Following in the footsteps of Gerhard Bersu at Freestone Hill and Stonyford, Co. Kilkenny. New contributions from magnetic surveys

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Introduction

A remarkable alignment of circumstances led to Gerhard Bersu (1889–1964) undertaking in the years 1948–49 what is to this day one of the most important excavations of an Irish hillfort, at Freestone Hill, Co. Kilkenny, in the south-east of Ireland *(fig. 1)*. In January 1937 Bersu, then 47 years old, was forcibly retired by the *Reich*'s and Prussian Minister for Science, Education and Culture, Bernhard Rust (1883–1945), having been relieved two years previously of his post as Director of the Römisch-Germanische Kommission (RGK). Thanks to the solidarity of British colleagues such as Osbert G. S. Crawford (1886–1957), Bersu received an invitation to direct excavations at Little Woodbury, near Salisbury, in 1938, which ultimately led to the fortunate outcome that at the beginning of the Second World War he was in Great Britain, where he was to remain living and working with his wife Maria until 1947. During this time he conducted numerous excavations, along with Maria, on the Isle of Man where they were nominally interned, thereby consolidating his reputation as a leading excavator. At the end of the war life remained difficult for Gerhard and Maria Bersu and Gerhard was unable to regain his former position in Frankfurt. As a result, Crawford suggested to their mutual friend, the internationally-renowned Kilkenny essayist and humanitarian Hubert Butler (1900–1991), that Bersu reside with him in Kilkenny, with a view to exploring future possibilities for research and employment in Ireland.

H. Butler, a descendent of the noble Butler Earls of Ormonde, had been central to the revival of the Kilkenny Archaeological Society in 1945, the once-thriving organisation having gone into a period of steady decline following its move in 1890 to Dublin as the Royal Society of Antiquaries of Ireland. In reviving the Society, Butler wanted to reinstate Kilkenny as the 'great centre of Irish and British archaeology' as it had once been in the latter half of the 19th century, thanks to the pioneering work of archaeologists like James Graves (1815–1886) and John Prim (1821–1875). In bringing an esteemed German professor to Kilkenny it presented him with a unique opportunity to make progress with this aim. The injustice of Bersu's treatment at the hands of the German *Reich* also infuriated Butler, who had spent a lifetime advocating for human rights. Butler also drew parallels between the Nazi view of the Jews as 'inferior' and how the Gaelic Irish were similarly regarded by the English colonisers in the medieval period. He arranged with the Irish government,

Fig. 1. Geophysical surveys and distribution of Roman finds in Ireland (after Cahill Wilson 2017). Prospections of the Römisch-Germanische Kommission (RGK) highlighted by numbers: 1 Derry, 2 Ballynahatty, 3 Newgrange, 4 Knowth, 5 Dowth, 6 Oldbridge, 7 Faughan Hill, 8 Riverstown, 9 Tara, 10 Skryne, 11 Clomantagh, 12 Freestone Hill, 13 Stonyford, 14 Knockroe (map: H. Höhler-Brockmann, RGK).

whose leader *(Taoiseach)* Éamon de Valera, had attended and been highly impressed by one of Bersu's lectures in University College Dublin, that he receive a salary as chair of the Dublin-based Royal Irish Academy. Around the same time Butler and members of the Kilkenny Archaeological Society identified Freestone Hill as a suitably impressive venue for Bersu to carry out an excavation, in conjunction with the Society and financed by the Academy. A preliminary report on the outcome of Bersu's Freestone Hill excavation was published, apparently to the chagrin of the 'Dublin authorities', in the local journal of

the Kilkenny Archaeological Society, the 'Old Kilkenny Review'. Due to the burdens of administrative work following his return to his former institute in Germany in 1950, the full excavation report was not completed by Bersu before his death in 1964. Fortunately however, his widow Maria subsequently made the site archive available to Barry Raftery (1944–2010), former Professor of Archaeology at University College Dublin, who in 1969 published a comprehensive account of the excavations in the Proceedings of the Royal Irish Academy. No excavations have occurred at Freestone Hill since Bersu's original campaign was undertaken but two separate geophysical surveys have been conducted; one centred on the hillfort itself in 2009 and the second by the RGK, in collaboration with Jacqueline Cahill Wilson, former Director of the Late Iron Age and Roman Ireland (LIARI) project, and Cóilín Ó Drisceoil, Director of Kilkenny Archaeology, in the years 2014 and 2016. The surveys focussed on the hillfort but also included, for the first time, an extensive survey of the surrounding lowland landscape below the monument and the team also undertook a separate survey of the area of the proposed find-spot of a unique Roman burial near Stonyford, Co. Kilkenny. The outcome of these investigations forms the subject of this paper.

The extent of the number of finds of Roman material from the Kilkenny area makes this one of the key regions in Ireland in the ongoing debate about the extent and character of Roman influence on Ireland. The Stonyford burial, personal and votive objects from Freestone Hill and a concentration of stray finds from the river valleys, as well as excavated settlements, corn-drying kilns and metal-smelting sites dating to the Late Iron Age make Kilkenny exceptionally important in Irish Iron Age studies. The exploitation of significant lead and silver deposits that occur at Knockadrina Hill, near Stonyford, and along the banks of the river Nore may have attracted settlers from the Roman world to the area, a factor that Bersu had alluded to in his original paper. The significance of Roman finds and their correlation with likely mineral exploitation was mapped by Cahill Wilson during her doctoral research. The importance of Kilkenny to the broader debates about the character of Roman settlement outside the margins of the Empire is why the geophysical research undertaken by the RGK formed part of the "Corpus der römischen Funde im europäischen Barbaricum" (CRFB) project, initiated by the RGK. Although it was initially limited to Central Europe, the CRFB has been, since its inception, international in its scope and collaborative in nature. There have been close contacts with researchers in northern and western Europe and the project has sought to help facilitate investigations and contribute to research questions around the phenomena of the impact of Roman influence on societies that lay beyond the formal *territorium* of Rome. It has been further developed and expanded to include consideration of aspects of Roman social influences through the movement of people and materials, and their likely social and economic structural development, looking beyond individual objects to encompass their landscape contexts. This is reflected in the field research presented here, which also offers continuity with Bersu's research and his personal impact on Irish archaeology and significant relationship with Kilkenny.

Freestone Hill

Freestone Hill (Coolgrange townland) is situated 8 km to the east of Kilkenny city, on the tip of a spur that protrudes into the Nore river valley from an area of uplands known as the Castlecomer Plateau *(fig. 2)*. The topographical situation of Freestone Hill (140 m above sea level) rising to around 60 m above the valley to its south is not immediately impressive but from the summit of the hill, where the hillfort is situated, a wide panorama opens

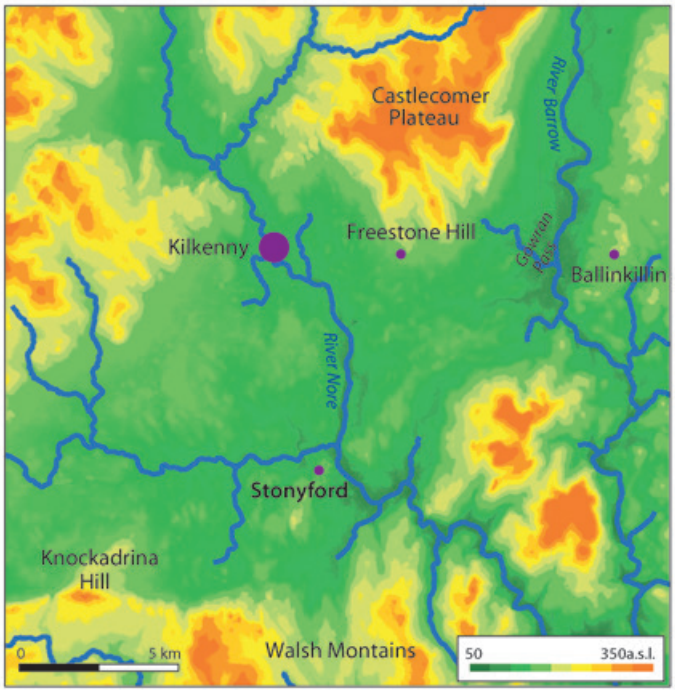

Fig. 2. Overview of the research area around Freestone Hill and Stonyford (Shuttle Radar Topography Mission 1 Arc-Second Global, doi: 10.5066/F7PR7TFT; map: K. Rassmann, RGK).

up over the Nore and Barrow river valleys and east to the Walsh Mountains and beyond *(fig. 3)*. The hillfort was deliberately sited to overlook what was historically a strategically important routeway known as *Bealach Gabráin* (the Pass of Gowran). This pass linked the two valleys of the rivers Nore and Barrow and two ancient Gaelic kingdoms, the Laigen to the east of the pass and the Osraige, within whose former territory the hillfort is situated, to its west. About 13 km to the east of Freestone Hill there is another hillfort, Ballinkillin, Co. Carlow, which although unexcavated, appears to be perfectly coordinated with Freestone Hill to facilitate control of the Gowran Pass *(fig. 2)*. At the east end of the pass, an extensive area of dispersed Late Iron Age settlement and burial sites, apparently centred on a linear earthwork known as the 'Rathduff Trench', has been recently proposed as readily comparable to territorial oppida settlements in England, France and Germany.

Freestone Hill derives its present name from outcrops of dolomite – known colloquially as "freestone" due to the ease with which it could be worked by stonemasons – on the east side of the hill. This rock was employed as a building material for many of Kilkenny's medieval structures (e. g. the lower part of the 12th century round tower at St Canice's Cathedral and the Dunamaggin high cross) and traces of quarrying for the stone are visible on a terrace at the eastern verge of the hill. The western part of the hill is limestone, which was also used as a major building stone in Kilkenny for generations. Limestone was also burned in lime kilns to produce lime for mortar and for spreading on land to improve its yields, and a number of these kilns are located around Freestone Hill. In the contact zone between these two types of rock, concentrations of calcite in combination with traces of manganese ore and malachite are indicative of ore deposits and, as Bersu suspected, may have attracted the attention of Iron Age prospectors.

Fig. 3. In the foreground Swen Heinermann and the 5-channel magnetometer, in the background the Freestone Hill hillfort (photo: H.-U. Voß, RGK).

The site today presents as a 1.4 ha (internal dimensions 152 m north-south × 128 m east-west) Late Bronze Age oval, univallate hillfort (Raftery's Class 1) that is defined by a low earth-and-stone bank with an external rock-cut ditch. The bank, measuring approximately 500 m in length, is continuous apart from where it is interrupted by simple entrance gaps in the west and south-east. Bersu regarded the western gap as the entrance to the hillfort. At the highest point within the hillfort interior the denuded remains of a 23 m diameter Early Bronze Age cemetery cairn are situated surrounded by a 36.5 m x 30 m 'heart-shaped' Late Iron Age enclosure defined by the foundations of 1.5–2.5 m thick drystone walls *(fig. 4)*. The Ó Drisceoil and Nicholls geophysical survey in 2009 identified what appears to be a large enclosure ditch with a north-facing entrance surrounding the cairn and the heart-shaped enclosure. The impressions of at least sixteen circular hut-platforms, arranged in neat parallel rows, can be discerned in the west and north of the interior from aerial photography of the site *(fig. 4)*. It is presumably from these that the local Irish name for the hill *Cnoc na mbothóga*, which translates as the 'hill of the huts', derives. Aerial photographic survey by Simon Dowling and a photogrammetric model by James O'Driscoll have recently identified a sub-circular enclosure (35 m north-south × 30 m east-west internally) appended to the exterior of the southern arc of the rampart and immediately to the west of the main entranceway *(fig. 4)*. Two smaller annexes are attached to the east side of this enclosure, apparently flanking either side of an entrance into the interior. Although it remains undated it may be earlier than the hillfort because it appears to be truncated by its ditch and rampart. Conversely, there are no indications for its continuation north of the rampart and it could therefore be of later date than the hillfort.

Bersu's excavations at Freestone Hill, meticulously surveyed by his wife Maria, concentrated on the central area of the burial cairn and drystone enclosure, but also included

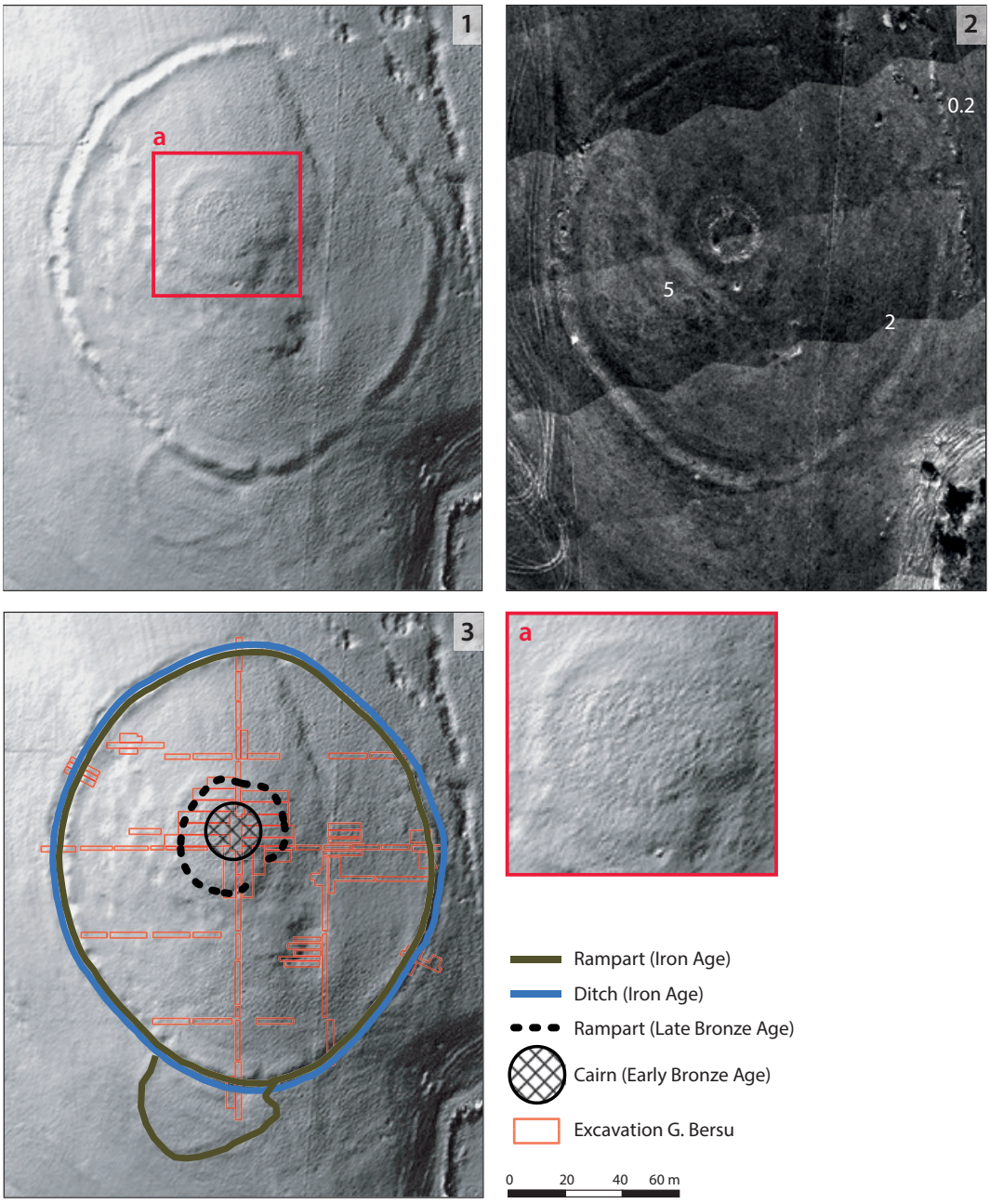

Fig. 4. Freestone Hill. 1 Lidarscan, 2 Multispektral image (red colour range), 3 Summary interpretation of the layout of the Freestone Hill hillfort with the location of Bersu's excavation (map: RGK and C. Ó Drisceoil).

complete north-south and east-west transects across the site, eight cuttings across the ditch and bank of the hillfort, and the investigation of some of the hut sites and the dolerite quarry-pits. Bersu, followed initially by Raftery, proposed that the excavations demonstrated two periods of occupation, the Early Bronze Age (Period I) burial cairn being succeeded in the Iron Age (Period II) by the hillfort, which they dated to the fourth century

AD on the basis that the same form of coarseware pottery recovered from the ditch, hut-sites and within the central drystone enclosure, was stratified with a coin of Constantine II (AD 337–340) and an assortment of provincial Roman bronzes such as toilet implements, fragments of penannular bracelets, rings, a blue-glass bracelet fragment, a gaming-piece, and sherds of Late Roman drinking vessels (subsequently identified by Cahill Wilson in 2010 as Nene Valley colour-coated ware and Severn Valley ware). Raftery subsequently proposed that the coarseware pottery was the same as the ware that had been found in unequivocally Late Bronze Age levels at Rathgall Hillfort and that it therefore represented a previously unidentified Late Bronze Age phase of occupation for the Freestone Hill site. A subsequent reassessment of the Iron Age phase of the site by Raghnall Ó Floinn also argued that the coarseware pottery was of Late Bronze Age date and that it was not in fact stratigraphically associated with the Roman finds. Instead, he proposed that the Roman material represented votive offerings made by a community who were well versed in the ritual practices of Roman Britain, within a shrine or *temenos* of Romano-British type that was demarcated by the drystone enclosure wall at the centre of the hillfort. The overall chronology of the site remains, however, very poorly understood and there is thus far just one, probably unreliable, radiocarbon date (810–550 BC) from an occupation layer within the central drystone enclosure. It was with great prescience therefore that Bersu deliberately left an area of the Late Iron Age enclosure l unexcavated in order that it could be available to future archaeologists. Further excavation here and elsewhere in and around Freestone Hill *(see below)* offers an exciting opportunity for further investigation with the benefit of the suite of modern scientific analyses.

Magnetic Prospection

Technical equipment

Freestone Hill and areas surrounding the site to its south and southwest were surveyed over the course of two campaigns, from the 28th–30th June 2014 and on the 28th of June 2016. A total area of about 40 ha was surveyed *(fig. 5)* with the aid of a manually-operated 5-channel magnetometer *(fig. 3)* and a vehicle-mounted 16-channel magnetometer *(fig. 6)*. Both the 5-channel and 16-channel magnetometers (SENSYS MAGNETO®-MX ARCH) were manufactured by Sensys GmbH, Bad Saarow, Germany. They are made entirely from fibre-reinforced plastic. Both systems used included FGM-650B tension band fluxgate vertical gradiometers with 650 mm sensor separation, a±3000 nT measurement range and 0.1 nT sensitivity. The 5-channel magnetometer was mounted on a hand-propelled carriage. The gradiometers were set at 0.25 m intervals. A walking pace of c. 4–5 km per hour yielded a mesh of 0.25 m by approximately 0.06–0.08 m. The prospection areas were first marked out using a Leica DGPS (GX 1000). The 16-channel magnetometer was mounted on a vehicle-drawn cart. The gradiometers were set at 0.25 m intervals on a 4 m-wide sensor frame. The vehicles housed both power supply and data processing hardware. MAGNETO®-MX compact 16-channel data acquisition electronics with 20 Hz sampling frequency were used for data acquisition with Trimble RTK-DGPS georeferencing (base / rover combination). With speeds of approximately 12–16 km per hour and a sample rate of twenty readings per second, the system provided xyz-data on a mesh of 0.25 m by approximately 0.3 m. Combining both systems offered the advantage of working with the hand-pushed system in rough areas and prospecting the easily-accessible areas by vehicle. At Freestone Hill the upper part of the hill was particularly difficult to drive on because

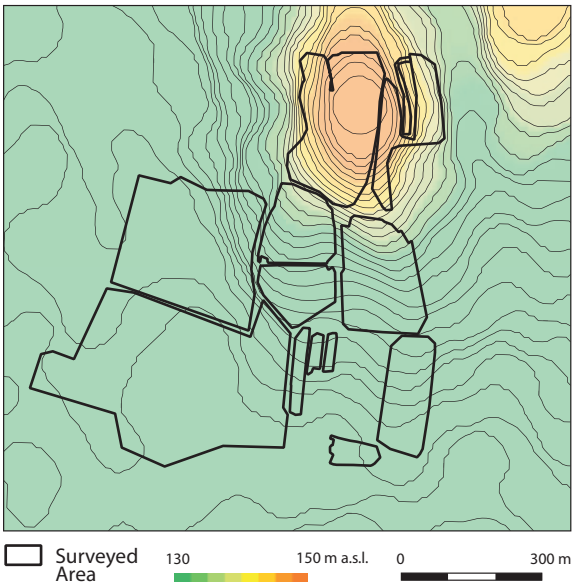

Fig. 5. DEM and the location of the surveyed area around the Freestone Hill (map: K. Rassmann, RGK, based on: Shuttle Radar Topography Mission 1 Arc-Second Global, doi: 10.5066/F7PR7TFT).

Fig. 6. In the foreground the vehicle-mounted 16-channel magnetometer on the top of Freestone Hill. View to the south to the Walsh Mountains (photo: K. Rassmann, RGK).

Fig. 7. Orthophoto and the location of the surveyed area around the Freestone Hill (map: RGK).

of numerous boulders that were hidden in the high grass that was present at the time of the survey.

Results of magnetic survey

As already mentioned in the introduction, the area of the hillfort *(fig. 7)* had been previously surveyed in 2009 by Ó Drisceoil and Nicholls with a hand-held Bartington gradiometer. Despite the lower density of measuring points employed in this survey – the measuring lines were at a distance of 50 cm as opposed to 25 cm in the RGK survey – the results of the earlier investigation are clearer. A simple explanation for this rests is the fact that the systems used in the most recent survey were mounted on a carriage that ran unsteadily and swayed back-and-forth when driving over the uneven stony ground. The different movements of the probes influenced the measurements and led to 'noisier' measurement images. Here, an experienced fieldworker with a smooth-carrying hand-system can achieve better results when walking carefully. For instance, at Freestone Hill the probable ditched enclosure discovered by Ó Drisceoil and Nicholls around the burial cairn cannot be identified with certainty in the measurement images produced by the new prospection. Nonetheless, the new magnetic map identifies approximately 3000 anomalies of over 1–3 m² in size and having a minimum of over 2 nT with a median of between 10–20 nT *(fig. 8)*. The majority of these are presumably boulders from the underlying dolomite or limestone. However, some of the anomalies shows significantly elevated nT values of up to 20 nT *(fig. 9)* and thus probably represent pits and mining hollows filled with rock material and waste similar to those identified by Bersu during his excavation. In the northern part of the hillfort, linear and pit anomalies with measurement values over 20 nT located both inside and outside of the rampart correspond with features that were identified in Bersu's excavations. Further fieldwork which might include susceptibility measurements of soils and stone samples from

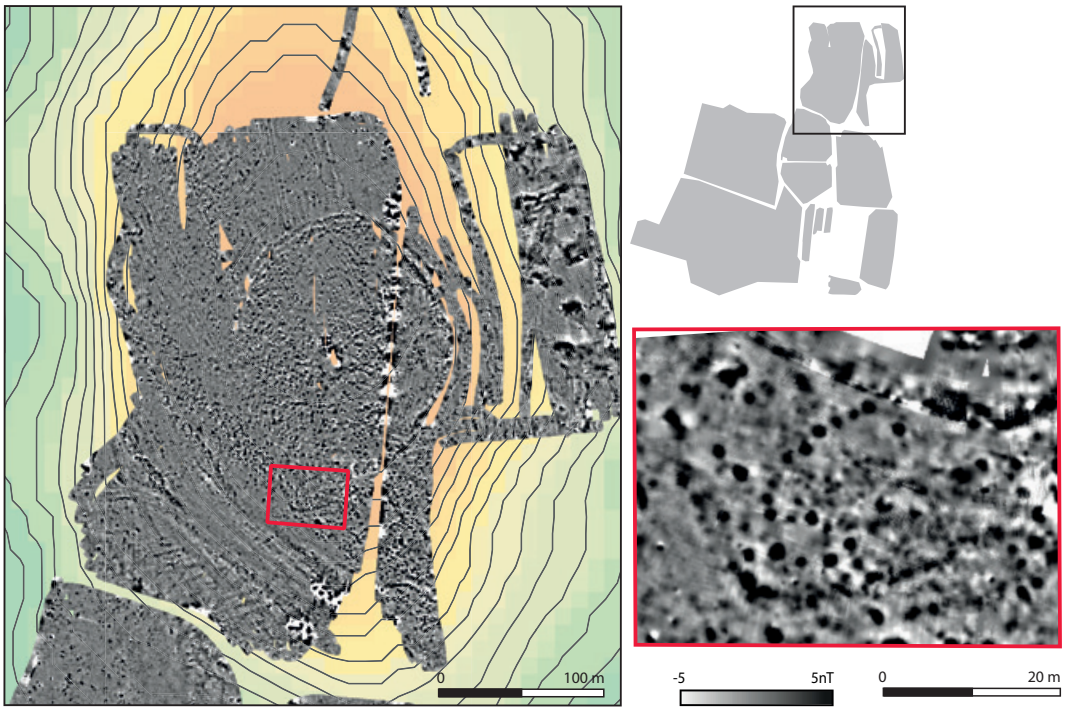

Fig. 8. Magnetic map of the top of Freestone Hill with a detail of the enclosure attached to the southern periphery of the hillfort (map: RGK).

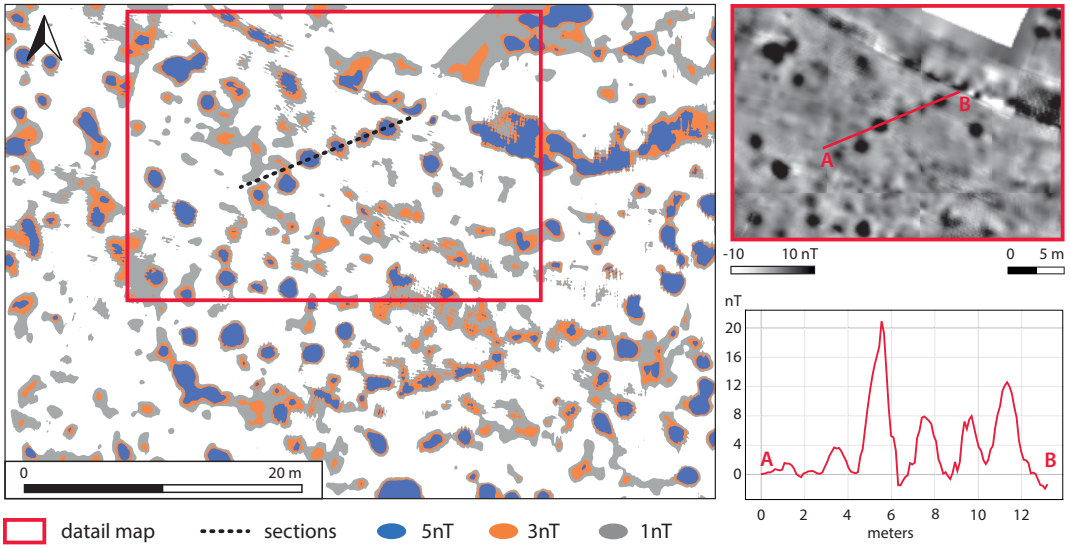

Fig. 9. Contour map of anomalies outside the southern periphery of the hillfort *(fig. 8)* and a section through the anomalies (map: M. Kohle, RGK).

drilling cores and test pits would be necessary to clarify interpretation of these anomalies. Immediately outside (south of) the southern arc of the hillfort rampart and within the area encompassed by the sub-circular enclosure previously identified from aerial photographs,

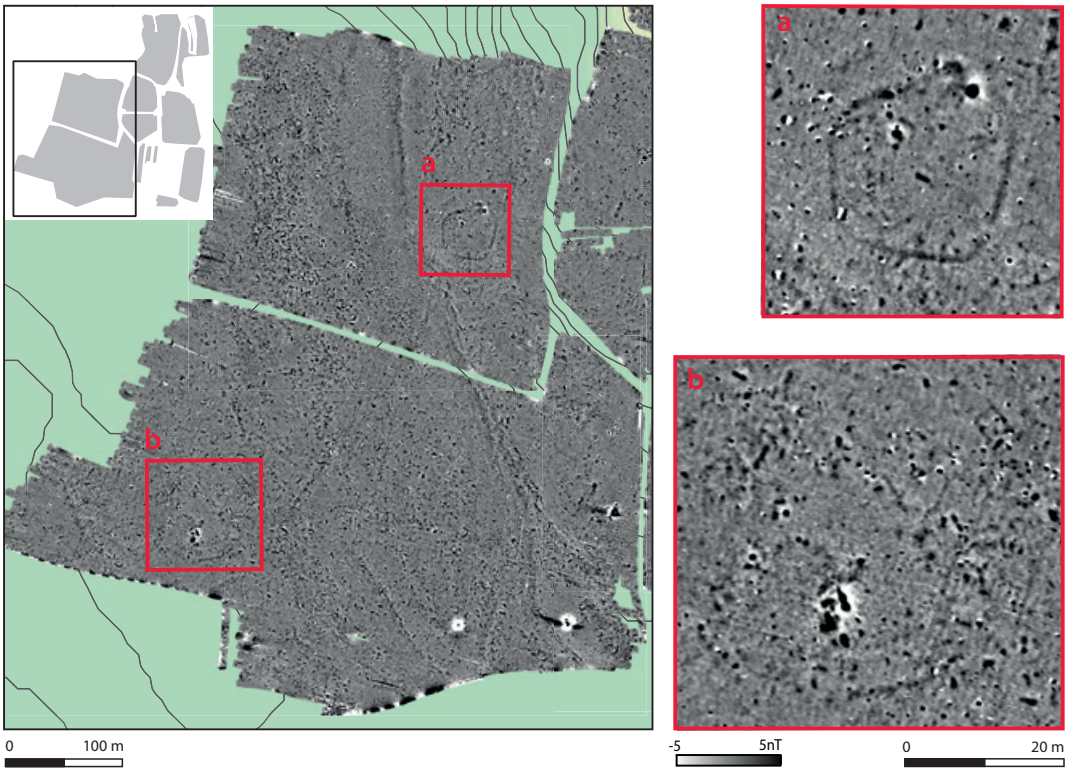

Fig. 10. Magnetic map of the areas to the southwest of Freestone Hill (map: M. Kohle, RGK).

a striking U-shaped arrangement (18 m × 11 m) of anomalies is visible *(fig. 8)*. The fact that they do not extend beyond the rampart and ditch of the hillfort tends to suggest they are contemporary with or of later date than the hillfort, although this is not certain. The anomalies have diameters of 1–1.5 m, but since the features will be significantly smaller than the surrounding magnetic field, in reality they may have diameters in the order of 0.5–1 m. The nT value of one of the anomalies reaches a maximum at 20 nT, indicating it is a pit containing burnt material *(fig. 9)*. These form part of a broad swathe of archaeological anomalies that extend southwards on the downslope of the hill from the main entrance to the fort in the south-east.

Thanks to the closer 25 cm probe distance employed and the resulting higher density of measuring points, the 2014 magnetic prospection was able to identify smaller structures inside the hillfort than the Ó Drisceoil and Nicholls survey. A reliable interpretation of the several thousand anomalies produced cannot, however, be provided solely on the basis of the magnetic measurement images and, as previously noted, supplementary investigations are necessary.

The results are considerably clearer in the lower-lying areas to the south and southwest of the hillfort, where the ground is more even and contains far fewer bedrock protrusions *(fig. 10)*. This area was prospected in 2016 using the 16-channel magnetometer when the land was used for pasture and the surface was flat and easy to drive on. Two clear archaeological monuments were identified in the area *(figs 11; 12)*. In the northern field a distinctive roughly pentagonal-shaped (25 m × 25 m / 1500 m² internal area) ditched enclosure,

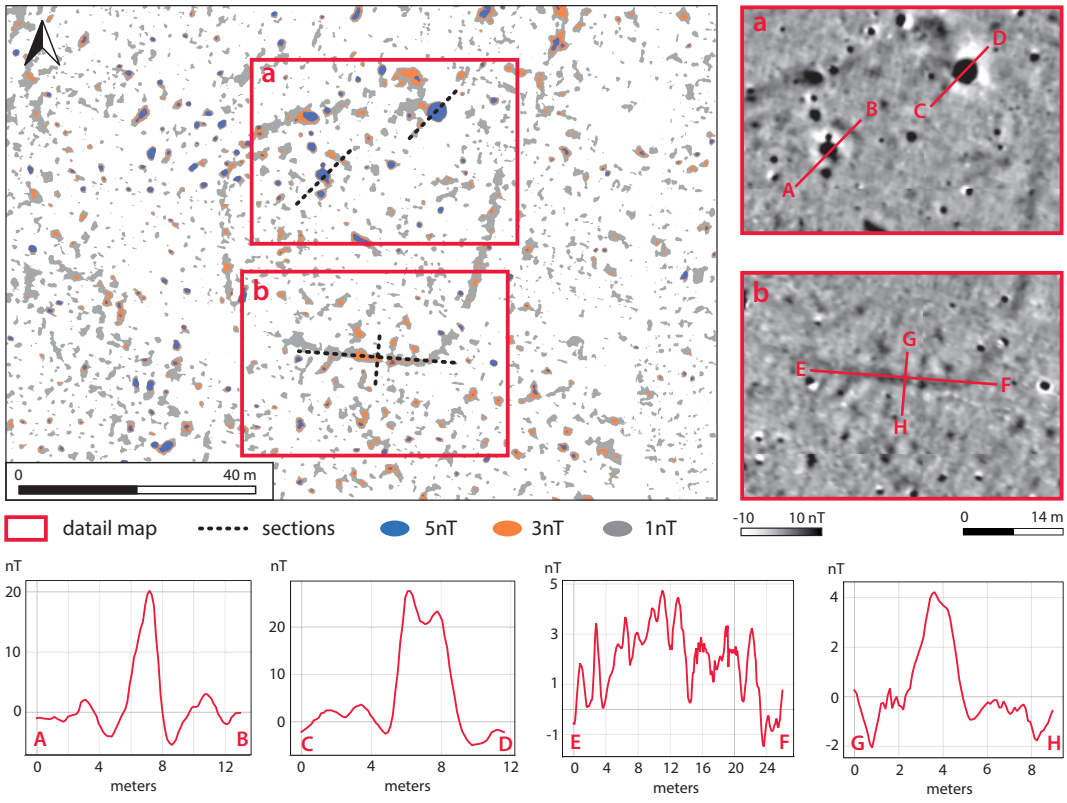

Fig. 11. Contour map of ditch enclosure in the area southwest of Freestone Hill *(fig. 10)*. a) Section through circular anomalies; b) Sections through the ditch of the enclosure (map: M. Kohle, RGK).

situated on flat ground 400 m to the southwest of the hillfort, is visible in the geophysical images *(figs 10; 11)*. The outline of this enclosure had been previously identified as a cropmark in aerial photography undertaken in 2013 by Ó Drisceoil. In the northwest of the enclosed area a circular 7 m diameter anomaly is visible, in the centre of which is a pit-like anomaly with a 20 nT maxima and a diameter of 2.5 m. At a distance of 20 m to its northeast there is another prominent c. 4 m diameter pit-like anomaly present with a slightly higher nT of 25. The magnetic image indicates some gaps in the enclosure ditch and whilst many of these may be related to the state of preservation of the monument, as well as to the survey process, one 4 m wide gap in the southeast might represent an original entrance feature. In the north-eastern part of the enclosure there are additional disruptions in the line of the enclosure ditch and these may indicate another entrance. The coincidence of a large, extensively burnt, pit could indicate a burnt entrance gateway or perhaps a cremation pyre.

Situated 450 m southwest of the above enclosure and 680 m southwest of the hillfort, further anomalies were identified with high nT-values that possibly represent kilns *(fig. 10)*. A nearby house-like structure can be seen in the magnetic images as a rectangular 6 m × 11 m building that is defined by lines of post-pit like features and slot-trenches *(fig. 12)*. Within the "house", a small circular anomaly, possibly a hearth, can be seen *(fig. 12a)*. Anomalies with a clear magnetic contrast are also discernible 50 m to the southwest of the structure *(fig. 12b)*. Two small features here with diameters of about 2 m might be interpreted as kilns due to their nT values of more than 20 nT (*fig. 12b:* sections A–B,

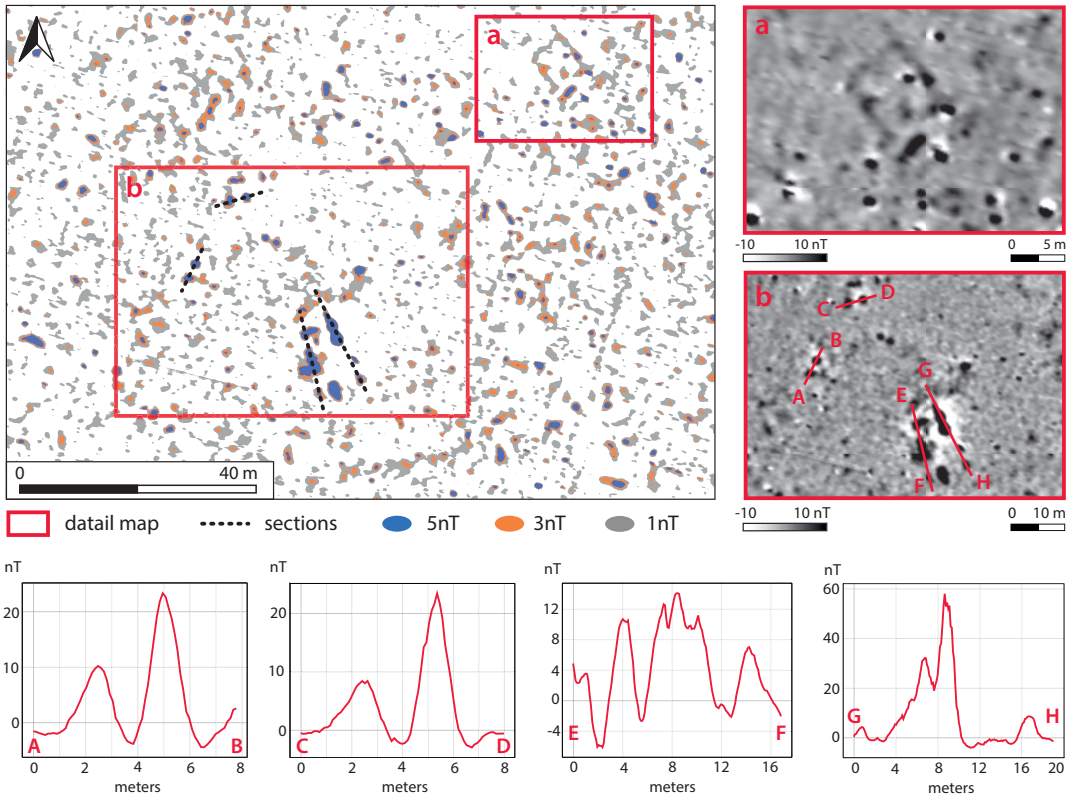

Fig. 12. Contour map of area with a house-like anomaly and kilns(?) or hearths(?) in the area southwards of Freestone Hill *(fig. 10)*. a) Detail of the house anomaly; b) Sections through a kiln(?) or hearth(?) (map: M. Kohle, RGK).

C–D). Surrounding the anomalies, a veil of negative nT-values indicate a remnant magnetisation of the features, a phenomenon that is often correlated with a concentration of burnt material, for example at pottery kilns.

In the vicinity of both of the features described above there are further circular anomalies of similar size that may represent further pits. Their nT-values are less than 10 nT, which is significantly lower than the burnt features and perhaps indicates an association with domestic occupation rather than industrial activities. A much larger kiln-like structure is located approximately 25 m to the east (*fig. 12b*: section G–H). Its magnetic contrast is much higher than the other similar features, with maxima reaching nearly 60 nT, indicating extensive burning. The veil of negative nT-values here indicates, as mentioned above, a pronounced remnant magnetism effect. The elongated, 8 m long × 2.5 m wide, keyhole-shaped / figure-of-eight ground plan of this feature is indicative of a probable corn-drying kiln.

Several pit-like anomalies and indications of further kilns / hearths are dispersed in the prospecting areas on the south-eastern periphery of Freestone Hill. In the west of this area, on the flat ground 510 m south of the hillfort, a concentration of burnt material with a maxima of more than 60 nT and of figure-of-eight plan probably represents another corn drying kiln *(figs 13a; 14a)*. It is situated immediately beside a c. 8 m diameter circular-shaped anomaly, perhaps a roundhouse or funerary ring-ditch (*fig. 14a*: section C–D).

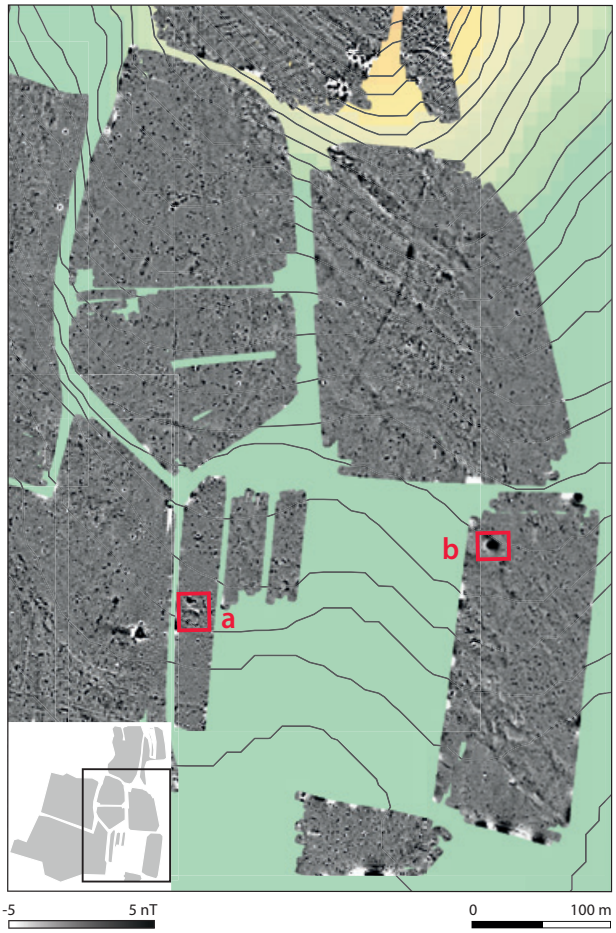

Fig. 13. Overview of the magnetic survey in the area south-eastwards of Freestone Hill (map: RGK).

A 4 m diameter burnt feature in the south-eastern prospection area, 450 m southeast of the hillfort, showed remarkably high values of more than 40 nT and may be a post-medieval lime kiln; a number of these structures are depicted nearby on the first edition Ordnance Survey map (1840) (*figs 13b; 14b*: section A–B).

Freestone Hill: discussion

Knowledge of the interiors of Ireland's 60 recorded Class 1 hillforts is extremely limited and our research therefore presents a significant addition to understanding the layout and topography of these sites in the late prehistoric period. The RGK survey within the ramparts of the hillfort at Freestone Hill, whilst somewhat unclear due to technical constraints, nevertheless indicates a great density of potential archaeological features throughout the site that, in conjunction with the structures and features previously identified by Bersu's excavations and in the Ó Drisceoil and Nicholls survey, is suggestive of a dense concentration of occupation and a broad range of activities being practiced at the site. The character and date of the occupation activities is, however, only poorly understood at present but Bersu's excavations, which produced what has been identified as Late Bronze Age

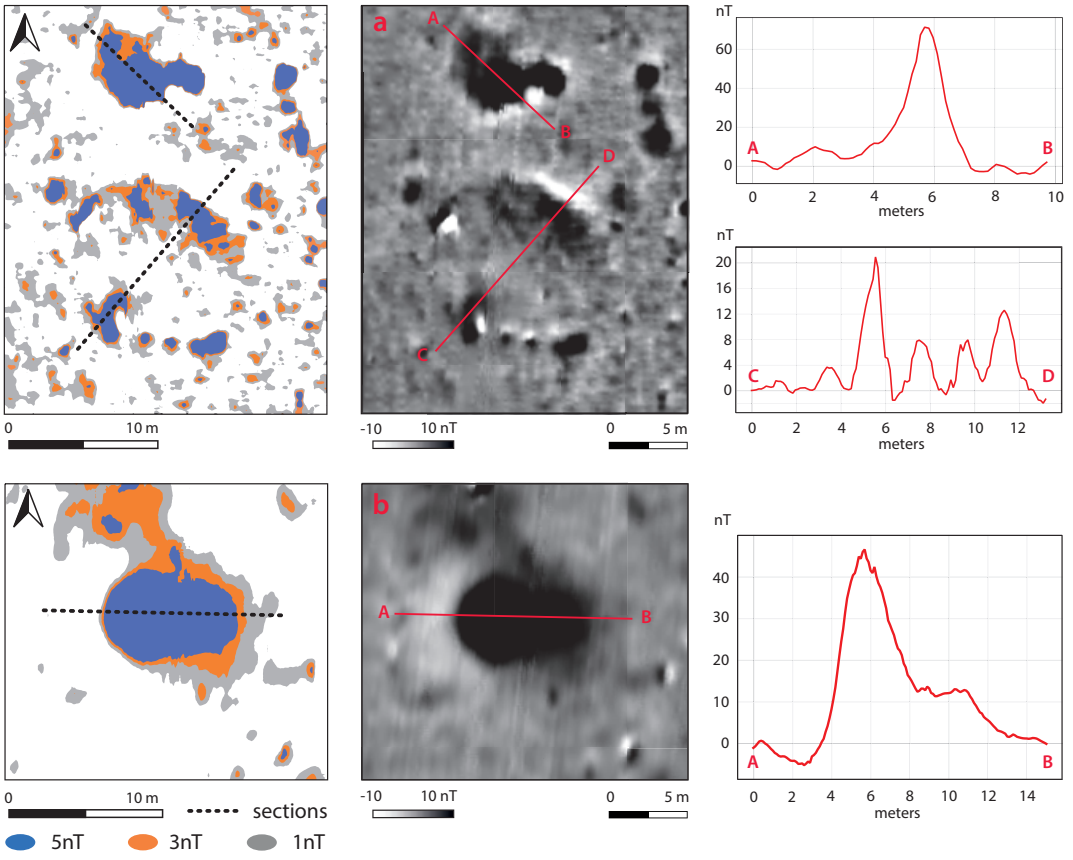

Fig. 14. Contour map of two areas south of Freestone Hill *(fig. 13)*. a) Section A–B through a and kiln(?) or hearth(?), C–D section through an unknown object (pits)(?); b) Section through a kiln(?) or hearth(?) (map: M. Kohle, RGK).

coarseware pottery from one of the house platforms and the ditch fills, suggest much of the activity dates from this period. If this is the case it has important implications for the ongoing debates around the function(s) of Irish hillforts and the question of whether they were primarily centres of permanent occupation or seasonal conglomerations for assembly. The high density of occupation within the bounds of the hillfort would tend to contradict Bersu's interpretation of the hillfort at Freestone Hill as a 'temporary fortified camp'. The extent and density of activities evident from the results of the Freestone Hill surveys bear close similarity with the small number of other densely-packed hillforts recorded, such as Knocknashee and Glasbolie, and they thereby lend support to Barry Raftery's assertion that at least some of the Irish hillforts 'approached the status of small, defended villages'.

A key discovery from the most recent phase of geophysical research is the remarkable detail it has provided for the arrangement of features within the 35 m × 30 m sub-circular embanked enclosure situated outside the southern rampart and immediately to the west of what may be an entrance to the hillfort. The area of the sub-circular enclosure had not been excavated by Bersu. Whilst the enclosure itself appears to be truncated by the hillfort's defences and may thus be associated with the Early Bronze Age phase of funerary activities 100 m to its north, the U-shaped arrangement of what appear to be large pit features within the area it encompasses is highly unusual in the context of Irish late

prehistoric funerary monuments *(fig. 9)*. As previously noted, this pit arrangement may post-date the construction of the hillfort and its location adjacent to an entrance into the fort suggests it may have occupied a place that maintained its significance after the fort was built. Whilst clearly excavation is required to date and characterise the nature of the activities that were taking place within the enclosure, the general arrangement of pits inside a sub-circular enclosure finds close parallels with the Romano-British style *temenos* situated 100 m to its north on the summit of the hill. It also bears comparison with circular / sub-circular Late Iron Age and Romano-British ritual shrines such as those excavated at Hayling Island, Uley, Harlow, Colchester, and Maiden Castle. Large pits / shafts within which votive offerings were deposited form an important component of many of these and other circular shrines of the period, offering an intriguing potential explanation for the pits within the newly identified enclosure at Freestone Hill. These pits also bring to mind the series of large shafts that Bersu had excavated which he regarded as iron-ore prospecting mines that had been dug into the dolomite bedrock in the eastern area of the fort and outside its north-eastern ramparts. The shafts were, however, subsequently dismissed as natural solution hollows by Raftery. However, the pits, some of which were over 3 m deep and filled with clay and rubble which contained animal bones (some worked), antler tines, pottery (unidentified) and iron and bronze artefacts, bear close comparison with some of the aforementioned pits / shafts found on the Romano-British shrines. The discovery of the new sub-circular enclosure therefore potentially supplements the previous finds of Roman material culture from the site. These have been convincingly paralleled with material from Roman temples sited along the Severn River in Gloucestershire, such as Lydney Park, and this adds further importance to Freestone Hill in the ongoing debate about the extent of cultural contacts across the Irish Sea in the Roman period and likely Romano-British or Romano-Irish settlement in the area.

The extensive surveys undertaken in the lower terrain surrounding the hillfort, at around 38 ha in total extent, are amongst the most extensive undertaken around any Irish hillfort and provide significant new information regarding the archaeological landscape context of Freestone Hill. The surveys identified a dispersed series of monuments, structures, and features, including a distinctive pentagonal-shaped enclosure with internal features, a probable roundhouse, a rectangular structure and at least five probable corn-drying kilns, in addition to scatters of pits and areas of burning. The new discoveries augment the previously recorded corpus of eight large circular / sub-circular enclosures concentrated in a 65 ha area within a distance of 800 m to the east of the hillfort. Interestingly, the closest enclosure to the east side of the hillfort (KK020-024) is also of roughly pentagonal form, similar to the recently-discovered example on the west side of the hill. A number of additional circular cropmarks are also visible in the aerial photography in this area and although none of these sites have been excavated yet they can be considered to form an integral part of the Freestone Hill archaeological landscape. Unhappily, the fields in which the sites are situated have in the fairly recent past undergone intensive agricultural extensification and most of the monuments are now only intermittently visible as cropmarks.

Close dating and characterisation of the small pentagonal enclosure identified in the geophysical images to the southwest of the hillfort is not possible without excavation, largely because settlement enclosures of broadly similar form are known to span the late prehistoric to late medieval period in Ireland. Nonetheless, it is potentially significant that its configuration compares well with the D-shaped ditched enclosure identified adjacent to the probable find-spot of the Roman burial at Stonyford, Co. Kilkenny, presented below, and it is also similar to a roughly oval enclosure identified by geophysical survey at Drumanagh, Co. Dublin, where extensive quantities of Roman finds have also been

recovered. In both these instances, however, the enclosures have not been dated. Similarly, the Freestone Hill example compares particularly well, morphologically, with Iron Age settlement enclosures in Wales, for example Varchoel Lane, Great Cloddiau and Ffynnoncyff and amongst numerous multi-period and multi-focal Iron Age to Roman sites in Gloucestershire and Wiltshire.

The unenclosed 6 m × 11 m rectangular house-like structure situated southwest of the hillfort is also not readily dateable given that buildings of similar form and dimensions are known throughout much of the prehistoric to post-medieval periods *(fig. 12a)*. It is, however, remarkably similar in form to the many early Neolithic house sites that have been excavated in Ireland in recent years. The figure-of-eight / keyhole plans and high nT values of five separate features indicate they are probably corn drying kilns that were employed for the purpose of cereal processing. Whilst none of these potential examples can be closely dated it is of considerable interest, in light of the fourth century Roman / Roman-influenced religious / ritual activity on the summit of Freestone Hill, that this form of cereal processing technology came into regular use from c. 200–100 BC, with a peak in dated sites from AD 200 to 400. Further examples dating to the same period have been excavated within the Gowran Pass below Freestone Hill and in the environs of Kilkenny City, where evidently cereal cultivation was an important aspect of the Late Iron Age economy.

Stonyford

A second key site for assessing the nature of Roman interaction with Ireland, and vice versa, in the Late Iron Age is situated 13 km southwest of Freestone Hill, near the confluence of

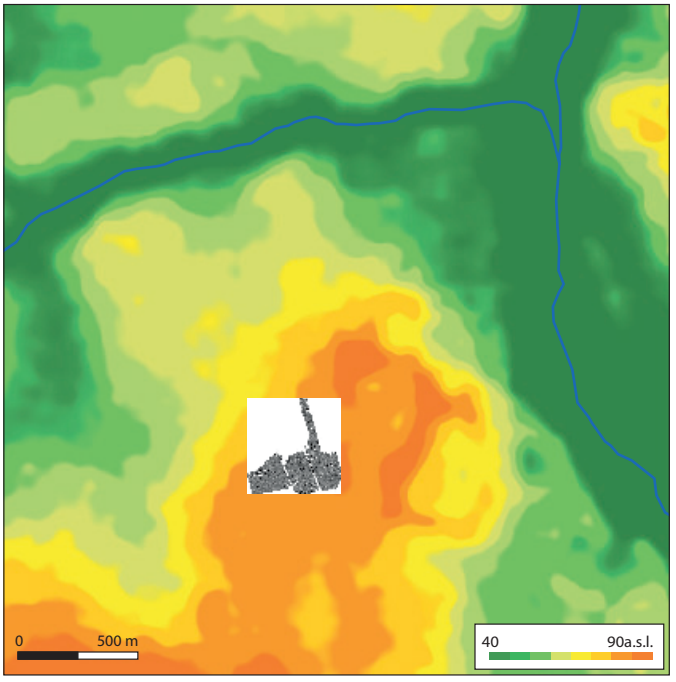

Fig. 15. DEM and overview on the surveyed area in Stonyford (Shuttle Radar Topography Mission 1 Arc-Second Global, doi: 10.5066/F7PR7TFT; map: K. Rassmann, RGK).

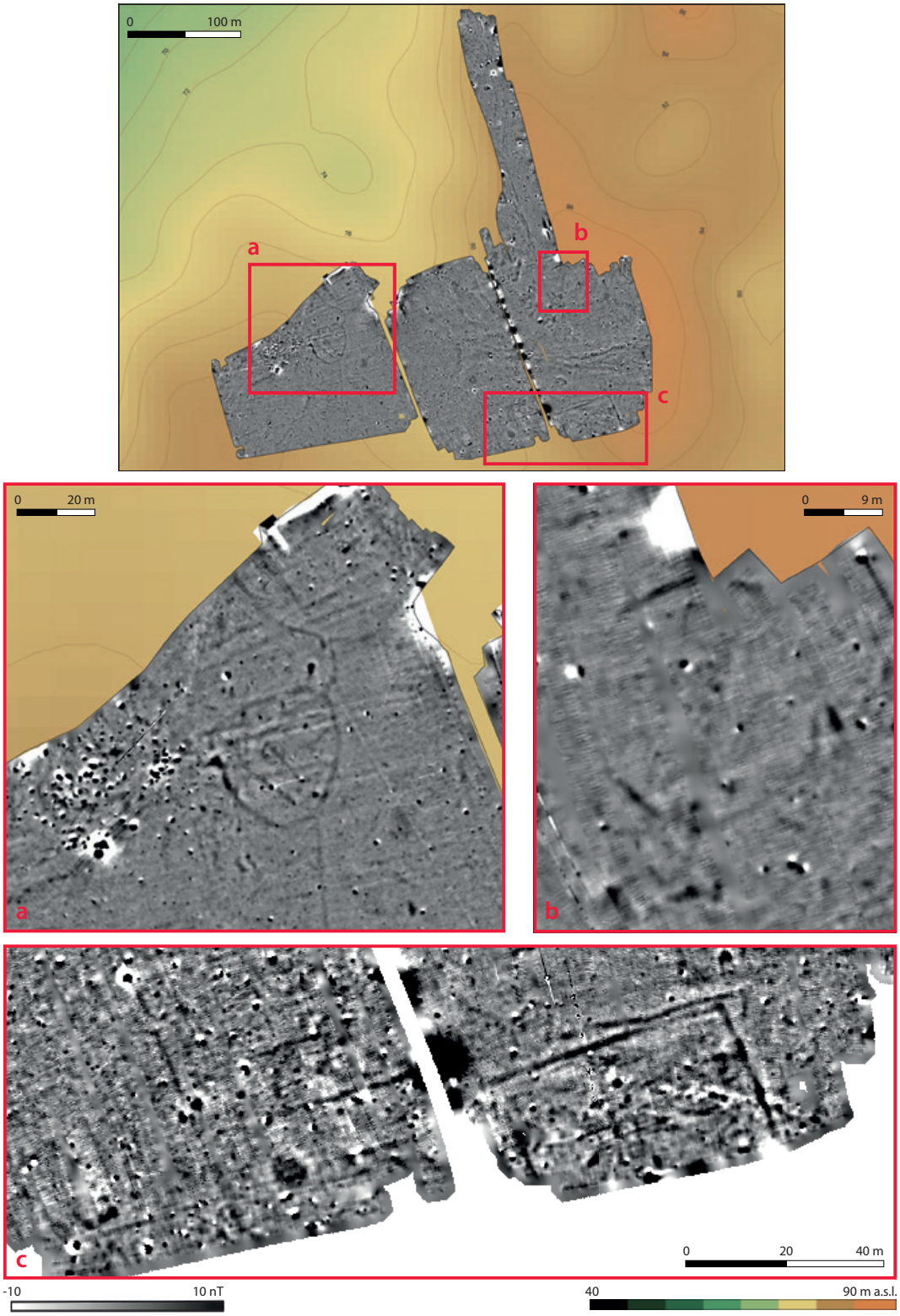

Fig. 16. Overview on the surveyed area in Stonyford. a) Semi-circular ditched enclosure with central ring-ditch / roundhouse; b) circular ring ditch (map: K. Rassmann, RGK and C. Ó Drisceoil, Kilkenny Archaeology).

the Nore and its tributary, the King's river, in the vicinity of the village of Stonyford, Co. Kilkenny. In around 1852, six Roman objects were reported to have been discovered 'near Stonyford'. These included a glass cinerary urn (Isings form 67a) of first century AD date containing cremated human remains (now lost), which was sealed with a circular bronze mirror and was found alongside a small glass bottle known as an *ungentarium* (Isings 28a or b). These were reported as having been found 'protected by stones' in an earthen enclosure and are considered to have constituted a Romano-British cist burial. The three other objects, found nearby according to the nineteenth century account of their discovery, comprised a nail-cleaner, a hooked toilet implement, and a finger-ring with *millefiori* inlays. They have been dated by Ó Floinn to the fifth–early sixth century. Because the precise discovery circumstances of all the objects were not adequately recorded at the time, questions have been intermittently raised about their veracity and provenance. Such doubts have however generally been discounted because the group of objects constituting the burial, and the burial rite associated with them, are of a standard Roman form and would have been extremely difficult to recreate in the nineteenth century. Furthermore, two separate reappraisals of the circumstances of the discovery both concluded that it is authentic and that the most likely location of the Roman burial is an enclosure thought to be a ring-barrow (KK 027-035) in Ballycoam townland, a kilometre due east of Stonyford village on a ridge that overlooks the King's river valley. In the 1990s this monument was, unfortunately, largely levelled by a local farmer and today it is visible only as a low rise in a pasture-field. Its outline was recorded on the first edition (1840) Ordnance Survey map and the 1910 25-inch map, prior to its destruction, as a circular mound around 25 m across. Local accounts of it also describe it as having comprised of a large circular mound with a deep encircling ditch. There is a second ring-barrow (KK027-036), marked on the historic maps but now a sub-circular 25 m × 26 m crop-mark, situated 350 m to the south-east in Cotterellsbooly townland and it may be speculated that it was this monument that produced the other, later, artefacts.

Results of the magnetic survey

The magnetic prospection undertaken at Ballycoam, near Stonyford, was carried out on 1st July 2014. The survey area, covering an area of approximately 6 ha of pastureland in total, extended over two separate fields *(figs 15; 16)*. The western field contained the levelled remains of the Ballycoam ring-barrow, where it is thought the first century Roman cist-burial was found c. 1852. As at Freestone Hill the prospection was carried out with the vehicle-mounted 16-channel magnetometer *(fig. 6)*. The principal aim of our work was to investigate the area of the barrow and its surrounding landscape.

Extensive disturbance is visible on the magnetic image in the area corresponding with the location of the levelled ring-barrow (KK027-035) as it is depicted on the historic Ordnance Survey maps, which makes it difficult to determine the original configuration of the monument *(fig. 17)*. However, it is possible to trace the outline of a c. 30 m diameter curving ditch amongst the 'noise' caused by the modern disturbance. Additional features may be visible within the enclosed area but these are difficult to isolate from the overall disturbance.

Situated 15 m east of the levelled ring-barrow the magnetic data identified a previously unknown enclosure which is linked by a narrow, curving, trackway to either an elaborate forework or perhaps a second, larger, enclosure *(fig. 17)*. The clearly identified enclosure, situated on flat ground below the ridge occupied by the ring-barrow, is well-defined as a roughly D-shaped univallate enclosure measuring 30 m (east-west) × 32 m (north-south)

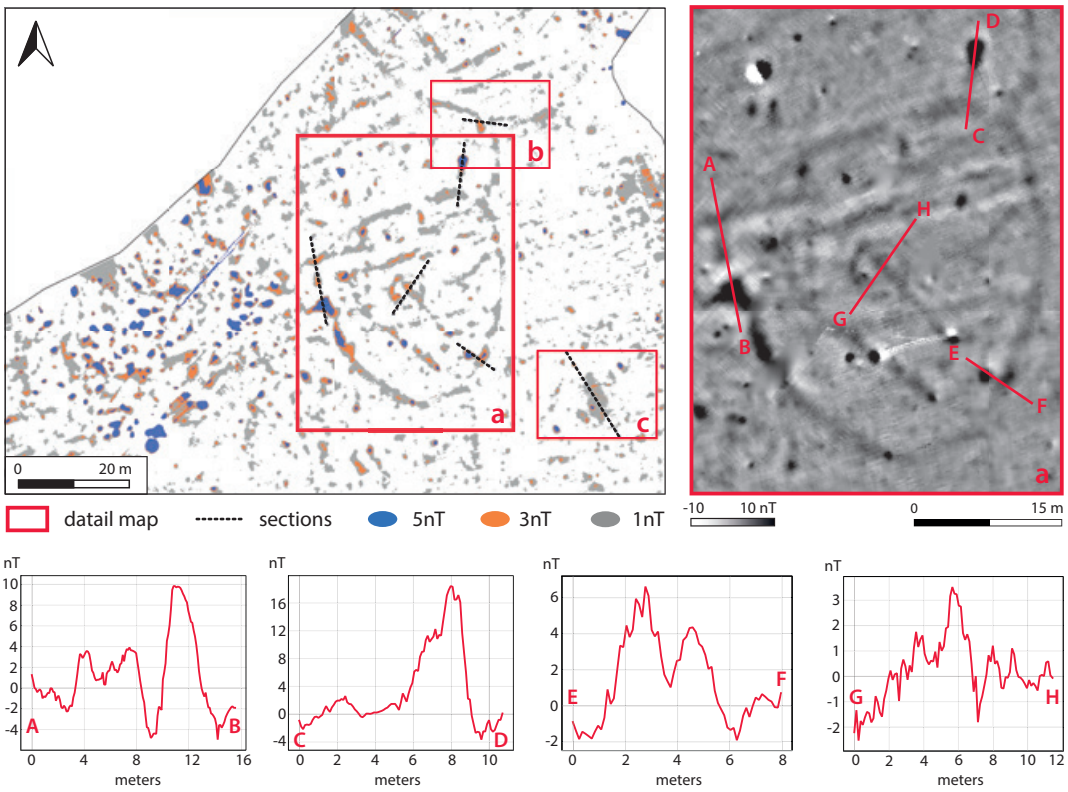

Fig. 17. Stonyford. Contour map of (a) D-shaped enclosure, (b) curving ditches, (c) circular anomaly, and section through ditch (A–B, C–D), ring-ditch / roundhouse (G–H) and pit like anomalies (E–F, B–C) (map: M. Kohle, RGK).

and encompassing an area of 530 m² *(figs 17; 18a)*. A likely entrance gap interrupts the north-western arc of the enclosure and appears to lead directly to the adjacent ring-barrow to its west (*figs 17a; 18*: profile A–B). Another entrance gap in the northeast leads into a 15 m long × c. 4 m wide, slightly curving passageway formed by parallel ditches. This continues on either side as curving stretches of ditch with a high magnetic contrast of up to 16 nT, indicating its backfill contains burnt material (*fig. 18a*: profile C–D). The curving ditches represent either the south side of a complete enclosure (c. 40 m diameter) that extends beyond the survey area to the north or, alternatively, an elaborate splayed outwork entrance feature for the D-shaped enclosure *(figs 18b; 19a)*. Further geophysical survey in accessible areas to the north is required to determine its complete morphology. A later double-ditched track, the north side of which corresponds with a former field boundary marked on the 1840 Ordnance Survey map, runs north-east to south-west across the enclosure. The D-shaped enclosure ditch has a low magnetic contrast of 1–3 nT (*fig. 18a*: profile C–D, E–F). Only at a point south of the postulated entrance are the values higher, reaching 10 nT, indicating that it is backfilled at this location with fired material (*fig. 18a*: profile A–B). Slightly offset within the centre of the D-shaped enclosure is a 7 m diameter circular anomaly that is probably a ring-ditch / roundhouse (*fig. 18a*: profile G–H). Pit anomalies are also visible within the enclosure. A linear ditch also extends for a distance of 70 m to the south of the enclosure and there are indications, albeit poorly defined, of what

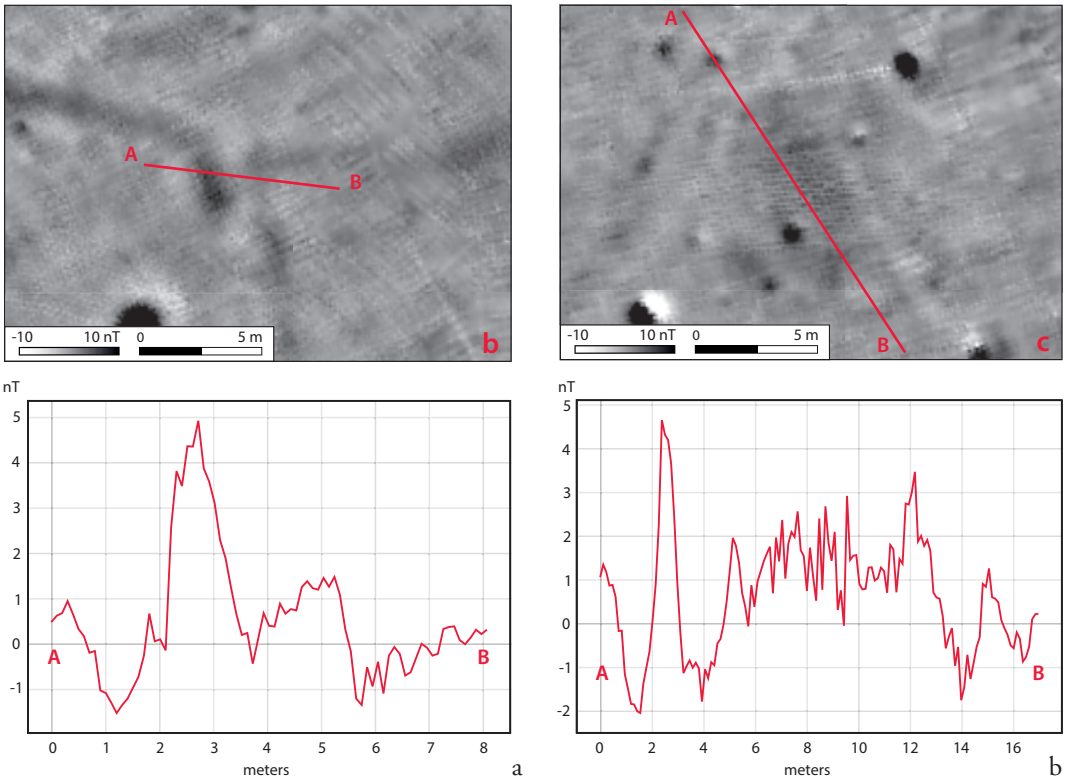

Fig. 18. a) Section A–B through the entrance feature in northern enclosure; b) circular anomaly with unclear function (map: M. Kohle, RGK).

may be a corresponding ditch to its north-west, the two features forming a widely splayed avenue to the south of the enclosure. In addition, 95 m south-east of the enclosure a large, elongated pit anomaly, reminiscent of a corn-drying kiln, is present in the geophysical images *(fig. 18)*.

A circular anomaly, 10 m in diameter, is visible in the magnetic data, 35 m south-east of the D-shaped enclosure *(fig. 18c)*. In the far northeast of the survey area in the townland of Cotterellsbooley, 250 m east of the D-shaped enclosure, a 26 m diameter circular enclosure is visible in the magnetic data *(fig. 17b)*. This enclosure is located on a low ridge in an area of limestone that was quarried for a nearby limekiln according to the first edition (1840) Ordnance Survey map, but it appears to have somehow survived relatively intact (or perhaps the map is inaccurate for this area). Within the circular enclosure no clear structures can be identified but a number of pit-like anomalies are visible in the data.

A portion of a large rectangular / square ditched enclosure was indicated in the survey 300 m south-east of the probable Roman burial find-spot *(figs 17b; 20)*. The enclosure appears to have continued outside the survey area to the south of an east-west running field boundary that cuts across its south side. Within the survey area the enclosure measures 50 m east-west × 33 m north-south and within it are what appear to be a number of pit-like and linear features *(fig. 20)*. The monument is not marked on any of the historic mapping and nor is it visible on any aerial photographs that were available for examination. Enclosures of similar scale and form are generally characterised as 'moated sites', a class

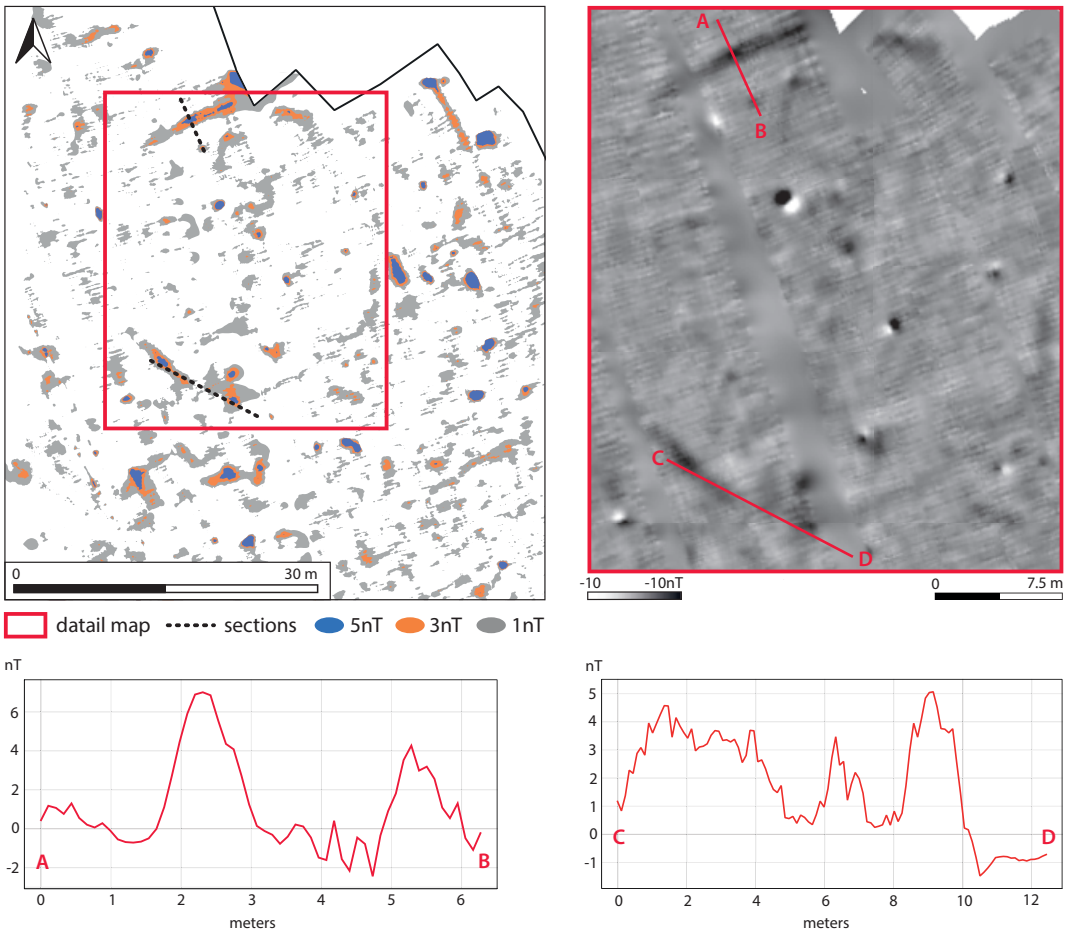

Fig. 19. Section through circular ditch *(fig. 17b)* in the eastern field (map: M. Kohle, RGK).

of monument that were primarily the fortified residences of Anglo-Norman settlers in the late 13th–14th centuries AD, although they were also built by Gaelic lords in both the later and early medieval periods. Around 65 moated sites are known in County Kilkenny, including a number to the north and south of Ballycoam. However, in light of the high likelihood of Late Iron Age and Roman activity in the surrounding area the possibility that the rectangular / square enclosure belongs to the same period cannot discounted and it could be speculated that it finds analogies with Late Iron Age square ritual enclosures such as Hayling Island, Thetford, and Folly Lane[1].

[1] Haselgrove 1999, 123.

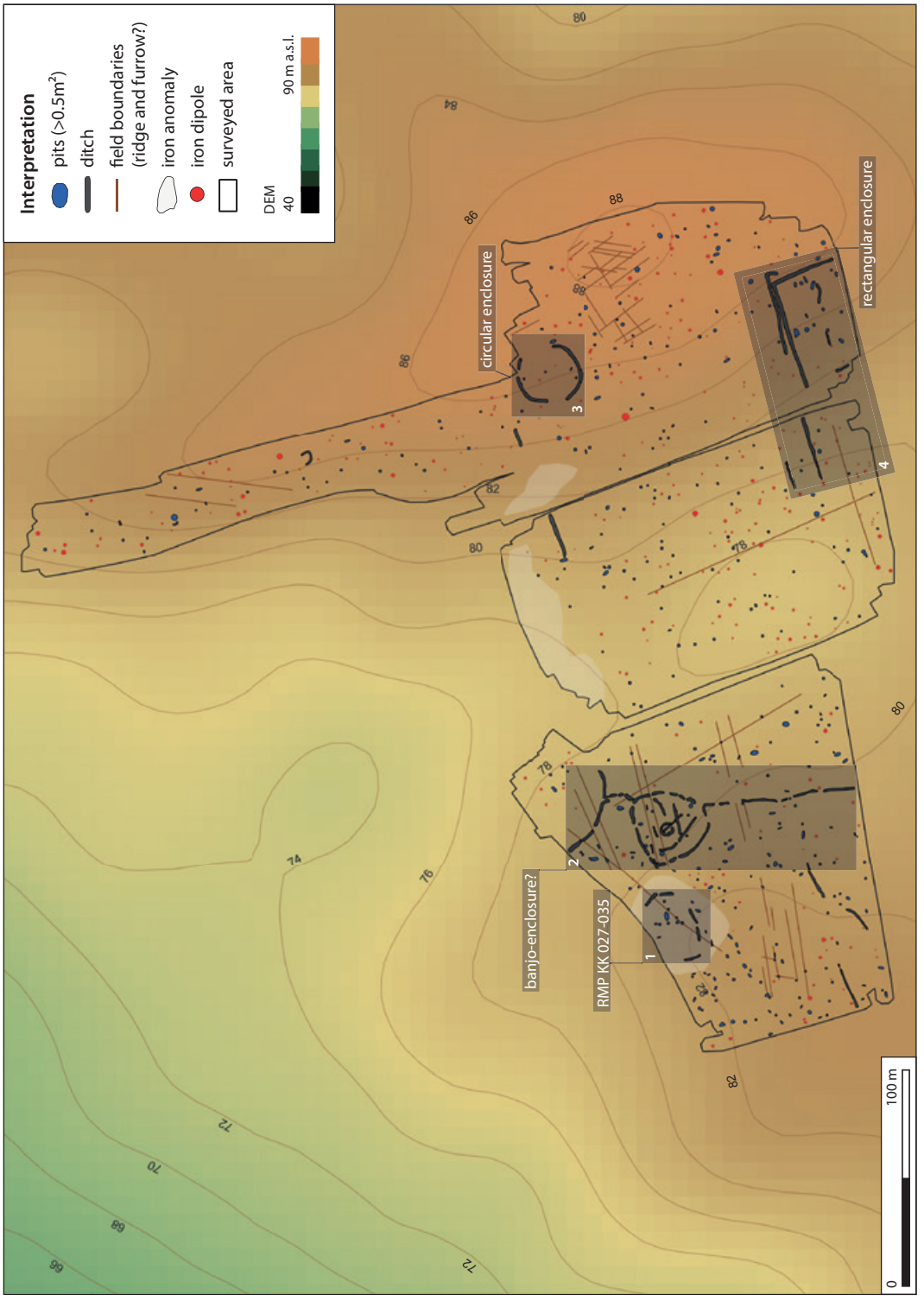

Fig. 20. Interpretation of the magnetic survey in the context of the archaeological data already available (map: K. Rassmann, RGK and C. Ó Drisceoil, Kilkenny Archaeology).

Summary

The prospection in Stonyford has confirmed the location of the, much disfigured, enclosure, considered a ring-barrow, wherein it is proposed the first century AD Roman burial was discovered in the 19th century. Whilst the survey adds little new information regarding the configuration of this particular monument, other than it appears to be defined by a circular ditch, it has revealed that it was not an isolated site, but that it is instead situated immediately beside a previously unidentified D-shaped enclosure and two further circular enclosures, possibly additional barrows, one 75 m to its southeast and the other 250 m to its east. A large square / rectangular enclosure is situated 300 m south-east of the burial find-spot. A fifth enclosure, thought to be a ring-barrow (KK027-036), has, as previously noted, been already identified in Cotterelsbooley, 365 m to its southeast. Pit-like features and what appear to be corn-drying kilns also occur within the survey area. The newly-identified D-shaped enclosure, connected via a trackway to either a widely-splayed entrance forework or another, larger, circular enclosure to its north, is of particular interest. If the latter scenario is valid it would recall conjoined ringforts of early medieval date, but none of these have the distinctive curving link passageway seen at Ballycoam[2]. The arrangement is atypical in an Irish context and instead finds its closest analogy in the highly distinctive Iron Age settlement enclosures of southern England and west Wales known as 'banjo enclosures'[3]. The defining characteristic of these sites is an elongated out-turned entrance passageway that extends from the main enclosure. The entrance features often 'flare out' at their furthest extension and connect with additional stretches of bank and ditch to create a 'funnel' shaped approach to the main enclosure. In some cases the outer banks and ditches loop around to create full enclosures that encircle the main enclosure. When excavated, the banjo enclosures generally produce evidence of intensive occupation, often in the form of roundhouses and storage pits, and what appear to be similar features are present within the Ballycoam D-shaped enclosure. The purpose of the elaborate entrance configurations represented at the banjo enclosures has been a matter of debate but they are generally thought to be expressions of status, along with having a practical function in directing and channelling movement into a central enclosure[4]. Chronologically, the sites in England and Wales wholly date from the Middle and Late Iron Age periods, c. 400 BC to AD 43. Significantly, in light of the dating of the Stonyford Roman burial to the first century AD, there is a particular concentration of occupation at the sites between the first century BC and the first century AD. It is also of interest that in Britain banjo enclosures are sometimes found in association with Iron Age barrow cemeteries, for example at Claydon Pike, Gloucestershire[5].

Banjo enclosures have not been heretofore identified in Ireland, although Katharina Becker has drawn parallels between these sites and the splayed entrance avenues recorded in association with large Iron Age circular structures at some of the Irish royal sites, for example Knockaulin (Rose phase)[6]. Whilst the data is unclear from Ballycoam, the possibility that there is a similar splayed 'avenue' leading up to the south side of the D-shaped enclosure offers a further interesting parallel. For some time the Stonyford burial's significance has been recognised as a strong indication that a Roman/Romanised community was living in Kilkenny in the first century AD, but no domestic settlements have ever been found in Ireland. Could the newly discovered enclosure be a candidate? Whilst this may be

[2] See O'Sullivan 2011, 67–69.

[3] Lang 2016; Murphy et al. 2012, fig. 3 (e. g. Rosehill, Gors Wen).

[4] Moore 2020, 574–575.

[5] Miles et al. 2007.

[6] Becker 2019, 268–286.

the case, evidently the hypothesis that the Ballycoam site represents an Irish example of a banjo enclosure is a new departure for the Irish Iron Age and needs to be tested by further geophysical survey and excavations.

Conclusion

In his published preliminary report on his excavations at Freestone Hill Gerhard Bersu wrote that 'For the first time a well dated complex of finds of mid-4th century date, a hitherto rather obscure period is available. The exclusively provincial Roman provenance of the bronzes (mount and bracelets of this type are so far unknown from Ireland) indicate that already in pre-Patrician times close contacts existed with the area of the Roman empire'[7]. Bersu was one of the first archaeologists to recognise that Ireland and the Roman world were interconnected and the most recent work described above is thus very much, as the title of this paper suggests, following in his footsteps. Similarly, the Late Iron Age and Roman Ireland project for the Discovery Programme set out to characterise Roman and Iron Age material and identify nodal entry points and probable landscape clusters of Roman material and likely social influence, using a multi-discipline and international collaborative framework and these surveys were undertaken as part of that collaboration. In the absence of access to the most likely Roman site at Drumanagh, Co. Dublin, thanks in no small measure to Bersu's work, the wider Kilkenny environs proved to be the next highly probable area of interaction. Cahill Wilson's prior research using geo-chemical analysis on human and animal remains had identified a corresponding link between areas of natural mineral wealth (copper, lead and silver) and clusters of Roman material around Ireland[8]. Given, as noted above, that there are known lead silver deposits at Knockadrina and along the river Nore, access to these along with the navigable nature of the River Nore and rich fertile land on which to settle must have proved immensely attractive for Roman immigrants.

The results of the wider surveys at Freestone Hill and Stonyford are impressive and it is important to note that further work to establish dating for the various new features and sites is an essential next step, and if these are established as both Irish and Roman this would be ground-breaking on an international level. The new work also underlines the need to study sites such as these on several scales to create a better picture of how they fitted into the landscapes of the past. On the one hand it is essential to investigate the specific areas of the monuments, but it is also necessary to investigate the surrounding landscape as widely as possible. The system used for the surveys described above, with its expansive coverage of 10–30 ha, makes it possible to prospect large areas of the landscape relatively easily, and in exploring a monument's landscape positioning we avoid the binary classifications (royal / secular, sacred / profane) that have isolated these sites from our understanding of wider agricultural and settlement patterns and once rendered the people of the Iron Age as 'invisible'[9]. Freestone Hill and Stonyford (Ballycoam) are not just important Iron Age sites in their own right though, as they both sit within the landscape of the Nore river valley in Kilkenny, which has significant evidence of finds of Romano-British or we may say 'Romano-Irish' evidence. The cremation burial from Stonyford would be a rare find in any of the Roman provinces, with only a few examples known from Roman Britain, so for it to have been found in Ireland makes it exceptional. The surveys suggest that not only is

[7] Bersu 1951, 9.
[8] Cahill Wilson 2017.
[9] Raftery 1994, 112; but see Becker 2019.

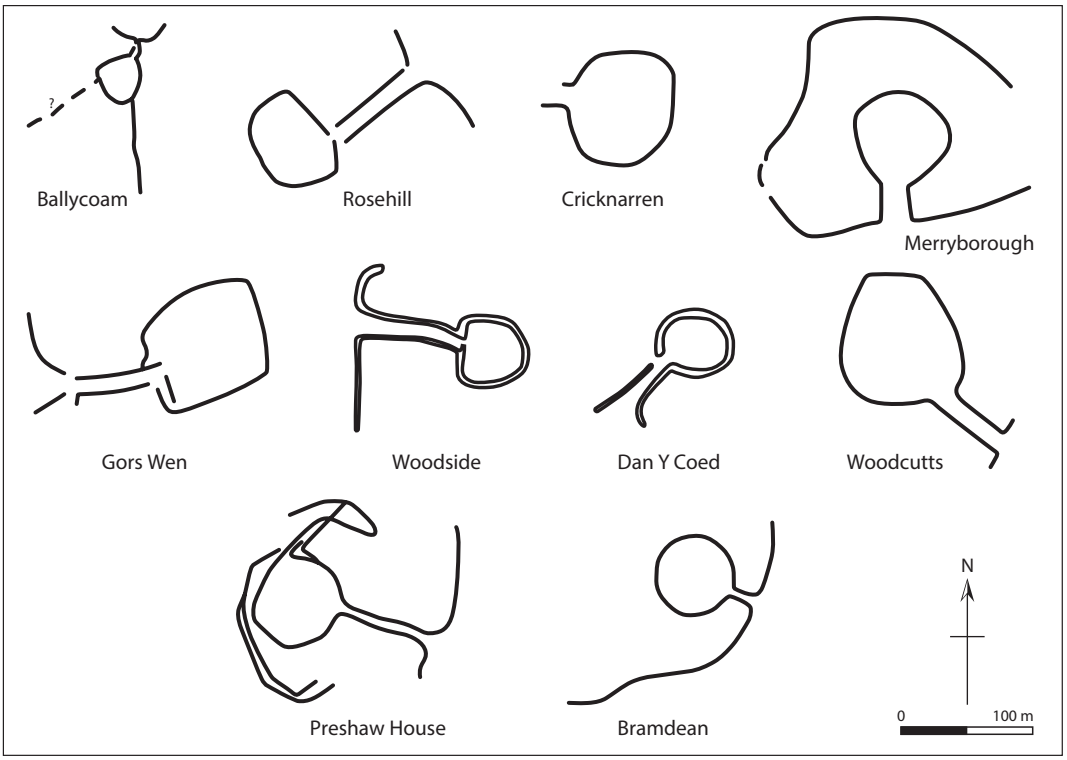

Fig. 21. Overview on Banjo-Enclosures in Ireland (graphic: C. Ó Drisceoil, Kilkenny Archaeology).

there evidence of settlement and ritual enclosures, but likely further barrow burials of an otherwise Roman character *(fig. 17)*.

If, as we believe this survey has revealed, there is settlement evidence at Stonyford and Freestone Hill that dates to the Roman Iron Age then we will be able to demonstrate Roman impact in Ireland for the very first time, and it will open up an entirely new research avenue for Irish archaeology. Furthermore, if we have identified an entirely new form of monument, the enclosure, in Ireland, a site-type that has up to this point been seen as uniquely British, then we will have prompted a need for a reconsideration of its classification.

Given the national but also important international significance of these sites, we recommend that the following programme of research be undertaken in the region around Freestone Hill and Stonyford.

1. To test the various interpretations of the magnetic anomalies set out above through targeted excavation aimed at obtaining suitable samples for radiocarbon dating and soil chemistry analysis.
2. To undertake systematic aerial photography of the sites and their surroundings using multi-spectral sensors.
3. To expand the geophysical survey areas around Stonyford (Ballycoam) and Freestone Hill, including the neighbouring hillfort at Ballinkillin, Co. Carlow[10].
4. To undertake archaeometric investigation of the Stonyford and Freestone Hill artefactual assemblages, including obtaining radiocarbon dates directly from residues on the pottery assemblage and human and animal skeletal material from the latter site.

[10] See e. g. Condit / Gibbons 1986/87.

Fig. 22. Participants in the first campaign in 2014 at Freestone Hill, Co. Kilkenny. From left: Klaus Abraham, Ralf Schuhmann, Swen Heinermann, Knut Rassmann, Francis Carroll, Jacqueline Cahill Wilson, Cóilín Ó Drisceoil and Austin Carroll (photo: H.-U. Voß, RGK).

5. To undertake geochemical analysis of samples of lead silver ore from Knockadrina to compare against recent comparative data on the sources of lead and silver in Ireland and Roman Britain.

The German-Irish project 'From Boyne to Brodgar' in the Boyne Valley World Heritage Site and on Rousay[11] and now in Kilkenny *(fig. 21)* has successfully demonstrated the significance of exploratory landscape studies even at sites that have been previously well studied. Gerhard Bersu was an extraordinary man working at Freestone Hill in difficult times. As we have finalised this paper during a global pandemic, several years after the surveys at Kilkenny were undertaken, the extraordinary results speak for themselves and it seems fitting to remind ourselves of the old Irish adage, 'good things come to those who wait'.

Acknowledgments

The research at Freestone Hill and Stonyford was only possible with the support and cooperation of Klaus Abraham, Ruth Beusing and Johannes Kalmbach. We are thankful to Francis Carroll and his family for facilitating us with the opportunity to investigate Freestone Hill and its surroundings. We also thank James O'Driscoll for allowing us to reproduce his photogrammetric model of Freestone Hill and Simon Dowling for bringing his aerial photograph of the site to our attention.

[11] Rassmann et al. 2019.

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Following in the footsteps of Gerhard Bersu at Freestone Hill and Stonyford, Co. Kilkenny. New contributions from magnetic surveys

Zusammenfassung · Summary · Résumé

ZUSAMMENFASSUNG · Der Freestone Hill ist ein mehrphasiges 5 ha großes *hillfort* im südöstlichen Irland. Hier fand in den Jahren 1948–49 die letzte große Siedlungsgrabung von Gerhard Bersu statt. Der Beitrag geht kurz auf die Umstände ein, die Bersu zu dieser Ausgrabung veranlassten, und beschreibt die Ergebnisse der magnetischen Untersuchungen im *hillfort* und seiner Umgebung in den Jahren 2014 und 2018 durch die Römisch-Germanische Kommission und irische Kollegen. Die Untersuchungen führten zu äußerst wichtigen Ergebnissen für das *hillfort* und die umgebende Landschaft. Sie sind eine Würdigung für den großen deutschen Gelehrten und erweitern seine bahnbrechenden Forschungen auf dem Freestone Hill.

SUMMARY · Freestone Hill, a five-acre multiphase univallate hillfort in south-east Ireland, was the location of Gerhard Bersu's last major excavation in 1948–49. This paper describes the peculiar set of circumstances that led Bersu to undertake the excavations at Freestone Hill and it also describes two campaigns of magnetic surveys undertaken within the hillfort and in its environs in 2014 and 2018 by the Römisch-Germanische Kommission and Irish colleagues. These investigations produced highly significant results that provide a new landscape context for the late prehistoric activities within the hillfort and which augment the ground-breaking work on the site by the great German researcher.

RÉSUMÉ · Le Freestone Hill, une colline fortifiée de 5 ha du Sud-Est de l'Irlande comportant plusieurs phases, fut l'objet de la dernière grande fouille de Bersu menée dans les années 1948–49. Cette contribution aborde brièvement les circonstances qui ont poussé Bersu à entreprendre les fouilles et présente deux campagnes de prospection magnétique menées sur la colline fortifiée par la Römisch-Germanische Kommission et ses collègues irlandais en 2014 et 2018. Ces prospections ont livré des résultats de la plus haute importance pour la colline fortifiée et son environnement et, rendant hommage à ce grand chercheur allemand, elles complètent encore les travaux révolutionnaires sur le Freestone Hill. (Y. G.).

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