind.



Figure 13- Location of Caisteal Mac Tuathal

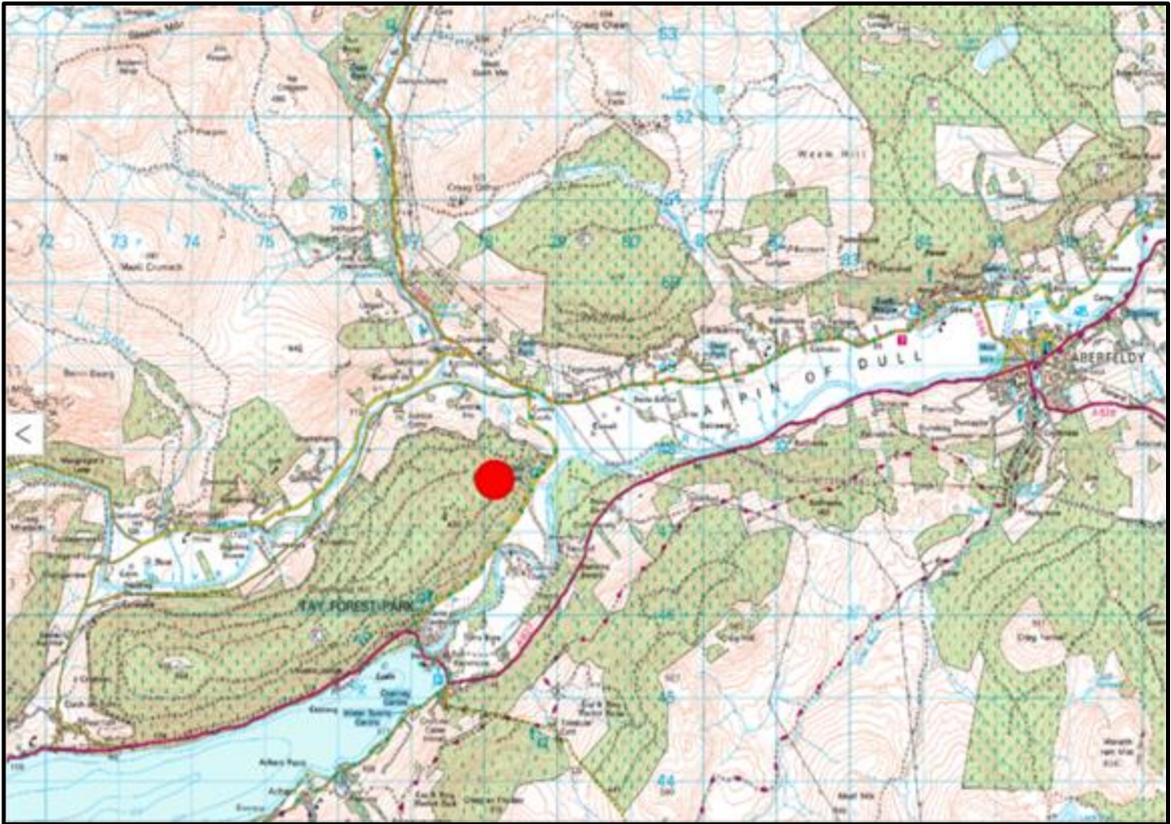


Figure 14- Location of Caisteal Mac Tuathal

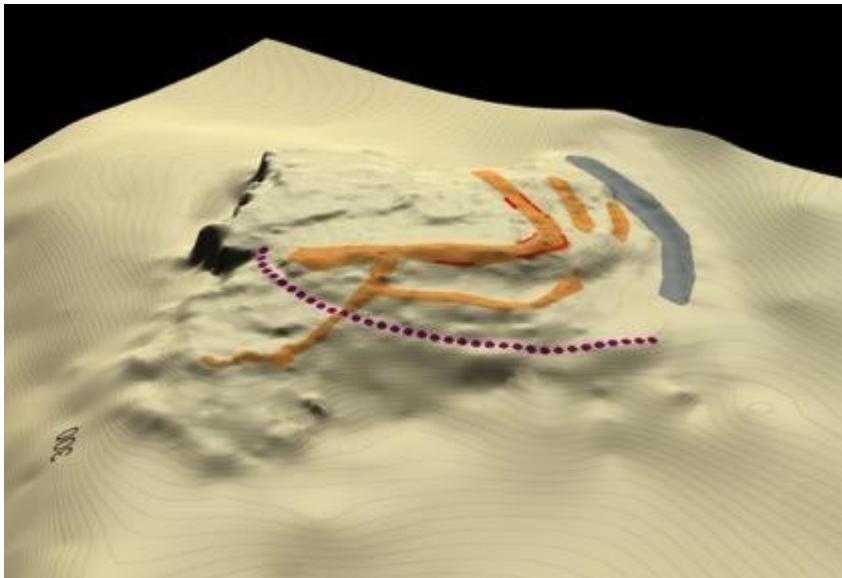


Figure 15 3D topographic model of Caisteal Mac Tuathal © Rubicon Heritage

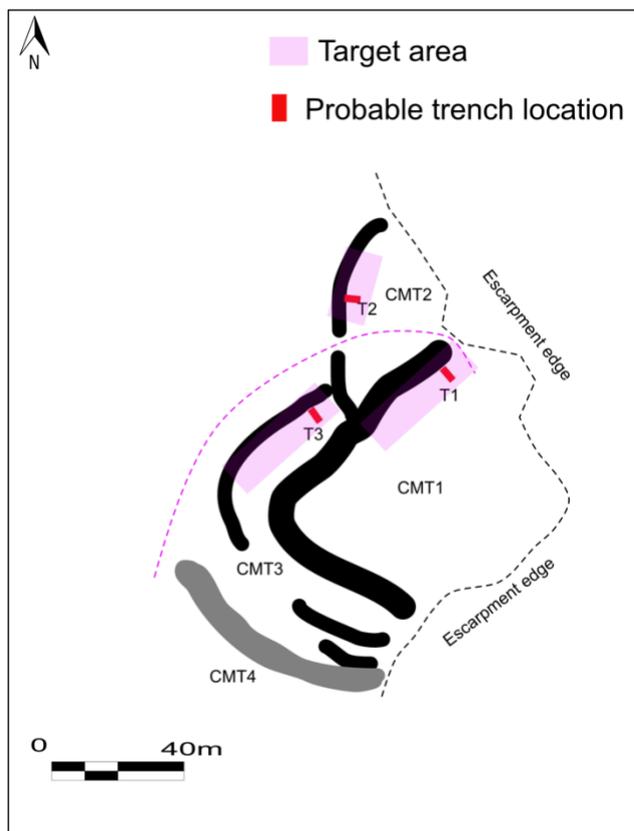


Figure 16 Transcription of Caisteal Mac Tuathal plan and layout of proposed trenches.

## Case Study 2: southeast Scotland. ‘Nuclear forts’ of Brittonic/Anglian Scotland?

### Dalmahoy

Dalmahoy (Figures 17,18,19) was the first ‘nuclear’ fort to be identified in Stevenson’s seminal (1949) article on the topic and remains the site type to this day. Dalmahoy comprises a large 2.1ha fort (**Site Number: NT16NW 1; Canmore ID: 50318; NGR: NT 13550 66930**) surrounding an elongated rocky summit at 246m OD, overlooking a broad flat valley, providing commanding views of the Firth of Forth and its environs. Sheer cliff-face to the north is augmented by a series of enclosing elements to the south which incorporate numerous outcrops and gullies, providing a complex defensive arrangement. Stevenson (1949, 191) showed that many of the smaller banks on the western side of the fort were connected to a central enclosure. Although Stevenson (1949, 191) originally argued that this

represented a 'single work', he later conceded that the fort may have been the product of multi-period development (Lock and Ralston 2017, **SC3698**), though none of these ideas have been tested by excavation.

The central citadel (**DMH1**) is approximately 0.08ha in size and positioned on the western summit of an elongated east–west running ridge which abuts a steep natural slope to the north. It comprises an oval enclosure with a grass covered stone wall some 2.3m wide and 0.3m in maximum height, with a narrow 2.1m wide entrance at the north-east. Sections of outer wall-facing is apparent at the south and east and is in excess of 3m high in places (Lock and Ralston 2017, **SC3698**). A further series of outworks defend the southern approach (**DMH2**) with one large enclosure extending to the east to enclose an area of over 2ha (**DMH3**). (**DMH3**) averages 0.2m in height with a width of 2.5m. While these do not form complete circuits, they take advantage of the natural terraces and rock outcrops on the site to block access from the natural gullies on the southeast and southwest. Lock and Ralston (2017) suggest that this larger enclosure has an entrance at the south/south-east, though this is not apparent in recent photogrammetry modelling by the University of Aberdeen. There is another enclosure (**DMH4**) south-west of the central citadel with a wall 0.1m high and approximately 2m wide. Stevenson (1949) was unsure if this bank was part of the fort or evidence of agricultural terracing. There is a large platform at the eastern summit of Dalmahoy which may have been used for habitation. This measures about 12m in diameter. Lock and Ralston (2017, **SC3698**) suggest, however, that this may comprise the remains of a robbed cairn. Photogrammetry and field survey by the University of Aberdeen have identified the remains of at least three other circular platforms within the interior of the fort to the west this, which measure between 7–8.6m in diameter.

Despite occupying such a central position in the history of identifying and trying to characterize forts of this type Dalmahoy has seen no excavation of any form. Stray finds of a gold stud-cap and some mould fragments of possible early medieval date were found inside the central citadel by field walkers (NRHE 50318), hinting that there was at least some early medieval occupation of the citadel, but only targeted fieldwork can help resolve the chronology(ies) of the citadel and outworks.

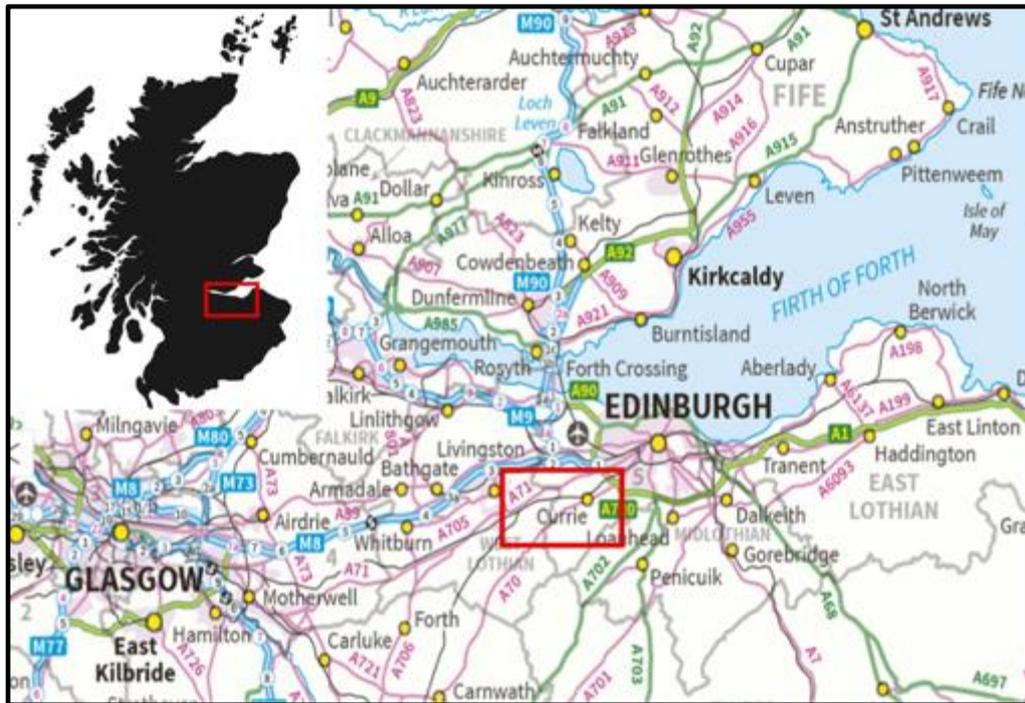


Figure 17- Location of Dalmahoy



Figure 18- Location of Dalmahoy

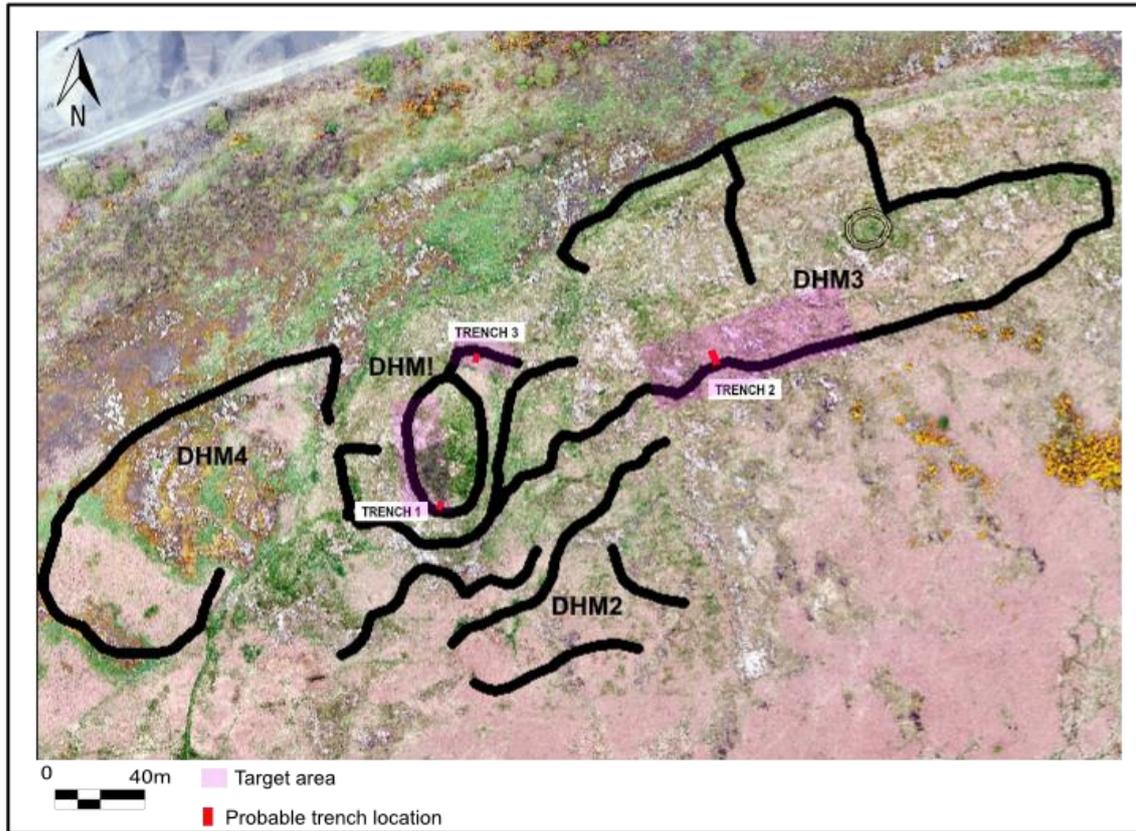


Figure 19- Drone derived plan of Dalmahoy Hill from photogrammetry model - (trenches labelled) © University of Aberdeen

## Moat Knowe, Buchtrig

Lying further south in territory that would have almost certainly been under Anglian dominion by the 7<sup>th</sup> century lies Moat Knowe, Scottish Borders. Moat Knowe (**Figures 20,21,22**) (**Site Number: NT71SE 24; Canmore ID: 58078; NGR: NT 7784 1364**) sits at 305m OD on a steep hill within the valley of Buchtrig in the Scottish Borders. The fort was first described as a ‘nuclear hillfort’ by RCAHMS in 1956. It consists of a central citadel (**MK1**) positioned at the summit of a rocky knoll which measures 0.2ha in size, with a series of outer enclosures that descend the hill on either side. The complex arrangement of enclosures might suggest different occupational and construction periods.

The fort consists of a single wall that encloses the entire fort which is sub-divided by east–west running walls that creates courts. The fort is approximately 0.53ha in total size. The main wall (**MK1**) averages 3.5 m in width and 0.3m in height. The central citadel is trapezoidal in shape and measures 0.23 hectares with walls up to 2.4m in thickness.

There are two enclosures north of the central citadel, **(MK2)** the most northern example encloses 0.06ha, while **(MK3)** encloses 0.06ha. The inner wall shared by both **(MK2)** and **(MK3)** is 3.5m in width and 1.5m in height. South of the central citadel are another two enclosures. **(MK4)**, the inner of the two encloses 0.08ha, and **(MK5)** encloses 0.06ha. The wall that **(MK4)** and **(MK5)** share is 2.3m in width and 0.8m in height. There is evidence of rectangular structures within the central citadel **(MK1)**, yet the number is difficult to determine. There is evidence of two rectangular structures in **(MK4)**. The structures were first thought to be of late Medieval origin, but have also been suggested to be prehistoric in date (RCAHMS 1967). East of the fort is a circular settlement (NRHE 58079) which consists of at least two banks and two ditches.



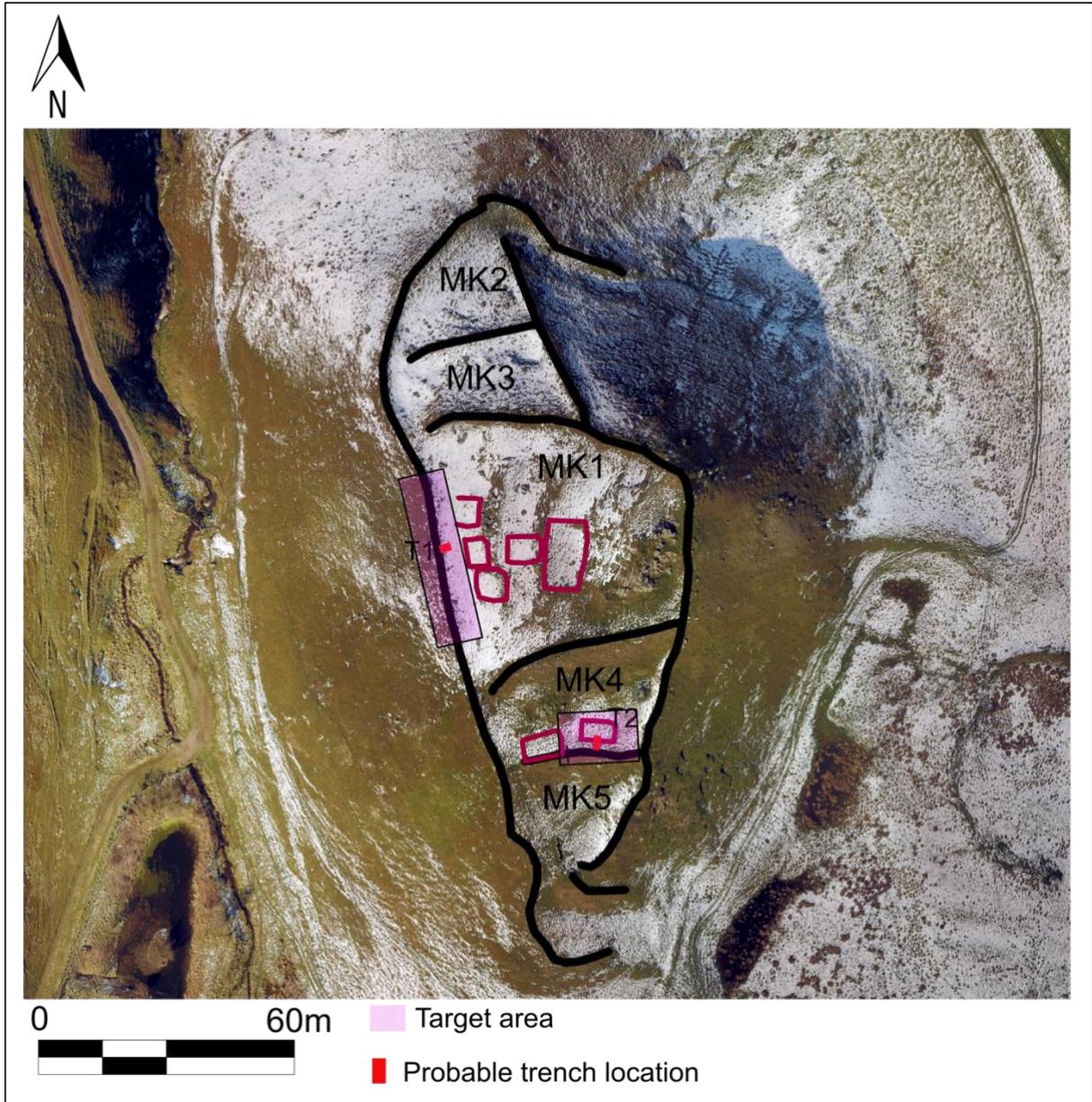


Figure 22 Plan of Moat Knowe (Trenches labeled)

## *Rubers Law*

As noted above forts that fit the nuclear fort typology are not a confirmed element of the archaeology of Anglian territories, but Rubers Law is morphologically strongly reminiscent of Dalmahoy and Norman's Law with a summit citadel and looping outworks. The fort (**Figures 23, 24, 25**) (Site Number: NT51NE 8; Canmore ID: 50318; NGR: NT 13550 66930) is situated at 424 m OD with a commanding view of the Scottish Borders overlooking Jedburgh and Hawick. The fort has a total footprint of approximately 4.3ha. Stevenson (1949, 194–195) included this fort in his list of possible 'nuclear hillforts'. The enclosing elements notably incorporate prominent crags and large gullies into its design, a core characteristic of Feachem and Alcock's definition of a nuclear hillfort. Feachem (1963, 153; 1965, 161) suggested the fort consisted of two structural periods with elements of the outworks being of earlier date, possibly Iron Age, and the central citadel being early medieval.

Recent photogrammetry survey of the fort by the University of Aberdeen has provided the most accurate survey of the fort to date. The citadel (**RS1**) is approximately 0.19ha in size and comprises a single bank 2-3m wide and up to 0.9m high. An entrance is recorded at the northeast. Another possible entrance on the southwest side of the upper citadel leads down into the enclosed terrace. Northwest of the citadel is evidence of a possible wall some 7.5m wide and up to 1.5m high, enclosing an area of approximately 0.11ha (**RS2**). The inner southwest rampart (**RS3**) encloses a terrace approximately 0.68ha in size and continues to the southeast along the flank of the rock outcrop to the foot of the summit. The wall is 0.3m in height and 3.7m wide. There is another rampart wall found lower down the slope of the hill that contours around the slope except for the eastern portion of the hill creating a total enclosed area of the fort of 3.6hectares (**RS4**). There are three walls on the eastern side of the fort that cut off access into the interior (**RS5-RS7**). The walls average 3.5m in width and 0.15m in height. The only excavation at the site was Curle (1907) who excavated a mound within the fort and believed he found evidence of a rampart, as well a hut structure. Subsequent survey work has given some clues to chronology, showing that the walls of the citadel and outer terrace enclosure have Roman masonry blocks incorporated in their construction, inferring that these features were built or re-worked, possibly in the Late Roman Iron Age or early medieval period (St. Joseph 1951).

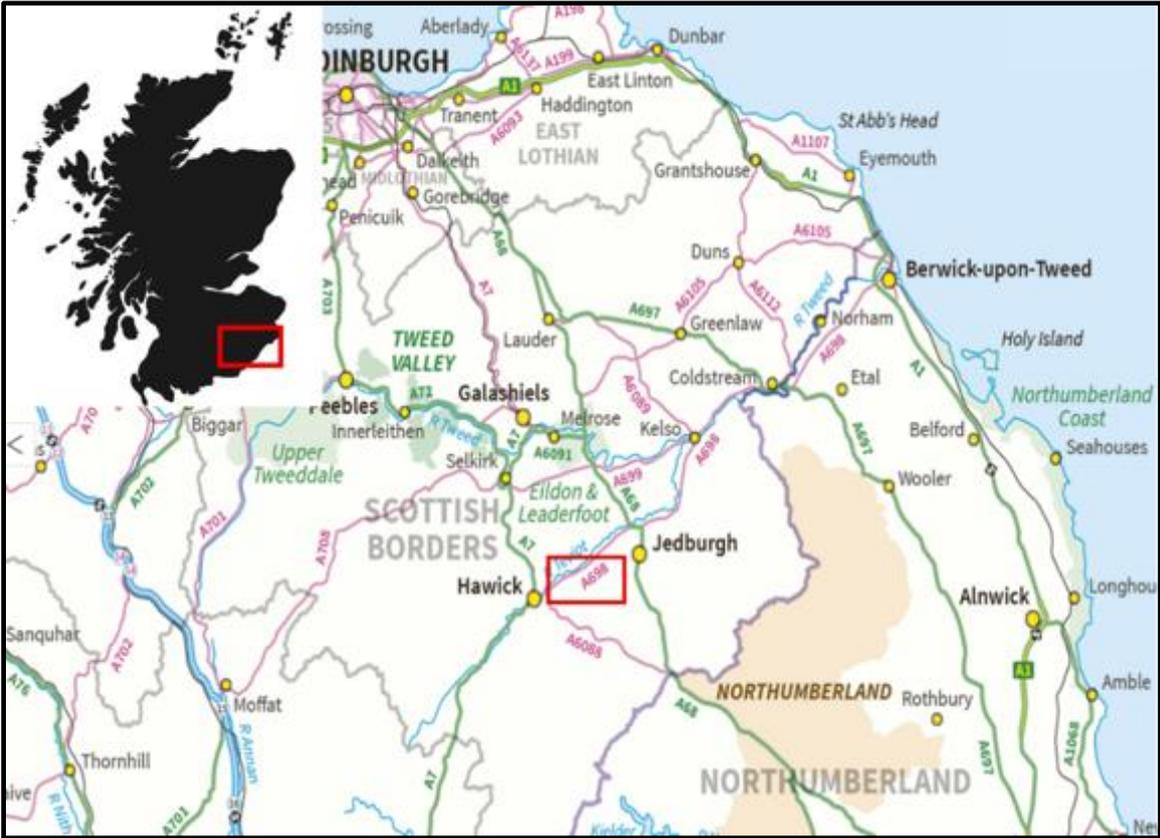


Figure 23- Location of Rubers Law



Figure 24- Location of Rubers Law

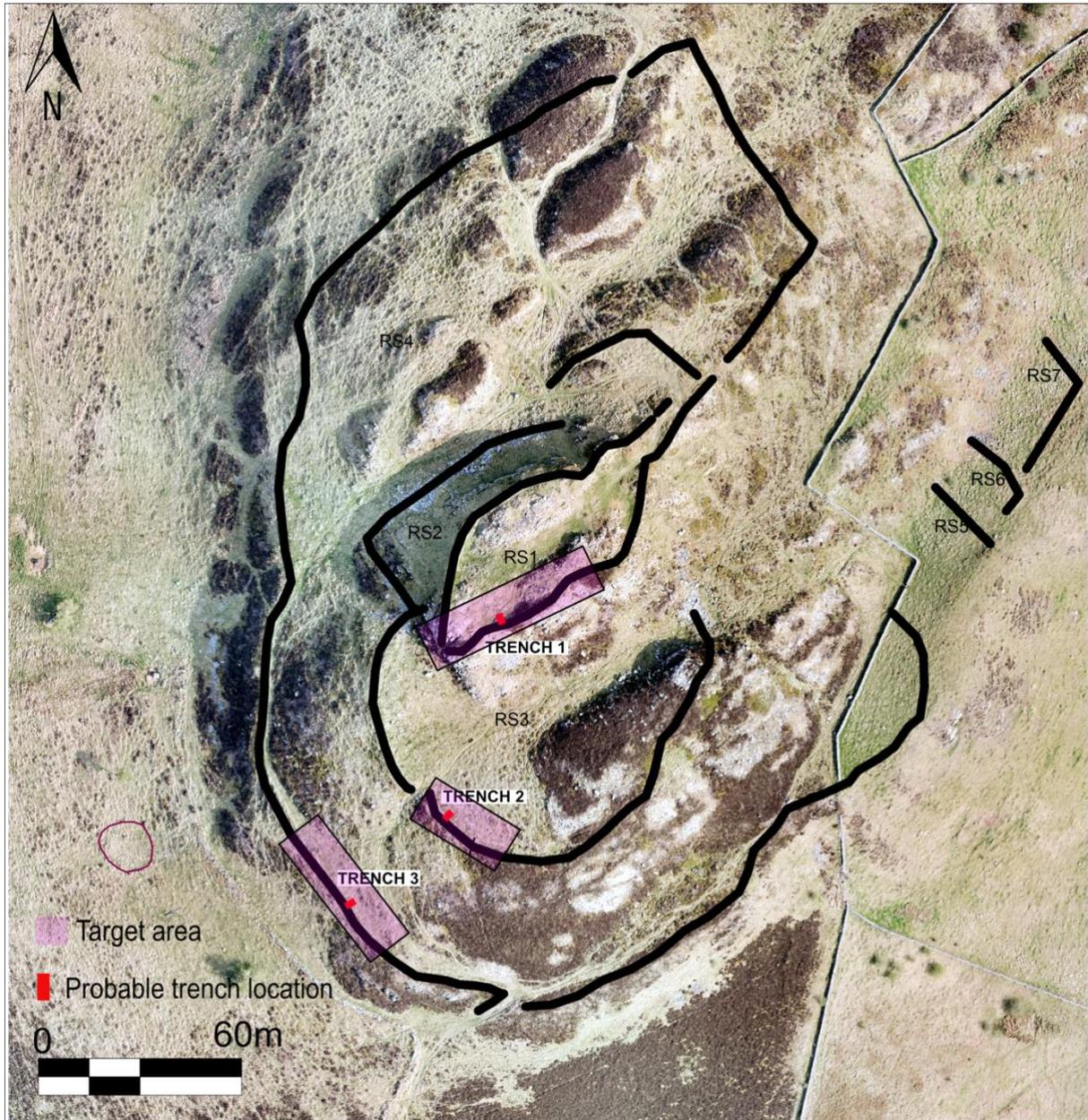


Figure 25- Plan of Rubers Law (Trenches labeled)

## Research Questions

As noted earlier, the nuclear fort is one of the repeated tropes of early medieval archaeology, but there has been very little critical reflection of this typological term, nor of its veracity of its indicator of early medieval date. The Comparative Kingship project at Aberdeen aims to identify and assess power centres of the early medieval period, assess their frequencies and critically assess the similarities/differences of power centres amongst the early medieval polities of northern Britain. The proposed archaeological works outlined below aim to provide keyhole investigation of the nuclear fort typology through targeted excavation of a series of sites that have been identified as of the nuclear form or are of close morphological parallels and have evidence of some form of early medieval occupation. Taking a wide view of the issue and identification of this typology is important given that the number of confirmed sites of the nuclear form is less than a dozen in Scotland and the typological classification of the nuclear form has seen little agreement amongst some of the foremost hillfort scholars in the history of the subject (principally Stevenson, Feachem, Alcock).

The primary aim is to establish an outline chronology for the long-mooted, but much debated monument type: the nuclear fort, to critically analyse this category and to potentially confirm, refine or entirely refute this archaeological construct through targeted, keyhole intervention at a small selection of sites as recommended in ScARF for the first stage of investigation of a wide range of forts. This will involve targeted trenching at seven scheduled sites in two case studies: Norman's Law, Dunsinane Hill, Caisteal Mac Tuathal, and Dumyat: Southern Pictland; Dalmahoy Hill, Ruberslaw and Moat Knowe: Southeast Scotland-Brittonic and Anglian Scotland) – all of the forts that have traditionally been identified as nuclear or related types across Scotland are scheduled, but the project aims to address a number of key research questions with minimal, evaluative intervention including re-opening antiquarian trenches where possible. The excavation programme will involve opening small targeted trenches that will leave the wall faces of the defences intact and sample forts that extend over many hectares in most cases (up to 7ha in the case of Norman's Law). The research questions to be addressed by the project include:

1. Are 'nuclear hillforts', a long-discussed site-type in early medieval archaeology, a distinct monument type? Or is it the product of archaeologists trying to add order to multi-period development of individual sites of multiple chronologies?
2. How commonplace was early medieval fortified sites of the nuclear form in an area where the nuclear-like form has been tentatively confirmed (Southern Pictland)?

3. Was this a type of elite site in an area where the original site type is known (Dalmahoy), but where confirmed sites are lacking (southeast Scotland)?
4. How does the chronology of the case studies compare – is there evidence for early medieval occupation at all of these sites? Did the ‘nuclear form’ develop over comparatively short periods of time or are some sites the product of multi-period development?
5. Are there clear differences in the character/date of ‘classic nuclear forts’ (as defined by Stevenson) such as Dalmahoy and ‘citadel forts’ (as proposed by Feacham) such as Dumyat and do these sub-categories stand up to scrutiny?
6. Are there differences in date/character between the ‘nuclear forts’ according to the size enclosed? e.g. between the 6.42 ha Norman’s Law and the more modest sites such as Moat Knowe and Dumyat?
7. Can keyhole trenching reveal anything about the status/function of these sites? Are there clear differences between the inner citadel defenses and deposits and those associated with the outer defenses?
8. If early medieval deposits are identified how does this alter the regional evidence for early medieval activity in each case? Likewise with Iron Age activity/other periods how does this evidence augment or alter local and regional patterns?
9. Are there regional differences in the development of nucleated hillforts between areas where this site type has been confirmed (Southern Pictland) and areas where forts of this type and date are yet to be confirmed (Southeast Scotland)?

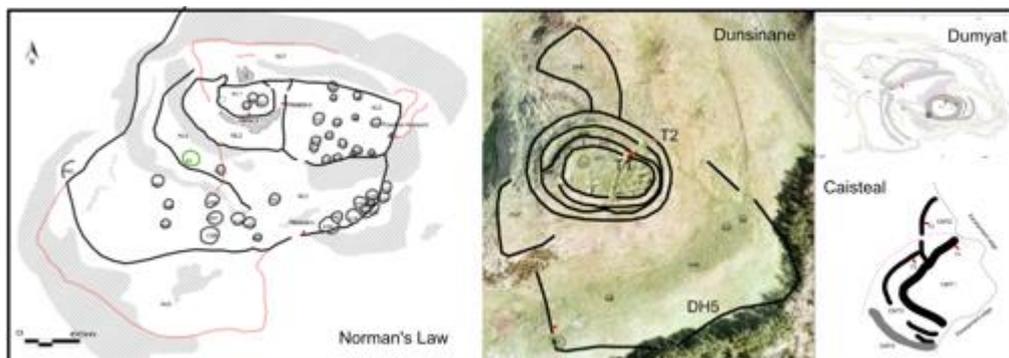
## **Nature of the Proposed Work**

At all sites keyhole trenching will be adopted to provide basic characterisation of the sites with an emphasis on providing a chronology for the central citadels and a sample of the outwork defences of each site. The trenching is designed to have minimal impact, but allow the research questions to be addressed. The project follows similar keyhole projects by Cook in Aberdeenshire and by the University of Aberdeen in the same region that has very substantially increased our knowledge of enclosure form and date with minimal impact on the archaeology.

The methodology in all the trenches will proceed as follows. In all instances, the trenches will be de-turfed by hand and any wall faces if present will be left *in-situ*. The trenches will be located as indicated on the figures or within designated ‘target areas’ that will allow flexibility of position on the ground, with the trench in that area addressing the same research question and with the same methodology

followed regardless of exact positioning. The trenches will sample any deposits against the wallface and if possible, from layers extending under the wall foundation. This will consist of micro-sampling under the basal facing stones without removing, with interventions carefully backfilled. Where no wall face is present, the excavation will not proceed any further than where occupation deposits extend up against the wall face or any further than the central core of the wall. In each trench each deposit will be sampled using bulk samples and if obvious floor/occupation deposits are identified micromorphology tins/column will be sampled from at least one section for characterisation of the deposits. Charcoal or other organic material will be used to date such features where possible and all deposits will be bulk sampled in 20L bags alongside smaller spot samples. Where possible a smaller sondage than the actual trench dimensions (c.2x2 m) will be dug against the wallface to obtain samples to assess the history of occupation in association with the ramparts with minimal intervention. Any major features such as hearths will be left in situ and where possible at least 50% of deposits of any excavated feature/deposit will be left in situ for future investigation.

### *Case Study 1*



#### *Normans' Law*

Three trenches are proposed at Norman's Law, Fife (**marked in red on Figure 5**), to obtain samples for characterizing and dating the central citadel defences and a sample of the outworks. One trench (**TRENCH 1**) will be placed over the upper citadel (**NL1**), with another trench (**TRENCH 2**) directly east on the wall that divides the second enclosure into two (**NL2 & NL3**), and one (**TRENCH 3**) on the rampart below (**NL5**). This will allow us to obtain an outline chronology for the citadel deposits and the deposits built up against (and perhaps beneath) the outwork defences.

#### *Dumyat*

Two trenches are proposed at Dumyat, Stirling (**marked in red on Figure 9**). A c.4 x 2m (**TRENCH 1**) trench will target the inner wallface of the central citadel (DY1). A second c.4 x 2m trench (**TRENCH 2**) will be placed on one of the outer ramparts (DY2). These small-scale trenches will be able to provide an outline chronology for occupation/activity deposits in association with the enclosing elements. The trenches will aim to sample any deposits against the ramparts and if possible from layers extending under the wall foundation. These test trenches will help date and understand the occupation history of the fort. The results from the enclosing works within the scheduled area will be compared and collated with work by Murray Cook and Stirling Council on the newly identified outer enclosure elements identified in the recent AOC survey outwith the scheduled area. The work at Dumyat will involve a partnership between Stirling Council and the University of Aberdeen with experienced excavators from both organisations working alongside local volunteers.

## Dunsinane Hill

Three trenches are proposed at Dunsinane Hill, Perth and Kinross (**marked in red on Figure 12**). Considering the significant excavation trenches still evident on the surface from the antiquarian excavations, this project will attempt to minimise the impact of the proposed excavations by reopening these trenches where possible. As such, we propose to re-excavate a c.12 x 2m wide section of the antiquarian trench across the inner bank(s) on the northern side of the fort (**TRENCH 1**)(DH1). This will allow us to expose the eastern facing *section of the antiquarian trench*, which we will record and sample for radiocarbon dating the ramparts that enclose the summit. The section will be cut back by a maximum of 0.5m to sample the undisturbed interior deposits. The re-excavated trench will aim to identify key deposits for dating the ramparts and interior deposits.

We propose a similar intervention to date the outer enclosure of the central fort (DH4). Here, a c.4 x 2m cutting (**TRENCH 2**) will be placed within the antiquarian trench positioned against the outer face on the northern side. This will expose the western facing section of the outer wall face, with deposits recorded and sampled using the same methods for Trench 1. Dr. Jeff Oliver of the University of Aberdeen will assist in the identification and analysis of any 18<sup>th</sup> and 19<sup>th</sup> century artefacts that may be associated with the antiquarian excavations. With both these re-excavated trenches any antiquarian backfill will be dry sieved for artefact retrieval.

A third trench will be positioned over the undisturbed outer enclosing elements of the fort on the southern side of the hill (DH5). Here a c.5 x 2m trench (**TRENCH 3**) will be opened across the collapsed bank in an attempt to identify the inner wall face and potential occupation deposits for radiocarbon dating. A longer trench is necessitated here, as the position of the wall faces are less obvious on the

ground, though a smaller trench (in this instance a 3 x 2m) will initially be opened and if secure radiocarbon samples can be attained the remainder of the trench will remain unexcavated. These small-scale, targeted trenches would provide a basic chronology for enclosing elements at Dunsinane Hill through obtaining samples for dating, and would help to clarify its construction history. The work at Dunsinane will involve a partnership between Perth & Kinross Heritage Trust and the University of Aberdeen with experienced excavators from both organisations working alongside local volunteers.

### *Caisteal Mac Tuathal*

Three trenches are proposed at Caisteal Mac Tuathal (**marked in red on Figure 16**). A c.4 x 2m trench (**TRENCH 1**) will be placed at the inner face of the central citadel (**T1**). A second c.4 x 2m trench (**TRENCH 2**) will be placed at the wall face of the annexe enclosure (**T2**). A third will be opened against the wall face of (CMT3), a wall looping out from the annexe enclosure. The trenches will target the wall faces of the defences and/or aim to identify surviving wallfaces and sample any deposits against the rampart and if possible from layers extending under the rampart foundation. The trenches will provide a chronology of occupation associated with the rampart defences of the site and the resulting chronology will be compared to the other case studies in this application and the existing dates we have for nuclear type forts. The work at Caisteal Mac Tuathal will involve a partnership between Perth & Kinross Heritage Trust and the University of Aberdeen with experienced excavators from both organisations working alongside local volunteers.

### *Case study 2*



## *Dalmahoy*

Three trenches are proposed at Dalmahoy (**marked in red on Figure 19**). A c.4 x 2m trench will be positioned against the inner face of the upper citadel wall (**TRENCH 1**) (**DMH1**) to record and sample potential interior deposits and pre-bank material for radiocarbon dating if possible. A second trench (**TRENCH 2**) will be positioned over the larger enclosure extending to the east, with a c.5 x 2m wide trench positioned over the bank (**DMH3**). A slightly longer trench is necessitated here, as the position of the wall faces are less obvious on the ground, though a smaller trench (c. 3 x 2m) will initially be opened and if secure radiocarbon samples can be attained from this trench or a smaller area yet the remainder of the trench will remain unexcavated.

A third 3 x 2m trench (**TRENCH 3**) will be placed directly north of the citadel on a wall that cuts off access from the north. Excavation of the larger enclosing elements will allow us to identify the overall sequence of occupation and perhaps construction in association with the major earthworks of Dalmahoy fort and assess if the central citadel was located within an earlier fort, or if the enclosing elements and summit citadel are broadly contemporary.

## *Moat Knowe*

Two trenches are proposed at Moat Knowe, Scottish Borders (**marked in red on Figure 22**). A c.4 x 2m trench (**TRENCH 1**) will be placed on the eastern portion of the main wall of the fort. Two rectangular structures are within the enclosed area and a c.3 x 6m trench (**TRENCH 2**) is proposed to excavate up against inner face of the wall of the fort and any occupation material abutting it, as well as part of one of the rectangular structures. The trenches will aim to identify surviving wallfaces and sample any deposits against the rampart and if possible from layers extending under the rampart foundation, as well as providing basic characterisation of one of the structures within the fort. These trenches will provide a basic chronology for the fort and its occupation history, while also allowing us to assess the date and character of one of the internal rectangular structures.

## *Rubers Law*

Three trenches are proposed at Rubers Law, Scottish Borders (**marked in red on Figure 25**). A c.4 x 2m trench (**TRENCH 1**) will be placed towards the inner face of the upper citadel wall (**RS1**). The second trench (**TRENCH 2**) will be c.4 x 2m and will be placed over the inner face of the wall of the southern enclosure below the central citadel (**RS3**). A third c.4 x 2m trench (**TRENCH 3**) will be placed over the inner face of the outermost rampart to the south (**RS4**). The trenches will aim to identify surviving

wallfaces and sample any deposits against the rampart and if possible from layers extending under the rampart foundation. These three trenches will allow us to produce an outline sequence for the development of the fort and/or its occupation with minimal intervention.

## **Justification for proposed work**

One significant void for early medieval Scotland is the difficulty in tracing settlement patterns and hierarchies which make questions of state formation difficult to address (Noble and O'Driscoll 2019). However, enclosing settlement, whether this was meant to be a practical defensive barrier or more symbolic in function, had become an important element of society, with hilltop locations becoming a prime position for high status occupation (Alcock 2003; Noble and O'Driscoll 2019). However, the number of sites investigated remains frustratingly small and insufficient to draw wider conclusions about the density of early medieval forts and the spatial patterning of elite centres.

The most significant question to be addressed in this application is if 'nuclear hillforts' are a distinct site-type and one that is related to the development of early medieval society in Northern Britain. There has been no concerted effort to address the nature of this long-standing site type and no previous fieldwork project has tested the ideas of Stevenson (1949), Feachem (1955) and others through targeted excavation of multiple forts with a specific focus on dating the multiple enclosing elements of these forts or at least the occupation layers in association with the enclosing works. The nuclear fort is a concept that is routinely cited in research for the period (Alcock 2003; Toolis and Bowles 2017; Noble and O'Driscoll 2019), yet there are very few excavated sites for us to draw sufficient conclusions on the nature and date of this apparent site type and rarely have the outer enclosures been targeted at these sites, at least not in a systematic way. In order to tackle the questions outlined in this document multiple case studies are required to address in detail the categorisation of nuclear forts and indeed whether such a category had currency in the early medieval period or forts of diverse morphology (and date) have been lumped together by archaeologists in more recent times.

The keyhole targeting of multiple sites and the dating of multiple enclosing elements at each fort will not only allow us to create a more comprehensive chronology for the nuclear fort site type (and its possible variations/sub-categories), but on a site-specific scale, it will allow us to answer key questions regarding the evolution of the individual monuments over time and allow the outline sequence for a much broader set of forts with multiple enclosing elements in Scotland to be assessed providing an important baseline for further study of forts in Scotland and their development.

The project follows previous programmes of research that have adopted a keyhole strategy. The Hillforts of Strathdon project led by Murray Cook adopted this strategy and the resulting dates identified a whole new category of early medieval sites as well as putting the regional chronology of hillforts on a more solid footing (Cook 2010, 2011, 2013). Similarly the University of Aberdeen project in Angus at Turin Hill provided an outline chronology for six forts on the Turin plateau, again bolstering our knowledge of regional patterns of enclosure for minimal intervention (O’Driscoll and Noble forthcoming PSAS).

The project and the wider Comparative Kingship study will address many of the key research areas and issues identified in SCARF (<http://www.scottishheritagehub.com>). This includes investigating the formation of Iron Age and early medieval polities and centres of power and consumption; addressing the rise and fall of power centres; and uncovering settlement hierarchies of the Iron Age and first millennium AD (<https://www.scottishheritagehub.com/content/64-enclosed-places>). The sampling of the ramparts through keyhole excavation will allow us to build outline chronologies for the enclosing elements and occupation history of each hillfort. The limited excavation methods outlined here is the least intrusive way of gaining a broad outline of a fortification’s chronology. Dating evidence for hillforts in general is lacking in Scotland, even more so on ‘nuclear hillforts’. Each trenching programme will consist of less than 1% of the archaeology of each site, very substantially so in the majority of cases and where possible, e.g. Dunsinane we have targeted the re-opening of antiquarian trenches.

Overall, the project is the first modern attempt to understand the ‘nuclear hillfort’ site type by dating multiple sites and creating a basic chronology. Whether the project confirms, refines or refutes the typology it will significantly enhance our understanding of the monuments selected for sampling by:

- Investigating a crucial part of Scotland’s story: its major, but generally poorly understood hillfort resource and will help tackle big questions such as how the early tribe to state-like societies of Scotland developed – a topic of wide European interest and relevance and one where there has been only limited studies to date.
- Help understand iconic, but poorly understood heritage resources and forts that may represent central structures during either the Iron Age and/or early medieval period.
- Communicating complex knowledge regarding the Iron Age, the Roman Iron Age and the Picts and the beginning of Scotland for a wide audience in a publicly accessible way through the project social media streams.

The project will enable and encourage greater engagement with our past by:

- Involving local volunteers from a range of geographical areas of Scotland through partnerships with PKHT and Stirling Council as well as involving students from the University of Aberdeen in the excavation and post-excavation stages of the project
- Delivering a possible collection of material artefacts, site archive details and landscape investigation that can provide rich opportunities for future research/possible museum displays that focus on the formation of Iron Age society and the development of Early Medieval kingdoms.
- In accordance with the Historic Environment Policy for Scotland (2019, 15), this SMC will assess and enhance the cultural significance of each site. The results will offer new interpretation opportunities, with the dating and results of the excavations being of wide public and academic interest.

## **Outputs and stakeholder engagement outcomes**

This project will provide:

- Academic and research outputs in the form of journal articles, reports and research opportunities for academic staff and students through providing dissertation topics, hands on training in field archaeology, surveying and post-excavation.
- Training opportunities for undergraduate and postgraduate students, as well as community volunteers.
- Popular outputs in the form of a daily blog on the Northern Picts Facebook page (with more than 6000 members), wider media impacts and press opportunities for HES and project partners.
- This research will feed into the Comparative Kingship project which will lead to an open access monograph and a more popular volume on the archaeology of Iron Age and early medieval Scotland.
- On reporting – see Appendix 1.
- In due course the ADS will be consulted for guidance on digital archiving and the hosting of the digital archive.

## Appendix 1 Methodologies, sampling and resources

Permission to excavate at each site has been obtained and the individual landowners have been made aware of the details of the proposed investigations.

At all of the proposed sites, each trench will be deturfed by hand, with turfs reinstated at the end of the excavation.

In addition:

- The trench sizes will be of the order stated here, but we would like to apply for an additional 3m<sup>2</sup> per trench to allow for contingencies such as extending for health and safety or logistical reasons or to reveal a particular feature in plan at the trench edge.
- In addition we would like to have the contingency of allowing steps of a maximum of 1m wide to be excavated around any of the larger trenches through collapse, or 19th century or later overburden if needed for health and safety reasons.
- If need be trenches may be cordoned off with rods and barrier tape – the rods will be inserted no deeper than 0.15m into the ground.
- All trenches will be excavated stratigraphically and there will be a written record on pro-forma context sheets and/or tablet-based recording
- Specialist advice on any artefacts retrieved will be available from Dr Ewan Campbell, the leading Iron Age and early medieval artefact specialist in Scotland
- Environmental processing will be conducted at the University of Aberdeen and in consultation with Dr Susan Ramsay, who has analysed the botanics for the Northern Picts/Comparative Kingship project from 2011 onwards. Environmental sampling will follow English Heritage guidance (Campbell, G, Moffett, L and Straker, V 2011).
- Specialist advice on animal and human bones recovered will be available from Dr Masson-Maclean, University of Aberdeen
- Any complex archaeological deposits where post-excavation budgets are not sufficient to deal with, will be left in situ and not excavated
- During the excavations all archaeological features will be carefully cleaned and recorded (hand and digitally planned at 1:20 and photographed).

### *Reinstatement plans and post-excavation site management strategy*

At all of the proposed sites, all excavated material will be reinstated by hand, with top-sod carefully returned in each trench. None of the proposed excavations are positioned on steeply sloping areas, such as extant, steep hillfort banks (the proposed trench at the summit of Dunsinane Hill will re-excavated an area cutting through the inner bank, meaning there is no extensive slope here to re-instate) and as such, it is unlikely that the backfilled trenches will be prone to any reinstatement problems.

### *Team and implementation of research design*

The project team involves three site directors, Gordon Noble, James O’Driscoll and Edouard Masson-Maclean, who have experience in both large-scale field projects and targeted test trenching. Experienced site directors and supervisors will be on site at all times to monitor the progress of the excavations. Additional staff inputs from Stirling Council and PKHT will be available for the excavations at Dunsinane, Caistel mac Tuathal and Dymyat. We will maintain a ratio of 1:3 experienced to non-experienced diggers, though at most sites, only a small team of four individuals will be needed. Volunteers and archaeological students from the University of Aberdeen will work on site under close supervision. The site directors will supervise all excavation work. Post-excavation analysis will benefit from the facilities and expertise available in-house at the University of Aberdeen.

### *Resources*

The project is funded through a Leverhulme Trust research grant for 2017–2022 and through University of Aberdeen funding streams organized through the Comparative Kingship project.

### *Publication*

There have been a number of major journal articles and book chapters relating to the wider Comparative kingship project, as well as detailed Data Structure Reports produced on the fieldwork. The final outcome of this project will be a monograph, though it is envisaged that a number of papers directly resulting from the proposed excavations as set out in this document will be published.

### *Post-excavation and sampling strategy*

The budget includes funds for object analysis, botanics and conservation.

### *Artefacts*

Advice will be sought from conservators for any unusual items/materials recovered. Finds will be collected, cleaned and conserved where needed and will be analysed by specialists.

### *Faunal material*

Animal bones from a number of Iron Age to early medieval sites excavated as part of Comparative Kingship are currently being assessed by Edouard Masson-Maclean, University of Aberdeen. His analysis will focus on assessing the composition of the assemblage and comparing it to other relevant assemblages from Scotland and other contemporary sites across Britain and Ireland.

### *Soil samples*

During the excavation of all sites soil samples will be taken from features using standardised methodologies. This will consist of 20 litres of soil being sampled from features where possible (though note some contexts will be smaller than this) for charcoal and macroplant analysis. Additional samples will be taken from occupation horizons and any midden deposits identified for detailed faunal analysis including presence/absence of fish bone. Cut features will be sampled 50% through a combination of dry sieving and flotation. Sampling will be particularly targeted at key contexts for dating. All animal bones will be retained and analysed by in house specialists.

Samples will be double bagged and labelled. Samples will be floated using bucket sieving which allows for more controlled recovery of charcoal. 1mm and 500 µm mesh will be used to capture the charcoal and botanics. The flots and retents will be sorted and carbonised plant remains assessed by a botanist for their potential for radiocarbon dating and botanical analysis. The soil sieving will be undertaken by students under the supervision of the project manager.

### *Radiocarbon dating*

Dating will be provided by funding through the Comparative Kingship programme. Derek Hamilton of SUERC will advise on sample selection throughout and will model the dates using OxVal c4.2 and standard Bayesian modelling approaches. The work will aim to produce a more detailed chronology for ramparts and any in situ deposits found in association with the ramparts. Ideally two dates will be sourced from key dating deposits in each trench where suitable samples are present.

### Reporting

We will notify HES of the timescale of each excavation in advance of each phase of works, giving at least 2 weeks notice. We will provide a DSR and PERD for each excavation within 3 months of completion of the fieldwork. The approved DSR will then be sent to the relevant SMRS, and DES and OASIS entries will be submitted. The archive will remain at the University of Aberdeen until completion of the study when it will be housed with a relevant body (The HES National Record of the Historic Environment). PERD will be agreed with HES and the PERD's proposals for analysis and publication will be implemented in full.

## Bibliography

Alcock, L. (1981). 'Early historic fortifications in Scotland', in Guilbert, G. (ed) *Hillforts Studies*, 150–180. Leicester: Leicester University Press.

Alcock, L. (2003). *Kings and Warriors, Craftsmen and Priests in Northern Britain AD 550–850*. Edinburgh: Society of Antiquaries of Scotland.

Alcock, L. and Driscoll, S. (1989). 'Reconnaissance excavations on Early historic fortifications and other royal sites in Scotland', *Proceedings of the Society of Antiquaries of Scotland* 119, 189–226.

Anderson, M. (1973). *Kings and Kingship in Early Scotland*. Edinburgh: Edinburgh University Press.

AOC Archaeology (2019). *Dumyat Survey Plan Photo*. <https://www.socantscot.org/research-project/dumyat-survey/>

Bersu, G. (1950). 'Rectangular enclosure on Green Craig, Fife', *Proceedings of the Society of Antiquaries of Scotland* 82, 264–275.

Bhreathnach, E. (2014). *Ireland in the Medieval World AD 400-1000: Landscape, Kingship and Religion*. Dublin: Four Courts Press.

Campbell, E. (2007). *Continental and Mediterranean Imports to Atlantic Britain and Ireland, AD 400–800*. Council for British Archaeology Research Report 157. York: Council for British Archaeology.

Christison, D. (1900). 'The forts, "camps", and other field-works of Perth, Forfar and Kincardine', *Proceedings of the Society of Antiquaries of Scotland* 34, 43–120.

Close-Brooks, J. (1986). 'Excavations at Clatchard Craig, Fife', *Proceedings of the Society of Antiquaries of Scotland* 116, 117–184.

Cook, M. (2010). 'New light on oblong forts: excavations at Dunnideer, Aberdeenshire', *Proceedings of the Society of Antiquaries of Scotland* 140, 79–83.

Cook, M. (2011). 'New Evidence for the Activities of Pictish Potentates in Aberdeenshire: The Hillforts of Strathdon', *Proceedings of the Society of Antiquaries of Scotland* 141, 207–229.

Cook, M. (2013). 'Paradigms, assumptions, enclosure, and violence: the hillforts of Strathdon', *Journal of Conflict Archaeology* 8, 77–105.

Cook, M., Strachan, D., Nicol, S. and Roper, K. (2016). *Moredun Top, Moncreiffe Hill, Perth and Kinross: Archaeological Evaluation Phase 1 Data Structure Report*. Perth: Tay Landscape Partnership, Perth and Kinross Heritage Trust.

Curle, A. O. (1907). 'Note of excavations on Ruberslaw, Roxburghshire, supplementary to the description of the fortifications thereon', *Proceedings of the Society of Antiquaries of Scotland* 41 (1906-7), 451–3.

Driscoll, S. and Yeoman, P. (1997). *Excavations within Edinburgh Castle in 1988–91*. Edinburgh: Society of Antiquaries of Scotland.

Feachem, R. W. (1955, reprinted 1980). 'Fortifications', in Wainwright, F. T. (ed) *The Problem of the Picts*. Edinburgh, 66–86. Perth: The Melven Press.

Feachem, R. (1963). *A Guide to Prehistoric Scotland*, 1<sup>st</sup> edition. London: Batsford.

Feachem, R. (1965). *The North Britons: The Prehistory of a Border People*. London: Hutchinson.

Feachem, R. (1966). 'The hill-forts of Northern Britain', in Rivet, A. (ed) *The Iron Age in Northern Britain*, 59–87. Edinburgh: Edinburgh University Press.

Gleeson, P. (2012). 'Constructing kingship in early medieval Ireland: power, place, ideology', *Medieval Archaeology* 56, 1–33.

Hanson, W. and Maxwell, G. (1983). *Rome's North West Frontier: The Antonine Wall*. Edinburgh: Edinburgh University Press.

Harding, D. (2004). *The Iron Age in Northern Britain: Celts and Romans, Natives and Invaders*. London: Routledge.

Headland Archaeology (2011). *A Topographic Archaeological Survey of Five Pictish Forts in the Highlands, for Forestry Commission, Scotland.*

[https://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-417-1/dissemination/pdf/headland1-95129\\_1.pdf](https://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-417-1/dissemination/pdf/headland1-95129_1.pdf)

Historic Environment Scotland (2019). *Historic Environment Policy for Scotland.*  
<https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/>

Hutcheson, A. (1889). 'Notes on the stone circle near Kenmore and of some hill forts in the neighbourhood of Aberfeldy, Perthshire', *Proceedings of the Society of Antiquaries of Scotland* 23, 356–67.

Hinckley, Z. (2018). *Defining Early Medieval Nuclear Hillforts: A Case Study of Perth and Kinross and Fife.* Unpublished MSc Dissertation, University of Aberdeen.

Laing, L. and Longley, D. (2006). *The Mote of Mark: A Dark Age Hillfort in South-West Scotland.* Oxford: Oxbow Books.

Lane, A. and Campbell, E. (2000). *Dunadd: An Early Dalriadic Capital.* Oxford: Oxbow.

Lawson, A. (1817). 'Ancient circles of stone discovered under ground in the parish of Creich, Fifeshire', *Edinburgh Magazine* 79, 423–427.

Lock, G. and Ralston, I. (2017). *The Atlas of British and Irish Hillforts.*

MacIver, C., Cook, M., Heald, A., Strachan, D., Roper, K., and Malone, S. (2017). *King's Seat, Dunkeld, Perth and Kinross: Archaeological Evaluation Phase 1 Data Structure Report.*

MacIver, C., Cook, M., Heald, A., Strachan, D., Roper, K., and Malone, S. (2018). *King's Seat, Dunkeld, Perth and Kinross: Archaeological Evaluation Phase 2 Data Structure Report.*

Maxwell, G. (1969). 'Excavations at Drumcarrow, Fife: an Iron Age unenclosed settlement', *Proceedings of the Society of Antiquaries of Scotland* 100, 106–108.

Noble, G. and O'Driscoll, J. (2019). 'Fortified Settlement in early medieval Northern Britain and Ireland', in Lock, G. and Ralston, I. (eds) *Hillforts: Britain, Ireland and the Nearer Continent*, 97–116. Oxford: Archaeopress.

Ralston, I. (2004). *The Hill-Forts of Pictland since 'The Problem of the Picts'*. Rosemarkie: Groam House Museum Papers.

RCAHMS (1950-9). *Marginal Land Survey* (unpublished typed site descriptions), 3 volumes.

RCAHMS (1956). *The Royal Commission on the Ancient and Historical Monuments of Scotland. An inventory of the ancient and historical monuments of Roxburghshire: with the fourteenth report of the Commission*, 2 volumes. Edinburgh: HMSO.

RCAHMS (1967). *The Royal Commission on the Ancient and Historical Monuments of Scotland. Peeblesshire: an inventory of the ancient monuments*, 2 volumes. Edinburgh: HMSO.

RCAHMS (1994). *The Royal Commission on the Ancient and Historical Monuments of Scotland. South-east Perth: an archaeological landscape*. Edinburgh: HMSO.

Robertson, J. (1799). *General view of the agriculture of the county of Perth with observations on the means of its improvement, drawn up for the consideration of the Board of Agriculture and Internal Improvement*. Perth: C. Macrae.

Ross, A. (1915). 'Dun-Dhearduil and Tor-Duin hill forts', *Transactions of the Inverness Scientific Society and Field Club* 7, 23–7.

St Joseph, J. K. S. (1951). 'The Roman forts at Carriden and Brownhart Law', *Proceedings of the Society of Antiquaries of Scotland* 83, 167–74.

Stevenson, R. (1949). 'The Nuclear Fort at Dalmahoy and other dark age capitals', *Proceedings of the Society of Antiquaries of Scotland* 83, 186–198.

Toolis, R. and Bowles, C. (2017). *The lost Dark Age Kingdom of Rheged. The discovery of a Royal Stronghold at Trusty's Hill, Galloway*. Oxford: Oxbow.

Wise, T. (1859). 'Notice of recent excavations in the hill fort of Dunsinane, Perthshire'. *Proceedings of the Society of Antiquaries of Scotland* 2, 93–99.