

# Kinneddar: a major ecclesiastical centre of the Picts

Gordon Noble<sup>1</sup>, Gemma Cruickshanks<sup>2</sup>, Lindsay Dunbar<sup>3</sup>,  
Nicholas Evans<sup>1</sup>, Derek Hall<sup>4</sup>, Derek Hamilton<sup>5</sup>, Cathy MacIver<sup>6</sup>,  
Edouard Masson-MacLean<sup>1</sup>, James O’Driscoll<sup>1</sup>, Lindsey Paskulin<sup>7</sup>  
and Oskar Sveinbjarnarson<sup>8</sup>

## ABSTRACT

*The early Christian sculpture from Kinneddar has long been noted as a major assemblage. New survey work by the University of Aberdeen and AOC Archaeology has identified a large vallum enclosure around the site that was renewed on at least one occasion. The vallum enclosures surrounded an area of up to 8.6ha, and the groundplan presents striking resemblances to other major ecclesiastical sites, particularly Iona. Evaluative excavations instigated through research- and development-led projects have provided an outline chronology for the vallum enclosures, identified an additional annexe and located settlement features inside the enclosures. Radiocarbon dating suggests activity as early as the late 6th century, with the vallum likely to date to the 7th or 8th century. This article sets out the evidence from the site and discusses Kinneddar in relation to other likely major ecclesiastical sites in northern Pictland and its wider early medieval Insular context.*

## INTRODUCTION

Kinneddar, Lossiemouth, Moray (Illus 1), is likely to have been one of the major ecclesiastical sites of northern Pictland. It is a site long discussed with regard to its sculptural evidence and has been investigated archaeologically from the 1970s onwards, but its true nature and significance has only recently begun to materialise with new geophysical evidence and now the first radiocarbon and well-contextualised archaeological sequence. This has been established through research- and development-led excavation, with radiocarbon-dating evidence showing that the site was in use from the late 6th century through to the 12th

century when Kinneddar first appears in the historical records. This article outlines the recent archaeological survey and excavation results and attempts to draw out the significance of the site in its wider context.

Kinneddar stood at the edge of the former sea loch of Spynie, on a raised ridge of land. Loch Spynie was a sea loch in the later medieval period, but through sandblow became a freshwater loch by the 17th century and was almost totally drained by the 19th century (Stratigos forthcoming). The sea loch would have provided a sheltered anchorage for shallow draft vessels and access to the Moray Firth seaways. At the other end of the sea loch, 11km to the west, lay Burghead, the largest identified early medieval enclosed

<sup>1</sup> Department of Archaeology, School of Geosciences, University of Aberdeen, St Mary’s, Elphinstone Road, Aberdeen AB24 3UF

<sup>2</sup> National Museums Scotland, Chambers Street, Edinburgh EH1 1JF

<sup>3</sup> AOC Archaeology Group, Edgefield Road Industrial Estate, Loanhead, Midlothian EH20 9SY

<sup>4</sup> [derek.hall157@gmail.com](mailto:derek.hall157@gmail.com)

<sup>5</sup> SUERC, Scottish Enterprise Technology Park, Rankine Avenue, Glasgow G75 0QF

<sup>6</sup> AOC Archaeology Group, Old Estate Office, Rosehaugh Estate, Avoch IV9 8RF

<sup>7</sup> [lindseypaskulin@gmail.com](mailto:lindseypaskulin@gmail.com)

<sup>8</sup> Northern Archaeological Associates, Maewood House, Harmire Enterprise Park, Barnard Castle DL12 8BN



ILLUS 1 Location of Kinneddar, Lossiemouth, Moray (Base map © Crown Copyright/database right 2018. An Ordnance Survey/EDINA supplied service)

site in northern Britain (Oram 2007: 241). 35km to the northwest, across the Moray Firth, lay Portmahomack, a monastery established in the 8th century and destroyed during the Viking Age (Carver 2016; Carver et al 2016).

Today Kinneddar comprises a graveyard marked by a relatively modern sub-rectangular boundary wall, with gravestones from the 17th to the 20th century (Illus 2) (Canmore ID 16470). Kinneddar's parish church went out of use around 1666, when a kirk at Drainie was constructed for a new parish uniting the medieval parishes of Kinneddar and Ogston (Shaw & Gordon 1882, vol III: 400–1). Richard Pococke (1887: 186) noted that when he visited in 1760 there was 'a Church in form of a Cross the foundations of which are seen' at Kinneddar, but by 1792 only 'vestiges' of the church remained (*OSA* iv 1792: 81). However, Dr Richard Rose, when writing about Kinneddar in 1842 (*NSA* xiii 1845:

Elginshire 151), mentioned that foundations of a church in the centre of the graveyard could still be identified.

In the medieval period Kinneddar was important as a centre of the bishopric of Moray. In the years immediately following the granting of a papal mandate on 7 April 1206, the bishop's seat was fixed at Spynie (moving later to Elgin in 1224), but before the episcopacy of Bishop Brice (1203–22) Kinneddar had been, along with Spynie and Birnie, one of the three episcopal seats of the bishopric (Innes 1837 [*Moray Reg* nos 45, 46]: 39–43; Fawcett 1999: 5; Oram 2016: 18). It remained a significant place after the 12th century (Dransart 2016: 60–1, 73–4) with charter evidence demonstrating that Kinneddar was a location for the bishopric's charter ceremonies of 1226, 1237, 1263, 1269, 1294 and 1328 (Innes 1837 [*Moray Reg* nos 75, 89, 126, 130, 137, 278]: 82, 103, 140, 144, 151, 278). Kinneddar also had a *castrum*,

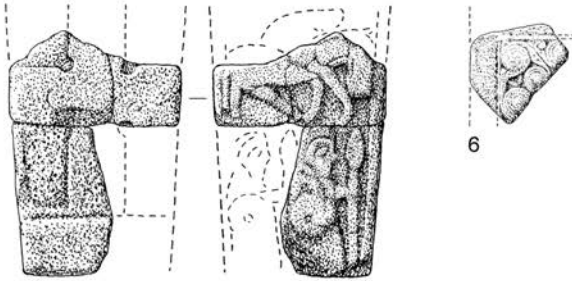


ILLUS 2 Geophysical survey at Kinneddar by the University of Aberdeen and AOC Archaeology (Base map © Crown Copyright/database right 2018. An Ordnance Survey/EDINA supplied service)



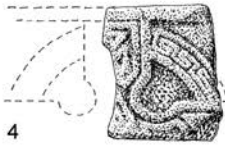


1

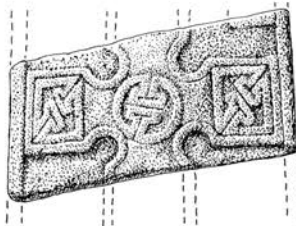


3 & 8

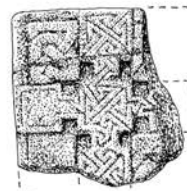
6



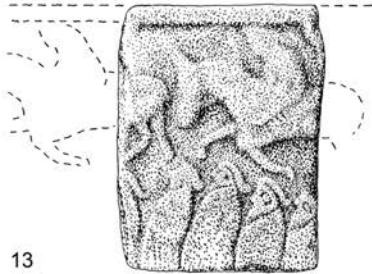
4



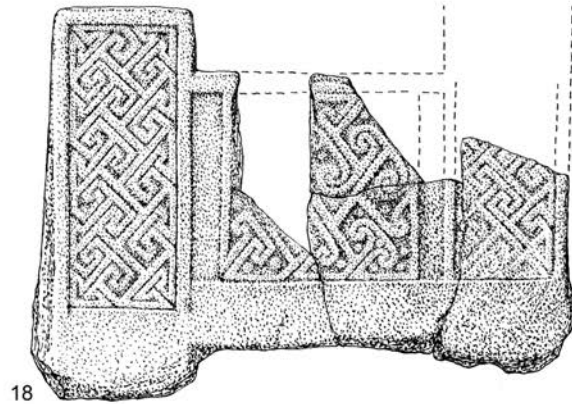
11



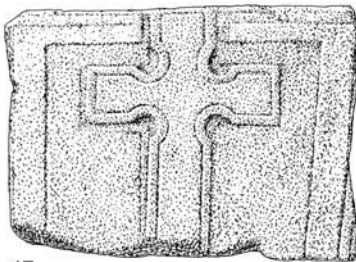
15



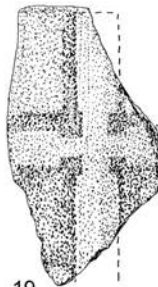
13



18



17



19

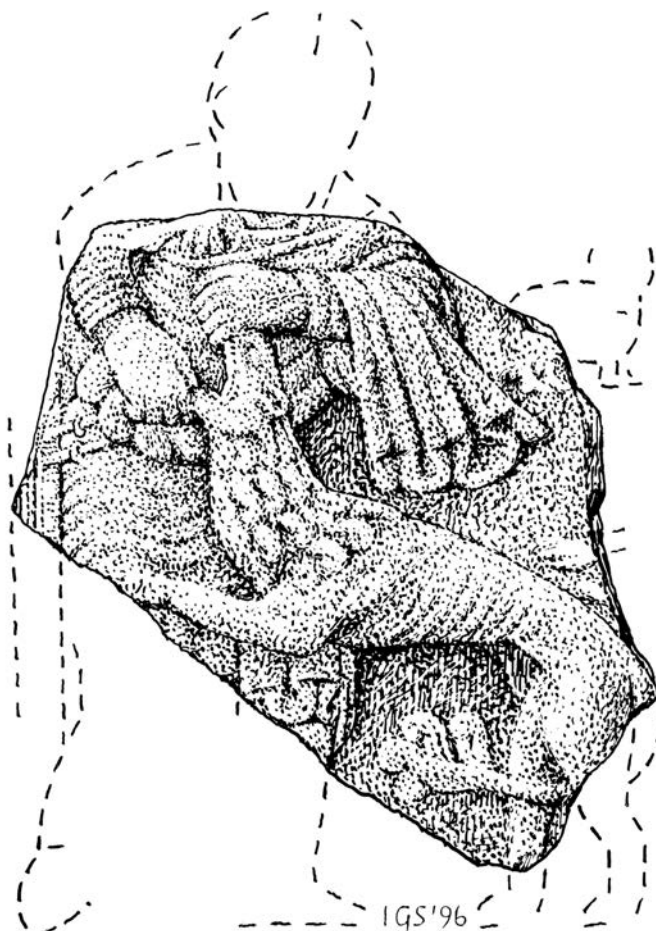


32

ILLUS 3 (a: previous page)  
 (b: right)  
 (a) Examples of monuments from the early medieval sculpture assemblage from Kinneddar  
 (b) the David shrine fragment (not to scale) (© Historic Environment Scotland)

from where the bishop travelled in 1383 (Innes 1837 [*Moray Reg* no. 289]: 369), which presumably was the location of the ‘*capella manerii sui de Kynedor*’, the ‘chapel of the bishop’s manor of Kinneddar’, mentioned in 1328 (ibid [*Moray Reg* no. 137]: 151; Dransart 2016: 73). This residence subsequently fell out of use and into ruin, and was described as the ‘*palatium dirutum*’, ‘ruined’ or ‘destroyed palace’, in *Moray Registrum* no. 462 (Innes 1837: 426), dating to some point between 1606 and 1623.

In the 18th century there are some general descriptions of the episcopal residence, stating that it was in 1760 ‘a large house’ whose foundations could be seen (Pococke 1887: 186), and in the *Old Statistical Account* it is stated that there were ‘the remains of an old palace or castle’ close to the church of Kinneddar (*OSA* iv 1792: 81; see also Grant & Leslie 1798: 84). The form of the bishop’s residence is uncertain, but, according to the entry by Rose in the *New Statistical Account* (*NSA* xiii 1845: Elginshire 151–2), it included two sets of walls, each with a ditch outside and an earthen rampart inside, the outer wall had towers at each angle of a hexagonal groundplan, and at the centre was a great tower, storehouses and a barracks. According to Rose (ibid: 151) ‘what remained of the doors and windows, and the hewn stones found among the rubbish, shows that the work



was of the Gothic order, and highly ornamented in its day’. Rose stated (ibid: 152) that some of the eastern wall and towers still survived, and that a drawbridge had recently been found there, but that elsewhere the walls and ramparts had been levelled to the ground, with the ramparts used to fill in the ditches, before the land was placed under cultivation. While this was taking place (considerably before 1842), Rose visited the site, describing (ibid: 152–3) stone cists, human bones, peat or turf ashes, oak charcoal, and broken urns found under the ramparts, with ‘the numerous graves running parallel to the wall, and covered by the high earthen rampart’. According to Rose, the castle was so closely

‘adjoining to the churchyard’ that the large central tower was supposedly used as a belfry for the church after the stronghold fell out of use (ibid: 151–2). While Rose’s account may have been an embellished interpretation, if even some of the finds and structures he described were present then it indicates that substantial structures were created at Kinneddar in addition to the parish church, and that these covered earlier human activity on the site, including what may have been a cemetery (although of uncertain date).

The early medieval sculptural evidence (Illus 3) from the site included part of a now lost Class I symbol stone, along with over 30 fragments of composite box-shrines, cross slabs, freestanding cross fragments and other sculptural elements. The Class I stone was found in 1855 when the church manse at Kinneddar was demolished. It was decorated with a large crescent and V-rod with spiral decoration on the crescent (Stuart

1856: 40). The early Christian sculpture at Kinneddar is diverse, with fragments of cross slabs decorated with ring-headed crosses, knotwork and key pattern, and some of the stone fragments show human figures, including figures on horseback and warriors carrying spears. The style and quality of carving has close parallels with collections from Burghead, Rosemarkie, St Andrews and Portmahomack, with the majority of the carvings likely to be of 8th- to 9th-century date (Dransart 2001: 235, 239; Henderson & Henderson 2004: 130–1; cf Henderson 1998: 130–1, 155, 165). Most of the stones were found in old stone dykes around the Old Manse or were dug up in the cemetery (Stuart 1856: 40; Allen & Anderson 1903: 142). One sculptural fragment is worthy of particular mention – a fragment of a panel showing David wrenching apart the jaws of a lion (Illus 3b). This can be directly compared with the St Andrews Sarcophagus (Henderson 1998), and it is likely that the Kinneddar



ILLUS 4 Development-led trenching at the site (Base map © Crown Copyright/database right 2018. An Ordnance Survey/EDINA supplied service)

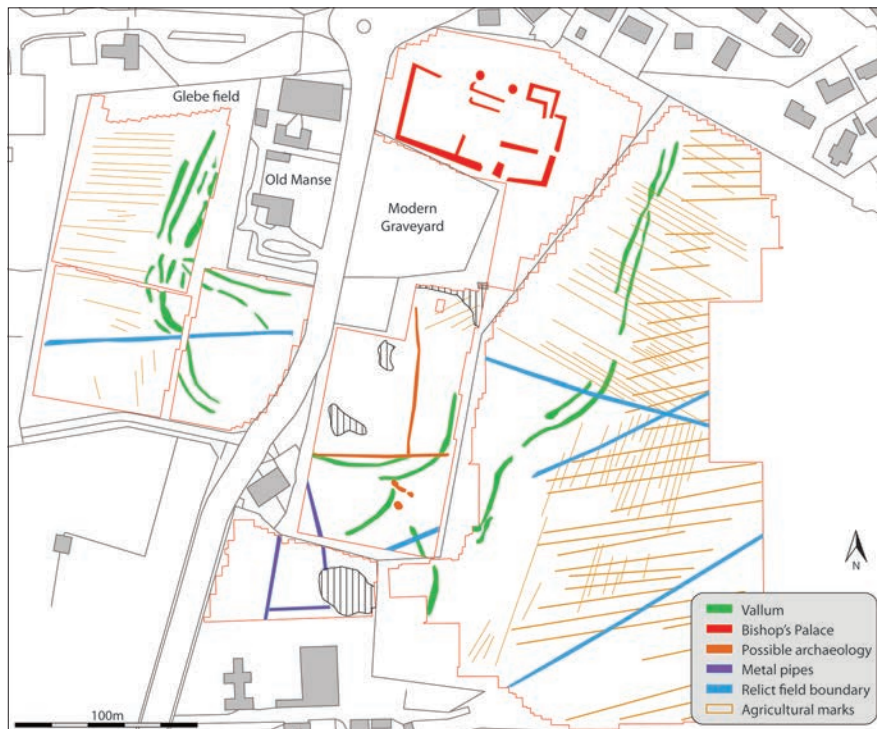
monument was designed to hold the body or relics of an important saint or more likely a king (Henderson 1998: 154–6; Dransart 2001: 235; Jane Geddes pers comm).

Previous archaeological work at the site has included excavation by boys from Gordonstoun School in 1936, who, led by a schoolmaster, excavated the foundations of the Bishop's Palace (Canmore ID 16459). In 1995, The Moray Society commissioned CFA Archaeology to undertake some trial trenching at the site (Cameron 1995). A number of evaluation trenches were dug to the north, east and south of the modern graveyard (Illus 4). These uncovered walls that were probably associated with the Bishop's Palace to the north, but identified few definitive features to the east or south. A later geophysical survey by the Scottish Episcopal Palace project identified the cruciform layout of the later church within the modern graveyard (Dransart 2016: 73). In 2002, development-led work by Headland

Archaeology revealed a large ditch to the east of the Bishop's Palace, which was not dated or fully published (Brown 2002), but at the time it was tentatively identified as a possible enclosure ditch surrounding the Bishop's Palace or the modern graveyard. The description and position of the ditch suggests it is likely to have been a northern stretch of the vallum. The ditch found consisted of a primary cut around 2.8m wide, which was recut by a larger ditch, 5.6m wide – it is possible that this was an early vallum ditch with a recut by a secondary vallum on the same line (see below). Medieval redware was found in the deliberate backfill of the recut ditch.

#### UNIVERSITY OF ABERDEEN AND DEVELOPMENT-LED EVALUATIONS

New work was carried out at the site from 2015 to 2017 as part of research by the University



ILLUS 5 Interpretation of the geophysical results (Base map © Crown Copyright/database right 2018. An Ordnance Survey/EDINA supplied service)



of Aberdeen. Development-led archaeology led by AOC Archaeology occurred during the same period (Dunbar 2018). The University of Aberdeen-led work was undertaken as part of the Northern Picts and Comparative Kingship projects, both of which seek to understand the environs of the major Pictish centre at Burghead. In 2015 and 2016, geophysical surveys were undertaken to test the idea that a vallum ditch might surround the modern cemetery – as had been established by aerial photography at Portmahomack (Carver et al 2016: 37). The geophysical survey was carried out by team members of the Northern Picts project (Noble & Sveinbjarnarson 2016: 125) with the aim of trying to identify signs of an outer enclosure around the modern graveyard. Approximately 5.47ha was surveyed with a dual sensor Bartington Grad 601-2 gradiometer. Data was collected in zig-zag mode with 1m traverse and 0.25m sample intervals.

This survey identified traces of probable vallum enclosures to the west and south of the modern graveyard (Illus 2 and 5). These are typically apparent as linear bands of positive magnetic readings. In the Glebe field on the western side of the Old Manse, a corresponding break in these anomalies, together with a funnel-like entrance that connects to the terminals of the enclosures, probably represents an entrance. Immediately to the north of this, a more complex series of enclosing elements is apparent with up to four possible ditches. At least two ditches can be identified continuing south, where they narrow and kink before curving eastward. Additional positive magnetic readings, indicative of cut features such as infilled ditches, abut and extend southwards from the main line of the vallum. These may represent additional segmentation of the enclosure complex. A series of linear striations representing modern cultivation truncate all of the features mentioned above. A more widely spaced set of rig and furrow marks, however, seem to respect the line of the outer vallum ditch on both the eastern and western sides of the enclosure. A number of possible ditch features have been identified within the southern portion of the interior. To the north, the modern graveyard and houses largely

obscure any earlier features, but the townplan of Lossiemouth might preserve the northern line of the vallum. A series of anomalies recorded on the northern side of the modern graveyard confirm the presence and extent of the later Bishop's Palace. However, rather than a hexagonal plan as suggested by the *New Statistical Account* (NSA xiii 1845: Elginshire 151–2), the geophysical survey suggests a rectilinear groundplan, much more similar to that which still survives at nearby Spynie Palace (Walker & Woodworth 2015: 741–7).

In addition to the University of Aberdeen-led work, during the same period AOC Archaeology was commissioned by Tulloch of Cummington Ltd to undertake survey and evaluation work in advance of housing development to the east of Kinneddar. This mainly focused on land to the east and south of the Bishop's Palace. This work comprised both geophysical survey and excavation. The geophysical survey employed a dual sensor Bartington Grad 601-2 gradiometer with data collected in zig-zag mode and at a resolution of 1m traverse and 0.25m sample intervals, covering a total area of approximately 4.55ha. The AOC survey produced near-identical results to the University of Aberdeen survey for the area immediately south of the modern graveyard, but the AOC survey also significantly extended eastwards allowing the eastern extent of the vallum ditches to be established (Illus 2 and 5). On the eastern side, the vallum enclosures, apparent as two bands of positive magnetic readings, run in a north/north-east direction and are spaced approximately 7–12m apart. These correspond with the results of the University of Aberdeen survey, which together show the southern and eastern extent of the vallum enclosures.

## EXCAVATION

Following the geophysical results of 2015 and 2016, an evaluative excavation was undertaken in 2017 by the University of Aberdeen to ground-truth the geophysical results and to obtain an absolute chronology for the features identified. The objectives for the excavation were to confirm





ILLUS 6 The position of the University of Aberdeen trenches (Base map © Crown Copyright/ database right 2018. An Ordnance Survey/EDINA supplied service)

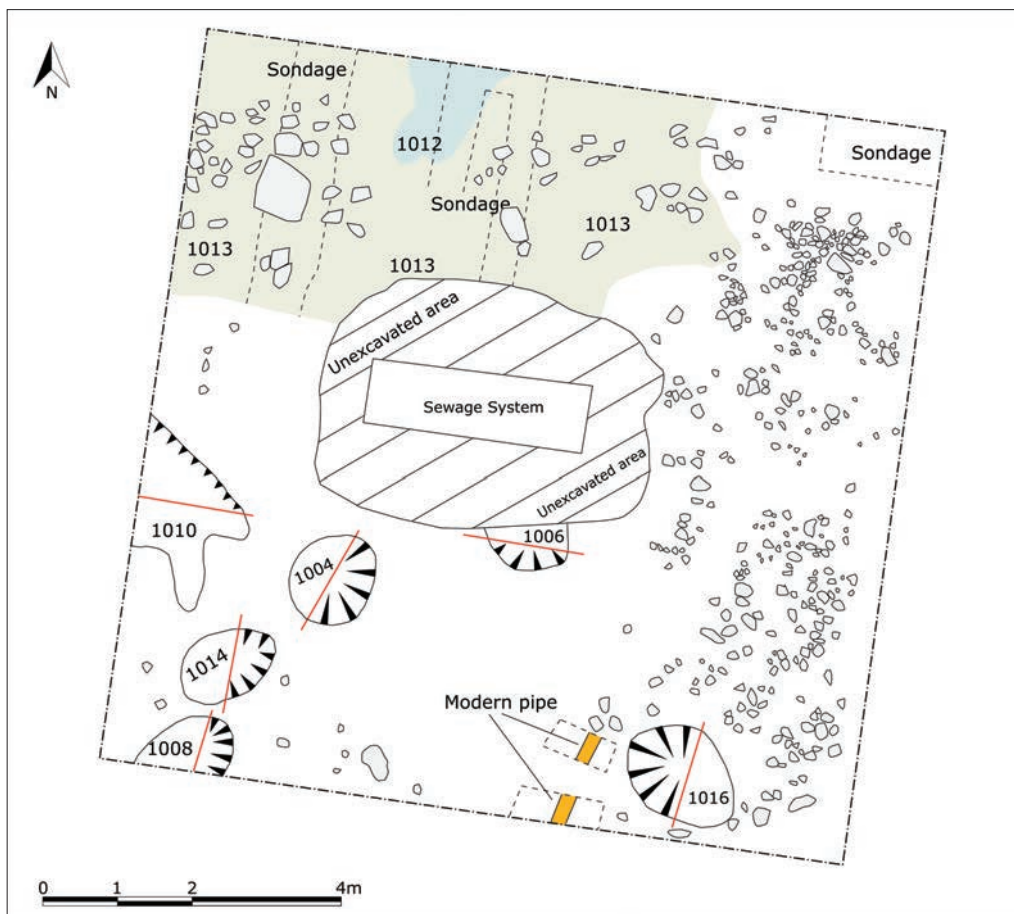
and characterise the vallum enclosure(s) identified in the survey, confirm and characterise an annexe enclosure to the south and test interior areas of the vallum for surviving early to high medieval in situ deposits and features. No work was carried out in the modern cemetery, which remains in use today. The evaluation reported here took place over four days (6–9 October) and comprised a team of three professional archaeologists from the University of Aberdeen, 20 University of Aberdeen undergraduate students and four local volunteers. The fieldwork was carried out as part of the University of Aberdeen Honours-level undergraduate course 'Professional Archaeology I'. The excavation at Kinneddar was centred on NGR: NJ 22376 69668, immediately to the south of the graveyard, and comprised six trenches with a total excavation area of around 340m<sup>2</sup> (Illus 6), targeting the main enclosure boundaries identified in the survey and an area in the interior. The excavation areas were situated in a grassed

field at *c* 10m AOD, with the land sloping to the east towards the former location of Loch Spynie. The underlying bedrock consisted of raised marine deposits of Holocene age – gravel, sand and silt. The trenches were opened by machine with all features subsequently excavated by hand.

Near the southern graveyard wall, four trenches were opened with features present in three out of four trenches (Illus 6). Trenches 2 and 5 had a single pit or truncated post hole in each, with a possible post pipe identified in the example from Trench 5. Trench 6 revealed no features of archaeological significance. In Trench 1, modern features such as a roughly north/south running plastic waste pipe and a centrally placed concrete sewer system restricted the extent of the excavations and had truncated some of the archaeological deposits. Nonetheless, within the (*c* 10m × 10m) trench there were a number of features indicative of earlier activity, including a circular setting of large post holes ([1004], [1006],

[1008], [1014] and [1016]) and two successive clay floor layers, [1012] and [1013] (Illus 7). The post holes appear to have formed the structural posts for a wooden building, though there were no surviving floor layers or hearths associated with these features. However, approximately half of this possible structure remains unexcavated and an associated hearth may be preserved *in situ* to the south. The posts were spaced up to 2m apart. It is possible that the modern waste pipe, which runs through the eastern section of this structure, may have truncated another post, which would explain the wide spacing between Post holes [1006] and [1016], however, this could also be interpreted as an entrance area. The post holes varied from 0.5m to 1.3m wide and 0.35m

to 0.88m deep. Post hole [1016] was the largest example excavated in Trench 1 and the only one to produce definitive evidence for a post pipe (Illus 7 and 8). The post pipe measured approximately 0.3m wide and at the base of the post pipe fill there was a thin, folded strip of copper alloy. The copper alloy strip appears to have been part of a plain, functional fitting for protecting the end of a leather strap of some sort. Charcoal from Fill (1017) from the post hole was dated to cal AD 1030–1220 (SUERC-78797 900±35; 95% probability). The fills of the other posts [1004], [1006], [1008] and [1014] contained infrequent or occasional amounts of charcoal and small to medium-sized stones that could have been used as packing material. The upper fill (1009) of



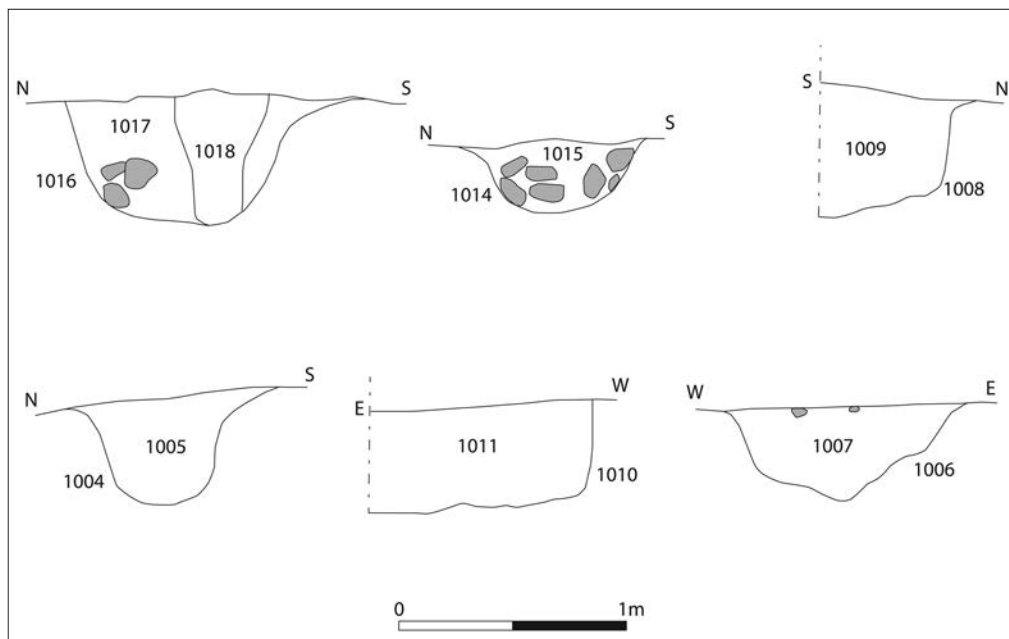
ILLUS 7 Trench 1 plan (© Authors)

Feature [1008] contained fragments of a possible deer mandible as well as a degraded animal horn. The deer mandible was dated to cal AD 970–1160 (SUERC-78796  $1006 \pm 35$ ; 95% probability). Immediately to the north-west of this structure, an irregularly shaped pit [1010] was identified which was around 2.2m by 1m wide and up to 0.4m deep (Illus 7 and 8). The edges of Pit [1010] appear to have been lined with flat, elongated stones. The fill contained a loose dark brown silty sand with frequent amounts of pebbles and medium stones, as well as infrequent amounts of charcoal and charred roundwood.

At the north-western corner of Trench 1, the remains of two successive clay floor layers were identified (Illus 7). The larger spread [1013] consisted of a deposit of compact greyish-yellow silty clay with a considerable number (*c* 50–60%) of medium-sized stones and slabs, covering an area approximately 7.2m × 3.4m. In some instances, the stones seem to have been deliberately placed to form a level surface. The clay and stone deposit ranged from 0.1m to 0.25m deep, generally becoming thicker to the

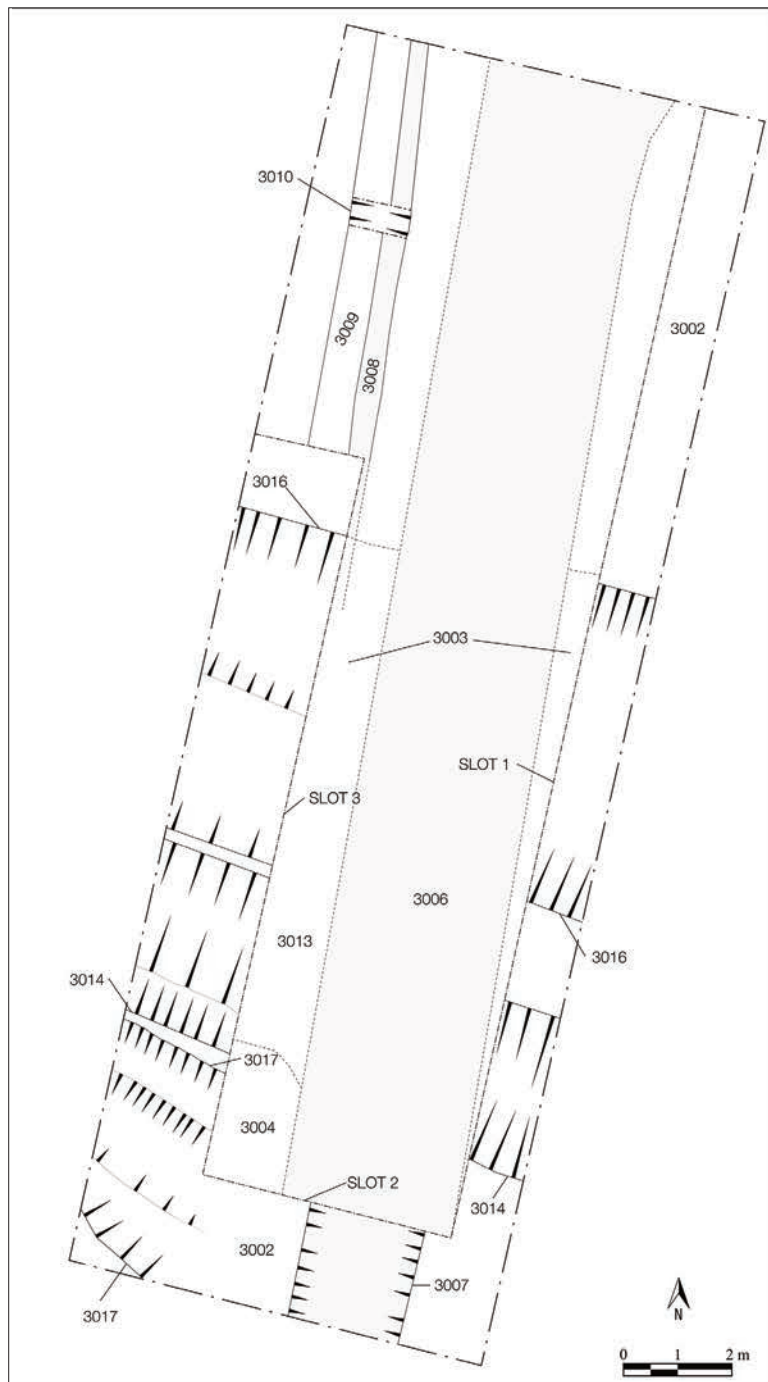
east. The spread was truncated to the south by the modern sewage system. Two sondages through Deposit [1013] revealed that this deposit was placed directly over the natural subsoil. Lying directly over Floor Layer [1013], another clay deposit, [1012], was recorded. This consisted of a compact greyish-blue silty clay. This layer covered an area of approximately 2.8m × 0.7m and was 0.05m to 0.15m thick. Unlike [1013], Deposit [1012] did not contain any stones or slabs. Unfortunately the clay deposits excavated contained no datable material, but the features are suggestive of some sort of building foundation and suggest settlement deposits may survive extending northwards towards the modern cemetery.

Trench 3, which measured 10m × 3.5m, was located along the field boundary adjacent to the B9135 road, approximately 70m south of the graveyard. It was opened to investigate two lines of the possible vallum ditch. As noted above in the geophysical results, two large ditches can be seen arcing south-eastwards from the Glebe field to the west. The fainter of the two ditches

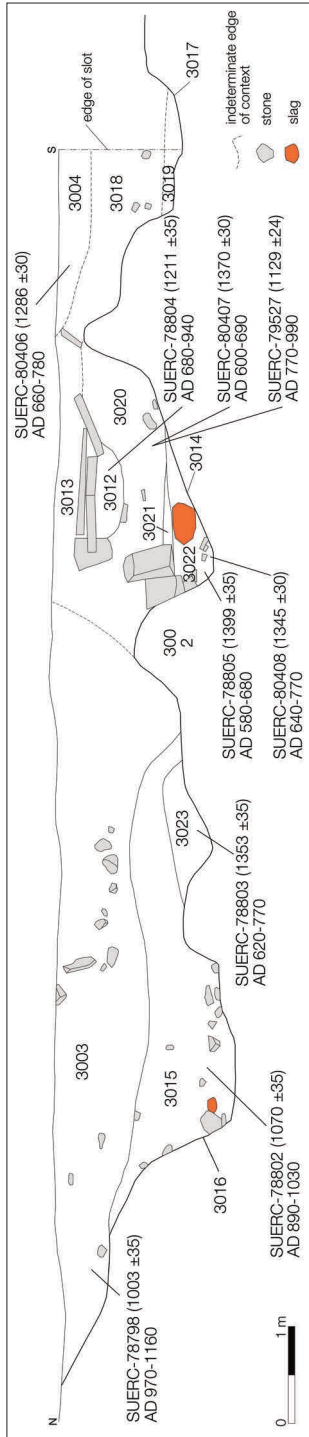


ILLUS 8 Sections of features excavated in Trench 1 (© Authors)





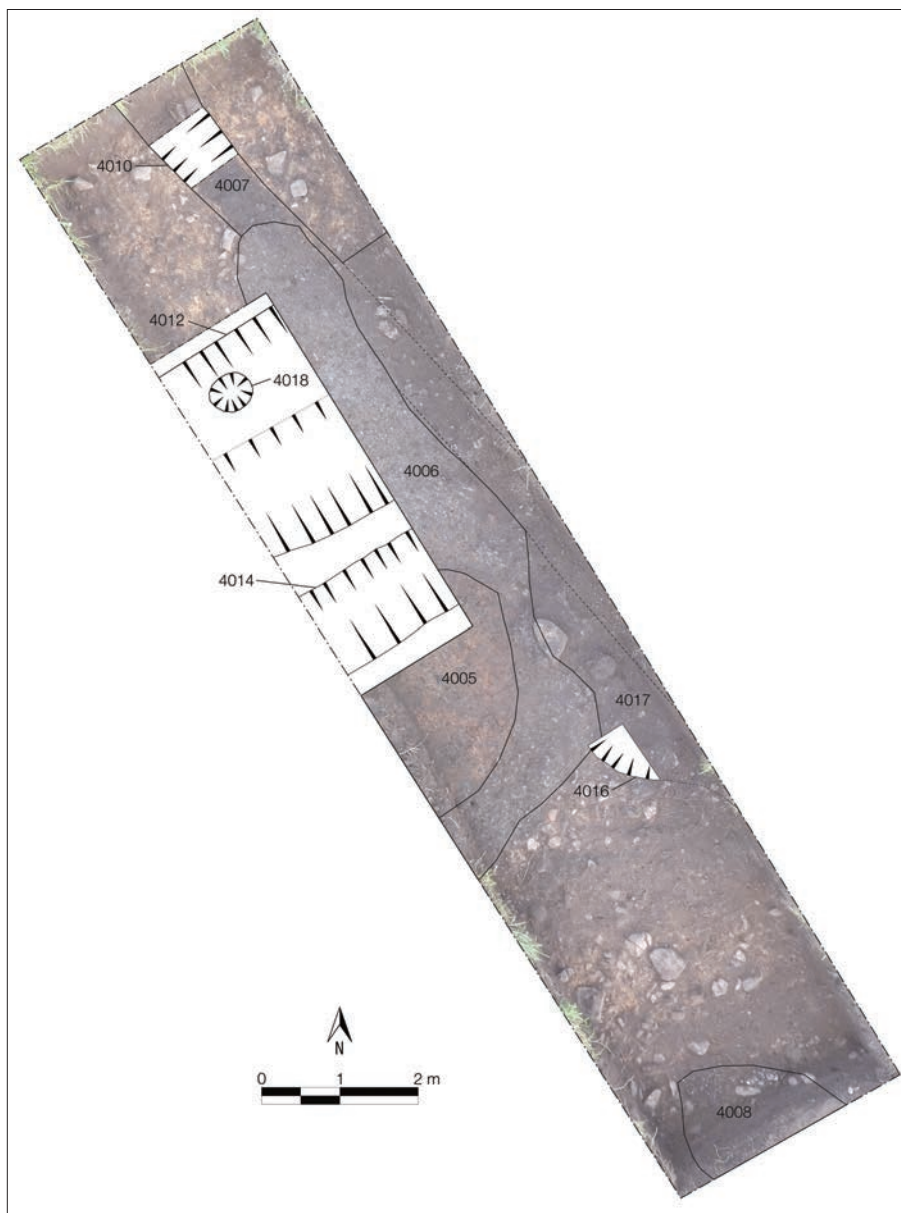
ILLUS 9 Plan of Trench 3 (© Authors)



ILLUS 10 West-facing section of vallum ditches [3014] and [3016]. © Authors

on the geophysical survey was actually the larger identified in the excavation and likely to be the later of the two features. These ditches appear to cross over somewhere under the current B9135. It is likely therefore that these two ditches represent successive phases of a vallum enclosure rather than contemporary features. Two linear cut features, a field drain and a plough furrow [3010], truncated the earlier archaeological features in Trench 3, limiting the area of the ditch that could be investigated (Illus 9).

The smaller and earlier of the two ditches, Ditch [3014], was identified towards the centre of Trench 3. Ditch [3014] was 1.5m wide and 1.30m deep (Illus 9 and 10). The ditch had irregular slopes on its two opposing sides, suggesting that the ditch had been recut, with Fill (3020) within a recut. The basal fill (3022) of the ditch was a compact bluish sandy clay with occasional charcoal and cobble inclusions. The basal fill contained charcoal which produced radiocarbon dates of cal AD 580–680 (SUERC-78805 1399 ±35; 95% probability) and cal AD 640–770 (SUERC-80408 1345 ±30; 95% probability). Fill (3022) was overlain by (3021), a thin lens of light brown silty sand. At the intersection of Fills (3022) and (3021), a smithing hearth base was identified (see below). Above Fill (3021) was (3020), a mid-fill that may have been in a recut of the ditch. Fill (3020) was a mid-greyish-brown silty sand with occasional charcoal inclusions. Charcoal from (3020) was dated to cal AD 770–990 (SUERC-79527 1129 ±24; 95% probability) and cal AD 600–690 (SUERC-80407 1370 ±30; 95% probability). Fill (3020) was cut by a pit or a further recut of the ditch with a brown-orange silty clay fill (3012), with frequent charcoal and occasional calcined bone inclusions. The edges of (3012) were marked by large stones. A large animal bone fragment from (3012) was dated to cal AD 680–940 (SUERC-78804 1211 ±35; 95% probability). The uppermost fill (3013) had unclear edges and could not be confidently distinguished from the upper fill (3003) of the secondary vallum ditch [3016], but the dating suggests [3016] cut the earlier ditch. Occasional charcoal and bone were recovered from (3013) and several large slabs sat at the interface between (3013) and the fill immediately beneath (3012).



ILLUS 11 Plan of Trench 4 (© Authors)

The probable secondary vallum ditch [3016] existed up to a depth of *c* 1.8m and was around 5m wide (Illus 9 and 10). The edges were gently sloping and the base was flat, though irregular in parts, with a possible step, perhaps as a result of recutting the ditch. The ditch comprised at least three fills, primarily identified in section. Deposit

(3023), a relatively sterile dark brownish-grey silty sand, was a basal fill, charcoal from which returned an early date of cal AD 620–770 (SUERC-78803 1353 ± 35; 95% probability). Fill (3023) may have been an earlier phase of the secondary vallum with the upper fills within a recut. The mid-fill (3015) consisted of a mottled

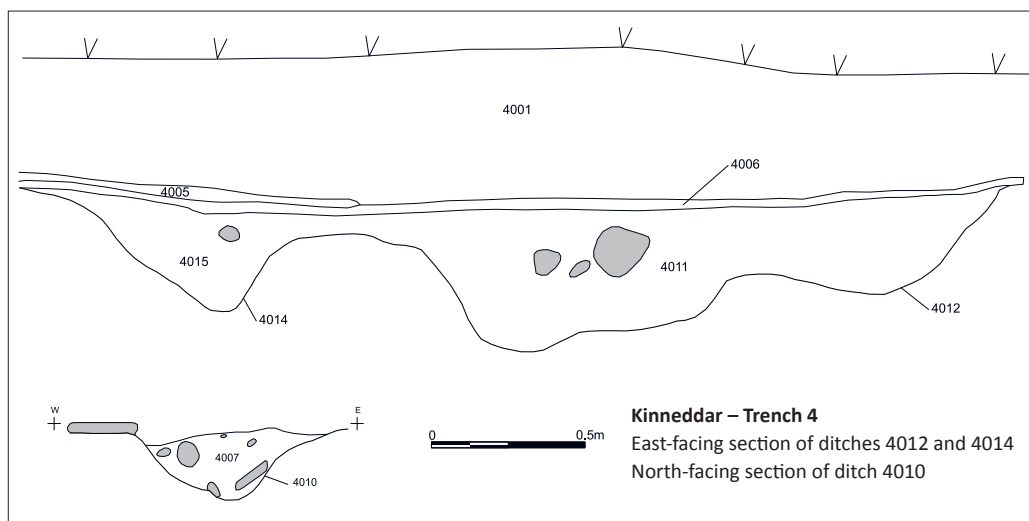


orange and brown silty sand with occasional large slag fragments at the base and frequent cobble and stone inclusions. This may suggest the use of the ditch for metalworking or the discard of metalworking waste, similar to the evidence from Ditch [3014]. A cattle metatarsal from (3015) was dated to cal AD 890–1030 (SUERC-78802  $1070 \pm 35$ ; 95% probability). The upper fill (3003) consisted of a medium brownish-grey clayey sand with occasional charcoal and frequent sub-angular stone inclusions. Animal bone (primarily cattle), shell fragments, flint, fragments of iron, slag and ceramic were recovered from (3003). The ceramics were from near the surface and comprised two sherds dating from the 12th to 13th centuries (see below). A large mammal long bone shaft fragment from the same context (3003) was dated to cal AD 970–1160 (SUERC-78798  $1003 \pm 35$ ; 95% probability).

Located immediately to the south of, and adjacent to, Ditch [3014], in the south-west corner of the trench, was a poorly defined cut feature [3017], either a pit or another ditch (Illus 9 and 10). Its limits could not be clearly identified as it extended beyond the excavation area and was heavily truncated to the east by the sewage pipe. It was at least 1.5m wide and 1.20m deep, with a stepped northern edge and a flat base. At least three loose fills were identified in section.

At the bottom of the pit was a greyish-brown silty sand (3019) with frequent cobble inclusions. Above was Fill (3018), a light greyish-brown silty sand with occasional charcoal inclusions. The upper fill (3004) was a dark grey silty sand with occasional charcoal and bone inclusions as well as moderately frequent sandstone slabs. Charcoal from (3004) was dated to cal AD 660–780 (SUERC-80406  $1286 \pm 30$ ; 95% probability).

Trench 4 was located approximately 50m south-east of Trench 3, and was opened to investigate a large linear feature [4012] identified in the geophysical survey as a possible annexe enclosure (Illus 11). Two linear features were identified in the trench, Ditch [4012] and Ditch [4014], as well as an amorphous large pit [4016], a linear cut feature [4010] and a shell deposit (4008) (Illus 11). Feature [4012], orientated north-east/south-west, was 2m wide and 0.5m deep and filled by a dark brown sandy silt (4011) (Illus 12). It had straight edges and a U-shaped base and its northern edge was stepped, where a post hole [4018] was identified. Post hole [4018] was circular in plan, measuring 0.35m in diameter and was 0.15m deep. Its fill was very similar to Fill (4011) of the linear feature [4012]. The presence of a post hole could suggest that [4012], and perhaps also Feature [4014] located immediately adjacent, formed part of a palisaded



ILLUS 12 Sections of features in Trench 4 (© Authors)

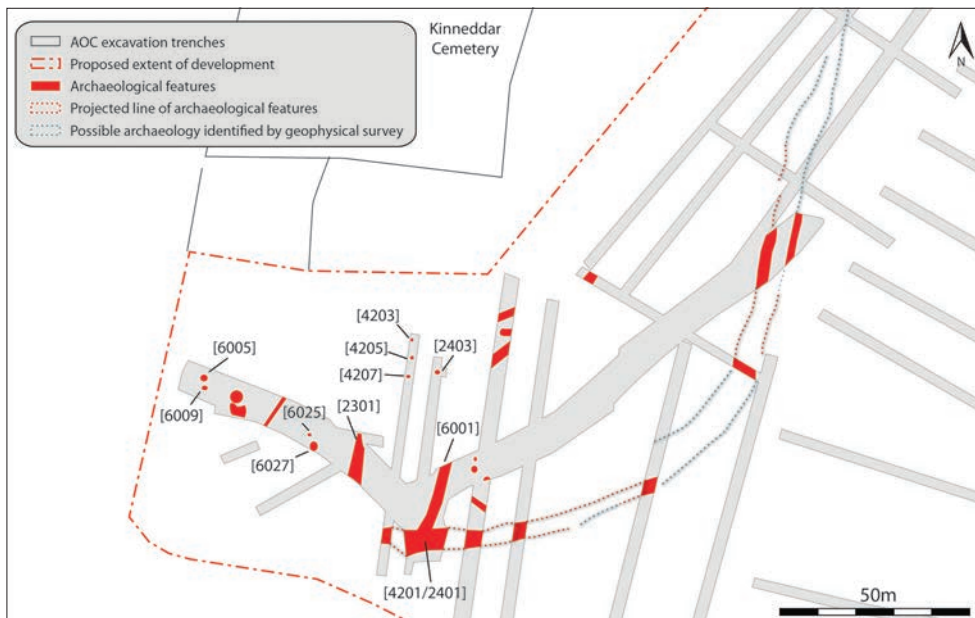
or fenced enclosure (Illus 11 and 12). Charcoal from Fill (4011) was dated to cal AD 1030–1210 (SUERC-78806  $911 \pm 35$ ; 95% probability). Alongside [4012], a shallow additional linear feature [4014], approximately 1m wide and 0.4m deep, ran parallel to the larger linear feature (Illus 11 and 12). This feature was filled by a dark brownish-black sandy silt (4015) with occasional bone and moderate stone inclusions. Two clay and silt deposits (4005, 4006) overlay Features [4012] and [4014].

A poorly defined cut feature [4016] was identified immediately south of Ditch [4014] (Illus 11). It was filled with mid-grey sandy silt (4017) with occasional small stone inclusions. Ditches [4012] and [4014] and Pit [4016] were truncated by a further feature [4010] (Illus 11 and 12). This linear feature, orientated north-west/south-east, was located along the northern edge of the excavation trench. It extended to 0.25m in depth and 0.6m in width and was filled by a dark brown/black sandy silt (4007), charcoal from which was dated to cal AD 1020–1170 (SUERC-78807  $938 \pm 35$ ; 95% probability). The shallow shell deposit (4008) was located against the southern edge of the excavation trench (Illus

11), and was exposed after the removal of a light grey clayey-silt deposit (4003). The visible extent of the shell deposit was  $0.5\text{m} \times 1\text{m}$  and it appeared to extend beyond the excavation trench to the south.

In addition to the University of Aberdeen excavation results, evaluation by AOC Archaeology produced additional information regarding the vallum to the east of the Aberdeen trenches. The AOC trenching was limited to a 7% evaluation of the development area to the east and south of the modern graveyard at Kinneddar, alongside stripping of an access road to the immediate south (Illus 13). The access road trench was a maximum of 8m wide. This trench, along with the linear evaluation trenches, allowed the larger of the two vallum ditches to be traced on its eastern limits.

A large ditch [4201/2401] (Illus 13), likely to be the same ditch as the secondary vallum ditch [3016] found in the University of Aberdeen excavation, was traced in at least six of the AOC evaluation trenches. The profile of Ditch [4201/2401] was very similar to [3016] identified in the University of Aberdeen project – around 4m to 5.6m wide and at least



ILLUS 13 AOC Archaeology trenches to the south and east of the modern graveyard (© Authors)

1m deep. The basal fill showed evidence of gradual silting and inwash, with upper deposits suggestive of much more rapid and deliberate backfilling. A radiocarbon date of cal AD 660–780 (SUERC-73462; 95% probability) was returned from ash roundwood charcoal from the base of one of the sections excavated across the ditch (Table 2). The uppermost fills produced redware and green glaze pottery likely to span the 13th–15th centuries (Haggarty 2018: 22–4). The upper fills also contained iron slag and hammerscale (McLaren 2018: 25). The latter is diagnostic of bloomsmithing or blacksmithing.

In the AOC evaluation, two north/south ditches were also identified to the north of the vallum ditch. Ditch [6001] (Illus 13) was cut by the vallum ditch. In the geophysical survey, this ditch can be identified heading northwards, but its route farther north is obscured by the modern field boundary. On the south side of the vallum, this ditch appears to curve south-east and may join up with Ditch [4012] identified in Trench 4 of the University of Aberdeen excavations. Ditch [6001] was around 3m wide and around 0.65m deep, with three distinct fills (6002), (6003) and (6004). Fill (6004), the basal fill of the ditch, comprised a dark brown/orange medium sand with charcoal flecking. A radiocarbon date of 2040–1880 cal BC (SUERC-73460) was obtained from the basal fill. A mid-fill (6002) was a dark brown medium sand and the uppermost fill (6003) was a similar material and appeared to lie within a recut of the ditch. While the radiocarbon date might suggest a prehistoric date for the ditch, it could be that this represents residual material and that the ditch cutting was a later event. Certainly, the fact that this feature aligns with medieval features identified in Trench 4 of the University of Aberdeen excavations might suggest it was a medieval feature, but at least one phase of it was cut by the vallum enclosure, though it may have been designed to connect to an earlier phase of the vallum. A further north/south linear ditch [2301] was also identified in the AOC trenching, but not dated. It was around 3m wide and 0.55m deep, with two fills. Metalworking slag was retrieved from the ditch fills. In addition to the ditches, a number of cut features [6009], [6025], [6027], [4203], [4205], [4207] and [2403] were

identified (see Illus 13), representing isolated pits and post holes, but none were diagnostic and none of the features contained datable material. A well-constructed well [6005] was also found – measuring 1.9m north/south by 1.65m transversely. This was lined with stones and backfilled with material containing 13th- to 14th-century ceramics.

## SPECIALIST REPORTS

### THE FAUNAL ASSEMBLAGE

The University of Aberdeen excavations produced a small faunal assemblage (N=357) from Kinneddar which was the subject of an assessment, the results of which are reported below. The animal remains were mainly recovered from Fills (3003) and (3015) from the secondary vallum ditch [3016], from the fill (3012) of a pit or recut of the primary vallum ditch [3014], and from a fill (3004) of a large cut feature [3017] in Trench 3. These features represented 98% of the bone assemblage (Table 1). Animal bones were also recovered from the fill (1009) of Post hole [1006] in Trench 1 and from Clay Deposit (4006) in Trench 4. The animal bone was hand-collected and no bulk samples were taken for the recovery of faunal remains, potentially resulting in the underrepresentation of small mammal, bird, fish and amphibian remains (Reitz & Wing 2008). Nevertheless, small soil samples (of 2 litres) for the recovery of dating material were taken and processed in November 2017 at the University of Aberdeen and did not yield any faunal remains with the exception of calcined bones flecks or tiny fragments (<5mm).

Mammal bones were identified to species when possible, using the reference collection at the University of Aberdeen and with reference to Schmid & Garraux (1972), and if not were grouped into the following categories: large mammal (horse/cow/large cervid size), medium mammal 1 (sheep/goat/pig/small cervid size) and medium mammal 2 (dog/cat/hare size), based on Dobney et al (1999). There was no attempt to distinguish sheep from goat remains with all bones being recorded as sheep/goat (*Caprini* sp). The number of fragments with unfused



TABLE 1  
Faunal remains from Kinneiddar

| Taxon                 |                      | Contexts |      |       |      |      |      |      |  |  |       | Total |
|-----------------------|----------------------|----------|------|-------|------|------|------|------|--|--|-------|-------|
| Common name           | Scientific name      | 1009     | 3003 | 3003? | 3004 | 3012 | 3015 | 4006 |  |  | Total |       |
| Cattle                | <i>Bos taurus</i>    |          | 11   |       | 9    | 1    | 1    | 2    |  |  | 24    |       |
| Cattle?               | cf <i>Bos taurus</i> |          | 1    | 2     | 1    |      |      |      |  |  | 4     |       |
| Sheep/goat            | Caprini sp           |          | 5    | 7     | 2    |      | 1    |      |  |  | 15    |       |
| Sheep/goat?           | cf Caprini sp        |          | 2    |       | 4    |      |      |      |  |  | 6     |       |
| Pig                   | <i>Sus scrofa</i>    |          | 5    |       |      |      | 1    |      |  |  | 6     |       |
| Pig?                  | cf <i>Sus scrofa</i> |          | 4    |       |      |      |      |      |  |  | 4     |       |
| Horse                 | <i>Equus</i> sp      |          | 1    |       |      |      |      |      |  |  | 1     |       |
| Deer?                 | cf Cervidae          | 1        | 3    |       |      |      |      |      |  |  | 4     |       |
| Large-sized mammal    |                      | 1        | 11   | 17    | 7    |      | 1    |      |  |  | 37    |       |
| Medium-sized mammal 1 |                      |          | 27   | 15    | 11   |      | 9    |      |  |  | 62    |       |
| Mammal indeterminate  |                      |          | 82   |       | 64   | 7    | 14   |      |  |  | 167   |       |
| Fish                  | Osteichthyes         |          | 1    |       | 3    |      |      |      |  |  | 4     |       |
| Indeterminate         |                      |          |      | 23    |      |      |      |      |  |  | 23    |       |
| Total                 |                      | 2        | 153  | 64    | 101  | 8    | 27   | 2    |  |  | 357   |       |

epiphyses were also recorded by species. These were recorded as neonatal (very small with an obviously spongy and porous appearance to the bone), juvenile (an obvious porous appearance to the bone but not as small as neonatal) or unfused (epiphyses unfused but the diaphysis appears to be adult in texture). The surface preservation of each recordable fragment was recorded as either 'poor', 'moderate' or 'good' and evidence of burning and gnawing was also noted. Evidence of butchery was recorded with reference to the type of mark displayed on the bone such as chops, cuts and sawing.

Out of the 357 bone fragments recovered from the excavation, only 68 fragments (19%) could be identified beyond class level with the remainder comprised mainly of long bone shaft fragments from large or medium-sized mammals. The assemblage was relatively well preserved based on bone surface condition (over 75% of fragments are considered in good condition) and there was no evidence of weathering, which suggests the rapid burial of the bones after their disposal (Behrensmeyer 1978). Their preservation in the archaeological layers could have benefitted from the sandy nature of most deposits and reflects low soil acidity. Other taphonomic factors can also affect the survival and condition of faunal assemblages – such as butchery, disposal patterns and gnawing. Butchery and gnawing were evidenced by the observation of rare cut marks (3%) and canid teeth marks (1.4%) on some specimens. Evidence of burning was noted on 8.6% of bone fragments with calcined fragments (N=19) slightly more frequent than charred or burnt fragments (N=12).

The bone assemblage was dominated by domesticates (cattle/ovicaprid/pig) representing 87% of the identified faunal remains, with cattle (41%) and sheep/goat (31%) far more frequent than pig (14.7%). Fish (N=4), horse (N=1) and possible deer remains (N=4) completed the faunal assemblage.

The small size of the assemblage prevented the analysis of body part representation. Cattle remains were primarily composed of head and feet bones, though shaft fragments from long bones of large mammals, probably cattle, may indicate the presence of most body parts, which

would suggest that animals were brought in on the hoof or raised locally, as observed at Portmahomack (Seetah 2016: D134). Horn core was identified for both cattle and sheep, which could suggest the use of horn sheath. Cranial, long bones and feet bones were also identified among the sheep remains. With the exception of an unfused sheep/goat humerus and a deciduous pig third molar, all other specimens from cattle, sheep/goat and pig were fused, suggesting that the animal bones discarded in the features excavated came from adult individuals. Butchery marks were rare and consisted of occasional cut marks and chop marks observed on cattle and sheep bones.

Currently, the small size of the assemblage limits the interpretative value of the faunal remains from the evaluation, though some comments on the economy of the site and comparisons to the Pictish monastic site of Portmahomack (Carver et al 2016) can be made. The animal component of the economy was dominated by domestic animals, with the possible inclusion of wild animals. The presence of fish and shellfish in the assemblage suggests the exploitation of a marine environment, either from the sea or Loch Spynie, but the numbers are very small. This pattern of predominance of domestic species combined with the exploitation of the local environment was also observed at Portmahomack (Seetah 2016). The uncommonness of juvenile individuals in the Kinneddar assemblage suggests perhaps a focus on the use of cattle and sheep/goat for secondary products. This was also observed at Portmahomack, where cattle were the main source of traction power, dairy products and leather (Seetah 2016: D135). There was no evidence for the production of vellum at Kinneddar as no specimens were from calves under 6 months old (Carver 2016). At Kinneddar, the presence of a juvenile pig specimen may relate to meat production and pigs were perhaps the primary source of meat. However, pigs were uncommon and meat production was perhaps not the main concern based on the features excavated, an observation made by Seetah for the Portmahomack assemblage (Seetah 2016: D135).

### MEDIEVAL POTTERY

Fourteen sherds of medieval pottery were examined by eye and  $\times 10$  lens and identified where possible to known fabric types and vessel forms. No petrological or chemical analysis has been undertaken. There are two sherds in a distinctive gritty black brown fabric type from (3003): (FN6 and FN12), a single slightly hooked everted rimsherd and a rilled bodysherd (Illus 14). Pottery of this form has previously been recovered from excavations on Elgin High Street in the mid-1980s and at Duffus Castle (Cannell & Tabraham 1995: 388, illus 6, cat 2; Hall et al 1999: 764, illus 5, cats 20–4) and dated to the 12th century. Chemical analysis funded by Historic Scotland suggested that this may be a locally produced product, although so far no production sites have been located (Jones et al 2003: 66, 71, 79–80). The remaining sherds are from Scottish Redware vessels in a micaceous version of a widespread Scottish pottery tradition (Illus 14). Chemical sourcing, again funded by Historic Scotland, has suggested that



ILLUS 14 The medieval pottery from Kinneddar. (Left) Rim and bodysherd from cooking vessels in local gritty fabric and Scottish Redware; (right) bodysherds from glazed and unglazed Scottish Redware jugs (© Authors)

there were production centres in all of the main Scottish river valleys where there were abundant sources of red firing blue clays (Haggarty, Hall & Chenery 2011). The same study indicated that it was possible to chemically separate Redwares from Elgin and Spynie Palace due to their very distinctive signatures. The sherds from Kinneddar are from both cooking vessels and jugs, with jugs being better represented. There is a single piece of splash glazed roof tile from (3003) (FN10). This small group of pottery is quite tightly dated to the 12th–13th centuries, with only the roof tile fragment (3003 FN10) and unglazed rim (3003/3009 FN11) being of a potentially slightly later date (13th–15th centuries). The presence of the potentially 12th-century gritty fabric is of interest and those sherds could usefully be chemically sourced to confirm their similarity to the fabrics from Elgin and Duffus Castle.

### IRONWORKING DEBRIS

Three fragments of ironworking debris were recovered (a full catalogue is in the archive). A smithing hearth base was recovered at the intersection of Contexts (3022) and (3021) in the primary vallum fill. In addition, two fragments were obtained from the secondary vallum fill (3015), including a small undiagnostic fragment and one more complex form, comprising two plano-convex bases superimposed with a thin layer of charcoal in between, probably deriving from bloom-refining.

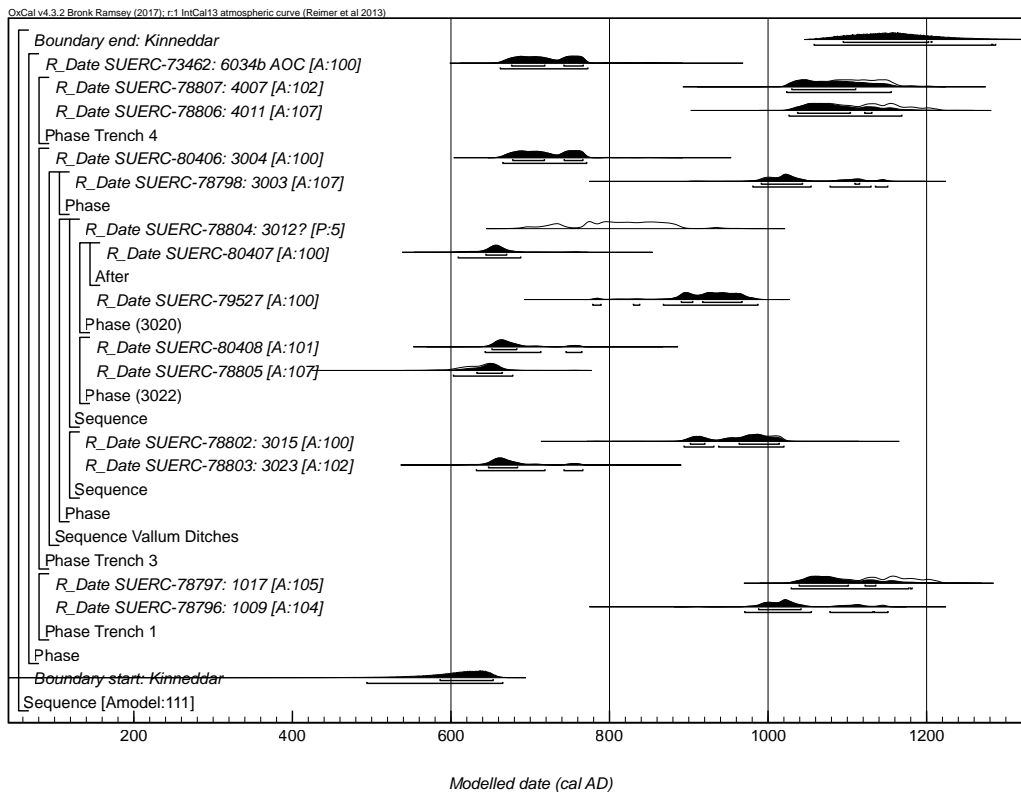
Though this assemblage is very small, several features allow us to interpret the potential scale and nature of early medieval ironworking activity at Kinneddar. Superimposed slag cakes, as found in the primary vallum ditch, indicate repeated activity in the same hearth without clearing it out, suggesting this was a regular activity and that the hearths were substantial enough to allow for this. That fragments have been recovered from the fills of both the earlier and later ditches suggests ironworking was potentially taking place over several centuries.

Ironworking evidence is a common feature of other early medieval ecclesiastical sites in Scotland, for example the Period 2 and 3 metal

workshops at Portmahomack (AD 700–1100) (Spall & Mortimer 2016: D107–11), industrial areas in Periods I–IV at Whithorn (Hill 1997) and substantial spreads of ironworking debris at Iona (Campbell & Maldonado 2016: 90; forthcoming; Cruickshanks 2018). Although ironworking was a major activity on roundhouse settlements in Moray up until around the 1st/2nd centuries AD, a lack of securely dated early medieval evidence leaves an incomplete picture of how the craft continued to develop there (Cruickshanks 2017: 159–214). Despite the small amount of evidence, the ironworking debris from Kinneddar is therefore a significant addition to our understanding of the organisation and development of ironworking in this area.

DATING

A total of 13 radiocarbon dates are available from the University of Aberdeen trenches and one from the AOC excavation of the vallum ditch. The dates are from single-entity samples (Ashmore 1999) of wood charcoal and animal bone with the samples processed by the Scottish Universities Environmental Research Centre (SUERC) Radiocarbon Dating Laboratory. The samples were pretreated following the protocols described in Dunbar et al (2016). Graphite targets were prepared and measured following Naysmith et al (2010). SUERC maintains rigorous internal quality assurance procedures and participation in international inter-comparisons (Scott et al 2003, 2007, 2010) indicates no laboratory offsets, thus

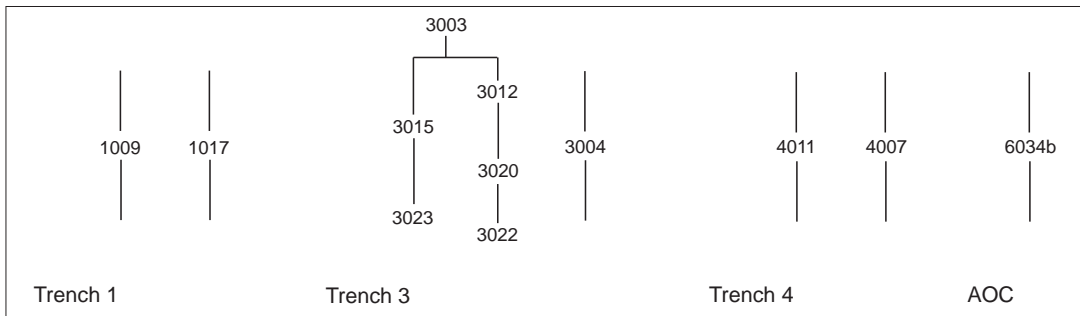


ILLUS 15 Chronological model for the dated activity at Kinneddar. For each of the radiocarbon measurements two distributions have been plotted, one in outline, which is the result of simple radiocarbon calibration, and a solid one, which is based on the chronological model use. The other distributions correspond to aspects of the model. The large square 'brackets' along with the OxCal keywords define the overall model (© Authors)



TABLE 2  
Radiocarbon determinations from Kinneddar

| Site      | Lab No.     | Material                                 | $\delta^{13}\text{C}$ | Context   | Radiocarbon Age (BP) | Calibrated date (95% confidence) cal AD (unless otherwise stated) |
|-----------|-------------|--|-----------------------|---|----------------------|---|
| Kinneddar | SUERC-73460 | Charcoal: Alder                          | -26.2                 | Ditch [6001] basal fill; AOC Archaeology evaluation                 | 3598 ± 32            | 2040–1880 cal BC  |
| Kinneddar | SUERC-73462 | Charcoal: Alder                          | -26.2                 | Secondary vallum ditch basal fill 6034b; AOC Archaeology evaluation | 1286 ± 32            | 660–780   |
| Kinneddar | SUERC-78796 | Animal bone: Deer mandible               | -22.7                 | Pit fill 1009   | 1006 ± 35            | 970–1160  |
| Kinneddar | SUERC-78797 | Charcoal: <i>Corylus cf avellana</i>     | -25.8                 | Pit fill 1017   | 900 ± 35             | 1030–1220   |
| Kinneddar | SUERC-78798 | Animal bone: large mammal shaft fragment | -22.0                 | Secondary vallum ditch upper fill 3003                              | 1003 ± 35            | 970–1160  |
| Kinneddar | SUERC-78802 | Animal bone: cattle metatarsal           | -22.2                 | Secondary vallum ditch lower fill 3015                              | 1070 ± 35            | 890–1030  |
| Kinneddar | SUERC-78803 | Charcoal: <i>Corylus cf avellana</i>     | -26.2                 | Secondary vallum ditch basal fill 3023                              | 1353 ± 35            | 620–770   |
| Kinneddar | SUERC-78805 | Charcoal: <i>Fraxinus</i> sp             | -26.1                 | Primary vallum ditch basal fill 3022                                | 1399 ± 35            | 580–680   |
| Kinneddar | SUERC-80408 | Charcoal: Indeterminate                  | -24.8                 | Primary vallum ditch basal fill 3022                                | 1345 ± 30            | 640–770   |
| Kinneddar | SUERC-80407 | Charcoal: <i>Ericales</i>                | -26.7                 | Primary vallum ditch mid fill 3020                                  | 1370 ± 30            | 600–690   |
| Kinneddar | SUERC-79527 | Charcoal: <i>Salix</i> sp                | -26.8                 | Primary vallum ditch mid fill 3020                                  | 1129 ± 24            | 770–990   |
| Kinneddar | SUERC-78804 | Animal bone: large herbivore atlas       | -22.3                 | Primary vallum ditch upper fill 3012                                | 1211 ± 35            | 680–940   |
| Kinneddar | SUERC-80406 | Charcoal: <i>Ericales</i>                | -27.0                 | Large pit/additional ditch Trench 3; Cut 3017, upper fill 3004      | 1286 ± 30            | 660–780   |
| Kinneddar | SUERC-78806 | Charcoal: <i>Betula</i> sp               | -24.8                 | Annexe enclosure/field boundary 4012, fill 4011                     | 911 ± 35             | 1030–1210   |
| Kinneddar | SUERC-78807 | Charcoal: <i>Corylus cf avellana</i>     | -27.1                 | Annexe enclosure/palisade 4010, fill 4007                           | 938 ± 35             | 1020–1170   |



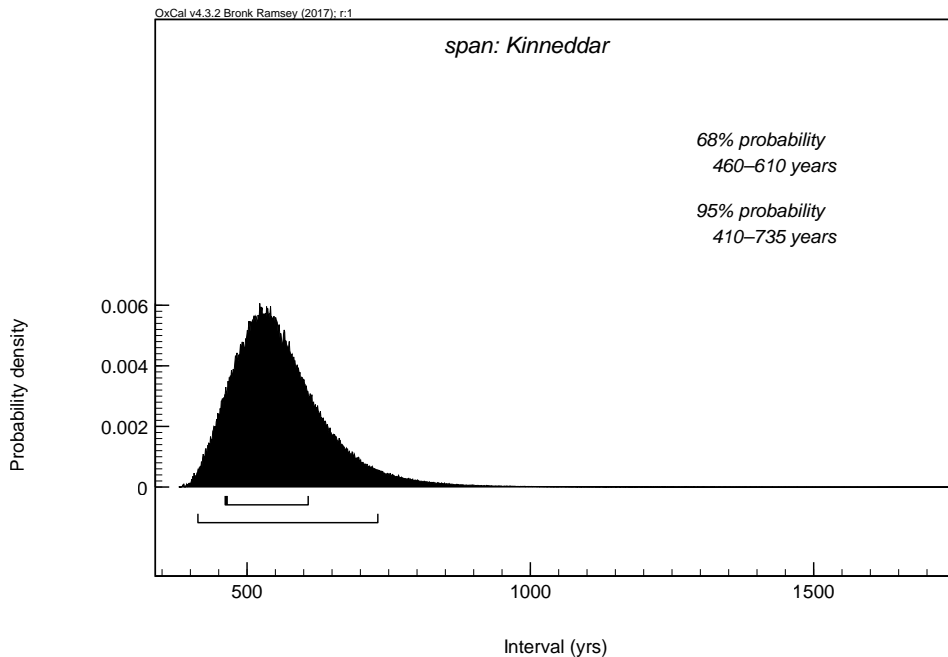
ILLUS 16 Simplified matrix of the dated contexts from Kinneddar (© Authors)

validating the measurement precision quoted for the radiocarbon ages.

Conventional radiocarbon ages (Stuiver & Polach 1977) are presented in Table 2, where they are quoted in accordance with the Trondheim convention (Stuiver & Kra 1986). Calibrated date ranges were calculated using the terrestrial calibration curve (IntCal13) of Reimer et al (2013) and OxCal v4.3 (Bronk Ramsey

1995, 1998, 2001, 2009). The date ranges in Table 2 have been calculated using the maximum intercept method (Stuiver & Reimer 1986) and quoted with the endpoints rounded outward to ten years. The probabilities shown in Illus 15 were calculated using the probability method of Stuiver and Reimer (1993).

A Bayesian approach has been applied to the interpretation of the chronology of Kinneddar



ILLUS 17 Probability for the span of activity at Kinneddar, as derived from the chronological modelling shown in Illus 15 (© Authors)

(Buck et al 1996). Although simple calibrated dates are accurate estimates of the age of samples, this is not usually what archaeologists really wish to know. It is the dates of the archaeological events represented by those samples that are of interest. In this case, for example, it is the timing of the activity associated with the digging and infilling of the vallum ditches, rather than the dates of individual samples, that is of interest. The chronology of this activity can be estimated not only by using the absolute dating derived from the radiocarbon measurements, but also by using the stratigraphic relationships between samples and the relative dating information provided by the archaeological phasing.

Methodologies are now available that allow the combination of these different types of information explicitly, to produce realistic estimates of the dates of archaeological interest. It should be emphasised that the estimates produced by this modelling are not absolute; they can and will change as further data becomes available and as other researchers choose to model the existing data from different perspectives. The technique used is a form of Markov Chain Monte Carlo sampling and has been applied using the program OxCal v4.3 (Oxford Radiocarbon Accelerator Unit). Details of the algorithms employed by this program are available in Bronk Ramsey (1995, 1998, 2001, 2009) or from the online manual. The algorithm used in the models can be derived from the OxCal keywords and bracket structure shown in Illus 15.

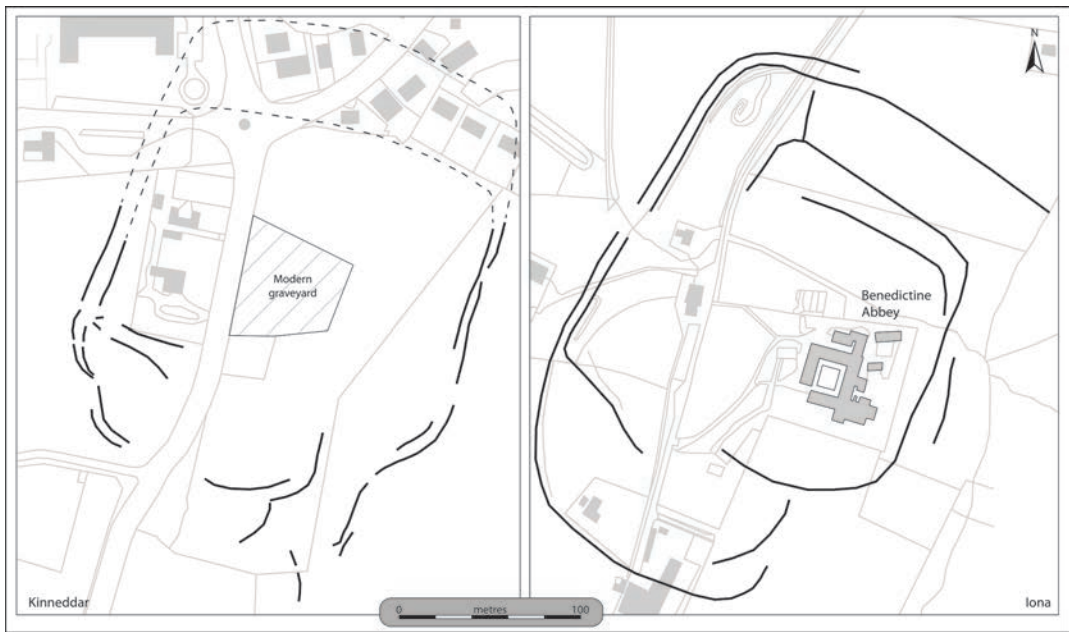
The radiocarbon results and their location within the observed stratigraphy of the site has been discussed in detail in the previous sections. The modelled relationships between the samples can be seen in Illus 16. Of particular note is the sequence of dates in the vallum ditches in Trench 3. Context (3022) is the basal fill of the second ditch, from which there are two results on fragments of charcoal, placing it in the 6th–8th centuries cal AD. Fill (3022) is overlain by (3021), which is a deposit that contains metalworking debris, and above this is (3020) from near the base of which there are two results that are considerably different in date. SUERC-80407, from *Ericales* sp charcoal, dates to the 7th century cal AD, while SUERC-79527, on willow charcoal, dates to the

8th to 10th century cal AD. Since the two results are from the same environmental sample, near the base of this thick deposit, SUERC-80407 has been included as a *terminus post quem* for the context in the modelling, since it is likely reworked material. Cut into (3020) is a pit or later ditch (3012) cutting into Fill (3020). This feature contained frequent charcoal and cremated animal bone. The radiocarbon date (SUERC-78804) from (3012) is on a large herbivore atlas, and it is earlier than the date (SUERC-79527) from the underlying (3020). Therefore, this animal bone is considered to be residual in the context and has been excluded from the modelling.

With these two adjustments made, the radiocarbon dates have good agreement (Amodel=111) with the archaeological information. The model estimates that the overall activity at Kinneddar began in cal AD 500–670 (95% probability; Illus 15; start: Kinneddar), and probably in cal AD 585–655 (68% probability). The overall activity as represented by the samples dated ended in cal AD 1050–1280 (95% probability; Illus 15; end: Kinneddar) and probably in cal AD 1090–1200 (68% probability). The span of the dated activity is 410–735 years (95% probability; Illus 17; span: Kinneddar) and probably 460–610 years (68% probability). Assessing the dating of the vallum ditches is difficult given the recutting of these features and the incorporation of residual material. However, for Ditch [3014] the stratigraphically earliest sample dated (SUERC-78805) from (3022) provides a *terminus ante quem* of cal AD 600–680 (95% probability; Illus 15; SUERC-78805) and for Ditch [3016], SUERC-78803, the modelled result provides a *terminus ante quem* of either cal AD 630–720 (86% probability; Illus 15; SUERC-78803: 3023) or cal AD 740–770 (9% probability). The latter is closer to the radiocarbon date (SUERC-73462), cal AD 660–780, from the basal fill of the vallum ditch excavated by AOC Archaeology.

## DISCUSSION

Various strands of evidence highlight the importance of Kinneddar as a major



ILLUS 18 A comparison of the layout of Kinneddar and that of Iona (© Authors)

ecclesiastical site in the early medieval period. The sculptural evidence is extensive and displays connections to other major Pictish ecclesiastical sites as exemplified by the David fragment (eg Henderson 1998: 130; Dransart 2001; Henderson & Henderson 2004: 129–30). The vallum enclosed an extensive area that is likely to have been around 8.6ha and the presence of annexe enclosures/field boundaries dating to the 11th–12th century suggests the size and importance of the site grew through time. The radiocarbon-dating evidence from Kinneddar suggests activity as early as the late 6th century and certainly by the 7th century, with the primary vallum ditch dug sometime after *cal AD 600–680*. Unlike at Portmahomack, there is no evidence of a hiatus in the Viking Age with the vallum ditch continuing to be infilled into the early 2nd millennium AD.

The full layout of the vallum at Kinneddar remains unknown due to urban development to the north of the site, but the emerging plan has some striking resemblances to other major contemporary ecclesiastical sites. The layout of the vallum, for example, shows parallels to Portmahomack, which is likely to have comprised

a similar sub-rectangular form, though the area enclosed at Portmahomack is likely to have been much more modest (Carver et al 2016: 37; see Campbell & Maldonado forthcoming: fig 15 for other rectilinear plans in Scotland; these contrast to the Irish generally circular vallum forms). The nearest parallel in terms of form and scale to Kinneddar is Iona, which was enclosed with a very similar sub-rectangular series of vallum ditch(es), with a very similar doubling of the ditch on the west side (formerly identified as a unique feature at Iona (Campbell & Maldonado forthcoming)), with both sites having annexe enclosures on the south side and both encompassing a similarly sized enclosed area (Illus 18). The dates for the vallums at each site are also broadly similar (Campbell & Maldonado forthcoming: table 2).

The structural and dating parallels between the enclosure at Kinneddar and those at Iona are intriguing and perhaps suggest very direct connections between the Columban Church and the establishment of Kinneddar. Our understanding of the spread of Christianity to the Picts is still very hazy. Traditional accounts



of the conversion of northern Pictland have, following Bede, focused on St Columba and his immediate successors, but it is likely that the conversion process was complex (Fraser 2009: 68–115; Clancy 2008: 363–4, 392). As Adomnán's *Life of St Columba*, written c 697, indicates (Sharpe 1995), Columba was involved in some missionary activity, but recent accounts have suggested that the role of the Columban Church in the conversion process in northern Pictland has been exaggerated (Taylor 1996; Fraser 2009: 97–9, 103–5). Nevertheless, Iona was clearly a prestigious monastery in the 7th and 8th centuries, with daughter houses in Ireland, Northumbria, Dál Riata and presumably Pictland (Herbert 1996: 9–56), so even if Kinneddar was not a Columban establishment, it may have been a place whose layout was to be emulated. Fraser (2009: 94–115, 253–63, 269–82) has argued that Iona was particularly influential in the Pictish Church in the late 7th and early 8th centuries, which might explain the similar shape of the enclosures at Iona, Fortingall, Portmahomack (and Kinneddar) (Foster 2014: 121–2), but this does not prove that any of the Pictish sites were Ionan foundations, since aspects of Columban practice may have been widely adopted, particularly at sites receiving royal patronage.

The material evidence from Kinneddar is as yet slight, but the metalworking evidence from the excavations can be highlighted. The evidence for metalworking found in various fills of the vallum ditch would suggest Kinneddar, like Portmahomack, was an important centre of production and the size of enclosure would suggest that it contained areas of extensive settlement and industry. Indeed, the size of the vallum enclosures can again be highlighted with the newly identified vallum on a par with the larger ecclesiastical enclosures found in regions such as Ireland where we have a better understanding of the range and form of ecclesiastical enclosure complexes (O'Sullivan et al 2014: 147). In Ireland, where the scale of excavation has also been larger, the larger ecclesiastical sites have been compared to urban settlements, dubbed in some cases as 'monastic towns' (eg Doherty 1985). Doherty (1985) suggested that some of the most influential sites were large religio-economic

complexes incorporating social, religious, administrative and commercial functions. Doherty's writings have generated fierce debate (eg Graham 1987; Swift 1998; Valante 1998; Etchingham 1999), but it is the case that the larger ecclesiastical sites, such as Clonmacnoise, were important consumer centres that can be compared, in some respects, with the urban centres such as Dublin (O'Sullivan et al 2014: 177). The abundant evidence for intensified economies and for the use of technological advances such as mill technology and fish trapping has helped underline the importance of these sites in early Irish society (Davies & Flechner 2016). The more limited evidence for these innovations in regions such as Wales and Scotland led Davies and Flechner to suggest that Ireland's economy was transformed more in the early medieval period than the other countries (Davies & Flechner 2016: 381–2, 384–5). However, in Pictland, apart from Portmahomack, few sites have been excavated on any scale and the relative lack of excavations of all types of sites in Pictland compared to Ireland means that it is difficult to compare the relative development of sites until more sites have been investigated.

In terms of wider context, the only other archaeologically investigated early ecclesiastical centre in northern Pictland is Portmahomack. Portmahomack has been interpreted as having origins as an elite settlement in the 5th to 7th centuries AD, based on a small number of structural remains and finds, some early cist burials and a possible barrow cemetery (Carver 2016: 89; Carver et al 2016). The monastic settlement began sometime in the late 7th or early 8th century AD. Within the vallum, on either side of a road heading towards the church, evidence for craftworking was found with the production of precious metalwork, glass and vellum being undertaken to the south of the church. Large timber buildings were also identified at the site and those, along with the evidence for the management of water with a dam, bridge and pool and other structural remains, suggest a densely populated site. During the excavations, hundreds of fragments of sculpture were found with different types of monument identifiable. These included simple cross-marked stones,

grave markers, the lid of a sarcophagus, a possible panelled shrine, a corbel for a stone church and fragments of four monumental cross slabs (Carver et al 2016: 167). At the church, 58 burials from Period 2, the monastic phase, were identified, the vast majority mature males, which is strongly suggestive of a monastic population. The evidence from Portmahomack points to the rich data that can be obtained from larger-scale investigation of early church sites in northern Pictland.

Other important church centres in northern Pictland are likely to have included Rosemarkie, Easter Ross, argued to have been the episcopal centre for Fortriu (Woolf 2007a: 56). The urban area around Rosemarkie is significantly built up, making identification of any kind of enclosing vallum (if one existed) difficult. Nonetheless, a large body of early Christian sculpture survives from the site and is of a sufficiently diverse character to suggest a very important early church existed here. The sculptural assemblage includes a magnificent cross slab, decorated panels and what may be architectural fragments (Henderson & Henderson 2004: 66, 211).

Nearer to Kinneddar, the impressive Pictish fort at Burghead also preserves important examples of early Christian sculpture. The sculpture appears to have been associated with an early chapel, depicted on General Roy's 18th-century map as a level area adjacent to the entrance causeway through the outer defences of the fort (Oram 2007: 256). The chapel at Burghead and a nearby well are dedicated to St Aethan, a dedication which could be to any one of the many saints who shared this name, including the Columban Bishop Aidan of Lindisfarne who died in 651 after evangelising among the Northumbrians (Ó Riain 2011: 71–5, 183–208; Macquarrie 2012: 322). The sculpture from Burghead includes fragments bearing interlace and key-pattern that may be from a cross slab or series of cross slabs, a slotted corner slab and a fragment of a panel with a carving of a stag being brought down by hounds (Henderson & Henderson 2004: 203). The latter two fragments suggest the presence of composite shrine monuments or a sarcophagus of the type found at Kinneddar. There is also a

fragment from a small cross slab with a relief-carved cross on the front and a mounted warrior on the back. The sculptural evidence hints at an important early Christian site being a key feature of the fortified settlement at Burghead in the 8th and 9th centuries AD, contemporary with at least some phases of the ecclesiastical site at Kinneddar.

All of these sites – Portmahomack, Rosemarkie, Burghead and Kinneddar – may have lain within the bounds of the powerful kingdom of Fortriu (Woolf 2006: 201), and the rich sculptural evidence from these sites may indicate these were among the larger ecclesiastical establishments within the kingdom – at least once it had expanded its control in the late 7th century. However, it is likely that there was a patchwork of ecclesiastical sites of different sizes and forms within this area of northern Pictland (cf Clancy 2008: 391). In the same broad area there are more modest enclosed sites with possible evidence for an early church, and small collections of sculpture at sites such as Congash, Inverness-shire, that may represent examples of important, but smaller-scale, ecclesiastical establishments (Canmore ID 15675). Within north-eastern coastal areas of Easter Ross, Inverness-shire and Moray there are also sites with isolated cross slabs such as those found at Edderton, Ross and Cromarty; Glenferness House, Inverness-shire; Rodney's Stone (Brodie), Moray; and the fine granite example at Elgin Cathedral (Allen & Anderson 1903: 135–6). These form part of a rich corpus of medieval sculpture across the area stretching from Moray to Easter Ross, but this surviving evidence may suggest that royal patronage flowed to particular locations in this region of northern Pictland. The David imagery on the cross slab at Nigg, on a recumbent grave marker at Kincardine, Sutherland, and on the shrine fragment from Kinneddar, for example, stands out and has been used to suggest royal patronage (and perhaps burial) was concentrated at these particular ecclesiastical establishments (Henderson 1998: 154–6; Fraser 2009: 360).

Given Kinneddar's possible connections to Iona, the size of its vallum enclosure and the suggestions of royal patronage within the

sculptural assemblage, what role might the site have played in the wider ecclesiastical organisation of northern Pictland? Given that Kinneddar was one of the three seats of the bishops of Moray in the immediate period before the cathedral was fixed at Spynie in the early 13th century, it is tempting to argue that Kinneddar had a similar role earlier. Certainly the concentration of important later ecclesiastical sites in this area at Kinneddar, Spynie, Elgin and Birnie, all closely connected to the bishops of Moray, suggests that it had particular significance by the 12th century, but how this developed – for instance when Kinneddar came under episcopal control – is uncertain. Alex Woolf (2007b: 316–20) has suggested that before the 12th century bishops had no fixed seat but were instead itinerant *chorepiscopi*. Certainly in Ireland at the same time, the centres, areas of authority and hierarchies of bishoprics could change over time (Etchingham 1999: 177–94) so we should not necessarily expect a permanent episcopal situation in early medieval Pictland. However, the surviving sculptural evidence from Kinneddar is currently unrivalled in Moray and it undoubtedly had an important role in the ecclesiastical organisation of the area in the early medieval period.

The place-name and dedicatory evidence might contribute a little more. The place name of Kinneddar derives from Gaelic *cenn*, ‘head, end’ (either in terms of promontory or a chief place), plus *foithir*, probably derived from a Pictish word meaning something like ‘district, region’, thus it means ‘end of the *foithir* (district)’ (Taylor 2011: 107; Taylor with Márkus 2012: 325, 376–8). It contains the same elements as the parish name of King Edward, farther east in Aberdeenshire, where Taylor has suggested that the parish name refers to the same entity as represented by nearby Fedderate, the centre of a late medieval barony whose name also contains *foithir* (Taylor 2008: 277–8, including n 11). *Foithir* is Gaelic in form, but its use in place names is largely confined to eastern Scotland, and it is often found in high-status names, including parishes, such as the promontory fort of Dunottar in Kincardineshire, and the area of Fothrif (*foithir* plus *Fíb*, ‘Fife’ (Taylor with Márkus 2012: 72–89, esp 73)), so

it seems to have been a similar-sounding Pictish term adopted into Scottish Gaelic, although a full study is still needed (Taylor 2011: 107; Taylor with Márkus 2012: 376–8). Further research on *foithir* names is required before a more exact date range and meaning can be determined, but at least in the case of Fothrif, Taylor regards it as quite plausible that it originated as a sub-division of Fife in the time of the Pictish kingdom. Similarly, Kinneddar may have been either a centre or more likely a subordinate focus to an administrative unit in the area. Given the area’s geography, largely cut off from the mainland, it is likely that Burghead was a significant part of the same entity, probably the territory’s centre.

In terms of the dedication of the site, according to *The Aberdeen Breviary* published in 1510, Kinneddar was initially an oratory or cell, with a ‘stone bed’ established by Geruadius, an Irish saint and miracle worker (Dransart 2001: 239; Clancy 2008: 378; Macquarrie 2012: 266–9). The Irish ancestry given to him in the text is not trustworthy (Macquarrie 2012: xxix, 365), but nor are later texts which depict a Gervadius as a bishop of Moray (Dransart 2003: 241), since they probably reflect the late medieval episcopal significance of Kinneddar, rather than necessarily reflecting any earlier tradition. Later, more modern, texts about the area mention sites in the parish linked to a hermit called St Gerardine (*OSA* iv 1792: 85; Grant & Leslie 1798: 122; *NSA* xiii 1845: Elginshire 149; Keith 1975: 11–13). As Thomas Clancy, following earlier scholars, has asserted, both Geruadius, Gervadius and Gerardine are forms of the same name, Gartnait (Clancy 2008: 378; cf Forbes 1872: 355), so it is likely that the parish’s dedication was to a saint of this name. Gartnait is a name found elsewhere in the Pictish king-lists (Anderson 2011: 246–8), in the notes in *The Book of Deer* for a 12th-century mormaer of Buchan (Broun 2008: 346–8; Clancy 2008: 378), in the 7th century in a leading Gaelic kindred based on Skye (Fraser 2004: 85–9; 2005: 129) and is last found in the Irish chronicles in *The Annals of Ulster* at 716.2 (Mac Airt & Mac Niocaill 1983: 170). The name does not necessarily identify the bearer as ‘Pictish’, but its distribution in Pictland, east of the Highland watershed and in the northern part of the western

seaboard, indicates that the Gartnait dedication at Kinneddar celebrated a local or regional saint or an important Pictish secular figure associated with the site. The appearance of Gartnait in the king-lists might suggest royal connections, which can sit alongside the evidence for royal connections displayed in the sculpture, most prominently in the figure of David, but, given the slim textual evidence we have, this remains largely speculation.

## CONCLUSIONS

The new evidence from Kinneddar highlights the site as a major ecclesiastical centre of northern Pictland that was established by the late 6th to 7th century AD. The vallum enclosures are the largest yet identified in northern Pictland and the recent excavations suggest important information on the character of the site is preserved despite intensive cultivation and redevelopment of the area in recent centuries. Previous archaeological work at the site of Kinneddar, like Iona, has been piecemeal, with a litany of research and development-led excavations failing to really grasp the significance of the surviving archaeology (cf O'Sullivan 1999). Some of our traditional evaluation methods perhaps struggle to deal with sites on this scale. However, the survey and excavations outlined here have set the archaeology of Kinneddar on a more solid footing and hopefully future work at the site can continue to flesh out our picture of this important site and landscape. In particular, evidence for the context of the sculptural evidence from the site is wanting and the evidence for settlement and metalworking is likely to be significantly increased with further work. The modern town of Lossiemouth and more recent development to the east have begun to encroach on the site, but large areas are still to be explored and future archaeological investigation can undoubtedly reveal more regarding the character of this major ecclesiastical site of Pictland.

## ACKNOWLEDGEMENTS

The work at Kinneddar was conducted with kind permission from Pitgaveny Estates, organised by

Duncan Dunbar-Nasmith. The fieldwork was made possible by funding from the Leverhulme Trust as part of the Comparative Kingship project (RL-2016-069), and Northern Picts funding through the University of Aberdeen Development Trust. Many thanks to Bruce Mann of Aberdeenshire Council Archaeology Service and RAF Lossiemouth for advice and support.

## REFERENCES

- Allen, J R & Anderson, J 1903 *The Early Christian Monuments of Scotland*. Edinburgh: Society of Antiquaries of Scotland.
- Anderson, M O 2011 *Kings and Kingship in Early Scotland*. Edinburgh: Birlinn (reprint of 1980 edition).
- Ashmore, P 1999 'Radiocarbon: avoiding errors by avoiding mixed samples', *Antiquity* 73 (279): 124–30. <https://doi.org/10.1017/S0003598X00087901>
- Behrensmeyer, A K 1978 'Taphonomic and ecologic information from bone weathering', *Paleobiology* 4(2): 150–62. <https://doi.org/10.1017/S0094837300005820>
- Bronk Ramsey, C 1995 'Radiocarbon calibration and analysis of stratigraphy: The OxCal program', *Radiocarbon* 37(2): 425–30. <https://doi.org/10.1017/S0033822200030903>
- Bronk Ramsey, C 1998 'Probability and Dating', *Radiocarbon* 40(1): 461–74. <https://doi.org/10.1017/S0033822200018348>
- Bronk Ramsey, C 2001 'Development of the radiocarbon calibration program', *Radiocarbon* 43(2A): 355–63. <https://doi.org/10.1017/S0033822200038212>
- Bronk Ramsey, C 2009 'Bayesian analysis of radiocarbon dates', *Radiocarbon* 51(1): 337–60. <https://doi.org/10.1017/S0033822200033865>
- Broun, D 2008 'The property records in the Book of Deer as a source for early Scottish society', in Forsyth, K (ed.) *Studies on the Book of Deer*, 313–60. Dublin: Four Courts Press.
- Brown, G 2002 'Moray Coast Waste Water Project: Kinneddar Bishop's Palace (Drainie parish)', *Discovery & Excavation in Scotland* 2002: 82.
- Buck, C E, Cavanagh, W G & Litton C D 1996 *Bayesian approach to interpreting*



- archaeological data*. Chichester: John Wiley & Sons Ltd.
- Cameron, K 1995 'Kinneddar Archaeological Field Evaluation, Lossiemouth, Moray District', unpublished report for CFA Archaeology. Data Structure Report No. 243.
- Campbell, E & Maldonado, A 2016 'Russell Trust Excavations on Iona led by Charles Thomas, 1956–1963. Data structure Report'. Edinburgh: Historic Environment Scotland. <https://ionaresearchgroup.arts.gla.ac.uk/wp-content/uploads/2017/07/charles-thomas-excavations-dsr-update1-3.pdf>. Accessed 26 June 2019.
- Campbell, E & Maldonado, A forthcoming 'A New Jerusalem "at the ends of the earth": interpreting Charles Thomas's excavations at Iona Abbey 1956–63', *Antiquaries Journal* 99.
- Cannell, J & Tabraham, C 1995 'Excavations at Duffus Castle, Moray', *Proc Soc Antiq Scot* 124 (1994): 379–90.
- Carver, M 2016 *Portmahomack: Monastery of the Picts*, 2nd edition. Edinburgh: Edinburgh University Press.
- Carver, M, Garner-Lahire, J & Spall, C 2016 *Portmahomack on Tarbat Ness: Changing Ideologies in North-east Scotland, Sixth to Sixteenth century AD*. Edinburgh: Society of Antiquaries of Scotland.
- Clancy, T 2008 'Deer and the early church in North-Eastern Scotland', in Forsyth, K (ed.) *Studies on the Book of Deer*, 363–97. Dublin: Four Courts Press.
- Cruikshanks, G 2017 'Iron in Iron Age Scotland: a long-term cast study of production and use c.800BC to AD800', unpublished PhD thesis, Edinburgh University. <http://hdl.handle.net/1842/23501>. Accessed 20 June 2019.
- Cruikshanks, G 2018 'Ironworking Debris from Excavations on Iona', unpublished specialist report by National Museums Scotland for University of Glasgow.
- Davies, W & Flechner, R 2016 'Conversion to Christianity and Economic Change: Consequence or Coincidence', in Flechner, R & Ní Mhaonaigh, M (eds) *The Introduction of Christianity into the Early Medieval Insular World*, 377–98. Turnhout: Brepols.
- Dobney, K, Jaques, D & Johnstone, C 1999 'A protocol for recording vertebrate remains'. York: Reports from the Environmental Archaeology Unit 99/15.
- Doherty, C 1985 'The monastic towns in early medieval Ireland', in Ní Chatháin, P & Richter, M (eds) *Ireland and Europe: The Early Church*, 89–101. Stuttgart: Klett-Cotta.
- Dransart, P 2001 'Two Shrine Fragments from Kinneddar, Moray', in Redknap, M, Edwards, N, Youngs, S, Lane, A & Knight, J (eds) *Pattern and Purpose in Insular Art*, 233–40. Oxford: Oxbow Books.
- Dransart, P 2003 'Saints, stones and shrines: the cults of Sts Moluag and Gerardine in Pictland', in Cartwright, J (ed.) *Celtic Hagiography and Saints' Cults*, 232–48. Cardiff: University of Wales Press.
- Dransart, P 2016 'Bishop's Palaces in the Medieval Dioceses of Aberdeen and Moray', *Transactions of the British Archaeology Association* XL: 58–81.
- Dunbar, E, Cook, G T, Naysmith, P, Tripney, B G & Xu, S 2016 'AMS <sup>14</sup>C dating at the Scottish Universities Environmental Research Centre (SUERC) Radiocarbon Dating Laboratory', *Radiocarbon* 58(1): 9–23. <https://doi.org/10.1017/RDC.2015.2>
- Dunbar, L 2018 'Sunbank, Lossiemouth, Moray: Archaeological Works', unpublished report for AOC Archaeology.
- Etchingam, C 1999 *Church Organisation in Ireland A.D. 650 to 1000*. Maynooth: Laigin Publications.
- Fawcett, R 1999 *Elgin Cathedral*. Edinburgh: Historic Scotland.
- Forbes, A P 1872 *Kalendars of Scottish Saints*. Edinburgh: Edmonston and Douglas.
- Foster, S 2014 *Picts, Gaels and Scots: Early Historic Scotland*. Edinburgh: Birlinn.
- Fraser, J E 2004 'The Iona Chronicle, the Descendants of Áedan mac Gabráin, and the "Principal Kindreds of Dál Riata"', *Northern Studies* 38: 77–96.
- Fraser, J E 2005 'Illustrations relating to Fraser's article, "The Iona Chronicle"', *Northern Studies* 39: 125–30.

- Fraser, J E 2009 *From Caledonia to Pictland. Scotland to 795*. Edinburgh: Edinburgh University Press.
- Graham, B J 1987 'Urban genesis in early medieval Ireland', *Journal of Historical Geography* 13(1): 3–16. [https://doi.org/10.1016/S0305-7488\(87\)80003-8](https://doi.org/10.1016/S0305-7488(87)80003-8)
- Grant, J & Leslie, W 1798 *A Survey of the Province of Moray. Historical, Geographical, and Political*. Aberdeen: Isaac Forsyth Bookseller.
- Haggarty, G R 2018 'Ceramic Report', in Dunbar 2018: 22–4.
- Haggarty, G R, Hall, D W & Chenery, S 2011 *Sourcing Scottish Redwares*. London: Medieval Pottery Research Group Occasional Paper No 5. <http://www.medievalpottery.org.uk/occpap5.htm>. Accessed 5 April 2019.
- Hall, D W, MacDonald, A D S, Perry, D R & Terry, J 1999 'The Archaeology of Elgin: excavations on Ladyhill and in the High Street and an overview of the archaeology of the burgh', *Proc Soc Antiq Scot* 128 (1998): 753–829.
- Henderson, G & Henderson, I 2004 *The Art of the Picts: Sculpture and Metalwork in Early Medieval Scotland*. London: Thames and Hudson.
- Henderson, I 1998 'Primus inter pares: the St Andrews Sarcophagus and Pictish Sculpture', in Foster, S M (ed.) *The St Andrews Sarcophagus: A Pictish Masterpiece and Its International Connections*, 97–168. Dublin: Four Courts Press.
- Herbert, M 1996 *Iona, Kells and Derry. The history and hagiography of the monastic familia of Columba*. Oxford: Oxford University Press.
- Hill, P 1997 *Whithorn and St. Ninian: The Excavations of a Monastic Town, 1984–91*. Oxford: Sutton.
- Innes, C (ed.) 1837 *Registrum Episcopatus Moraviensis*. Edinburgh: Bannatyne Club.
- Jones, R, Will, R, Haggarty, G & Hall, D W 2003 'Sourcing Scottish White Gritty Ware', *Medieval Ceramics* 26–7: 45–85. <http://www.medievalpottery.org.uk/mc26-27.htm>. Accessed 5 April 2019.
- Keith, A 1975 *The Parish of Drainie and Lossiemouth*. Self published.
- Mac Airt, S & Mac Niocaill, G 1983 (eds and trans) *The Annals of Ulster (to A.D. 1131). Part I. Text and Translation*. Dublin: Dublin Institute for Advanced Studies.
- Macquarrie, A (ed.) with Butter, R and contributions by Taylor, S & Márkus, G 2012 *Legends of the Scottish Saints. Readings, hymns and prayers for the commemorations of Scottish saints in the Aberdeen Breviary*. Dublin: Four Courts Press.
- McLaren, D 2018 'Vitrified Material Report', in Dunbar 2018: 25.
- Naysmith, P, Cook, G, Freeman, S, Scott, E M, Anderson, R, Dunbar, E, Muir, G, Dougans, A, Wilcken, K, Schnabel, C, Russell, N, Ascough, P & Maden, C 2010 '14C AMS at SUERC: improving QA data from the 5MV tandem and 250KV SSAMS', *Radiocarbon* 52(2): 263–71. <https://doi.org/10.1017/S003382220004529X>
- Noble, G & Sveinbjarnarson, O 2016 'Kinneddar (Northern Picts Project), Geophysical survey', *Discovery & Excavation in Scotland* 16: 125.
- NSA 1845 *The New Statistical Account of Scotland. Volume XIII. Banff–Elgin–Nairn*. Edinburgh and London: William Blackwood & Sons.
- Oram, R 2007 'Capital tales or Burghead bull?', in Arbuthnot, S & Hollo, K (eds) *A Grey Eye Looks Back: A Festschrift in Honour of Colm Ó Baoill*, 241–62. Clann Tuirc: Ceann Drochaid.
- Oram, R D 2016 'The medieval church in the dioceses of Aberdeen and Moray' in Geddes, J (ed.) *Medieval art, architecture and archaeology in the dioceses of Aberdeen and Moray* (British Archaeological Association, Conference Transactions 40), 16–32. London: Routledge.
- Ó Riain, P 2011 *A Dictionary of Irish Saints*. Dublin: Four Courts Press.
- OSA 1792 *The Statistical Account of Scotland*, vol 4. Edinburgh: William Creech.
- O'Sullivan, J 1999 'Iona: archaeological investigations 1875–1996' in Braun, D & Clancy, T (eds) *Spes Scottorum: Hope of the Scots. Saint Columba, Iona and Scotland*, 215–43. Edinburgh: T&T Clark.
- O'Sullivan, A, McCormick, F, Kerr, T R & Harney, L 2014 *Early Medieval Ireland, AD 400–1100: The Evidence from Archaeological Excavations*. Dublin: Royal Irish Academy.

- Oxford Radiocarbon Accelerator Unit *Oxcal Version v4.3*. <http://c14.arch.ox.ac.uk/>. Accessed 24 April 2019.
- Pococke, R 1887 *Tours in Scotland 1747, 1750, 1760*, Kemp, D W (ed.). Edinburgh: Edinburgh University Press for the Scottish History Society.
- Reimer, P J, Bard, E, Bayliss, A, Beck, J W, Blackwell, P G, Bronk Ramsey, C, Grootes, P M, Guilderson, T P, Haffidason, H, Hajdas, I, Hatte, C, Heaton, T J, Hoffmann, D L, Hogg, A G, Hughen, K A, Kaiser, K F, Kromer, B, Manning, S W, Niu, M, Reimer, R W, Richards, D A, Scott, E M, Southon, J R, Staff, R A, Turney, C S M & van der Plicht, J 2013 'IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0–50,000 Years cal BP', *Radiocarbon* 55(4): 1869–87. [https://doi.org/10.2458/azu\\_js\\_rc.55.16947](https://doi.org/10.2458/azu_js_rc.55.16947)
- Reitz, E J & Wing, E S 2008. *Zooarchaeology. Cambridge Manuals in Archaeology*, 2nd edition. New York: Cambridge University Press.
- Schmid, E & Garraux, O 1972 *Atlas of animal bones: for prehistorians, archaeologists and quaternary geologists*. Amsterdam: Elsevier.
- Scott, E M, Bryant, C, Cook, G T & Naysmith, P 2003 'Is there a fifth international radiocarbon intercomparison (VIRI)?', *Radiocarbon* 45: 493–5. <https://doi.org/10.1017/S0033822200032835>
- Scott, E M, Cook, G T, Naysmith, P, Bryant, C & O'Donnell, D 2007 'A report on phase 1 of the 5th international radiocarbon intercomparison (VIRI)', *Radiocarbon* 49: 409–26. <https://doi.org/10.1017/S003382220004234X>
- Scott, E M, Cook, G T & Naysmith, P 2010 'A report on phase 2 of the Fifth International Radiocarbon Intercomparison (VIRI)', *Radiocarbon* 52(3): 846–58. <https://doi.org/10.1017/S0033822200045938>
- Seetah, K 2016 'Summary report on animal bones', in Carver et al 2016: D131–5.
- Sharpe, R (trans) 1995 *Adomnán of Iona. Life of St Columba*. London: Penguin.
- Shaw, L, revised by Gordon, J F S 1882 *The History of the Province of Moray, enlarged and brought down to the Present Time*, 3 vols. London and Glasgow: Hamilton, Adams, & Co., and Thomas D. Morison.
- Spall, C & Mortimer, R 2016 'Iron-working slags', in Carver et al 2016: D107–11.
- Stratigos, M J forthcoming 'Late glacial to post-medieval palaeogeography of the Laich o' Moray', in Armit, I & Büster, L *Darkness Visible: Later Prehistoric Ritual and Identity at the Sculptor's Cave, North-East Scotland*. Edinburgh: Society of Antiquaries of Scotland.
- Stuart, J 1856 *Sculptured Stones of Scotland*. Aberdeen: Spalding Club.
- Stuiver, M 1986 'Editorial comment', *Radiocarbon* 28(2B): ii. <https://doi.org/10.1017/S003382220006015X>
- Stuiver, M & Polach, H A 1977 'Reporting of <sup>14</sup>C data', *Radiocarbon* 19(3): 355–63.
- Stuiver, M & Kra, R S 1986 'Editorial Comment', *Radiocarbon* 28(2B): ii. <https://doi.org/10.1017/S003382220006015X>
- Stuiver, M & Reimer, P J 1986 'A computer program for radiocarbon age calibration', *Radiocarbon* 28(2B): 1022–30. <https://doi.org/10.1017/S0033822200060276>
- Stuiver, M & Reimer, P J 1993 'Extended <sup>14</sup>C data base and revised CALIB 3.0 <sup>14</sup>C calibration program', *Radiocarbon* 35(1): 215–30. <https://doi.org/10.1017/S0033822200013904>
- Swift, C 1998 'Forts and fields: a study of "monastic towns" in seventh and eighth century Ireland', *Journal of Irish Archaeology* 9: 105–25.
- Taylor, S 1996 'Place-Names and the Early Church in Eastern Scotland', in Crawford, B E (ed.) *Scotland in Dark Age Britain*, 93–110. St Andrews: St John's House Papers No. 6.
- Taylor, S 2008 'The toponymic landscape of the Gaelic notes in the Book of Deer', in Forsyth, K (ed.) *Studies on the Book of Deer*, 275–308. Dublin: Four Courts Press.
- Taylor, S 2011 'Pictish Place-names Revisited', in Driscoll, S T, Geddes, J & Hall, A J (eds) *Pictish Progress. New Studies on Northern Britain in the Early Middle Ages*, 67–118. Leiden: Brill.
- Taylor, S with Márkus, G 2012 *The Place-Names of Fife. Volume Five. Discussion, Glossaries and Edited Texts with Addenda and Corrigenda of Volumes 1–4*. Donington: Shaun Tyas.

- Valante, M 1998 'Reassessing the Irish monastic town', *Irish Historical Studies* 31(121): 1–18. <https://doi.org/10.1017/S0021121400013663>
- Walker, D W & Woodworth, M 2015 *The Buildings of Scotland. Aberdeenshire: North and Moray*. London: Yale University Press.
- Woolf, A 2006 'Dun Nechtain, Fortriu and the geography of the Picts', *Scottish Historical Review* 85: 182–201.
- Woolf, A 2007a *From Pictland to Alba 789–1070*. Edinburgh: Edinburgh University Press.
- Woolf, A 2007b 'The Cult of Moluag, the See of Mortlach and Church Organisation in Northern Scotland in the Eleventh and Twelfth Centuries', in Arbuthnot, S & Hollo, K (eds) *Fil súil ngais: A Grey Eye Looks Back*, 311–22. Ceann Drochaid: Clann Tuirc.



