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RE-IMAGINING NAVAN FORT: NEW LIGHT ON THE EVOLUTION OF A MAJOR CEREMONIAL CENTRE IN NORTHERN EUROPE

Summary. This article presents major discoveries from a new campaign of large-scale multi-method geophysical surveying, focused on Navan Fort and its environs. Alongside a re-appraisal of excavated evidence, it offers a new model for the evolution of Navan. The large earthwork now known as Navan Fort sits alongside other iconic monuments such as Tara, Rathcroghan, Knockaulin and Cashel as one of Ireland's so-called provincial centres. Historical texts imply that these Iron Age complexes became enduring symbols of power for early medieval societies, and royal centres for overkings. These references, alongside the incredible scale of these landscapes, have encouraged intensive research, but only recently has non-invasive survey begun adding new data and facilitating new interpretations. Prior to the present study, discussion of Navan Fort was limited to the results of small-scale but iconic excavations. These new discoveries significantly change understandings, adding spectacular new monumental phases, and facilitating re-assessment of Navan's role within both later prehistoric and medieval society, as well as of the nature of ceremonial landscapes and their role in developing sacral kingship in northern Europe.

INTRODUCTION

Navan Fort, Co. Armagh, is one of Europe's most iconic monumental complexes. Research since the 1950s has identified a multi-period landscape that boasts centres of elite and cult activity spanning the Bronze and Iron Ages. Consequently, Navan has featured prominently in debates about both later prehistoric and medieval Ireland, about Ireland's 'royal sites' in particular, and on the character of cult practices and sacral kingship. The proximity of Navan Fort both to a Bronze Age hillfort, Haughey's Fort (to the west) and to the early medieval see of St Patrick, Cathedral Hill (east), has accentuated this European importance. Spectacular results from excavation in the 1960s, however, made Navan world famous within assessments of Iron Age and 'Celtic' societies across Europe. In particular, a series of figure-of-8 buildings and a 40-m-diameter structure, apparently constructed and then ritually destroyed c.95 BC, have been the focus of sustained debate since. While the archaeology of Navan Fort itself has generally been well-rehearsed within accounts of the 'royal sites' and their similarities, a sea-change in perceptions of the latter has occurred, mostly through results of large-scale geophysical survey, and principally

gradiometry. The absence of such data for Navan has limited its contribution; instead, analysis remains focused on excavations by D.M. Waterman (1997), and more recent key-hole investigations by Mallory (2000) and Lynn (2000, 2002).

Here we present new research that combines the results of a major programme of geophysical survey with re-appraisal of the excavated evidence to address debates about royal sites, cult practice, and the origins of sacral kingship in early medieval Europe. These new discoveries fundamentally alter our understanding of Navan and its long-term development. Whereas previous accounts portray the site as being enclosed in a final phase of monumental activity *c.*95 BC, and thereafter abandoned, we identify a series of large and complex monuments from a preceding, early Iron Age monumental horizon, as well as continuing medieval activity through the first millennium AD and beyond. These new discoveries contribute to a considerable body of evidence for continued use, monumental architecture, and investment in cult activity and residence, following the destruction of the 40-m structure. Providing the first certain evidence of medieval activity from one of early Ireland's so-called 'royal centres', this study opens up new avenues for exploring the role that cult places played in defining nascent institutions of sacral kingship in first-millennium AD Europe.

Navan Fort today appears as a large internally-ditched enclosure set on a domed hill summit and containing a large mound and a ring-barrow-like earthwork (Figs. 1 and 2). Previous

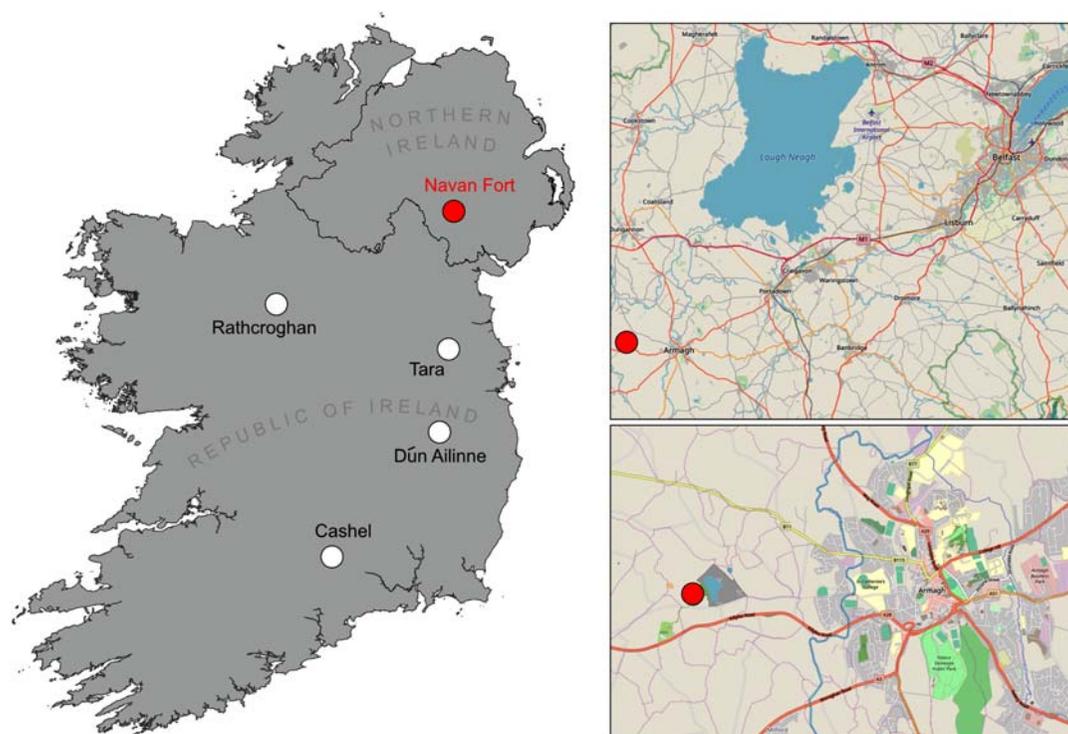


FIGURE 1

Location map showing Navan Fort and other 'royal' sites. [Colour figure can be viewed at wileyonlinelibrary.com]



FIGURE 2

Aerial Photograph showing Navan Fort. [Colour figure can be viewed at wileyonlinelibrary.com]

investigations demonstrated that the internally-ditched enclosure defines a palimpsest of unique and enigmatic monuments dating perhaps from as early as the Neolithic down to early first millennium AD. It forms the focal point of a landscape identified in historical texts as *Emain Macha*. *Emain* represented the mythical and symbolic capital of *Ulaid/Ulster*, one of five provinces dividing the island of Ireland since time immemorial. While these sources describe Navan Fort as a royal palace and place of military muster, the archaeological remains suggested a more complex and dynamic picture (Lynn 2006, 5; Mallory in Waterman 1997, 197–208 for *Emain Macha*). Some limited and low-resolution geophysical survey occurred around Sites A and B the 1990s (Ambos *et al.* 1996), but results were inconclusive, and there have been few attempts to deploy non-invasive technologies to augment the iconic excavation findings. To date, our new programme of large-scale survey has consisted of *c.*30 hectares of magnetic gradiometry, complemented by targeted electrical resistivity survey (*c.*12 ha) at Navan and its immediate environs. This paper focuses specifically on the results from within the Navan Fort enclosure. It highlights an over-reliance on magnetic gradiometry at complexes like Tara or Knockaulin as problematic, while outlining the implications of significant new discoveries for broader understandings of the Navan complex and its evolution. As these discoveries have changed how we view Navan Fort, and contributed to a wider re-framing of provincial centres in later prehistoric and medieval Ireland, so has the evolution of cult places and power in first-millennium AD northern Europe become a major theme in recent landscape-scale research (Ludowici *et al.* 2010; Hedeager 2011; Fabech and Näsman 2013; Noble *et al.* 2013, 2019; Jørgensen 2014). Hence, these findings are timely and of broad significance for wider European debates.

NAVAN AND THE 'ROYAL SITES'

In Ireland, Navan sits alongside Tara (Meath), Rathcroghan (Roscommon), Knockaulin (Kildare) and Cashel (Tipperary) as one of its so-called provincial centres, for the provinces of Munster, Ulster, Leinster and Connaught; Tara is generally regarded as either the capital of the 'middle province' (Mide), or the seat of an over-kingship controlling all the provinces. Despite the centrality of this provincial scheme to most accounts of later prehistoric and medieval Ireland since at least the 1800s, these royal capitals were only documented as provincial centres during the eighth century AD (consider Byrne 1973; Bhreathnach 2011). There are considerable problems attached to the idea that they held that function earlier, although the nature of the archaeological evidence would suggest that they held at least regional importance as ceremonial centres in the Iron Age (Aitchison 1994; Armit 2007; Mallory 2013).

These centres have, moreover, tended to be analysed and assessed together because documentary sources explicitly link them from c.AD 800 onwards, and they share many monumental features, including figure-of-8 buildings, large ceremonial enclosures, mounds, and a longevity of activity often stretching back to the Neolithic. While this shared monumental repertoire has long been held to have reached an Iron Age apogee, the apparent absence of medieval activity during the initial work (1950s–1970s) was felt to chime with the sources describing them as grass-grown and abandoned (e.g. the ninth-century Prologue to the *Martyrology of Óengus*; Wailes 1982; Newman 1998; cf. Gleeson 2019). For Navan Fort specifically, the status of *Emain* as a provincial capital of medieval Ulster seemed hard to explain, given that the polity of the Ulaid had largely contracted from a territory encompassing central Ulster in proto-historical sagas to a minor regional kingdom east of the River Bann by the seventh century (see Byrne 1973, 106–30). This contraction was ostensibly related to the expansion and consolidation of closely allied Uí Néill and Airgialla. That *Emain* remained the *Ulaid's* symbolic capital during the ninth–twelfth centuries, even though outside that territory, seemingly reinforcing the idea that Navan's provincial importance must be at least Iron Age in origin.

Aitchison (1994) highlighted significant concerns with such traditional models, not least in contemporary early medieval imperatives. Nevertheless, and more generally, the absence of medieval archaeology uncovered in excavations was felt to demonstrate the essential validity of the assessment that these centres' provincial 'royal' status was rooted in the Iron Age (e.g. Wailes 1982; Johnston and Wailes 2007). This relatively uncritical assessment changed from the late 1990s, when large-scale remote sensing survey at Tara, Knockaulin, Rathcroghan and Uisneach began highlighting not only further similarities between them, but also, and less explicitly, notable differences (Newman 1997; Fenwick and Newman 2002; Schot 2006, 2011; Waddell *et al.* 2009; Fenwick 2018). At the same time, this work emphasized tentative evidence for continuity into the medieval period, both through survey results and from the scientific dating of archived material from excavations (e.g. Schot 2006; Grogan 2008; Fenwick 2011; Gleeson forthcoming). This new evidence fundamentally undermined the traditional provincial model, but also facilitated the clearer recognition of the ritual and ceremonial elements of these complexes and their role in cult practices that shaped the character of sacral forms of rulership during the first millennium AD (Newman 2007, 2011; Bhreathnach 2011; Schot 2011; Fenwick 2018). Katarina Becker (2019) has countered this growing emphasis on cult and ritual, however, emphasizing instead domestic parallels in Britain and Ireland. She argues, for instance, that evidence for structured movement and procession is actually related to the control and the corralling of animals. While such re-assessments are perceptive, new evidence discussed below nevertheless accentuates the symbolic

and ceremonial functioning of architecture in Navan's later prehistoric phases. Central elements of Becker's argument for the interpretation of these buildings as manifestations of 'house societies', for example, would appear rather to be due to the progressive formalization and demarcation of the central complexes in their final phases when enclosed, as well as the dismantling of structures like the 40-m structure at Navan or the Mauve phase at Knockaulin in these complexes' terminal horizons. The discovery of pre-enclosure palisades, later Iron Age and medieval activities at Navan (below), provides a strong counter argument to such propositions; later activity surrounding Knockaulin might equally be emphasized (Gleeson 2017, 294–7; forthcoming). Nevertheless, the differences between the 'provincial centres' are at least as significant as their similarities, and Becker's arguments in this regard are important in order to move away from the conception of these sites as a singular group. Consequently, a corpus of new sites, equally impressive in scale and scope, can be integrated into debates about these complexes (further Armit 2007; Dowling 2015). These historiographic developments open up new pathways for analysing later prehistoric society and the roles that these landscapes and cult places play in shaping religious transformation and trajectories of rulership. New discoveries at Navan are of unique importance here.

SITE BACKGROUND

The Navan Fort enclosure contains two upstanding monuments: a large mound known as 'Site B', and a ring-barrow-like earthwork comprising a ring-ditch surrounding a centrally raised area, termed 'Site A' (Fig. 3). A third element, Site C, was identified through limited gradiometry survey and excavation in the 1990s, and consists of a triple enclosure now known to be stratigraphically associated with 'Phase B' of Site A (below). The internally-ditched enclosure is itself defined by a massive earthwork some 6.3 ha in size, with the external bank measuring 13 m wide and up to 3 m high. Conventionally categorized as a 'hengiform enclosure', this rare monument type is also represented in Ireland at Tara and Knockaulin (Roche 2002; Johnston and Wailes 2007).

There have been a number of excavations at Navan Fort since the 1960s (Gault 2002 for radiocarbon synthesis). A section across the northern ditch of the hengiform enclosure was excavated by Jim Mallory (2000) in 1999 to reveal a cut 8 m wide and 5.5 m deep. During the excavation, two large oak timbers were recovered from the basal fill, producing a *terminus ante quem* dendro-date of around 94±9 BC (Mallory 2000, 26–7; cf. Baillie 1988 for Site B and the Dorsey). While a palisade excavated *c.* 7 m inside the lip of the ditch by Lynn (2000, 13) is currently undated, the timbers found within the ditch may derive from this palisade, or more likely, the destruction of the 40-m structure at Site B (also built *c.* 95 BC; Baillie 1988; below). In either scenario, the hengiform enclosure ditch is likely to have been dug *c.* 95 BC.

Inside this internally-ditched enclosure, Site B constitutes the most impressive and famous monument (Fig. 4). Extant prior to excavation as a mound of 6.5 m high and 60 m in diameter, excavation revealed that this comprised multiple phases of activity, the latest being the mound itself and a monumental wooden building of 40 m diameter directly associated. A dendrochronology date from the central timber post indicates that the latter was constructed *c.* 95 BC (Waterman 1997, 35–60). That this was a building rather than an open enclosure is suggested first by evidence for the subsidence of the outer wall posts, arguably due to the weight of a roof pushing the posts down and through the base of their original postholes, and then by material thought to be thatching or kindling found associated with the destruction horizon (Waterman 1997, 35–48). There is little

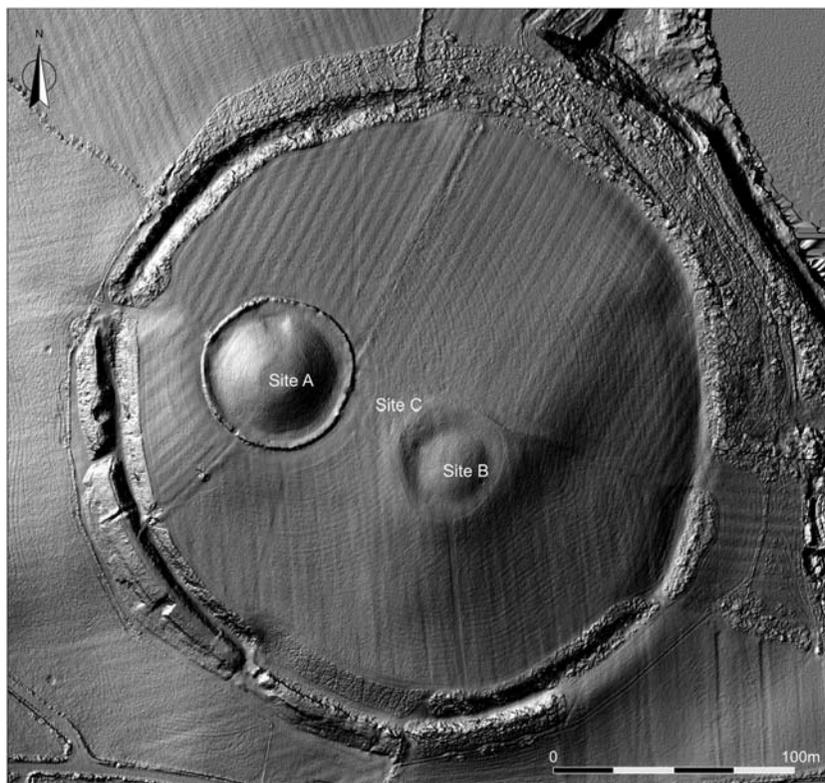


FIGURE 3

LiDAR image showing the focus of survey area, and major monuments.

evidence for internal use (occupation debris, surface deposits etc.); rather, and soon after its construction, it was filled with limestone boulders to a height of 2.8 m and set alight. Following this, the remaining mound was carefully encased in turf to create the large mound that survived prior to excavation.

Though the dendrochronological date from the central timber securely dated this structure to the early first century BC, this was actually the final phase of a sequence of construction stretching back into the Late Bronze Age. Under the structure and mound, Waterman excavated up to four structures (A, B, C and E), all triple ringed and figure-of-8 shaped (Waterman 1997, 17–33); these appear to have been built sequentially on the site of a yet earlier enclosure, itself constructed *c.*991–590 BC (Warner in Waterman 1997, 189–90; Gault 2002). The final triple-ringed structure (E) had been moved slightly northwards, so that its northern edge lay outside the excavated area. Whether it was joined to a larger northern circle was not determined conclusively. Each structure apparently consisted of a single palisade slot replaced twice before abandonment, where the earliest (now at the middle) ring-slot was replaced first by an outer slot and finally an inner slot (Lynn 2006, 5–9; cf. Becker 2019). Typically, the southern part of each figure-of-8 structure was smaller; Structure C's southern component measured 12 m across, while the larger larger northern circle measured *c.*20 m. At the centre of the smaller circles was a hearth, with at

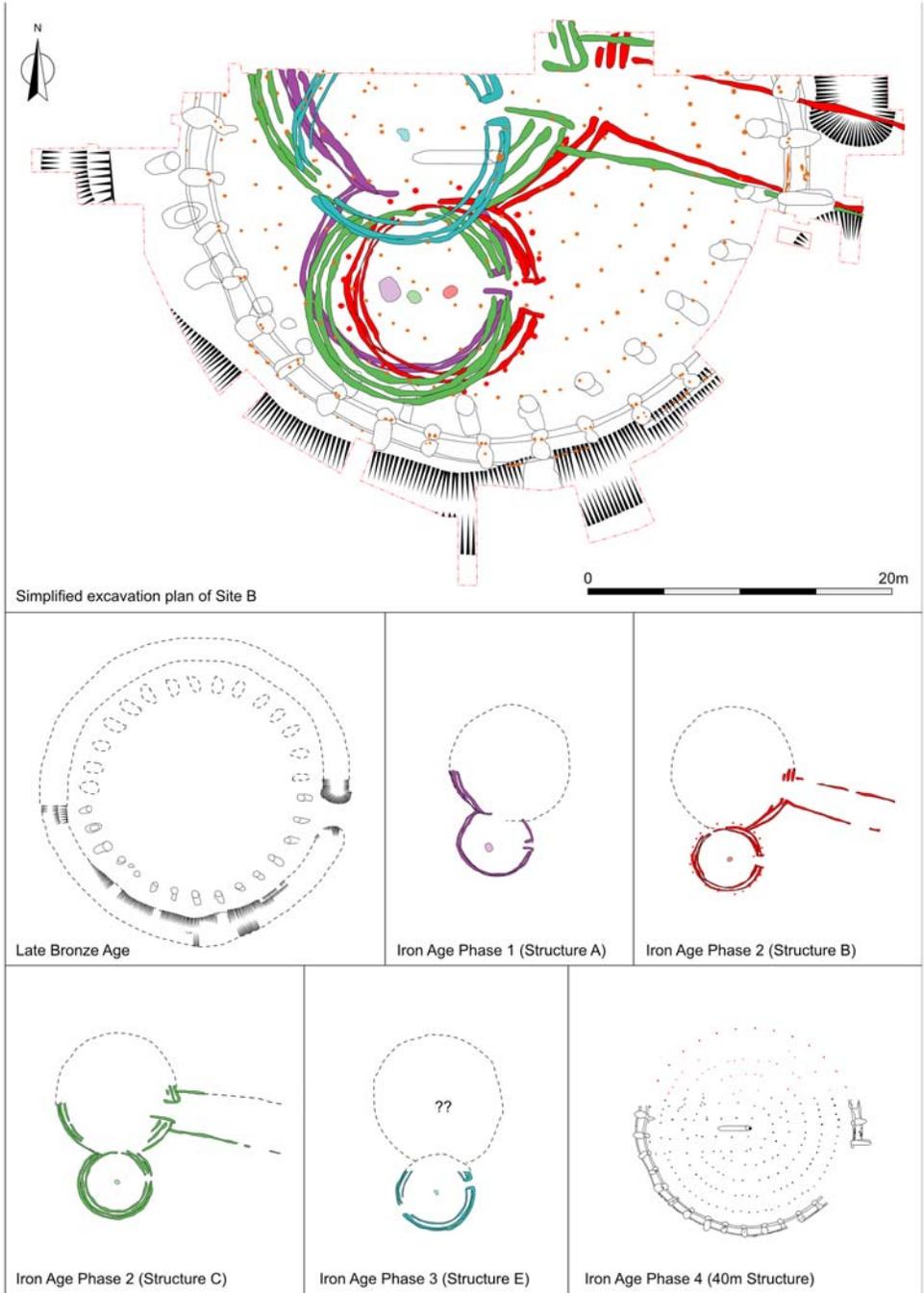


FIGURE 4
Plan of excavated Phases from Site B.

least two of the structures having external avenues leading to formal entranceways. Dating revealed that these structures were constructed during c.460–200 BC (see Gault 2002, 27).

Site A was different in character to Site B, with the dominant component (prior to excavation) being a ring-ditch rather than mound (Fig. 5). Like Site B, evidence of earlier structures underneath the ring-ditch was uncovered (Phase A). These in turn cut into an earlier structure (Phase B), now recognized as the south-easterly component of Site C (Ambos *et al.* 1996; Lynn 2002). This Phase B/Site C structure is comparable to structures A–E under Site B, albeit larger in size, and with a similar sequence of use regarding three ring-slots and figure-of-8 morphology. Four radiocarbon dates, 350–32 BC and 400–90 BC (inner slot), and 355–91 BC and 186 BC–AD 26, likewise suggested a contemporaneity or later construction with those under Site B (Lynn 2000, 14). Lynn (2000, 14) argues that this large figure-of-8 structure was constructed after 150 BC and could potentially be associated with the mound building phase at Site B (Lynn 2000, 17; further Gault 2002, 33). This suggestion is based on the ring-slots for Site C cutting a palisade trench, Z, identified as the northern slot of the entrance avenue for Structure B under Site B (Lynn 2002, 9; Waterman 1997, fig. 8). However, the radiocarbon dates do not rule out both figure-of-8 buildings being contemporary. Moreover, structure E, under Site B, being shifted north, suggests that it is perhaps more likely contemporary with, rather than earlier than Site A/C.

Site A's later 'Phase A' involved a double-walled wooden structure, c.16 m in diameter, within the centre of the ring-ditch. The structure was defined by two concentric ring-slots, 1.5–2 m apart, with a large central post-hole perhaps supporting a roof. The interior was partitioned, with a hearth in the south-east quadrant and a well-defined eastern entrance (Waterman 1997, 132–3, fig. 52). Immediately outside and aligned on the entrance-way terminals were two east-west extended inhumations. Excavation hinted that the grave cuts may have been timber-lined or that the inhumations were contained within coffins (due to the presence of iron nails). These burials were initially interpreted as 'early Christian' by Waterman, a possibility supported by the fact that there is currently no secure evidence for east-west extended inhumation burials in Ireland before the fifth century AD (McGarry 2010; Gleeson 2017). However, Lynn argued that these burials are more likely fortuitously placed and post-medieval in date, with the 16 m-diameter double-walled structure being Iron Age in date. The burials, positioned directly outside and aligned on the entrance terminals, nevertheless suggest contemporaneity with the structure and an early medieval date as the more likely.

Further early medieval activity is known at Site A. No suitable radiocarbon samples were obtained from the basal fill in the ring-ditch, but a weaving comb and a brooch terminal of probable fifth to sixth centuries AD date were recovered. Animal bone in the upper ditch fill also dated to the fourth to seventh centuries AD (AD 337–530 and AD 428–615; Waterman 1997, 137). It could be that the 16-m double-walled structure and the surrounding ring-ditch were contemporary: with both dating to the early medieval period. This is potentially supported by a series of discontinuous pits or gully-like features outside the structure's exterior, but placed more or less along the inner lip of the Site A ditch (Waterman 1997, 133), so implying the ditch was visible when the structure was in use. This dating evidence points towards an important but neglected early medieval phase, rather than the Iron Age chronology generally favoured by previous authors (e.g. Lynn 2003; Becker 2019). Moreover, unworked wood from the upper levels of the ditch of the internally-ditched enclosure of Navan Fort itself returned a date of AD 387–577 (Mallory 2000, 26; Gault 2002), clearly suggesting more substantial activity in this period than hitherto realized. If the 16-m double-walled structure was of fourth to seventh centuries AD date, it would be the largest wooden structure ever excavated from first-millennium AD Ireland.

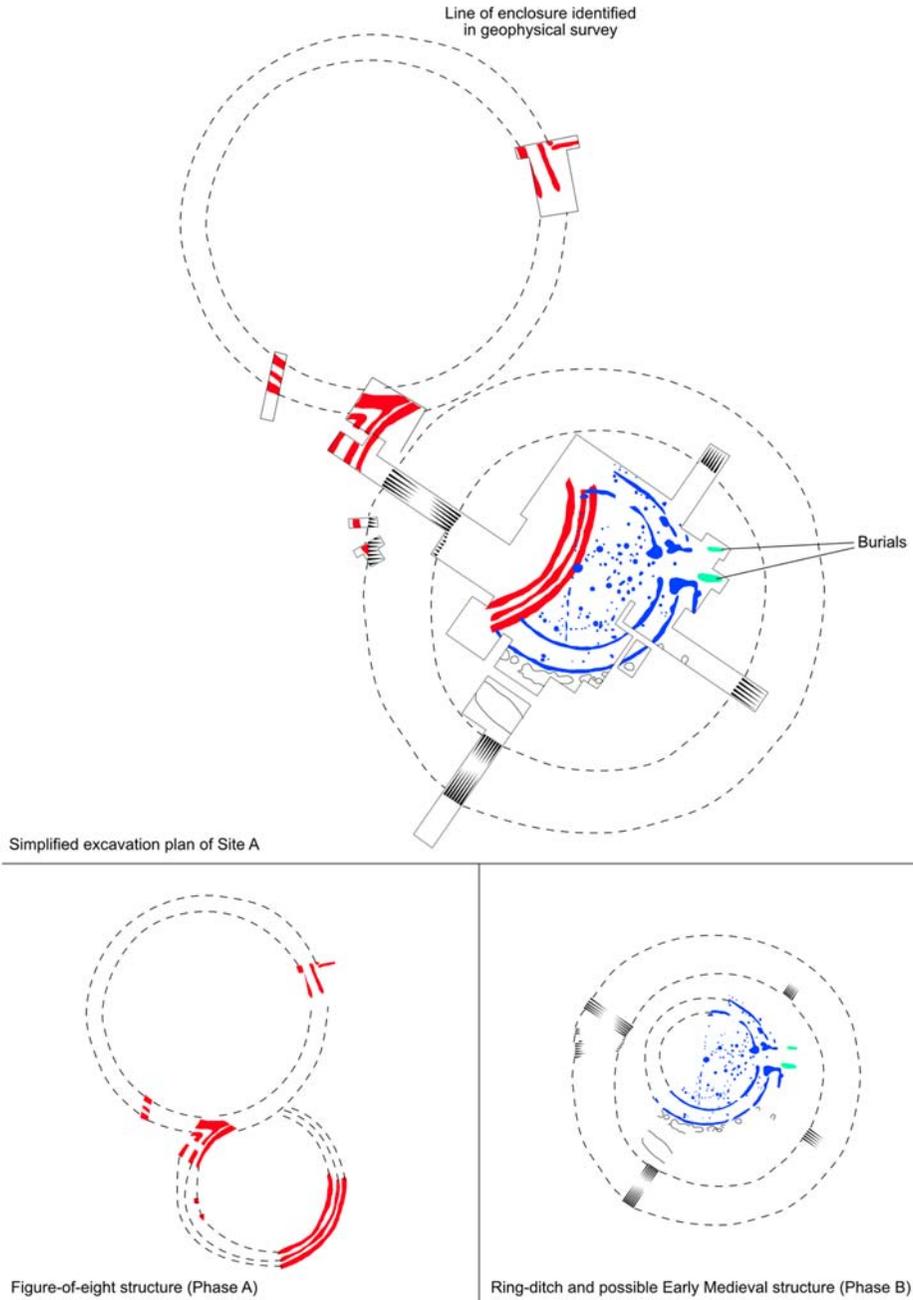


FIGURE 5

Plan of excavated phases at Site A/C. [Colour figure can be viewed at wileyonlinelibrary.com]

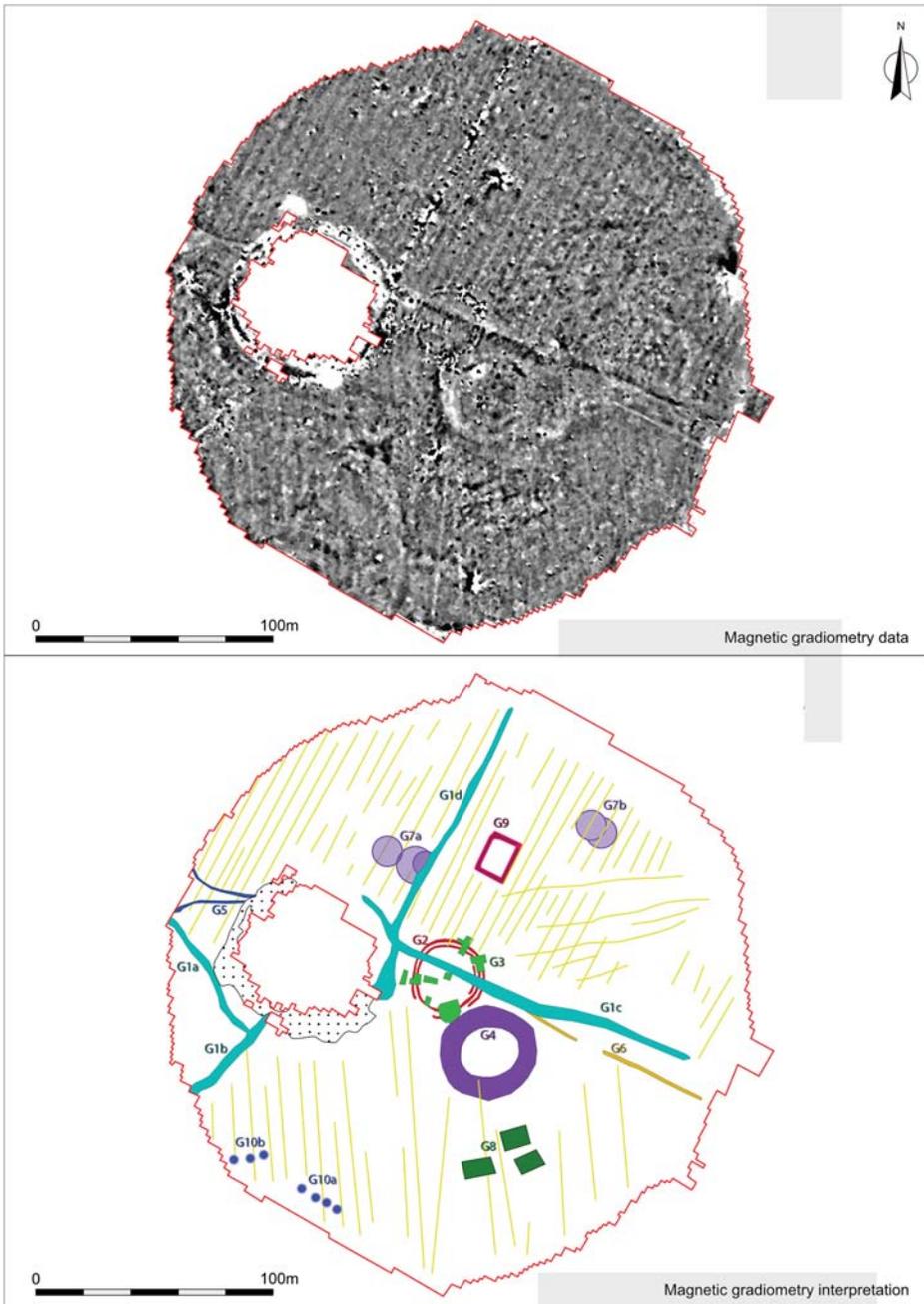


FIGURE 6

Magnetic gradiometry plot with interpretation showing main features. [Colour figure can be viewed at wileyonlinelibrary.com]

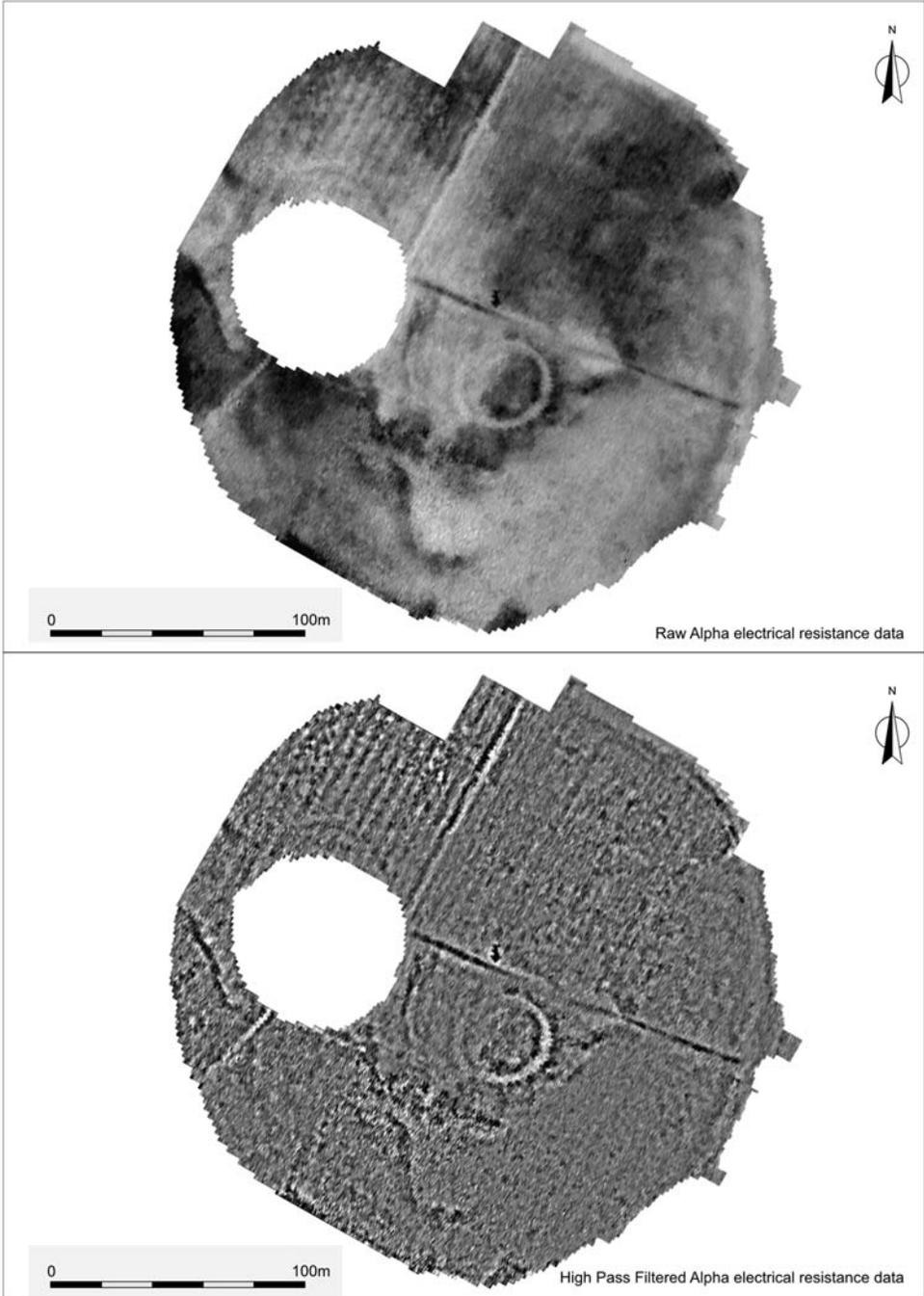


FIGURE 7
Electrical resistance alpha data.

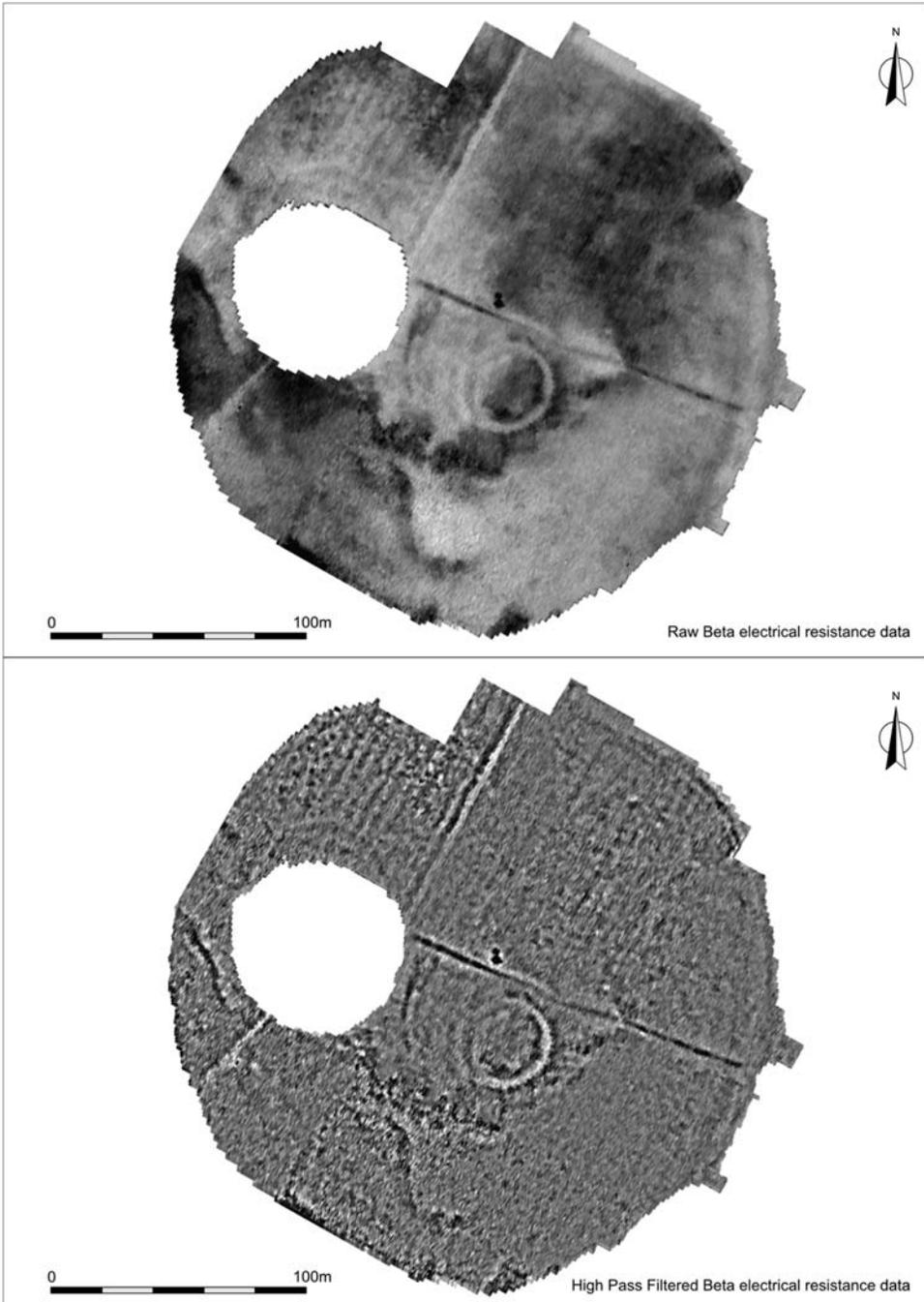


FIGURE 8
Electrical resistance beta data.

The unusual character, size and complexity of this and the earlier structures at Sites A/C and B raises questions about their function. Lynn (2006, 12) suggests that the larger figure-of-8 enclosure at Site A/C was probably too large to be roofed. Becker (2019) challenges this, suggesting that roofing was possible, and that these buildings, and the 40-m structure, should be read as domestic in character. Furthermore, she aptly emphasizes that ritual and profane should not be clearly distinguished between for later prehistoric societies. Nevertheless, the absence of an occupation horizon within Navan's 40-m structure, as well as the evidence for its almost immediate destruction and encasement within a mound, suggests an exceptional building involved in a short, concentrated period of ritualized monumentality. Similarly, given that the preceding figure-of-8 structures can now be identified as the centrepieces of a much larger and significant Iron Age ceremonial complex, itself also forming a figure-of-8 arrangement, suggests that they were imbued with cosmological import (below). Similar buildings found within other comparable landscapes show evidence for structured deposition and careful dismantling during destruction that supports such a reading. At Site B, for instance, a Barbary ape skull was discovered within the figure-of-8 Structure C/Phase 2, while an Iron Age sword was recovered from a structure immediately succeeding the Rose Phase at Knockaulin. Likewise, a figure-of-8 building hypothesized at the Rath of the Synods, Tara (Grogan 2008) was located within the Ditched Pit Circle, forming a massive, probably Iron Age, figure-of-8 arrangement with Ráith na Ríg, something now also paralleled at Navan (below). Whether roofed or not, arguably a tradition of purpose-built architecture, perhaps partly open-air, is here being associated with wider complexes where movement was controlled and activities ritualized via structured depositions, including concentrations of burial. Indeed, Lynn (2006, 14) even argues that the buildings themselves were all ceremonially destroyed by fire.

Wider architectural and iconographical comparanda for Navan Fort are found at other later prehistoric and medieval ceremonial centres, principally Tara, Co Meath, Rathcroghan, Co. Roscommon and Knockaulin, Co. Kildare (Newman 1998, 129; Johnston and Wailes 2007; Waddell *et al.* 2009). Like Navan, each of these landscapes shows a protracted period of use that indicates they were important regional centres of religious and political significance before they were documented as royal centres (eighth century AD onwards). One of the core monuments at Tara, for example, is a large internally-ditched ceremonial enclosure, Ráith na Ríg, which surrounds several prominent earthworks and timber enclosures identified by geophysical survey (Newman 1997; Roche 2002; Schot *et al.* 2016). Similarly, at Knockaulin, later associated with the kings of Leinster, an elaborate complex of monuments was defined by a massive internally-ditched enclosure (13 ha), within which geophysical survey has identified a series of previously unrecorded large concentric timber enclosures, possible ring-barrows and wooden structures (Johnston *et al.* 2009). Geophysical survey at Rathcroghan has recognized an impressive 360-m enclosure (Waddell *et al.* 2009). Morphologically similar, Iron Age enclosures have also been hypothesized at Uisneach, Ballymount Great, Knockainy, and in a range of other important complexes (Armit 2007; Schot 2011; Gleeson 2019).

Figure-of-8 structures are another common architectural feature of these complexes. A tentative example has been recorded underneath the quadrivallate Rath of the Synods, immediately north of Ráith na Ríg, Tara. Examples have also been tentatively identified at Rathcroghan and Knockainy (Grogan 2008; Waddell *et al.* 2009; Gleeson 2019; cf. Fenwick 2011). At Knockaulin, Wailes (1976, 325; Johnston and Wailes 2007) excavated a large figure-of-8 structure at the summit of the interior. Like the examples at Navan, the figure-of-8 structure consisted of three concentric post slots with an eastern-facing palisaded avenue. Wailes (1990) argued, however, that the concentric slots included settings for tiers of seats (see Wailes 1990, fig. 3 and fig. 6). Moreover,

recent geophysical survey adds complexity by identifying an extension of this structure's eastern palisaded avenue continuing for approximately 90 m to connect with the entrance to a massive (240 m by 200 m) sub-circular palisaded enclosure (Johnston *et al.* 2009).

Geophysical survey at Rathcroghan also suggests a figure-of-8 structure as part of a series of monuments under the mound at the complex's centre, all contained centrally within a ditched enclosure of 360 m diameter (Waddell *et al.* 2009). Survey identified an enclosure immediately surrounding the mound, with an eastern-facing entrance connected to a funnel-shaped avenue continuing eastward for over 140 m beyond the surveyed area. Within this avenue two conjoined ring-ditches formed a further figure-of-8-shaped monument. Immediately to its north was located a bivallate (possibly trivallate) circular enclosure with an eastern projecting avenue continuing for approximately 110 m beyond the surveyed area.

GEOPHYSICAL SURVEY RESULTS

Against this background of protracted use and cognate motifs linking the royal centres and other sites, we may begin considering the new data from Navan Fort. As will have been clear from the preceding section, the core areas of these landscapes can be defined by the massive internally-ditched enclosures often delimiting a concentration of significant monuments whose chronology and inter-relationships can be difficult to disentangle. Navan Fort represents a key case study because although it is the only provincial 'royal' centre to lack a comprehensive published survey of its interior, it is the most extensively excavated, and has the clearest absolute chronology. An unpublished gradiometry survey was undertaken in the early 1990s, but it was of low resolution, and the limitations of gradiometry are now apparent (below), meaning that its results are not now particularly useful.

In order to address this lack of a comprehensive survey programme, a team from the University of Aberdeen and Queen's University Belfast began such survey-work, as part of the Leverhulme Trust-funded *Comparative Kingship* project that is investigating royal centres across Scotland and Ireland. A series of surveys were undertaken in March and September 2018 to investigate Navan Fort's interior. These survey methods consisted of a photogrammetric survey complimenting the more extensive LiDAR coverage; a gradiometry survey conducted over the entire 6-ha interior with a dual Bartington 601–2 system at a resolution of 0.25 m sample and 0.5 m traverse intervals (Fig. 6); and an electrical resistance survey over the same 6-ha area using a Geoscan Research RM85 interfaced with a MSP40 mobile sensor platform, allowing for multiple square array data (Alpha and Beta) to collect simultaneously at a resolution of 0.25 m sample and 1 m traverse intervals (Figs. 7, 8 and 9). Although not discussed below, a further 24 ha of magnetic gradiometry survey, as well as targeted resistance-survey areas, has been completed in the immediate environs of Navan. This environs survey is ongoing and will be published in due course.

Topographic data from the LIDAR and photogrammetry reveals little unrecorded archaeology, with any potential micro-topographic features having been removed by later ploughing and lazybed agriculture (Fig. 3). This is particularly apparent at the north and west of the interior, where ridge and furrow marks are visible. These cultivation features heavily impact on the geophysical results, with both electrical resistance and gradiometry surveys indicating extensive ploughing. The upper levels of archaeology may therefore be affected by later farming, but this may yet also mask older and surviving archaeological features, particularly those sorts not reflected in gradiometry data.

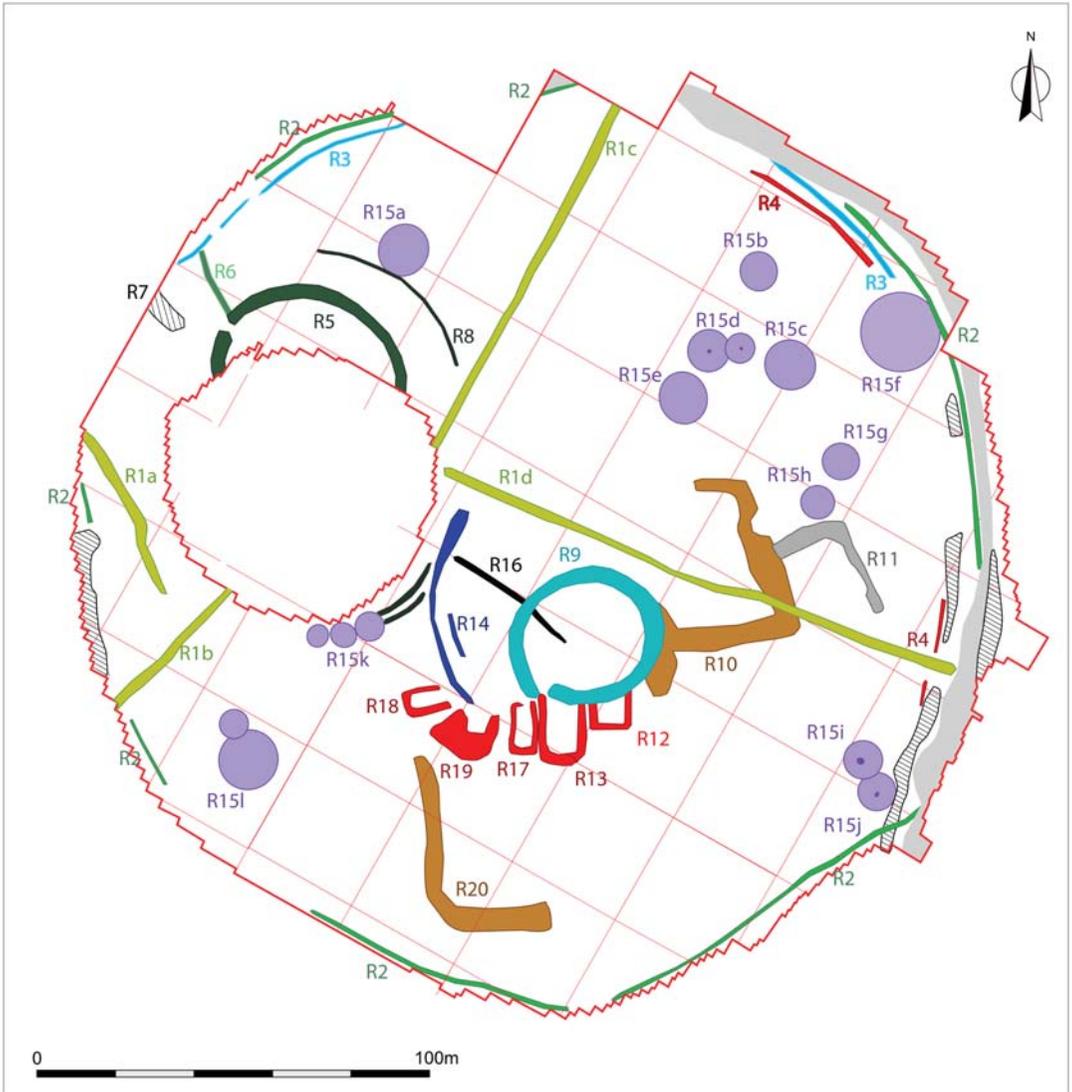


FIGURE 9

Electrical resistance cumulative interpretation showing main features discussed. [Colour figure can be viewed at wileyonlinelibrary.com]

The enclosing elements

The surveys revealed important new information on the Navan complex. On Site B's western side, a funnel-like avenue narrowing towards the mound is made up of two bands of increased magnetic readings confining an area of negative readings (**G5**) (Fig. 6). Spaced 2.5 m apart and expanding to 10 m at their widest, the wider end of this funnel is orientated on a break at the west in the enclosing elements to the internally-ditched enclosure. We could also consider the curving

band of positive magnetic readings, **G5a** (apparent as high resistance reading **R1a**), as an additional entrance feature that, if used in conjunction with the northern part of the **G5** funnel, would have created a much wider avenue (Figs. 7, 8 and 9). **G5** appears on the resistance results as a band of high readings similar to **R1a**, supporting the interpretation that they represent a similar feature. It is tempting to interpret this as a ceremonial avenue linked with Structure E (the latest of the figure-of-8 buildings under Site B) or with the 40-m structure, both of which had western-facing entrances. The enlarged funnel also seems to pass by the mound on either side, suggesting that it, or the 40-m structure, were already prominent features on the hill. Excavation is needed to clarify its chronology.

These new features generate questions as to the entrance to Navan Fort. It has generally been assumed this was placed in the east, as at Tara, Rathcroghan and Knockaulin (cf. Waddell *et al.* 2009, 192). Furthermore, the avenues of the figure-of-8 structures were orientated running east of Site B, toward a notable break in the internally-ditched enclosure. However, topographical data shows that this break is more likely modern damage to the bank, with electrical resistance data supporting the presence of an uninterrupted ditch here. A more plausible entrance location, therefore, is that in the west. Although the western break has generally been assumed to be a more recent feature introduced for agricultural purposes, the topographical data reveals little in the way of any low-relief features to suggest it was once unbroken. Similarly, the natural sunken hollow that extends into the interior around the entrance does not seem to be associated with a recent levelling event: it may have been used as a way to restrict visibility into the interior until one entered the enclosure. Such a hypothesis may be supported by the sub-optimal positioning of the enclosure ditch itself, enclosing the hilltop off-centre (Mallory 2000, 33). This intentional obfuscation would have been further emphasized by the presence of an internal avenue also obstructing visibility. Newman (2007, 428) argues that ‘obscuration and redirection are devices employed at many religious sites ... [with] direct visual access to the core sanctuary been obscured and at the point of entry the traveller redirected’. The absence of any eastern entrance into the internally-ditched enclosure does not conflict with the orientation of the eastern-facing avenues of the figure-of-8 structures within the interior. Excavation has clearly demonstrated the multi-phase use of the site, and radiocarbon dating suggests that the figure-of-8 structures at Site B were built *before* the internally-ditched enclosure was created.

The geophysical data also reveals that multiple enclosing elements surrounded the hilltop. Following the approximate line of the internally-ditched enclosure, and set about 2–5 m inside its inner lip, are a series of thin bands of varying high/low resistance ranging from 6–19 Ohms (**R2**, **R3**, **R4** and **R4b**) (Figs. 7, 8, 9 and 10). The innermost (**R2**) probably represent sections of the potential palisade trench identified by Lynn (2000, 13), the anomalies being created by a collection of moisture in the slots (low resistance) or the survival of *in-situ* packing stones (high resistance). It is likely that this feature continued around the entire hilltop, with some sections of the perimeter apparently missing from the survey, as a result of either a lack of moisture differentiation or significant amounts of overburden (as identified by Lynn 2002). Interestingly, on the eastern side, the palisade seems to be truncated by the ditch, suggesting that is an earlier feature. Notably, there is no obvious break on this side of the palisade, which might suggest that the eastern-facing entrances of some Site B structures were orientated other than at an actual entrance.

About 6 m inside **R2** is another set of readings probably representing a series of up to three additional palisades (**R3**, **R4** and **R4b**). These are again apparent as a thin band of varying high/low resistance readings ranging from 12–18 Ohms. In the Alpha resistance dataset at the north-east, these are clearly apparent as a series of up to four broadly concentric linear features some 18 m

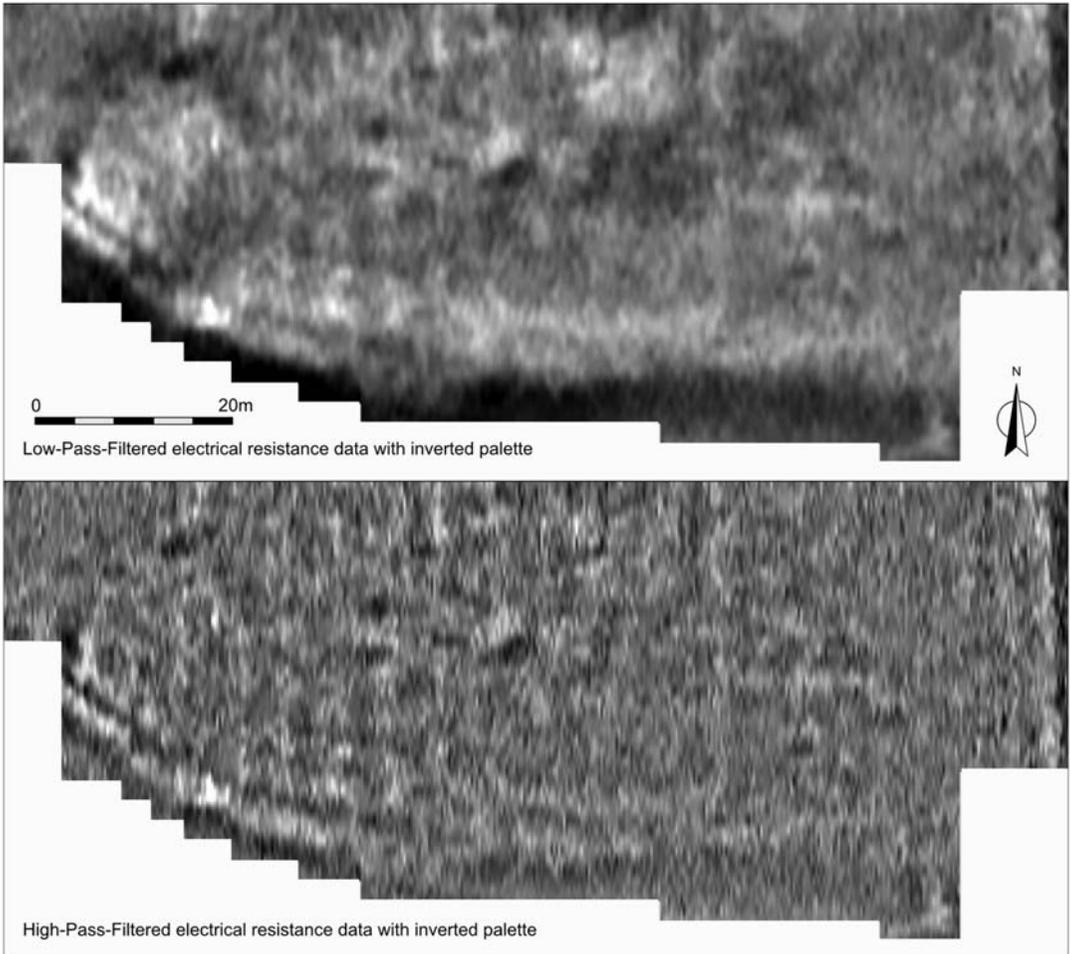


FIGURE 10

Electrical resistance showing the palisade-like anomalies preceding and concentric with the enclosure.

across. These are visible in the raw data and are unlikely to represent agricultural or modern features such as wheel ruts, as they are too widely spaced. Although the presence of these anomalies needs to be verified by excavation, it would correspond with other comparable sites, such as Lismullin, Lugg, Tara, Knockaulin, Uisneach and Rathcroghan, where there is clearly evidence for large free-standing palisade enclosures, as well as multi-phase monumental wooden palisaded enclosures (Kilbride-Jones 1951; Newman 1997; Fenwick and Newman 2002; O'Connell 2009; Waddell *et al.* 2009; Schot 2011). However, a notable difference at Navan is that these palisades seem to be defining large enclosing features, at least two (**R2** and **R3**) of which precede the internally-ditched enclosure, whereas at Tara and Knockaulin, the concentric nature of the internal palisaded enclosures suggests a probable link with the outer earthen enclosing feature (e.g. Ráith na Rí). Indeed, these palisaded enclosures that appear to pre-date the internally-ditched enclosure

would find better parallels in the 360-m enclosure at Rathcroghan, or the large palisaded enclosure identified surrounding Lough Lugh at Uisneach (Waddell *et al.* 2009; Schot 2011).

For Navan, we might ask whether these four palisades are contemporary. If not, it is likely that they were sequentially constructed, as each palisade seems to respect the perimeters of the others; radiocarbon dating might not provide ranges broad enough to distinguish their relative chronologies. We must also consider that two large pieces of oak discovered in the basal deposits of the internally-ditched enclosure returned felling dates of *c.*100 BC. It is possible that these are associated with the denudation or truncation of one or more of these palisades, which would imply either that the internally-ditched enclosure immediately succeeded these wooden features or that one or more of the inner three palisades may have been contemporary with this earthwork (as the outermost example is clearly cut by the ditch). Nevertheless, their contemporaneity with the central post of the 40-m structure and the excavator's interpretation of these as beams or structural timbers from that building is a more straightforward interpretation (Mallory 2000, 30–31).

Geophysical survey at Knockaulin identified multi-phase enclosing elements, including one large palisaded enclosure that was truncated by the internally-ditched earthwork (Johnston *et al.* 2009). Unfortunately, heavy vegetation cover prevented survey of this feature on its eastern and western sides and no obvious entrance was noted. Set inside this and surrounding the centre of the domed summit, survey-work also identified another large palisaded enclosure that connects to the avenue projecting from the central figure-of-8 enclosure. As the latter was placed more centrally within the internally-ditched enclosure, there is a possibility that these are contemporary with the internally-ditched enclosure; though without further dating information, a definitive chronology is difficult.

We might also speculate as to a similar phasing at Navan Fort. The construction of the Site B and Site A/C figure-of-8 structures could have been broadly contemporary with one or more of the palisaded enclosures. Soon after their destruction, and in relation with the building of the 40-m structure, the internally-ditched enclosure may have been dug, and a new focus of entry placed on the western-side approach. Clearly, the evidence at Navan Fort is indicative of a complex and successive series of major enclosures that may be difficult to unravel without further excavation. Nevertheless, putting these problems of chronology and inter-relationships aside, the results add significant new detail to the use of the hilltop in the early (Late Bronze Age to Iron Age) phases of the site, and specifically, a new monumental phase of enclosure preceding the 40-m structure and internally-ditched hengiform enclosure.

Internal activity

The anomaly **G2** is the most prominent feature identified in gradiometry at Navan; it corresponds with the previously identified Site C (Fig. 6). **G2** comprises two concentric sub-circular bands of high magnetic readings spaced about 3 m apart, with evidence on the eastern side of a third internal band. At its greatest extent these enclosures measure approximately 34 m in diameter and are similar in scale to the larger enclosing elements of the figure-of-8 structure excavated at Knockaulin. The significantly increased magnetism of the outer two bands indicates that these enclosures are likely to have been comprehensively destroyed by fire. The areas of disturbance (**G3**) associated with **G2** correspond with the location of previous excavation trenches (Lynn 2002). These anomalies (**G3**), along with truncation of Site C by recent field systems (**G1c**), make it difficult to assess or identify any internal features. Attached to the south-east of Site

C is **G4**, a large circular band of negative magnetic readings about 38 m in diameter, which corresponds with the surface remains of Site A. There are no obvious features within the interior of **G4** due to extensive excavation here in the 1960s.

To the west of Site C, **R14a** represents a curving high resistance anomaly which, if projected, would have a diameter just under 90 m and would surround the eastern ridge of the hill, including the Site A/C figure-of-8 structure, with the ring-ditch located near its centre. Unfortunately, the projected perimeter of this feature is masked by later features (below) (Figs. 7, 8, 9 and 11). The anomaly comprises two concentric arcs spaced approximately 4–6 m apart. It does not correspond with any of the recorded cultivation marks and is therefore likely to represent an archaeological feature such as the remains of a palisade slot with *in-situ* packing, though excavation is required to confirm this. Palisades of comparable diameter have been identified within Ráith na Ríg by geophysical survey (Newman 1997; Schot *et al.* 2016), though their date and function also remains unknown.

Another newly identified feature is possibly related: a curving anomaly (**R5**) that continues underneath the northern section of the Site B mound. Like **R14a**, this consists of two arcs of lower resistance (averaging 5–7 Ohms) confining a 3.5 m wide band of higher readings ranging between 7 and 12 Ohms. The enclosure has a diameter of approximately 53 m and if projected, lies just outside the area excavated to natural in the 1960s. It could be contemporary or earlier than the figure-of-8 structures which preceded the 40-m structure. Moreover, **R5** may have encompassed these buildings, or indeed could have been part of the latest figure-of-8 structure excavated. Excavation is needed to clarify this chronology, but the triple-ringed Structure E was only partially revealed in excavation and no conjoining structure was identified. This structure, however, was offset to the north of the other figure-of-8 monuments and it is possible, therefore, that **R5** represents the northern enclosure of such a structure. However, we could also consider **R5** as a standalone monument similar to a 47-m diameter monument at Knockaulin (Mauve) (Johnston and Wailes 2007).

There is a possible narrow break in **R5** at the north-west, measuring 3 m in width. This connects with a linear high resistance feature flanked on either side by low resistance anomalies perhaps framing an avenue-like approach (**R6**). The presence of a possible entrance on this side might suggest that this newly discovered monument is later in date than the eastern-facing structures underneath the mound, but earlier than the 40-m structure, placing it in a Middle Iron Age context.

To the north-east of **R5**, a band of higher resistance readings is apparent (**R8**). These readings are faint, but the anomaly follows the same broad arc as **R5** and may be an associated palisade or outer setting of some kind. **R8** would have had a much larger diameter than **R5**. We could suggest that *if* the lines of the anomalies **R8** and **R14a** were projected, they could abut, forming a large figure-of-8 enclosure. While this is a tentative interpretation that requires more investigation, the idea that these would have formed complete enclosures that would have respected the perimeter of each other is supported by the presence of a *c.*20 m double arc of high electrical resistance readings at the south-east side of the Site B mound (**R14b**), which likely represents the extension of **R8** on this side. This would potentially present us with an entirely new monumental phase of wooden architecture, where two large palisaded enclosures intersect to form a large figure-of-8 structure, with each enclosure surrounding massive figure-of-8 buildings (potentially Structure E, Site B, and the figure-of-8 building at Site A/C), with all of these features being positioned at the centre of one or more massive palisaded enclosures surrounding the entire complex (i.e. **R2** or **R3**). This was likely the last phase of construction before the internally-ditched enclosure was

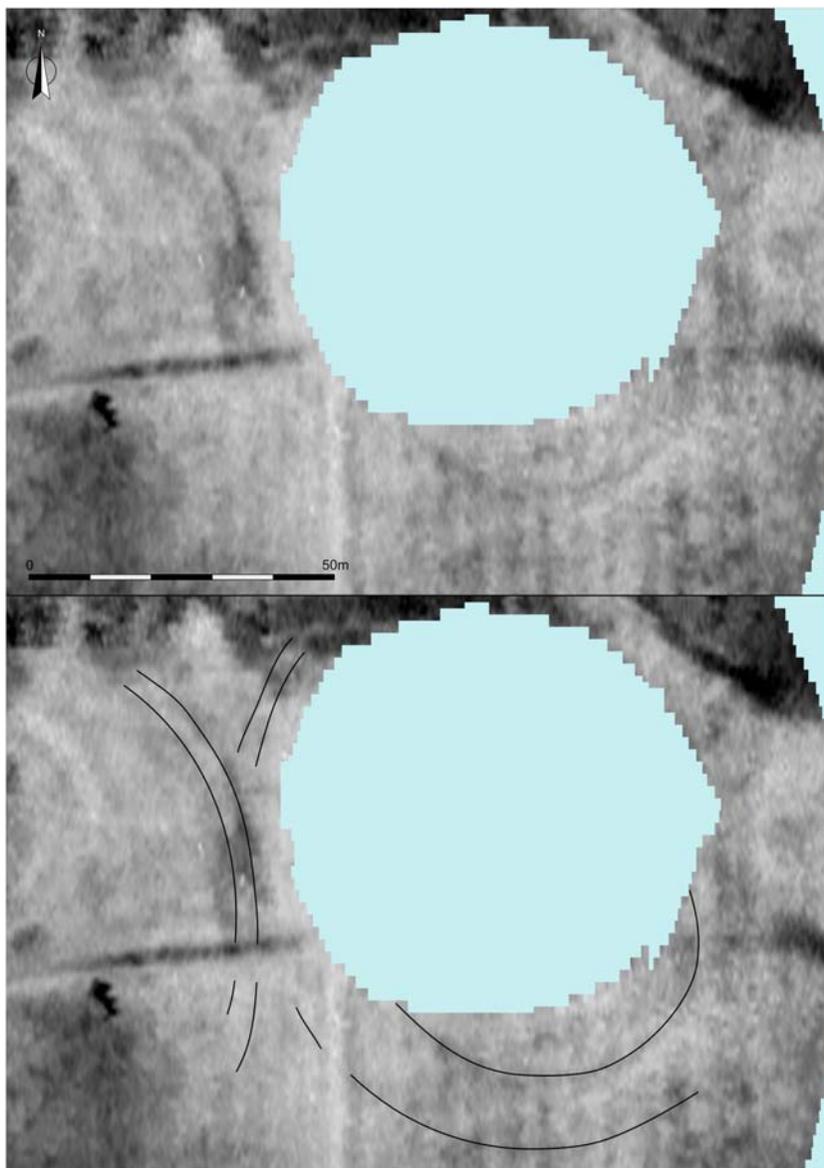


FIGURE 11

Electrical resistance showing the palisade-like anomalies preceding and concentric with Sites A/C and B. [Colour figure can be viewed at wileyonlinelibrary.com]

dug and the 40-m structure erected. It thus would be a hugely significant addition to the archaeology of Navan Fort and for the 'royal sites' more generally.

Scattered throughout the interior, up to 15 faint circular anomalies are apparent in the electrical resistance data (**R15a–R15l**) ranging from 7–20 m in diameter, with up to five circular anomalies in the gradiometry survey ranging 10–14 m in diameter (**G7a** and **G7b**). Most of these

probably represent levelled burial monuments like ring-ditches. At least two are conjoined (**R15d/R15e** and **R15i/R15j**), though here there is evidence for central pit-like features indicative of possible burials. Concentrations of these monuments have been recorded within the core area of other sites, including Ráith na Rí, the 360-m diameter enclosure at Rathcroghan, Mullahowe, Ballymount Great or Knockainy (Fenwick and Newman 2002; Waddell *et al.* 2009; Dowling 2015; Gleeson 2019), inferring that links to the ancestors were an important facet of these ceremonial centres.

Later phases of occupation

Near the eastern edge of the summit, up to four rectangular anomalies (**R12**, **R13**, **R17** and **R18**) are evident in resistance data (Figs. 7, 8 and 9). **R12** comprises a rectangular band of high resistance readings that measure 14 m by 9 m. They may represent the stone footing for a rectangular structure. **R13** is larger still, measuring approximately 18 m by 11 m, and is located a few metres from **R17** which measures about 14 m by 7 m. These are all orientated roughly north–south, are closely positioned and abut the ring-ditch of Site A. Some other potential, but more amorphous, structural remains (**R19**) separate another rectangular anomaly to the west (**R18**), which measures approximately 13 m by 8 m. Apart from some Neolithic examples, and a limited number of sub-rectangular structures generally from funerary contexts of the fifth to seventh-centuries AD (e.g. Marlhill, Co. Tipperary: McQuade *et al.* 2009), rectangular buildings are not commonly found in Ireland before the ninth century AD (Lynn 1994). A Neolithic date here is possible, but given the apparent relationship with Site A, unlikely. There are clear indications of early medieval use at Site A (above; Lynn 2003, 76), including probably midden deposits from the ring-ditch fill. As such, it is possible, indeed more likely, that these anomalies represent early medieval structures. Though excavation is needed to clarify their date, the presence of these structures is a tantalizing indication of early medieval activity, perhaps even of a settlement, and alongside the re-dating of Phase A, Site A (above), would be one of the first certain instances of medieval buildings at any such ceremonial landscape in Ireland.

Other comparable features are notable within the interior. To the south of Site A, three rectangular anomalies are defined by bands of higher magnetic readings delimiting areas of lower magnetism (**G8**) (Fig. 6). These measure 12 m by 8 m, 11 m by 7 m and 13 m by 8 m respectively, being positioned just off the steepest part of the hillslope at the south-east, though still in an area where it would have been difficult to construct a building without terracing into the hill. Another rectangular feature (**G9**) is apparent to the north of Site A. This measures 17 m by 13 m, with its long axis orientated north-east/south-west. Considering that the anomaly is aligned with ridge and furrow scars, it is possibly the result of more recent agricultural activity. Nonetheless, the right-angled return representing its southern corner hints at a rectangular structure. Indeed, its alignment and length to breadth ratio (1:1.3) is broadly within the range of known early medieval churches (Ó Carragáin 2010, 113), a possibility that remains tentative. Nonetheless, these anomalies too provide important targets for future excavation.

A series of linear anomalies (**R10–R11** and **R20**) could also represent two sub-rectangular enclosures of early medieval date (Figs. 7, 8 and 9). While possible that these features represent natural near-surface geological outcrops, both anomalies project at right angles. **R10** comprises a 4–6 m wide linear band of high resistance, ranging between 18–25 Ohms. The anomaly extends 30 m to the east of **R9**, before turning at a right angle. **R10** also delimits an area of extremely low

readings, ranging between 4.5–8 Ohms. The relict field boundary **R1d** visibly truncates this anomaly, implying that if **R10** is archaeological, it is pre-nineteenth century in date. Attached to **R10** is another band of high resistance readings (**R11**) that also turns at a right angle as it extends eastward. The size of these anomalies suggests they are not field divisions, but yet are also too large to be foundations for structures. Similarly, the southern sub-rectangular enclosure (**R20**) presents a comparable size, shape and geophysical response. One plausible parallel might be a sub-rectangular enclosure associated with E-W extended burials from Kilmainham, Co. Meath, near Teltown, of fifth to sixth centuries date, and interpreted by the excavator as a shrine (Walsh 2011). Here the comparable burials, aligned on the entrance to the 16-m double-walled building from Site A, are notable; perhaps like Kilmainham, the purpose of this three-sided rectangular enclosure at Navan was to delimit a ritual arena and wider funerary precinct. Indeed, a series of anomalies concentrated in the north and east of the Navan enclosure (**R15a–R15l**) are likely to also represent funerary monuments, further suggestions of a major cemetery hereabouts.

DISCUSSION

The foregoing analysis has revealed significant new discoveries that underline the status of Navan as a major ceremonial landscape of later prehistoric and medieval Europe. These discoveries have important implications for the relative chronology of monuments within this complex and its diachronic development. Of particular importance are the series of unrecorded enclosures on the summit, surrounding the eastern edge of the hill, and another underlying the Site B mound. These imply a more complex and intense sequence of activity, probably dating to the early-middle Iron Age, and comparable to a concentration of monuments identified through geophysical survey at centres like Tara and Rathcroghan (see Newman 1997, 2011; Fenwick and Newman 2002; Waddell *et al.* 2009; Fenwick 2018). The radiocarbon dates suggest a concentrated period of activity spanning the Iron Age, but the ranges are too coarse to define relative construction dates and to permit an elaboration of the use of some features (Waterman 1997, 173–96; Lynn 2000, 2002; Gault 2002). Geophysical survey results, however, allow us to propose a more comprehensive phasing than heretofore possible.

The survey suggests that at least one of the four palisades surrounding the hilltop were truncated by the large internally-ditched enclosure. One or more of these could have been contemporary with the internally-ditched enclosure. This newly-found preceding phase of palisaded enclosure allows us to identify a new phase of monumental wooden architecture preceding the internally-ditched earthen enclosure and (contemporary?) 40-m structure. This new phase comprised at least one massive palisaded enclosure surrounding the hilltop, and probably a large figure-of-8 enclosure within it, where each component of the latter surrounded a figure-of-8 building, namely: Structure E, Site B; and Phase A, Site A/C. At the very least, evidence that at least one of the four palisades was truncated by the internally-ditched enclosure allows speculation that the construction/destruction of each of the earlier figure-of-8 structures at Site B, as well as the earlier enclosure on the site, could have been enclosed within these palisades. There are, for instance, four phases of wooden structures prior to the construction of the 40-m building, while the geophysical survey has identified four larger palisades encircling the hilltop.

Survey also shows the likely presence of a western entrance in the internally-ditched enclosure and the absence of evidence for an entrance on the east or elsewhere on its perimeter. This corresponds well with the western-facing entrances of the later phases of wooden buildings,

including the Site B 40-m structure. Radiocarbon evidence too places the earthen enclosure relatively late in the sequence of Iron Age constructions on the hill.

The geophysical survey also identified several unrecorded enclosures within the interior, including a concentration of possible ring-ditches, and a large ditch feature truncated by Site B. Unfortunately, without more intrusive investigation, it is impossible to date these, but a later prehistoric date seems prudent. Furthermore, the relationship between the enclosures under Site B and surrounding Site A/C detected south-east of Site B is tantalizing, and potentially indicates a massive figure-of-8 arrangement at the site's core.

Considering that documentary sources imply that sites like Tara, Navan, Knockaulin and Rathcroghan were abandoned in the early medieval period, even though clearly important to contemporary elites, the identification of rectangular structures, barrow monuments/structures of potential late Roman Iron Age or early medieval date within Navan Fort's interior is significant. The rectangular structures abutting the south-eastern side of Site A, and the re-interpretation of the 16-m double-walled structure and ring-ditch (above) as fourth to seventh centuries AD in date, are particularly important. This group of monuments, possibly in close association with the two east-west extended burials, indicate a prominently sited medieval complex at the site's core.

Four penannular brooches of the sixth to eighth centuries have been provenanced to within or near Navan Fort, while another ninth-century brooch attests to high-status occupation in the immediate environs (Lynn 2003, 76). Notwithstanding early medieval settlement evidence hinted at in the hinterland, until now there has been no obvious high-status focus at Navan itself to which these artefacts could be linked (e.g. Mallory *et al.* 1992). Lynn (2003, 76) suggests these brooches may have been 'accidentally lost', though admitting that this unusual concentration implies intensive use of the Navan landscape. We might now argue that these elites had built their own structures within the interior, and perhaps that these objects were deposited with purpose and meaning. The exact function of these early medieval structures remains to be confirmed through excavation. Were they domestic settlements or some other form of structure associated with the use of Navan Fort in the medieval period? The larger structures may be a church, or could perhaps be the house recorded as being built at Emain Macha by Níall Óg Ua Neill for the learned poets of Ireland in the *Annals of Ulster* under 1387. Nevertheless, the identification of a significant early medieval component allows us to situate the medieval references to Navan Fort as a place of kingship within contemporary discourse, rather than solely in an imagined past. The evidence for continued fourth- to seventh-centuries activity, and indeed probably spanning most of the first millennium AD or later, is crucial for appreciating the establishment on Cathedral Hill, Armagh, immediately to the east, of the seat of St Patrick in the fifth century AD. By at least the early seventh century, Armagh was recognized as one of, if not the, pre-eminent ecclesiastical establishments in Ireland. Alongside the potential that this correlation presents for understanding how early conversion-period establishments served to authorize later prehistoric ceremonial landscapes in early medieval royal rituals and residence, this continuation illuminates the Navan landscape in a period that is emerging as vital for the development of sacral forms of rulership elsewhere in northern Europe (Hedeager 2011; Fabech and Näsman 2013; Gleeson 2017; Noble *et al.* 2019).

CONCLUSIONS

The results of geophysical survey have significantly transformed our understandings of Navan Fort and its evolution from the Late Bronze Age to the Medieval period. New evidence

suggests a phase, or series of phases, of monumental wooden architecture enclosing the hilltop and figure-of-8 buildings, adding an important new dimension to a long and ritualized history preceding the 40-m structure. This new evidence brings into focus both similarities and differences with other major ceremonial centres of later prehistoric Ireland too: the structures identified within the Rathcroghan mound sit within a large 360-m diameter enclosure, while the Mauve or Rose phases at Knockaulin, and perhaps cognate early phases at the Rath of the Synods within the Ditched Pit Circle at Tara, provide notable comparisons (Grogan 2008; Johnston *et al.* 2009; Waddell *et al.* 2009).

Furthermore, the Site A ring-ditch, 16-m double-walled structure and the newly identified rectangular structures surrounding the same all suggest a previously unknown but hugely significant medieval complex at the heart of Navan Fort. This material is significant for it may prove to be the first concrete evidence for activity post-dating the 40-m structure, but also, because it would constitute the first certain evidence of structural remains from this period from any of Ireland's so-called provincial centres (Gleeson forthcoming, for a review).

As much as this emerging evidence challenges the documentary sources that describe these centres as grass-grown and abandoned, so too the growing evidence for monumental wooden architecture and large-scale later prehistoric ceremonial structures equally contributes to appreciating the ritual and cult associations of these centres, as is reflected in the growth in recent literature (e.g. Waddell *et al.* 2009). The recognition of activity across the first millennium is not only significant for challenging historical narratives and analytical frameworks, but also because it sets Navan within a broader comparative context. A burgeoning literature from Britain, Scandinavia and elsewhere, for instance, has similarly identified a host of new sites since the 1990s, originating in the late Roman Iron Age, but intimately associated with the prerogatives of cult and rulership through the middle to later first millennium AD: these include Rhynie, Yeavinger, Gudme, Tissø or Gamla Uppsala (e.g. Ludowici *et al.* 2010; Noble *et al.* 2019). Potentially, Navan presents an important Irish example of a landscape where cult practices formed the basis of emergent new forms of early medieval rulership, albeit within a landscape redolent with ritual and elite imperatives from much earlier.

In order to more holistically address such thematic imperatives, of course, more targeted and invasive work is needed, at both Navan and Ireland's other major ceremonial landscapes. Rathcroghan, Tara, Knockaulin and Uisneach have all seen extensive geophysical surveys, but targeted excavation aimed at providing absolute chronologies for features identified has not yet become systematic. Moreover, in all cases survey-work has consisted almost exclusively of magnetic gradiometry, which the foregoing account has clearly demonstrated can be unreliable in areas of intensive agricultural activity. It is imperative that multiple methods are combined in future at these centres, but also that invasive archaeological evaluation complements this work, verifying results from large-scale survey. The results at Navan, therefore, are important for being the first comprehensive use of resistivity methods of investigation at the heart of any of these landscapes, but even more so because they present a more detailed basis for targeting future research, aimed principally at clarifying the date, phasing and inter-relationship of the significant discoveries described here above.

Acknowledgements

This research has been supported by a Leverhulme Trust grant for the Comparative Kingship Project. The authors are extremely grateful to the Historic Environment Division, Northern Ireland, for supporting the project and permitting access as landowner. In particular, we are grateful to Dr John O'Keefe and Dr Jaqueline McDowell. We are also grateful to the Navan Centre for

facilitating access, as well as local landowners whose help and knowledge is invaluable to ongoing research. We are grateful to Prof. Jim Mallory and Dr Chris Lynn for assistance and discussion of these results developed.

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doi: 10.1111/ojoa.12198

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