



Dunoon Castle & Gardens

Archaeological Survey Report

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Archaeological Survey Report

Prepared on behalf of:
Dunoon Development Trust
and
Argyll and Bute Council

Case ID: 300065624

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Purpose of document

This document has been prepared as a survey report for an archaeological geophysical survey undertaken around the scheduled monument of Dunoon Castle (SM5450; Canmore 40729), in Dunoon, Argyll and Bute. The survey was undertaken as part of a community research and engagement project, delivered in partnership with Dunoon Area Alliance, Argyll and Bute Council CARS project, and Castle House Museum. The investigation aimed to further understanding about the nature and extent of the remains of the scheduled monument and former buildings within the grounds of the castle. The purpose of this document is to provide a comprehensive account of the geophysical survey, with specialist assessment of the geophysical results and recommendations for further investigation.

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Project summary

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Non-technical summary

DigVentures was invited by Argyll and Bute Council (landowner), in partnership with Dunoon Area Alliance and Castle House Museum, to deliver a geophysical survey and community activity programme at Dunoon Castle (NGR NS 17518 76372). The works have been funded by Castle Studies Trust.

Dunoon Castle is a scheduled medieval castle (SM5450). The geophysical survey aimed to assess the site and understand the extent and character of potential existing features across the castle mound and surrounding area. The results have provided new data to support ongoing heritage management of the site, and for heritage interpretation both at the site and at the Castle House Museum located at the same location. This report details the results of a magnetometer and earth resistance survey totalling 0.22Ha undertaken between the 21st and the 24th of July 2023. It also details the results of a historic building and aerial 3D photogrammetric drone survey undertaken during the same period, and a detailed archaeological and historical background.

This report conforms with current best practice and to the guidance outlined in the Management of Research Projects in the Historic Environment (Historic England 2015), the Chartered Institute for Archaeologists (2014), and the Europae Archaeologiae Consilium (EAC) Guidelines for the Use of Geophysics in Archaeology (Schmidt et al. 2016).

The magnetometer survey was undertaken across an area to the north of the tennis courts, an area to the south of the tennis courts and an area to the south of the castle museum. The magnetometer survey revealed possible garden wall foundations around the museum, features relating to the landscaping of the castle gardens, and features relating to former garden plots and a fire station.

The earth resistance survey was undertaken across the same areas as the magnetometer survey to provide a comparable dataset. The resistance survey revealed garden features around the castle museum, possible gateposts at the south-western entrance to the grounds, features



relating to former garden plots and a fire station as well as landscaping features.

As part of the community heritage weekend, Dr Louise Turner supported a rapid historic buildings assessment of the castle remains. Whilst this was not undertaken as a detailed survey, the results suggest that much of the walling visible as part of the castle ruins is likely to date from the Victorian period, with very limited evidence for the earlier and original phases of the castle visible. The historic buildings and 3D aerial photogrammetric drone surveys also revealed the extent of walls and earthworks obscured by vegetation overgrowth. The resulting topographic survey was compared against previous Ordnance Survey maps and an earthwork survey conducted by the RCAHMS. This showed a large proportion of the previously recorded castle walls are now hidden or even considered submerged below current ground level, with some vegetation permeating throughout the fabric of the surviving castle walls with the potential to cause damage.

As a community focussed project, public engagement was integral to the research aims and success of the Dunoon Castle Heritage Project. Local community members were offered a chance to explore the archaeology and heritage of Dunoon Castle first hand. In total, the project welcomed at least 110 participants who joined the team across 6 different activities that took place across 3 days.

The project attracted a diverse community of people from the local area. The Dunoon Castle Heritage Project offered survey training and experience to adults and teenagers, and peripheral activities supported the participation of families and children. Training activities were also independently accredited through ClfA. The insights gained from the evaluation of this project have established a clear community need and demand for more archaeological and heritage work at Dunoon Castle.



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1 INTRODUCTION

1.1 Project background

1.1.1 DigVentures were invited by Argyll and Bute Council (the landowner), in partnership with Dunoon Area Alliance and Castle House Museum, to deliver a geophysical survey and community activity programme at Dunoon Castle, Argyll and Bute (hereafter “the site”; NGR NS 17518 76372; scheduled monument SM5450; [Figure 1](#)). The works were funded by the Castle Studies Trust.

1.1.2 The survey area ([Figure 2](#)) comprised an earth resistance survey totalling 0.09Ha and a magnetometer survey totalling 0.22Ha of the castle grounds, as well as an aerial 3D photogrammetric drone survey and a photographic record and description of the standing building remains. The non-invasive survey was undertaken under permission granted by Historic Environment Scotland following an MMDC Application (Case ID 300065624; granted on the 29th of June 2023). The survey was conducted between the 21st and the 24th of July 2023 with members of the local community.

1.1.3 The purpose of the geophysical survey was to assess the site with an aim to understand the extent and character of potential existing features across the castle mound and surrounding area. The results will provide new data to support ongoing heritage management of the site, and for heritage interpretation both at the site and at the Castle House Museum. This report details an assessment of the survey results as well as recommendations for further investigation.

1.1.4 The report conforms with current best practice and to the guidance outlined the Management of Archaeological Research Projects in the Historic Environment (Historic England 2015), the Chartered Institute for Archaeologists *standards and guidance for archaeological geophysical survey* (2014), and the Europae Archaeologiae Consilium (EAC) *Guidelines for the Use of Geophysics in Archaeology* (Schmidt et al. 2016).

1.2 Location, topography, and geology

1.2.1 The remains of Dunoon Castle (NGR: NS 17518 76372; Canmore ID: 40729) occupy a prominent, partly modified hill within landscaped gardens which overlook the seafront in the coastal town of Dunoon ([Figure 2](#)). The site is located to the southern tip of the town of Dunoon, across a small promontory jutting into the Clyde, and bounded by the Castle Gardens to the north, and the Pier Esplanade Road (A815) to the South. The town itself is located towards the south end of the eastern side of the Cowal Peninsula, with the castle itself sited at the narrowest point of the Firth of Clyde. This part of the peninsula forms the west shore of a distinct body of water - the north-south oriented sea loch named ‘Holy Loch’ – which adjoins the lower reaches of the Clyde that continue onwards following a more east-west course past Toward Point in the south.

1.2.2 The survey areas comprised open parkland with occasional obstructions of trees, bushes, park benches and footpaths (see [Appendix A – General Setting Photographs](#)).



- 1.2.3 The mound that Dunoon Castle is situated upon sits at approximately 18m above Ordnance Datum (aOD), with the landscape sloping down towards the north, east, south and south-west to 10m aOD in the gardens and 1m aOD by the Victoria Parade.
- 1.2.4 The recorded bedrock geology of the castle mound is an igneous quartz-microgabbro comprising the Central Scotland Late Carboniferous Tholeitic Dyke Swarm, and the recorded bedrock geology of the surrounding Castle Gardens comprise Dunoon Phyllite Formation – Pelite, a metamorphic bedrock, and the Mull Dyke-swarm – Microgabbro, an igneous bedrock; with superficial deposits of raised marine deposits of sand and gravels (British Geological Survey, 2023).
- 1.2.5 Magnetometer survey can sometimes be affected by thermoremanent effects over some igneous rock types, such as basalts, however others such as Cornish granites seem to be unaffected (David *et al.* 2008). The magnetometer dataset was affected by the underlying geology, but not so much as to have affected the visibility of archaeological trends. An exaggerated plotting scale was used to present the greyscale plots to lessen the effects of the geology on the dataset.

1.3 Designations

- 1.3.1 The scheduled remains of Dunoon Castle (SM5450; [Figure 2](#)) comprise the remains of a castle constructed by the 13th Century which was in use until the 17th Century. The listing describes the monument as;

“...fragmentary masonry remains on the summit of a rocky mound around 27m in height with the remains of a ditch visible on the northwest side. The monument is located on the seaward end of a low peninsula, overlooking the Firth of Clyde.

... During the 14th century it served as a Royal castle. It was re-used for military purposes during the First and Second World Wars.

... The scheduled area is irregular on plan, to include the remains described above and an area around them within which evidence relating to the monument's construction, use and abandonment is expected to survive. The scheduling extends up to but excludes the retaining wall to the east, south and southwest. The scheduling specifically excludes the above-ground elements of all modern structures, fittings and fixtures within and around the monument, such as handrails, pathways and steps (Historic Environment Scotland, 2016).

- 1.3.2 There are 28 Listed Buildings within a 1km search around Dunoon Castle and Gardens ([Figure 3](#)). These comprise a mixture of Category A, B and C hotels, churches, farmhouses, bridges, domestic and other buildings. Dunoon Castle sits within the Dunoon Conservation Area (CA464), an area which has been designated in order to preserve its natural features, cultural heritage or wildlife.

1.4 LIDAR study

A multi-directional hillshade model visualisation was created in QGIS using the Relief Visualisation Toolbox, utilising a freely available 1m Digital Surface Model which was downloaded from the Scottish Remote Sensing Portal licenced under an Open Government Licence v3.0 (Figure 4). The dataset depicts the castle mound which Dunoon Castle sits on very clearly, as well as the numerous paths and steps leading up to it. Further paths and shrubs are visible throughout the castle grounds, but other archaeological features are not discernible, either due to the effects of extensive landscaping throughout the gardens or due to the low resolution of the LiDAR data.

2 DUNOON CASTLE - HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

Louise Turner

2.1 Introduction

2.1.1 The remains of Dunoon Castle (NGR: NS 1796 7868; Canmore ID: 40729) occupy a prominent, partly modified hill within landscaped gardens which overlook the seafront in the coastal town of Dunoon. The town itself is located towards the south end of the eastern side of the Cowal Peninsula, with the castle itself sited at the narrowest point of the Firth of Clyde. This part of the peninsula forms the west shore of a distinct body of water - the north to south oriented sea loch named 'Holy Loch' – which adjoins the lower reaches of the Clyde that continue onwards following a more east to west course past Toward Point in the south.

2.1.2 The strategic importance of the site is demonstrated by the presence of military fortifications and installations dating from the medieval period right through to the Second World War. Documentary sources confirm that the castle was established by the 13th century AD although some sources suggest a much earlier, early medieval, origin. The south end of the east coast of the Cowal Peninsula also formed a much later focus for military activity during the two World Wars, with the castle hill used as the location of a Second World War Coastal Battery (Canmore ID: 106362) on account of its advantageous location. This particular installation was just one component in a network of defensive structures which included batteries and searchlights and an underwater boom to prevent submarine incursions. After the war, Dunoon remained an important military site, providing housing for US military personnel stationed at the submarine refitting base at nearby Holy Loch, until its closure in 1992.

2.1.3 The remains of Dunoon Castle, and the hillock on which it stands, are a designated Scheduled Monument (HES ID: SM5450). Certain built elements associated with the 19th century AD landscaped park and gardens are also designated as Listed Buildings. These include the Statue of Highland Mary (HES ID: LB26437) and elements of the garden's boundary walls, including the Gate Lodge to Castle Gardens, with Gate Piers and Screen walls, Pier, Esplanade (HES ID: LB26435) and the Kirk Street, Boundary Wall of Castle Gardens (HES ID: LB26433).

2.1.4 In summary, the remains of Dunoon Castle and the gardens in which it now stands form an important element in the heritage and history of Dunoon. The changing



fortunes of the castle were inextricably linked with the success of the town itself, with the castle hill also playing a crucial role both in the military history of the Clyde Coast, and in the town's success as a holiday destination during the later 19th and early 20th centuries AD.

2.2 Prehistoric and Roman

2.2.1 To date, no evidence for prehistoric activity has been reported from the castle. Similarly, evidence for occupation and land use within the bounds of modern Dunoon and its environs during the prehistoric periods is conspicuous by its absence.

2.2.2 The nearest monument of prehistoric date is the Neolithic chambered cairn called 'Adam's Grave,' which is located at Ardnadam (Canmore ID: 40774), almost 4km to the north of Dunoon Castle. Located in the same general area are two hut circles, an enclosure and a field system at Ardnadam Wood (Canmore ID: 40776), also ascribed a possible prehistoric date. To the south, a platform settlement, again believed to be of prehistoric date, has been identified at Creag Nan Cat (Canmore ID: 40750). This particular group is noted for its similarity to examples identified on the Island of Bute. Further to the south, examples of stone coffins or cists of 'three different lengths' are recorded in historical accounts as having been found in the vicinity of Toward (Canmore ID: 40712), some 11km to the south, and although detailed information is lacking, the presence of short cists with flexed inhumations - characteristic of the Early Bronze Age - cannot be ruled out.

2.2.3 In general terms, prehistoric activity tends to focus along the roughly east to west running Glen Loan, which runs east from the north end of Loch Striven to the north end of Holy Loch, providing a logical land-based communication route between heads of the two sea lochs. There is a cupmarked stone at Cuilbuidhe (Canmore ID: 40782), at the west end of the route, with the Ardnadam chambered cairn lying at the E end. Possible examples of standing stones have also been identified along the E bank of Loch Striven, at Allt nan Cuilom (Canmore ID: 312092), Invervegan (Canmore ID: 312095) and Inverchaolain (Canmore ID: 40469), with possible cupmarked stones also noted further to the S along the same coastline, at sites including Knockdhu Burn (Canmore ID: 154567) and Old Knockdhu (Canmore ID: 40473). Finds of prehistoric artefacts are scarce throughout the area, with one notable exception provided by the recovery of a carved stone ball of probable Neolithic date from Dergachy, at the head of Holy Loch (Canmore ID: 40780).

2.3 Early Medieval (AD400 – AD1100)

2.3.1 Evidence for occupation and use of the castle hill and its immediate environs is also absent for the early medieval period. It seems unlikely that some kind of defensive site was not established at Dunoon at some point either during or after this period: the elevated coastal position is already advantageous, even before taking into account the fact that Dunoon sits at the narrowest point in the Clyde, with the town sited at the major crossing point linking Argyll with lowland Scotland (Anon 1792, 385).

2.3.2 Traditional thinking originally placed the Cowal Peninsula within the SE limits of the kingdom of Dalriada. It was supposed that this area was settled by incomers from Ireland, the Scotti, whose legacy included both the predominance of gaelic



placenames throughout the region, and also, arguably, the introduction of Christianity into western Scotland (Ritchie and Harman 1996, 17-18). Recent research has, however, questioned whether this was the character of the population within the Cowal Peninsula at this time. It has instead been suggested that the political boundary between Dalriada and Strathclyde lay further to the north west than was previously thought (Rennie 2006, 27), placing Castle Hill and the site of modern Dunoon within the Kingdom of Strathclyde, rather than within Dalriada.

- 2.3.3 In the case of Dunoon, the possibility of early medieval occupation is further strengthened by place name evidence, with the 'Dun' element of 'Dunoon' perhaps referring to a fortified place. The proliferation of gaelic place names in an area which should be populated by Brythonic-speaking peoples does require explanation: Rennie suggests that the area was subject to ethnic cleansing following the fall of Alcluith in AD871.
- 2.3.4 Early antiquarian accounts do however fail to mention any potential link between the place name 'Dunoon' and the presence of an early defensive or fortified site. The Old Statistical Account explores the origins of the name, its author suggesting here that it means either the 'New House' or the 'House of the Virgins' (Anon, 1792, pp.383). While the 'New House' could potentially suggest a secular role, the potential for an ecclesiastical origin was clearly more attractive to the author, with the religious link further strengthened by the gaelic name for the adjacent sea loch, translated today as 'Holy Loch.' The name 'Holy Loch' was itself rooted in religious tradition, with the head of the loch traditionally identified as the place where St Munn first made landfall in Scotland following his departure from Ireland. He subsequently founded a monastic community there, with a medieval church later dedicated to him and given the name 'Kilmun.'
- 2.3.5 An ecclesiastical link is supported by archaeological discoveries which were being made in and around Dunoon during the late eighteenth and early nineteenth centuries AD. In particular, finds of stone-lined cists are recorded as having been uncovered in the garden of Castle House during 1822 (Canmore ID: 40744). These are described as having contained full length skeletons, as opposed to crouched or flexed examples, so they would be more likely to indicate an early medieval, rather than a prehistoric, date. Similar cists may be amongst the variety of cists recorded at Castle Toward (Canmore ID: 40712) and reported in the Antiquaries of Scotland in 1857.
- 2.3.6 In summary, although there is ample evidence for occupation and land use in and around Dunoon during the early medieval period, so far this evidence has been ecclesiastical in nature. If the Cowal Peninsula is viewed in its wider context, as either the south east extremity of the Kingdom of Dalriada or as the north west extremity of the Kingdom of Strathclyde, this would suggest that – in either case - the area played a peripheral role, located some distance from the heart of political affairs. This in turn would explain the area's attraction to the founders of early medieval monastic houses, who would have favoured remote and isolated locations for siting their places of pious contemplation and learning.
- 2.3.7 Nonetheless, the fact remains that the site of the later-Dunoon Castle certainly has the potential to have housed some kind of early medieval defensive site, however modest.



The defensive capabilities of the site and the strategic importance of its location are now supplemented by place name evidence which could be indicative of an early defensive site, too. No archaeological evidence has yet been found which can confirm this, so to any argument for the presence of an early medieval defensive site on the castle hill must remain conjectural.

2.4 Medieval (AD1100 – AD1600)

2.4.1 The medieval period provides us with our first confirmed evidence for the presence of a stone-walled defensive site on the castle hill. This is represented by the physical remains of a medieval structure which still survive, albeit in a much-fragmented form, and by documentary sources which record the sometimes-significant role played by Dunoon Castle in historical events.

2.4.2 We know that throughout much of the medieval period, the Cowal peninsula was held by the MacKerrachers, who later changed their name to 'Lamont.' This change occurred in the thirteenth century AD, when the family name was altered to honour one prominent member of the family bearing the name 'Lammon.' Whether the Clyde shore and the site of modern Dunoon actually fell within the bounds of early Cowal has been questioned by Rennie (Rennie 1993, 71), who has also argued that the Lamonts did not actually make their appearance in Cowal until the thirteenth century AD (Rennie 2006, 82).

2.4.3 The earliest mention of Dunoon Castle in the documentary sources confirms the presence of a castle in the second quarter of the 13th century AD. It does not refer directly to the castle itself; rather, it mentions by name and office an individual known as 'John, Constable of Dunoon' ('John, constabularies de Dunoon'). The term 'Constable' is given to a high-ranking member of a household, and its use in association with Dunoon suggests that a high-status residence has been established here by this point. This fits in well with the broader picture in Scottish politics at the time, with Alexander III making strenuous efforts to secure the western seaboard and the Western Isles for the Scottish Crown.

2.4.4 The construction of Dunoon Castle in the early thirteenth century can therefore be seen as part of a wider programme of castle-building around the Firth of Clyde, undertaken in order to consolidate Stewart power throughout the area. This would make Dunoon Castle part of a wider network of coastal castles which included Rothesay, Ardrossan, and even perhaps Renfrew. Their maritime locations and outlook implies a close connection with the sea, potentially placing them in a group known as the 'galley-castles,' which are more usually associated with the Atlantic seaboard and the North West highlands, i.e. that area which once made up the Kingdom of Dalriada.

2.4.5 Dunoon Castle may have occupied a peripheral location, but with much of Argyll now firmly absorbed into interests of the Scottish Crown, its strategic position was crucial. It was located on an important river crossing which linked lowland Scotland with Argyll and the western seaboard, and this meant it did not escape attention during the Scottish Wars of Independence. One particular event recorded during the second Scottish War of Independence was the besieging of the castle in AD1334. This followed an earlier surrender to forces loyal to Edward Balliol, son of the defrocked John I. The castle was subsequently retaken by Sir Colin Campbell and Robert Stewart



who arrived at the site equipped with 'engines of war.' (RCAHMS 1992, 273) Whether these machines ever actually saw use is unknown: in many instances, even the sight of such equipment was enough to discourage any besieged garrison from holding out against their attackers.

- 2.4.6 At some point, perhaps during the reign of Robert III, the Campbells of Lochawe were appointed hereditary constables of Dunoon Castle, giving the family an established foothold in Cowal. Over the following centuries, this would have unfortunate consequences for the Lamonts, who never regained the power and influence they had enjoyed up until the short, contested reigns of John and Edward Balliol. In AD1460, the castle became the property of the Campbells on a more permanent basis, when King James III of Scots granted the castle to the nobleman formerly known as Colin Campbell of Glenorchy, recently elevated to 1st Earl of Argyll. Under Earl Colin's leadership, the Campbells flourished and grew to new prominence.
- 2.4.7 The Campbells retained Dunoon Castle throughout the remainder of the medieval period, and beyond. A document dated 15th January AD1472 informs us that as well as having responsibility for the upkeep of the castle and the maintenance of its fabric, Earl Colin had the power to appoint constables, porters, jailors, watermen and other officers.
- 2.4.8 By the end of the medieval period, Campbell influence was growing ever greater in this south west corner of the Cowal peninsula. In response, the Lamonts may have felt increasingly marginalised and perhaps even threatened. Hostilities came to a head during the post- medieval period, but it seems likely that the seeds for the almost-inevitable showdown were sown much earlier. Most of the bloody feuds recorded in Scottish history began as small-scale skirmishes undertaken by those who felt aggrieved in some way by judicial and political decisions which consistently seemed to be lodged against them, with the feud between the Lamonts and the Campbells in Cowal fitting well into this pattern.

2.5 Post-Medieval (AD1501 – AD1775)

- 2.5.1 The post-medieval period brings us our first known image of Dunoon Castle, which is depicted on Timothy Pont's map of Mid-Argyll, surveyed between AD1583 and AD1614 (Figure 5, Image 1). Pont's map shows the castle as a fairly standard tower-house, annotated 'Dunuyne Castle,' with a square building surmounted by a cross (the parish church) located slightly to the northwest, in roughly the same position as the modern parish church.
- 2.5.2 The second map was produced c. 100 years later in the late 17th century AD, by Peter Shenk (Figure 5, Image 2). The map itself shows little insight into c. AD1690's Dunoon. One imposing structure with a tower is shown in the locale of Dunoon, but its generic character, matched by identical representations located elsewhere, suggests that Shenk is representing churches, while leaving domestic residences and fortifications unrecorded.
- 2.5.3 The third map, (Figure 6, Image 1) was surveyed by William Roy in the period AD1757-62 as part of his Military Survey of Scotland. This survey was carried out in the aftermath of the Jacobite Rebellion of AD1745, and it is much more informative,



providing us with the earliest available mapping which allows comparison with modern maps. Its level of detail is also much more helpful, with individual structures, cultivated lands and enclosures all shown in schematic form.

- 2.5.4 Roy's map was surveyed almost a century after the castle's supposed removal. It nonetheless shows the castle hill as a raised feature with a single rectangular structure aligned north west to south east on the summit. This would suggest that the castle has not been entirely removed, and that enough remained for it to still be depicted as a building. In its vicinity, there is little evidence of the 'town of Dunoon.' Instead, we see a scatter of small rectangular structures set within rectilinear enclosures located to the north west of the castle hill, with much of the rest of the ground covered by rig-and-furrow cultivation. Shelter belts of trees also appear to be in evidence around the settlement, though these do not appear to coincide with any of the enclosures.
- 2.5.5 Throughout the post-medieval period, the castle mostly remained within Campbell control. These years did not, however, pass without incident. Matthew Stewart, Earl of Lennox, who had spent his early life in France, returned to Scotland on the death of King James V of Scots. By November AD1543, his loyalty must have been doubted sufficiently for King Francis I of France to intervene by personally asking Lennox to assist against the English. Lennox, by this time, had already gathered a number of allies, including the Earl of Glencairn, and had fortified Glasgow and Dumbarton. There appears to have been a 10-day period in May 1544 when Lennox ran amok in and around the Firth of Clyde, sacking the town and church of Dunoon and devastating much of Kintyre. Any damage inflicted by Lennox upon the castle, church and town must have been made good within the following decades, as Mary Queen of Scots paid a visit to Dunoon in AD1563 (MacDonald 1860), witnessing a charter at the castle.
- 2.5.6 Queen Mary's visit proved to be the last occasion that Dunoon castle found itself at the heart of national affairs. The Campbells retained possession of the castle, with a AD1571 charter providing full details of the land holdings and settlements which were attached in order to provide sufficient income and resources for the castle to function properly. These comprised the twenty-seven merklands of 'Bordland,' which comprised the 'Castell aiker, the town of Dunoon, and the townships of Innellan, Garrariff, Kilbride, Auchmoir, Dunloskin, Ardnadam, and Finbracken (RCAHMS 1992). By this time, however, responsibility for the castle had been 'sub-let,' in a manner of speaking, to a cadet branch of the Campbell clan, the Campbells of Ardkinglas, with Ardkinglas required to provide the service of a boat, and Archibald, Master of Argyll retaining responsibility for maintaining the fabric of the castle and attending to repairs (ibid.).
- 2.5.7 The castle is thought to have fallen into disuse c. 1650, when the Campbells built a new house at Innellan (Canmore ID: 40713). This plain, two-storey house was rectangular on plan with a rear circular stair tower, and was still upstanding in the last decades of the 19th century AD, when it was described by MacGibbon and Ross in their *Castellated and Domestic Architecture of Scotland* volumes (MacGibbon and Ross 1887-72b, 295-6). It is thought that the remains of Dunoon castle were quarried for building material during the construction of this country house, which has itself



since been demolished and survives only as an overgrown mound of rubble measuring 17 x 7m in extent and upstanding to a height of 0.6m.

2.6 Modern

- 2.6.1 Throughout the first decades of the early modern era, Dunoon's situation was one of decline and stagnation. The town's failure to build a viable pier and its isolation away from the now-preferred land routes to mid-Argyll appear to have lain at the root of the problem, leaving Dunoon beleaguered. In many cases, townsfolk left their home for better opportunities elsewhere. Although the overall impression is one of stagnation and abandonment, some modest changes were already occurring at the end of the 18th century AD which suggested that modernisation was underway. Coal was now being burned as fuel instead of peat by wealthy families and agriculture practices were also now being re-organised along similar lines to that already being practised in the Lowlands, with a greater emphasis on sheep and with tenants now having greater bargaining power with their landlords (ibid. 391). Additionally, the opening of the Melfort Gunpowder Works, located in Mid-Argyll, led to an escalation in the demand for the charcoal industry in the local area.
- 2.6.2 AD1822 marked a profound change in Dunoon's fortunes, with the purchase of Dunoon Castle and attached grounds by wealthy Glasgow merchant James Ewing. Ewing was active as an investor and politician in Scotland, but he made his fortune in the sugar trade. He owned plantations in Jamaica and in AD1803 established the West India trading firm James Ewing and Co. in association with his partner William Mathieson. He was an active lobbyist on behalf of the slave-owning community, and the extent of his involvement is revealed in his compensation claims lodged in the wake of the Slavery Abolition Act of AD1833.
- 2.6.3 For the building of Castle House, he engaged the services of the celebrated Glasgow architect David Hamilton, whose Hutcheson's Hall in Ingram Street (McKean et al 1989, 73) and the former Cunninghame mansion (now the Museum of Modern Art) in Royal Exchange Square (ibid. 88). Castle House, unlike many of Hamilton's Glasgow buildings, is built in a castellated style rather than in the restrained Classical manner.
- 2.6.4 The gardens at Castle House appear to have formed as much of a talking point as the house itself, with the ruins of Dunoon Castle forming an important focal point at the heart of the garden. Amongst the works undertaken were rudimentary excavations on the Castle Hill itself, aimed – one imagines - at exposing more of the stonework for picturesque reasons than for reasons of archaeological endeavour. An extensive wall was also constructed to enclose the gardens, with the presence of a c. 16th century AD roll-moulded lintel suggesting that some of the stone used may have derived from the remains of the castle itself. This act of enclosure caused friction with the local residents who launched a land dispute. Although they ultimately lost their claim, their actions inadvertently provided us with a valuable insight into the size, character and layout of early 19th century AD Dunoon (Figure 6, Image 2), as well as details of land ownership at this time.
- 2.6.5 This plan shows the extent of Ewing's property, with the roughly north to south aligned road laterally bisecting the platen. Castle Hill is shown as one defined property, and although the outline of the castle hill is shown, the contemporary layout of the castle

is unfortunately omitted. Adjacent to that on the north side is a roughly rectangular area leased to Ewing, with the 'common' lying to the north of that, located to the rear of four properties which front onto the east side of the road. The 'common' appears to be the area under dispute, as it is labelled 'supposed to belong to the castle bailey.' Lying to the north of the fourth property is the church, with a further three properties fronting onto the opposite, west side of the road.

- 2.6.6 Ewing must have succeeded in his attempts to acquire not only the common ground, but also the four properties located to the east of the road, as the Ordnance Survey 1st edition map of 1869 (surveyed 1864) shows this entire part of the town, lying between the castle hill and the church building, as composed of ornamental woodland traversed by pleasure paths (Figure 7, Image 1), with the completed Castle House an imposing structure in its midst. The town, it can be seen, has also grown substantially.
- 2.6.7 The building of Castle House in the AD1820s appears to have had a massive impact on the wider perception of Dunoon, vastly transforming its appeal as a potential holiday destination. This was assisted by several artistic depictions of the town which were circulating amongst a population that – fuelled by the writings of the mythical poet Ossian and the novelist/poet Walter Scott – was becoming ever more eager to explore romantic places steeped in Scottish history. Their interest was fuelled by a number of artists and writers who used words or images to convey picturesque impressions of Scottish towns and/or regions (MacDonald 1860).
- 2.6.8 Two images are illustrated here. The first, by Fleming/Swan (Figure 7, Image 2), shows the town from the sea, with the castle featured prominently, and Castle House shown as an imposing landscape feature. This indicates that the original drawing was carried out after the mid 1820s, when the Hamilton-designed mansion was completed. The other image, by Brown/Miller, appears to be earlier, as it does not show Castle House but instead features the parish church very prominently (Figure 8, Image 1). This suggests that Dunoon was already an object of interest and curiosity even before the construction of Castle House.
- 2.6.9 By AD1885, Dunoon was a bustling town, equipped with two banks, 10 hotels, a gas company, two bowling greens, three weekly papers and a convalescent home equipped with its own hydropathic spa. Ewing had sold Castle House long before the building was bought in 1893 by Dunoon Burgh Council, and converted into a social amenity and library.
- 2.6.10 The Castle Gardens continued to develop as a public space at this time, with the 2nd Edition Ordnance Survey map showing the addition of a bandstand, and a statue of 'Highland Mary' located in a prominent position on Castle Hill (Figure 8, Image 2). 'Highland Mary' was a renowned figure in the folklore that had accumulated around the life of renowned Scots poet Robert Burns. Born in the parish of Dunoon, Mary Campbell had reportedly been a lover of the poet, and her commemorative statue allowed the town to celebrate their link with Burns.
- 2.6.11 Throughout this period, Dunoon became more and more accessible to a wider range of people. The wealthy built their summer residences; the middle class might rent a house for the summer or stay in a hotel. Meanwhile, the working classes were granted more freedom to explore their local area via a wide range of day trips and excursions

organised by the shipping companies at a very reasonable price. These became particularly popular during towns' annual fairs, with the Greenock Fair, Paisley Fair and Glasgow Fair (traditionally held annually over two weeks in July) allowing workers who normally spent their lives toiling away in textile mills or ship-building yards to enjoy the fresh sea air and a well-earned break from their labours. This trend continued – interrupted only by the two World Wars – until the AD1960s, when the rise of the package tour started to change the way in which people experienced holidays by providing more opportunities to travel abroad.

- 2.6.12 It was during the First and Second World Wars that Dunoon's strategic location once again became crucial to wider defensive schemes devised to protect not just Scotland but also Great Britain from attack or invasion.
- 2.6.13 During the First World War (1914-1918), Dunoon never played any active defensive role, but it was fully equipped on the expectation it might have to. Some kind of attack – whether marine or aerial – might be undertaken via the Firth of Clyde, and this eventuality had to be planned for.
- 2.6.14 Archaeological fieldwork undertaken in the Cowal peninsula has recorded a dense group of features associated with the First World War, concentrated on the area of Ardhalow and Creag nan Cat, to the south of Dunoon. At the core of this group lies a series of blockhouses associated with a gun emplacement (e.g. Canmore ID: 352920), plus assorted ancillary structures which include pillboxes (e.g. Canmore ID: 331613), sentry posts and trenches.
- 2.6.15 Dunoon was also chosen as an appropriate regional location for the recruitment of soldiers. These recruits were absorbed into two training battalions attached to the Argyll and Sutherland Highlanders (Princess Louise's), with the first battalion formed in August AD1914 and the second in September AD1914. The first was moved to Bedford before being transferred to the First Highland Brigade, who were sent to France in May AD1915. The second battalion appears to have remained in Dunoon between September AD1914 and early May AD1915, when they were moved to a new base near Hawick.
- 2.6.16 Another crucial element in the defence of the Clyde coast ports was the creation of an anti-submarine boom which traversed the Clyde at its narrowest point between the Cloch Lighthouse, near Gourock, and Dunoon. This comprised a heavy net which blocked underwater access to the river. A similar defence was used in the Second World War, but the anchoring point on the Dunoon side was changed, located closer to the castle hill. The presence of the boom caused disruption to shipping in the Clyde, with the steamer services reorganised so they either operated north or south of the boom (<https://www.secretscotland.org.uk/index.php/Secrets/ClochBoom>: Accessed 27th April 2023). 'DELS' ('Defence Electric Lights') had also been installed on the summit of the castle hill as a means of illuminating potential targets for artillery, with defence of the boom a priority.
- 2.6.17 When Britain declared war on Germany in AD1939, the boom was rapidly re-instated and Dunoon once again became an important site for the placing of defensive installations. The former site of the 'DEL' on the castle hill was re-used for the placing of a coastal battery in February AD1940. Another gun was added elsewhere in Castle



Gardens, on a site now occupied by a Crazy Golf course. Work carried out as part of the Defence of Britain project has recorded a detailed description of how the site was configured (see Canmore ID: 106362). In addition to the battery itself, several ancillary structures were present. Two sleeping huts and a cookhouse were located to the south west of the castle hill, with the main magazine and the oil and petroleum store sited at the foot of the west flank of the hill. A store and office was placed in a pre-war building which later became the Waterfront Café. This is the only structure which remains, with only fragmentary traces of foundations surviving elsewhere.

- 2.6.18 Following the widespread destruction suffered both by the Clyde valley in the spring of AD1941 and English cities such as Coventry and London in the autumn of AD1940, the existing anti-aircraft guns at Dunoon were augmented by a wider network of anti-aircraft batteries located across the country. These included a battery sited slightly to the north of Dunoon at Sandbank, named 'AA Battery Dunoon.' This took the standard form for one of these sites, comprising four gun emplacements, a command centre and a radar mast.
- 2.6.19 Equipped with searchlights as well as two 4.7 inch guns, this facility also functioned as the inspection post for ships requiring passage into the Clyde through the boom. Together, the various coastal batteries and anti-aircraft batteries meant that the east coast of the Cowal peninsula was well-placed to provide defensive fire over this part of the Clyde estuary. From 1942, however, the threat of airborne attack appears to have receded, with AA Battery Dunoon recorded as being unarmed from then on to the end of the war.
- 2.6.20 With the end of the Second World War, Dunoon's popularity as a local holiday destination was restored. Its success was short-lived, however, with the rise of the package holiday in the AD1960s and 70s. The town, however, retained its strategic importance during the Cold War era, with the retention of the submarine base in the Holy Loch which in AD1961 became the United States Navy's Fleet Ballistic Missile (FBM) Refit Site.
- 2.6.21 Holy Loch was chosen for this location as it met several criteria: a sheltered anchorage, close proximity to a major international airport, and nearby shore facilities which could provide accommodation for service personnel and their families. The town of Dunoon subsequently became home to a number of United States naval personnel, with a number of houses built to accommodate them in the decades before the base ceased operation in AD1992.

3 PROJECT AIMS AND OBJECTIVES

3.1 Project aims

- 3.1.1 The principal aims of the project at Dunoon Castle were to further current understanding about the nature and extent of the remains of the scheduled monument, to clarify the presence and absence of potential archaeological remains within the site, and to provide an updated measured dGPS survey and photographic record of the extant earthworks at the site. A key outcome of the project has focused on raising awareness to the archaeology of the castle site within the local community,



working closely with the Castle House Museum team to build engagement with the site and promote opportunities to learn about the past through participation.

3.1.2 The works included:

- Project set-up, risk assessment and a WSI
- Historic background and archive review
- Earth resistance and magnetometer survey of approximately 0.95Ha
- A measured dGPS survey of extant earthworks
- Photographic record of standing building remains
- Production of a full scientific report including georeferenced greyscale plots of the data, interpretative figures and photographs.

3.1.3 The site is located on a sloped mound and contains some earthworks and standing building remains relating to below ground medieval, Victorian and military remains. By conducting earth resistance and magnetometer survey on foot over as much of the accessible areas of the castle mound and grounds as possible, it was hoped that a detailed image of the below-ground remains could be ascertained. This, combined with a dGPS survey and photographic record, provides an up-to-date record of the current preservation of the site, and adds to the existing description of the monument. The site has been disturbed in more recent years in its use as a public space and park relating to the Castle gardens, including paths, steps and memorials. There is likely to be some modern magnetic disturbance visible in the dataset.

3.2 Research aims and objectives

3.2.1 The overarching aim of the research was to define and characterise the physical extent and preservation of the site, including the castle and any remains visible across the location and its immediate environs. A planned program of geophysical and topographic survey aimed to obtain baseline data that will facilitate the future management, presentation, and enjoyment of this important monument. The investigation provided a broader understanding of the castle and its immediate environs, as well as the historical and cultural context of the Castle Gardens.

Aim 1 – Using nonintrusive techniques, identify the physical extent and character of archaeology of the castle mound and Castle Gardens

3.2.2 Fulfilling this aim involved nonintrusive investigation including desk-based research, geophysical prospection and topographic earthwork survey, and photographic record of the extant structural remains. The purpose of this aim was to define and establish the precise physical extent and condition of the site, observing the standing remains of the medieval castle and later uses of the site, and recording earthworks across the immediate landscape context. These low impact tools will add further to our understanding of the castle and its environs by addressing the following questions:

- Q1: What features can be identified in the immediate landscape of the site which may inform our understanding of the development, chronology and layout of associated structures?



- Q2: Can we identify any phasing from the survey data or photographic record indicative of an extended period of use, and relate that to the historical narrative of the site?
- Q3: Can the layout of the castle buildings across the castle mound be established by survey and recording?
- Q4: Can we establish the current preservation of the archaeological remains and establish any risks to the monument?
- Q5: Can we identify ways to improve access and enjoyment of the monument for local people and visitors to the area?

Aim 2 – To engage and train local people in the research of Dunoon Castle and the Castle Gardens, and provide opportunities for public engagement

3.2.3 This aim is integral to the project and includes delivering a programme of public participation and engagement. In summary, the project offered a range of opportunities for local community members to get involved, and provided training in heritage skills linked to the survey of the site.

- Q6: To further the study, understanding and enjoyment of the Garnock Connections Study Area by interested individuals and community groups.
- Q7: To provide training, guidance and technical support to members of the community in the methods and techniques used in archaeology and the investigation of the historic environment

Aim 3 – Making recommendations, analysis and publication

3.2.4 This aim requires all data from Aims 1-2 to be collated, with an integrated synthesis of the archaeological resource at the site as documented through survey. Recommendations will be made to conserve, enhance and interpret the heritage significance of the Castle and Castle Gardens, proposing recommendations for future fieldwork stages, and/or analysis, publication and final archiving, as appropriate. An evaluation of public engagement and participation will provide a summary of the impact of the project on the local community, outlining outcomes for both local people, the community and the heritage of the site.

- Q8: What can an integrated synthesis of the results of this project and studies of contemporary regional sites tell us about the castle site and its setting?
- Q9: What recommendations can be made to protect, conserve and enhance the site?
- Q10: What recommendations can be made to enhance public awareness, understanding and engagement with the site in future?
- Q11: What strategies should be put in place to protect extant archaeological remains and deposits at Dunoon Castle and the Castle Gardens for the enjoyment of future generations?



3.3 Regional Archaeological Research Framework for Argyll

3.3.1 The Regional Archaeological Research Framework for Argyll (RARFA) is a summary of archaeological knowledge and understanding of Argyll to the end of 2016; specifically, it is a resource and forms a strategic summary of key questions for future research.

3.3.2 The research undertaken as part of the geophysical and building surveys at Dunoon Castle is key to helping to understand the historic environment of Argyll and Bute and to understanding the lost history of the castle.

3.3.3 The research will in particular feed into the understanding of Section 9 of the RARFA – *The Archaeology of Medieval Argyll (AD 1100 – AD 1600)*. The document states that ‘Secular lords used an increasingly nuanced set of monumental and architectural motifs to demonstrate their social position...they were amongst the first to adopt castle building techniques in places where they would interact with outsiders and most needed to express their dominance, especially near harbours’ (Raven, J. 2017).

3.3.4 Research into Dunoon Castle therefore may help to answer the following research questions:

- The understanding, dating and phasing of different castle building traditions (this is at the most basic level but also includes; what are the different socio-cultural messages being mediated, are there different castle building traditions and what does this reflect, what does ongoing development tell us about changing patterns and expressions of lordship?)
- The use of timber buildings and external buildings at castle sites
- The layout and uses of internal spaces within castles
- Genealogies of place – length of occupation, re-use and/or continuity of use, links to people, families, etc.

3.3.5 The geophysical and buildings survey at Dunoon Castle, including the background research and LIDAR analysis contained within this report, has the potential to uncover evidence and deliver insights towards answering some of these research questions.

4 DUNOON CASTLE – CHARACTER, MORPHOLOGY AND PHASING

Louise Turner

4.1 Dunoon Castle: character and morphology

4.1.1 Documentary evidence tells us that the castle was established c. the second decade of the 13th century AD. Its physical remains now survive as a modified natural mound measuring 27m high, with a roughly oblong curtain wall measuring 26m north west to south east by 18m transversely occupying the summit area (RCAHMS 1992, 273), An area of flat ground lying to the north west has been interpreted as a possible bailey, with the remains of a possible ditch separating the ‘bailey’ along the north west edge of the mound (RCAHMS 1992, 273).



- 4.1.2 The co-existence of a raised mound and an adjacent area of flat ground (the 'bailey') immediately conjures up the image of a motte-and-bailey castle. In Scotland, this form of castle, characterised by a timber keep occupying an elevated position overlooking an enclosed area of service buildings, was characteristic of the reign of David I (AD1124-1153). If Dunoon Castle was indeed an example of this type, then occupation would be pushed back by around a century. This is not impossible in chronological terms, with many of the earth-and-timber castles subsequently replaced with stone keeps and enclosure walls. However, while the RCAHMS Inventory makes mention of a 'bailey,' it never explicitly refers to the castle hill as a motte.
- 4.1.3 Dunoon was included on a distribution map of mottes in Scotland in a 1975 publication (Stell 1975, reproduced in McNeill 2020-1, 136) but it is unclear whether this map refers to the castle hill itself or the large natural mound named Tom a Mhoid which is located close to the castle and which has traditionally been interpreted as a moot hill (Canmore ID: 40743) or alternatively as a motte. More recent advances in castle studies appear to discount this possibility, with only one individual arguing that Dunoon Castle falls close to this date range. This is Pallister (Pallister 2005), who suggests that Dunoon Castle was built by the Norseman Magnus Barefoot in AD1050. This date would predate even the earliest motte-and-bailey castles in England (the form spread rapidly across England following the Norman invasion of England in AD1066), and it would certainly pre-date the programme of castle-building instigated by King David I of Scots. Changing attitudes towards the inclusion of Dunoon Castle amongst the wider group of Scottish mottes are also evident in the work of Rennie, who in 1993 described the castle as a 'scarped motte' (Rennie 1993, 76) but in 2006 had revised its description to 'motte-like' (Rennie 2006, 82).
- 4.1.4 Recent interpretations of Scottish castles demonstrate an overall consensus which instead interprets Dunoon Castle as representative of a castle group known as the 'castles of enclosure.' This term equates to a group of castles discussed by MacGibbon and Ross in their definitive AD1890s work *The Castellated and Domestic Architecture of Scotland* (MacGibbon and Ross 1897-92a). These authors identify in particular an early episode of castle-building carried out by successive Scots kings in the North and West during the 12th and 13th centuries AD. They describe the thirteenth century castles as follows: 'The general idea ... is that of a large fortified enclosure. The plan is usually quadrilateral, but more or less irregular, so as to suit the site.' (MacGibbon and Ross 1887-92, 64). The internal arrangement of these structures, they argue, is impossible to establish as the earliest phases are now lost.
- 4.1.5 The construction of Dunoon Castle has been attributed to the Stewarts, but in general form, its surviving remains fit in well with this classification. In location, however, it differs to some extent. MacGibbon and Ross point out that the 'sites selected for these castles vary greatly. They are, however, generally built on rather low-lying ground, and trust more to water than to lofty sites for their security.' (MacGibbon and Ross 1887, 64). These sites may include islands, or locations next to rivers, with defences augmented through the sinking of a ditch or even a moat. Some examples – in particular Castle Roy, Dunstaffnage and Tarbert – have however been placed on low rocky eminences or mounds (MacGibbon and Ross 1887, 64) and we can perhaps envisage Dunoon Castle as fitting nicely within this particular subgroup.

- 4.1.6 While the basic groupings established by MacGibbon and Ross have been largely retained, there is increasing recognition that equating a simple form and layout with an early date may not always be appropriate and that castle typologies have to be approached more critically. One particularly important contribution has been made by Caldwell and Ruckley (Caldwell and Ruckley 2005) who undertook a detailed study of castles associated with the Lordship of the Isles. They examined masonry styles and floor plans of various castles located across Argyll and the Isles, with a view to identifying local trends and characteristics. This work was carried out on the basis that it might be possible to differentiate castle structures built at the behest of the Lords of the Isles from those built through the patronage of the Scots Crown.
- 4.1.7 Dunoon Castle is not, unfortunately, listed amongst the castles which were included in this study. Its upstanding remains are too sparse to be informative, with an added difficulty provided by the fact that the surviving walls appear to have been refaced in modern times (RCAHMS 1992, 273). The study is also impeded by the fact that early documentary evidence relating to the Lordship of the Isles is sparse, with most of the castles studied appearing to date to the fourteenth or fifteenth centuries.
- 4.1.8 Most analyses concur that Dunoon Castle represented a simple form of castle, the detailed layout of which remains unknown. In this respect, it seems quite appropriate to include it amongst the castles of enclosure, on the basis of both its morphology, and its early date. A recent trend amongst the study of Scottish castles shows, however, a move away from the overly restrictive focus on typology, with a focus more upon function. This is best demonstrated by the growing recognition of a category known as the 'galley castle,' a type commonly found in North West Scotland and associated with areas steeped in Norse and Gaelic influence. Galley-castles occupy maritime locations; they may be accessed from the sea as well as from the land, they will have facilities for safely keeping a boat or ship in their immediate vicinity and they often afford more extensive views out to sea than they do inland. Dunoon Castle neatly ticks all these boxes, although any Norse association is questionable and its lack of intervisibility with other Clyde Coast castle sites is unusual for a galley-castle. Nonetheless, it has been included amongst discussions of galley-castles (Oram 2017) and mention of provision of a galley in two documents dated AD1550 and AD1571 further strengthens the association.
- 4.1.9 Before leaving this discussion of the castle's character, one last account should be mentioned, even though it does not conform to historic mapping or to the layout of the castle as it appears today. It is, however, perhaps worthy of mention as it dates to the period immediately following the excavation of the castle site during the early nineteenth century AD. This was an entry in *Groome's Gazetteer*, which described the castle as having had three towers (Groome 1882-4; Accessed 19th April 2023.) This implies a much more complex structure than has otherwise been envisaged for the castle, and it is difficult to reconcile this version with the level of information that is currently available.

4.2 Phase 1: Prehistoric and Roman – Early Medieval

- 4.2.1 No evidence for prehistoric, Roman or early medieval activity has as yet been identified on the site of the later castle or in the vicinity of modern Dunoon. Field



monuments have been identified running along the line of Glen Loan, which links the heads of Loch Striven and Holy Loch, with further potential examples running down the west edge and the south end of the Cowal peninsula. Despite antiquarian interest in the area since the eighteenth century AD, no finds of prehistoric artefacts have been recorded, either in or around Dunoon. So far, the evidence suggests that local prehistoric activity was sparse and low intensity.

4.2.2 The Cowal Peninsula formed part of the gaelic-speaking Kingdom of Dalriada during the early medieval period and was particularly linked with the McKerrachers, who later changed their family name to 'Lamont.' The place name 'Dunoon' is of gaelic origin, and one of its translations, 'the place of strangers,' may refer to an incoming group who established themselves on the castle hill because it was a place of strength. As yet, no archaeological evidence has been found which supports this possibility. There is, however, widespread evidence for ecclesiastical activities, both in the vicinity of modern Dunoon and further north at Kilmun. These sites are consistent with a peripheral location well away from political centres.

4.3 Phase 2: Medieval and Post Medieval

4.3.1 This phase saw increasing efforts on the part of Scots Crown to impose authority on Argyll, with a number of castles having their origins early in the medieval period. Dunoon Castle appears to be one of these, interpreted by most authorities as representative of a group known as the 'castles of enclosures' ascribed a date range between the twelfth and thirteenth centuries AD. In the case of Dunoon Castle, documentary evidence suggests a construction date prior to c. AD1257.

4.3.2 This is the first phase for which we have actual structural evidence for activity on the castle hill. This takes the form of fragmentary walling, partial scarping of the hill, and a ditch separating the hill from the level ground beyond on its NW side. It is likely that the walling has been refaced in recent times, and the internal layout of the castle remains unknown.

4.3.3 The castle passed from the Lamonts at an early date with the Campbells of Argyll installed there from the mid-fifteenth century AD onwards. This caused ongoing friction with the Lamonts who retained possession of the nearby lands of Toward. The castle saw several episodes of action during its history, including seizure by forces loyal to Edward Balliol in the Scottish Wars of Independence and by the Earl of Lennox during the regency of Mary de Guise. Mary Queen of Scots also visited there during a Royal progress undertaken to Argyll early in her reign. Throughout this period, Dunoon's strategic location in the Firth of Clyde was integral to the role it played in historic events, suggesting that the river crossing between Dunoon and Gourrock had become a vital communications link.

4.3.4 The castle was abandoned c.AD1650, ostensibly in the aftermath of a bloody massacre carried out by the Campbells upon the Lamonts of Toward during the late AD1640s. The castle structure was supposedly dismantled and its building materials used to build a new country house at Inellan, but historic mapping still suggests that the castle survived in some form as late as the AD1770s.



4.4 Phase 3 Nineteenth Century AD

- 4.4.1 AD1822 marked a significant milestone for both Dunoon Castle itself and for the wider town, which saw its fortunes dramatically change for the better throughout the remainder of the nineteenth century AD. This was the year in which James Ewing (latterly James Ewing of Strathleven) took possession of Castle Hill and the level ground which supposedly comprised its 'bailey,' using this ground as a backdrop for a magnificent castellated mansion designed by renowned Glasgow architect David Hamilton. The balance of the ground was transformed into landscaped gardens. Ewing's activities, coupled with much-improved transportation links from industrial towns such as Glasgow and Greenock resulted in Dunoon's increasing popularity as a holiday destination for the wealthy and middle classes. Summer residences were built there in profusion, with day trips 'doon the water' becoming more accessible for the working classes as the nineteenth century AD progressed. This phase saw Dunoon given burgh status, while the site of the castle became incorporated into an enclosed area of landscaped gardens which were eventually opened to the public. The area retains this character to this day.

4.5 Phase 4 Twentieth Century AD

- 4.5.1 The strategic importance of Dunoon Castle came to the fore once again when war broke out with Germany in AD1914. Dunoon Castle became the site of a searchlight and battery built to protect an anti-submarine boom placed across the mouth of the Clyde at this, its narrowest point. The Dunoon Castle installation formed part of a wider network of defences which included the Arnhallow Blockhouse, located further inland to the S on the Cowal peninsula.
- 4.5.2 Dunoon also provided two battalions of infantry, with traces of training trenches still surviving in places outwith the town.
- 4.5.3 The onset of World War 2 saw the castle hill used once again as the site of a searchlight and coastal battery, once again associated with an anti-submarine boom which extended across the Clyde between Dunoon and the Cloch Point, near Gourrock. Following the Clydebank Blitz in AD1941, the existing batteries were augmented by a further anti-aircraft battery located to the north of Dunoon, with Holy Loch also used as an anchorage for submarines.
- 4.5.4 The installations on and around the castle hill were demolished soon after hostilities ceased but traces of foundations survive which could derive from AD1917 onwards.
- 4.5.5 Although the cessation of World War 2 meant the end of Dunoon's direct involvement in military activities, the town retained an indirect link with the military during the Cold War period. For roughly three decades between the AD1960s and the AD1990s, Dunoon expanded further through the construction of military houses built for American naval personnel who worked at a US Navy submarine refitting base sited at the former World War II submarine base in Holy Loch.



4.6 Conclusion

- 4.6.1 Dunoon Castle has a long and complex history linked inextricably with its prominent strategic location in the Firth of Clyde, The site itself retains its nineteenth century character, having been retained within a larger area of landscaped gardens. Extant remains survive on the castle which relate directly to the medieval castle (Phase 2) and the twentieth century AD coastal defences (Phase 4).
- 4.6.2 More detailed examination of the twentieth century AD structures might enhance our knowledge of the Phase 4 structures. Further investigation has the potential to explore whether there are as-yet undiscovered features relating to prehistoric and early historic occupation of the castle mound (Phase 1), or evidence relating to the internal layout of the medieval castle (Phase 4). There is also the potential to further refine our understanding of how the configuration of the gardens and landscaped grounds may have changed from the early nineteenth century AD to the present (Phase 3).

5 METHODOLOGY

5.1 Introduction

- 5.1.1 An archaeological geophysical magnetometer and earth resistance survey was undertaken across 0.22Ha of land around Dunoon Castle within the castle gardens (Figure 9). The survey was undertaken by an accredited surveyor and members of the local community and took three days to complete. Occasional trees, park benches, bushes and park footpaths presented some obstruction to survey.

5.2 Magnetometer survey methodology

- 5.2.1 Magnetometer survey is generally considered as the quickest and most widely used geophysical survey technique for the detection of buried archaeological remains. It is efficient for detecting features that have been thermoremanently magnetised, such as kilns, as well as ditches and pits that have been backfilled, due to the relative presence or absence of enhanced magnetic material due to human activity.
- 5.2.2 The survey grids were set out on an individual basis, using a best-fit methodology and trigonometry utilising 60m measuring tapes, with bamboo canes used as temporary grid markers (Figure 9). Three grids were set out to the south of the Castle Museum (Grid 1), two to the south of the tennis courts (Grid 2 and Grid 3), and one to the north of the tennis courts next to the church graveyard (Grid 4). The grid corners were measured in with a Trimble R10 dGPS utilizing VRS now corrections with an accuracy of <0.10m. Landmarks and reference points were surveyed with the GPS by way of control points.
- 5.2.3 The magnetometer survey was undertaken using a Bartington Grad601-2 magnetic gradiometer. The Bartington Grad601-2 is a dual sensor instrument, incorporating two Grad-01-1000 sensors set 1m apart. The site was surveyed east-west in the southern half and north-south in the northern half in a grid-like pattern within 20m-by-20m grid squares, with readings taken every 0.25m along traverses set 1m apart with a zig-zag patterning. The gradiometer was balanced on a magnetically quiet point within the



site before survey commenced and again before the afternoon's survey. If significant drift occurred, the machine was re-balanced.

5.3 Earth Resistance survey methodology

5.3.1 The earth resistance survey was conducted using an RM15 Resistance Meter utilizing a multiplexor (Geoscan Research). The set-up comprised of three probes in a parallel twin electrode configuration, which are capable of detecting archaeological remains to a depth of 1m below the surface. The survey was conducted along an east-west alignment in a zig-zag fashion across 20m by 20m grid squares, utilising a sample interval of 0.5m with a traverse interval of 0.5m. This aimed to provide a high-resolution dataset in order to clarify the extent and nature of any archaeological remains suitable for detection by earth resistance.

5.3.2 The survey grids were set out on an individual basis, using a best-fit methodology and trigonometry utilising 60m measuring tapes, with bamboo canes used as temporary grid markers (Figure 9). Two grids were set out to the north of the tennis courts next to the church graveyard (Grid 1 and Grid 2), two were set out to the south of the Castle Museum (Grid 3 and Grid 4), and one was set out to the south of the tennis courts (Grid 5). The grid corners were measured in with a Trimble R10 dGPS utilizing VRS now corrections with an accuracy of <0.10m. Landmarks and reference points were surveyed with the GPS by way of control points.

5.4 Geophysical Data processing

5.4.1 The magnetometer data was downloaded using Bartington's Grad601 download software and then imported into Geoplot v4.0 (Geoscan Research) for data processing. For the minimally processed data plot, the data was de-spiked and a zero mean traverse step was applied, and the data was exported as a greyscale plot at a scale of -10nT to 40nT due to the strong underlying geology affecting the results. An XY trace plot of the raw data was also exported to aid in identifying anomalies for the interpretation, and this has been presented alongside the minimally processed data (Figures 10-11).

5.4.2 For the processed and filtered data plot, a low pass filter was applied, followed by an interpolation, and the data was exported at a scale of -10nT to 30nT due to the underlying geology. This processed plot is presented alongside an interpretation of the magnetometer survey results (Figures 12-13).

5.4.3 The earth resistance data was downloaded and processed using Geoplot v4.0 (Geoscan Research). The data was de-spiked and a high pass filter was applied, followed by an interpolation along the X and then the Y axis. The data was exported as a greyscale plot at a maximum scale of -160 ohms to 198 ohms and has been presented alongside an interpretation of the results (Figures 14-15).

5.4.4 The greyscale plots of each set of data were combined with GPS points in order to produce georeferenced figures in QGIS. The interpretations of the data were created in QGIS as line and polygon data and are presented as interpretive figures.



5.5 Topographic survey – Digital Terrain Model

- 5.5.1 An aerial photogrammetric survey was undertaken by SureShot drone services encompassing approximately 0.06km² including the remains of the castle mound, Castle House & Gardens and adjacent structures immediately to the north. In total, 596 .jpg images were obtained through a pre-programmed overlapping grid pattern in an automated flight mission over the survey area. An image overlap rate of approximately 80% was utilised and image EXIF data was stored to provide X,Y and Z co-ordinates for georeferencing purposes.
- 5.5.2 The images were processed using Agisoft Metashape Professional to create a 3D photogrammetric model of the survey area. Images were aligned using the software's default settings with a 100% alignment success rate. Image tie points were then filtered by reconstruction uncertainty, reprojection error and projection accuracy, whilst optimising camera locations at the end of each filtering process. A high quality 3D mesh was then created from the image depth maps using a high face count. Textures were added using a size/count ratio of 4096x24 using the software's default settings.
- 5.5.3 A Digital Elevation Model (DEM) was produced from the 3D mesh at a resolution of 2cm per pixel (8,890x14,155 pixels). The DEM was then classified by ground points and re-run to produce a Digital Terrain Model (DTM), which was georeferenced into QGIS software and used for subsequent topographic analysis and regression of historical earthwork mapping.

5.6 Photographic survey

- 5.6.1 A photographic record and description of visible historic building remains was undertaken by historic buildings archaeologist, Louise Turner, to provide a complete visual record of the site. A photographic record of selected elevations comparable to an enhanced record (as detailed in ALGAO:Scotland 2013) was created. This work focused on extant medieval remains visible on the south side of the castle mound, but also included more recent remains on the platform, including military elements visible as areas of concrete. Recording involved elements of:
- 5.6.2 a photographic record of the visible fabric in context, including external and internal elevations together with a general plan shot of each compartment; and
- 5.6.3 a written record was compiled using pro forma building recording sheets including comments on the condition, construction techniques, materials, fixtures and fittings and interpretation of function.
- 5.6.4 On conclusion of this recording, the ascription of phasing within the fabric of the structure and hence significance was reviewed and enhanced. The survey built on desk-based research which has collated an archaeological and historic background to the site, with an aim to identifying specific phases of use from the medieval to modern eras.



5.7 Participation activities

- 5.7.1 Participation and engagement are integral to the successful delivery of the project aims, and a programme of public events and volunteering opportunities will be delivered. The project will offer a range of opportunities for local community members to get involved and learn more about the heritage of Dunoon Castle and the Castle Gardens. Working closely with the wider project team and other local stakeholders, including the Castle House Museum, participation opportunities will include historic building recording, geophysical and topographical survey. Our activity programme will include:
- 5.7.2 Historic building recording – Participants will learn how archaeologists use digital photography to understand and record the phases of a historic structure. Participants will use proforma recording forms to describe features within the Castle Mound and Castle Gardens and support the written description with a visual photographic record.
- 5.7.3 Geophysical survey – Participants will be taught how to undertake systematic geophysical survey using magnetometry and resistivity over an established grid. This workshop will provide the opportunity to gain an understanding of how geophysical techniques inform our understanding of the physical extent and character of sub-surface archaeological remains.

5.8 Health and safety

- 5.8.1 All work was carried out following the creation of a Risk Assessment and Method Statement and in accordance with its company Health and Safety Policy, to standards defined in The Health and Safety at Work etc. Act 1974, and The Management of Health and Safety Regulations 1992, and in accordance with the SCAUM (Standing Conference of Archaeological Unit Managers) health and safety manual Health and Safety in Field Archaeology (1996), and DigVentures Health and Safety Policy.

6 GEOPHYSICAL SURVEY RESULT AND DISCUSSION

6.1 Data presentation

- 6.1.1 The gradiometer data have been presented as greyscale plots. An XY trace plot of the raw data alongside a greyscale plot of the minimally processed data has been presented in [Figure 10](#) and [Figure 11](#), with a greyscale plot of the processed and filtered data alongside an interpretation of the data in [Figure 12](#) and [Figure 13](#).
- 6.1.2 The earth resistance data have also been presented as greyscale plots, with the processed and filtered data shown alongside an interpretation of the data in [Figure 14](#) and [Figure 15](#).
- 6.1.3 Key anomalies have been given a unique ‘anomaly ID’ in the illustrations and report text for the purpose of the discussion. The Anomaly IDs are listed for reference in [Appendix B](#).



6.1.4 The topographical earthwork survey has been presented as a georeferenced DTM generated from the aerial 3D photogrammetric drone survey of the castle and its environs (Figure 16). It can be seen as an illustration with the geophysical magnetometer and resistivity surveys in Figure 17 and Figure 18.

6.2 Results – Magnetometer survey (Figures 10 - 13)

Grid 1

6.2.1 Three features of a possible archaeological origin have been identified in Grid 1. A strong positive broad curvilinear trend is visible in the north of the dataset to the west of the Castle Museum [M1 & M2]. The trend runs towards the south-west before turning towards the south-east, and a short break between anomalies [M1] and [M2] could signify an entranceway. The trend is suggestive of buried remains such as a foundation wall, and they could relate to a former garden wall adjacent to the former conservatory and kitchens.

6.2.2 In the centre of the dataset, a sub-circular positive anomaly around a negative anomaly has been identified [M3]. This trend was adjacent to a large tree and could relate to a seat or ornamental fence, or a buried garden feature.

6.2.3 In the south of the dataset, a broad trend of mixed positive and negative anomalies is visible curving around the base of the castle mound [M4]. The trend aligns with current paths running through the gardens and up to the mound. It also continues south-west through a lawned area which could either relate to the material making up the mound, or a former path which is now no longer extant. A similar trend of mixed anomalies runs across the centre of the dataset from east to west which also relates to paths running through the grounds [M5].

6.2.4 Broad mixed negative and positive anomalies around the castle museum in the north of the dataset relate to further pathways and walls around the former conservatory area [M6].

6.2.5 A couple of ferrous anomalies likely relate to modern detritus in the topsoil.

Grid 2

6.2.6 In the grid located to the south-west of the tennis club, no anomalies of a possible archaeological origin were identified. The dataset is dominated by trends relating to landscaping of the grounds, such as a path and associated levelling material [M7] and a boundary wall alongside the road [M8]. A couple of ferrous anomalies likely relate to modern detritus in the topsoil.

Grid 3

6.2.7 The grid of data adjacent to the tennis club and the tennis courts similarly contains no anomalies of a possible archaeological origin, and the dataset is dominated by trends relating to modern activity. Along the south-eastern boundary, a broad trend of mottled positive and negative anomalies likely relates to landscaping and materials relating to the path and wall it lies adjacent to [M9].



- 6.2.8 Alongside the tennis court, a very magnetic positive and negative long linear anomaly could relate to a modern service, such as pipes running from the museum or tennis club [M10].

Grid 4

- 6.2.9 Four trends have been identified in Grid 4 which have a possible archaeological origin. In the north-west of the data, a large curvilinear positive and negative anomaly [M11] falls within the location of a 'fire station' as indicated by the 1863 Ordnance Survey 25 inch to the mile map (<https://maps.nls.uk/view/82864680>). It is not clear if the fire station was a building or a hydrant, but it is likely that the anomalies seen in the data in this area relate to material left following its demolition. A similar anomaly to the north-west of this [M12] could also relate to this.
- 6.2.10 In the south-west of the dataset, a square positive anomaly can be seen [M13] alongside a curvilinear and linear trend [M14]. These anomalies fall within an area which used to comprise the back garden plots for terraced housing marked as 'Milton's property' and possibly 'Dunevan's property' on the 1824 disputed boundary map (Figure 6, Image 2), adjacent to the 'Church of Dunoon'. They could relate to the foundation wall around the plots as well as rubble left behind after their demolition.
- 6.2.11 Other anomalies visible in the dataset for Grid 4 relate to landscaping of the castle gardens, including a tarmac driveway running north-west to south-east through the centre of the data [M15] and landscaping materials combined with a magnetic reflection from adjacent tennis court fencing running along the south of the dataset [M16].

6.3 Results – Earth Resistance survey (Figures 14 - 15)

Grid 1

- 6.3.1 Two features have been identified in the data which could have archaeological origins, and which also correlate with features identified in the magnetometer survey data. A large area of high resistance [R1] adjacent to an area of low resistance [R2] correlates with magnetometer trends [M11] and [M12]. These trends are located in the site of a 'Fire Station' as indicated by historical mapping, and likely are a response of below ground remains such as rubble from former building foundations.
- 6.3.2 A large spread of medium – high resistance to the east of these [R3] lies adjacent to a path leading to the graveyard, and could either relate to this or further below ground remains relating to the fire station.
- 6.3.3 Other areas of high and low resistance in the data plot likely relate to tree roots and materials from landscaping and levelling the castle park grounds.

Grid 2

- 6.3.4 The dataset for Grid 2 also contains a number of anomalies which correlate with features identified in the magnetometer survey data.



- 6.3.5 In the south-east of the data, a linear trend of high resistance running north-east to south-west [R4] correlates with the location of a former footpath running through the grounds, as seen on historic Ordnance Survey mapping from 1888 (NLS, 2023).
- 6.3.6 In the west of the dataset, an L-shaped area of high resistance [R5] is visible next to an amorphous area of high resistance [R6]. These correlate with magnetometer trends [M13] which are thought to relate to former garden plots. The trends in the magnetometer data likely relate to a spread of buried rubble, and the trends visible in the earth resistance likely relate to buried wall foundations, or the robbed out trenches of the foundations which have been backfilled with rubble. A linear bank was visible in the topography in this location, which is also supportive of the suggestion of buried wall remains.
- 6.3.7 Three areas of low resistance, one next to an area of high resistance [R7] correlate with the location of trees in the gardens. The anomalies are a response to moisture held in the tree roots and surrounding soils.

Grid 3

- 6.3.8 Three anomalies have been identified which could have archaeological or historical origins.
- 6.3.9 Immediately to the south of the Castle Museum and the former greenhouse, a group of rectangular medium-resistance trends are visible [R8]. It is possible that these could relate to former garden features, such as flower beds or raised beds, as the curve of the anomalies appears to follow the current path and the stone wall around the former greenhouse.
- 6.3.10 To the east of these anomalies, a sub-circular medium-resistance anomaly has been identified [R9]. From studying historical maps, it is possible that this anomaly could correlate with the location of a former flag pole or monument. However, the trend is very weak and it is not expected that substantial remains are present below the ground.
- 6.3.11 In the south of the dataset, a sub-circular high resistance anomaly surrounded by a mixed high and low resistance area is visible [R10]. Given the anomaly's sub-circular appearance, it could relate to the footings of a former monument (such as a flag pole) or a stone lined well.
- 6.3.12 Areas of medium-resistance and low resistance throughout the rest of the dataset relate to footpaths running through the gardens and flagstones.

Grid 4

- 6.3.13 In the grid immediately adjacent to the castle museum, it was hoped that the data would clarify a band of magnetic material identified in the magnetometer survey [M1] which was thought to relate to a possible wall. It is possible that the area of low resistance identified in the east of the dataset [R11] could relate to this, as well as some high resistance trends adjacent to it [R12] but the anomalies do not correlate exactly.



Grid 5

- 6.3.14 Two circular areas of low resistance have been identified which could be archaeological in origin [R13]. Measuring approximately 3m each in diameter, it is possible these could relate to the footings for former gate posts around the entranceway to the castle grounds or tennis courts. Cist burials were discovered in this locality years ago, and it is also possible that these very low-resistance anomalies could relate to a response of the resistance meter hitting a large stone slab with water pooled on top of it.
- 6.3.15 Areas of high resistance to the north of these follow the pathway to the tennis club and likely relate to material from this.

6.4 Conclusions

- 6.4.1 The magnetometer and earth resistance survey results have identified a number of features which could relate to historical or archaeological features within the castle museum grounds. It is not thought that any of these features relate to Dunoon Castle or any ancillary buildings which may have once been present within the grounds. The grounds of the castle museum have been significantly landscaped over time and it is possible that any remains relating to the castle, aside to those on the mound, have been removed.
- 6.4.2 In the north of the site, anomalies relating to former garden plots have been identified, which comprise the possible outer garden wall and rubble or levelling material within the plots. A former path running through the grounds was also identified. Anomalies correlating with the location of a former 'fire station' have been identified to the north of this, which are suggestive of buried remains.
- 6.4.3 To the south of the castle museum, garden features and a possible well or monument footings were discovered, as well as a possible gatepost or grand entranceway to the gardens adjacent to the tennis club.
- 6.4.4 The magnetometer and earth resistance survey data have complemented each other, supporting the presence of some anomalies and confirming the presence of buried features. It is pertinent to note, however, that it is possible that the visibility of any further archaeological remains could have been obscured by landscaping efforts over the years, and that not all archaeological remains are suitable for detection through geophysical survey.

7 HISTORIC BUILDING AND TOPOGRAPHIC SURVEY

7.1 Historic buildings survey and observations

- 7.1.1 Although a detailed historic building assessment was not undertaken, a community workshop delivered during the heritage weekend gathered some interesting results. Led by Dr Louise Turner for one afternoon (23 July 2023), participants took part in providing a descriptive record and visual assessment of the castle monument,



describing and recording the different fabrics visible, and comparing visible remains to an existing survey undertaken by RCAHMS (1992).

7.1.2 Photographic survey and drawn elevations of the largest areas of accessible visible walling are available in [Figure 19](#) and [Figure 20](#) with their exact locations plotted on [Figure 21](#). Visual assessment of the remains identified four fabric types within the castle wall ruins:

- Fabric Type 1 (A) – homogenous large slabs in regular courses, which appear as facing in some areas. Very similar to the modern revetment wall material visible within the Castle House Gardens alongside paths on the south facing side.
- Fabric Type 2 (B) – Consisting mainly of rounded beach cobbles and rough material, making up rebuilt sections of walling.
- Fabric Type 3 – More consistently constructed walling of pink sandstone, most likely to represent original elements of the castle construction and date to 13th century.
- Fabric Type 4 – Late medieval construction with tapered pinning, likely to date to 15th century. Very similar walling visible at Kilmun Collegiate Church (mid-15th century).

7.1.3 [Figure 19](#) shows the south facing elevation on the south side of the castle near the modern public footpath and steps leading towards the top of the mound (Elevation 1). It shows key fabric elements representing a likely 15th century construction (Fabric 4) consolidated by modern concreted large slabs in regular courses (Fabric 1). Substantial obscuring vegetation is visible permeating throughout the fabrics observed.

7.1.4 [Figure 20](#) shows the north facing elevation of an area of consolidated walling to the northeast of the castle mound (Elevation 2). Fabric A; large slabs laid in regular courses, is of unknown date but similar in nature to Fabric 1 and has been consolidated by rounded beach pebbles set in modern concrete (Fabric B). Again, a substantial level of obscuring vegetation is visible growing throughout the fabrics observed, from above and below.

7.1.5 [Figure 21](#) shows the locations of these two elevations, the only two remaining elevations containing fabrics with the potential to relate to the castle itself that were safely accessible for recording and not fully obscured by vegetation. This is shown in contrast to the RCAHMS earthwork survey of 1974 where multiple upstanding wall elevations are shown to be extant.

7.1.6 [Figure 22](#) shows the georeferenced RCAHMS earthwork survey overlaying the orthomosaic generated from the 3D aerial photogrammetric model. This shows that a high proportion of the wall elements recorded in 1974 are no longer visible today.

7.1.7 [Figure 23](#) shows the RCAHMS survey overlaying the DTM model generated from the 3D mesh produced by the aerial photogrammetric survey. There are no elevation changes of any significance at the location of the earthworks recorded by the



RCAHMS. This indicates that vegetation and undergrowth has built up to such an extent that these walls can now be considered buried at or below the current ground level.

7.1.8 [Figure 24](#) re-assesses the 1974 RCAHMS survey by annotating the plan with the current level of visibility associated with the walls and features recorded on the original survey. Two categories of visibility were applied; those walls completely or substantially obscured by vegetation and those partially obscured. Eleven features are recorded on the survey as completely or substantially obscured (including those now considered at or below ground level), whilst seven features are recorded as partially obscured by vegetation. No walls are recorded as fully visible and completely free from vegetation.

7.2 Topographic earthwork survey and historic mapping

7.2.1 A Digital Terrain Model (DTM) was produced from the aerial 3D photogrammetric drone survey of the castle mound, Castle House & Gardens and the area in the immediate vicinity. The DTM shows changes in elevation at ground level to a very high resolution (2cm per pixel), highlighting changes in topography across the survey area. [Figure 25](#) shows part of the DTM results focused on the castle mound in its immediate environs.

7.2.2 The mound itself is 26m aOD at the top and sharply drops down to a minimum of 1m aOD towards the southeastern corner and beyond. The survey shows it located at the tip of a protruding ridge of high ground surrounded by much lower ground towards the shoreline. The construction of the castle mound is likely to have further emphasised this high point at a strategic location extending out from the Dunoon coastline. A number of banked earthwork features are visible surrounding the base of the mound, as highlighted in black in [Figure 25](#), that could possibly relate to its construction, further highlighting the defensive nature of the mound and the castle on top. However, these features could also relate to later activity associated with the landscaping and maintenance of the castle gardens.

7.2.3 These earthwork features must have been constructed before 1863, as they appear in the Ordnance Survey 25 inch to the mile map of the area from the same year ([Figure 26](#)) and a number of them also appear to line up with those identified on the DTM and orthomosaic ([Figure 27](#) and [28](#)). However, it is still feasible they relate to the construction of Castle House and the landscaping of the gardens by James Ewing in 1822.

7.3 Conclusions

7.3.1 The various types of fabrics identified as part of the historic building recording include some elements of possible 13th-15th century building material that may be contemporary with the construction and occupation of the castle. However, the most extensive of the surviving building fabrics observed appears to be that of modern, likely Victorian, consolidation. It is possible that such consolidation works were undertaken at or around the time at which Castle House & Gardens were being developed by James Ewing as land around the vicinity of the castle was redeveloped and incorporated into the new gardens.



- 7.3.2 The topographic earthwork survey conducted in the form of a DTM generated from the aerial 3D photogrammetric drone survey shows a number of earthwork banks and features also visible on the 1863 OS 25 inch to the mile map. Whilst these could relate to the original construction of the castle mound, it is also possible that they too are the result of landscaping during the redevelopment of the castle grounds by James Ewing in the 1820s.
- 7.3.3 It became clear whilst undertaking the historic building elevation surveys that the few surviving portions of accessible castle walls still visible today are gradually becoming obscured by vegetation overgrowth. Both of the drawn and photographed elevations (Figure 19 and Figure 20) showed signs of excessive vegetation growth permeating throughout the building fabric itself, suggesting it is only a matter of time before these areas become either fully or substantially covered and even damaged by overgrowth.
- 7.3.4 A comparison of the 1974 RCAHMS earthwork survey with the results of the DTM generated from the aerial photogrammetric survey also showed the deteriorating visibility of the surviving castle walls. Almost all of the walls visible in the RCAHMS survey are now either partially, substantially or fully obscured by vegetation with eleven of eighteen features recorded in 1974 no longer visible at all, indicating they now likely exist at or below ground level as a result of vegetation overgrowth. A more detailed and extensive historic buildings survey would be required to determine the full nature of the current state of preservation of the surviving building fabrics.

8 PUBLIC IMPACT

Harriet Tatton

8.1 Introduction

8.1.1 This section details a rapid assessment of the social impact for project participants of the Dunoon Castle geophysics and community heritage project, in particular the geophysics and heritage activities weekend that took place in July 2023. DigVentures defines social impact as a measure of the positive and negative primary and secondary long-term effects produced by the programme, whether directly or indirectly, intended or unintended, over and above what would have happened in the absence of the project initiative. Results were analysed using a bespoke social impact methodology, drawing on DigVentures' Theory of Change and Standards of Evidence framework (Wilkins 2019, 77; Wilkins 2019, 30).

8.1.2 Public engagement was integral to the successful delivery of the project aims of the Dunoon Castle. The project was designed to offer a range of opportunities for those local to Dunoon to get involved with.

8.2 Public programming

8.2.1 A carefully designed community excavation was programmed for the weekend of the beginning Friday 21st July through to Sunday 23rd July, creating different levels of participation opportunities from an evening talk through short taster sessions in geophysics and historic building recording, the events were suitable for both adults



and teenagers. There were also activities aimed at children and young families to encourage participants with a diverse range of ages to get involved with the project.

8.2.2 The all events were free of charge and places were available for those living locally to Dunoon to book. The activities for families and the evening talk by Dr Louise Turner were advertised locally and were run as drop-in sessions with no requirement for booking.

- Project launch and talk by Dr Louise Turner – Attended by 48 people
- Historic buildings recording – Attended by 5 people
- Geophysics taster days – Attended by 13 people
- Guided tours of Dunoon Castle – Attended by 18 people
- Send a Postcard from Dunoon family activity – Attended by 10 children
- Character Trail at Dunoon Castle – Attended by approximately 8 families

8.2.3 But any evaluation of social impact needs to go beyond a list of output numbers of participants and visitors (Gould 2016). DigVentures has developed a bespoke evaluation methodology for measuring the social impact of public archaeology programmes and this is discussed in specific relation to the Dunoon Castle Heritage Project below.

8.2.4 The Dunoon Castle Heritage Project audience comprised both experienced and first-time participants. Those attending the Historic Building Recording and Geophysics workshops were required to join the project through a formal booking process, with all opportunities delivered free of charge. DigVentures have developed a methodology for measuring the social impact of archaeology programmes for participants, pictured as a Theory of Change detailing outputs, outcomes and impacts. In this framework, social impact can be conceived as the difference that activities make to people's lives over and above what would have happened in the absence of that initiative. Outputs are a measurable unit of product or service, such as a community excavation; outcomes are an observable change for individuals or communities, such as acquiring skills or knowledge. Impact is therefore the effect on outcomes attributable to the output, measured against two metrics: scale, or breadth of people reached; and depth, or the importance of this impact on their lives.

8.2.5 The credibility of a Theory of Change rests on the level of certainty that organisational activities are the cause of this change. For this certainty to be achieved, the correct data must be collected to isolate the impact to the intervention. The DV Theory of Change is therefore linked to a Standards of Evidence framework designed to articulate and highlight the causal links between activity and change. These tools are then used to create a bespoke, project specific evaluation table linking activities, outputs, outcomes and evidence base.

8.2.6 In support of this overarching methodology, a data collection strategy was undertaken for workshop participants that required pre-booking. They were interviewed before their experience (100% completion rate, or 18 in total) and post dig experience (50% or 9 in total). The age and professional background of participants was derived through digital analytics. At this stage, the report only focuses on output numbers and socio-economic distribution of participants. The outputs numbers are discussed in turn below.



8.2.7 Socio-economic data was not collected for those who took part in activities that did not require booking.

8.3 Social impact – excavation participants

8.3.1 The age of participants across all activities ranged from young children to people in mid 70s to early 80s. The following statistics represent the data from the geophysics and historic building recording workshops. Almost all age groups were represented in the project, with a broadly even spread except for a spike in participants aged between 55 - 65. Participants represented a variety of full and part-time occupations (58%, or 15 in total) and retirees (15%, or 4 in total). The remainder were students, either of compulsory educational age or those attending university (15% or 4 in total), and people in unemployment (2%, or 1 in total).

8.3.2 Examples of professions included history teacher, councillor, foster carer, chartered accountant and managing director. This illustrates that the free survey opportunities allowed participation by a range of people, and they were also taken up by younger participants, which is an improvement on existing community archaeology provision compared with the typically retired, over 65 local civic society groups (Wilkins 2020, 33).

8.3.3 Participants all joined the from the surrounding local area (0-25 miles away from site). This was by design, as the project was small and was intended to encourage local people to engage with Dunoon Castle and the Castle House Museum. After their experience, participants were asked about what they liked and didn't like about their experience. This is a selection of their highlights:

- "It's been good to find out more about the castle even though I'm local, but seeing more in depth"
- "Realising how complicated the history and it's interesting because Dunoon is thought of more as Victorian, not medieval. Being a part of documenting that."
- "I've enjoyed it very much, it's a different look at the castle and to realise that the assumptions I've previously made are wrong"
- "I really enjoyed the whole day - I've always loved the history of Dunoon but it was great to have a go at using the geophysics equipment and find my first possible feature! I think I've found a new passion in archaeology"
- "It was lovely! I've never been up to the castle before"

8.4 Conclusion

8.4.1 As a community focussed project, public engagement was integral to the research aims and success of the Dunoon Castle Heritage Project. Local community members were offered a chance to explore the archaeology and heritage of Dunoon Castle first hand. In total, the project welcomed at least 110 participants who joined the team across 6 different activities that took place across 3 days.

8.4.2 The project attracted a diverse community of people from the local area. The Dunoon Castle Heritage Project offered survey training and experience to adults and



teenagers, and peripheral activities supported the participation of families and children. Training activities were also independently accredited through ClfA. The insights gained from this evaluation have established a clear community need and demand for more archaeological and heritage work at Dunoon Castle.

9 RECOMMENDATIONS

9.1 Historic buildings survey

9.1.1 The small-scale historic buildings assessment carried out in July 2023 highlighted the deteriorating visibility and condition of the surviving castle walls. It is recommended that excessive vegetation overgrowth be removed in advance of a more extensive historic buildings analysis and condition survey of all surviving wall elevations to determine their current level of preservation. This could then form the basis of a management plan that ensures the long-term preservation of the castle remains.

9.2 Geophysics

9.2.1 Some of the more interesting anomalies could benefit from further investigation through test pitting to confirm their nature. For example, investigating the fire station and garden plots in the north of site would prove for an excellent community engagement activity and would add to the understanding of the land use of Dunoon Castle and the surrounding gardens. It would also be interesting to understand the circular low resistance anomalies at the southern entranceway to the gardens, and to ascertain if they are related to a grand entranceway and gateposts, or if they could be older in origin.

9.3 Test pits

9.3.1 A community test pitting event, conducted over a long weekend and targeting a number of the geophysical and earthwork anomalies identified during the 2023 surveys, could help to gain a wider understanding of the character and function of land in and around Dunoon castle gardens. Any artefacts recovered could potentially be of use in refining the chronology and phasing of occupation in this area, adding to our understanding of how the Dunoon castle landscape developed over time.

9.3.2 Developing this as a community-based test pitting project would provide an opportunity to further engage the local community in Dunoon with their heritage, building upon the knowledge and skills already developed as part of the 2023 project whilst contributing to wider archaeological research questions.



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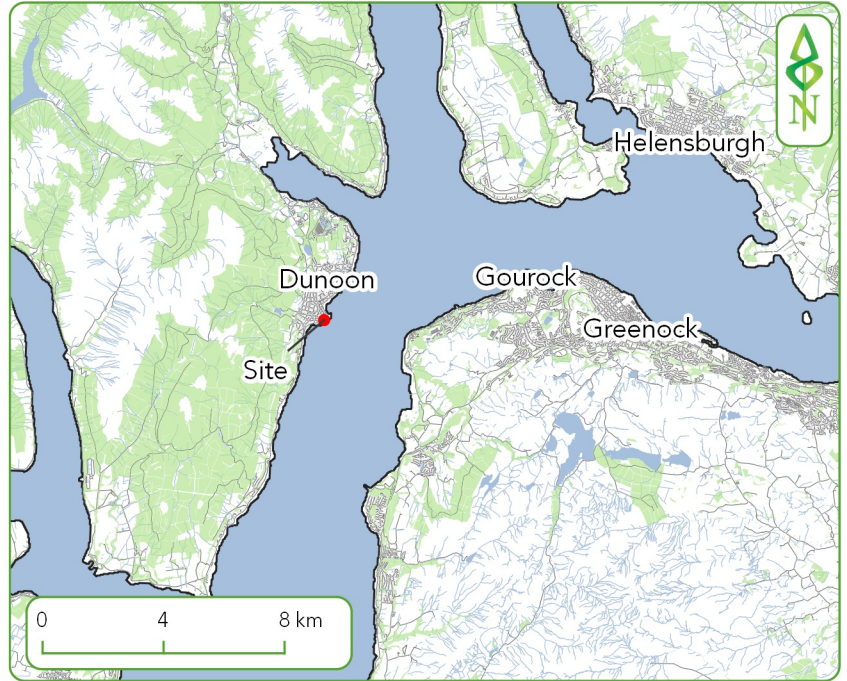


Figure 1. Site location



Key

- Site Boundary
- Surveyable Area
- Dunoon Castle SM5450 Scheduled Area

Figure 2 - Plan of survey area

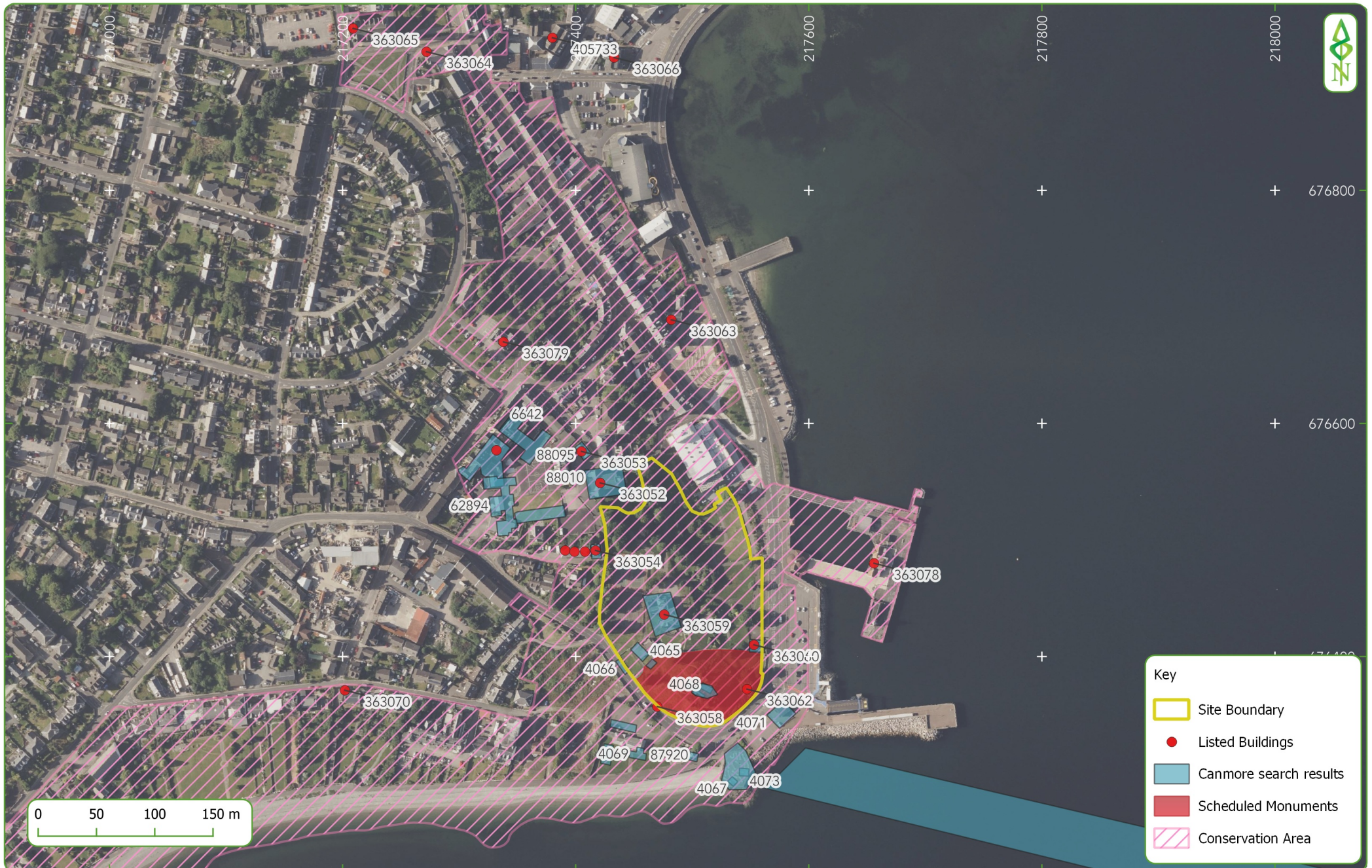


Figure 3 - HER and Designated sites around Dunoon Castle

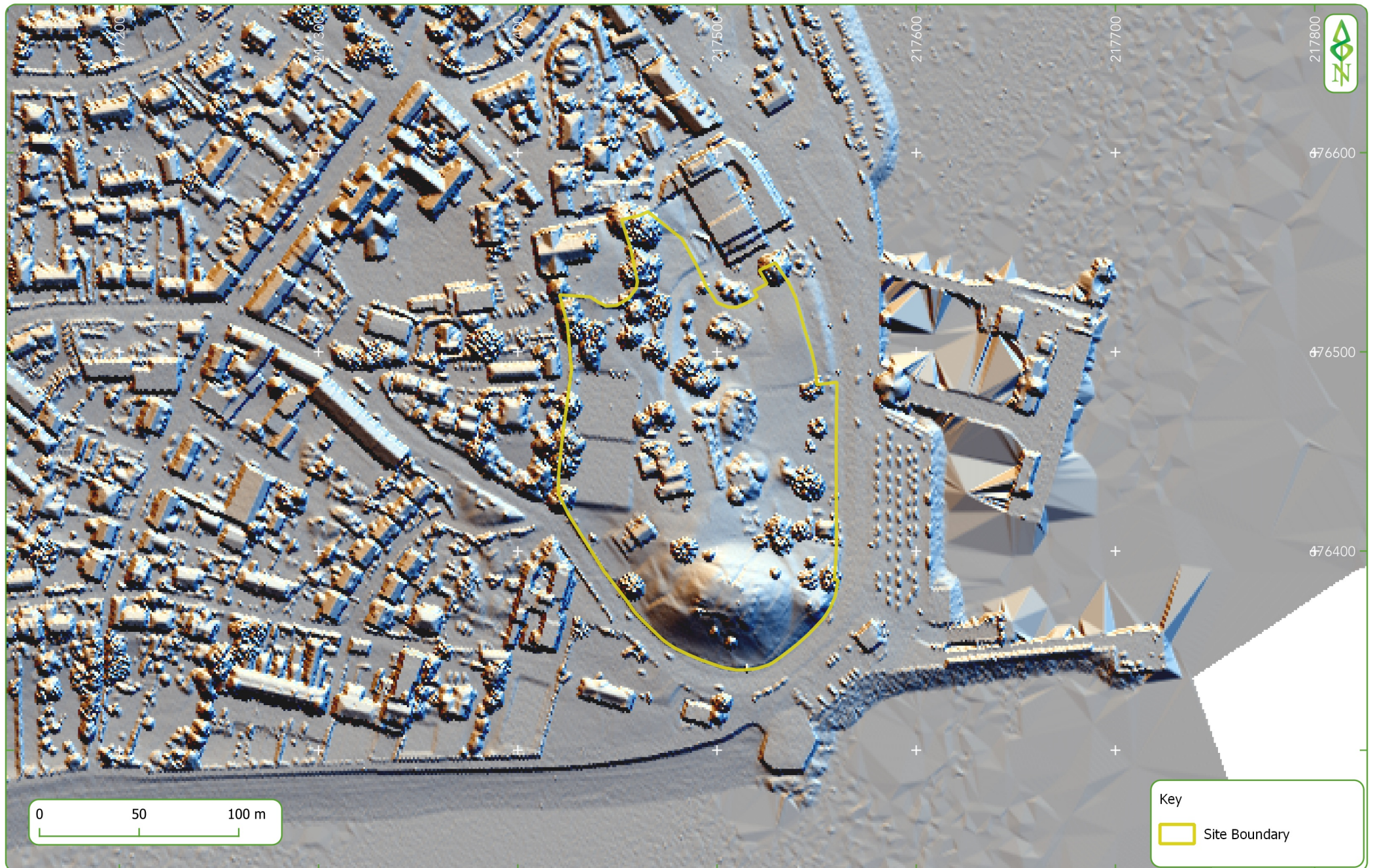


Figure 4 - LIDAR visualisation - Multi-Directional Hillshade Model from 1m DSM

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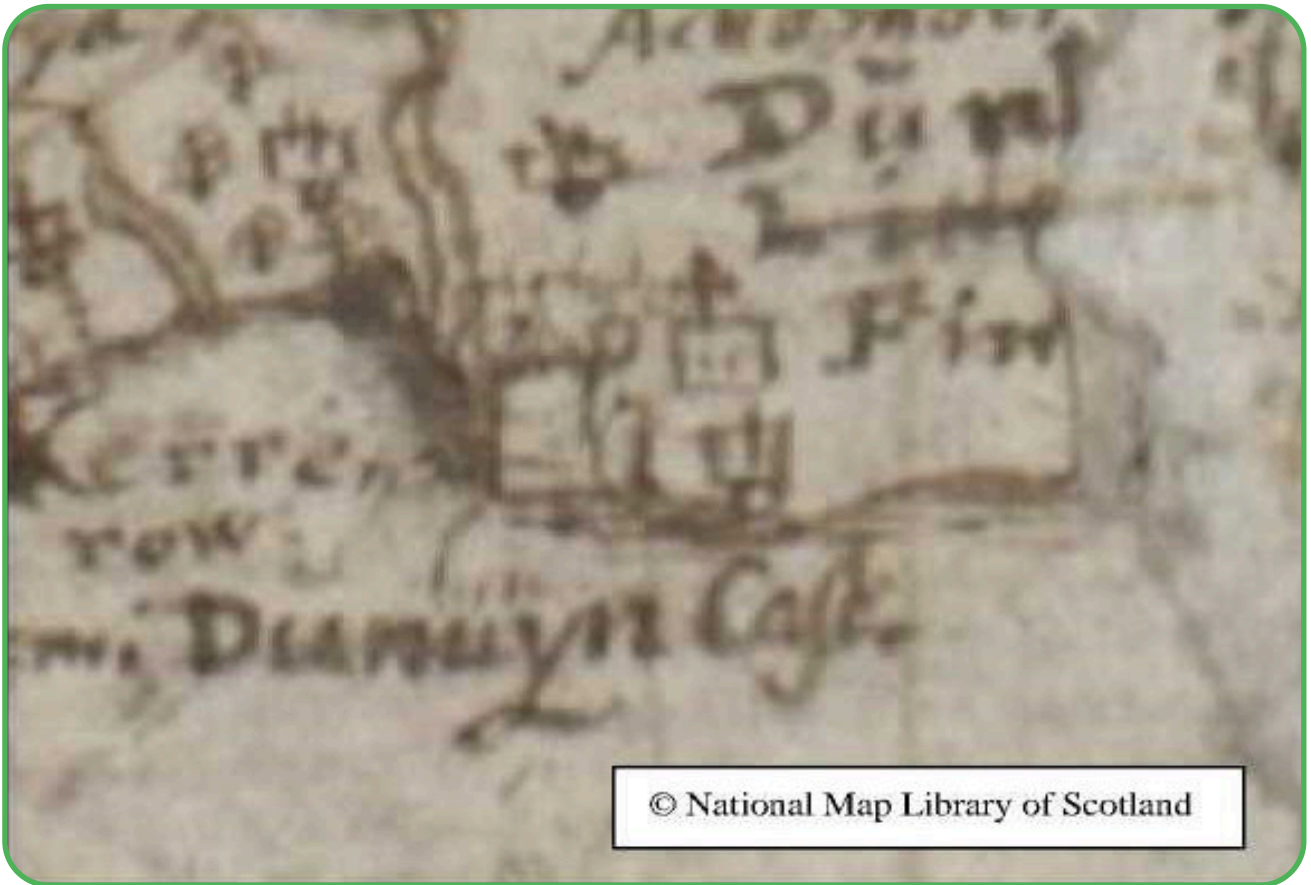


Image 1: Extract from Timothy Pont's map of Mid-Argyll, showing Dunoon Castle.



Image 2: Extract from Peter Shenk's map of 1690.

Figure 5. Timothy Pont's map of Mid-Argyll (1583-1614) and Peter Shenk's map of 1690.

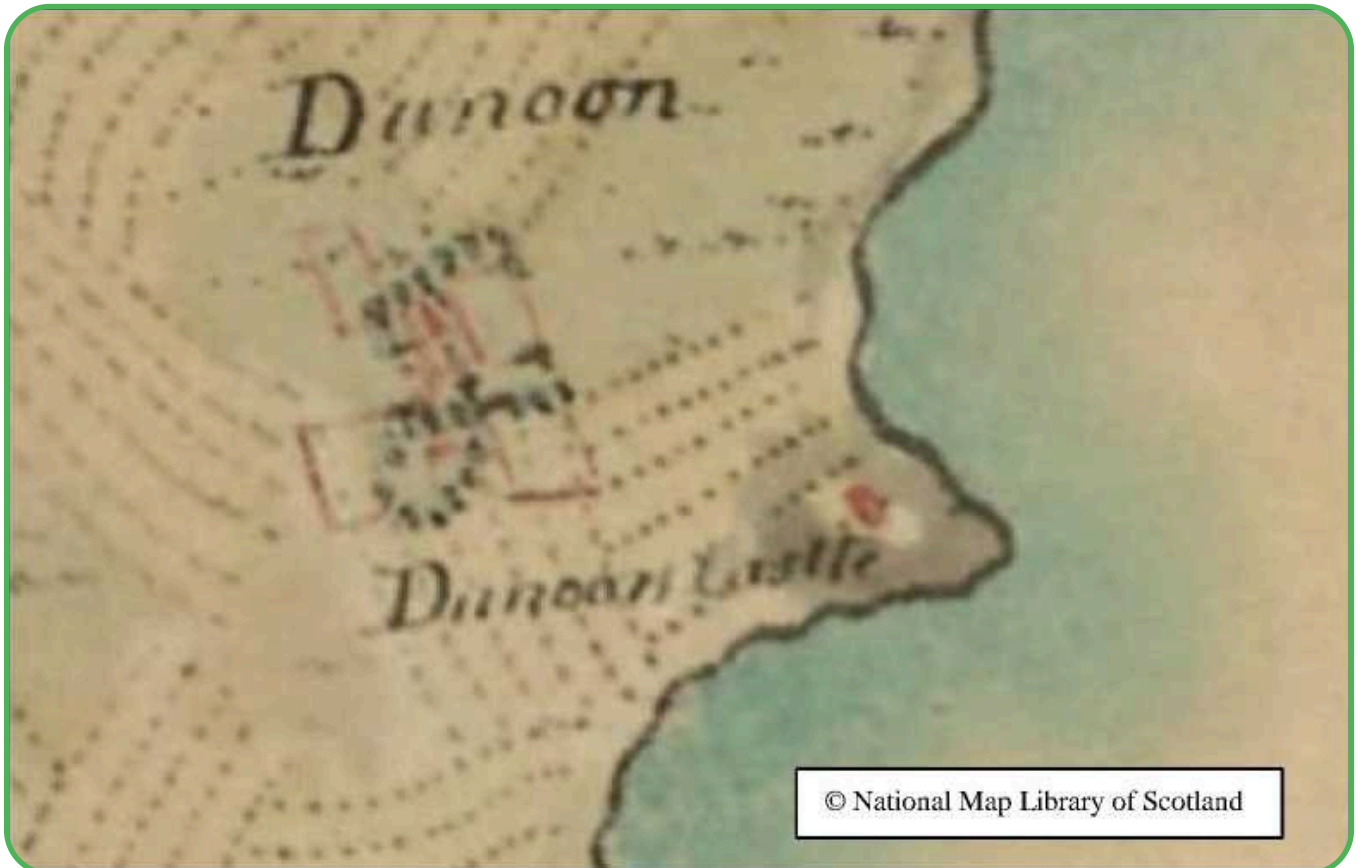


Image 1: Extract from Roy's Military Survey of Scotland (1752-55) showing Dunoon Castle and settlement of Dunoon.



Image 2: Map from 1824 showing disputed boundaries.

Figure 6. William Roy's military survey of Scotland (1752-1755) and an 1824 map of disputed boundaries.



Image 1: Extract from 1st edition Ordnance Survey map of 1869 (surveyed 1864), six-inch to one mile.



Image 2: View of Dunoon Castle' – illustration by John Fleming (1782-45); engraving by Joseph Swan (1796-1873).

Figure 7. Extract from 1864 six inch OS map and 'View of Dunoon Castle' by John Fleming, engraved by Joseph Swan.



Image 1: Dunoon Castle, engraved by William Miller after original by W. Brown.

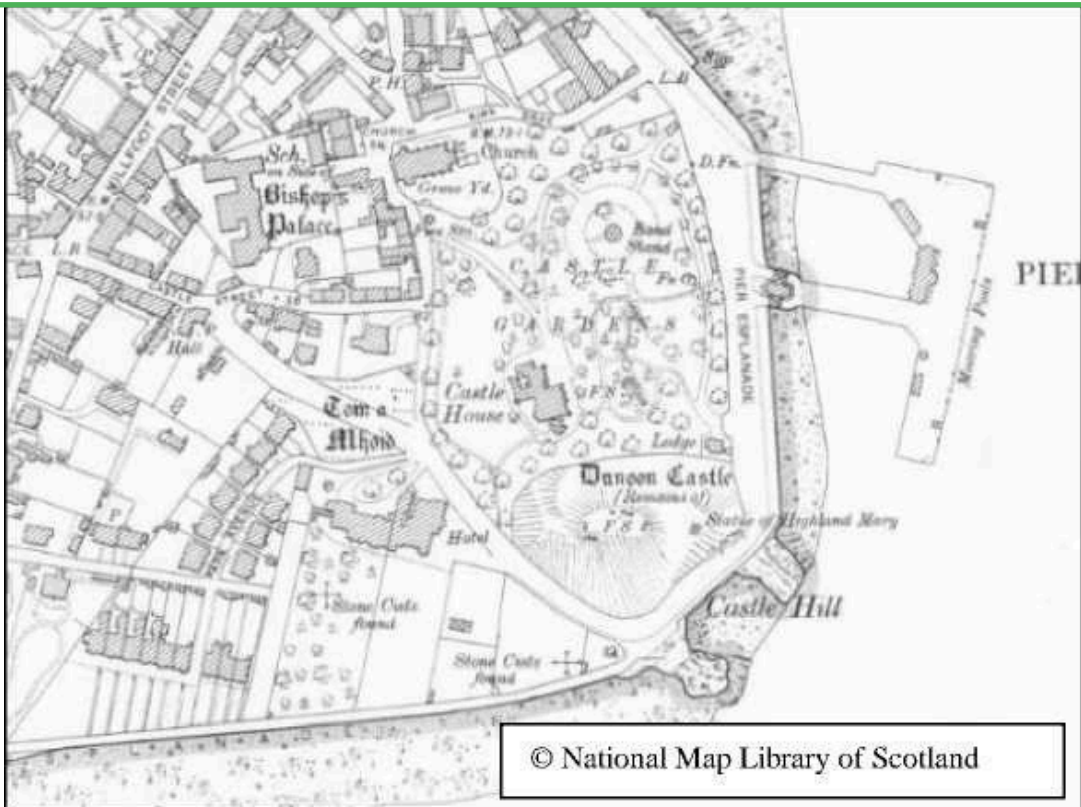


Image 2: Extract from 2nd edition Ordnance Survey map.

Figure 8. Dunoon castle engraved by William Miller and the second edition Ordnance Survey map.



Location of Magnetometer survey grids



Location of Earth Resistance survey grids

Figure 9 - Location of geophysical survey

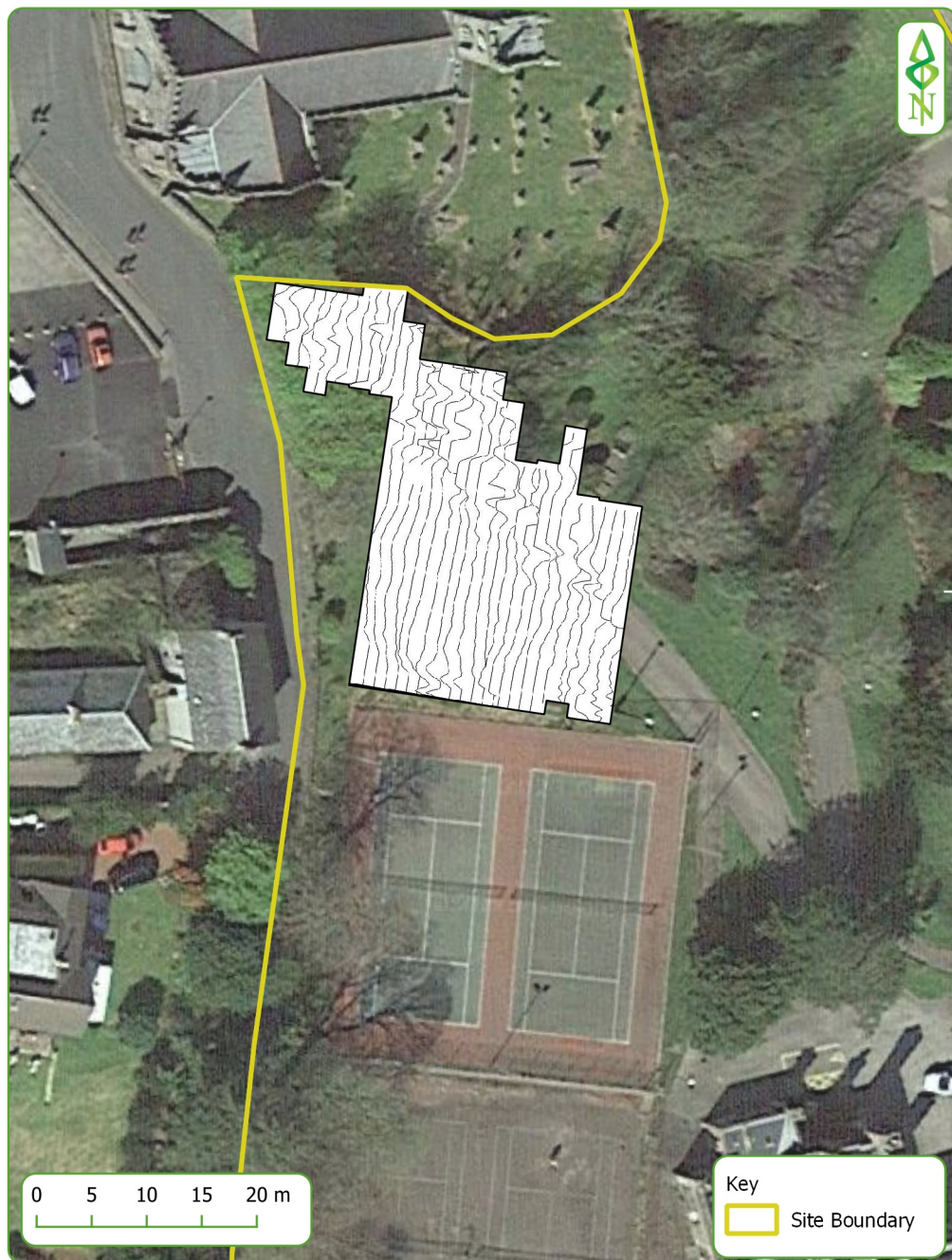


Grids 1, 2 and 3 - XY trace plots



Grids 1, 2 and 3 - Minimally processed gradiometer data - greyscale plots

Figure 10 - Magnetometer survey data (grids 1-3)



Grid 4 - XY trace plot

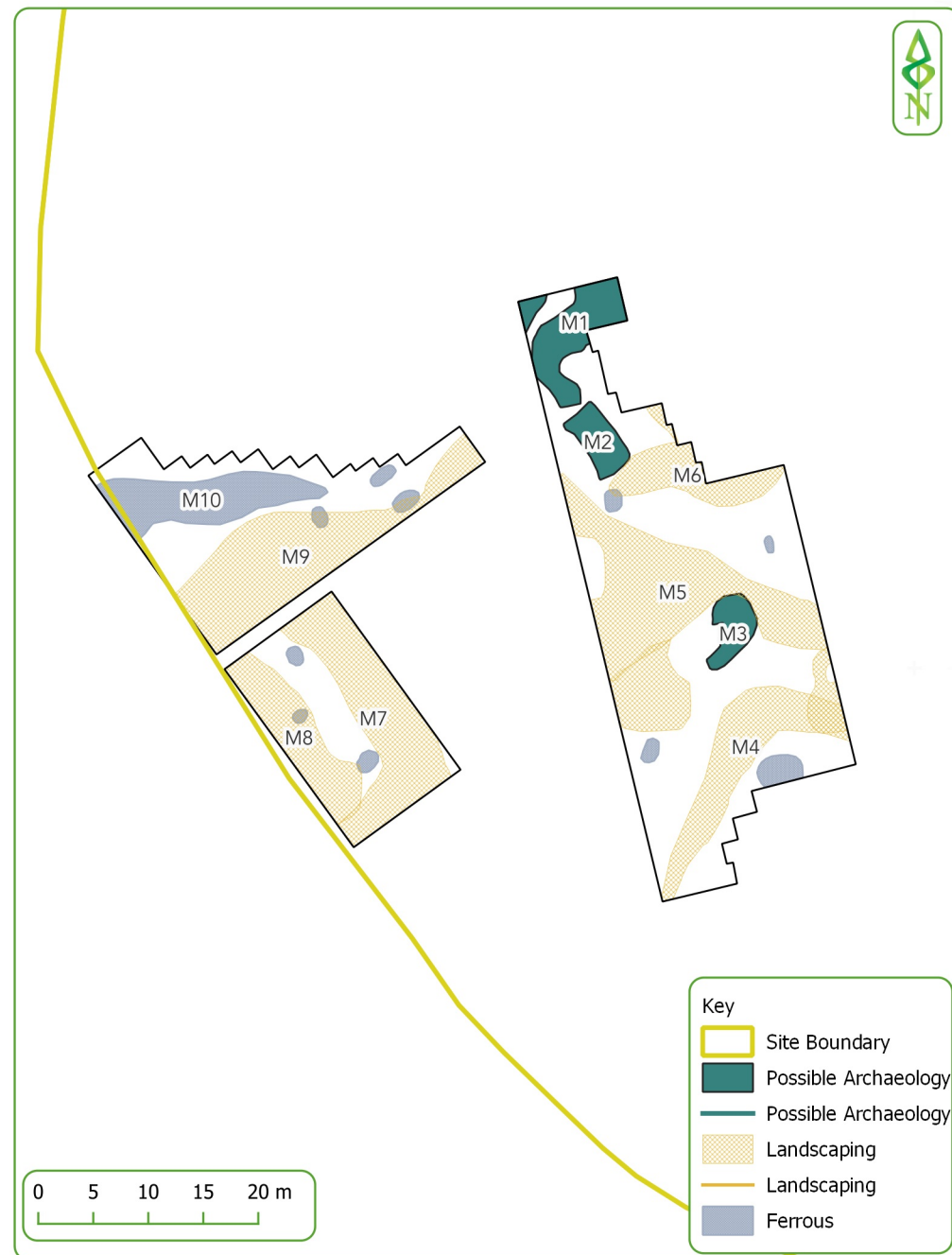


Grid 4 - Minimally processed gradiometer data - greyscale plot

Figure 11 - Magnetometer survey data (grid 4)



Grids 1, 2 and 3 - Processed and filtered gradiometer data - greyscale plots

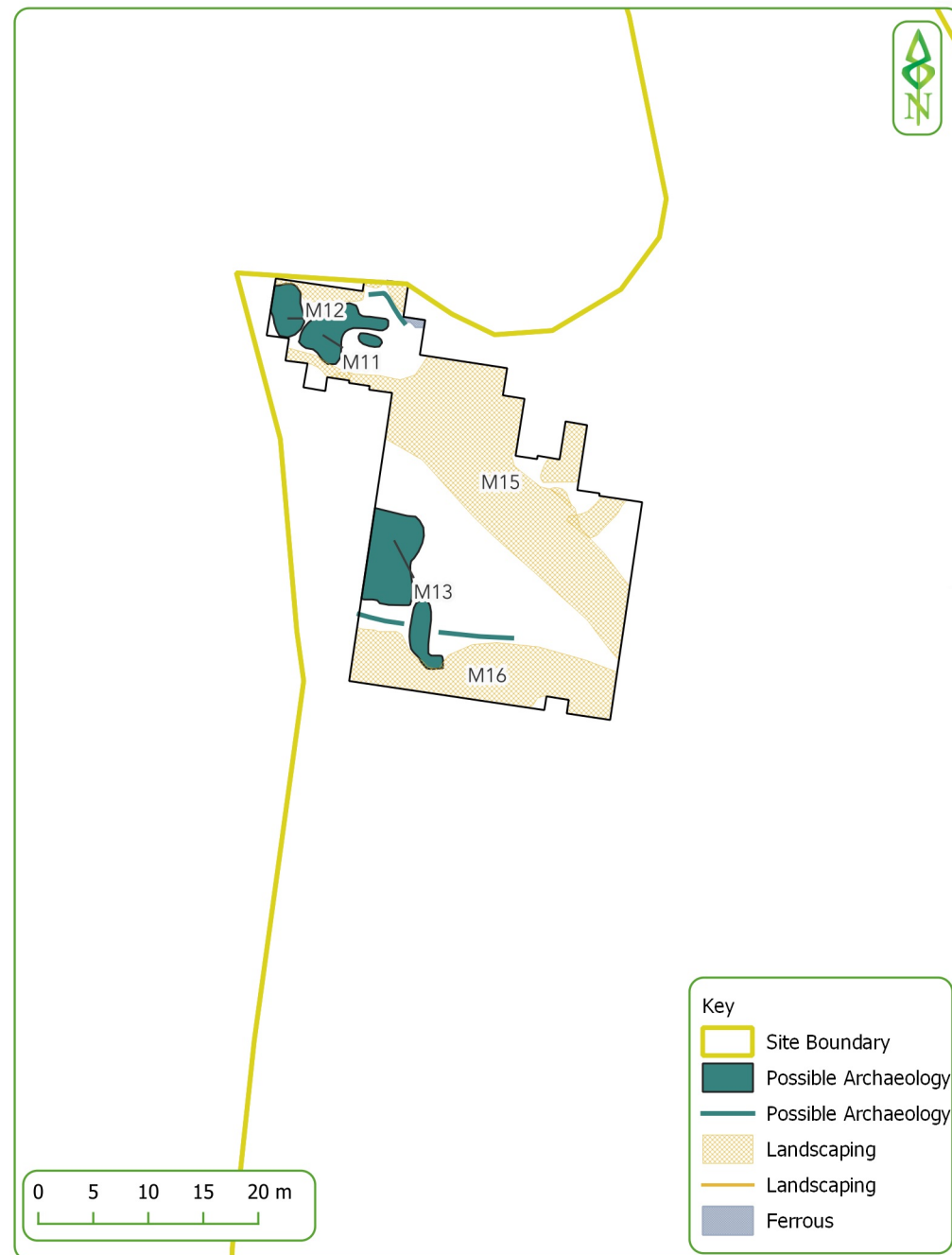


Grids 1, 2 and 3 - Interpretation of gradiometer data

Figure 12 - Magnetometer survey data (grids 1 - 3) and interpretation.



Grid 4 - Processed and filtered gradiometer data - greyscale plot



Grid 4 - Interpretation of gradiometer data

Figure 13 - Magnetometer survey data (grid 4) and interpretation.



Grids 1 and 2 - Processed and filtered earth resistance data - greyscale plots



Grids 1 and 2 - Interpretation of earth resistance data

Figure 14 - Earth Resistance survey data (grids 1 - 2) and interpretation.



Grids 3, 4 and 5 - Processed and filtered earth resistance data - greyscale plots



Grids 3, 4 and 5 - Interpretation of earth resistance data

Figure 15 - Earth Resistance survey data (grids 3 - 5) and interpretation.

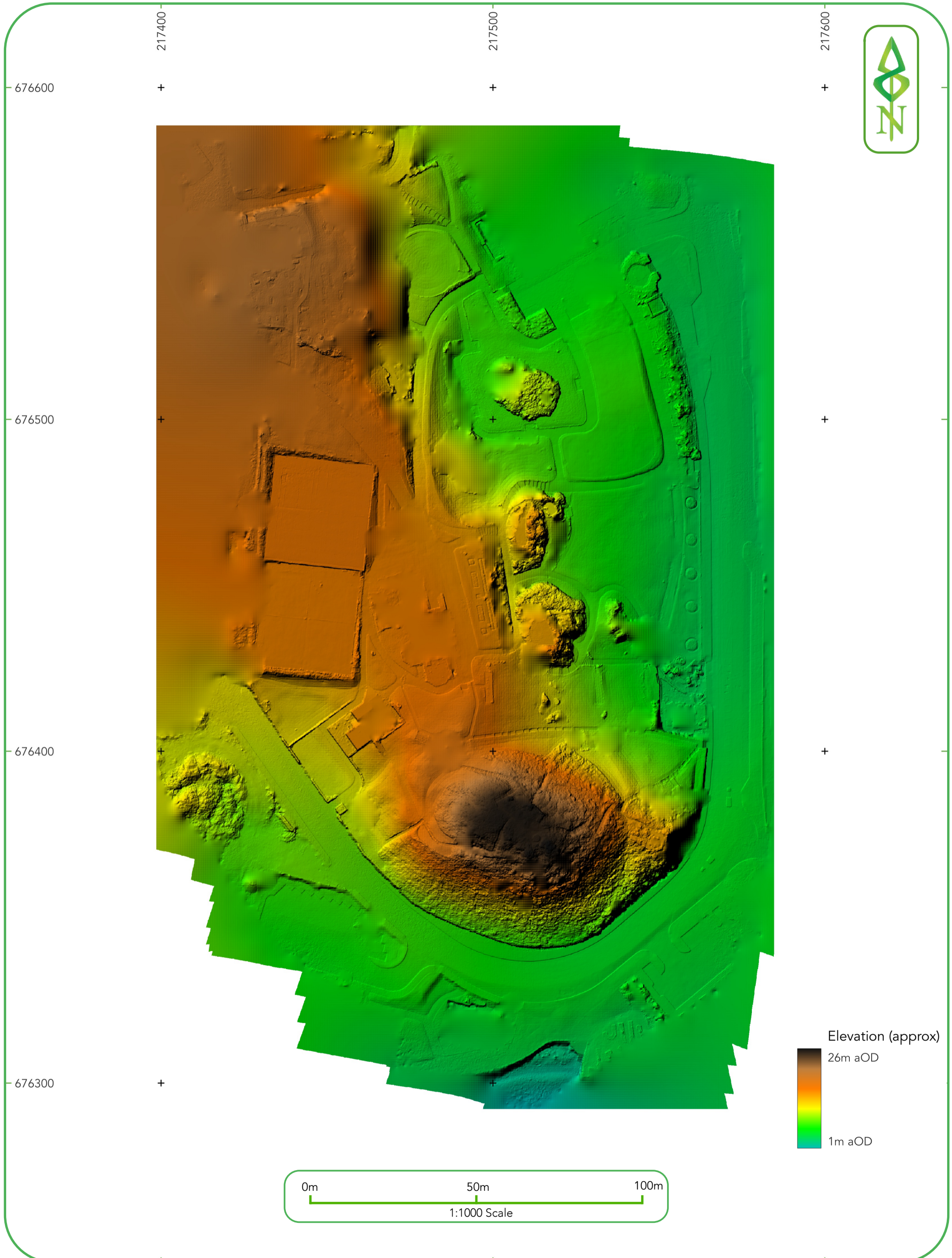


Figure 16. Digital Terrain Model generated from full drone survey

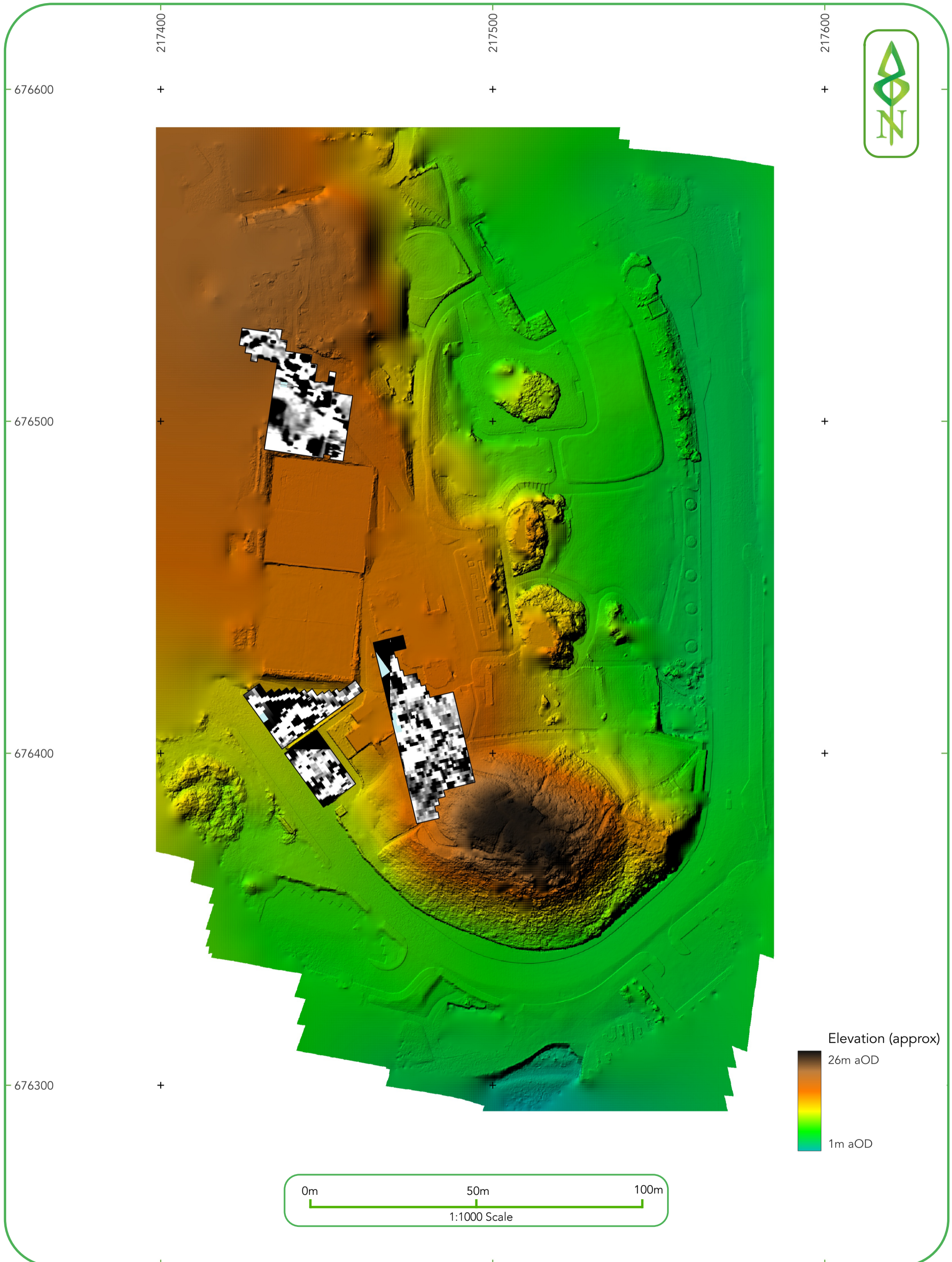


Figure 17. Digital Terrain Model generated from full drone survey and magnetometer survey plots.

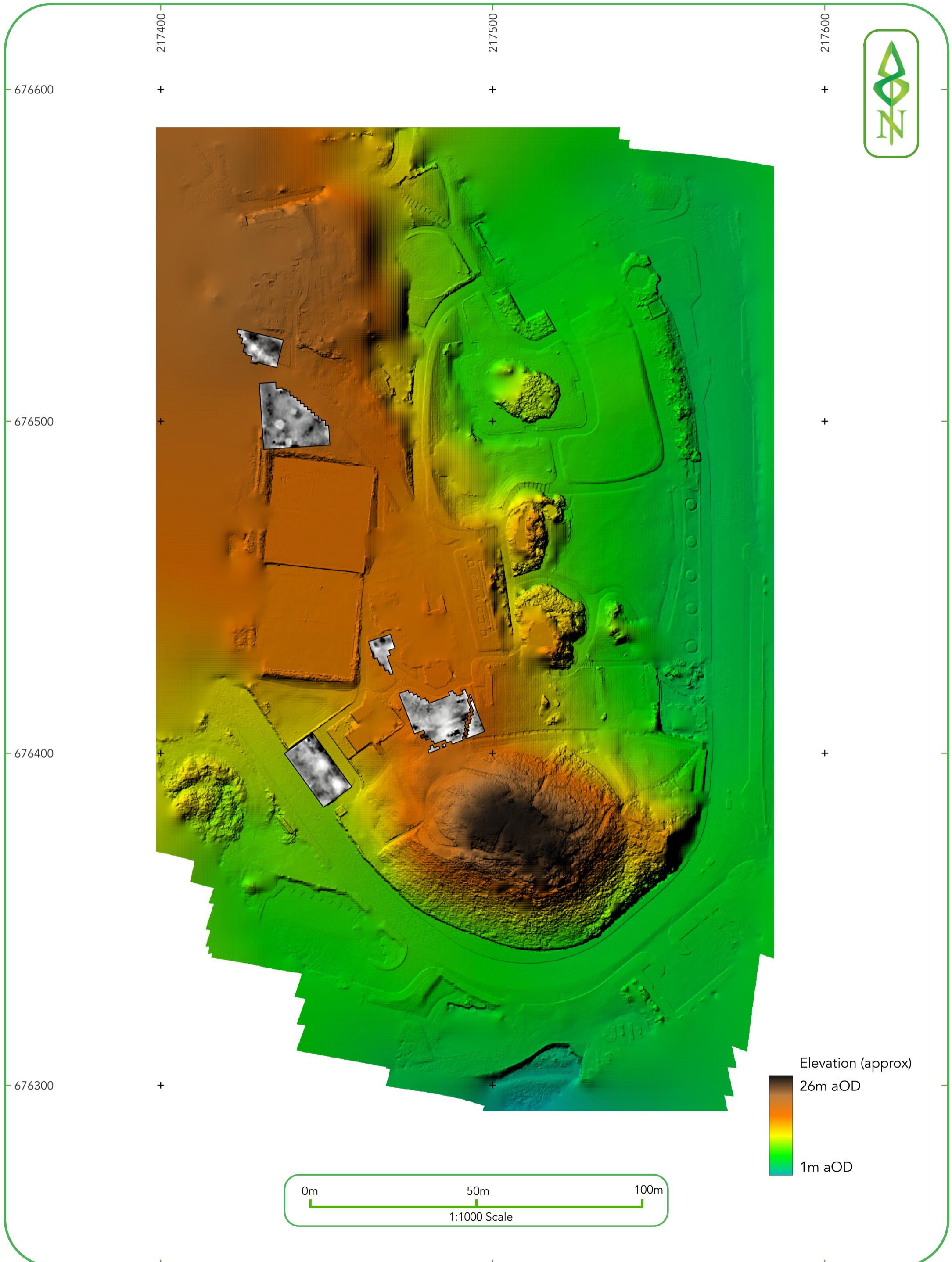


Figure 18. Digital Terrain Model generated from full drone survey and resistivity survey plots.

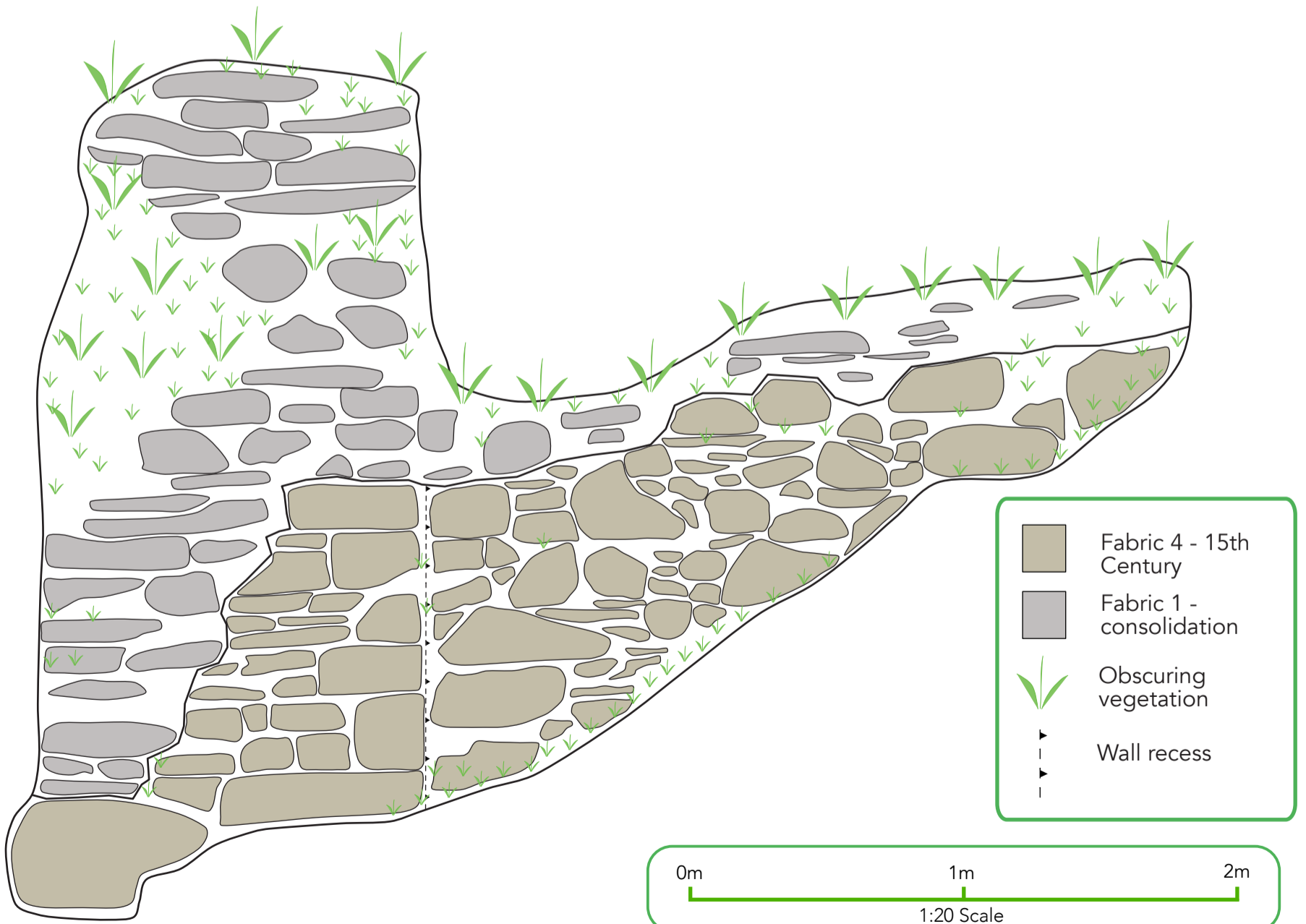


Figure 19. Elevation 1 - South facing elevation of consolidated 15th century walling near the castle entrance.

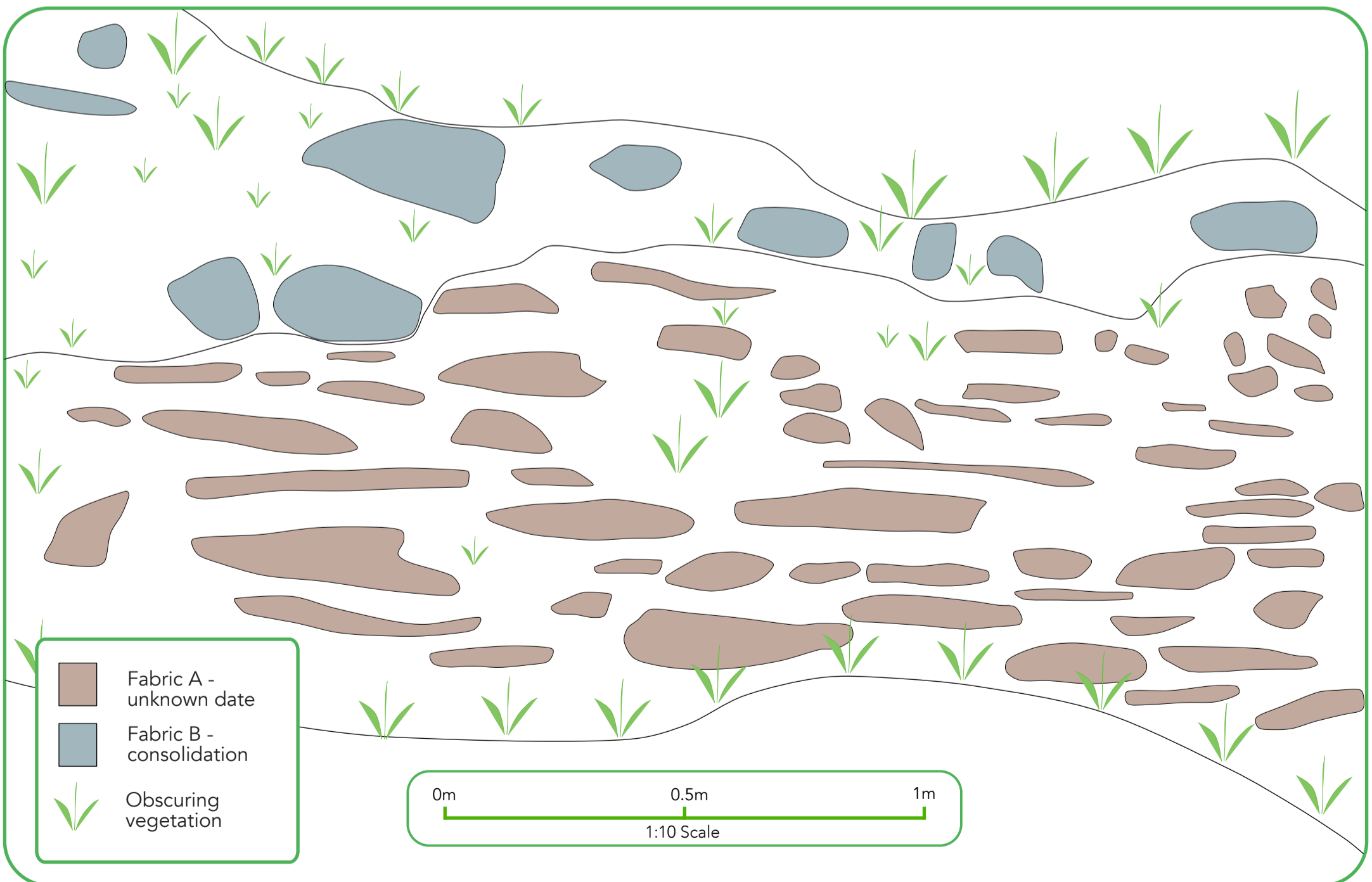
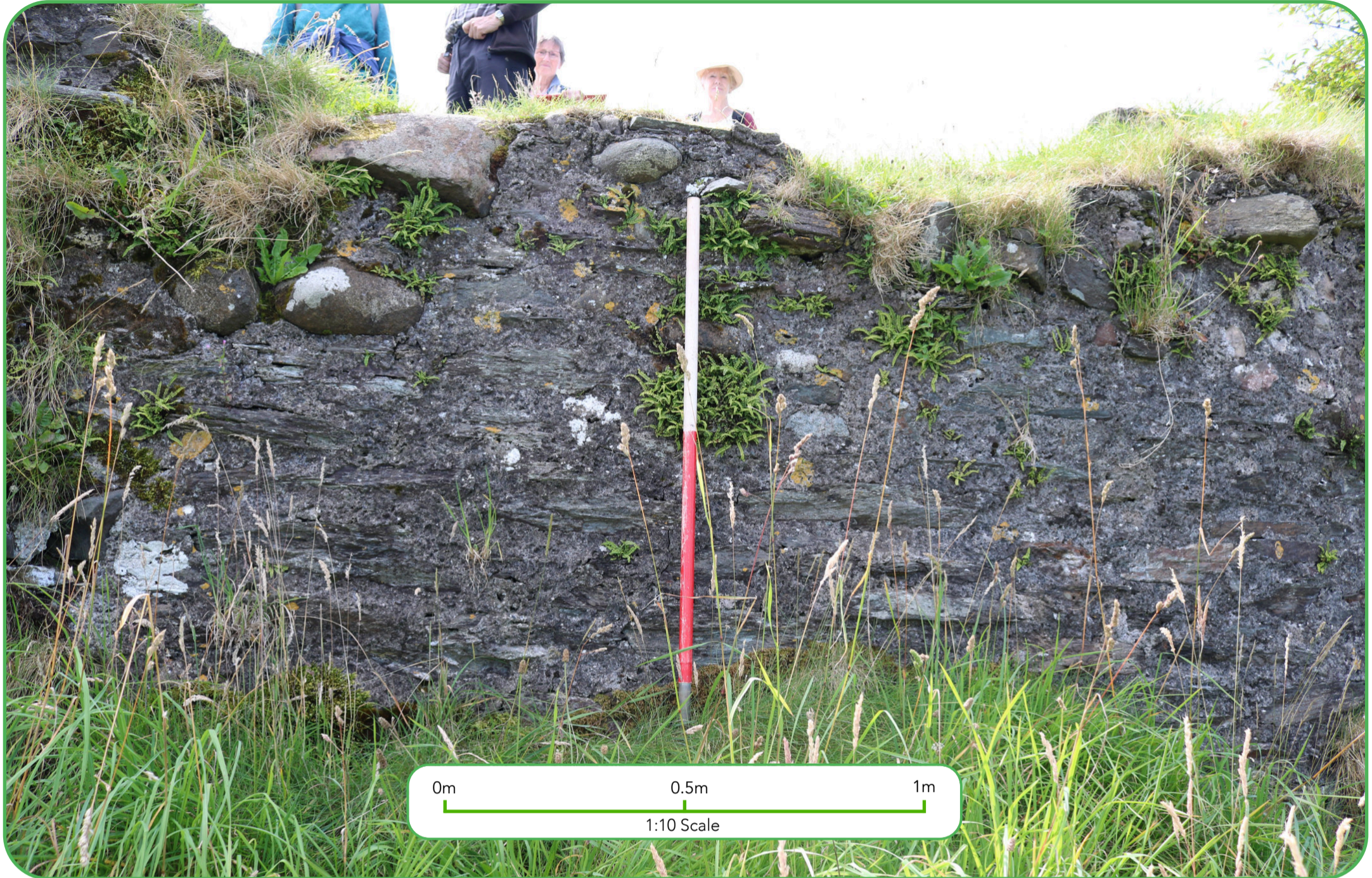


Figure 20. Elevation 2 - North facing elevation of consolidated walling.



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Figure 21. Georeferenced RCAHMS castle earthwork survey showing location of drawn elevations.

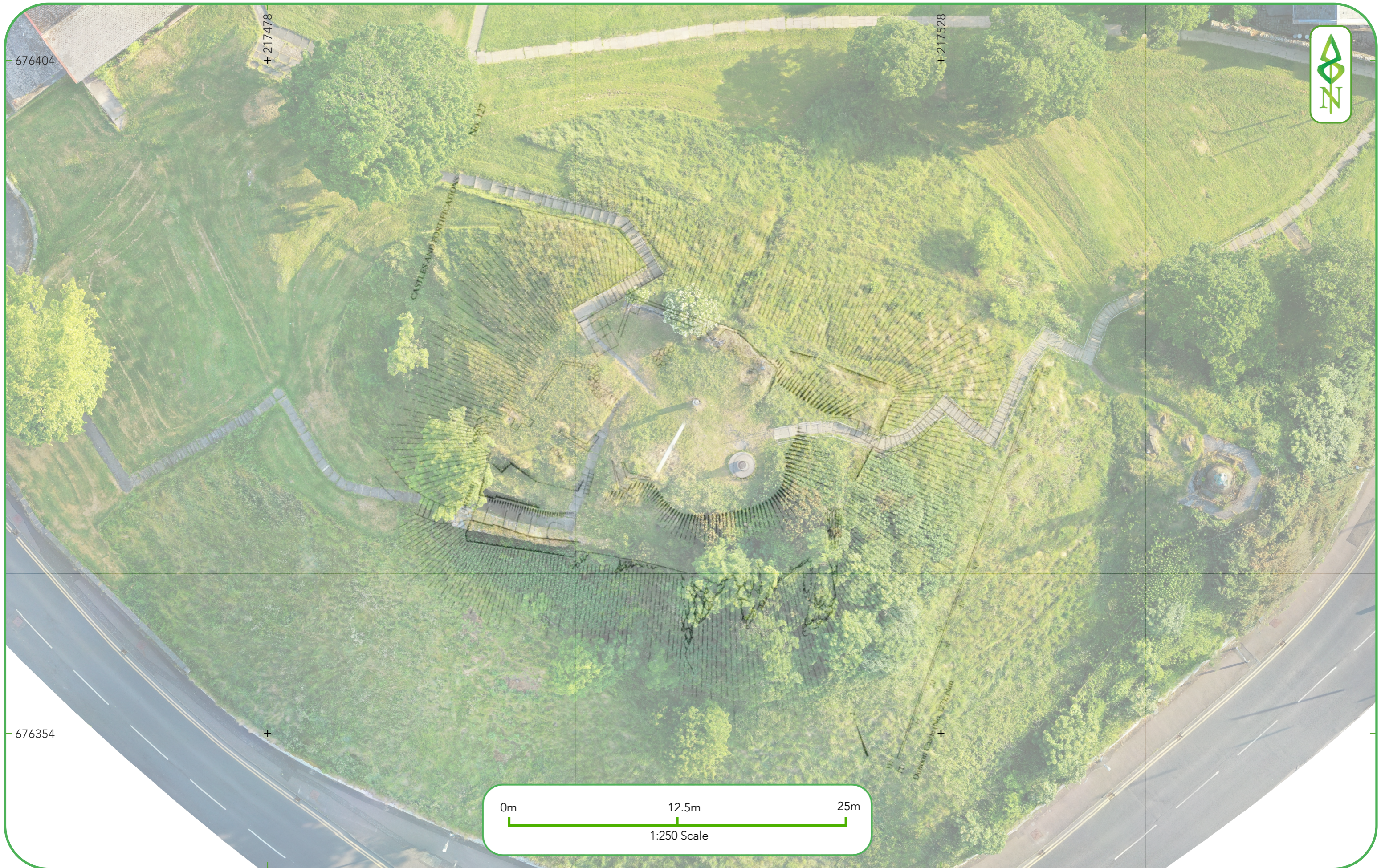


Figure 22. Orthomosaic of castle area overlain with georeferenced RCAHMS earthwork survey..

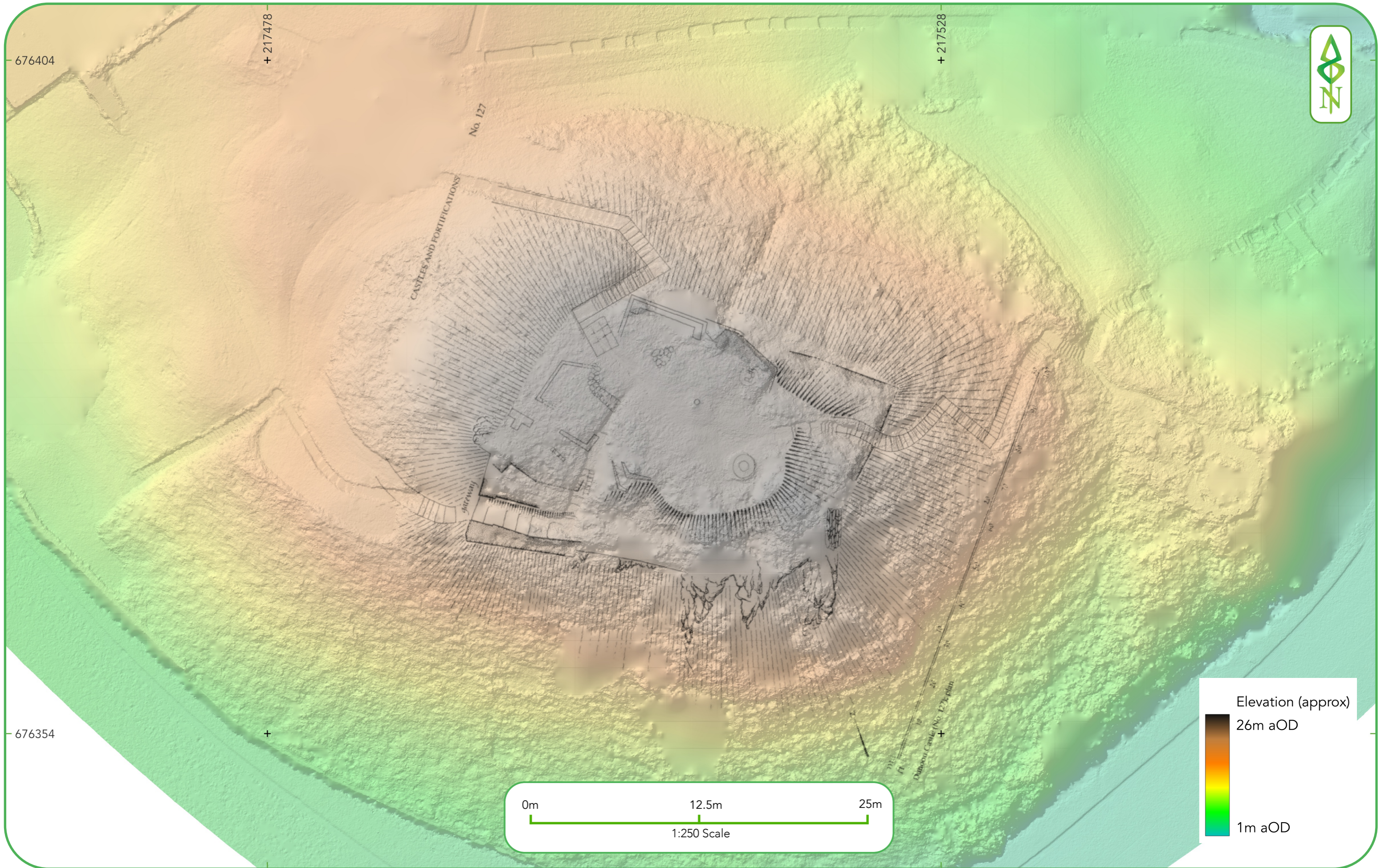


Figure 23. Digital Terrain Model of castle area overlain with georeferenced RCAHMS castle earthwork survey.



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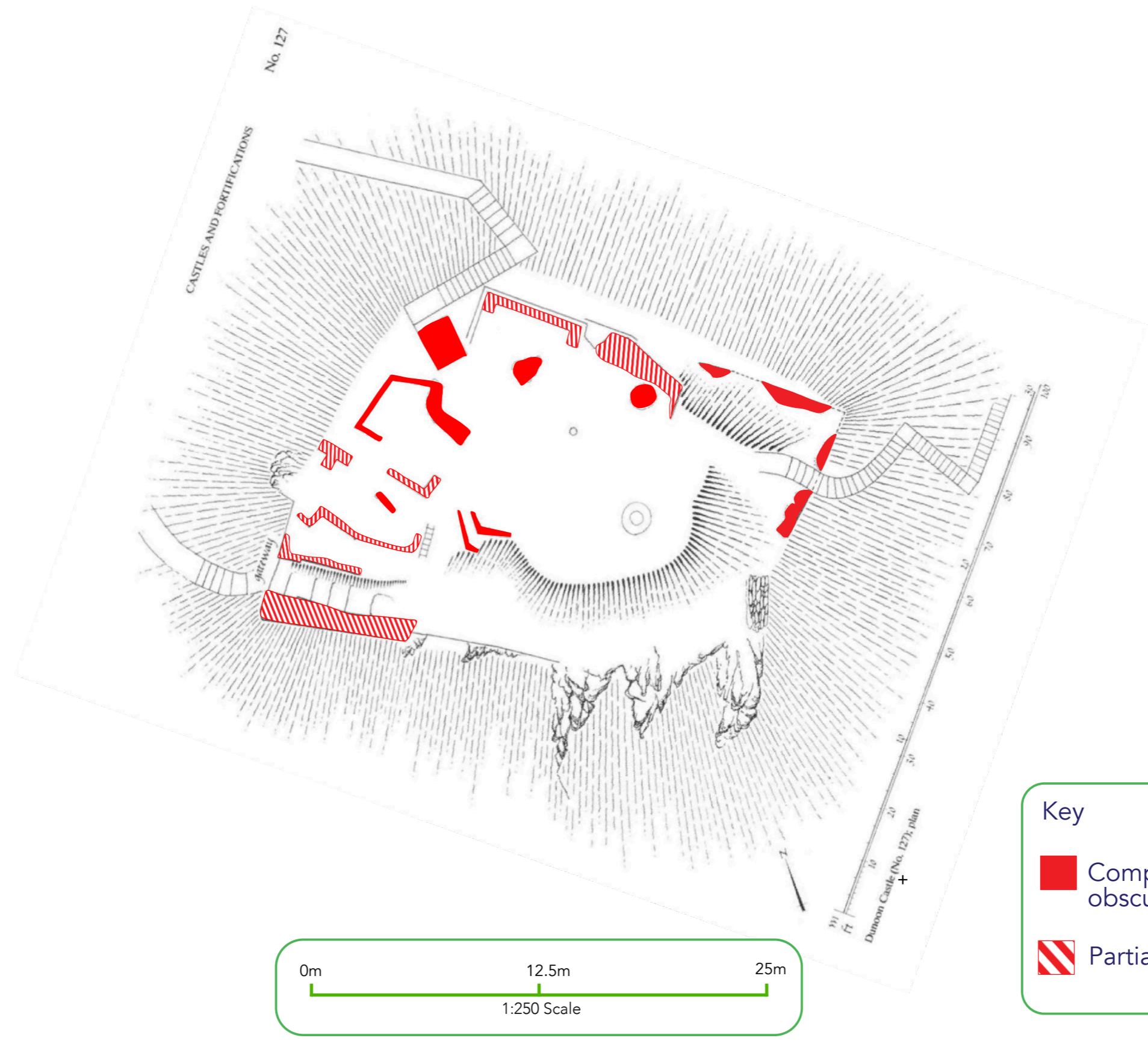


Figure 24. Annotated RCAHMS earthwork survey showing obscured walls.

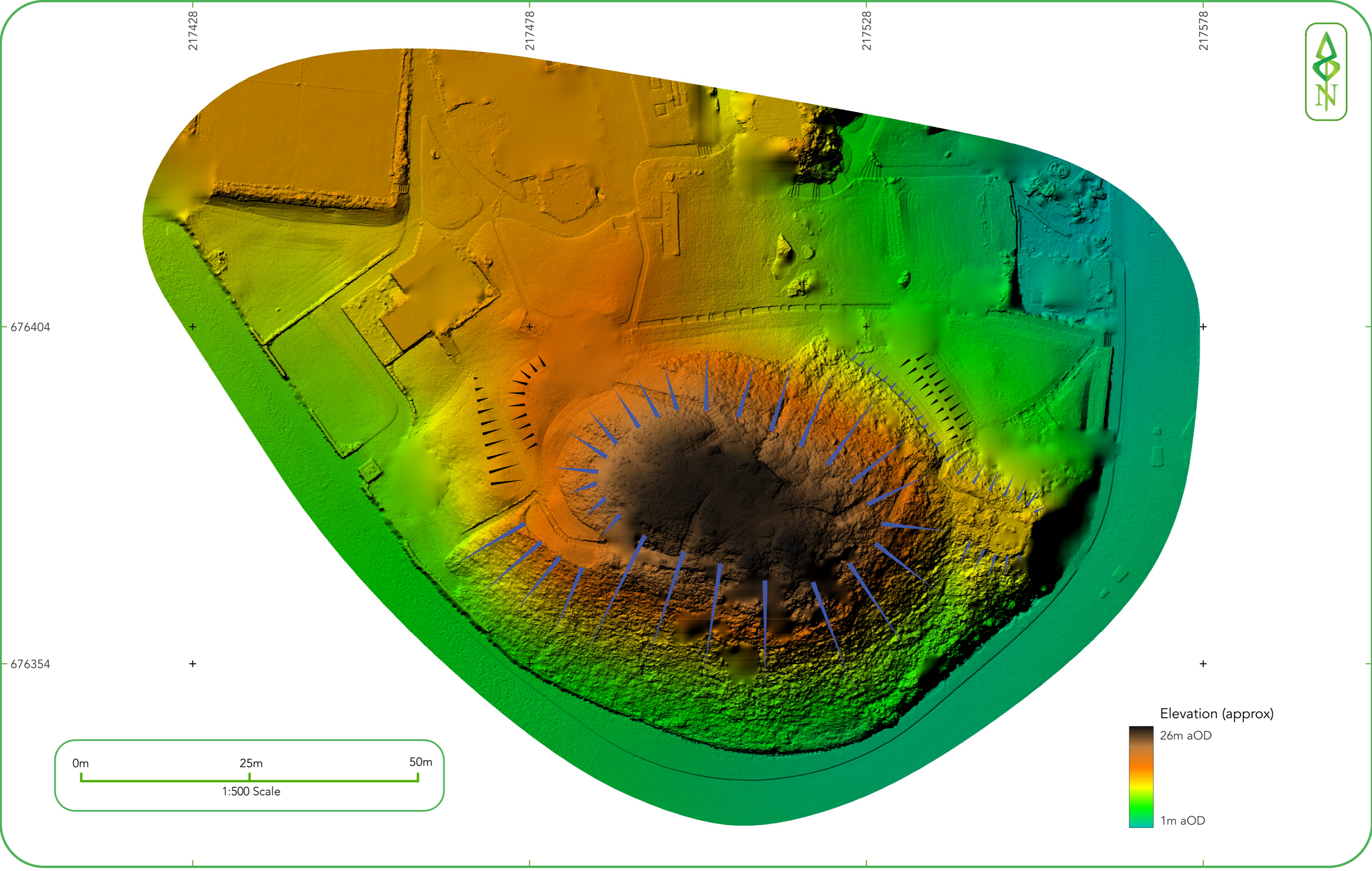


Figure 25. Digital Terrain Model of castle area with castle mound earthwork interpretations.



Figure 26. Georeferenced 1863 25 inch Ordnance Survey map of castle area.

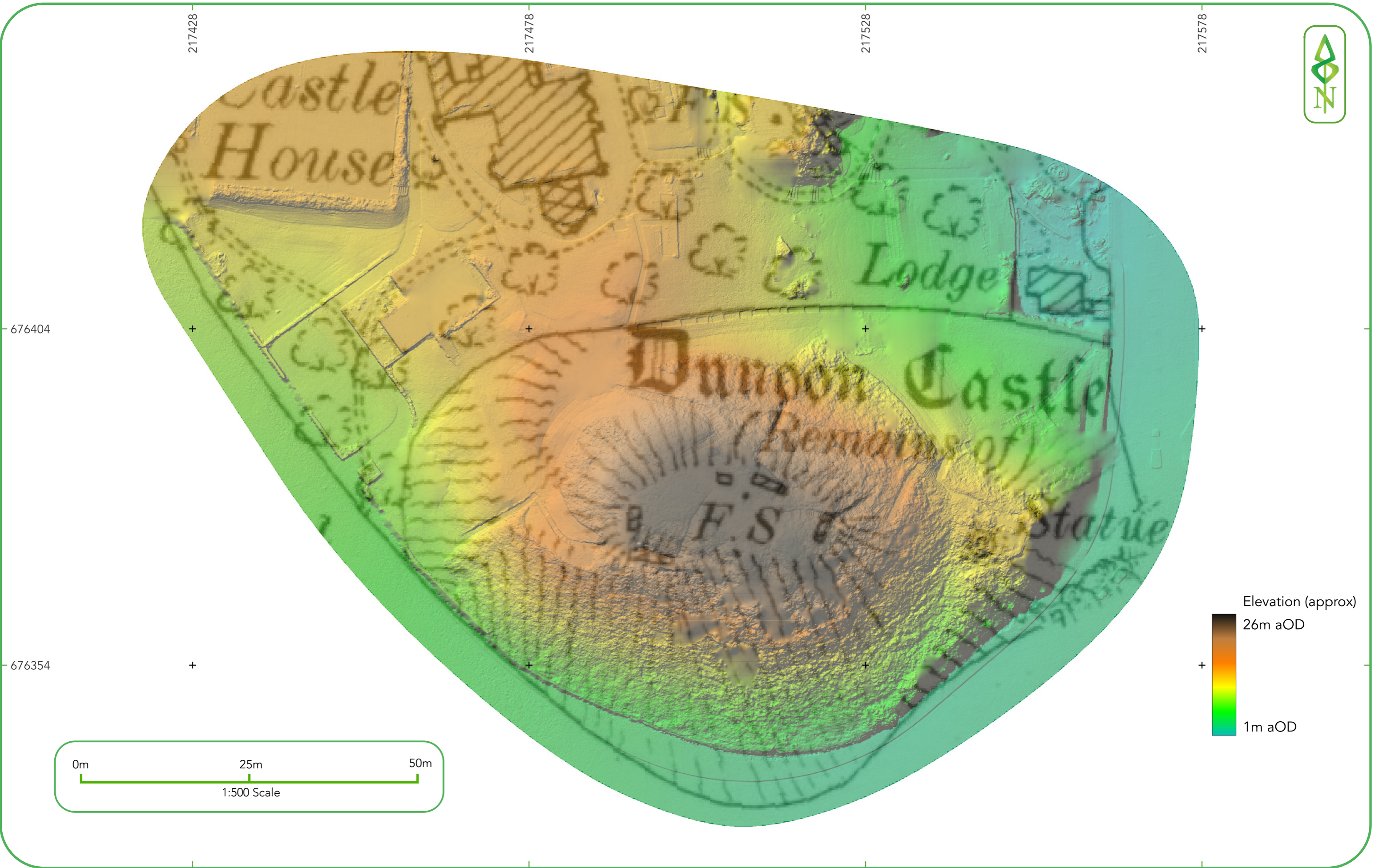


Figure 27. Digital Terrain Model of castle area overlain with 1863 25 inch Ordnance Survey map.



Figure 28. Orthomosaic of castle area overlain with 1863 25 inch Ordnance Survey map.

APPENDICES

APPENDIX A GENERAL SETTING PHOTOGRAPHS



Image 1 – Looking north-west towards the church (3976)



Image 2 – Looking south past the castle mound (3952)



Image 3 – Looking north towards the Castle Museum (3950)



Image 4 – Looking north-east towards the Castle Museum
(3961)



Image 5 – Surveying west of Dunoon Castle, looking east
(4008)



Image 6 – Surveying in the Castle Gardens
(4003)



Image 7 – Surveying in the Castle Museum grounds (4005)



Image 8 – Surveying next to the church (3982)



Image 9 – Building survey next to the church (3987)



Image 10 – Surveying next to the tennis courts (3989)



Image 11 – Looking south towards the tennis courts (3985)



Image 12 – Surveying next to the tennis courts (3994)

Appendix B: Table of anomalies

Table 1: Magnetometer survey anomalies

Anomaly ID	Grid	Description
M1	Grid 1	Possible archaeology - wall
M2	Grid 1	Possible archaeology - wall
M3	Grid 1	Possible archaeology – garden feature
M4	Grid 1	Possible archaeology – garden feature
M5	Grid 1	Landscaping - paths
M6	Grid 1	Landscaping – path around former greenhouse
M7	Grid 2	Landscaping - path and lamp post
M8	Grid 2	Landscaping – boundary wall
M9	Grid 3	Landscaping – boundary wall
M10	Grid 3	Modern service
M11	Grid 4	Possible archaeology – building / fire station
M12	Grid 4	Possible archaeology – building / fire station
M13	Grid 4	Possible archaeology – former houses / garden plots
M14	Grid 4	Possible archaeology – trend
M15	Grid 4	Landscaping - paths
M16	Grid 4	Landscaping – tennis courts

Table 2: Earth resistance survey anomalies

Anomaly ID	Grid	Description
R1	Grid 1	Possible archaeology – ‘fire station’
R2	Grid 1	Possible archaeology – ‘fire station’
R3	Grid 1	Possible archaeology – high resistance area
R4	Grid 2	Possible archaeology – former garden path
R5	Grid 2	Possible archaeology – former garden plots
R6	Grid 2	Possible archaeology – former garden plots
R7	Grid 2	Landscaping
R8	Grid 2	Possible archaeology – possible garden features
R9	Grid 2	Possible archaeology – possible garden features
R10	Grid 3	Possible archaeology – possible garden features / well
R11	Grid 4	Possible archaeology – possible wall
R12	Grid 4	Possible archaeology – possible wall
R13	Grid 5	Possible archaeology – possible gate posts