

Iron Age Consultation Draft

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Introduction

The Iron Age in Britain is widely recognised as transitioning from the Bronze Age around 800 BC and has been adopted by ScARF (2012a: 8) and Historic Environment Scotland (via ScAPA) as the beginning of the Iron Age in Scotland. It is defined here as extending to c. AD 400, and sees significant technological advancements in metalworking, and the introduction of dramatic new monument forms, such as forts, souterrains, crannogs, brochs, duns and monumental roundhouses. There is also a significant material legacy of interaction with the Roman Empire both in terms of material culture and sites constructed during Roman military campaigns and periods of occupation.

Defining the start of the Iron Age largely relies on the absence of Bronze Age metal work, notably that of the Ewart Park style which went out of use by sometime between 800–750 BC (Needham *et al.* 1997). In the earliest part of the Iron Age (c.800–600 BC) its two key archaeologically identifiable attributes, the adoption of iron and the construction of enclosed settlement and monumental constructions such as forts, are quite elusive, and it's largely not until the 6th century BC that these characteristic features become archaeologically known across Perth and Kinross.

The area hosts a rich and diverse material record of the Iron Age. It boasts excellent upland preservation of hut circles, an abundant lowland cropmark record, and the monumental architecture, known to dominate the Iron Age, found in great quantity and quality, in a variety of forms and across a range of environmental contexts. The region has a long history of Iron Age and Roman research. Several significant thematic and landscape studies have taken place in recent decades, while developer- and major infrastructure-led research are increasingly expanding our knowledge of the period, as is the impact of citizen-science community archaeology projects, such as the Tay Landscape Partnership Scheme.

This chapter provides a short regional overview for the Iron Age and its Roman interlude, including a brief history of research, a thematic assessment of the currently known archaeological resource, including the Roman presence and its material culture. Finally, recommendations are made for research priorities and questions for future work. In line with Historic Environment Scotland's [monument thesaurus](#), the term 'fort' is used for enclosed sites constructed by Iron Age communities, while forts constructed by the Roman army are prefaced either with the cultural term (Roman) or by military classification (Auxiliary or Legionary). As with the Chalcolithic and Bronze Age chapter, the term 'hut circle' is used for roundhouses where above ground features, such as

an earth or stone bank, survives, while 'roundhouse' is used where no above ground remains survive, but a circular building has been identified as a cropmark, through geophysical survey, or by excavation. All C14 dates given are calibrated.

Regional Overview

Due in part to the challenges to radiocarbon dating presented by the Hallstatt Plateau, the Bronze Age/Early Iron Age transition is largely defined by an absence of evidence for Bronze Age metalworking as opposed to the presence of tightly dated material evidence for distinctly Iron Age activity. Greater clarity of the region's Early Iron Age is emerging through the application of bayesian modelling and comparative 'wobble-matching' with dendrochronological records but the national questions around the adoption of Iron Age lifestyles and the origins and development of new architectural forms, such as forts and enclosed settlements, remain priorities for clarifying the regional picture (ScARF 2012a). Summed probability approaches to radiocarbon dates have been used to suggest a widespread population decline across north-west Europe around the Bronze Age/Iron Age transition (eg Ireland - Armit *et al.* 2014) coinciding with an increasingly wetter climate and the subsequent abandonment of upland unenclosed settlement (Tipping *et al.* 2008). The timing and nature of such changes is complex however (Gearey *et al.* 2020) and compounded by the relatively low yield of evidence that can be unambiguously dated to this key transitional period (800–600 BC). It is also possible that summed probability data primarily reflects a change in archaeological visibility and not a decline in population (Dave Cowley pers comm). Understanding the nature and mechanics of change therefore remains an ongoing challenge for archaeological research spanning the 1st millennium BC. Iron Age Scotland is dominated by various domestic architectural forms including sites recorded as hut circles, roundhouses, ring-ditch houses, duns, brochs, monumental roundhouses and crannogs. The area is nationally important as all of these forms are found offering an opportunity to explore the drivers for the diversity of known house forms. The region's settlement evidence includes a wide range of monument types from well-preserved hut circles in the uplands, and an equally impressive cropmark record of roundhouses, enclosures and souterrains, as well as enclosed monumental structures such as forts, brochs, duns, and crannogs.

As discussed in the Chalcolithic and Bronze Age chapter, Perth and Kinross has an extensive record of unenclosed timber and stone roundhouse forms predominantly identified as cropmarks in the lowlands, and hut circles, often with associated field systems, in upland areas. With the exception of [Dalrulzion \[MPK#\]](#) (Thorneycroft 1933; 1946), [Carn Dubh \[MPK#\]](#) (Rideout 1996) and [Tulloch Field \[MPK2854\]](#) (Thoms and Halliday 2014), the region's roundhouse tradition and unenclosed settlement chronology remains poorly understood due to a general lack of excavated examples and this in turn makes it difficult to disentangle the extent of open settlement in the Iron Age from that of the Bronze Age.

A relatively well-dated Roman presence, represented by a number of sites of national and international significance, spans the 1st to 4th centuries AD and being on the fringe of the Empire's north-west frontier provides a unique opportunity to study interaction which has arguably yet to be fully realised.

The uplands include excellent survival of open settlement in the form of hut circles and associated features, especially in the north-east of the region which has one of the densest concentrations of hut circles in Scotland (RCAHMS 1990: 2). They are of note due to their exceptional preservation, and variation of form, including single walled, double walled and tangential pairs (Harris 1985: 203-209; RCAHMS 1990: 2-4) and occur over a long chronology of use between the 2nd millennium BC and 1st millennium AD. The most distinctive are double-walled hut circles (Thorneycroft 1933; 1946), which are uncommon beyond the area (RCAHMS 1990: 3). Complex sequences of multi-period construction of hut circles were confirmed through excavation at [Carn Dubh](#), which produced Late Bronze Age dates (intra) with subsequent occupation during the Early-Middle Iron Age (745-385 BC), with reoccupation in the Early Medieval period (Rideout 1996: 175). Similar reoccupation was found at [Tulloch Field](#), here with Middle Bronze Age and Late Iron Age (173 BC) activity (Thoms and Halliday 2014: 12). Cultivation remains, usually in the form of clearance cairns, less commonly as field systems and banks, and at Drumerg as lynchets and strip-fields are found in association with this open settlement (RCAHMS 1990: 4-5). While they suggest long histories of cultivation and animal grazing, the extent to which they represent Iron Age activity is difficult to ascertain.

The extensive cropmark record in the lowlands has revealed extensive prehistoric unenclosed settlement, including a significant number of roundhouses (RCAHMS 1994: 43-48). These vary considerably in size and form, and are evident in the cropmark record as ring-ditches, maculae and enclosed crescents. While only a relatively small sample has been excavated, the scale of recent developer-funded work has begun to shed further light on the variations of form present. Recent sites of note include Bertha Park near Perth (Engl 2020), the A9 Dualling Programme (Paton *et al.* 2018), and at the Late Bronze Age/Early Iron Age palisaded enclosure at [Kirkton Farm \[MPK#\]](#), Blackford, which includes some of the earliest evidence (742–397 BC) for enclosed settlement in the area (O'Connell and Anderson 2021: 94-106). In addition, there is an extensive cropmark record of larger, undated uni- and multi-vallate enclosures in both rectilinear and curvilinear forms, many of which are of probable Iron Age date, including interrupted ring-ditches (RCAHMS 1994: 57-62). Souterrains are often found in close association with these various forms, and as with elsewhere in Scotland (ScARF 2012a), debate continues regarding their storage function and/or ritual use, their relationship to the Roman military and the dating of their abandonment (Armit 2000, Coleman and Hunter 2002; Halliday 2006).

The uplands west of the River Tay contain a notable concentration of massive, stone-walled roundhouses, found on high ground proposed as ancient pasture overlooking upland passes. They have previously been referred to as 'ring-forts' (Stewart 1969), 'homesteads' (Taylor 1990) and 'monumental roundhouses' (Strachan 2013). While Stewart and Taylor proposed an Early Medieval origin for the site type, Aldclune (Hingley *et al.* 1998) and Black Spout (Strachan 2013) confirmed construction and use in the 3rd and 2nd centuries BC, with secondary occupation in the 2nd and 3rd centuries AD, but with Early Medieval re-use. Also found in the uplands West of the Tay are duns and forts. The duns and forts are infrequent, and the forts, in lower Strathtummel and Strathtay, appear generally smaller than those found in the lowlands. Also predominantly found in this area are crannogs and the use of water as a natural form of enclosure occurs from the Early Iron Age with crannogs becoming a distinctive feature of settlement. While occurring throughout the region, the uplands west of the River Tay have one of the densest known concentrations in

Scotland, on Loch Tay (Dixon 2004: 10). Radiocarbon dating of structural timbers from seven of the Loch Tay examples (Dixon *et al* 2007) and the lowland crannog in Loch Monzievaird (Dixon and Shelley 2006) suggests they were occupied from as early as 820 cal BC (Oakbank Crannog [MPK/Canmore ID], Loch Tay), beginning a water dwelling tradition that continued in the region into the late Medieval period (Stratigos and Hamilton forthcoming).

A single broch tower, of the height and proportions more commonly found in the north and west of Scotland, and in lesser numbers across the Lowlands, has been confirmed at Castle Craig [MPK/Canmore ID] Auchterarder (James 2011; 2012; Poller forthcoming). A second, unexcavated example has been proposed at Little Dunsinane [MPK/ID] Collace (RCAHMS 1994: 51, 74) while a monumental roundhouse, similar to those found in the Highland zone (see above), was recently discovered within a series of forts on Moredun Top, Moncreiffe Hill [MPK/Canmore ID] Perth (Strachan *et al* forthcoming). Radiocarbon dating suggests Castle Craig as a Late Iron Age site of the early centuries AD, occupying a previously fortified prominent hill and post-dating the monumental roundhouses of the uplands, and the Moredun monumental roundhouse.

As varied in scale and form are the hilltop forts found principally along the Ochil and Sidlaw hills, while smaller forts are found along the interface with the uplands and along the lowland straths. Recent programmes of excavation of forts along the Ochils and at the head of the Tay estuary are beginning to improve our understanding of the chronology of these sites. Notably Late Bronze Age dates have been secured for activity from Rossie Law and Ogle Hill (Poller pers comm). Early Iron Age dates from Moncreiffe Hill fort [MPK3203/Canmore ID], range from c.700–250 BC (Strachan *et al* forthcoming) while lower lying forts along Strathearn, such as Dun Knock, Dunning [MPK/Canmore ID] and Jacksstairs Wood [MPK/Canmore ID], Forgandenny, range from 600–400 BC (Poller forthcoming; for an analysis of vitrification at Dun Knock see Donaldson *et al.* 2004).

These various forms of monumental structure are designed to display from their distinct locations that occur at different altitudes, with crannogs at water level, forts on high elevations and monumental roundhouses between (Strachan 2013: 112). They may well have had significant socio-economic and potentially local political roles (*ibid.*: 10). Notably, while forts are common along the Sidlaw hills, they are notable by their absence in the uplands to the East of the Tay. This is in contrast to the uplands west of the Tay where again they occur relatively frequently. Significantly other monumental forms are also absent in the uplands East of the Tay: there are no monumental roundhouses, duns and, with one exception, crannogs. The question then, is to what extent an upland-lowland division dictated the nature and density of the region's population, settlement forms, land use and economy? In the broad lowland straths, larger politico-economic groups, supported by grain-rich, mixed arable and pastoral economies, suggest a tiered society represented through the presence of hilltop power centres and a hierarchy of settlement forms, while a smaller-scale, more fragmented social structure in the uplands, with greater emphasis on cattle-based transhumance, is represented by fewer forts and the monumental roundhouses (Strachan 2013: 114). While both monument survival resulting from land-use change, and archaeological survey bias, appear to have influenced the distribution of some known site types, the contrast between monumental forms present to the west of the River Tay, but absent to the east, suggests the River, perhaps unsurprisingly, as a significant cultural boundary throughout the period.

As for much of Scotland, the burial practices remain difficult to establish, but from the limited excavated examples a number of traditions are apparent, based on extended inhumation with variations in construction, monumentality and associated material culture (Winlow 2010; Mitchell *et al* 2020).

A major and tangible phase of the Iron Age in parts of Perth and Kinross was the Roman military incursions of the 1st-3rd centuries AD. Despite threats from development, erosion and agriculture, we know more about the Roman presence in the region than in many other parts of Scotland. However, the historically partitioned approach to Iron Age and Roman studies in the region has made it difficult to assess the extent to which the Roman presence interacted with and induced change within local Iron Age society, particularly beyond the immediate physical impact of the military campaigns. Nationally this interaction has been the subject of study in more recent years (e.g. MacInnes 1989; Hunter 2001; Hunter 2007a; Hunter 2007b; Ingemark 2014 and cf. Wilson 2014; Wilson *et al.* 2014; Ivleva *et al.* 2018). In fact, evidence for this interaction across Perth and Kinross is extensive and varied through stray single finds and hoards of Roman coins as well as the recovery of Roman material culture from Iron Age sites throughout the region, but especially in association with hilltop enclosed settlement sites such as on Castle Craig [MPK/Canmore ID], Auchterarder and particularly with souterrains. The roundhouses identified as cropmarks and through geophysical survey by the Roman Gask project around Roman forts such as at Cargill [MPK/Canmore ID] are undated and it remains unclear whether they represent Iron Age structures forming vicus settlement contemporary with fort occupation, a deliberate insertion of Roman forts into culturally rich settled landscapes, or sites being reclaimed by Iron Age communities after the Romans departed, as at the forts of Cargill and [Cardean](#), and possibly Inverquhar [MPK/Canmore ID] also in Angus. The unusually complicated bank system in Ardoch fort and the juxtaposition between Iron Age, Roman and Early Medieval features on the Inchtuthil plateau are also suggestive of complex landscape narratives and cultural interactivity meriting further study.

There are currently three periods of Roman activity in Scotland where historical sources indicate a presence in parts of Perth and Kinross (Flavian, Antonine and Severan). Archaeological investigations across the region have revealed an increasingly complex picture with continued debate over exactly when the Roman military incursions into the region first occurred. What is clear is that Rome's arrival in Perth and Kinross saw the construction of both temporary and more permanent military installations from the Flavian period (c.AD 77–86/90) onwards. Following an initial period of campaigning and temporary camp construction, more permanent auxiliary forts, fortlets, towers and a road were established. A Legionary fortress, begun but not completed, on the upland/lowland highland boundary at Inchtuthil [MPK/Canmore ID] hints at unrealised Flavian ambitions to springboard further (Pitts and St Joseph 1985). Accurately dating the military campaigns through the region and the establishment of individual sites is still debated and tied up with the interpretation of the conflicting historical sources. Various dates are suggested by the sources from the early 70s to the traditional date of AD 79 without sufficient geographical detail to allow confident links to be made with the archaeological record. In the wider context, Carlisle is currently the northernmost fort with clear evidence for occupation in the early AD 70s (Caruana 1992; Shotter 2001; 2009). The first Roman occupation appears to have continued to about AD 86/87.

In the mid-2nd century AD, during the reign of emperor Antoninus Pius, a number of the Flavian auxiliary fort sites show evidence of being reoccupied for at least 10 years, where they potentially served as outposts for the Antonine Wall. The forts of Ardoch [MPK/Canmore ID], Strageath [MPK/Canmore ID], Bertha [MPK/Canmore ID], Cargill [MPK/Canmore ID] and Dalginross [MPK/Canmore ID] have all produced Antonine datable material (c.AD 139–165). In the case of Strageath, and to a lesser extent Bertha, evidence for large scale occupation exists outside the fort defences and merits more extensive future research to define its nature and relationship to the forts. Although situated in Angus, excavations at Inverquharity [Canmore ID] suggest that the well-engineered Roman road (as opposed to the earlier track) may also date to 2nd century AD reoccupation and some of the smaller installations such as the fortlets at Glenbank [MPK/Canmore ID] and Midgate [MPK/Canmore ID] have provided some suggestion of a second phase of occupation which could equally relate to Antonine activity.

Beyond the 2nd century AD, only excavations at the Roman fortress at Carpow [MPK/Canmore ID] near Abernethy have so far produced evidence for permanent occupation and relates to the short campaigns of the Emperor Septimus Severus c.AD 208–211 (Birley 1963; Dore and Wilkes 2000; Hodgson 2014). Late 2nd century AD finds at Strageath and possibly Cargill might suggest reoccupation of these permanent sites in the 3rd century AD as well. A Roman presence continues following the Severan campaigns but is more subtle and mainly recognisable in the archaeological record through material culture, especially silver coins occurring as stray finds or on Late Iron Age and Early Medieval sites (Blackwell *et al.* 2017: 33-40). This has been interpreted in broader studies as indicative of a different, less-military form of Roman foreign policy that was more covert but still subversive in its involvement in local political systems across selected regions beyond the edges of the Empire (*ibid.*).

The end of the Iron Age is not defined by any fundamental shift in economy, technology or settlement patterns, but rather through the detection of new early medieval identities known historically, notably the Picts in this area, successors to the Caledonians and the Maetae. While often cited as emerging AD 300-400, the relevance of any specific date range in defining the Pictish identity, remains open to debate (Noble *et al.* 2018). Initially, many site types, such as forts, crannogs and roundhouses, with broadly similar material culture and economy appear to continue across the same landscape settings. The proximity of post-Iron Age monuments, such as castles, churches, long cists and tumuli, to the forts of Inchtuthil and Ardoch may suggest that abandoned Roman sites had some continued purpose and value after the Roman military withdrew. This is paralleled across Roman Britain where Roman sites attracted post-Roman settlements from the Early Medieval period on, often with a local governance, religious or monastic association (e.g. the forts at Burgh Castle, Carlisle and Birdoswald). It is not until c.AD 600 that distinctively new site types emerge, notably the Pitcarmick-type buildings, Pictish longhouses that survive in the uplands east of the River Tay (Carver *et al.* 2013; Strachan *et al.* 2019), and square burial barrows and barrow cemeteries, with new ritual landscapes introduced (Mitchell *et al.* 2020; Maldonado 2017). Notably, in terms of material culture, important new insular art forms are introduced, significantly the Pictish symbol stones (Fraser 2008; Hall *et al.* 2020), while Roman influence persists through the role of silver as a status symbol and catalyst for social change (Blackwell *et al.* 2017).

History of Research

Study of the region's Iron Age and Roman sites has a long and varied history. It begins, as result of wider antiquarian interests in the Roman Empire, with the Roman military sites of the area. Descriptions of sites such as the exceptionally well-preserved Roman auxiliary fort of Ardoch [MPK799], Braco, are published as early as the 16th century (Boece 1527) and continued in antiquarian accounts into the 18th century, including Sibbald (1695, 1707), Gordon (1726), Horsley (1732), Maitland (1757), Pennant (1771), Adamson (1774), in Gough's edition of Camden's *Britannia* (1790) and in both the Old and New *Statistical Accounts of Scotland* (Sinclair 1799; Gordon 1845). William Roy's pioneering mapping (1793) is noteworthy as his surveys capture the earthworks of prominent Roman sites that have since been lost or severely deteriorated, mainly through agriculture. From the 18th century, as a result of agricultural improvement and treasure hunting, the recovery of Roman material became common with frequent references appearing in the New *Statistical Accounts of Scotland* and later in more bespoke works such as Robert Stuart's *Caledonia Romana* of 1852. The Perth Literary and Antiquarian Society, founded in 1784, ranked the study of Perthshire's Roman remains very highly in its agenda of antiquarian studies, an approach it maintained through the 19th century. As was common at the time, Bronze Age swords were often interpreted as Roman ones (Cowie and Hall 2001, 151-3).

Pennant's accounts of his travels to the region in the 1770s also deserve particular attention as an early commentator on Iron Age monuments and in particular the 'circular buildings' of 'Highland Perthshire' (1776). These represent some of the earliest comprehensive field observations of Iron Age sites in the region using an approach that is recognisable today as an early expression of landscape archaeology (Strachan 2013: 4). While mistakenly attributing Danish or Norwegian origins to sites (as so many did with Pictish stones also), his work remains an early and important regional thematic study which saw little if any revision through the subsequent *Statistical Accounts of Scotland* (Sinclair 1799; Gordon 1845).

The 18th century excavations, early even in Scottish terms, at Dunsinane Hill fort (MPK4823), Collace, by James Playfair (Robertson 1799), were no doubt inspired by association with Shakespeare's *Macbeth*. The small, heavily defended summit-fort remains scarred by these, and the following investigations by Nairne in 1854, were reported in the second volume of PSAS (Fig. X; Wise 1856; Brown 1872). Also around this time, many of the region's crannogs were recorded in the first gazetteer of crannog sites in Scotland (Stuart 1865: 174-7).

Pennant's external origin theories were to prevail, however, for almost 100 years until Christian MacLagan (1871) first suggested that monumental Iron Age structures were built by indigenous communities. Despite gaining support from Joseph Anderson (1876), the national debate continued to associate brochs, duns and forts with Scandinavian influences (Fergusson 1877) and MacLagan's suggestion only became fully accepted in the 20th century.

It was from the end of the 19th century that more formal programmes of archaeological work commenced, however, and notable here are the large-scale excavations at Ardoch Roman fort (Christison 1898; Cunningham 1898; Anderson 1898), excavations of Castle Law, Forgandenny (MPK1905; Bell 1893; Christison 1900b) and Castle Law, Abernethy (MPK3069: Christison and Anderson 1899). David Christison was influential, contributing significantly through classification

and synthesis of Iron Age and Roman sites in the wider area (Christison 1900b) and through excavation. Recognising the potential and value of Iron Age monuments, he was an advocate for their study and in the annual report of the Society of Antiquaries of Scotland in 1900 wrote: *“I could almost regret that the Society have undertaken the excavation of Roman 'Camps' in preference to our Native Forts. The secrets that lie beneath the ruins of the Caterthuns, Dunsinnan, and hundreds of other native fortresses, are no less worthy of being brought to light than the relics left behind by the Romans”* (Christison 1900a: 12).

Aside from William Watson's (1915) work on monumental roundhouses, including the excavation at Borenich [MPK/Canmore ID], Loch Tummel, on the eve of World War I, relatively little excavation was carried out on Iron Age sites in the first half of the 20th century. Interest focused on major Roman sites such as Inchtuthil legionary fortress [MPK/Canmore ID] Spittalfield (Abercromby 1902) and Fendoch auxiliary fort, Glen Almond [MPK/Canmore ID] (Richmond and McIntyre 1935, 1939). This focus may in part have resulted from a lack of typologically distinct Iron Age material culture, which presented a significant challenge to the culture-historical approaches of the time. The shortage of chronologically definable data also resulted in narrative construction based on historically documented events, such as the Roman military campaigns. Diffusionist models for aspects of the Iron Age, such as for broch building in the region, also persisted long into the 20th century (e.g. MacKie 1987: 16). It has only been with the chronological security of radiocarbon dating across different site types that historically-driven chronologies have become increasingly scrutinised and the region's Iron Age narratives have become more independent.

Between the 1950s and 1970s Iron Age and Roman investigations continued to be undertaken in relative isolation from each other and were generally smaller scale in nature. Following Thorneycroft's pioneering work on the Late Bronze Age settlement at Dalrulzion (1933; 1948) Margaret Stewart excavated roundhouses at [Dalnaqlar](#) [MPK/Canmore ID], Kirkmichael (Stewart 1964) and [Tulloch Field](#) [MPK2854], Enochdhu (Thoms and Halliday 2014), then reviewed the work of Watson on monumental roundhouses, through *'The Ring Forts of Central Perthshire'* and excavations at Litigan (Stewart 1969) [MPK/Canmore ID] and Queen's View (1974–77) [MPK/Canmore ID], later published by Taylor (1990). The latter part of the 20th century also saw excavation at a range of Roman site types, from the forts at Carpow (Birley 1963; Dore and Wilkes 2000) and Strageath (Frere and Wilkes 1989), to fortlets, such as Glenbank (Woolliscroft and Hoffmann 2009), to towers including Westerton [MPK/Canmore ID] (Hanson and Friell 1996) and [Woodhead](#) [MPK3672] (Woolliscroft and Hoffmann 2010; Chapman *et al.* 2011), and finally camps, including Dunning [MPK/Canmore ID] (Dunwell 1995, Hunter 2015a), Forteviot [MPK/Canmore ID] (Aitken 1952) and Longforan [MPK/Canmore ID] (Hunter 2015b). However, in the early years of the 21st century, it was observed that Iron Age research in the area had fallen behind that in neighbouring regions such as Stirling and Angus, with notably fewer excavations across Perth and Kinross in the 20th century (Davies 2007: 270).

Air photographic survey has contributed significantly to understanding of the region's Iron Age and Roman presence since the 1950s, having been initiated by OGS Crawford (1949) of the Ordnance Survey. J.K. St Joseph of the Cambridge University Collection of Aerial Photography (CUCAP) flew annual sorties over the region until the late 1980s, and this work was built on by the

establishment of aerial survey with the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) in 1975/6 (Maxwell 1983: 27-40).

Two important RCAHMS primarily ground-based surveys, of north-east and south-east Perthshire, carried out in the late 1980s and early 1990s, set the paradigm for understanding most aspects of Perth and Kinross' Iron Age remains (RCAHMS 1990: 1994) and many of the key under-lying assumptions about the Iron Age of the region can be traced back to these influential publications. While extensive, they covered less than half of the PKARF area all of which is in the east. Consequently there is a survey bias to the west of the River Tay where the lack of a county-wide RCAHMS inventory has never been alleviated (Strachan 2013: 115).

The advent of development-led archaeology, responding primarily to areas of housing and road development, has helped to broaden field-work from what had become an established focus on Roman military and monumental Iron Age sites. The resulting discovery and excavation of both new sites and monument forms has enriched our understanding of the period. While it began to have impact from the 1980s, for example through excavations at Aldclune, Blair Atholl (Hingley *et al.* 1998) in advance of construction of the A9, monitoring of development in the area improved significantly from 2000, when a high-quality Sites and Monuments Record and consistent, properly resourced screening of planning applications was introduced by Perth and Kinross Heritage Trust on behalf of the local authority. Nearly 40 years on from Aldclune, important sites are again being discovered and explored through the ongoing A9 dualling programme and its associated works. These include post-built roundhouses at Bertha Park, Perth (MPK20178-88; Engl 2020); two roundhouses, a souterrain, and four-post structures at Northleys, Luncarty, and west of Newmill, Bankfoot, where a third roundhouse with an enclosing palisade was excavated (Paton and Wilson 2019); and at the Stanley Road Junction (MPK20176), where a roundhouse, 6-post timber structure, and possible kiln were uncovered (Airey 2020). Perhaps most significant though are results from Loak Farm (where? MPK?) where seven roundhouses, four-post and six-post structures, ring-ditches, and an oval post-built structure indicate extensive settlement of Late Bronze Age to Iron Age date (Kirby 2019), while a second phase of monitoring discovered three souterrains (Demay 2021). Another important developer-led site, excavated in advance of a golf resort at Blackford over 2007-8, uncovered extensive enclosed and unenclosed settlements, principally of the Middle and Late Bronze Age, but continuing into the early Iron Age (O'Connell and Anderson 2021). More recently in 2021, excavation of targeted areas following trial trenching at the James Hutton Institute has revealed a well-preserved roundhouse with several associated elongated/oval buildings and outlying postholes and linear features that may also be contemporary.

Independent academic and project-based research has also contributed in recent decades. The [Roman Gask Project](#), established in 1995 by David Woolliscroft and Birgitta Hoffmann, has helped to shape understanding, and questioned assumptions on the nature of the Roman presence in the region. Combining aerial and geophysical survey with field-walking and excavation, a wide range of sites along the Gask Ridge and across wider area have been investigated (Woolliscroft and Hoffmann 2006) and visual signalling explored (Woolliscroft 2001) while reassessing the influential historical text by Tacitus on Agricola, the provincial Roman Governor from AD 77–83 who is attributed with the conquest of Scotland (Hoffmann 2003; 2012). Further geophysical survey has

been conducted by Peter Morris (Blairgowrie Geoscience) at both Roman and Iron Age sites. Research on Roman camps across Scotland has included a review on current knowledge in the region and placing them into their wider context (Jones 2011).

The value of the GIS analysis of Iron Age and Roman military sites has been explored through viewshed analysis to examine intervisibility (Strachan 2013: 61-67; Lindsay 2006; Murphy 2018; Tibbs 2021) and the examination of small finds, at Inchtuthil legionary fortress, where it was employed to better understand trade and coin loss (Trezzi 2017). Advancements in remote data gathering, such as satellite imagery, photogrammetry and LiDAR, now offer great potential for future research.

Postgraduate research has contributed to the understanding of both settlement patterns and specific architectural forms, notably including comparative study of later prehistoric settlement north and south of the Forth (MacInnes 1983) and a valuable comparative synthesis of later prehistoric settlement in 'Perthshire' and 'Stirlingshire', using dating and palaeoenvironmental data to aid discussion of settlement types known from survey and excavation (Davies 2006). Janet Hooper's (2002) thesis on Highland cultural landscapes, while focused on the Early Medieval period, also includes much of value regarding Iron Age settlement.

In recent decades several thematic and landscape studies have been carried out. The multi-disciplinary Ben Lawers Historic Landscape Project (1996-2005) was primarily aimed at medieval and later periods, but did explore Iron Age roundhouses at Tombreck [MPK15945; NN63NW 6] and [Croftvellick](#) [MPK9467] (Atkinson 2016). Excavations at the Black Spout [MPKXXX], Pitlochry (2005–9) responded to unresolved questions regarding the chronology of the monumental roundhouses following earlier work (Stewart 1969; Taylor: 1990; Hingley *et al.* 1998) and illustrates how targeted work at a single-site can help to address regional narratives through the context of wider synthesis (Strachan 2013). It was also an early Scottish example of 'community archaeology', highlighting the valuable contribution that can be achieved through citizen science. The Strathearn Environs and Royal Forteviot (SERF) project (2007–19) included excavation of 10 forts, predominantly along the Ochils hills and Strathearn and while full results are in preparation (Poller forthcoming), much has been published online through [The Archaeologist's Trail: Hillforts of Central Scotland](#), including interactive media and data structure reports. Similarly, The Tay Landscape Partnership Scheme (2014–18) 'Hillforts of the Tay' project excavated three hilltop forts at the head of the Tay estuary (Moncreiffe [MPK#/Canmore ID] and Moredun Top on Moncreiffe Hill [MPK#/Canmore ID] and Castle Law, Abernethy [MPK#/Canmore ID]). Radiocarbon dating confirmed an Iron Age date for all, significant in that Moredun Top had been for many years mooted as an Early Medieval 'nuclear' fort (Feachem 1955: 79-80; Alcock *et al* 1989: 206 and Alcock 2003:189). The excavations suggest earlier activity at the smaller, multivallate Moncreiffe fort, while on Moredun Top, a monumental roundhouse was uncovered within a series of three Iron Age forts occupied from the late 6th century BC to the mid-1st century BC, confirming a particularly prominent power centre dominating both the important estuarine and terrestrial routes and a key site in local Iron Age society (Strachan *et al* forthcoming). The project saw considerable volunteer and community engagement, with web-based Minecraft, Virtual Reality and artistic reconstructions, interpretive leaflets and on-site panels plus a popular publication (PKHT 2020) making the findings widely accessible to a broad audience. Finally, building on Dixon's

excavations at Oakbank Crannog in the 1980s, the Living on Water project (2017-20) has investigated seven of the 11 crannogs on Loch Tay with known Early Iron Age phases. The project has aimed to develop chronological precision during the Hallstatt Plateau period, which coincides with the emergence of crannogs in the loch, using a combination of dendrochronology, radiocarbon dating and Bayesian statistical analysis. The initial results seem to suggest crannog building began no earlier than 600 BC with a notable increase in activity from 400–350 BC. Further detail on the local economy and environment has been gleaned from the exceptionally well-preserved deposits of organic material, and the results are expected to be published in 2021 as a monograph (Cook *et al* forthcoming), along with publication of Oakbank crannog, detailing excavations there since 1980 (Dixon and Andrian forthcoming).

The Extant Resource

Domestic Architecture/House Forms

The remains of circular houses are one of the most frequent monument types and their use spans the Bronze and Iron Ages. As outlined in the Introduction, Historic Environment Scotland's Monuments thesaurus dictates the use of 'hut circle' for sites which have above ground remains, and 'round house' for those which don't. In reality the distinction is at best unhelpful, particularly as, because the former tend to be found in the uplands, the usage restates an upland/lowland divide, which is at least in part an artefact of historic/modern land use and implies a binary division in form which is misleading. As with all vernacular architecture, it is probable that availability of materials would dictate, to some degree, variations in form, and it is likely these were reflected across the landscape.

The terminology used to describe sites has also varied over the history of research, in part to characterise and interpret the emerging archaeological resource. The resulting array of terms has proved a hindrance to understanding, using weighted or inappropriate elements at times. For example, the examination of the historical use of 'circular fort', 'ring-fort' and 'homestead' led to the recognition of the site type as one form of 'monumental roundhouse' (Davies 2007; Hingley 1998; Strachan 2013: 8-10). Equally, Thoms and Halliday (2014) have addressed the regional nuances of hut circle/roundhouse forms, drawing on known forms to suggest 'post-ring' and 'ring-ditch' as design elements, and 'tangential pairs' as possible evidence of sequential construction rather than distinct house types. These approaches are helping to establish a regional baseline for settlement type definition, allowing future research to move on from the 'self-absorbing' debates of classification that dominated discourse in the late 20th and early 21st centuries (ScARF 2012a: 8).

Hut Circles

The north-eastern uplands of Perth and Kinross include one of the densest concentrations of hut circles known anywhere in Scotland (RCAHMS 1990: 2), typically found outwith agriculturally improved areas and at high elevations, often above 250m OD. They are generally unenclosed and distributed individually in apparent isolation, in small scatters, or in clustered or rows. They are notable in their diversity of form, and are predominantly in single or double-walled forms, and in

pairs enclosed by a single concentric wall (Harris 1984: 203–7; RCAHMS 1990: 2-4). A remarkably early interest in these various forms, by the Rev. Stewart in the late 18th century (Thoms and Halliday 2014: 13), was much later first broadly classified by Thorneycroft (1933). While the reasons behind the construction of one type over another remains unclear, and merits further research, as a whole they represent a long chronology of roundhouse use between the 2nd millennium BC and 1st millennium AD (Thoms and Halliday 2014: 17) and variation may simply reflect available materials and changes in architectural fashion. As a result, the monument type offers an excellent research opportunity regarding the transition of settlement from the Late Bronze Age to the Early Iron Age and from the Iron Age to Early Medieval period.

Several sites have been excavated since the mid-20th century, including the group at [Tulloch Field \[MPK2854\]](#), first excavated in the 1970s by Margaret Stewart, and later by Lisbeth Thoms which included one roundhouse dated to c. 400–200 BC amongst predominantly Middle Bronze Age dated examples (Thoms 1983; Thoms and Halliday 2014). Similarly at the scattered hut circle group on [Carn Dubh \[MPK#\]](#), an Early Iron Age burnt roundhouse, dated to 745–385 BC, was located amidst an otherwise Middle Bronze Age dated group (Rideout 1995).

As a result of this wide chronological span of their use, it is not possible to identify Iron Age hut circles, or groups, without excavation. This inhibits discussion about the known distribution of the site type, which is also seriously restricted by the impact of subsequent phases of agriculture impacting on monument survival (RCAHMS 1990: 1). Furthermore, levelled platforms among some groups have been interpreted as sites of degraded roundhouses (Thoms and Halliday 2014: 15), while excavation of a tangential pair at Pitcarmick confirmed that, at that site at least, the configuration was a result of sequential construction (Carver *et al* 2012) rather than representing a monument type.

Wider discussion of the regions unenclosed settlement (Halliday 2007) has challenged the common interpretation that these remains represent continuous occupation over hundreds of years, rather suggesting a dynamic process whereby the hut circles and associated field systems represent shifting cycles of short-term usage at multiple locations over millennia (Thoms and Halliday 2014: 16).

Roundhouses

The vast majority of the region's roundhouses have been identified as circular cropmarks between c. 5-15 m in diameter, found along river valleys in areas where soils and agriculture promote their detection. Prior to levelling through cultivation, it is likely that many, such as circular post-ring or shallow ring-ditch sites were architecturally similar to the hut circles in the uplands (Harding 2004: 102; Thoms and Halliday 2014: 15). There were no doubt slight variations in the nature and availability of building and thatch materials between lowland and upland environments, which would have been expressed in vernacular nuances. A key distinction, however, is the common association with souterrains found at lowland roundhouses, such as [Newmill East \(MPK2308/9; Watkins and Barclay 1979\)](#), [Loak Farm \(MPK\) by Bankfoot](#), and [Northleys \(MPK20138; Wilson and Clarke 2019; Paton and Wilson 2019\)](#) by Luncarty; all dated from excavated material to the Late Iron Age (4th-1st century BC).

Roundhouses with ring-ditches are also mostly known as cropmarks, and characterised by a ditch enclosing a circular area, often with an internal ring of post holes. While the interior is usually interpreted as domestic, it has been suggested the outer areas may have housed animals (Harding 2004: 84). Earthwork ring-ditches are known in less intensively ploughed areas and feature an external bank to the ring-ditch, however Bronze Age examples are known and many of the 100 plus examples may relate to this period. While there are a relatively large number of confirmed Iron Age ring-ditch houses, as with hut circles, only further excavation to secure dating will disentangle their chronology. Recently, one of two ring-ditch houses at [Easter Croftintygan](#) [MPK11992], near Lawers on Loch Tay, was partially excavated with the aim of comparing site chronologies with nearby crannogs. A series of secure contexts including postholes, a central hearth and the ring-ditch, produced dates in the 1st centuries BC/AD (Stratigos and Hamilton forthcoming).

The excavated examples with an enclosing palisade at [Blackford](#) (MPK17955; O'Connell and Anderson 2021) and at [Newmill](#) West (MPK2331; Wilson and Clarke 2019; Paton and Wilson 2019) are also notable. Here, two post-ring roundhouses produced Early Iron Age dates (c.726-397 BC) and a single ring-ditch roundhouse from the Late Iron Age (357-61 BC). The palisade would have restricted access to the houses and it is suggested, that in addition to defence, may also have signified status of the occupants (O'Connell and Anderson 2021: 119). With only three known examples across the region, it remains unclear how common individual roundhouse enclosure was across the lowlands of the area, but does indicate another variation in timber roundhouse construction, which may represent a degree of monumentalism utilising timber instead of stone.

In 2021, excavation at the James Hutton Institute, Invergowrie, revealed a well-preserved roundhouse, with several elongated/oval buildings and a series of probably contemporary outlying postholes and linear features (Sophie Nicol pers comm). While as yet undated, both the level of preservation at this site, and the variety of associated features looks set to make a significant contribution to our understanding of roundhouses on the Carse of Gowrie.

Souterrains

Most of Scotland's souterrains are thought to date from the last centuries BC and early centuries AD, although exceptionally their use is also known into the second half of the 1st millennium AD (Watkins and Barclay 1979; Armit 2000; Halliday 2006). Commonly found juxtaposed and in some cases associated with other settlement evidence, such as round houses or enclosures, the majority of the nearly 200 examples in the area are concentrated in the eastern lowlands. The vast majority are known as cropmarks, found in areas where well-drained soils coincide with arable cropping over the second half of the 20th century. However, there is no simple relationship between the distributions of known souterrains and cropmarking, with some areas of dense cropmarking apparently not including any examples. This hints that the use of souterrains may have varied locally and regionally. Fewer souterrains occur as earthworks, and areas of poorly drained soils that are not conducive to cropmarking or are set to pasture are poorly understood.

Excavation in 1977 at [Newmill](#) East [[MPK2309/Canmore ID](#)] near Bankfoot, significantly advanced Scottish souterrain studies, confirming that at least some were accessed from house interiors. It was associated with an unenclosed settlement of the later Iron Age and was probably built in the 1st century BC but with continued activity into the early centuries AD (Watkins and Barclay 1979). It not only confirms that open settlement continued through this period but also offers a chronological proxy for the region's unexcavated souterrains identified in association with isolated or clustered unenclosed roundhouses (Wainwright 1963; RCAHMS 1994: 63-68; Armit 1999). Similarly, another large example, excavated at Shanzie Farm, Alyth [[MPK?/CID?](#)], may well have been associated with settlement as early as the 3rd century BC but with activity as late as the 4th century AD (Coleman and Fraser 2002: 97).

More recently, developer-led work has contributed significantly through the discovery of two well-preserved examples, associated with a late prehistoric settlement at Loak Farm (MPK20126; Kirby 2019) and [Northleys](#) near Luncarty (MPK20138; Paton and Wilson 2019: 14-15). At Northleys, which has at least two phases of construction, including an extension in length and a possible timber lining or superstructure, the post-excavation analysis (Wilson and Clarke 2019) illustrates how advances in dating (eg Bayesian statistical analysis) and palaeoenvironmental analyses, (including soil micromorphology) are increasing the potential to make major improvements to the understanding of the site type, and therefore contributing to the national narrative of these enigmatic structures.

Cultivation Remains

Presumed later prehistoric cultivation remains, in the form of field systems, including lynchets, clearance cairns, cultivation scars and stone dykes, predominantly survive around the open settlement in the uplands of north-east Perth and Kinross (RCAHMS 1990). Due to the nature of their use, as monument types they can be extremely difficult to date. As with the hut circles, these apparently well-preserved remains suggest long histories of cultivation and animal grazing. However, they can be heavily truncated by later use and the extent to which they represent Iron Age activity is difficult to ascertain. For example, the various remains at Balnabroich [[MPK4032](#)], represent probable use spanning the Neolithic to the late 1st millennium AD, and 18th and 19th century activity (RCAHMS 1990: 35). Iron Age activity amid similar patterns of recurrent settlement west of the River Tay has been evidenced in Strathbraan (Cowley 1997), however it was probably ubiquitous across the region's inhabitable uplands.

The field systems and hut circles indicate prolonged settlement continuity at a landscape-wide level from the late prehistoric to the early historic period (Halliday 2007; Thoms and Halliday 2014). The dating of cultivation remains is highly problematic however as the landscapes in which the remains occur are multi-period and often with minimal, if any, stratigraphy. High resolution palaeo-environmental study of features that includes sediments may offer a route for future study.

Monumental Roundhouses and Brochs

In the northern periphery of the 'lowland group' for brochs (Macinnes 1985; Romankiewicz 2011), the uplands west of the River Tay contain a notable concentration of massive, stone-walled monumental roundhouses of c.12-18m internal diameter, with a variety of options for internal

construction, including some architectural features found on brochs, such as raised floors, and intra-mural cells and stairs. Six have been excavated: Borenich (MPK?/ID25880; Watson 1915), Litigan [MPK413/Canmore ID24945; Taylor 1990] and Queen's View [MPK# / Canmore ID25844; Taylor 1990], two at Aldclune [MPK3? / Canmore ID25822] (Hingley *et al* 1998), and the Black Spout, Pitlochry [MPK1607 / Canmore ID26267] (Strachan 2013). While Stewart (1969) and Taylor (1990) suggested the sites as an Early Medieval phenomenon, excavations at Aldclune confirm construction of one between the 1st and 2nd centuries BC and other between the 2nd and 3rd centuries AD, with two phases of occupation at each site (Hingley *et al.* 1998). The Black Spout was occupied between the late 3rd and late 2nd centuries BC. A number of the sites do appear to have seen some Early Medieval re-use, however (Strachan 2013). A related example has recently been identified within Moredun Top fort, Perth (MPK 5232/ ID?; Strachan *et al* forthcoming).

The discovery of a demolished broch within Castle Craig fort [MPK1399/CID?; Poller forthcoming], is significant, being the only confirmed example where its scale and construction suggest a full broch tower, with the narrow entrance and battered external wall face, associated with the class across Scotland. The structural viability of the building was afforded by the quality of the local stone as a building material, naturally breaking into even, flat slabs, (though elsewhere, the quality of stone may not always have been a consideration). Excavation suggests that the broch was burnt and levelled, with the debris containing a rich assemblage of 1st-2nd centuries AD artefacts, including fragments of glass vessels and bronze objects including a patera (James 2011; 2012) which offer insight into connections between the broch community and the Roman Empire (Poller forthcoming). Radiocarbon dating of the fort indicates several phases of activity over the periods 400 BC to AD 50, AD 50–400 and post AD 800 (Tessa Poller pers. comm.) with the later dates confirming the continued importance of the site and relate to the fort constructed over the levelled broch (James 2011; Poller forthcoming).

A broch suggested at Little Dunsinane [MPK/Canmore ID] Collace, (RCAHMS 1994: 51, 74), could equally take the form of the monumental roundhouses of the uplands, rather than a broch proper, and only excavation can determine the answer. Recently, a monumental roundhouse was recently discovered within [Moredun Top](#) [MPK5232] fort on Moncreiffe Hill, Perth (Strachan *et al* forthcoming; PKHT 2020: 28). Initial dating suggests use c. 400-100 BC, making it slightly earlier than the Black Spout and Aldclune sites (PKHT 2020: 32-33; Strachan *et al* forthcoming) while the interior produced a rich assemblage of artefacts and ecofacts providing extensive evidence for occupation and indicating a major burning and demolition event.

The nature of monuments also varies significantly across the region, notably with a concentration of monumental buildings found west of the Tay, being absent to the east of it.

A notable difference between the settlement evidence east and west of the Tay is that the concentration of monumental roundhouses, as well as duns and forts, found west of the Tay, are notably absent to the east. Around 60 massive, stone-walled roundhouses are known, previously called 'circular forts' (Watson 1913), 'ring-forts' (Stewart 1969) and 'homesteads' (Taylor 1990).

Duns

A related class, the dun, is defined as a building or settlement enclosure, generally circular or oval in plan and usually sited in an elevated location. Of the 19 recorded in Perth and Kinross, most carry a closer resemblance to monumental roundhouses than duns elsewhere in Scotland. They also occur in similar landscape contexts to the monumental roundhouses, but at slightly higher elevations. Some were observed in antiquity, and subsequent survey has either failed to locate these, or has been unable to further define on inspection. Three examples, being oval in plan, larger than the monumental roundhouses, and located at higher elevations include [Tulach Hill](#) [MPK1213], and [Creag Odhar](#) [MPK1211] both overlooking the River Garry at Blair Atholl, and [The Dun](#) [MPK984], overlooking Aberfeldy. Regionally a neglected class, work is required to better understand their form and function and refine distinctions between them and both the smaller monumental roundhouses and larger forts. It may be an unsatisfactory classification within the area, rather than expressing the issues around classification and their impact on research/understanding.

Crannogs

Current evidence suggests that artificial island dwellings were first built in the area in the Early Iron Age and of the 29 recorded examples, surviving either as partially or completely submerged, the densest distribution is around the shores of Loch Tay. In most cases, preservation of organic material is exceptional and structural timbers have been noted protruding from the stony mounds or on the loch bed around them, with further structural and artefactual material surviving within the mounds. Not all can be dated to the Iron Age but higher precision dating carried out in recent years has pinned crannog construction across Scotland, including Perth and Kinross, to no earlier than 600 cal BC (Cook *et al* forthcoming). While research has shown that the majority of Scotland's crannogs have Iron Age origins (Crone 2012) some do appear to be solely Medieval in date, such as Council Island [[Canmore Link](#)] in Loch Treig, Highland. As discussed in the Early Medieval chapter, this may be the case with some Perth and Kinross sites, such as Castle Island in Loch of Clunie [[MPK3937](#)] or the Loch Beanie Crannog [[MPK4235](#)] but equally, earlier Iron Age origins for these sites cannot be ruled out without closer investigation and dating.

Oakbank is the most extensively excavated underwater crannog in Scotland (Dixon 1981; 2004). Work there, which has been ongoing periodically since 1980, recovered numerous unparalleled wooden artefacts and exceptional evidence for Iron Age life. New work begun in 2017 as part of the *Living on Water* project has significantly improved the chronological security of the initial Iron Age emergence of crannogs (including at Oakbank), a period in the Early Iron Age described by Cavers as the crannog 'event horizon' in Scotland (2006). In Perth and Kinross, only Loch Tay has been intensively surveyed for crannogs, with minor survey and dating programmes in other lochs in the region (Dixon and Shelley 2006). There is therefore great potential for further discovery of sites. Given their unique preservation conditions it is difficult to understate the role crannogs can play in informing understanding of Iron Age life and economy .

In conclusion, the area includes diverse and complex variation of settlement forms and in the past analysis has largely been based on morphology. Technical advances may help to reveal potential explanations for diversity, through improved chronological resolution (eg the Living on Water project), exploring expressions of identity in architecture (eg Romankiewicz 2009, 2011, 2016;

Cavers *et al.* 2016; Barber 2017), resource availability impacting design (Strachan 2013) and the impact of later land use on survival (eg Historic Land Use Assessment). Ultimately, however, more excavation is required to better understand architectural diversity (Davies 2006: 150).

Enclosure

While enclosure is recognisable as early as the Neolithic (Harding *et al.* 2006; [intra ref](#)), the idea of constructing enclosed places which divide both the physical and mental landscape is widely recognised as a key feature of the Iron Age (Haselgrove 2007; Romankiewicz *et al.* 2019: 1). Enclosure has wide associations, from fortification, and the demarcation of domestic space, to the classification of field systems, linear banks, pit groups and alignments across multiple chronological periods.

Enclosed Settlement

Primarily discovered and recorded as cropmarks, over 60 rectilinear and curvilinear enclosures, generally 25-100 m across in size, are known in Perth and Kinross. Around a third of these have been interpreted as being later prehistoric or Iron Age settlements largely on their morphology, while others lack any further definition beyond their basic identification. Apart from the circular enclosure east of [Cuil-an-Daraich](#) [MPK1672] near Logierait, they are distributed across the region's lowland straths and are often juxtaposed with other settlement evidence such as souterrains.

At [Peterhead](#) (MPK1287; Dingwall 2011), Auchterarder, a sub-circular enclosure, excavated in advance of expansion of the A9 Loaninghead Junction, was found to contain two well preserved souterrains and two long cists, with possible roundhouses suggested in the immediate environs through geophysical survey (Gondek 2008). With a lack of radiocarbon dating, the chronology of the site remains unclear, and while Early Medieval dates have been attributed to the cist burials, as discussed (Winlow 2010; Mitchell *et al.* 2020), an Iron Age origin should not be ruled out without radiocarbon dating or diagnostic grave goods.

An array of techniques was also successfully applied to the cropmark circular enclosure at [Millhaugh](#) (MPK2022; Wright 2017), Dunning, with fieldwalking, geophysical survey and test pitting followed by open area excavation which revealed stake defined structures within a palisaded enclosure (Wright 2017). Also lacking radiocarbon dating, an Iron Age date has been tentatively attributed through comparanda in advance of full publication (Wright and Brophy forthcoming).

A dedicated programme of cropmark mapping and research at multiple sites is required to disaggregate this broad class of monument and ascertain the nature and date of settlement represented. It is possible some may be assigned to periods other than the Iron Age. In addition to excavation, research should use the full potential of more traditional non-invasive techniques such as geophysical survey and field-walking, which have already proved valuable, and newer techniques such as multispectral imagery and LiDAR which, when available, will most likely assist with better identification of features.

Palisaded Enclosures

Most of these enclosures, defined by one or more rows of closely-spaced vertical timbers embedded in a narrow foundation trench, are generally known as cropmarks and are generally circular or oval (RCAHMS 1994: 50) and between 20-75 m in diameter, occasionally with internal features such as roundhouses and souterrains. While very few in the region have been excavated, and fewer accurately dated, they have been suggested as being broadly placed in the latter half of the first millennium BC (Davies 2006: 203).

The recent publication of excavations near Blackford has made a significant contribution to improving understanding this form of enclosure, as well as the region's transition from Bronze Age to Iron Age. The elliptical palisaded enclosure at [Kirkton Farm \[MPK#\]](#), dated to 742–397 BC, provides some of the earliest dates for enclosed settlement in Perth and Kinross (O'Connell and Anderson 2021: 94-106). A pair of large roundhouses and associated four-post structures were uncovered within the enclosure, which occupies a prominent knoll with commanding views across a landscape that had seen open settlement from the Middle Bronze Age. This location, and the intent for display, may be comparable with other Iron Age monuments, such as the forts, monumental roundhouses, and crannogs, and may represent the beginning of Early Iron Age communities responding to factors that continued to drive increasingly monumental forms of construction through the Iron Age. Along with [Brookfield House \[MPK#\]](#), the Blackford sites suggest a degree of lifestyle continuity from small-scale communal living in the Bronze Age (*ibid.*: 131), and a rich mixed subsistence economy is evidenced from large assemblages of cereal grain and animal-worn pits with faeces-rich bedding indicating that livestock were stalled within roundhouses (*ibid.*:109-111). Excavations at the example at Upper Gothens, Blairgowrie (Canmore 28912), however, suggested use around AD 885-1024 and to AD 1040-1259 (Barclay 2001) and indicates extended use of the form.

Four of the five examples confidently attributed to the Iron Age are located in lowland straths with either souterrains or roundhouses present. Owing to the limited level of investigation, the nature and function of the surrounding palisade, and the sites as a whole, remain difficult to ascertain, although defence and a visual projection of status or 'wealth' within small-scale communities are prevalent themes (O'Connell and Anderson 2021: 119). Palisaded enclosures are usually of only one or two roundhouses contained within the palisade perimeter. Future research would benefit from pre-excavation non-invasive surveys to help characterise and identify targets for excavation.

Excavation at [Methven Wood \(MPK2065\)](#) in 1979, following discovery in advance of quarrying, revealed a heavily truncated palisade trench with an entrance (Sherriff 1987), however poor preservation of botanical remains prevented radiocarbon dating, and so the site chronology remains unclear. There is a need for better chronological resolution and in addition to being a priority where preservation allows, it could be addressed by reviewing existing assemblages, such as Methven Wood, where 14C dating might now be possible with AMS measurements requiring less material.

Forts

Often referred to as hillforts (a [monument thesaurus](#) non-preferred term) where they occupy elevated positions, forts are arguably the most well-known and recognisable Iron Age site type and have attracted considerable attention both in the past and over recent decades. The [Atlas of Hillforts of Britain and Ireland](#) records 76 sites within the area that fulfil their criteria whereby sites: have an advantageous topographic position enhancing their visibility to and from the surrounding landscape; include substantial uni- or multivallate enclosing works; and enclose an interior area above 0.2 ha (Halliday 2019: 37-39). The majority survive as substantial upstanding remains and are assumed to date to the Iron Age, however some have been confirmed as Early Medieval, while other sites show evidence of Neolithic and Bronze Age activity. Approximately 80% occur below the Highland Boundary Fault and are most numerous along the hills around the major river valleys, especially the Tay and Earn, with notable concentrations along the Ochil Hills overlooking Strathearn, around the Tay estuary, and along the Sidlaw Hills. The 20% of forts that do occur in the Highland zone are predominantly found in Upper Strath Tay. David Christison pioneered the region's fort studies through surveys, excavation and synthesis in the 1890's and 1900's and his work remains the basis for any new field assessment. It is apt that his detailed recording of the timber-laced rampart at [Castle Law](#), Abernethy (MPK3069; Christison and Anderson 1899) and recognition of similarities with the example which had been recently uncovered at [Castle Law](#), Forgandenny (MPK1905; Bell 1893; Christison 1900b), has become the focus of a reassessment of this group recently.

The key modern excavation, in 1987, at [North Mains](#) (MPK1353; Barclay and Tolan-Smith 1990), Strathallan, revealed post-holes along the ditch perimeters, interpreted as fences, and an internal timber roundhouse with radiocarbon dating suggesting occupation between 390-110 BC, and an earlier date from an inner ditch (1740–1320 BC) suggesting Bronze Age activity on the hill.

The SERF project (2007-15) included small-scale excavation at over 10 forts along lower Strathearn and the northern slopes of the Ochil Hills. Both low and high elevation sites were targeted, from those enclosing small knolls near the Strath floor (such as Hilton House [MPK]; Law of Dumbuils [MPK]; Jacksairs Wood [MPK]; Green of Invermay [MPK]; [Dun Knock](#) [MPK2004]; Kay Craig [MPK]) to prominent foothills (Castle Craig [MPK]), and hill summits (Ben Effrey [MPK]; [Rossie Law](#) (MPK1397); Castle Law, Forgandenny [MPK1905]; [Ogle Hill](#) [MPK1419]). Full publication of this extensive body of work is imminent (Poller forthcoming), however, preliminary results indicate that most were constructed between the Early and Middle Iron Ages ([Figure XX](#)) and were often adapted or reused. Significantly, Rossie Law and Ogle Hill produced Late Bronze Age dates (Poller pers comm), with the recovery, from a secure context, of a rare, socketed Iron Age axe head of 8-4th century BC date at Rossie Law. Previously, in 1923, amidst the scree of the north slope of the Law a Bronze age battle axe was found (Callander 1926, 257-58; Callander 1930, 146-47). Dun Knock, Dunning, produced a complete Carinated Bowl and stone axe, evidencing Neolithic activity, along with Iron Age impressed ware pottery, and a crucible and waste material from bronze casting (*ibid.*; Poller with Campbell 2015). Re-excavation at Castle Law, Forgandenny (2013-14) revealed a complex sequence of three major constructions with, at its centre and on the summit, an elongated, sub-rectangular fort with massive timber-laced ramparts, over 5m thick, and without an entrance, set within two larger oval forts (Poller 2013; Poller and Maclver 2014; Poller forthcoming; (Atlas REF).

The Tay Landscape Partnership's 'Hillforts of the Tay' project (2014-17) saw excavation at Moncreiffe fort [MPK3203] and Moredun Top [MPK5232] on Moncreiffe Hill, and Castle Law, Abernethy [MPK3069] around the confluence of the Rivers Tay and Earn (Strachan *et al.* forthcoming). Three phases of activity at Moncreiffe fort were evidenced, one Neolithic (3365-3104 BC), and two Iron Age (c. 748-403 BC and c. 410-211 BC). As at Dun Knock, the nature of Neolithic activity remains unclear, and while fort construction appears to have begun in the Early Iron Age and continued into the Late Iron Age (Strachan *et al.* forthcoming), it would appear to be part of a prolonged discontinuous activity across prehistory. Moredun Top, the larger site on Moncreiffe Hill, was found to comprise a series of three forts, an annexe and monumental roundhouse. Provisional radiocarbon dates, suggesting the forts were active between c. 534–62 BC, will be refined in due course. Notably the 5m broad ramparts of the oval summit fort, previously mooted as the citadel of an Early Medieval 'nuclear' fort, were confirmed as Iron Age and of a rarer, more complex form of timber-framing (Ian Ralston pers comm.) than at Castle Law, Forgandenny, or Castle Law, Abernethy. A small round house produced evidence of a range of crafts including small-scale ironworking, decorative stone jewellery, and with a rare decorative bronze bird-headed pin interpreted as a deliberate deposition (PKHT 2020: 40-41; Strachan *et al.* forthcoming). In addition to the monumental roundhouse, discussed below, a palisade around a large cistern was dated to the 4th-1st centuries BC, confirming a hilltop water supply for the fort's occupation (PKHT 2020: 24-28; Strachan *et al.* forthcoming).

The timber-laced ramparts uncovered at the very small, oblong fort of Castle Law, Abernethy (Christison and Anderson 1899), led to the fort becoming the type-site for Childe's Abernethy tradition, the especially northern British variant of the *murus gallicus* (Ralston 2006: 56). Re-excavation in 2017 aimed to assess erosion over the intervening 120-year period and was accompanied by a re-assessment of the early finds assemblage (Christison and Anderson 1899; Strachan *et al.* forthcoming). The work uncovered the distinctive timber-laced ramparts, notable for their scale (c.5m wide) relative to the size of the oblong enclosed space (0.06ha) and revealed evidence of an internal building and bronze-working, adding to the extensive assemblage of high status pre-Roman iron objects recovered by Christison and Anderson (Cook 2018; PKHT 2020: 46-53). While radiocarbon dating proved problematic, cattle bone recovered from a cistern by Christison and Anderson, and since stored in the National Museum of Scotland, was dated to 367–197 BC (*ibid.*: 50) which, together with an assessment of the combined artefact assemblages, suggest that activity at the fort can be more closely dated to the middle of the Iron Age.

The excavations of these three forts will contribute significantly to understanding of hilltop forts in the area, especially when considered alongside the work of the SERF project (Strachan *et al.* forthcoming; Poller forthcoming). It is apt that over a century after the excavations by Bell and Christison, that this group is again the focus of study of this architectural trend for visually impressive, massive-walled enclosures on the summits of prominent, intervisible hills in this area.

In contrast, the forts south of the Ochil Hills, such as Dumglow (MPK5647) and Dummiefarine (MPK5646) in the Cleish Hills and on Benarty Hill (MPK5637), overlooking Loch Leven, have received the least attention to date, however may be best considered in the context of the neighbouring forts on the Lomond Hills in Fife.

There has also been little work carried out on the forts in the uplands, found in upper Strath Tay, such as Castle Dow (MPK1691), lower Strath Tummel, such as An Dun (MPK1635) and along the Highland Fault line, such as Dun Mor (MPK1560). Two of the three that have been excavated, Dundurn, St Fillans [MPK346; Alcock et al. 1989] and King's Seat, Dunkeld [MPK5444; Strachan and McIver forthcoming] have returned Early Medieval dates while the third, Torr Hill, Aberfeldy [MPK966; Stewart 1962] failed to produce datable material. Another possible Early Medieval candidate is Caisteal Mac Tuathal (MPK382) on Drummond Hill, Kenmore, overlooking the confluence of the River Lyon and River Tay and Loch Tay. As a group however, lack of excavation leaves their date and relationship to lowland forts, as well as other settlement forms in the area, largely unknown.

Finally, recent development-led excavation was carried out at the ploughed-out multivallate oval fort at [Broxy Kennels](#) (MPK2051; Pettitt and Hession 2019), north of Perth, as part of evaluation work ahead of the Cross Tay Link Road. While radiocarbon dating is currently lacking for the fort, a souterrain has produced a small assemblage of charred-grain and pottery which would suggest low level domestic cereal processing took place on this low knoll overlooking the River Tay between the Bronze and Iron Ages.

Funerary Monuments

The evidence for Iron Age burial is extremely limited and an ongoing research challenge for both identifying burial sites and characterising funerary practices. The vast majority of potential sites are unexcavated cists or barrows recorded as cropmarks. One of the few burials excavated, in 1970, came from an oval pit at [Castle Menzies Home Farm](#) [MPK 1026] near Weem and while not radiocarbon dated, a probable Iron Age date was attributed based on pottery and quern stones recovered from associated pits (Clark 1970).

Through comparison with examples from Stirling and Angus, it has been suggested the paucity of confirmed sites could in part result from misidentification, where Bronze Age dates are assumed for unexcavated round barrows and oval cists, and Early Medieval dates assumed for square barrows or burials lacking grave goods (Davies 2006: 342-349). The complexity of practice is further illustrated from further afield in Scotland, where Iron Age burials elect to reuse older prehistoric sites, as at Waulkmill, Aberdeenshire (Clarke *et al.* 2016). Given the lack of an identifiable Iron Age burial tradition for Scotland and the similarities in late prehistoric to early historic funerary monument forms, it is evident that the region's sizeable record of undated funerary remains from within this time span cannot be confidently considered Iron Age or otherwise without further investigation.

Significantly, human remains from the early excavation of the Women's Knowe [MPK] round barrow from Inchtuthil near Spittalfield (Abercromby 1902), were recently radiocarbon dated and provide valuable insight into otherwise elusive Iron Age funerary practices in the area (Winlow 2010). An Iron Age date for the extended inhumation, preserved beneath a stepped circular earthen mound with a surrounding ditch, through a radiocarbon date of 20 BC– AD 130, potentially contemporary with Roman activity (Winlow 2010: 51). Assessing the evidence, Winlow suggests that while burial practice may be difficult to define without further radiocarbon dating, there

appears to be a broad pattern in burial practice, spanning generations, based on extended inhumation with variations in construction, monumentality and associated material culture, for example in how the cists were constructed, whether a cairn or barrow was raised, and in the presence or absence of grave goods (Winlow 2010: 55; Mitchell *et al.* 2020).

Roman Military Structures

The roads, forts, fortlets and towers that span the region from Strathallan to Strathmore via Strathearn rank highly amongst the best-preserved networks of interconnected Roman military sites in Europe. The function of the region's installations in their entirety remains under debate. Most prominent amongst academic discourse has been the interpretation of lowland Flavian activity centred around the Gask Ridge representing an artificial land frontier system which could possibly be the first in Britannia and an early example in the wider Roman Empire (Woolliscroft and Hoffmann 2006: 225-234). In this scenario the utilisation of prominent terrain and the combination of towers, fortlets and forts in close proximity to an arterial road has been compared with configurations seen along the German *Limes* as well as on both Hadrian's and the Antonine Wall. The Antonine reuse of forts and limited evidence for smaller installations is more in keeping with the notion of a supervised supply line which represents the principle alternative interpretation for the Flavian activity, first presented by Pitts and St Joseph (1985) and more recently by Dobat (2009) through his comparison with the Taunus-Wetterau *Limes*. The situation is further complicated by the discovery of a Roman tower and adjoining road at [Woodhead](#) [MPK#] near Wolfhill which suggests that the road and line of towers may have continued on the eastern side of the River Tay which is beyond the northern terminus of the envisaged 'Gask Frontier Line', previously viewed as ending on the western shore at Bertha (Woolliscroft and Hoffmann 2010). The ongoing discourse and general interpretive uncertainty that remains around how the Roman military operated within the region is an important context to the understanding of the known Roman monument forms as overarching theories and assumptions have and continue to apply a high degree of influence on how individual sites and types are both studied and interpreted.

Temporary Camps

As a major corridor through which the Roman army manoeuvred over multiple campaigns, Perth and Kinross has an impressive record of temporary camps (c.10% of Scotland's known examples). The majority have been interpreted as marching camps and as such are a valuable resource documenting the movement of Roman armies on campaign. Others, such as two by the legionary fortress at [Inchtuthil](#) [MPK5481] are more likely to reflect temporary accommodation for those involved in the construction of the more permanent fortifications (Jones 2011: 226-228). In all cases the enclosures feature a bank and ditch with rounded corners and entrances some of which still survive as upstanding monuments (such as north of Ardoch). In the majority of cases, however, owing to their predominant position in arable land in the lowland straths, the camps have been recorded only as cropmarks. The form of the entrance breaks (or gate types) and the size of the enclosed area are the main morphological variables between the camps. Distinctive features such as Stracathro-type gates have been used to group camps into sequences or series' and postulate dates of construction, however, Jones' extensive work assessing camps across Scotland cautions against using morphology without corroborating dating evidence (Jones 2009: 25; 2011). To date, excavation of camps has been minimal and small scale although more examples are receiving investigation as part of developer-funded work (eg [Longforgan](#) [MPK4799]). In some

cases where excavation has been undertaken, such as at [Dalginross](#) [MPK5314] near Comrie, multiple phases of activity have been identified indicating that the chronology, use and re-use of temporary camps is complicated. The dating of temporary or marching camps (where artefacts have not been uncovered) tends to come from typological analysis of sites (see for example St Joseph 1969:113-119, Hanson & Maxwell 1986, Jones 2011:99-108), but the established sequences are complex and at times contradictory.

Roads and Transportation

The known Roman road network in the area continues north from Stirlingshire and, with the exception of an enigmatic possible section at Reddie near Forfar, appears to end at the [Woodhead](#) timber tower above Cargill where sections of the well-engineered road have been excavated (Woolliscroft and Hoffmann 2010). It is generally assumed that this forms part of one principal Roman road that essentially ran from Camelon / Watling Lodge on the Antonine Wall, through the Stirling local authority area towards Doune or Dunblane before entering Perth and Kinross and heading north to Ardoch. Crossing the River Earn around Innerpeffray the route then takes a line along the Gask Ridge before dropping down to Bertha fort (just north of Perth). After a crossing of the River Tay the route and extent remained vague until the discovery and excavation at Woodhead. It is predicted that the road would have continued up the east side of the River Tay towards Inchtuthil fortress before continuing towards Angus and the fort at Cardean (*ibid.*: 158-164). In the main section the Roman road is well engineered and contains amongst others a deep road cutting at [Innerpeffray](#) [MPK15365] allowing the Roman road to reach the Earn at Strageath (Woolliscroft 2004). Archaeological work to identify and confirm sections of the road has been principally carried out by Crawford (1949) as well as Woolliscroft and Hoffmann (eg 2006) and excavations at [Innerpeffray West](#) [MPK1367] temporary camp suggested that the engineered road post-dates the marching camp and is thus likely to date to the 2nd century AD, reusing a 1st century AD track (Woolliscroft 2007). Exact dating of the road surfaces is complicated by the continued use of long stretches of the road into modern times. Historical accounts that record discoveries of Roman roads are frequently fragmented with Roman attribution suggested rather than proven. For example, Gordon (1726) refers to “The great Military Way...” noting that it passes by Innerpeffray (Frere and Wilkes 1989:3), but assumes it is Roman purely because it is in the vicinity of the fort at Strageath. Using historical accounts that document post-medieval to modern road and bridge building offers potential for helping to address this issue and could be employed to disentangle genuine ‘Roman roads’ from non-Roman roads as well as exploring ‘old roads’ for potential Roman origins.

Beyond the main section of road, aerial reconnaissance of the Flavian forts has identified short ‘stump roads’ leaving the gates but so far little incontrovertible evidence exists to suggest that these extended much further. In view of the frequency of these stump roads, questions remain as to how permanent or extensive road construction was. It is also unclear whether more routes existed and given the spread of fortifications which would have required supplies, more roads or at least routeways remain a possibility that requires further investigation.

With roads providing an essential corridor for the movement of military units, equipment and supplies between installations and beyond, points where the roads crossed the region’s many rivers remain an elusive yet key element requiring investigation. William Roy’s map of [‘the military](#)

[*antiquities of the Romans in north Britain*](#) published in 1793 indicates a bridge or crossing over the River Tay upstream of Derders Ford near the fort at Bertha (Roy 1793: Plate XII). Understanding this crossing would significantly assist with understanding how Roman activity west of the river linked with that to the east and to sites further east in Angus. Similarly, there are suggestions from AD 208 and 209 dated coins for a bridge which may relate to the strategic riverside fortress at Carpow and a possible bridgehead camp identified by aerial survey on the north bank near St Madoes (Reed 1976). From bridging points to consideration of the rivers and estuary as transportation routes in their own right, it is noteworthy that Carpow, Bertha, Strageath, Cargill and Inchtuthil are all positioned along rivers which were navigable in the pre-Modern period with flat bottomed craft. This raises the potential that the rivers were employed to supply major installations. The rock bars in the Tay at Stanley (now a weir) and at Campsie Linn [MPK/Canmore ID] should be considered in this discourse as they would have limited river use to downstream traffic only in these sections.

Small Forts and Fortlets

Two groups of Fortlets (Glenbank, Kaims Castle (Christison 1901: 18ff) and Midgate (Christison 1900b: 32ff; Woolliscroft 1993: 302ff) and two slightly larger installations (Inverquharity and Cargill) have been identified. The first group consists of a small bank and ditch enclosure, with no evidence of internal structures beyond a gravelled surface (Woolliscroft and Hoffmann 2006: 87-88). The small forts at Cargill (*ibid.*: 150) and Inverquharity (*ibid.*: 165-167) are somewhat larger but have only been investigated from the air (Maxwell and Wilson 1987: 15) and through geophysical survey.

Auxiliary Forts

The region's auxiliary forts can be roughly divided by geographical location and association. In the lowlands, Ardoch (Woolliscroft and Hoffmann 2006: 90-97 with further references), Strageath (*ibid.*: 111-114) and Bertha (*ibid.*: 144-148) are situated to the west of the River Tay and sit along the route of the main Roman road passing through the region via the Gask Ridge (often termed the Gask Line). East of the River Tay is Cargill (*ibid.*: 150-155). All of these lowland forts along the line of the road have produced evidence of both Flavian and Antonine phases of activity.

Dalginross near Comrie (*ibid.*: 49-52) and Fendoch near Crieff (*ibid.*: 53-61) are situated at the mouths of upland glens along the highland boundary fault and as a result have been referred to in the past as 'glen-blockers' and now more frequently as the 'highland line forts'. Like the lowland forts, fieldwalking at Dalginross has produced both Flavian and Antonine evidence whereas only Flavian material is known from Fendoch. Using the example of later, Cromwellian and Hanoverian, invasion forces, Southern (1997) has argued that the highland line forts served as springboards for further campaigns using the local garrison and formed part of a wider plan to absorb the whole of Scotland into the Empire which was never fully realised when the army withdrew. Woolliscroft and Hoffmann (2006) have also considered the highland line forts in conjunction with the lowland forts, interpreting them as part of a single network designed to control both the land in the straths, the entrances into, and the exits from the Highland glens (*ibid.*: 231-232). In this scenario the highland line forts are seen as advanced positions serving as early warning sites although few have so far shown evidence for a connection to the signalling system spanning the Gask Ridge itself. While the springboard theories are convincing, it has been observed (Birgitta Hoffmann pers. comm.)

that this is realistically only possible with the legionary fortress at Inchtuthil due to its position at the end of the main valleys to the north.

All of the auxiliary forts have received some degree of excavation as well as geophysical surveys and fieldwalking in the past with Strageath (Frere and Wilkes 1989) and Fendoch (Richmond and McIntyre 1935; 1939) representing the most extensively excavated. They can be characterised by multiple ditches and annexes, with many forts occupying tactically strong positions that control river crossings and the approaches to upland glens. With the exception of Fendoch, the forts are also regularly associated with temporary camps which often date from several periods, overlay each other or forming clusters. The varied extramural elements present at each of the auxiliary forts is an important feature meriting further consideration in terms of what types of activity (settlement/manufacturing/temporary accommodation for advancing military units) and the types of people (military/civilian, Roman/non-Roman) they represent. Geophysical survey, fieldwalking and excavations have provided evidence of roundhouses and a souterrain in close juxtaposition with Cargill whereas at Bertha and Strageath there is suggestion of extramural road systems, Roman material and structures. Excavated in the 1980's (Frere and Wilkes 1989), Strageath is also particularly noteworthy for its unusual pair of granary buildings which are approximately twice as large as other auxiliary forts in the region and located opposite each other next to the western gate (see also Woolliscroft and Hoffman 2006: 111-114). Comparison with other fort granaries elsewhere in the Empire, such as Hofheim in Germany on the Taunus-Wetterau *Limes*, has revealed the Strageath granaries to be of a larger storage capacity than necessary for the fort garrison which in turn has led to the interpretation that the fort fulfilled a strategic supply function for forward operating combat units (Dobat 2009: 41).

With an impressive array of extant banks and ditches, Ardoch has attracted attention since Roy's survey (1793) and has long been recognised as one of the best-preserved timber forts in Scotland, one of the best survivals of Roman earthwork defences in Britain and indeed the wider Roman Empire (Keppie 2004: 162; Maxwell 1989: 114). Good knowledge of the fort layout and phasing exists from the early excavations, geophysical surveys and subsequent interpretations. Maxwell (1989: 165) describes Christison's (1898) excavations as pioneering and were one of the first instances where timber structures were identified through excavation in Scotland. Several attempts at decoding the fort's complex phasing have been made (MacDonald 1918; Crawford 1949; Breeze 1983) with a general consensus arriving at a Flavian fort followed by three Antonine period remodellings and occupations. Incredibly rare for Roman forts in Scotland is the associated tombstone which offers a unique insight and detail into the first cohort of Spaniards who garrisoned the fort most likely during the Flavian phase of activity (Woolliscroft and Hoffman 2006: 94-95; Keppie 1998, 112-113). Ardoch occupies a strategic position in the landscape and its importance over time and multiple campaign seasons is evidenced by no fewer than four camps, the largest being 130 acres (54 ha), in addition to an annexe, recorded to the north of the fort (Woolliscroft and Hoffman 2006: 90-96; Jones 2011).

Inchtuthil Legionary Fortress and Landscape

Inchtuthil is the only legionary fortress in Scotland. It was abandoned before completion and represents a rare example from across the Roman Empire of a legionary fortress unencumbered by later settlement. As such, it provides a unique insight into how the Roman military operated,

particularly when campaigning through new territories and consolidating gains through the military installations. Its location, in the far north of the province, is an indicator of the Roman ambition for the province of *Britannia*. It can provide a comparator with other frontier fortresses, including those which did further develop into regional capitals, expanding beyond the military. The Inchtuthil peninsula has been extensively surveyed through geophysics and the fortress itself has been partially excavated (Abercromby 1902; Pitts and St Joseph 1985). In addition to the fortress itself aerial survey has revealed extensive Roman activity outside the fortress, ranging from temporary camps to annexes, a Roman bathhouse as well as scatters of Roman artefacts suggests the presence of an extramural settlement. Inchtuthil is also a rich non-Roman cultural landscape with the barrow at Women's Knowe producing a contemporary 1st century AD date evidencing continued use during and after the Roman presence (see Winlow 2010). There is also a multivallate promontory fort [MPK/Canmore ID] at the Western end of the plateau, while the current Delvine house [MPK/Canmore ID] occupied the site of a medieval and early modern castle.

To the north of the fortress interpretation of aerial photographs suggests the presence of a metalled road, which leads to the upland road to upper Strathtay. The Roman remains have been truncated at several points by riverine erosion (Woolliscroft & Hoffmann 2006: 62-71). On the hill of Gourdie to the north of the fortress several stone quarries from different periods have been identified. While some can be assigned to the medieval and modern periods, others have been claimed as Roman without dating evidence. On this upper plateau of the hill is the Roman site of the Steedstalls, deep U-shaped sunken features of unknown function. Aerial reconnaissance has identified a temporary camp enclosing the site, as well as a number of further possible "stalls", no longer open.

Timber Towers

To date, 16 Roman towers have been identified along the route of the Roman road between Greenloaning [MPK/Canmore ID] (in the south-west) to Huntingtower [MPK/Canmore ID] (near Perth in the north-east). In addition, two towers have also been identified on the eastern side of the River Tay near Cargill at Woodhead [MPK/Canmore ID] and Black Hill, Meikleour [MPK/Canmore ID].

Excavations of towers began with Christison around 1900, with further work in the mid 20th century and between 1994 and 2012. Recent excavations of some of the towers suggest that they may have had their structural posts replaced during the lifetime of the site suggesting multiple phases or seasons of use although the duration of these phases and the time lapse between them remains unclear. The towers show considerable architectural variation in terms of size and construction which extends to the number of ditches surrounding them. Although proving difficult to corroborate, the towers are generally understood to be contemporary with the Flavian forts and fortlets identified along the Gask Ridge, at Cargill and Inchtuthil and considered to form a continuous visual signalling system along the road (Woolliscroft and Hoffmann 2006: 86-143, 155-7, 235-237; 2010; Lindsay 2006).

Material Culture

The number of excavated and published Iron Age sites in the area is limited and the material culture dataset relatively small. The limited assemblages, however, are diverse and a vital component of excavated sites, whether cropmark, upland fort or waterlogged crannog, offering a solid basis for discussion of aspects of life which complement larger, structural remains. Indeed, when analysing material culture under the key research themes, it is evident that, although small in number, the diverse assemblage contributes considerably to our understanding of the Iron Age.

The Iron Age material culture is discussed around 5 key themes: Everyday Life, Craftworking, Conflict, Jewellery and Decorative Metalwork, and Belief and Ritual. It is important to note that the recent, as yet unpublished sites, for example, the forts of Strathearn (Poller forthcoming) and the Tay estuary (Strachan *et al* forthcoming) and ongoing work on the Transport Scotland A9 corridor will add greatly to what follows.

Everyday Life: Domestic Activities

Pottery

Compared to much of mainland Scotland during this period, pottery assemblages from Perth and Kinross tend to be generally small, even when associated with good evidence for domestic structural remains. For example, the post-built roundhouse and souterrain at Newmill East (Watkins and Barclay 1981), produced only a single sherd, while both substantial roundhouses at Aldclune produced only a small assemblage (Hingley *et al.* 1998) and the Black Spout monumental roundhouse produced none (Strachan 2013, 32). Some larger assemblages have been recovered from both lowland and upland Iron Age (or purportedly Iron Age) settlements, for example at Blackford (O'Connell and Anderson 2021), Dalrulzion (Thorneycroft 1933), Dalnaglar (Stewart 1964), Carn Dubh, Moulin, and Craighead, Alyth (Rideout 1996), and Oakbank crannog, Loch Tay (Dixon forthcoming). In this respect, Perth and Kinross benefits from a wide range of geographical contexts from which assemblages can be recovered. Small assemblages of Roman pottery (usually the occasional sherd) have also been recorded on later Iron Age sites (discussed below).

Iron Age pottery in Perth and Kinross, and across mainland Scotland, generally remains poorly understood and has for many years been referred to as Flat-rimmed Ware (Coles and Taylor 1970), a rather ill-defined ware present throughout during the 2nd-1st millennia BC. The limited nature of assemblages from settlement in the area has prevented regional synthesis and detailed typological work, however, it is probable that new finds, considered alongside re-analysis of older assemblages, will offer broader datasets which afford regional and chronological distinctions.

[image: Iron Age pottery from Perth and Kinross]

Stone

Stone continued to be an important raw material for domestic objects, from single-use tools to valued objects such as spindle whorls and quern stones; the latter often showing evidence of extensive use, such as re-dressing, replacement handle sockets, or as votive deposits, as at the Black Spout (Strachan 2013: 45, 105-106; Case Study *The Black Spout*) and Aldclune (Hingley *et al* 1997: 452). Assemblages containing a breadth of typical domestic stone artefacts, such as

querns, hammerstones, pounders, whetstones, lamps etc, are found on most Iron Age settlement sites across Perth and Kinross (Case Studies *Moredun Top Hillfort*, *Castle Craig Broch*; *The Black Spout*).

[image: in situ quern/s at The Black Spout]

[image: spindle whorls]

Hollowed stone artefacts, frequently found in domestic contexts, are often interpreted as mortars for food production or the preparation of materials for crafts, or as lamps where there is evidence of burning or sooting. Lamps are made from a variety of rock types, usually sourced locally. Scientific analysis of residues can be highly illuminating, for example, the stone lamps from Clachtoll Broch, Sutherland were found to contain beeswax (Cavers forthcoming).

[image: stone lamps from Castle Craig broch/ Moredun Top/ Castle Law]

Steatite is a soft workable stone with thermal properties, it was often carved into lamps, cups and spindle whorls. Several examples are known from Perth and Kinross, with vessels from Taymouth Castle (NMS X.AQ 19) and Drummond Hill, both Kenmore; and elaborate decorated lamps from Farleyer Moor, Aberfeldy (Close-Brooks 1972); Edradynate, Aberfeldy (NMS X.AQ 125); and Needless, Perthshire (NMS X.AQ 63). Recorded as stray finds, however these objects, with several others classed as undiagnostic, frustratingly fall into a wide chronological bracket 2nd century BC – 4th century AD.

[image: steatite lamps from Perthshire (scraper image)]

As there are few known steatite sources in Scotland (Hunter 2015c: 229, Illus 13.2), finds from securely dated contexts will also enrich our understanding of trade during the period. Preliminary work on the limited range of central Scottish finds has shown them to originate from western sources (ibid., 230).

The Perth and Kinross coarse stone dataset, that tends to dominate settlement assemblages, has been enriched by recent excavations at, for example, Moncreiffe Hill (Strachan *et al* forthcoming) and Castle Craig broch (Poller forthcoming; Sherriff 1984 for an earlier find of a stone lamp). Given their continued use from the later prehistoric into the Early Medieval period, many stone objects are chronologically un-diagnostic and display little or no regionality. Attributing provenance is also problematic given both the glacial movement of a wide range of rock types over most of Scotland (Hunter 2015c: 229), and their portability as artefacts. Examples from well-dated, carefully excavated sites will be key for identifying regional trends and offer much-needed insight into the nature and organisation of craft within Iron Age societies.

Bone

Bone was an abundant raw material used for a variety of decorative and practical objects (often both) including combs, pins and needles, textile-working tools, dress fasteners and dice. It is assumed, due to poor survival of bone in acidic soils and waters, such as Oakbank crannog (Dixon 1981: 19) that the archaeological record does not fully reflect the volume of objects which were in

circulation. Where conditions allowed, particularly across Atlantic Scotland, Iron Age bone artefacts and evidence for their production can be extensive (Mackie 2007a; 2007b).

[image: bone weaving comb from Castle Craig broch]

Iron

Iron is usually heavily corroded and fragmented when found and unless discovered in archaeological contexts can be chronologically undiagnostic. Iron tools are common finds on settlement sites, and several have been recovered from well-dated contexts, for example, blade fragments from Castle Law, Abernethy (PKHT 2020), and an knife or dagger from Oakbank crannog (Dixon forthcoming) and at Castle Craig broch which included a sickle (Poller forthcoming; Case Study *Castle Craig Broch*). Proxy evidence for widespread use of iron edged tools is common in the form of whetstones, while tool marks occur on timbers from Oakbank crannog (Case Study *Oakbank Crannog*).

Bronze

Cauldrons

One of the most diagnostic finds of indigenous Iron Age material culture is the (generally bronze) cauldron, still a rare find as a complete object. A development of vessel types of the Bronze Age, across Britain it can be identified through various sizes (including miniature) of cauldron and cauldron elements including rim fragments, handles and suspension chains. For general discussions of the Scottish and British evidence see Fox 1946; Gerloff 1986; Hawkes 1951; Hawkes and Smith 1957; Joy 2014 and Piggott 1953. They are linked to Iron Age cultures across Europe as graphically demonstrated by the Gundestrup cauldron, a rare example in silver, ritually deposited in a Danish bog having journeyed from Thrace, where it was made (Bergquist and Taylor 1987; Hunter et al. 2015, 262-71; Kaul 2005; Kaul *et al.*1991; Olmstead 1979; Salo 2018). It has a complex biography, which can also be said of many of the indigenous examples, which boast a catalogue of damage, loss and repair and are frequently found in wet deposits implying ritual deposition. This is true of the key example from Perthshire, found in a bog on the Abercairney estate, Crieff, in or before 1946, when it was donated to Perth Museum (registration number IE.1946; MacGregor 1976ii, no. 300) Though it is in remarkably good condition, it is not complete, missing a rim piece and two handles, all of iron. It probably dates to the 1st-2nd century AD, and is made from a single sheet of bronze, beaten into shape. Oval punch marks made by the hammer can be seen both internally and externally. Used in the preparation and consumption of food and drink, such cauldrons could have contained a variety of liquids: water, blood (including from sacrifices), oil, wine and ale and to cook a range of foods, mainly meat, either by boiling or stewing. Their presence at communal feasts and at sacrificial rites no doubt reinforced their symbolic and mythological meanings (Green 1998; Joy 2014) .

Tankard handles

A further aspect of the value given to the probable, non-exclusive, consumption of alcohol (which in Perth and Kinross we can see from at least the Bronze Age, with the Corrymuckloch ladle-like

vessel (Cowie *et al.* 1996) takes the form of decorative bronze tankard handles. These were mounted onto variously-sized (with an average capacity of 4.2 pints/2.3 litres), stave-built wooden tankards, covered in copper alloy sheet. The handles are the commonest components of the tankards to survive. They are regarded as a distinctive element of the Late Iron Age/Roman period in Britain. Originally regarded as Early Iron Age and with a limited distribution (Corcoran 1952) a new analysis (Horn 2015) has shifted their chronological and cultural understanding. In Scotland they now have a widespread distribution from Orkney to Kirkcudbrightshire and some examples have been found on Roman sites (Hunter 2006: 155-6; Illus 19) broadly dated 1st-2nd centuries AD. Locally there were no known examples until the 21st century and in the last two decades five handles have been identified through both excavation (at Castle Craig broch - Poller forthcoming; Horn 2015, fig. 11) and metal-detecting (at Muthill [Hunter 2006, 157, fig. 19b], Milnathort, Quoigs and Kinross - all now in the collections of Perth Museum). The handles could be mounted singly or in pairs and are often intricately decorated with abstract 'Celtic' designs. The various contexts of deposition for handles, charted by Horn (2015, 330-333), including Iron Age settlements and Roman military sites and burials and watery places, shows they were used in ritual as well as utilitarian contexts. The consumption of liquids in various contexts (indigenous and formerly Roman) is further evidenced by the indigenous re-use of Roman military bronze cooking vessels, as discussed below, again in both ritual (Stormont Loch) and utilitarian contexts (Castle Craig broch).

Wood

Excavated over a prolonged period since 1980, the organic artefact assemblage from Oakbank crannog, Loch Tay, is of national significance; a selection of rare and unique items representing everyday life in the early Iron Age, of the type usually lost on terrestrial sites. It includes a range of vessel types including a butter/cheese dish, putative bridge from a lyre or similar stringed instrument, a hunting/herding whistle, a fragment of woven woollen textile, and a large collection of worked wood (Dixon 2004: 146-51) and fir candles (tapers of pine wood). The assemblage is paralleled by similar objects recovered from waterlogged occupation deposits at Clachtoll Broch, Sutherland (Cavers *et al* forthcoming).

[image: organic artefacts from Oakbank crannog]

The assemblage includes a putative bridge for a lyre. The evidence for Iron Age stringed instruments in Scotland is extremely rare, and the only other known example, also a lyre bridge, was excavated at High Pasture Cave, Skye (Birch forthcoming). Both fragments suggest that music was an important shared tradition, perhaps linked to oral tradition, or in celebration and ritual activities, no doubt often in association with alcohol served from cauldrons and consumed from tankards.

[image: lyre bridge from Oakbank crannog]

The organic collection from Oakbank crannog is exceptional in terms of breadth and preservation and offers a rich research resource with the potential to address many knowledge gaps around everyday lives of Iron Age people.

Riverine and estuarine transport: logboats

While none of the thirteen logboats known from Perth and Kinross are dated to the Iron Age, Bronze Age dates have been confirmed for the vessels from Carpow, on the Tay estuary and Croft-na-Caber, Loch Tay, while the Errol 2 boat dates to the mid-1st millennium AD (Strachan 2010: 130). The wooden paddles from Oakbank crannog suggest boats, of some kind, were in use on Loch Tay in the Early Iron Age (Strachan 2010: 117-18). The use of logboats, and skin on frame boats, were no doubt an important feature of the area's loch, river and estuarine transport from at least the Neolithic to the Medieval period. Sewn-plank boats may well have made an appearance in the estuary from the Middle Bronze Age, as evidenced at Dover (Clark 2004) and the Humber wetlands (Wright 1991; Ven der Nort 2004).

Craftworking

Fundamental questions remain concerning the nature and organisation of craftworking in Iron Age Scotland. Artefactual evidence from Perth and Kinross provides a limited, but nevertheless informative base from which to consider these, as it indicates a range of making practices comparable to those in other areas which have received greater archaeological attention.

Craftworking evidence has been found on several settlement sites in the region, for example, in the form of crucibles and moulds from the production of decorative bronze objects, waste material representing various stages of iron production, roughouts and debris from the production of cannel coal/shale artefacts and valuable proxy indicators for organic crafts such as polishing stones for leatherworking and spindle whorls for textile production.

A general overview of Scottish Iron Age craftworking, the raw materials available and wider considerations and research questions is presented in the ScARF Iron Age panel report section 4.4.

Stoneworking

Stone tools with evidence of wear provide valuable proxy data for craft activities for which the finished products and working waste have since degraded. Spindle whorls on many sites confirm widespread and localised textile production, as at Moredun fort (Strachan *et al* forthcoming) and Castle Craig broch (Poller forthcoming). Polishers for use in textile production and whetstones for sharpening long-since corroded iron tools, are frequent finds on settlement sites. A possible roughout for a spindle whorl from Moredun fort (Strachan *et al* forthcoming) also shows the production of these small, often decorative objects, was localised and probably taking place on most settlement sites.

Textile-working

Spindle whorls are the most common artefacts associated with textile production, their survival is probably, at least in part, a consequence of their generally being made of inorganic materials. We know that organic (e.g. bone) spindle whorls survive well from the medieval period so there may also be a factor of bone not being used at this time for spindle whorls. Other associated tools made from organic materials are much rarer, however the recent recovery of a cache of bone

points from *in situ* burnt deposits from the monumental roundhouse within Moredun fort, Perth, have been interpreted as possible textile-working implements (Strachan *et al* forthcoming). They provide rare, well-preserved evidence for bone artefacts in central Scotland and may have been deposited either in use, or intentionally (*ibid.*). The evidence from Moredun poses the opportunity to explore the production, use and deposition of bone objects during this period and will be discussed further in the forthcoming publication.

[image: cache of bone points from Moredun Top fort]

Cannel Coal / Shale Working

The exceptional assemblage from Moredun fort includes many pieces diagnostic of various stages of production, such as roughouts (blanks for bangles) and debris/working waste, and the quantity recovered suggests a small centre of production (Strachan *et al* forthcoming). Current known sources of oil shale, cannel coal and lignite are scattered along the western coast of Scotland and Inner Hebrides, with one outlier at Brora, Sutherland (Hunter 2015: 230 Illus 13.3). Further analysis of this important group of finds will inform and enhance understanding of raw material sources, trading and production) and provide a basis to consider the social significance of artefact production in Iron Age society in Scotland, including the organisation and nature of craftworking and how finished objects may have been valued in different regions (Hunter 2015).

Non-ferrous metalworking

Evidence for later prehistoric non-ferrous (precious) metalworking in areas of southern and eastern Scotland is limited, but is largely confined to enclosed settlements, specifically forts (Heald 2005: 126). In the early Iron Age it is often accompanied by iron working, and the recovery of both iron and bronze-working debris from settlements suggests that, in certain areas of Scotland, the first manufacture of iron objects took place while bronze-smiths still plied their craft (see Heald 2005 for discussion).

Limited evidence for iron and bronze-working was discovered at Oakbank crannog, however two crucible sherds were recorded, one apparently associated with iron slag (Dixon and Cavers 2001; Dixon forthcoming). The metalworking evidence from Oakbank crannog provides a valuable insight into the early Bronze Age to Iron Age transition and wider social and economic developments.

Excavations at Kay Craig produced evidence of Iron Age and Roman activity and non-ferrous metalworking and while the site was heavily disturbed it included a hearth setting surrounded by metalworking debris and a crucible fragment (Poller 2013c; Poller forthcoming). The hillfort at Castle Law, Abernethy, also produced evidence of non-ferrous metalworking (Strachan *et al* forthcoming).

Metalworking debris is often found in secondary deposits in souterrains, including a mould from one of the upper fills of the souterrain at Shanzie, dated to the Middle Iron Age (Heald 2005).

Ephemeral remains of a metalworking area were discovered during excavations of the henge and stone circle at Moncrieffe, where clay crucible fragments, molten bronze and iron slag were recovered (Stewart *et al* 1986). While originally assigned a late Bronze Age date, a late Iron Age/Roman date is supported by analysis of the crucible that demonstrates that it was used for melting silver, suggesting a date no earlier than the 2nd century AD (Heald 2005: 177). Moncrieffe is important as it provides rare evidence for the reuse of a Neolithic monument for metalworking and a rare insight into possible 3rd – 4th century AD activity in the region.

Recycling Roman alloys

Over the 1st-2nd centuries AD the use of Roman alloys to fashion new objects in local styles makes a conspicuous appearance in the archaeological record. Roman objects were not only prestige items, but a valuable raw material for melting and casting into new objects (Heald 2005; Hunter 2007: 38); a practice known across northern Europe (Wells 2013: 9). Two scientific studies have been pivotal for understanding metalworking processes during this period: Dungworth's (1996) analysis of the production of copper alloys in Iron Age Britain, and Heald's (2005) assessment of the evidence for non-ferrous metalworking in Iron Age Scotland through analysis of debris.

Ferrous Metalworking

The Iron Age saw the adoption of iron as the dominant material for tools and weapons, and evidence for iron working in Scotland has been considered (Cruickshanks 2017). Iron slag (waste from the smelting and smithing processes) is found on many sites, however, evidence for smelting is less common suggesting it was a more restricted process. Iron-smelting was a highly specialised process, perhaps ritually charged, going beyond the process of producing material for everyday objects (Giles 2012). Evidence for the production of iron in Perth and Kinross is limited and where it has been found, for example at Moredun fort, suggests small-scale ironworking, probably to produce and maintain iron tools and equipment for the immediate community (Strachan *et al* forthcoming).

The regular use of iron tools and weapons would have required blacksmiths on most settlement sites, even at a basic level for mending everyday objects (Hunter 2015c, 233-234). Ironworking debris is found on many settlement sites, often incorporated within fills of pits and souterrains, for example, at Shanzie (Coleman and Hunter 2002), Newmill (Watkins 1981) and the recently excavated souterrain at Loak Farm, near Bankfoot (Demay 2021). Discovered in backfill deposits, ironworking debris cannot be used to accurately reconstruct metalworking practices but provides evidence ironworking was taking place in the vicinity and important for mapping Iron Age metalworking in the region. Given slag was rarely retained by early excavators (Hunter 2015c, 233) recent and planned developer-led work poses an excellent opportunity to investigate unknown settlement sites and enhance our current understanding of the nature and organisation of metalworking across the region and Iron Age Scotland.

Conflict

Iron weapons are rare finds on Iron Age settlements, an example being the possible sword or dagger tip from the Black Spout (Strachan 2013: 45-46; Case Study *The Black Spout*).

[image: iron sword or dagger blade from the Black Spout]

The evidence for iron weapons largely comprises component parts; rare and impressive Celtic metalwork from Perth and Kinross includes northerly examples of sword fittings. Perth Museum holds a hilt guard and pommel of a sword (Perth registration number 1350) belonging to Piggott's group IV (Piggott 1950; MacGregor 1976, no's 159-60; Hunter 2006: 154-155, Illus 19a). The distribution of these swords and fittings is largely confined to northern England and southern Scotland, as stray finds, and from forts and military contexts (MacGregor 1976: 79-83). Unfortunately, the findspot of the hilt guard and pommel are unknown but presumed to be local. We have greater precision with the iron and cast bronze sword of Piggott's Group IVA, found during excavation of Fendoch Roman fort (Richmond and MacIntyre 1939, 146-7, pl. LX.1; Piggott 1950, 20-1, fig. 11.4; MacGregor 1976: No, 146; NMS registration number FR 536) and the metal-detected bronze cross-guard from a hilt at Spittalfield, Caputh, probably 1st/2nd century AD in date (Perth Museum registration number 2015.118). The Fendoch sword, found in the foundations of the fort's Principia, is interpreted as having belonged to an auxiliary soldier. Given the context of the near-by legionary fortress at Inchtuthil, the same may be true of the piece from Spittalfield, though the promontory fort and burial mound at Inchtuthil could also indicate indigenous ownership.

[image: request to reproduce drawings from Hunter 2006 or source images]

Jewellery and Decorative Metalwork

Jet and jet-like substances (Shale/Cannon Coal)

Comparable with other areas of Iron Age Europe, jet and jet-like substances, such as cannel coal, shale and lignite were exploited as a raw material in Scotland to create jewellery (Hunter 2015c: 230-232; see below). Jet has been used to make jewellery since the Neolithic and has always had a magical aura because of its physical property in being able to take an electric charge. Jet is relatively rare as a raw material and often jet-like substances, more commonly occurring, were used, that is black, organic-rich stones such as cannel coal, lignite and oil-shale. The different materials are distinguishable through XRF analysis (Hunter and Russell 2001, 121-22). Shaped and polished to a high sheen, objects such as beads, bracelets, pendants and rings form an important, but until recently, understudied and undervalued material.

At Moredun fort, Perth, a significant quantity of cannel coal/shale finds were recovered, including fragments of bangles and a ring pendant and evidence of repair to a bracelet shows these objects were valued and had long lives (Strachan *et al* forthcoming).

Other shale objects are known from a variety of sites in Perth and Kinross including fragments of bangles from Castle Craig broch (James 2011; DES 2011, 144), Pitcarmick (Carver *et al* 2012), from possible Iron Age activity at the Forteviot henge (Brophy and Noble 2009), and a ring from Castle Law, Abernethy (Christianson and Anderson 1899). [image: shale bracelet fragments from Moredun]

[image: shale roughout from Moredun]

Bronze: Early Iron Age

Oakbank Crannog provides a rare and varied assemblage of organic artefacts but like other early Iron Age sites, metalwork evidence is limited. A decorative 'swan's neck' pin, discovered in 2002, however, is a derivative of the crook-headed pin, an early Iron Age type known from central/eastern Scotland (Dunning 1935; Coles 1959; Dixon 2004: 158).

[image: Swan's neck pin]

Another rare, decorated ring-headed pin was recently discovered on Moredun fort, Perth. This La Tene 1 type copper-alloy, bird-headed pin, dating to the 3rd century BC, has been described as a 'miniature masterpiece of early Celtic art' (PKHT 2020: 40). The intricate openwork decoration displays zoomorphic elements in typical Celtic style, perhaps to mimic the eyes of a beast or a bird with hollows which may have originally held coral or enamel inlays. Found within a roundhouse, the pin may have been broken on purpose, perhaps as an offering (Strachan *et al* forthcoming).

[image: Moncrieffe Hill Pin]

Another significant La Tene type 1 find was the bronze brooch recovered from Castle Law fort, Abernethy, in the 1890s (Christison and Anderson 1899; Hunter 2009; Hull and Hawkes 1987). Brooches do not appear to have been common in early Iron Age Scotland, to judge from the limited numbers recorded (Hunter 2009). The lack of accompanied burials during this period compared to Northern England, makes it difficult to determine the gender variation in how these brooches were used. With typological parallels to the south, these early brooches may have been traded long-distances amongst social elites in the form of gift exchange between 300-100 BC and they probably played an important role in maintaining and creating social relations and identities (Hunter 2009: 151).

[image: La Tene brooch from Castle Law]

Castle Law, Abernethy also produced a bronze spiral finger ring and a ring-headed pin, objects more commonly found on Iron Age unenclosed settlement sites. The paucity of brooches in

comparison to the evidence for widespread and prolonged use of ring-headed pins suggests brooches were restricted to the upper echelons of society.

[image: spiral finger ring from Castle Law]

Bronze: Middle Iron Age

Around the beginning of the 1st century AD, a marked change in personal ornamentation occurs in both style and volume in the north-east of Scotland (Hunter 2007b: 289; MacGregor 1976: 177). In contrast to the rarity of metalwork from the preceding period, the quality and quantity of metalwork from this period is significant, particularly the emergence of massive metalwork (MacGregor 1976: 177-8). Identified as one of the few regionally distinctive metalworking traditions in Iron Age Britain, massive metalwork is concentrated in the north-east of Scotland between the Moray Firth and the Firth of Forth (Hunter 2019: 87- 123). Objects which fall into this striking style of decorative metalwork include armlets, zoomorphic spiral bracelets, finger rings, and a limited selection of non-personal ornament such as strap junctions (horse harness fittings) and tankard handles (ibid.).

[image: request permission to reproduce distribution map of massive metalwork (Hunter 2019, 89; Fig 57)]

The flourishing of this distinct type of metalwork during the Roman Iron Age is remarkable in terms of distribution and evidence of regionality and artistic style. Hunter suggests the creation of massive metalwork was an 'outpouring of a very visual indigenous response' to reinforce identity, a reaction caused by the external threat posed by Rome (2006: 150). Several outstanding examples of massive metalwork are known from Perth and Kinross:

Massive armlets

Massive armlets are imposing pieces of personal ornament, decorated in high relief, often with terminals containing discs of colourful patterned enamel. Twenty-nine are known from Scotland, falling into two types/regional variations: oval and folded. Whilst folded armlets are usually recorded as single finds, oval armlets are often found in pairs (Hunter 2019: 92). In 1837, two bronze armlets of the oval type were discovered at Pitkelloney, Muthill, and are in the collections of the British Museum (registration P&RB 38.7-14.3a-b; Smith 1881, 340-42). They are similarly decorated, inset with roundels containing yellow and red glass, creating a display of patterns and colours clearly in vogue during the 1st-2nd centuries AD. They bear a striking resemblance to the pair from Castle Newe, Aberdeenshire (Smith 1881, 330-32).. Another example of the oval type of armlet, poorly provenanced but presumed to be from the Perth vicinity, is in a fragmented state, possibly as a result of poor casting (Perth Museum registration number 1293 [139]; Anderson and Black 1888, 339-40; MacGregor 1976, No. 250).

[image: massive armlets from Muthill]

[image: massive armlet from Bunrannoch]

Zoomorphic spiral bracelets

Zoomorphic spiral bracelets are sometimes referred to as spiral snake bracelets as they resemble a coiled snake with heads as terminals. Nine are known, strongly distributed around the Firth of Tay (Hunter 2019: 94-95) and some have circular settings which probably held a patterned enamelled disc. A massive armlet and a spiral snake bracelet were discovered together in a vessel with other smaller objects (since lost) at the foot of Schiehallion between c.1820-1830 (NMS registration no. FA 18 and FA 75; Anderson 1904, 460-65; MacGregor 1976, No. 213 and 238).

[image: spiral snake bracelet from Bunrannoch]

Finger rings

The “massive” style of the first quarter of the first millennium AD also includes a new style of finger ring. They combine the typical enamelling of the massive style with the use of bezels adopted from Roman ring styles (Hunter 2019, 97). Their distribution is concentrated in Fife, Moray and Perth and Kinross (Hunter 2019: 95-97). They vary in design and form a distinct change from the spiral finger ring, a common Iron Age personal ornament in circulation over a prolonged period.

Several rings featuring circular bezels decorated with enamelling are known from Perth and Kinross (Hunter 2019: 95-97). The example from Tarnavie, Dunning (NMS registration no. FA 109) features a triskele design in red, yellow and (probably) blue enamel (Simpson 1970; MacGregor 1976, no. 260) and Strageath Roman fort produced an example with a petal design (NMS registration no. xxx; Frere and Wilkes 1989: 154). Three further examples have been found recently, the enamelling in various states of decay: from Kildinny, Forteviot, with quatrefoil decoration (Perth Museum registration no. 2018.112; DES 2016, 144); from Portmoak, Kinross, a bezel only (Perth Museum registration no. 2018.115); and from Castle Craig broch a complete ring in fine condition decorated with a chequer pattern (Poller forthcoming) Kildinny and Portmoak are metal detector finds, and the condition of Portmoak could be a reflection of deliberate, votive deposition in the marginal waters of Loch Leven.

[image: Tarnavie ring]

[image: Strageath ring]

Tankard handles

The “massive” style extends to the tankard handle group discussed above. The largest and most elaborately decorated of the handles from Perth and Kinross is in the “massive” style. It was excavated at Castle Craig broch (Horn 2015, fig. 11; Hunter 2019, 99; Poller forthcoming; Case Study *Castle Craig Broch*). Like the finger rings already discussed it is a hybrid object fusing Roman and regional traits: the handle form fits Horn’s Group VII - Pointed Oval (lugged), a group, ‘overwhelmingly associated with Roman military and settlement sites and is often recovered in close association to Roman material culture.’ (Horn 2015, 328). The curvilinear trumpet decoration links it to the “massive” style. The direction of travel of these cultural traits is hard to determine (was the mixing Roman determined or indigenous determined?) needs further consideration.

[image: tankard handle from Castle Craig broch]

[image: request to reproduce Illus 19 Hunter 2006, 156]

Strap junctions

Strap junctions (horse harness fittings) are tentatively classed as part of the massive metalworking tradition (Hunter 2019: 97-98). The recent metal-detector find of a rare figure-of-eight strap junction from near Carpow Roman fort is only the second known example of the tradition in Scotland (Perth Museum registration no. 2019.47). Featuring high-relief mouldings, trumpets and an enamelled circular field, this unique example is significantly more decorative than examples from the Borders (MacGregor 1976: no 18; 36-8) and cracks in the metal show it was well-used and probably damaged from use (Hall 2018). The suggestion is that auxiliary soldiers were acquiring and using indigenous material culture.

[image: strap junction from Carpow]

Terrets (chariot/cart fittings used to guide the reins) form another class of decorative metalwork associated with later prehistoric equitation. Examples include fragments (roughly half-portions) from Vane Farm and Kelty, and a near complete example from Balgeddie near Kinross (Perth Museum registration nos. 2103.32, 2015.115 and 2021.54, respectively). All three were recovered from what were, before drainage, the margins of Loch Leven and probably represent the continuation or renewal of votive depositional practices in this watery place.

Glass

Glass is a relatively common find on Iron Age sites, usually in the form of beads or bangles. The first comprehensive study and classification of Iron Age glass beads (Guido 1978) has been recently re-examined to assess new material and reconsider the findings in view of changing theoretical approaches (Foulds 2014; 2017). The corpus consists mainly of unstratified stray finds traditionally assigned a broad chronological range of 2nd century BC-2nd century AD. The distribution of glass beads and bangles suggests two traditions: in north-east Scotland and in southern Scotland/northern England (Hunter 2015c: 235-236). The current glass bangle typology remains Kilbride-Jones (1937).

Evidence for glass production and its organisation remains unclear across much of Iron Age Britain (Foulds 2017: 17). However, recent work at Culduthel, Inverness-shire, has produced the first secure evidence for glass working in Scotland (Hatherley and Murray 2021; HighARF Case Study *Iron Age Craftworking at Culduthel*). There is no evidence for primary glass manufacture in Scotland and scientific analysis of glass beads from the north-east has shown they were made from imported glass ingots from Roman and Mediterranean sources (Davis and Freestone 2021: 217; Bertini *et al* 2011).

Small opaque yellow annular beads of Guido Class 8 (Guido 1978: 73-6) are widespread and commonly found on Iron Age settlements, for example, Shanzie souterrain (Coleman and Hunter 2002) and the Queen's View monumental roundhouse Loch Tummel (Taylor 1990). Other glass beads found in Perth and Kinross include a small pale blue example from Moredun fort (Strachan

et al forthcoming), a pale green toggle, using Roman glass, from the Black Spout (Strachan 2013: 46-49; Case Study *The Black Spout*) and a Roman melon bead from Castle Craig broch, found alongside other Roman glass finds including fragments of bangles (Poller *et al* forthcoming; Case Study *Castle Craig Broch*).

[image: glass toggle from The Black Spout]

It is important to consider the glass beads from Perth and Kinross within the wider context of northern Scotland. The north-east corpus (between the Dee and the Moray Firth) is dominated by decorated spiral beads and annular beads of various colours (Guido's Class 13 and 14), with outliers as far north as the Orkneys (Guido 1978: 85-89). The striking absence of these from Perth and Kinross raises questions concerning the control of glass as a raw material, trade networks, regionality and the use or rejection of specific types of personal ornament to maintain and project social identities.

[image: glass bead from Moredun Top fort]

Belief and Ritual

Bone, stone and pottery were important to the inhabitants of Iron Age Scotland and objects usually viewed as prosaic were likely as symbolic as they were functional, playing an important part in ritual activities within settlements and the wider landscape. Structured deposition is well-attested on Iron Age settlement sites with objects such as querns and stone tools placed in foundation deposits, secondary deposits, and structures. Votive offerings, predominantly metalwork and coins, are known from peat bogs and other wetland environments. One Iron Age burial is known from Perth and Kinross, part of a rare group of burials containing grave goods. The varied evidence from Perth and Kinross forms an excellent dataset to consider many of the questions surrounding belief and ritual in Iron Age Scotland.

Querns – There is copious evidence for the special treatment of quern stones across Iron Age Scotland, often in foundation or secondary/closing deposits. One of five quernstones recovered from the Black Spout, was buried under the paving at the threshold to the intramural cell which may have accessed an upper floor in the building (Strachan 2013: 40-45; Case Study *The Black Spout*). The reuse of querns in several phases of construction of the roundhouses at Aldclune have been interpreted as imports from older settlement sites, symbolically placed in foundation deposits of new dwellings, and again several were redeposited near entrances (Hingley *et al* 1997:452). Querns are also known from souterrain closure deposits, for example, at Newmill (Armit 1999) and Shanzie (Coleman and Hunter 2002). The transitional very late Iron Age / early medieval inhumation burial from Blair Atholl contained no grave goods but the long cist was partially closed off by an unfinished or pseudo-quernstone, which may represent a continuity of Iron Age ritual modalities (Czére *et al.* 2021, 32-33, illus.2).

Stone discs – Iron Age burials are extremely rare and a limited number contain polished stone discs, including that at Baledgarno (McManus Art Galleries and Museums accession number DUNMG 1964-79), the most southerly known example, and the only known Iron Age burial in Perth and Kinross (Hunter 2021a). A reassessment of a polished stone disc from an Iron Age cist

burial on Orkney suggests it may have been used as a palette for cosmetic, medical or cosmetic purposes (Graham-Campbell and Hunter 2021). More commonly, stone discs from Iron Age sites are interpreted, depending on size and place in the chronological sequence, as pot lids and gaming pieces and recent findings suggest they require further analysis as a group, highlighting the potential value of reassessing existing, archived material.

Bone tools – The cache of bone points from *in situ* burnt deposits in the monumental roundhouse within Moredun fort may have been deposited intentionally (Strachan *et al* forthcoming). Caches of bone tools are also known from other Iron Age sites such as Fiskavaig, Skye (Birch forthcoming) and at the Cairns, Rousay, Orkney, where a cache of long-handled bone combs likely to be related to textile production were placed in a lattice formation mimicking woven cloth (ScARF ECR Case Study *Long-handled Iron Age bone combs*).

Cauldrons - Frequently portrayed as magical objects in Celtic myth and legend, cauldrons, as well as being of great domestic, practical value had a rich, symbolic, and ritual value. They are often found as votive deposits in watery places. The exceptional cauldron from Abercairney, near Crieff is such an example, and is discussed in detail above.

Massive metalwork – A pair of bronze armlets were discovered at Pitkelloney, Muthill close to one another in the ploughsoil at a farm at Pitkelloney, Muthill. They were probably buried as a pair and disturbed by the plough. A similar pair from Castle Newe, Aberdeenshire found at the entrance to a souterrain provides a close parallel. A spiral snake bracelet and massive armlet were discovered with other smaller objects in a vessel at the foot of Schiehallion (MacGregor No. 213 and 238). Frustratingly, the vessel and smaller items are now lost, but they provide a tantalising and rare insight into Iron Age hoarding practices. These cases are fully discussed above.

Reuse of monuments – Evidenced by the short-lived metalworking area discovered during the excavation of the stone circle at Moncrieffe for both non-ferrous and ferrous metalworking (Heald 2005). Metalworking may have taken place in a ritually charged environment, especially in the complex production of iron, where ore was transformed into metal. The metalworkers themselves were also likely to have been viewed as important and powerful individuals within Iron Age society (Giles 2012).

Souterrain abandonment – Substantial stone-lined souterrains, characterised by Wainwright (1963) as 'souterrains of southern Pictland' have been suggested by Armit (1999) as showing clear evidence for deliberate destruction or backfilling, while others suggest more gradual abandonment (Halliday 2006; Coleman and Hunter 2002). Several souterrains of this type in Perth and Kinross provide evidence of structured deposition, often incorporating Roman material, for example at Newmill (Watkins 1981) and Shanzie (Coleman and Hunter 2002). In addition to evidence for the careful dismantling of the structure, various objects related to craftworking were recovered from the recently excavated souterrain at Loak Farm, Bankfoot, including a possible cache of coarse stone tools, pottery, a whetstone, metalworking debris, a cup-marked sandstone block and possible anvil stone (Demay 2021). Excavation evidence suggests souterrains were usually cleaned out prior to being backfilled/closed and as a result *in-situ* deposits and artefacts are rare, however, this activity provides additional evidence of belief and ritual activity surrounding a labour-intensive process which probably involved the entire community.

Roman objects – As mentioned, Roman objects have been found in backfilled souterrains. Various brooches and coins recovered from the margins of Loch Leven – areas which are dry today but would have been submerged or partially submerged and boggy in the past (before 18th century drainage works) not only provides evidence of votive deposition (see examples cited above in discussion of decorative metalwork), but also shows the symbolic value of exotic objects for ritual activities (discussed in detail in the *Influence of Rome* section).

The Influence of Rome

The Roman presence in Scotland was sporadic and very brief in terms of the longevity of the Iron Age as a whole. Unlike southern Britain, settled for almost 400 years, Scotland was never fully conquered. The 1st century AD saw Roman forts, fortlets and signal towers constructed in Perth and Kinross and later a new frontier was established, the Stanegate, connecting the Tyne and Solway estuaries. In the 120s AD, the Emperor Hadrian ordered the construction of a wall just to the north of the Stanegate line, defining this frontier. Hadrian's successor, Antoninus Pius, launched Roman forces back into Scotland in the 140s AD. A new frontier was established on the Forth-Clyde line, with military bases north of this, including in Perth and Kinross. Occasional campaigns were launched into Scotland, notably under the Emperor Septimius Severus in the early third century AD.

Roman objects and ideas travelled beyond the frontiers, however, and Roman material culture is discussed below around 4 key themes: Everyday Life, Conflict, Jewellery and Decorative Metalwork, and Belief and Ritual. The aim is to present the types of Roman objects found in Perth and Kinross, on both Roman and Iron Age sites, and often on both, alongside wider consideration of what they can tell us about their role within evolving societies.

The important synthesis *Roman finds from non-Roman sites in Scotland: More Roman 'Drift' in Caledonia* by Robertson (1970) is a valuable base for the study of Roman and Iron Age interaction; however, the corpus has been substantially enriched in recent years with finds recovered through archaeological excavations and metal-detecting augmented, much of it discussed by Hunter (including 2001; 2007; 2010; 2013b). There is a clear influx of Roman objects on Iron Age sites, the majority dated broadly to the 1st - 2nd centuries AD. The Romans posed a threat – but they also presented an opportunity, for trade, to gain status and to create powerful alliances.

Roman and Iron Age identities

By 'Romans' we mean people from across the Empire, as it was usual practice to draft military units in conquered lands to serve in distant territories. For example, units raised in North Africa and in the Middle East served in Britain. We do not know what the peoples of North Britain called themselves, but we know what the Romans called them. In what is now Perth and Kinross, the two main groupings seem to have been the Caledonians and the Maetae, and from the late 3rd

century AD, the Picts (for the earliest Roman textual references to the Picts see the summary in Hall 2007, 3; Ritchie 1994).

Identity is a term that expresses how an individual defines themselves as both the same and different from others. In Roman-Britain people could think of themselves as Roman and/or British, military or civilian, warrior or farmer. People express their identity through their language(s), clothing and dress accessories, food and a wide range of objects. Owning Roman objects did not always mean you were Roman. Roman goods could be adopted and re-defined to support someone's non-Roman identity. Whilst some artefacts can be considered as exclusively Roman or local, some classes of objects are found on both Roman and Iron Age sites. Some objects fuse Roman and British elements, as discussed for "massive" style metalwork above.

A selective process is clear in terms of the types of Roman goods which made their way into local societies, generally consisting of items of jewellery, and items connected to feasting such as glass vessels and ceramics. A range of Roman objects found at or close to military sites across Perth and Kinross give a flavour of everyday life for the soldiers stationed in the Caledonian frontier zone revealing facets of the life of infantry and cavalry both in their daily routines of equipment maintenance and in their pursuits of relaxation.

Everyday Life: Domestic Activities

Tastes and habits of food and drink are often a good indicator as to how people defined themselves, especially when ritual and ceremony developed from everyday food needs. Cultures often mixed and matched the objects that expressed these identities. For the Roman army, it is envisaged that, at least initially, many foods were imported from further south and east across the Empire, with most Roman forts including a granary, and while food sourced locally no doubt made up a significant part of the Roman military diet, imports would have also continued to be important.

Pottery

Amphora, ceramic storage vessels, came in a range of sizes to transport food and drink both in military and civilian contexts. A fine example, found in the 19th century survives in Perth Museum (registration no. 976) however, the name of the site was not recorded. Amphorae are common finds on Roman forts; a vessel for transporting Spanish fish sauce was found at Inchtuthil (Pitts and St Joseph 1985). A distinctive type of amphora (the so-called 'carrot' type) was also found at Inchtuthil and the excavators suggest it was used to transport such as figs or dates from the eastern Mediterranean, observing that such '...contents were more appreciated by the Roman army than by British civilians.' (ibid., 335). Fragments of amphora have also been found on elite Iron Age settlement sites with Roman Iron Age activity.

[image: amphora on display at PMAG]

[image: reconstructed amphora from Inchtuthil (NMS image X.FY 459)]

Samian ware (Terra sigillata), a red-gloss pottery mass-produced from the first century BC to the third century AD, is also a common find on Roman military and civilian sites across Britain.

Quantities have been recovered from several fort sites in Perth and Kinross, notably Strageath (Frere and Wilkes 1989, 204-18) and Inchtuthil (Pitts and St Joseph 1985, 314-324). Sherds are also found on Iron Age sites, for example at the souterrains at Newmill (Watkins 1981), Shanzie (Coleman and Hunter 2002).

[image: a good example of samian from Perth and Kinross]

Glass

Where glass beads and bangles are relatively easy to make, glass vessels required greater skill and knowledge. Neither were available in Roman Scotland but the vessels were imported and shards have been found on both Roman and Iron Age sites in Perth & Kinross, including, Castle Craig broch (Poller forthcoming; Case Study *Castle Craig Broch*). It is likely that exotic foodstuffs and alcohol were gifted and traded far and wide with drink-related Roman glass vessels known from many Scottish Iron Age sites, mainly concentrated in the south and up the east coast to the Northern Isles (Ingemark 2014: 175, figure 4.1). The presence of Roman samian, amphorae and fine glassware on a variety of elite sites during this period shows the willing incorporation of Roman goods within food and drink cultures, including at the level of social elites, feasting remained important in the maintenance of power and relations (Hunter 2007: 16).

Bronze

An essential part of a soldier's kit was cooking equipment, usually shared between a unit of three men. The implements carried in their packs included copper alloy cooking skillets/saucepans or *trulla* (sometimes more loosely known as *patera*); several examples are known from Perth and Kinross.

[image: trulla or skillet with stamped handle]

A notable example in the collections of Perth Museum (registration no. 1295; Wright 1966, 220-21, no. 16) is stamped on the handle with the name of the bronze worker 'Cipius Polybius' indicating it was made at his workshop in Campania, Southern Italy. This important object probably belonged to Roman soldiers based at Cardean fort near Meikle. Subsequently it passed into Caledonian hands and was repaired several times before being placed in Stormont Loch (near Blairgowrie) as a votive offering. In its Caledonian life it may well have been used to serve drink from a large cauldron. A complete bronze Roman saucepan was discovered at Castle Craig broch (James 2011; 2012; Poller forthcoming; Case Study *Castle Craig Broch*).

A different sort of vessel is evidenced by the recent metal-detector find from Kindrochet, near Comrie. It is a worn escutcheon in the shape of a human (probably male) head (Perth Museum registration no. 2021.50). It is likely to have been one of at least a pair, supporting suspension rings which probably suspended a basin from chains. The basin was probably used to serve alcohol. It dates to the second or third century. Although of Roman manufacture the find spot is closer to Dundurn fort (from where other Roman goods are known) than Dalginross Roman fort at Comrie and may again signal a Roman vessel which passed into Caledonian hands.

[image: escutcheon in the form of a human head (if not too worn/damaged)]

Querns

Querns are amongst the most regular finds on Iron Age settlement sites. A major development in the period, was the adoption of the more efficient rotary quern in place of the saddle quern (Armit 1991). A review of Scottish rotary querns (McLaren and Hunter 2008) has suggested regional 'patterning' and concentrations of decorative styles.

[image: fragment of an upper quern stone from Bertha Roman fort]

Building and decorating

Where local clay was available the Roman military made tiles for floors and roofs, in workshops near to the relevant fort. These often carry the stamp of the legionary unit who made them, for example, the inscribed part of a roof tile from Carpow, bearing the LEG VI stamp representing Legion VI Victrix, based there during campaigns against the Caledonians and Maetae under Commodus. Claiming victory, he awarded the legion the honorary title Britannica. Another tile from Carpow (McManus Art Galleries and Museums accession number DUNMG 1987-291) includes the print of a dog's paw, and provides intimate insight into a moment in time. It is probably of a dog smaller than a fox (Catherine Smith pers. comm.). A single example of a dog paw print was excavated from Inchtuthil and analysis showed it to have been made by a fast-moving whippet type dog (Pitts and St Joseph 1985, 340). Recent analysis of the various animal and bird footprints on tiles from Silchester ([Footprints on Roman brick and tile - Silchester Archaeology \(reading.ac.uk\)](http://reading.ac.uk)) points to an unrealised potential for a study of such evidence from Roman Scotland to explore the dynamics and seasonality of tile production and animal keeping.

[image: stamped tile from Carpow]

In AD 82/83 work commenced on building the huge legionary fortress at Inchtuthil on the river Tay, southwest of Blairgowrie. Planned as the base for the Twentieth Legion (*Valeria Victrix*) in the conquest of the Caledonians, the fort was never finished as around AD 86, legions were sent to reinforce the Danube frontier, resulting in the abandonment of forts on the Highland line and others to the south. Before leaving the fort at Inchtuthil, legionaries dismantled what they had built and buried nearly a million iron hand-forged nails, weighing 7 tons. The nails were buried at a depth of 4 m so they would not be discovered and forged into weapons by the Caledonians.

[image: excavation photo of the nails on SCRAN]

Amongst the earliest buildings completed at Inchtuthil was the bathhouse, investigated in the 1930s establishing its location and recovering wall plaster. Bathing was an essential routine for the military for both hygienic and social/relaxation reasons.

[image: painted wall plaster from Inchtuthil]

Not Just Passing the Time: board games

The playing of board games took off across Europe as a consequence of Roman practice and influence (Hall and Forsyth 2011). Elites in Southern Britain were acquiring board games before the conquest and evidence indicates it was linked to other elite practices including literacy and wine consumption. Partial and complete sets of gaming pieces sometimes with boards are a not uncommon element in inhumation and cremation burials of British, and after the conquest, Roman elites and military. With the spreading conquest of Britain by the Roman army the social spread of board games widened. It was one of the most common leisure pursuits for Roman soldiers (and often linked to spending time in the bath-house). Glass counters used as pawns in a strategy board game called *ludus latruncularum* are commonly found on Roman sites in Scotland. In Perth & Kinross, 24 such counters, 7 of blue and 17 of white glass, probably elements of various sets, were excavated at Strageath fort (Price 1989, 196, 200-02, fig. 102.1-5). Fragments of ceramic tiles marked out for *ludus* were discovered at the Roman forts of Bertha (Perth Museum registration no. 1994.423.1; Croom 2002, 43) and Inchtuthil (Perth Museum registration no. 11/1935) (Hall and Schädler forthcoming). Across Scotland board game kit is found across Roman and British sites (Hall 2007; Hall and Schaedler forthcoming) and in Aberdeenshire there is an example of at least one elite Roman Iron Age burial with gaming pieces (Hall and Forsyth 2011, 1331, fig. 3; Cool and Hall 2016, 47-52). To date in Perth and Kinross the evidence for board games is confined to Roman sites. The presence of such material on other Iron Age sites should be anticipated, however and may signal Roman interaction.

[image: gaming piece from Bertha and gaming boards from Bertha and Inchtuthil]

Conflict

Weaponry

Slingshot from Ardoch

14 iron spearheads from Strageath

Armour

A Lorica Squamata scale armour fragment recovered from the Severan fortress of Carpow, now residing with the extensive Carpow collection at The McManus in Dundee (accession number DUNMG 1987-291), has been described as being unique for its exceptional construction quality and merits further research interest (Wild 1981).

Horse fittings

Horse harness and chariot fittings include stylistically Roman and Caledonian pieces, probably used interchangeably by Romans and Iron Age societies. Several examples have been found close to Roman military sites and probably for military use. Examples include a fine example of an enamelled strap junction from the fort at Inchtuthil (NMS registration no. X.FY 168; Pitts and St Joseph 1985, 287-88, pl. XLV; MacGregor 1976, No. 32). the enamelled strap junction from Carpow (discussed above as an example of 'massive' metalwork), a copper alloy triskele mount strap fitting from Aberuthven (Perth Museum registration no. 2016.56), and cavalry harness fittings from East Camno, Meigle (Perth Museum registration no. 2007.95.1-3; Hall and Hunter 2006) and Dalginross, Comrie (Perth Museum registration no. 2015.136-139; Hall and Hunter 2007). Both of these small groups of fittings are typical Roman cavalry unit equipment and were found in proximity to two Roman forts, Cardean and Dalginross respectively. Those from East Camno were far enough away from the fort to promote the speculation that they may have entered Caledonian hands.

[image: cavalry harness fittings from Meigle/Dalginross]

[image: enamelled strap junction from Inchtuthil/NMS]

Jewellery and Decorative Metalwork

Romano-British brooches

In terms of decorative metalwork, Hunter (2010b) has identified three processes of transition between the Iron Age and Roman Britain: the continuation of Iron Age styles; the decorating of Roman objects with styles taken from Celtic art; and the development of hybrid types representing a fusion of both Iron Age and Roman styles and decoration to form new objects (ibid.). There are clear patterns of adoption of certain objects in the north-east of Scotland, reflected in the types of material absorbed into local societies on both sides of the frontier in the first two centuries AD (see discussion of 'massive' style above). All the main types of Romano-British brooches (Mackreth 2011) are found in Perth & Kinross, most often as metal-detected strays. As shown in previous studies (e.g. Robertson 1970; Hunter 2001; Hunter 2007b), specific brooch types were selected by Iron Age societies to fit with local tastes incorporating styles familiar in Celtic art, including trumpet, headstud and dragonesque.

Trumpet brooches

Trumpet brooches were popular amongst Britons in the 1st and 2nd centuries AD, and such brooches were generally worn in pairs, by women and to fasten a dress rather than a cloak. A rare giant version, made of copper alloy and strikingly effective red and yellow enamel, was found in the 19th century somewhere near Perth, but the precise place was not recorded (Perth Museum registration no. 143; Callander 1918, 28-31). Although it is impossible to know who precisely wore this brooch, it is not unlikely that it may have belonged to an important Caledonian woman who had connections perhaps with one of the local forts. A near complete example of a more conventionally sized trumpet brooch, with blue enamel was found in the river Tay at Inchyra, probably left there as a votive offering (Perth museum registration no.1992.600; Hunter 1996,

117). More fragmentary examples have been found at Kirkton of Mailer (Perth Museum registration no. 2018.116) and Aberuthven (Perth Museum registration no. 2018.108 and with a further example in NMS).

[image: giant enamelled trumpet brooch from unknown location]

Headstud brooches

Headstud brooches are one of the more common types of Romano-British brooches in the late 1st -2nd century AD. Their name derives from the decorative stud, usually enamel or glass, at the head of the bow shaped, copper alloy brooch, with a spring or hinged-pin fastener (usually missing). Fragmentary examples have been found across Loch Leven-side, Strathearn and Strathmore including at Meigle (Perth museum registration no. 2018.114), Crieff (Perth Museum registration no. 2018.94 [Ochertyre] and 2018.101 [Broich]), and Dunning (Perth Museum registration no. 2021.55). The Meigle and Dunning examples come from near a Roman fort and a marching camp respectively, one of the Crieff examples, from Broich, may have been an offering into the river Earn and the other may have had an association with the hillfort at Ochertyre.

[image: headstud brooch from Meigle, Crieff or Dunning]

Plate brooches

Another common form of enamelled copper alloy Romano-British brooch category, spanning the first to the third century AD, is the plate brooch, which could be simply hemispherical ('umbonate) or have a 'fantail' attached. These were generally worn in pairs, linked by a chain, to fasten a cloak. A round, brightly enamelled example was illegally metal-detected at the Roman fort at Bertha (Perth Museum registration no.2013.66; Hall and Hunter 2011, 158) and which is directly comparable to an example metal-detected from fields to the north-west of Inchtuthil fortress (NMS registration no. xxx) and an excavated example from Strageath (Frere and Wilkes 1989, 151, no. 57, fig. 76). Fantail examples are known from Kinnaird, Scotlandwell, and Bankfoot (Perth museum registration nos. 2016.46, 2013.65 [Hunter 2014, 169] and 2019.36 respectively); both have elements from local Celtic art styles. The brooch from Milnathort (Perth museum registration no. 2020.4) is an unusual Roman plate type for Scotland (cf. Mackreth 2011, 160-63, pl. 107) and has a central glass gem and gilded decoration more common in the south of Britain. It was found near a Caledonian settlement site indicated by a souterrain 120m to the SSW of the find spot (CANMORE 70794) and had presumably come into local hands.

[image: plate brooch from Bertha]

Crossbow brooch

This is a type of late Roman brooch very rarely found in Scotland. They are often linked to Roman officialdom, especially the military. Often made of solid gold, a metal-detector found example from Kinnesswood (Perth Museum registration no. xxx- to follow) is made of gilded copper alloy (a trace of gilding surviving on one shoulder). It also has punched decoration and is complete apart from the hinged pin, possibly lost through ploughing damage. It was probably a votive offering into

Loch Leven. Dated to the early fourth century, it represents a very rare find from the later Roman period, and was probably worn by someone of high, official (military?) status.

[image: crossbow brooch from Kinnesswood]

Brooches as votive offerings

As with the crossbow brooch just discussed, metal-detecting in recent years has recovered a significant number of Romano-British brooches, generally fragmentary, from around the margins of Loch Leven. Though the findspots are dry today they would have been below water or at the edge of the lake before the 19th century partial draining of the Loch to release additional farmland. A range of objects have been found from the Loch spanning prehistoric to medieval times and indicating the use of the lake to make ritual offerings to the gods or to otherwise appease the supernatural (cf. Cowie and Hall 2001; Cowie and Hall forthcoming). Notable examples of Roman Iron Age brooches include, in addition to the Kinnesswood crossbow brooch cited above : a plate and fantail brooch from Scotlandwell (Perth Museum registration no.2013.65); two headstud brooches from Easter Balgeddie and Kelty (Perth Museum registration no. 2015.117 and 2015.116 respectively; and two trumpet brooches from Kinnesswood (Perth Museum registration no. 2018.92 and 2021.53). The use of Loch Leven as a location for votive deposition is one to be returned to (Cowie *et al.* in preparation).

The increased volume and distribution of brooches during this period is notable when compared to the scarcity of brooches from the pre-Roman Iron Age. In general, brooches no longer represent unique, singular expressions of craftworking and identity; they become more available and predictable. It could be argued that brooches underwent significant transformation in meaning during the 1st and 2nd centuries AD, becoming multifaceted objects for negotiating relationships and creating and maintaining identities in a changing world.

Various types of decorative metalwork are found on both Roman and Iron Age sites; however, it should be noted certain types of jewellery and “flashy” fittings are not commonly found on the latter. Assemblages from Roman sites give a flavour these, for example, the excavation at the fort at Strageath (Frere and Wilkes 1989) produced a wealth of objects including plate and penannular brooches (ibid, 150-51, fig. 76) and other fancy military fittings such as an enamelled stud or dress fastener featuring an eagle (ibid,151, no. 60) and a stud in the form of Medusa’s head (ibid, 151, no. 62). Many objects did not fit with local tastes and some perhaps carried too much military connotation to be desirable.

[image: reproduce drawings of stud and fastener from Frere & Wilkes or find images]

Glass beads and bangles

Glass beads and bangles are another form of jewellery that show the mixing of Roman and local Iron Age preferences. Round beads, known as melon beads, are a long-lived form with a wide distribution. Melon beads were introduced by the Romans and have been found on many sites in Perth and Kinross, for example, the Roman forts at Ardoch ref. [xxx](#)), Cardean (ref. [xxx](#)), Fendoch

(ref. xxx), Inchtuthil (a single example, Price 1985, 303, 312, no. 15), and Strageath (36 in total, Price 1989, 202-03). They are also often found on Iron Age sites, most recently by excavation at Castle Craig broch where fragments of three glass bangles were found (Poller forthcoming; Case Study *Castle Craig Broch*).

[image: melon bead from Roman or Iron Age site]

[image: fragments of glass bangles from Castle Craig broch]

Belief and Ritual

A selection of Roman objects from Perth and Kinross tell us about Roman religious practice engrained in everyday life. Roman religion was generally tolerant and accepted other religions on condition they accommodated the worship of the emperor, deemed to have divine status.

Burial markers and architectural fragments

[image: 3D printed replica tombstone, painted as it may have been originally]

During investigations of Ardoch Roman fort in the mid-seventeenth century, a gravestone was recovered. In 1738 it was donated to the Hunterian Museum, University of Glasgow (registration no. F.52; Keppie 1998, 112-13, no. 47). Burials were made on the approach roads to forts (as with towns) and this example would have originally stood in that approach cemetery, as part of a larger monument. It was clearly reused after the abandonment of the fort as it was found in the Praetorium area of the fort (Christison *et al.* 1898, 402). The soldier named on the tombstone, Ammonius, is probably of Eastern Mediterranean/North African origin, he was serving in a military unit raised in Spain and stationed in northern Britain during the Flavian campaign. The translated Latin inscription reads:

'TO THE SPIRITS OF THE DEPARTED
AMMONIUS, SON OF DAMIO,
CENTURION OF THE FIRST
COHORT OF SPANIARDS, OF
27 YEARS SERVICE. HIS HEIRS
HAD THIS CREATED'

A piece of well-made architectural moulding (Perth Museum registration no. xxx) was an unexpected find from the souterrain at Shanzie. Presumably originating from the Flavian fort at Cardean, it may have been part of the bathhouse or come from a tomb or temple (Coleman and Hunter 2002, xxx). Fragments of Roman stonework are known from three souterrains south of the Forth, the example from Shanzie is the only known example from the Tay souterrain group (*ibid.*). Given the abundance of local building stone, the presence of Roman sculpture raises interesting questions surrounding the symbolic nature and value of such objects on Iron Age sites.

Stone altar

[image: stone altar from Bertha]

The most direct piece of evidence for official military religious practice is the portable sandstone altar found in the 1950s by two schoolboys, in the north bank of the river Almond, beside the fort at Bertha (Perth Museum registration no. 6/1958; Keppie 1983, 402, no. 16). Carved from a block of sandstone this would have stood in its own shrine at the fort at Bertha. It is inscribed DISCIPLINAE AUGUSTI, 'To the discipline of the emperor'. *Disciplina* was a supernatural personification of Discipline, probably created by the Emperor Hadrian, who reformed army discipline. This cult was obligatory and meant to keep the troops loyal through recognition of the divine status of the emperor.

Stone head

[image: North Muirton ritual head]

A carved sandstone head was found by two schoolboys in 1965 playing near a pile of stones at the North Muirton end of the North Inch (Perth Museum registration no. 19/1965; Ross 1966). The head has horns, now damaged, suggesting it may represent the Romano-Celtic God *Cernunnos*, or a Caledonian equivalent. He was the god of fertility, life, animals, wealth and the underworld. The empty eye pupils were probably filled with coloured stones or glass. The head may originally have come from a shrine on the Inch. The regular flooding of this land would have attracted fertility rituals. It was possibly in use at the same time, in the second century, as the Roman altar stone from the fort at Bertha (the early cult centre attributes for Bertha are discussed in Hall, Hall and Cook 2005).

Intaglios

Another supernatural attribute linked with Roman emperors, and so the well-being of the state, was fortune or good luck, personified as Fortuna. She is shown on a carnelian gemstone from Ardoch fort which would have been the setting in a finger ring, probably lost by a soldier in the first or second century AD (Perth Museum registration no. 2003.11; Hall and Henig 2002, 90-91, and cf. Henig 1978, no. 316 and 317; Johns 1997, nos. 154-56),

[image: carnelian intaglio from Ardoch fort]

An intaglio is a semi-precious gemstone (e.g. carnelian or jasper) or glass engraved with a design, frequently a deity, set into a finger ring with a bezel. On the frontier, particular deities were favoured by the army including Fortune, Success, and goddesses of the Parade Ground. Intaglios were a popular style of jewellery and are found across the Roman Empire and would have been worn by soldiers for luck and protection. Several are known from the Roman fort at Strageath,

some set into iron finger rings (Frere and Wilkes 1989, 179-180) including one depicting Cupid (Henig 1980, 93-4, pl.5.1; Henig 1989, 179, no. 1, pl. XXXVII A), the god of love, who was also a symbol of life after death.

Roman bells

A key type of object that speaks to both quotidian and supernatural aspects of everyday life is the bell. The small Roman hanging bell is found in two forms the circular, supra-chronological and the distinctly Roman quadrangular or pyramidal form, with a suspension loop at the apex. Generally they are made of copper alloy, usually with an iron clapper (for the type see Clarke 1971, 228-31). Their four small feet suggest their use was not confined to their suspension. Until recently the only Perthshire example came from Perth (NMS registration no. KA 23) and was interpreted as a Roman object which had passed into Caledonian hands, probably through trade and exchange (ibid, 229). More recently, an example was found by metal-detecting at Spittalfield (Perth Museum registration no. 2016.67) not far from the first century AD Roman fortress of Inchtuthil. In the same vicinity, and discussed above, were found elements of sword furniture. Both sword and bell suggest a Caledonian presence perhaps after the abandonment of the fortress. The iron clapper of the Spittalfield bell survives as a stub and damage has removed the four feet. Small bells such as this were used as apotropaic or evil-averting devices – the sound of its tinkling would have diverted evil influence. It could have stood on a piece of furniture or an altar or have been fixed to a horse harness.

[image: Roman bell]

Roman coins

Hoardings of Roman *denarii* form a very different class of Roman artefact which characterise this period. As of 2017, 41 silver coin hoards were recorded in Scotland from non-Roman contexts (Blackwell et al 2017: 20-21). In the north-east, a scatter of hoards around Perth and Kinross, Fife and Angus, lead northwards forming a dense linear distribution along the coast towards the modern-day area of the city of Aberdeen and five hoards distributed along the Moray Firth leading towards Inverness (ibid., Fig 3.2).

In AD 197, Roman statesman Cassius Dio records the failing of the Caledonians to honour their promises by assisting the Maeatae and the Romans are consequently forced to 'buy peace' (Blackwell et al. 2017: 21). Roman policy for the use of silver coin hoards as pay-offs to local groups around the northern frontier is well-documented (Hunter 2007a: 23-31, 50-53; Blackwell et al. 2017: 19-31). Bribery and tactical manoeuvres may have been used by the Romans to cause friction between competing social groups (Hunter 2007a, 23-31; Blackwell et al. 2017, 19-31). The distribution and context in which the hoards are found shows deliberate targeting of specific settlements (Hunter 2007a, 27-31); however, being in receipt of these diplomatic gifts may have become more a curse when the movement of Roman material stopped abruptly in the early 3rd century AD where the archaeological record shows social disruption (Hunter 2007a: 50-53; Blackwell et al 2017: 19-31).

Iron Age stray finds in Perth and Kinross mostly relate to single Roman coins and hoards, predominantly found in the 18th and 19th centuries, notably Drummond Castle and Taymouth (Macdonald 1918, 263-64). Many of these have subsequently been lost while others reside with the National Museum of Scotland and Perth Museum. There are four recorded stray finds of hoards of denarii where some or all elements survive; two are of low quantities and span a broad range of dates from Emperor Vitellius (AD 69) to Commodus (AD 180–192), namely 8 recovered from near [Inchyra](#) [MPK7817; Bateson and Hall 2002] and 14 from [Taymouth](#) [MPK372], Kenmore (Macdonald 1918, 263-84). Of note are 179 discovered in small batches between 1938 and 1974 from hillside at [Briglands](#) [MPK5602], Rumbling Bridge (Robertson 1959) with date ranges between Emperor Nero (AD 54–68) and Crispina (AD 178–192). It is possible that the small batches buried close to each other may represent an Iron Age group regularly depositing over an extended period. By far the largest hoard is from [Kirkness](#) [MPK5616] by Portmoak (Macdonald 1918, 264-5), where in 1851 over 700 denarii were reported as found, dating between the Emperors Nero and Severus (AD 54–211), and which have been interpreted as related to the Severan campaign in the 3rd century AD (Wilson 1852; Macdonald 1918, 264-5). This context may apply to more isolated finds such as the pair of denarii from Findo Gask (Hall 2002) for which we have no clear context nor sense of whether they were part of any larger accumulation(s). In addition to the votive implication of such depositional practices consideration should be given to other practicalities - the Inchyra hoard for example may indicate deposition at the site of a ferry crossing and analysing hoards for their landscape/taskscape locations should be encouraged. The finding of a trumpet brooch at Inchyra adjacent to the coin hoard find reminds us of a wider pattern of votive deposition to be taken into account.

[image: Roman coin hoard]

The valuable research carried out by The National Museum of Scotland regarding silver deposition across Scotland is important to understanding the nature and pattern of these stray finds. Payments associated with the terms reached between the Romans and some Iron Age groups following the death of Severus and the premature end of his military campaign (Blackwell *et al.* 2017, 25) offers context to the Kirkness hoard, although the relationship between the Romans and the Iron Age communities living south of the Ochil Hills in the Loch Leven basin remain unclear. Greater regional application of Blackwell *et al.*'s work and further assessment of the Perth and Kinross resource remains a beneficial area for future investigation.

[image: denarii from river Tay at Inchyra or Portmoak, Loch Leven – votive offerings]

Research Agenda

This section presents the agenda themes for the Iron Age in Perth and Kinross. Some are nested under the **overarching PKARF theme headings** aimed at addressing wider multi-period priorities and others are **period-based** and specific to the scope of this chapter. Where appropriate, a short explanatory note is provided detailing underlying **period-based** thematic priorities which is then followed by the research questions generated to address them.

Environment

Priority 1: The pre-Roman Iron Age in many places south of the Antonine Wall, is characterised by rapid and extensive deforestation. Population growth has been suggested as the factor for such a regionally vibrant rural economy. How comparable deforestation was in the Grampian highlands is an open question: pollen sites at Rae Loch and Methven Moss suggest that it was, but many more detailed and dated regional pollen records are needed to test this fully, and to relate it to archaeological models.

Priority 2: Iron Age hillforts are large enough to have had measurable environmental impacts, however little work has been attempted to understand this. Some hillforts on broad summit plateaux were isolated from farmland in the lowlands, thus disentangling hillfort construction and maintenance from other land uses, as demonstrated recently at Moredun, Perth. Local deforestation, soil disturbance, geomorphic change and soil erosion, and sourcing of exotic construction materials might all be detectable, and their dating would help define phases of human activity.

Priority 3[1] : Research on waterlogged timbers from Iron Age crannogs have significant potential to inform many aspects of Iron Age domestic life, usually not present on terrestrial sites. A broad reconstruction of the woodland resource available to the crannog builders around the lochs can be developed, as has been done for Oakbank Crannog. It also offers potential to develop Iron Age tree-ring chronologies for the area, at least for oak, as part of the wider potential of Perth and Kinross to contribute to the development of dendrochronology for the prehistoric period in Scotland (Mills 2021).

Priority 4: There is a need for comprehensive environmental profiling of Roman sites and their immediate environs (up to 1km radius) which, as evidenced at Bearsden on the Antonine Wall (Máté and Bohnke 2016), could significantly enhance our understanding of sites and their landscape setting.

Priority 5: Historical and archaeological evidence indicates significant changes to river courses and other water courses since the Iron Age. The river Tay and its estuary is a good example (Strachan 2010), and includes notable erosion at Inchtuthil Roman fortress. As a result, our interpretation of the relationship between sites and the course and navigability of rivers and estuaries is compromised. Palaeoenvironmental data could help to better understand the riverine and estuarine changes and build a better picture of water courses across the Iron Age *longue duree* and help to illuminate how rivers were utilised during the Roman presence.

Priority 6: Much of the area's straths and lower lying areas, such as the Carse of Gowrie, were historically a diverse mosaic of woodland, bog, and scrub containing smaller watercourses, very largely swept away since the post-medieval period. While these were widely used since at least the Bronze Age (Strachan 2010) the nature and extent of activity remains poorly understood. Improved palaeoenvironmental data linked to targeted excavation at, for example river oxbows or palaeo-channels on the Carse of Gowrie and in the lower reaches of the river Earn, could reveal the nature of river and littoral activity and the use of, for example, wooden trackways, fish-weirs,

watercraft and crannogs in now lost small open water bodies. Improved understanding of palaeolandscapes could also inform our understanding of the Roman response to these wetlands. Elsewhere in the Empire, wooden trackways and drainage channels were employed to exploit such areas and we might anticipate the same, if more short-lived, in Perth and Kinross.

Priority 7: The ScARF Roman priorities emphasise the value of more extensive environmental analysis at Roman sites, in particular dendrochronological dates[2] , when available, to assist with ongoing chronology debates (ScARF 2012b: 11). [It is recognised this cannot happen in isolation; there are so far no Roman period dendrochronological reference chronologies anywhere in Scotland, and much wider support for dendrochronology development is required, within and beyond Perth and Kinross, to enable regional objectives like this one to be met. Long reference chronologies would need to be built back in time from later periods for native tree species in Perth and Kinross for this objective to be met (see dendrochronology section in final chapter of research framework)].

Questions:

1. What can targeted palaeoenvironmental work tell us about deforestation over the Iron Age *longue duree*, and what can that tell us about the social and economic change, and other impacts of the Roman presence?
2. Can palaeoenvironmental studies help us better understand the development of monumental architecture through the Iron Age, was this linked in any way to Roman agency?
3. What potential is there for dendrochronological dating to contribute to addressing outstanding questions concerning the chronology of the Roman presence in Perth and Kinross?
4. What potential is there to develop Iron Age tree-ring chronologies in Perth and Kinross for archaeological dating, climate record and other environmental applications? Understanding historic climate change in relation to changing levels of tree cover and timber exploitation is a line of enquiry highly relevant to contemporary life.
5. How can environmental profiling enrich our understanding of the activities that took place at Roman sites, natural resource exploitation and their wider landscape setting?
6. How can further environmental analysis of the region's river networks, lochs and estuary enhance our understanding of Iron Age life and society and the Roman occupations supply lines, resource exploitation and troop movements?

Upland/Lowland Relationships

Priority 1: There is on-going debate regarding the extent to which an upland and lowland divide influenced Iron Age population, economy and settlement forms, with some monument types either only found exclusively, or heavily biased, to one environment. The distribution of souterrains, for

example, is almost entirely lowland, with only a few exceptions known in upper Strath Tay and Strathearn, and can be seen as reflecting an emphasis on arable production.

Priority 2: In addition to the upland and lowland influence on settlement forms, debate continues around the nature of settlement in the uplands east and west of the River Tay, with monumental forms, such as forts, duns and monumental roundhouses not known east of the river.

Priority 3: The extent to which an upland and lowland divide influenced house forms remains unclear and debated. The extensive lowland cropmark record for various round house forms, and excellent preservation of various hut circle types in the uplands, offers significant potential to test and refine thinking through a programme of targeted excavation.

Priority 4: Although several theories have been postulated, the strategic and physical relationship between the Roman forts situated along the highland boundary fault line and lowland installations remains unclear. This priority encompasses issues surrounding site contemporaneity and phasing through to connectivity, communication and supply, whether that be via land or river.

Priority 5: The relationship between upland Iron Age settlement and the siting of Roman military installations merits further investigation, especially with regards to the positioning of Roman forts. Several have been long recognised to be at lowland/upland interfaces but they are not currently known within upland areas such as beyond the highland boundary fault line, whether this represents reality or the limit of evidence is a valuable line of enquiry.

Questions:

1. What can the distribution of known souterrains tell us about the relative balance of arable and pastoral farming in the uplands and lowlands, and is this reflected in house and settlement forms?
2. What does the occurrence of monumental roundhouses, and relative scarcity of larger forts, in the uplands tell us about population size and the scale of organisation in comparison with the lowlands?
3. Is the apparent contrast between monument forms and settlement types east and west of the Tay real, and if so what does it tell us about social organisation and the role of the river Tay?
4. Can we identify development in local or regional round house forms through time and/or geographically?
5. With one exception, in the uplands crannogs are also known almost exclusively to the west of the river Tay. Does this simply reflect the relative occurrence of suitable open water – or were there other open water bodies that have since been reclaimed?
6. What is the strategic relationship between the Roman highland line forts and the lowland military sites?

7. What was the physical relationship between the Roman highland line forts and the lowland military sites in terms of interconnectivity and lines of communication?
8. To what extent was the siting of Roman military installations been influenced by pre-existing Iron Age population centres, especially at interfaces between upland and lowland?

Periods of Transitions

Priority 1: A historical reliance on the perceived chronological security associated with the Roman presence combined with radiocarbon plateaus (800–400 BC, 400–200 BC and AD 150–350) present an ongoing challenge for building Iron Age chronologies, detecting social, economic and environmental change and understanding the transitions into and out of this important period. The comprehensive application of more robust radiocarbon dating strategies incorporating Bayesian statistical modelling are therefore needed to add clarity to site and landscape chronologies.

Priority 2: Nationally, the first few centuries of the Iron Age are poorly understood and although this region is no exception, recent projects, such as Living on Water, evidence the potential, with the application of new techniques, for understanding in this region to be improved and at the same time to make a contribution to outstanding national questions. Accurate dating of archaeological evidence to 800–600 BC is of great importance for understanding the transition of lifeways, architectural traditions and technology from the Bronze Age to the Iron Age.

Questions:

1. How can more robust dating methods be applied to achieve greater chronological precision for known major changes and transitions in Iron Age society as well as identify new ones?
2. To what extent can periods of Iron Age upland abandonment/re-occupation be identified in Perth and Kinross and if present, what was the driving force behind them?
3. What activity can be positively identified to 800–600 BC?
4. In the absence of identified Early Iron Age activity, how should the transitional period from Bronze Age to Iron Age be understood?
5. Where and when do we have the earliest evidence for the adoption of iron and iron working technology?
6. Can indirect evidence, such as palaeoenvironmental signals, shed light on where and when iron and iron working was adopted?
7. What is the timing and tempo of construction, re-use, reoccupation and remodelling of large domestic architecture?
8. To what extent can analysis and synthesis of well-dated contexts with faunal assemblages give greater insight into animal husbandry practices/pastoral activity?
9. How transformational was the presence of Roman military activity for local communities?
10. Beyond the immediate environs of Roman military installations and transport infrastructure, how far does the influence of Rome extend across Perth and Kinross?
11. What evidence is there in Perth and Kinross for the emergence of Pictish identity in the 3rd century AD as identified from coastal Aberdeenshire and Fife (Noble *et al.* 2018)?
12. How do we ensure the continuous inclusion of existing museum collections and their evaluation in the light of new ideas and techniques?

13. Can we identify a distinct Middle Iron Age in Perth and Kinross?

Rivers as Routeways

Priority 1: The area includes significant lochs and river systems, and wetland in the form of upland peat bogs. While much subsequently altered (see Environment priorities), the importance of rivers and lochs for transportation, communication, and trade, and the full nature of crannog settlement, remains largely unknown.

Priority 2: The Tay estuary includes an extensive and unexplored intertidal zone, which in the past was fringed with coastal wetlands in the form of estuarine saltmarsh on the Carse of Gowrie and the head of the estuary. While the importance of both the estuary and its main tributary rivers for transportation, communication, and trade has been established since at least the Bronze Age (Strachan 2010), the full extent of use of these environments in the Iron Age, has not been fully realised.

Questions:

1. Can we identify evidence for transport and communication on rivers and lochs in relation to crannog use?
2. Given the significant changes to the inter-tidal, sub-tidal and estuary littoral since the Iron Age, how best can we recognise waterlogged remains in the inter-tidal and within the reclaimed Carse of Gowrie, to identify new sites and previously unrecognised activities?

Investigative Disparity

Priority 1: As with other periods, past archaeological survey and investigative foci have created a degree of imbalance in the distribution pattern of known sites. LiDAR and multispectral imagery coupled with automated feature recognition present opportunities to overcome potential biases including taphonomically derived issues related to historical land-use across environmental contexts (Bennett et al. 2014; Cowley 2016). Therefore, utilisation of available (and new) technologies and techniques to achieve region-wide archaeological survey coverage is considered a high priority.

Questions:

1. How can a systematic survey of Perth and Kinross utilising LiDAR and multispectral imaging help to address data biases and clarify our understanding of the region's Iron Age?

Funerary Practice

Priority 1: The radiocarbon and isotope analysis of the Women's Knowe inhumation revealed the potential for better understanding Iron Age funerary practice and burial rites through the

reassessment of historically excavated skeletal material held in museum collections. Submission of more samples for dating from both recent and historic archaeological investigations is a key priority.

Priority 2: Iron Age funerary rites remain poorly understood and this also impacts our interpretation of funerary practice in adjacent periods where similar burial forms, such as barrows and cists, occur. There is a need to adequately explain solitary graves, the longevity and location of burial sites, the relationship between monumental and flat graves within the same cemetery and why some cemeteries grow when others do not (Winlow 2010: 55). The reanalysis of existing museum collections is a key strategy here (Hall 2012).

Priority 3: The emergence of formal cemeteries in the Early Medieval period is a major development in eastern and northern Scotland, with square and circular burial monuments constructed to commemorate an elite (Mitchell *et al* 2020). The mechanisms for this development are still relatively poorly understood however and merit further investigation.

Priority 4: The lack of formal burials for much of the Iron Age raises questions about non-burial funerary practice, such as the use of funeral pyres or river deposition, while the lack of skeletal material for study inhibits new approaches such as isotopic analysis, to reconstruct diet and model mobility. The study of human remains from non-burial contexts, such as those recovered from the fire-destroyed monumental roundhouse within Moredun Top fort (Strachan *et al* forthcoming), should also be a priority for research. Given the lack of skeletal material from burials, they offer a resource both for isotopic analysis and an opportunity to explore domestic burial as part of domestic 'ritualisation' in the period (Tucker 2012). Museum collections and archives can be an important source for recognising burial practices in water, as with the sword from Cambus, river Forth, in the collections of Perth Museum (Cowie and Hall 2001).

Questions:

1. What can AMS radiocarbon dating of skeletal material from possible Iron Age (as well as assumed Bronze Age or Early Medieval) barrow and cist burials reveal about the chronology and nature of Iron Age funerary practice?
2. What can aDNA and isotopic analysis of skeletal remains from confirmed Iron Age contexts tell us about diet and mobility in the period?
3. Why do solitary graves occur and what do they tell us about Iron Age funerary practice?
4. What does the location of burial sites tell us about Iron Age society, beliefs and rituals?
5. How long were Iron Age burial sites in use?
6. What is the relationship between monumental and flat graves within the same cemetery?
7. Why do some cemeteries grow when others do not? What are the factors of continuity and reuse from one period to another?

8. Can we identify the evolution of monumental cemeteries through the assessment of cropmark evidence in relation to early Pictish symbol stones, fortified sites and settlement landscapes of the 1st millennium AD?
9. How best can we assess how common barrow enlargement was in this period?

Material, Society and Cultural Interaction

Priority 1: The development of monumental structures through the Iron Age has the potential to tell us much about the nature and scale of social organisation, and the transition from the Bronze Age. The study of forts, monumental roundhouses and brochs in the context of any surrounding settlement will help us better understand this phenomenon more fully.

Priority 2: The artefactual assemblage from Oakbank crannog presents a valuable resource for understanding Iron Age lifeways, in particular the remarkable preservation of wooden artefacts. As yet relatively untapped for research, more extensive study of this significant collection is considered a high priority.

Priority 3: The relationship between Iron Age communities and the Roman army requires further study. Historical sources imply a turbulent relationship but specific study of cultural interaction has been limited and merits far greater investigation. The work at Castle Craig broch (Poller forthcoming) is an important first step here.

Priority 4: Iron Age pottery remains poorly understood with limited research on its function. The continued use of the 'flat-rimmed ware' category in particular has hindered typological research on later prehistoric pottery. Greater synthesis, reassessment of assemblages outwith established typologically restraints are key priorities going forward.

Priority 5: As elsewhere in Britain, close monument juxtaposition suggests reuse and adaptation of abandoned Roman military forts, such as Inchtuthil and Ardoch, in the Early Medieval and later periods. Closer study of these potential relationships is an important consideration for understanding how indigenous communities responded to the withdrawal of Rome, and how new social structures emerged in the region.

Priority 6: Artefacts recovered from both Roman and Iron Age contexts across the region suggest an extended period of material exchange and interaction the nature of which required definition. Going forward, synthesis and reassessment of both Roman material found on Iron Age sites and Iron Age material culture present in Roman contexts should be undertaken.

Questions:

1. Can we identify contemporary settlement and land-use within the environs of monumental forts, monumental roundhouses and brochs? If identified, what does it tell us about social organisation and power in the region, and how does this change over time?

2. What can further study of the Oakbank crannog assemblage tell us about everyday life: wooden artefacts, such as butter dish, animal teeth plus some faeces from sheep and cattle, as well as possibly goat and pig from Oakbank crannog improve our understanding of animal husbandry in the Late Bronze Age/Early Iron Age?
3. What can further study of the Oakbank crannog plant remains tell us about everyday life: what can the Early Iron Age opium poppy seeds tell us about trade or cultivation? How can the plant remains contribute to theories on shared farming? the processing of spelt and emmer is believed to be the earliest evidence for Scotland - what can analysis of reveal about the trade and cultivation, and whether the social status of the processors can be implied by their presence or absence on a site?
4. What can individual artefact and chemical material studies of the Oakbank crannog metalwork assemblage (including the iron dagger, copper alloy swan neck pin, bronze ring, crucible fragments and the charcoal) reveal about metal acquisition, working and status in north-west Perth and Kinross?
5. What can the presence of Roman originating material culture on non-Roman sites tell us about the regional interactions between different communities, social groupings and polities?
6. What insights can artefact analysis offer into Roman and Iron Age interactions?
7. What insights into the Roman military and their followers could be gained from examination and re-appraisal of artefacts?
8. To what extent can the identification and subsequent study of Roman vici, cemeteries, religious sites as well as closely associated non-Roman structures contribute to our understanding of the relationships between Roman and indigenous populations in the region?
9. How can fieldwalking and other survey techniques in the areas immediately surrounding Roman forts improve our understanding of annexes and potential extra-mural activity?
10. How can we recognise the reuse of Iron Age sites by the Romans and their response to earlier monuments in the landscape?
11. Can we identify the presence of post-Roman activity on and around Roman sites by the Iron Age and Medieval population. What uses were the sites put to allow the survival of the earthworks to the current day?
12. To what extent is the apparent longevity of 'flat rimmed ware' real or does it mask regional and chronological distinctions?
13. How should 'flat-rimmed ware' be considered going forward and does it represent a homogenous pottery type across the second and first millennia BC?

14. As a descriptor, what role does flat-rimmed ware have in future research? What is the case for the development of better terminologies and typologies with refined dates?
15. To what extent is there evidence for 'flat-rimmed ware' extending into the first millennia AD?
16. What is the relationship between Iron Age and Roman pottery on domestic sites?
17. What could a synthesis of securely contexted and well-dated pottery assemblages reveal about regional and chronological distinctions within the pottery of this period, both within Perth and Kinross and in comparison with other regions?
18. How could a synthesis of Iron Age pottery help identify associations between particular settlement types?
19. What could the application of lipid analysis reveal about regional pottery assemblages and what could it tell us about the complementary roles of pottery and organic containers found on waterlogged sites?

Assessing the Iron Age Historic Environment

Priority 1: GIS-powered regional Historic Environment Records (HERs) and national datasets present a powerful research tool with new data management and visualisation software indicating that an even greater potential exists. Enhancement of database records and their terminology is an important priority for realising this potential and therefore help to address a range of research questions relating to the Iron Age.

Priority 2: The increased availability of remotely sensed data presents challenges and opportunities. In unimproved and semi-improved ground availability of LiDAR (ALS – Airborne Laser Scanning) data is likely to stimulate a significant change in the detection and interpretations of earthwork remains (Cowley *et al* 2020), while multi- and hyperspectral imaging may help to extend the windows for detection of buried sites through crop proxies (Moriarty *et al* 2018). The development of AI and Machine learning enabled detection of archaeological features in remote sensed data is promising and offers a means to explore the proliferating datasets. For the Iron Age in particular, such approaches can enhance our understanding of the period's diverse settlement forms and should be a key focus for any new survey programmes undertaken.

Questions:

1. To what extent can taphonomic and environmental context biases in the types and frequencies of settlement forms be controlled using HER and national datasets?
2. How could refinement of Iron Age settlement nomenclature used in datasets improve our understanding of the region's roundhouse architectural tradition?

3. How can HER and national dataset enhancement and analysis assist with clarifying the region's Iron Age settlement distribution picture?
4. To what extent can Iron Age settlement activity currently recorded as hut circle or roundhouse types be better quantified across the extant resource using existing excavation data?
5. How can HER software functions and data enhancement be used to better represent periods and phases of use/disuse at palimpsest sites such as forts and crannogs?
6. How can Iron Age burial evidence be better represented within HER records?
7. How can a wider application of non-intrusive survey techniques such as LiDAR, including interpretation of existing data, assist with reassessing existing Iron Age and Roman sites as well as identifying new ones?
8. What can the application of a broader palette of scientific techniques add to our understanding of the region's Iron Age and Roman presence?
9. How can the Roman influence on the landscape in the short term and in the longer term better be assessed and integrated with the wider evidence for the Iron Age?

Iron Age Settlement

Priority 1: There is a need to better understand why such a diverse range of settlement types, in particular roundhouse forms, exists in Perth and Kinross. New research methodologies and clearly reported consideration of domestic architecture are key to addressing this. Reassessing how roundhouse forms relate across geographical zones and to other contemporary monuments outwith the region will contribute to understanding the Scottish Iron Age as a whole.

Priority 2: There is a need to refine chronology and mechanism behind the transition from roundhouses to longhouses (Pitcarmick-type buildings) at the end of the Iron Age and into the Early Medieval period.

Priority 3: There is a need to explore and refine the chronology of the origin and development of monumental enclosure forms, including brochs, monumental roundhouses, duns and forts, and to compare with neighbouring regions.

Priority 4: There is a need to better understand the context of monumental, enclosed forms, for forts in understanding contemporary settlement and environment of the site within the landscape.

Priority 5: There is a need to better understand lowland enclosed settlement known through the cropmark record – ideally through comprehensive mapping of the cropmark record and a programme of targeted excavation of multiple examples/sites. This could be considered a high priority given ongoing destruction of cropmark sites.

Priority 6: Further consideration of the origins and reuse of monumental roundhouses is required. A review of material assemblages and the radiocarbon dates from historically excavated sites such as Litigan and Queen's View could assist with this (Strachan 2013: 115).

Questions:

1. What are the key differences between the region's roundhouse forms and what can they tell us? How do these regional patterns relate to patterning beyond the PFARF boundary?
2. To what extent can the underlying reasoning behind construction of different roundhouse types be determined through archaeological investigation?
3. How influential are material, taphonomy and later-land use to the variety of regional roundhouse forms?
4. What can Iron Age inter-regional patterning of settlement (e.g. east and west of the Tay) reveal about societal structure during this period?
5. To what extent can patterns or sequences of elaborate/monumental roundhouse architectural development be identified and what can they reveal about the region's Iron Age communities?
6. What is the relationship between duns and other monument forms in upland north-west Perth and Kinross such as the smaller monumental roundhouses and larger forts?
7. How do patterns or sequences of architectural development compare across different Iron Age domestic monument types?
8. How extensively are chronology patterns for large hilltop and other enclosures identifiable in the region and how do they compare with elsewhere in Britain?
9. What is the chronology for the origins of forts, and related monumental forms such as brochs, monumental roundhouses and duns – can this be refined and is it reflected in morphology?
10. What is the chronology for the use of palisaded enclosures – can existing botanical archives contribute through C14 AMS dating?
11. Is there potential for the use of LiDAR data, especially in uplands and in improved pasture, where the results of air photography and ground survey are limited, to revolutionise our knowledge of settlement when it becomes available?
12. Some forts, such as Barry Hill, Alyth, and Abernethy include large artificial ponds, at Abernethy this is in addition to a recognised cistern. Might these examples suggest a regional tradition similar to the examples known in Ireland? Were these water bodies artificial? Do they date to hillfort construction? Why were they made? What practices went on around them? Comprehensive lake-based environmental construction is needed at these and other hilltop forts.

Refining Roman Chronologies

Priority 1: While the region's Flavian presence has received considerable attention, datable evidence remains limited with much dating reliant on comparative analysis with sites and assemblages elsewhere. Opportunities to obtain datable material from secure Roman contexts and subject it to detailed and scientific analysis (such as dendrochronological sampling) should be taken. Reassessment of regional collections and assemblages in light of methodological or theoretical advancements beyond the county boundaries, such as the analysis of marching camp ovens near Ayr Academy (Arabaolaza 2019), should also be undertaken where they may impact chronologies and phasing in Perth and Kinross.

Priority 2: Beyond the 1st century AD the picture of Roman activity in the region lacks chronological definition and should feature prominently in future investigations.

Priority 3: Resolving the precise chronology and sequencing of the Severan fortress at Carpow is considered critical to understanding the period regionally and nationally (ScARF 2012b: 20). Reappraisal of the pottery assemblage and close comparison with the sequences from South Shields and Wallsend on Hadrian's Wall are a significant component to this priority.

Priority 3: Outwith the three main periods of the known Roman presence in the region, literary sources suggest other military activity occurred north of Hadrian's Wall, but whether these penetrated into Perth and Kinross is unknown. Stray finds in the region complicate the picture providing evidence of activity without necessarily indicating what or when it relates to. Further, excavations have suggested that there may be additional phases of activity that aren't easily accommodated within the traditional three Roman periods. Further work is needed that focuses on these vague suggestions of Roman activity with a view to bringing greater definition and chronological clarity to the complex picture. This should include targeting locations of key metal-detector finds to seek a firmer understanding of their landscape setting.

Questions:

1. How accurately can we date the first Roman military incursions into Perth and Kinross and the associated construction of temporary and permanent installations?
2. To what extent can the application of a range of dating techniques help to refine our understanding of Flavian and later Roman activity in the area?
3. What is the precise chronological sequence of the Roman fortress at Carpow and what does it contribute to our understanding of the Severan period Roman presence both locally and nationally?
4. How can fieldwalking and further artefact analysis assist with refining the dating of individual Roman sites?
5. What datable evidence for the multi-phase occupation of Roman sites can be obtained from fieldwalking and artefact analysis?

Roman Roads and River Crossings

Priority 1: Antiquarian accounts document Roman roads across Perth and Kinross but modern research has been limited, many may simply be more recent misappropriated 'old roads'. Reappraisal of these accounts with remote sensing and non-intrusive survey are an important consideration for future research to both critically assess existing roads and prospect for additions.

Priority 2: Points where Roman roads crossed the region's many rivers remain an elusive yet key element requiring investigation. Foremost consideration should be afforded to further examination of the potential Flavian crossing at Derder's Ford near the fort of Bertha, the possible Severan bridging point at Carpow and associated bridgehead camp near St Madoes. Any prospection for early bridge remains should include consideration of timber survival; any surviving timber could contribute to the wider dendrochronological development and dating objectives for the Roman period in Perth and Kinross.

Priority 3: Most of the region's Roman auxiliary forts, and the legionary fortress, are located on the River Tay and its tributaries, and with the importance of rivers for the movement of troops and supplies in the conquest of Scotland established (Jones 2018), it is clear that both rivers and the estuary were vital to transport and communication during the Roman presence. Understanding the relationship between military sites and waterways is a priority, with the identification of docking structures, harbour or landing features a key element of this. For example, the annexe of both Cargill and Cardean forts appears to reach a flat beach, a possible landing place that offers a promising starting point for investigation. Comparison and regional application of approaches from the extensive work carried out elsewhere in the empire on Roman harbours and landings sites over the last 20 years could be very promising.

Questions:

1. How far does the Roman road network stretch across the region?
2. What is the construction and use history of the region's Roman road network?
3. What can a reassessment of historical accounts add to our understanding of the Roman road network?
4. How can the application of remote sensing techniques, survey and spatial analysis bring to the identification and mapping of the region's Roman road network?
5. How and where did the Romans cross the region's rivers and what can the study of crossing places reveal about Roman movement, transportation and communications across the region?
6. How do the Roman roads interact with transport routes that already existed prior to Rome's arrival?
7. How can we identify the Roman riverine infrastructure?

8. What evidence exists for Roman harbours sites and landing places and what can they tell us about Roman construction and supply networks?

Understanding the Roman Presence

Priority 1: Our understanding of the Roman forts in Perth and Kinross is limited to the areas enclosed by the defensive fortifications and, in the case of the temporary camps and smaller sites, of the ditch and rampart defences themselves. Excavations from across the Roman empire have demonstrated that extramural structures can be expected even at small tower sites. Whether re-examining known sites or investigating new discoveries, future research should follow national recommendations and extend their study across a 1km buffer zone from the outermost defenses of the sites in question (ScARF 2012b: 44).

Priority 2: As evidenced from excavations beyond the region, such as at Kintore, Aberdeenshire (Cook and Dunbar 2008) and Ayr Academy, Ayr (Arabaolaza 2019), Roman camps offer great potential for helping with dating and characterising the activities of Roman troops on the march. Similar archaeological excavation in this region supported with a robust post-excavation research design should be undertaken as a matter of priority to assist with the characterisation and dating of the region's camps.

Priority 3: To a large extent new sites discoveries have been driven by aerial surveys conducted along the route of the region's main Roman road. The tower at Woodhead demonstrates the potential for further survivals beyond this line, especially in the area between Bertha and Inchtuthil but there is also potential in Strathallan south of Ardoch. Concerted efforts to identify sites in these areas could contribute significantly to our understanding of the Roman presence in the region. In particular, such work would assist with the outstanding question of why Inchtuthil appears to be disconnected from other sites to the east of the River Tay such as Cargill and whether it linked to the lowland forts like Bertha west of the river.

Priority 4: Although excavation has established that a reoccupation of Flavian forts such as Ardoch and Strageath took place in the Antonine Period, possibly as outposts for the Antonine Wall (mirroring the situation on Hadrian's Wall), there is some doubt as to whether the evidence represents multiple Antonine phases or refurbishments (Hodgson 2009). Further assessment of Antonine dated sites would assist with clarifying the nature of the Antonine presence in the region.

Priority 5: Many of the region's Roman sites appear to be located close to mineral deposits, good sources of building stone (e.g. the sandstone quarry on Gourdie hill north of Inchtuthil) or precious metal deposits (e.g. silver and copper near the highland line forts). There is also evidence for the use of local materials and local production of artefacts such as the courseware pottery found at Inchtuthil (Darling 1985: 323) and quernstones recovered from various Roman forts. Identification of Roman raw material extraction sites and a closer examination of the relationships between such sites and where military installations were located would offer valuable insight into understanding the mechanics of the Roman presence in the region.

Priority 6: Beyond the Ardoch tombstone, there is little knowledge of the identities and ethnicities of the Roman army and any followers (women, children, traders) within the region. A detailed re-analysis of existing artefact and ecofact collections could help address such questions and offer further insight into social aspects such as the origins of individuals, lifestyle, health, diet and beliefs.

Priority 7: One aspect of understanding interactions between Rome and the region's Iron Age populations is the closer examination of how Roman sites integrated into the wider populated landscapes. Sites such as Cargill, where roundhouses and souterrains overly or are closely associated with the Roman fort, should feature prominently in such studies as should comparison with nearby sites outwith the region but with similar features and in the same strath such as Carden fort, only 9 miles away in Angus.

Questions:

1. What can new discoveries and the reassessment of previously excavated sites contribute to the ongoing discourse and strategic interpretation of the Roman military presence in the region?
2. How can the re-assessment of historically excavated Roman sites enhance our knowledge and understanding of the wider Roman presence in the region?
3. What is the nature of the occupation activity evident immediately outside Roman forts and how does it relate to the activity within the defences?
4. What can the holistic study of Roman sites and the immediate environs beyond their defences perimeters reveal about the broader Roman utilisation of the landscape?
5. What can excavation and post-excavation analysis of recovered material reveal about the dating of the region's Roman camps and the activities of the Roman army on campaign?
6. To what extent can targeted surveys in areas beyond the main route of the Roman road identify new sites and extend our understanding of inter-site connectivity and functionality?
7. What is the nature of the Roman presence during the Antonine period?
8. What role did the region's reoccupied Flavian forts serve in the Antonine period?
9. To what extent did the Romans exploit natural resources?
10. What can a study of military site locations and their proximity to raw material sources tell us about Roman attitudes and policies towards the region's considerable mineral wealth?

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