A Study of Diverse Identities during the Roman Period in the Severn Valley: a Cultural Network Approach

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ABSTRACT

The traditional Romanisation model of Roman Britain is disputed by a number of researchers who claim that it is an artificial construct. Instead they posit models of identity formation in which a number of heterogeneous collective identities coexisted (e.g. nativism, creolisation and discrepant experiences, among others). Evidence for this is based on heterogeneous archaeological remains found in a number of archaeological sites and from recent research on status, gender and mobility. However, little research has been developed to assess the coexistence of heterogeneous identities in rural areas. This thesis aims to add to the body of evidence by studying rural areas in Gloucestershire and Shropshire. For this purpose, a novel methodological approach to evidence collection was used based on a mixed method strategy employing a quantitative network phase followed by a phenomenological phase. Using this approach, it was found that the identity evolution in Shropshire is consistent with the nativist model of identity formation because it reflects a polarisation between Roman and native identities suggesting native resistance against Roman ways. In contrast, the results for Gloucester are more aligned to a process of creolisation because it reflects the emergence of hybrid/mixed culture in lower order societies that may be attributed to differentials between post-conquest and non-egalitarian societies. This finding indicates that the dynamic of identity formation in Roman Britain was a complex social process that cannot be captured by the simpler Romanisation approach. On the contrary, it supports the discrepant experiences view suggesting that heterogeneous identities reflect different perceptions of history, culture and relations between coloniser and colonised societies.

DEDICATION

To my wife Silvana and my son Ian

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LIST OF ABBREVATIONS AND SYMBOLS

CBM: Ceramic building material

DEM: Digital elevation model

DTM: Digital terrain model

ECMNM: Endogenous Cultural Material Network Model

F: Farm

I: Industry

ID: Site identity

MMA: Mixed method approach

N: Nucleated settlement

NGR: National grid reference

OS: Ordnance Survey

R: Rural settlement

SI: Strength indicator

↑SI: Highest strength indicator value

↓SI: Lowest strength indicator value

V: Villa

W: Weighted link

CHAPTER ONE: Introduction

Research on Roman Britain has traditionally been carried out under a paradigm referred to as the Romanisation model introduced by Francis John Haverfield in the early 1900s (Haverfield 1905). According to this model, Roman Britain consisted of two distinctive identities: Romanised people who adopted the Roman ways of living; and native groups. In this paradigm, Romanised people are seen as civilised individuals who adopted the idealised values of the empire, and native individuals as barbarians.

This model was criticised in the 1970s by a number of researchers who argued that it failed to capture the complexity of the social relationships that emerge when two different cultures meet (see for example Millett 1990a; Hingley 1996; Webster 1996; Mattingly 2002; James 2003; van Oyen 2015). Firstly, there is no reason to assume that native people were passive followers of Roman traditions. Secondly, the dichotomy between Romanised and native identities was possibly a result of research focusing largely on sites with significant Roman influence such as villas. Thirdly, the adoption of Roman items by native people is not necessarily indicative of Romanisation; these people may have used these items in non-Roman ways. Finally, it is argued that civilisation seen as an idealised attribute of the Roman culture is a construct reflecting colonialist ideologies of the late nineteenth and twentieth centuries.

In response to these criticisms, a number of alternative approaches of cultural identity formation have been proposed to explain cultural interaction in Roman Britain. These include the following: emulation (adoption of Roman ways by the elite to reinforce they social position, and the diffusion of these ways to the rest of the society (Millett 1990b, 38)); nativism (native and Roman culture remained polarised (Webster 2001, 217; Hingley 2005, 40)); creolisation (emergence of a hybrid culture reflecting power differentials

between post-conquest and non-egalitarian societies (Webster 2001, 218)); and discrepant experiences (emergence of heterogeneous or discrepant identities as a result of different perceptions of history, culture, and relationships between coloniser and colonised (Mattingly 2004, 8; Mattingly 2006, 15)). According to these models, diverse identities may have emerged under different social negotiations.

Recent research on status, gender and migration supports the idea that identity formation in Roman Britain followed a complex process, because these attributes are associated with heterogeneous material culture expression suggesting that dichotomised interpretations of identity are an oversimplification of reality (see for example Mattingly 2006, 294; Revell 2016; Chapters 1, 5 and 6; Peachin 2011; Eckardt et al. 2014; Allison 2015; Sherratt and Moore 2016; Avery et al. 2019). The majority of these studies were developed in urban areas. Nonetheless, it is argued that this diversity may be most accurately identified in rural areas because it is in these areas that diverse types of rural settlements can be found.

While some investigations have been developed to gain an understanding of diverse identities in rural areas, little research has focused on the different types of material culture remains found in rural settlements in Roman Britain with the purpose of identifying diverse identities and their evolution over time. This observation is the basis for the research gap that this thesis aims to fill: There is a lack of research based on processual and phenomenological approaches that addresses the issue of heterogeneous identity in Roman-Britain by simultaneously investigating the distribution of material culture and rural sites, and the relationship between both these sites and the material culture found within them.

One possible reason why little research has been developed in this area is lack of data related to material culture in rural sites. However, a database that can assist in this research has recently been created and is available in the Rural Settlement of Roman Britain

Online Resource of the Archaeological Data Service. While this database contains biases towards sites that have been excavated, it provides significant information with the potential to inform about general patterns in relation to identity in Roman Britain.

The objective of this thesis is to contribute to filling the research gap described above by means of an analysis that uses this database. For this, a novel methodology was designed and applied to sites in Shropshire and Gloucestershire to explore the issue of diverse identities in the Earlier and Later Roman period. It consists of an extension of a type of mixed method approach used in other social sciences referred to as explanatory sequential design. This method consists of a quantitative stage followed by a qualitative stage that utilises the results from the first stage.

The first stage is based on network theory and used the database mentioned above to create network models of cultural material remains. In these models, nodes correspond to archaeological sites and links reflect similarities in material culture (e.g. two sites linked by a weighted link of 0.7 means that they share 70% of the material culture indicators considered in the model). Using Gephi software designed for network analysis (Bastian et al. 2009), clusters of sites reflecting similarities of material culture were obtained and plotted on a topographic map, with relief represented as a digital elevation model (DEM). The DEM used corresponds to the OS Terrain 5 available on the Ordnance Survey website[1]. The specific version used in this thesis is the one published as a grid of 5km by 5km tiles with 5m post spacing resolution (OS, 2017). These clusters were considered as different social identities because they contain material cultural remains that inform about specific lifestyle types that, according to some definitions considered in this research, form part of a social identity. According to these definitions, a social identity corresponds to a mix of lifestyle types that characterise a group of individuals.

[1] Available at https://www.ordnancesurvey.co.uk/business-government/products/terrain-5

The second stage consists of phenomenological analysis and was used to explore the nature of the landscape surrounding key sites that were selected based on parameters and considerations associated with the results from the first stage. The focus was placed on landscape affordability in terms of landscape attributes that enabled specific identity expressions.

Using this novel methodological approach, a number of new insights were obtained. First, not only were diverse identities identified, but also potential sub-identities and possible identity formation mechanisms that are consistent with some of the new conceptual models that have been proposed to explain identity formation in Roman Britain (see for example Webster 2001; Hingley 2005; Mattingly 2008). In addition, the proposed approach has the potential to inform about distinctions between land owners on the one hand and tenants and slaves on the other, although, it does not allow gender to be studied in detail. Second, these results not only support the traditional claim made by related research that native response to Roman arrival was diverse, but they also point to an evolving process of native identity formation, which is central to this thesis. For example, evidence of Roman occupation has been found in a number of sites in Shropshire such as the hillforts at the Wrekin and Nesscliffe Hill Camp, among others (Lock and Ralston, 2017; White et al. 2013, 159). However, the results obtained in this thesis suggest that native people in this area responded by diversifying into two distinct groups, a finding that is consistent with the nativist model of identity formation. In contrast, the results for Gloucestershire revealed a much more diverse response that is more consistent with creolisation. This suggests that processes of identity formation such as creolisation, nativism and emulation, among others, may have coexisted and manifested in different native groups across Britain during the Roman period, a result that supports the discrepant experiences approach proposed by Mattingly (2004, 8; 2006, 15).

This thesis is organised as follows. Chapter Two presents a literature review contextualising the current investigation within the research on Roman Britain. Chapter Three describes the research gap identified from the literature review and explains why the network approach can assist in filling this gap. Chapter Four introduces the mixed method approach designed to explore diverse identities in Roman Britain. Chapter Five presents the results from the quantitative stage of the mixed method approach. Chapter Six presents the results from the qualitative stage of the mixed method approach. Chapter Seven discusses the results and provides explanations for the identified diverse identities and their evolution. Finally, Chapter Eight concludes the investigation developed in this thesis.

CHAPTER TWO: Literature review

2.1 Introduction

The objective of this chapter is to provide a literature review on the research on Roman Britain in general and the Romano-British countryside in particular with the purpose of contextualising the current investigation. The aim is to use this review to highlight the research gap that this dissertation fills. For this purpose, this chapter is organised as follows. Section 2.2 describes the Haverfield's Romanisation model and its influence on research on Roman Britain. Section 2.3 describes research on the Romano-British countryside. Section 2.4 reviews research on Material Culture in Roman Britain from the perspective of diverse identities. Section 2.5 describes the archaeology of the areas selected for the current investigation, Shropshire and Gloucestershire. Finally, Section 2.6 summarises and concludes the chapter by explaining that the model proposed by Haverfield has been criticised because it is based on an assumed identity duality (i.e. Romanised vs. non-Romanised) that is not consistent with partial evidence suggesting the emergence of diverse identities under some underlying social process. It also explains that more robust and conclusive evidence of heterogeneous identities in Roman Britain may be found in diverse sites in the countryside.

2.2 Romanisation model of Roman Britain

Formal research on Roman Britain is considered to have started at the beginning of the twentieth century with the introduction of the Romanisation model by Francis John Haverfield (Haverfield 1905). Haverfield was considered the father of Romano-British

studies by his contemporaries and is the researcher who set the agenda for this research for over sixty years (Jones 1987, 87; Freeman 1996, 32). This section describes this model and the subsequent extensions that have influenced the direction of research on Roman Britain.

2.2.1 Romano- British analysis before Haverfield's Romanisation model

Since medieval times, the debate on Roman Britain has been influenced to some extent by the historic context in which Rome was studied. Thus, leaders in the past such as Elizabeth I attached symbolic meaning related to power, unity and peace to Britain's association with the Roman Empire (Yates 1975, 29). In this context, early works during the Renaissance movement and English colonial expansion attempted to associate England's strength and identity with the Roman Empire and Elizabeth I with classical imagery in terms of a British and Imperial ruler (Hingley 1996, 35; Laurence 1999, 388; Hingley 2000, 1). An example is Camden's Britannia first published in 1586. Camden's work provided a detailed account of the Roman monuments and history of Britain and the role they played in bringing civility to England; little attention was paid to material culture. Civility in this context was understood as a moral concept of controlling and civilising contemporary barbarians by means of the establishment of civil government, polite manners and the Christian religion (Kidd 1999, 99; Hingley 2008, 427-429).

In the following centuries, politicians and researchers continued to develop associations between Roman and British systems. For example, parallels were found between the Roman Republican system and the British political constitution, and between their respective architectural practices (Turner 1989, 65). This was coupled with the growing colonial achievements that promoted the significance of the Roman models on which English colonial practices were based (van Oyen 2015, 209). In this paradigm, the focus

was placed on military analogies between British and Roman officers and military men in terms of conquest and control of territories in Britain and overseas. This view was reinforced by findings of Roman inscriptions containing information about Roman soldiers, army units and military sites, and the discovery and mapping of Roman military monuments in northern Britain that were used to develop new ideas of colonialism based on a neo-Roman geography of mapping, road construction and fort building through which colonised territories were controlled (Hingley 2006a, 338).

2.2.2 Haverfield's Romanisation model

In the later nineteenth century, a change in emphasis was introduced by Francis John Haverfield in his seminal contribution published in 1905 (see Haverfield 1905, updated in Haverfield 1915). As a consequence of his contribution, he is considered by many as the founder and foremost exponent of Roman British archaeology (Freeman 1996, 19; Hingley 1996, 35; Hingley 2000, xii). He introduced the idea of cultural 'Romanisation' which became the centre of scholarly discussions and the basic direction for future research on Roman Britain for the next sixty/seventy years (Jones 1987, 87). This contrasting approach explicitly addressed the cultural conversion of Britons to Roman ways of living. According to Haverfield (1915, 10), Romanisation is based on two main aspects referred to as incorporation (i.e. defending the frontiers) and assimilation/denationalization (i.e. civilisation of the provinces): "*Their effort took two forms. They defended the frontiers against the barbarians and secured internal peace; they developed the civilization of the provinces during that peace*".

Haverfield's Romanisation approach is considered a model of progressive change linked to the positive moral role model of the Roman Empire and to the concepts of progress

and development common in the nineteenth and early twentieth century. That is, Romanisation in this context is seen as a directional and progressive process by which native groups of people in Roman Britain became increasingly Roman (i.e. Romanisation seen as a cultural transformation) (Hingley 1996, 39; Jones 1997, 33).

In order to support this view, Haverfield (1905, 9) used evidence available at that time. One example is the findings obtained from Calleva and Silchester, one of the most highly excavated and hence best investigated Roman towns in the early twentieth century. A number of stones discovered in this site contained complete and fragmented inscriptions written in Latin. In addition, smaller objects and rude bricks with Latin graffiti were unearthed. According to Haverfield, this proves that the common language of the upper class, servants and workers was Latin. This is accompanied by the fact that no native inscriptions were found in the excavation.

2.2.3 Research based on Haverfield's Romanisation model

The main two hypotheses of Haverfield's Romanisation model are that Rome maintained its empire by organizing frontier defences, and that it encouraged the growth of internal civilization (i.e. new language, material culture, art, lifestyle, and religion) within the provinces. These hypotheses led to provincial studies based on the principle of cultural homogenisation (Webster 2001, 211). These investigations were focussed mainly on Roman cities and forts because it was believed that the Romanisation process was relevant in these places (see for example Haverfield 1918; Calkin 1935; Kenyon 1935).

As a result of the emphasis that researchers placed on Roman cities, towns and fortresses, a number of excavations were carried out to explore the nature of these sites within the Romanisation paradigm. For example, Collingwood and Taylor (1924, 244)

explain, in relation to excavations carried out in Wroxeter, that new inscriptions revealed that native tribes were highly Romanised and had the capacity to undertake the construction of large and ornate buildings in the Roman style. According to these academics, by 130 A.D. the distinction between the Roman government and the native tribe, particularly the *Cornovii*, had disappeared.

The same research trend focussing on major Roman sites within the Romanisation view continued until the 1980s. Clear examples of this are found in the work developed by Sheppard S. Frere who devoted his research to early urban development in Roman towns and related sites (see for example Frere 1966; Frere et al. 1974) and the work by Thomas Blagg (see Blagg 1980).

New approaches and developments have been introduced since the 1970s as a result of criticisms of Haverfield's Romanisation model (see next section). This has generated a number of investigations from new perspectives that have changed the focus of the research on Roman Britain. In spite of this change of emphasis, there are still some researchers who are developing recent studies based on Haverfield's Romanisation paradigm (see for example Mullen 2007).

2.2.4 Criticisms of Haverfield's Romanisation model

In spite of the success of the Romanisation model introduced by Haverfield, it was subjected to criticism over a long period of time. In the 1930s, this model was criticised for the assumed linear progression from barbarism to civilisation and this criticism led to the concept of *fusion*: the idea that the civilization of Roman Britain is neither Roman nor British, but a fusion of the two cultures into a single unity different from either (van Oyen 2015, 211).

In the 1970s, Haverfield's Romanisation model was challenged by Richard Reece from the London Institute of Archaeology (James 2003, 180). Reece argued that it is difficult to support the central tenet of Romanisation that the city is the idealised way of life of civilisation. The evidence for this is that archaeological excavations have revealed that a number of Roman towns (e.g. Verulamium, Chichester and Colchester) were abandoned or under-utilised during the fourth century suggesting a process of de-Romanisation and Romanitas failure (see for example the work by Faulkner 1994; Faulkner 1996). In addition, the Roman conquest does not appear to have led to changes in terms of the nature and practice of land-holding in the province as would have been expected within the context of a Romanisation process. In fact, archaeological evidence in a number of farmsteads, villages and river valley gravels (e.g. Hampshire chalklands, Trent and the Welland) shows that it is difficult to separate the late Iron Age settlements from those of the early Roman period (Reece 1980, 84-85).

Another early criticism of Haverfield's model was introduced by Martin Millett, an influential student of Richard Reece. The main argument by Millett is that colonised people were not passive (Millett 1990a, 1). That is, participants (i.e. Romans and natives) were involved in a two-way process of cultural interaction based on a practice of negotiation (Laurence 2001, 95; James 2003, 180). Evidence that partially supports this view (in terms of rejecting a single one-way process of cultural interaction) is found in Hodder and Millett (1980). These researchers used linear regression to test the hypothesis that urban population densities tend to decline away from the centre in a negative exponential manner, a fact that has been identified by a number of geographers in other contexts.

In Hodder and Millett's study, the aim was to explore this relationship in terms of villa density around Romano-British towns. The rationale of this exploration is that villages are expected to be clustered around highly Romanised centres because a more Romanised town

layout and facilities would be more attractive to the villa owning classes (Hodder and Millet 1980, 74). In considering a sample of thirty-one Romano British towns, the researchers found evidence of fall-offs in density around major towns. However, in many cases this effect was small (i.e. low correlation coefficient) suggesting that Romanisation was not a key factor in determining the distribution of villages around major Roman Britain centres and that a two-way process of cultural interaction played a role in the relationship between towns and villages.

By the same line of reasoning, James (2003, 180) explains that the cultural homogenisation assumed by Haverfield's Romanisation model cannot be sustained: "*the Roman world was the product of incredibly multilateral interactions between social groups. Most retained diverse cultural traditions, while selectively innovating as the result of a mix of negotiation with, coercion by and resistance to the imperial power, leading to new syntheses locally redefining what 'Roman' meant*".

Other criticisms to the Romanisation model have been made by Hingley (1996, 42-44). Firstly, a number of material items have been assumed to indicate Romanisation. However, they are not derived from Rome but from other areas of the Empire (e.g. pottery produced in Roman Gaul and fine wares from Roman Britain). Secondly, a standard Roman image should not be assumed because ideas and concepts utilized within civitates, provinces and across the empire could be different, a fact identified from de-centred studies of the Roman Empire. Thirdly, work developed in disciplines such as sociology, anthropology and archaeology suggest that the process of change in societies is much more complex than the process assumed by existing Romanisation models. For example, these models do not consider the opposition of native people to new methods of control. This failure may be explained by the fact that Romanisation models are based on Roman literary sources that were written from a particular viewpoint but not from the point of view of those subjected

to Roman imperialism who were in general not literate. Finally, archaeological research has focussed mainly on excavation of houses and settlements of the elite. Nonetheless, research on less wealthy groups has largely been ignored making it difficult to challenge Haverfield's Romanisation model. In relation to this point, Hingley (2006a, 344) points out, based on existing evidence collected over 60 years, that a large majority of the population during the Roman period occupied a variety of places including settlements, villages, small towns and native settlements. Yet these sites were considered irrelevant to many earlier archaeologists because they did not fit the dominant theoretical perspective of Romanisation.

A further criticism of the ideas associated with the Romanisation model is that they reflect colonialist ideologies of the late nineteenth and twentieth century based on a simplistic acculturation model (Webster 1996, 4; Mattingly 2002, 537). In this regard, Millett (1990a, xv) argues: "*A review of this evidence seems especially important since members of the post-imperial generation (to which I belong) are seeking new explanations for cultural change in the Roman world: they are unwilling to accept the paternalistic view that 'the Britons did what they told by the Romans because it represented progress''*.

2.2.5 New models and approaches

The criticisms made to Haverfield's Romanisation model have led to a number of alternative approaches and models based on post-colonial theory. According to Webster (1996, 6), this theory is an exploration of colonial cultural politics with the aim of writing a new history, which de-centres the dominant self-histories of the West. It involves key elements, namely: the decentring of Western categories of knowledge; the articulation of the active histories of colonised peoples including their capacity of resistance; the deconstruction of the binary models that consider the West as a self-category and the

application of deconstructive techniques to structures of dominance and marginality in order to bring margins into the centre; and the critique of the imperialism of representation.

The key idea behind the new developments based on post-colonial theory is that the assumption that to be Roman was to be part of a unified experiential is flawed because a number of studies have recognised the diverse identities and means of expression of different communities within the province (Taylor 2013a, 172).

A model that addresses the issue of diverse identities was proposed by Millett (1990b). According to this researcher, the elite of the western provinces adopted Roman material symbols and ideas (e.g. Latin language, new styles of dress, architecture and behaviour, among others) with the purpose of reinforcing their social position by identifying themselves with Rome. These symbols and ideas passed down the social hierarchy encouraging people to aspire to a Roman way of life and, in this way, spreading the Roman culture, a process referred to as emulation (Millett 1990b, 38). In agreement with this model, Scott (2006, 633) explains that Romanised artistic expression was adopted as a means of expressing power and status within the province by local elites, and this artistic expression was emulated by other levels of the social hierarchy.

A related approach was proposed by Hingley in the 1990s who accepted the hypothesis that communities actively adopted new symbols and ideas to maintain control of power relations. However, he rejected the subjective assumption that there is a linear progression from primitive society to the modern world in which Rome was seen as the ultimate ideal and where lower class individuals were passive actors in this. His novel contribution was the introduction of a counter hypothesis stating that dominated individuals were not necessarily passive in the process of emulation and reacted by opposition to the new symbols and ideas (Hingley 1996, 44).

Some researchers have proposed a contrasting approach referred to as the British nativist model. According to this model, native society did not change and its culture remained hidden beneath the Roman culture (Webster 2001, 217; Hingley 2005, 40). In this setting, the adoption of Roman symbols is seen as a strategy that was adopted to feign Romanisation, but in private life, Britons refused to become Romans. This model is supported by evidence revealing slow uptake of Latin, the abandonment or under-utilisation of towns during the fourth century, the revival in foundation burials (possibly even involving infanticide) suggesting re-invention of old ways, and an apparent Celtic revival in the later empire (Reece 1980, 84-85; Mays 1993, 883; Green 1998, 185; Webster 2001, 212).

An alternative approach referred to as Creolisation was proposed by Webster (2001) who argued that the British nativist model and the Romanisation approach failed to explain the emergence of Romano-Celtic hybrid features in provincial culture that included art and religion. This is because the former approach polarises Roman and native identities, and the latter is only a form of acculturation that assumes that all levels of society were willing to adopt Roman symbols despite the fact that some social groups such as the rural poor had little to gain by adopting them (Webster 2001, 210-215). The proposed Creolisation model solves the weakness of competitor models in the sense that it suggests the emergence of hybrid culture by means of a process of negotiation of post-conquest and strictly non-egalitarian societies with unequal power relations. What emerges from this process is not a single dominant culture, but mixed cultures (ibid. 218).

A final interesting approach that is considered in this chapter is that proposed by Mattingly (2004 and 2006). Mattingly introduced the concept of "discrepant experiences" in post-colonial research to explain the emergence of heterogeneous or discrepant identities in Roman Britain in terms of the range of possible responses to Roman invaders, from close integration to resistance. According to this approach, different perceptions of history,

culture and relationships between coloniser and colonised lead to parallel but discrepant identities, and this heterogeneity is identified in material culture (Mattingly 2004, 9; Mattingly 2006, 15 and 525).

Mattingly agrees with Millett and Hingley that Roman symbols were adopted by other groups of individuals. However, Mattingly's approach argues that the highest degree of social homogeneity occurred mainly in a small elite who shared metropolitan Roman culture and was involved in the governance of the empire, but not necessarily in the rest of the society (Mattingly 2004, 5). According to Mattingly, it is difficult to accept the idea of the emulation process as a spontaneous and uncritical adoption of material culture. Likewise, it is difficult to accept the assumption that identity in a province is determined by power in terms of the elite's incentives to reinforce their social position by identifying themselves with Rome. In this context, Creolisation is in this thesis a good approach to represent the active role of lower orders in the social hierarchy. However, Creolisation focuses on the lower order rather than the entire spectrum of society, a fact that might limit its explanatory power. It is for this reason that Mattingly argues that both emulation and Creolisation play an important role in explaining the formation of different identities in the Roman provinces (Mattingly 2004, 7).

Mattingly's discrepant experiences approach includes these mechanisms and postulates that the cultural outcome that results from the interaction of different societies is not homogeneous and cultural variation can be identified from archaeological remains and other sources (Mattingly 2002, 540). In this model, discrepant experience is assumed to be the engine that led to discrepant identity within a society (i.e. heterogeneity of response to changing identity in which each group have their own versions of Roman or non-Roman identity). According to this approach, archaeologists need to interrogate the archaeological

record in order to identify differences in the use of cultural material and assess whether their occurrence can be attributed to different expressions of identity (Mattingly 2004, 9).

2.2.6 Evidence supporting the new models and approaches

The previous section shows a number of extensions that have been introduced in response to the criticisms of Haverfield's Romanisation model. A key conclusion of most of these extensions is that societies in Britain during the Roman period were not homogeneous because they were the result of different experiences and different processes that resulted in different combinations of cultural attributes and identities. There is in fact a body of current evidence supporting this conclusion, and the objective of this section is to describe some of it.

One such piece of evidence is discussed by Jones (1997, 1932) from the sites of Kelvedon, Skeleton Green, Gorhambury, and King Larry Line located in Essex and Hertfordshire. Excavations carried out at these sites have revealed significant variation in material culture during the Roman period in terms of structural remains, brooches and pottery pattern styles. For example, there is a shift in the layout and building style in the site at Skeleton Green that occurred c. AD 40-50. In contrast, a shift in architectural style at Gorhambury occurred c. AD 100. Likewise, significant variation has been identified in terms of style and fabric of pottery found in all these sites. According to Jones (1997, 1932), this evidence suggests that the negotiation process of power and identity was heterogeneous, and this led to diverse identity and a new manifestation of ethnicity. In considering these results, it is argued that diverse identities can be identified from different types of sites such

as rural settlements, nucleated settlement, and military forts, among others (Jones 1997, 130).

Other pieces of evidence are provided by Mattingly (2004) in the Fenlands of eastern England. Firstly, this area has traditionally been considered as un-Romanised. However, research developed on sites in the silt fens (an area where drainage was improved during the Roman period) has revealed two groups of sites with clear distinct elite cultural markers. One of them is in the northern fens and is characterised by a change in architectural elements, and the other is in the south and is characterised by the presence of portable wealth. Secondly, religious manifestation is also heterogeneous. For example, the distribution of Roman conventional practices identified from archaeological remains (e.g. inscribed altars, written testimony and sacrifice of animals) is strongly influenced by the pattern of military garrisons with few examples in civilian areas. In contrast, the distribution of Roman-Celtic temples follows a different pattern with most of them occurring in rural areas suggesting differences between religious practices among parallel identities. According to Mattingly (2004, 2), these evidences may reflect discrepant experiences in terms of responses to Rome, from close integration to resistance.

Diversity in artistic expression in the Roman period is also evident in the archaeological record. This is formally stated by Hunter (2008, 129) who argues that there is a range of styles of indigenous, Roman, and hybrid objects implying that indigenous design elements persisted in the art of Roman Britain. Examples of Iron Age motifs/styles of decoration that persisted into the Roman period have been found in personal ornaments, weaponry, horse gear and feasting paraphernalia, and examples of Romano-British items that display Celtic-style ornament are jewellery (mainly brooches such as the dragonesque brooch) and vessels. Celtic craft tradition also responded to changing circumstances, a fact that is identified from new forms of artefact and new artistic styles. This adaptability is seen

in morphological hybrids such as terrets with a number having Celtic-style decorated hoops with Roman-style fittings. Finally, regional variety has also been identified. An example is the different brooch types in western England and Wales (mainly trumpet brooches with Celtic-style decoration), and in neck ornaments. According to Joy (2011, 216), this type of evidence might suggest that local identity put resistance to conquest, and this was reflected in the production of elaborately decorated versions of traditional artefacts and the creation of new artefact types.

Another area that has been explored by archaeologists is the Roman effect on consumption practices in Iron Age societies. From this perspective, it is argued that the adoption of Roman objects such as pottery and vessels does not necessarily mean that they were used in Roman ways. In fact, the adoption of these objects may reflect their availability and convenience rather than expression of identity (Cooper 1996, 89; Eckardt 2005, 140). For instance, a new Roman style pot may be used to reflect status in a household, but not to eat Roman food in Roman ways implying that a relationship between consumption and the expression of identity may not in this case exist. It is also argued that material culture cannot be seen as the passive products of people's lives. On the contrary, they should be seen as playing a key role in sustaining existing social identities and creating new ones (Hill 2001, 12).

An example that supports this claim is the research developed by Meadows (1999) who studied the relationship between changes in settlement structures and the apparent changes in eating and drinking practices in three native-type settlements in the Upper Thames Valley: Barton Court Farm, Old Shifford Farm and Roughground Farm. In considering evidence from excavations and material cultural objects collected from these sites, the researcher concluded that changes in settlement pattern and consumption practices at the three sites suggest different degrees of household resistance to Roman ways of life

(Meadows 1999, 116). For example, Old Shifford Farm was restructured from a non-enclosed settlement in the late Iron Age to an enclosed settlement with defined entrances by the early Roman period. However, material culture objects and the animal and plant remains suggest that some of the pre-existing customs and culinary traditions were maintained. For example, containers that held the ingredients did not significantly change through time and were locally acquired. Likewise, the narrow range of pottery seems to indicate partial or total rejection of Roman-like pottery. By contrast, while the evidence at Barton Court Farm revealed that the settlement was also reconfigured in the early Roman period, it appears that people at this site did adopt Roman dining practices suggesting the acceptance of Roman lifestyle. This is inferred from evidence revealing an increase in the consumption of beef and changes in the public rituals of consumption.

A final example of evidence supporting some of the predictions of the new approaches described in the previous section is that of Gardner (2007). According to Gardner, the interaction between indigenous people and Roman armies in terms of practices related to burying, eating, dwelling and dressing involved long-term complex local negotiations of identity. This, in turn, led to a diversity of cultural manifestations in areas conquered by the Romans (ibid. 2007, 53). This has been identified between the fortress of Caerleon, the town of Caerwent, and the surrounding rural landscape in South Wales where interactions between soldiers, local members of the elite involved in civic administration, and farmers led to distinctive local trajectories of cultural change Gardner (2007, 50).

2.3 Research on the Countryside of Roman Britain

One of the key aspects of the research on Roman Britain discussed in the previous section is that societies during the Roman period in Britain were culturally heterogeneous and reflected different identities. This social diversity has led academics to argue that research on this area has to cover a range of different archaeological sites with the purpose of gaining a better understanding of social diversity and local identities.

In this context, a number of archaeologists have pointed out that rural settlements have largely been ignored in the research agenda of Roman Britain. For example, Mattingly (2004, 14) states that about 50.000-70.000 rural sites of late Iron Age and Roman have been reported, but only 3-4% of these are Roman villas which are the sites that have received most attention. This implies that about 97% of the rural landscape pattern remains little understood. In the same line of argument, Webster (2001, 223) and Taylor (2013a, 171) argue that the study of intercultural contact in Roman Britain has to be shifted from the traditional focus on elites to other less represented social categories including the rural poor because the provincial landscape is shaped by the identity and agency of rural communities. A similar argument is given by Taylor (2001, 46) who points out: "*there is little doubt that compared to many parts of the western empire, social life was orchestrated through rurally-based social networks, which expressed social relations through a range of material resources placed in a variety of important rural or religious contexts. For this reason alone it can be suggested that the study of rural society, and social practice in particular, is of especial significance to understanding the history of the province*".

The objective of this section is to describe what is known about the issue of rural settlements and societies during the Roman period in Britain in order to justify the research gap presented in the next chapter.

2.3.1 Early research on native rural societies

As in other areas of the research on Roman Britain, early studies of rural societies and settlements were dominated by the Romanisation construct introduced in the twentieth century. In this context, rural societies in Europe in general were seen as passive followers of Roman ways, a research perspective that persisted until the 1980s (Somerset Fry 1984, 212; Freeman 1997, 10; Fulford and Holbrook 2011, 332). In particular, emphasis was placed on villas rather than on native settlements that were considered as unromanised. This tendency to study villas as isolated units continued until the beginning of the 1980s.

According to Taylor (2001, 49), this early research focussed on two types of studies: typological and economic studies. Typological studies were developed with the purpose of describing and classifying settlements and house types according to their excavated plans (see for example Applebaum 1958; Ramm 1978). Economic studies, on the other hand, were developed to investigate changes in housing, settlement, agriculture, or craft production due to the economic impact of Roman rule on native societies (see for instance Dent 1983; Webster 1971; Webster1976)

2.3.2 Recent research on native rural societies

Despite the lack of research on Romano-British native rural settlements before the 1980s, significant progress has been made over the last few decades. The factors contributing to this are outlined below.

Firstly, the new theoretical approaches based on post-colonial theory proposed in response to criticisms of the Romanisation model influenced the direction of the research on rural societies in the Roman period to some extent (although there are still researchers

who use the Romanisation construct in their studies. See for example Redfern et al. 2010; Redfern and DeWitte 2011). This influence is evident in the fact that the Romanisation model is no longer considered as the dominant theoretical framework in recent academic work on Roman Britain rural societies with a number of them focussing on identifying heterogeneous aspects of rural societies as well as the continuity of Iron Age form into the Roman period (Taylor 2013b, 173). This view of rural societies has also been influenced by evidence of agriculture, material culture and settlement patterns revealing significant regional variation within the Late Pre-Roman Iron Age societies suggesting different reactions to the conquerors (Millett 1990a, 11, 66).

Secondly, significant improvements in research methodologies have contributed to gaining a better understanding of native rural settlements from different perspectives. For example, the development of systematic analysis of architectural remains and settlements in the landscape has helped researchers to relate rural settlement architecture in Roman Britain with social organisation, to recognise geographical distribution patterns, and to identify functional and symbolic aspects of rural societies (Clarke 1990; Hingley 1990; Mattingly 2006; Taylor 2001; Taylor 2007; Smith et al. 2016). An example of this research is found in Hingley (1990) who developed a model based on the division of space in a number of Iron Age houses into public and private areas. By comparing this model with Romano-British houses, the researcher concluded that indigenous architectural traditions continued to be used during the Roman period.

Another relevant methodological innovation was the development of environmental archaeology that has been extremely useful in identifying agricultural practices, dietary habits, regional diversity, differences in identity, and socio-demographic aspects of rural Britain Roman societies, among others (see for example Cunliffe 2005; Redfern et al. 2015; van der Veen and O'Connor 1998). Finally, systematic analysis of artefacts (e.g. pottery

fragments, metal objects, nail-cleaner, coins, etc.) at different scales has contributed in providing valuable information related to religious and cosmological beliefs, differences in identity, and wealth (see Crummy and Eckardt 2003; Hingley 2006b; McCarthy 2013; Meade 2008)

Thirdly, the research on rural settlements during the Roman period in Britain has intensified since the introduction of Planning Policy Guidance 16 in 1990 (which deals with Secretary of State's policy on archaeological remains on land, and how they have to be preserved in the countryside), and the introduction of well-funded national programmes such as the Countryside Stewardship Scheme to support preservation and heritage management in rural areas (Department of the Environment 1990, 1; Riley and Harvey 2005, 272). Planning Policy Guidance 16 is probably the most crucial element of all and has led to a number of big data projects such as the Rural Settlement of Roman Britain, Fields of Britannia, EngLAID, and Hoards, among others (Bland 2014; Rippon et al. 2015; Smith et al. 2016; Cooper et al. 2021). The impact of these initiatives on this research is evident when considering the large number of published and unpublished grey literature that have arisen since the 1990s covering different aspects of rural Roman Britain archaeology such as regional diversity, settlement structure, agricultural production, field systems, communications, ceramic distribution, and dietary traditions, among others.

These factors have not only pushed forward the research agenda in the area of native societies in rural areas, but have also revealed that these societies were in general heterogeneous and diverse. This suggests that the Romanisation paradigm is an oversimplification of the nature of native societies and moreover, that contemporary societies should be seen as the reflection of diverse identities that coexisted during the Roman period in Britain. The aim of this dissertation is to gain a better understanding of

these identities by exploring social differences in the landscape. This aim is described in more detail in the next chapter.

2.4 Identity and Material culture in Roman Britain

A key aim of this dissertation is to use analysis of material culture in the areas of Gloucester and Shropshire to investigate diversity of identity in the Romano-British period. However, justifying a relationship between material culture and identity is not straightforward and calls for a clearer definition of the concept of identity that can then be adopted for use in the current investigation.

The objective of this section is to present a definition of the concept of identity that is appropriate for the current study and to describe how material culture may inform about diverse identity by using this concept. This information is the basis for a proposed indicator of similarity that is formally described in the chapter on methodology.

2.4.1 The concept of identity

A number of researchers have pointed out that the concept of identity in the social sciences is ambiguous. It has been argued that this ambiguity arises from the fact that this term has been used variously to refer to different social aspects (such as race, nation, ethnicity, citizenship, democracy, class, community, tradition, and individual personality) as attributes that allow people to be recognised, or to social context (such as sameness among members of a group, political action, and social movements, among others) (McGuire 1982; McCafferty and McCafferty 1991; Brubaker and Cooper 2000, 5-8). As a

consequence of this ambiguity, a number of alternative concepts of identity have been proposed (Barnard and Spencer 1996, 292).

The notion of identity used in the current investigation is related to collective identities: identity reflects the role of individuals within a collective group and how they perceive themselves, and how they are perceived by others, as belonging to certain groups and not others (Diaz-Andreu Garcia 2005, 1; Jenkins 2008, 18). This notion is useful to link identity with material culture. To clarify this, Mattingly (2004, 11) and Hill (2001, 15) argue that social identity is multidimensional and can be seen as a composite of individual identity types. Consequently, people who share a relatively similar composite of individual identity types perceive themselves as belonging to a collective identity. On the other hand, identity types can be linked to material culture by means of specific social behaviour or habits. That is, because material culture can reflect particular actions, behaviours and habits, the latter can be seen as mediating connectors between material cultural remains and identity types (Swift 2017, 12; Eckardt 2014, 4). This idea is illustrated in the following figure.

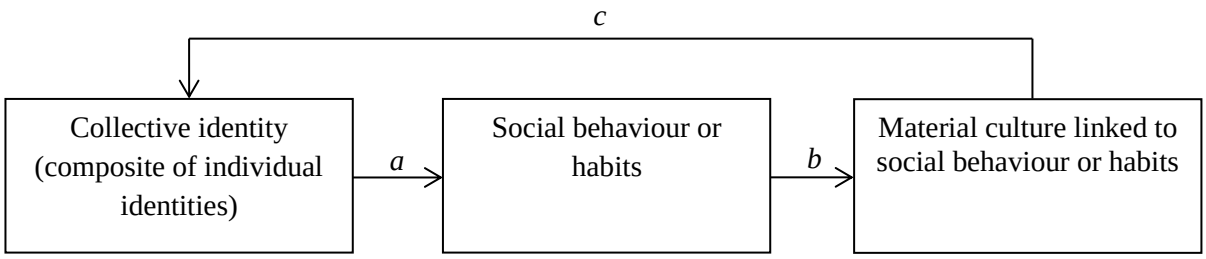


Figure 2.1. Relationship between identity types, social behaviour/habits, and material culture.

In this figure, the relation (*a*) reflects the idea that determined social behaviours and habits reflect a collective identity. The relation (*b*), in turn, suggests that determined social

behaviours or habits affect the nature (i.e. type and quantity) of material culture that can be identified from the archaeological record. Finally, the relation (*c*) proposes the idea that by knowing the relationship between material culture and social behaviour, it may be possible to recognise collective identities. These relationships have also been noted by Gardner (2002, 345) who explains that different material practices reflect the manifestation of differences between people that are the building blocks of social identities.

While this concept of social behaviour as a mediating variable is useful to link material culture to collective identity, it has the disadvantage that past social behaviour/habits cannot be directly observed making it difficult to define this connection. Nonetheless, recently some archaeologists have related lifestyles and activities to material culture suggesting that the former may be considered as proxies of behaviour. For example, Smith et al. (2018, 48) explains that cultural identities and social strategies may be reflected through a wide variety of lifestyle choices. Likewise, Eckardt (2014, 14) argues that variations in the proportion of material culture are likely to be related to patterns of activity. Finally, Millett (2016, 700) explains that variations in the character of rural settlements across Roman Britain reflect fundamental differences in the lifestyles of the populations.

In recognising both the difficulty in identifying past behaviour and the potential of adopting lifestyles and activities as proxies of behaviour, the theoretical framework in Figure 2.1 has been extended as follows.

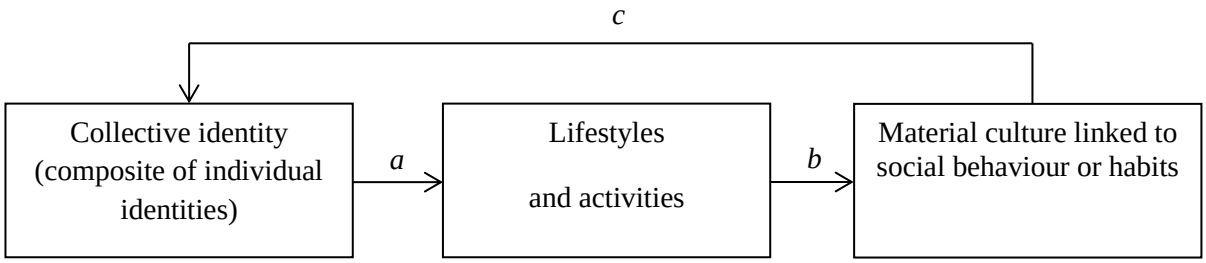


Figure 2.2. Relationship between identity types, lifestyles/activities, and material culture.

This framework is a version of the one presented in Figure 2.1. However, the contents of the second box have been replaced to highlight the fact that lifestyles/activities will be considered in the current investigation when linking material culture with identity.

The second advantage of adopting this approach is the fact that it is consistent with the dominant theories of identity proposed by sociologists and psychologists, namely: Social Identity Theory (i.e. a theory that considers identity in terms of categories), and Identity Theory (i.e. a theory that considers identity from the point of view of roles). This implies that this framework has strong theoretical foundations. These theories are outlined below.

Social Identity Theory postulates that an individual defines who he/she is (i.e. self-definition) according to the defining characteristics of the social categories (e.g. nationality, political affiliation, etc.) that she/he belong to. Each of these memberships is represented in the individual member's mind as a social identity that both describes and prescribes the ways in which he/she should behave (i.e. it links social behaviour or lifestyles/actions with identity which is the approach adopted in this thesis). In this paradigm, self-perception and conduct become in-group stereotypical and normative; perceptions of relevant out-group members become out-group stereotypical; and intergroup behaviour acquires competitive

and discriminatory properties to varying degrees depending on the nature of relations between the groups.

On the other hand, Identity Theory assumes that the self is the result of social interaction and this is reflected in the role that individuals adopt in the society (i.e. role identity). That is, self is a multifaceted social construct that emerges from the roles that people adopt in a society (Rust, 2013, 28). According to this theory, some identities have more self-relevance than others in that those located near the top of the hierarchy (i.e. salient identities) are more likely to be expressed in a determined situation and, therefore, are more self-defining than those near the bottom (Hogg et al. 2005, 258). This theory is also consistent with the lifestyle and activities approach to material culture because determined lifestyles/activities can be linked to specific roles that give salient identities.

2.4.2 Material culture and identity

As outlined above, a collective identity can potentially be identified by linking lifestyles and activities (as proxies of behaviour and habits) to existing material culture. A useful approach to make these links is an extension of the categorisation process developed by Hogg et al. (2005) that is referred to as the self-categorisation theory. This development argues that the process of categorisation accentuates both perceived similarities between stimuli (physical objects or people, including self) belonging to the same category and perceived differences between stimuli belonging to different categories (Hogg et al. 2005, 260). This argument suggests, therefore, that similarities between physical objects across archaeological sites reflect similar lifestyle and activity categories. This is in line with the view of Hill (2001, 16) who argues that many of the finds recovered by field archaeology are direct evidence of how people's identities were expressed, created and reinforced

through their choice and use of things. In considering these ideas, twelve broad categories related to lifestyles and activities have been identified from the literature. They are described as follows.

1. Building lifestyle: Architecture is considered as an important means of cultural expression that not only reflects social mores and ideologies, but also heterogeneous cultural identity within a determined society (Aaltonen 2008, 8; Herrle, 2008, 19; 2008, 239). For example, monument architecture during the Bronze Age has been interpreted as a reflection of hierarchically organised societies in which the labour class who built the monuments helped to establish the elite identity and authority and, therefore their own subordinate status identity (Knapp, 2008, 49). It is reasonable to hypothesise, therefore, that similar collective identities are linked through determined behaviour and habits to similar building lifestyles. This is illustrated by Revell (2016, 12) who argues that when a person enters a specific building for the first time, she/he knows where to go and the expected behaviour based on previous experiences in similar buildings. In this context, different Roman rural lifestyles probably coexisted within the countryside of Roman Britain. This is evidenced by the fact that there is a very broad spectrum of domestic architecture including round and rectangular houses, some with evidence of high levels of investment such as painted plaster walls, tiled roofs and window glass, among others (Smith 2016a, 44). According to Smith et al. (2018, 49), this diversity in rural architecture reflects a mix of cultural traditions, socio-economic aspirations and individual choice.

2. Household lifestyle: According to Gardner (2007, 99), cultural identities could be manipulated through a wide variety of lifestyle choices. In terms of household lifestyle, these choices can be directly or indirectly identified from a range of cultural remains including domestic tools, furniture, type of pottery, and presence of coins, among others (Días-Andreu et al. 2005, 103; Allason-Jones 2008, 89). Regarding direct identification of choices, this is illustrated by Millet (2016, 713) who identified a rapid change in lifestyles at Hayton. This is based on evidence of a transformation of round houses into new-style rectangular timber buildings that was accompanied by a change in the use of domestic material culture (e.g. furniture) indicating wider change in domestic habits. Regarding indirect identification of lifestyle choices, on the other hand, domestic habits of wealthy people may indirectly be reflected by the presence of fine pottery and coins because they can potentially inform about the purchasing power of these people (Allason-Jones 2008, 113; Ferris 2012, 17).

3. Kitchen activities and food preparation: According to Díaz-Andreu et al. (2005, 105), the ways of preparing food and the diversity of food consumption are relevant factors emphasising both similarities and differences between communities, and can be considered as social markers of group affiliation. In this regard, variations in the types of food, preparation and consumption at the regional level and across the settlement hierarchy are important elements in the construction and maintenance of social identity (Smith et al. 2018, 60). These variations can inform about the coexistence of heterogeneous expressions of identity in the same landscape or regional area. For example, current evidence has revealed a higher frequency of cattle at villa sites in the Central Belt suggesting that the owners had greater access

to better quality meat than other people in the countryside (Allen 2017, 112). In contrast, evidence of malnutrition and poorer food quality has been found in non-villa sites in the same area (Rohnbogner 2018, 314).

4. Transport: Different types of transport means/roads can affect the ways in which individuals manage the surrounding landscape and the natural resources they can exploit (Pinto-Correia and Vos 2004, 143). Likewise, different types of transport facilities can facilitate trade, communication and access to different places in the landscape such as focal urban areas, among others (Millet 1990a, 145; Mattingly 2006, 143, 259; Smith 2016b, 176-178; Millet 2016, 712). This suggests, therefore, that individuals with similar transport facilities had similar opportunities to trade, communicate and exploit resources in the local landscape. This may be illustrated by similar material culture reflecting similar transport habits.

5. Intellectual activity: Intellectual activity can be identified from material culture associated with literacy and this, in turn, can inform about the identity of the elite. This is because the ability to read in Roman Britain has been attributed to the elite and is related to a number of aspects of identity such as status and gender (Allason-Jones 2008 20-21; Eckardt 2017, 23-24). For example, it is argued that native elites may have adopted writing equipment as a symbol of cultural aspiration and a sign of competence (Eckardt 2014, 206). This suggests that literacy can be seen as an activity type that indicates people who perceived themselves as belonging to elite groups.

6. Security: The use of security devices may indicate the increased affluence of a section of society with the need to protect more materials (Mould 2011, 177). This is reflected by current evidence revealing a dramatic increase in the use of metal locks and keys on house doors during the Roman period (Allason-Jones 2011, 176). This suggests a distinctive type of individuals who cared about material possessions. This may also reflect lack of trust as a consequence of changes in communities.

7. Defence: Defence was an important activity during the Roman period because protection was required to keep the peace by different individuals such as the governor, procurator and small garrisons (Allison-Jones 2008, 25). It is also argued that defence was needed to protect agricultural supply networks by controlling the rural workforce in order to satisfy the Roman state's increasing demands for agricultural output (Smith and Fulford 2018, 354). The identity associated with defence in Roman Britain was the army, and the presence of soldiers has been identified from military equipment discovered in different archaeological sites (Mattingly 2007, 395; Allason-Jones 2011, 115).

8. Recreation: Recreational activities that involve physical infrastructures (e.g. theatre and baths) were mainly related to people with more free time living in urban areas (Smith et al. 2018, 61). However, material culture remains associated with gaming (e.g. gaming counters made of pottery, bone, glass and/or stone; and dices made of bone) have also been found in Romano-British rural settlements and field systems (ibid. 83). This evidence suggests the existence of a distinctive group of people in rural areas who had more time for leisure and social relationships, although it could also be related to activities that people did during a break.

9. Personal appearance: It is reasonable to argue that different individual behaviour is reflected in the way that people were involved with dressing, personal display, and decorative objects. Ferris (2012, 139) argues that a sense of self is created through the presentation of physical appearance and this can be identified through archaeological remains. According to Brindle (2018, 30), it is difficult to identify personal appearance in the Romano-British countryside because cultural material such as clothing has rarely survived. Nonetheless, the same researcher argues that some impressions can be inferred from existing evidence that includes brooches, hairpins, finger rings, and bracelets, among others. By recognising patterns of these remains across sites, it may be possible to identify social and cultural practices, and therefore, localised expressions of identity of people who shared similar personal ways such as dressing (Allason-Jones 2015, 70; Eckardt 2014, 128 and 150).

10. Personal grooming: According to Rosten (2007, 173), artefacts associated with grooming are indicative of particular methods of body alteration. It is argued that the objectives of altering the body in this way are: to create gendered and age-related identities (Eckardt 2014, 149); to project these identities to themselves by developing self-perception through the use of material culture (Smith 2007, 413); and also to satisfy the need for personal hygiene (Brindle 2018, 30). These objectives suggest that identities linked to personal grooming practices can potentially be identified from patterns of grooming material culture across sites. Patterns of this nature have indeed been explored by some researchers (see for example Crummy and Eckardt 2003).

11. Religion: Different beliefs may affect the way in which people perceive the world because many aspects of people's lives are framed and organised around religious practices (Díaz-Andrew et al. 2005, 127). This suggests that people who considered themselves as belonging to a similar identity group in the past, had similar beliefs and behaved similarly in relation to a number of ritual practices. For example, Revell (2016, 4) points out that there is evidence revealing an apparent emergence of new identities in some parts of Britain because some deities were accommodated to the Roman Cultural system suggesting the adoption of new beliefs and social practices. In relation to archaeological evidence, on the other hand, it is important to highlight the fact that while religious beliefs are linked to rural practices, it is difficult to identify beliefs from archaeological remains (Smith 2018, 135). However, because beliefs can be considered as a mediating connector between identity and religious practices, identifying these practices from archaeological patterns can potentially inform about religious identities which is the focus of this thesis. To illustrate this possibility, let us consider the following example. It is argued that the presence of shrines, temples and religious objects in several nucleated settlements is probably associated with religious practices that might have been used to create and maintain some level of community identity (ibid. 2018, 2003).

12. Economic activity: Economic activity is normally defined as the activities that involve production, distribution/trade and consumption of goods and services (see for example Pearce 1992; Black et al. 2012). According to Smith and Fulford (2018, 317), the most important economic activity in Roman Britain was farming. However, other relevant activities at that time were trade and the production of metal, pottery and craft, among others (Mattingly 2006, 491-504; Allison-Jones

2008, 133; Smith 2017, 174). Because economic activities such as the production of goods require a range of durable working artefacts, it is possible to identify these activities from existing archaeological remains. This can inform about diverse identities. That is, stronger social links may have been developed by people who were involved in similar economic activities affecting their sense of belonging to collective identities. This is outlined by Revell (2016, 90) who explains that daily working routines create a sense of self in terms of having a place within the wider society. Thus, people developing similar works or having similar knowledge probably had a sense of belonging to this sub-group and this can potentially be identified as patterns in the archaeological record (see for example Millet 2016, 715).

The twelve types of lifestyle/activities described in this section and the framework presented in Figure 2.2 are the theoretical basis for the methodology developed in this dissertation. In particular, this approach will be employed to determine similarity across sites in order to develop networks models of identity. This is discussed in more detail in the next Chapters.

2.4.3 Recent research on identity in Roman Britain: status, gender and mobility

Traditional research on identity in Roman Britain has been biased towards the elite and this has been influenced by historical narratives written by ancient writers such as Tacitus who focussed on high-status members of the society. In this paradigm, the role played by minorities, non-elite groups and women was largely ignored (for a discussion, see Revell 2016, Chapters 1, 5 and 6). This focus has changed over the last decades, and a number of investigations related to gender, status, and mobility have been carried out and

have demonstrated that society in Roman times was much more complex than previously thought. According to this research, material culture associated with these attributes is heterogeneous suggesting that dichotomic interpretations of status (i.e. elite vs. non-elite), gender (i.e. male vs. female) and mobility (i.e. incomers vs. locals) may not represent reality. On the contrary, heterogeneous material culture expression may indicate that identity formation is complex and involves the interaction of several attributes, lifestyles and activities. This supports the hypothesis that society in Roman Britain followed an underlying process of mixing identities such as creolization, hybridity and discrepant experiences (Mattingly 2006, 491; Eckardt et al. 2014, 536).

In relation to status, it is argued that Roman people ranked individuals socially by establishing rigid social hierarchies based on positions such as high-status individuals, land owners, tenants and slaves, among others (Mattingly 2006, 294; Peachin 2011, 27). This has been supported by several studies, with evidence revealing significant variability in material culture found in a number of burials (this variability has been identified in material related to pre-interment rituals for cremation and inhumation; containers of the dead; and grave artefacts), suggesting a more complex social identity than the elite, non-elite dichotomy (Pearce 2016, 343). For example, several inhumations were interred in coffins made of different materials (e.g. stone, lead coffin liners, and timber); and others were buried directly in the earth (Booth et al. 2010, 322). Likewise, diversity in material culture such as ceramic, glass and bronze vessels, and personal ornament have been identified in several burials (see for example Barber and Bowsher 2000; Cool 2005; Cool 2010). This evidence suggests that diverse identities and status expressions coexisted in Roman Britain, and this is reflected in different lifestyles types associated with the diversity of material culture deposited in these burials.

Regarding gender, on the other hand, it is considered as a social construct that interacts with other aspects of collective identity such as status and ethnicity, among others. That is, it is argued that gender is not fixed through biology because it also reflects a social dimension that is influenced by other aspects of identity, and thus changes as collective identity evolves (Sherratt and Moore 2016, 364; Avery et al. 2019, 157). This social dimension of gender is influenced by cultural processes that lead to gender differentiation. This is formally explained by Allison (2015, 107) who distinguishes 'being' gender and 'doing' gender as the two ways in which gender can be constructed as a social category. Being refers to the acceptance of socially accepted external appearance, and this is identified in the archaeological record in objects related to the maintenance of personal appearance and personal hygiene. Doing gender, on the other hand, refers to the roles and behaviours that are socially and culturally associated with a gender. Under this point of view, being and doing gender imply that gender is linked to a wide variety of social expressions that move beyond the biological duality of male-female. Evidence for this variety of expression has been found in burial, dress and adornment, economic activity, and family roles. For example, Avery (2019) studied dental health in Late Roman Winchester and found that gendered dietary experiences were related to social status, age and probably to differences in occupations and daily activities. The variability in gender expression suggests, therefore, that determined material culture objects can be related to gendered lifestyles and activities and this, in turn, contributes to the creation of diverse collective identities.

Finally, migration studies have revealed that there is not a correlation between local/foreign origin of people and material culture found in their graves suggesting significant migration into Britain from across the Roman world. For example, Eckardt et al. (2014, 535) adopted the theory of imperial and colonial diaspora (i.e. people who leave their homeland with the purpose of finding new jobs, carrying out trade activities or for colonial

ambitions) to investigate the nature of migrants in Roman Britain. Using a combination of isotopic analysis and material culture in graves, the researchers identified four types of people: individuals that appear to be foreign both archaeologically and isotopically; those that appear local archaeologically but are foreign isotopically; those that appear foreign archaeologically but are probably local isotopically; and those that appear to be local both archaeologically and isotopically. For example, a belt and crossbow brooch were found in a grave at Scorton suggesting local origin. However, isotopic signature of the skeleton revealed that this individual was not from Britain. According to Eckardt and Müldner (2016, 217), this type of evidence indicates that what matters is not only the identification of biological origin, but also its relationship with social identity. A related result was found by Chenery et al. (2010) who found significant diversity in the origins of the population of Gloucester in the 2nd century DC (i.e. domestic and foreign individuals) suggesting significant mobility both within Britain and between Britain and other parts of the Roman empire.

In summary, research on status, gender and mobility in Roman Britain does not support Haverfield's approach. On the contrary, results from this research have revealed that identity formation is complex and involves an underlying process of mixing identities.

It is interesting to note that the theoretical basis for the methodology developed in this thesis and summarised in Figure 2.2 is consistent with this recent research. This is because it is not limited to a particular high-status group of individuals. On the contrary, as revealed in the research on gender, status and mobility, diversity in material culture expression can be related to a number of lifestyle/activities and, therefore, to a collective identity that consider the main groups that formed part of Roman Britain society.

It is important to highlight, however, that the proposed methodology does not have the ability to inform about gender identity in detail. But may can link status to different groups

and make distinctions between land owners on the one hand, and tenants and slaves on the other.

2.5 Roman archaeology of Gloucestershire and Shropshire

In order to contextualise this investigation within the historical and current understanding of the Roman archaeology of Gloucestershire and Shropshire, this section provides a brief overview of the research in this area.

2.5.1 Roman archaeology in Gloucestershire

The conventional view of the Gloucestershire area in the Roman period was influenced by ancient Roman texts written between the 2nd and 4th Century AD such as *Geography* by Ptolemy and *Roman History* by Dio Cassius. These texts explain that this area was occupied by a relatively homogeneous (although not unified) and centralised tribe (Dobunni) with a capital at Corinium, the current town of Cirencester (for a discussion of these texts, see Holbrook 2008, 308; Moore and Reece 2001, 17-20). This view was reinforced by archaeological evidence (e.g. the distribution of coarse ceramic containers used to transport salt) suggesting that in the Middle Iron Age, the area was occupied by different communities that were connected by systems of trade and patterns of social interdependence. The distribution of coins in the area suggests that these communities became a homogeneous group in the Later Iron Age (Cunliffe 1984, 9-11). This view has changed and now scholars tend to agree that the Dobunni were not a centralised tribe, but rather, a social and political entity (see Moore 2011, 335).

When the Romans arrived in the area, they established two urban centres corresponding to current day Gloucester (Glevum) and Cirencester (Corinium). Gloucester was founded by 50 AD as a Roman fort to protect crossing of the River Severn, and became a settlement for retired soldiers by the end of the first century. One century later, Gloucester was densely populated and became a major urban centre with significant connections to relevant roads (Cheung et al. 2012, 61). In relation to Cirencester, on the other hand, the Roman conquest founded a cavalry fort near a Later Iron Age oppidum at Bagendon in about 50 AD. This oppidum was an important centre of production and exchange controlled by the local elite, and the arrival of the Romans did not have a significant impact on this complex (see Figure 2.3). The abandonment of several parts of the complex in 60 AD, the same year of the development of the town at Cirencester, suggests that the oppidum was replaced by this town as a centre of production, trade and commerce (Moore 2014, 27).

Traditional research on Roman Britain in Gloucestershire has focused mainly on these urban areas and also sites with high Roman influence such as villas. This may reflect the strong influence of Haverfield's Romanisation paradigm on this research at the beginning of the twentieth century, although several wealthy villas were previously excavated by antiquaries during the eighteenth and nineteenth centuries (Timby 2017, 306). Investigations in these areas and sites were developed with the aim to identify chronologies, Roman material culture remains, and the influence of urbanity and/or Roman ways on the surroundings, among others (see for example Hodder, 1974; McWhirr and Viner 1978; O'Neil 1952; Richardson 1962; Wacher and McWhirr 1982; Warry, 2017).

The research focus is evolving and there is now an interest in studying less Roman-centred aspects of Roman Britain in Gloucestershire. It appears that this change in emphasis is explained by the recognition that native populations were far less homogeneous and culturally bound than was previously thought (Chenery, et al. 2010). For example, it is now

well recognised that rural settlements in Roman Britain were very diverse (Allen and Smith 2016, 17). Likewise, archaeological evidence suggests a diversity of local responses to the Roman conquest, and non-uniform changes over the next centuries (Lucas 2001, 51; Moore and Reece 2001, 22). This evidence not only puts in doubt the binary opposites of Roman and Native assumed by the Romanisation model, but has also triggered an interest in the study of the diverse identities that may have co-existed during the Roman period in the region (Lucas 2001, 67).

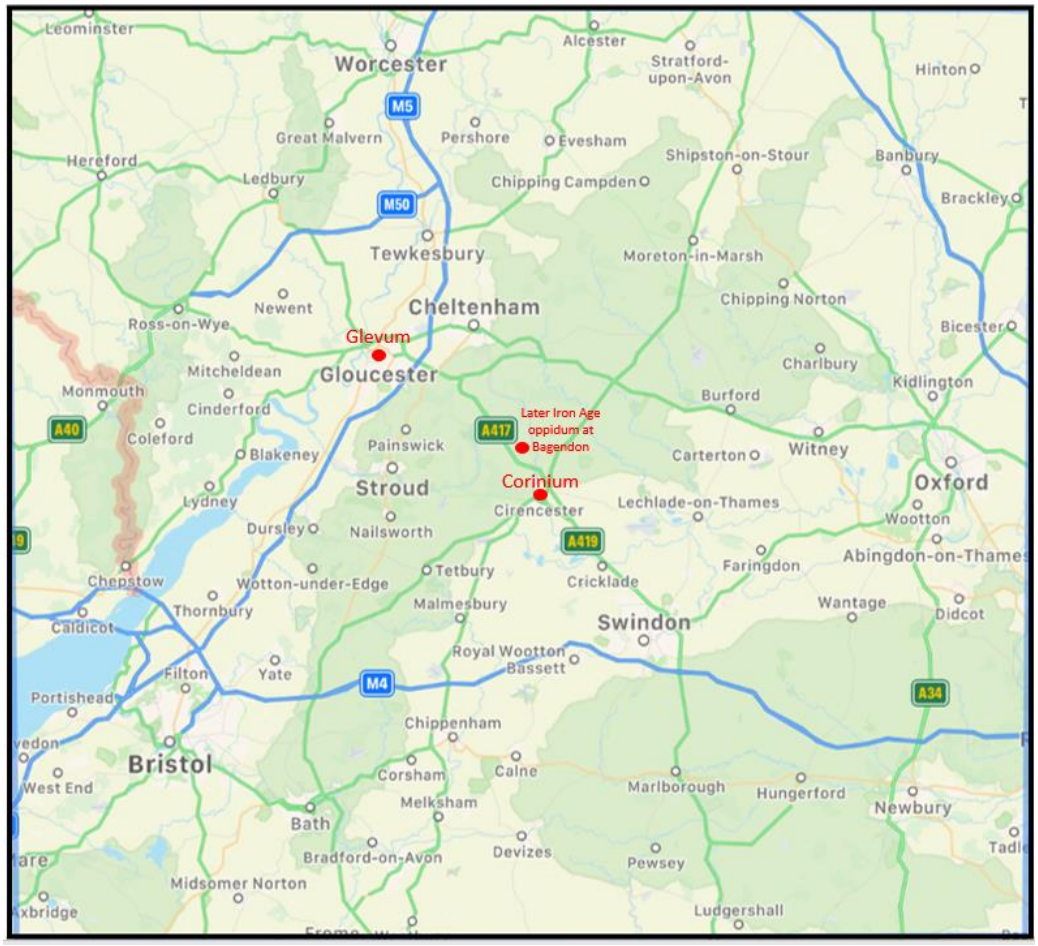


Figure 2.3. Gloucestershire: study area and key sites (in red).

2.5.2 Roman archaeology in Shropshire

Traditionally, the research on Roman Britain in Shropshire was focused on Wroxeter Roman city with excavations dating from the 19th Century, and these works were carried out with the purpose of exploring public buildings and commercial areas (see for example Wright 1872). However, little was known about the surrounding area of this city, apart from few studies providing cropmark typologies from aerial reconnaissance that revealed a suggested a significant number of farmsteads in the area (Buteux et al. 2000, 72). Excavations carried out on some of these sites revealed a lack of Roman material remains in these settlements, a fact that is referred to as Wroxeter's paradox (White and van Leusen 1997, 133). That is, Wroxeter was a successful Roman town but with little Roman influence in the surrounding area. Explanations for this paradox proposed by archaeologists include: the idea that native rural populations were hostile and resistant to urbanisation; the success of the town was apparent; that the economy of the region was underdeveloped; and the relative material poverty of the Cornovii or their weak social stratification (Buteux et al. 2000, 78; White and van Leusen 1997, 133).

A major change in this research trend was the introduction of the Wroxeter Hinterland Project (WHP) in 1994, a long-term research project which aimed to study the relationship between Wroxeter Roman town and its hinterland (Gaffney et al. 2000, 81). The results from this project revealed that Wroxeter actually exercised a strong influence on the surrounding area because it directed communal wealth into the town suggesting the presence of a strong and centralised elite (Buteux et al. 2000, 78).

Nowadays, archaeological evidence has revealed that native Iron Age people in Shropshire in pre-Roman times were more sophisticated than previously thought. Studies over recent years have revealed that they had a similar degree of sophistication to other

groups in the country (e.g. they developed metaled roads and participated in extensive trade networks), and they had local elite groups. Given the large number of hillforts and farmsteads, it is argued that native people occupied fertile arable lands that allowed them to obtain surplus to sustain a large population. Another interesting feature of this society is that they apparently did not produce and use pottery, although this may indicate that they used related items manufactured with materials that have not survived (e.g. leather and wood), or that have been recycled (i.e. metal) (White and Wigley 2018, 115-128).

When Romans arrived in this region, apparently established two lines of attack in North and South Shropshire secured by a number of camps and fortress along a road joining Chester (Deva Victrix) with Wroxeter, and also occupied several hillforts such as. It is suggested that this occupation not only implied a huge cultural impact on the native populations in the region, but also a significant loss of farmlands, forest and other natural resources for them. By the end of the first century, however, the army was reallocated to Chester and Wroxeter was left to the local tribal authority with a number of fortresses occupied by civilian settlements (White et al. 2013, 159 and 169).

While Roman rural settlements remain largely unexplored in Shropshire, some archaeological evidence suggests that over the ensuing centuries, societies in the proximity of urban areas and roadside settlements were influenced by Roman ways to some extent. This is inferred from findings that include: Roman style buildings indicating Roman ways adopted by local elites; the adoption of pottery, including samian; the production of local pottery and tiles mainly in roadside settlements; evidence of Roman food preparation; and also the influence of Wroxeter's urban life on the surroundings. However, lack of Roman material culture in areas away from urban and road settlements suggests lack of interest in adopting Roman ways in the rural population, or perhaps lack of resources to afford them (White and Wigley 2018, 125-128).

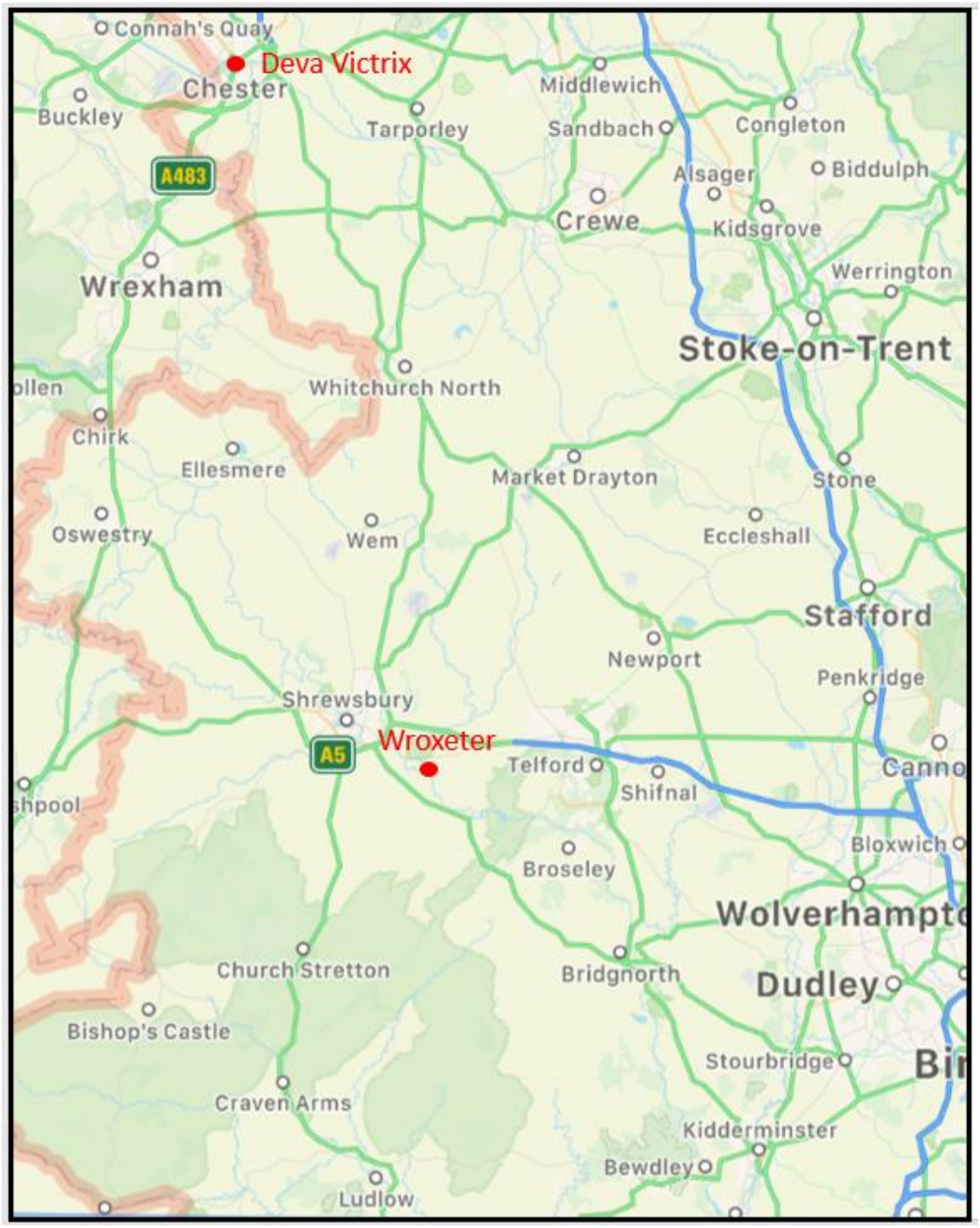


Figure 2.4. Shropshire: study area and key sites (in red).

2.6 Chapter summary

Before the twentieth century, the Roman Empire was seen as an idealised society in terms of values, superiority, morality and civilisation. This view was influenced by the historical context of England in which English colonial expansion attempted to associate England's strength and identity with the development of the Roman Empire in Britain.

In the early 1900s, an important shift in the study of Roman Britain occurred through a theoretical model introduced by Francis John Haverfield referred to as Romanisation. This model is based on two hypotheses: firstly, that Rome maintained its empire by organising frontier defences; and secondly, that it encouraged the growth of internal civilization within the provinces. This approach influenced the research on Roman Britain for over sixty years.

In the 1970s, a number of archaeologists criticised Haverfield's Romanisation model. Most of them argued that this model is an oversimplification. Firstly, the assumption that Romanisation and Roman cities represent an idealised way of life and of civilisation is difficult to justify given the discontinuity and abandonment of a number of cities during the Roman period. Secondly, Haverfield's Romanisation model implicitly assumes both that societies were culturally homogeneous, and that colonised people were passive in adopting the Roman culture. In doing this it neglects the possibility of a two-way process of cultural interaction based on a practice of negotiation. Thirdly, the adoption of Roman objects is not necessarily a reflection of Romanisation. On the contrary, indigenous and native societies may have used these objects in non-Roman ways. Finally, it is argued that Haverfield's Romanisation is a simplistic acculturation model that is based on subjective ideas reflecting colonialist ideologies of the late nineteenth and twentieth century.

In response to these criticisms, a number of new approaches and models based on post-colonial theory have been proposed. One of them, referred to as Emulation and

proposed by Millett (1990b), argues that the process by which indigenous societies adopted Roman ways of living is emulation. This concept is based on the hypothesis that the elite of the western provinces adopted Roman material, symbols and ideas with the purpose of reinforcing their social position, and that these Roman features were then spread to the rest of the population. A second approach proposed by Hingley (1996) endorses the idea of the adoption of Roman ways of living by the elite, but rejects the idea that lower classes were passive in the process. A third approach called the Nativist model (see Webster 1996) states that indigenous societies did not change but adopted Roman symbols to feign Romanisation. A fourth approach, referred to as Creolisation, states that Romans and native societies were involved in a process of negotiation that led to mixed cultures as a result of unequal power relations. A final approach considers the concept of Discrepant Experiences which suggests that heterogeneous identities are the result of diverse perceptions of history, culture and relationships between coloniser and colonised societies.

Some of the new approaches described above claim that societies during the Roman period were culturally heterogeneous. Current research on status, gender and mobility, as well as current archaeological evidence, support these claims in several parts in the UK. This has led some researchers to argue that archaeological research on Roman Britain has to cover a range of different settlements (e.g. villas, towns and rural settlements) in order to deal with the issue of cultural diversity. In addition, no site type should be neglected because they may contain information relating to local identity in terms of social, religious, political, and economic practices (see for example Webster 2001, 223; Mattingly 2004, 14; Thurston 2009, 391).

Paucity of currently published research in this area implies that there is potential relevant information that can be used both to identify local identities in rural areas and to gain a better understanding of social diversity during the Roman period. In spite of the lack

of research in this area, significant progress has been made in recent decades as a result of a number of factors, namely, the influence of new theoretical approaches based on post-colonial theory that were proposed in response to the criticisms to the Romanisation; the improvement of methodological approaches that have assisted researchers to gain a better understanding of the nature of native societies in rural areas; and the introduction of the Planning Policy Guidance 16 in 1990 as well as well-funded national programmes such as the Countryside Stewardship Scheme. New findings documented in published academic articles and unpublished grey literature suggest that native rural societies were heterogeneous with diverse cultural identity, proving that the Romanisation paradigm is not the most appropriate model to describe these societies.

In order to address the issue of identity and material culture, this thesis considers the notion of social identity which reflects the role of individuals within a collective group. In this concept, a social identity is seen as a composite of individual identity types. That is, a collective identity is formed of individuals who share relatively similar individual identity types. In considering this concept, it is argued that people in a collective identity have relatively similar social behaviours, and this is reflected in material cultural patterns in the archaeological record. In other words, social behaviour is a mediating variable between social identity and material culture. Unfortunately, social behaviour cannot be observed making it difficult to make connections between material culture and social identity which is the aim of the research developed in this thesis. However, using lifestyles and activities as proxies of social behaviour, possible links can be proposed.

This chapter finishes with a brief description of the archaeological record and histories of interpretation for the areas that will be considered in this investigation: Gloucestershire and Shropshire. Recent research in Gloucestershire has found that native populations were heterogeneous, and the focus today is to gain a better understanding of the diverse identities

that occupied this landscape in Roman times. On the other hand, recent research in Shropshire has revealed that local communities in the proximity of urban areas and roadside settlements were partially influenced by Roman ways. However, there is no evidence of Roman influence in rural settlements located away from these areas suggesting lack of interest in adopting Roman lifestyles. These findings are consistent with the results obtained in this thesis. That is, identities in Gloucestershire and Shropshire were heterogeneous. But the results obtained in this thesis also revealed that the origin and evolution of this diversity is different in these areas. In Shropshire, diversity seems to be explained by the nativist approach. In contrast, identity diversity in Gloucestershire seems to be explained by the creolisation approach. These differences support the hypothesis of discrepant identities in Roman Britain.

The information covered in this chapter is the basis for the research undertaken in this thesis. The ways in which this research was developed is explained in the next chapters.

CHAPTER THREE: Research gap and the network approach

3.1 Research gap and research questions

As shown in the previous Chapter, progress has been made in the research on native rural societies in Roman Britain and this has contributed to increasing the current understanding of the nature of these societies. New findings have proved that native people in rural areas were culturally heterogeneous, a fact that not only puts in doubt the validity of the Romanisation model introduced by Haverfield, but also suggests that rural societies reflected diverse identities.

In spite of this intellectual advance, little work has been undertaken to understand the issue of heterogeneous identity by studying simultaneously the geographical distribution of rural settlements, the relationship between these sites with each other and with the landscape, and their linkage with their material culture from a processual and phenomenological point of view (Revell 2016, 85). This fact is recognised by Fulford and Holbrook (2011, 341) who state that "*On the basis of what has been achieved to date, we are left with an imbalance towards research in the countryside on settlements (other than villas), rather than on settlements and their articulation with the landscape*". The potential of a research that addresses these relationships of settlements in the landscape is illustrated with the following examples.

Work by Taylor (2007) analyses rural settlement patterns with the purpose of identifying temporal and social markers through landscape change such as the size of farms, their dispersion and their association with trackway systems. This work could be complemented with material culture, cluster, and phenomenological analyses of sites in order to identify, for example, symbolic and functional associations of these sites with the

trackway systems. Likewise, these analyses could be used to contrast the robustness of descriptive works that normally link the distribution of earthworks and cropmarks to topography, soil variation, land use and underlying geography (see work by Fenner and Dyer 1994). For instance, a set of rural sites may be associated with a determined topography. However, these sites within this topography may be organised in clusters following functional and symbolic considerations, a possibility that has not been explored by these academic works.

Another complementary application of site distribution analysis by means of quantitative and qualitative approaches is in relation to works that have been developed to identify cultural zones. In this case, distribution analysis can inform about heterogeneous characteristics of apparently homogeneous groups. For example, results from studies of pottery distribution in the Severn Valley have been used to suggest the existence of a homogeneous cultural group in this area (see Evans 2001, 158; Evans 2002, unpaged). However, it is unlikely that homogenous groups can be identified only with the assistance of pottery distribution because an identity consists of a mix of attributes that can be reflected in different types of material culture remains (see Section 2.4). Consequently, it is not known whether this group organised heterogeneously in the landscape following natural, functional and symbolic considerations, among others.

Finally, processual and phenomenological material culture and site distribution analysis can contribute to the integration of evidence related to rural societies during the Roman period by adding evidence related to functional and symbolic aspects of the organisation of rural sites in the landscape. This would be a clear complement to integrative attempts made at the global (see McCarthy 2013) and local scale (see Booth et al. 2007).

Furthermore, site distribution analysis has the potential to provide evidence that may be used to support criticisms made by academics of some paradigms that have survived over

a long period of time. For example, it is argued that human groups in Roman-Britain should be viewed in terms of spheres of influence (i.e. differences in language, rituals, symbols, clothes, practices and people's actions, among others) and not as the dominant dichotomy of Roman vs. Native paradigm (Taylor 2001, 47; Mattingly 2006, 67,81; Moore 2011, 3501). Site distribution analysis can be adopted to test this view because, depending on the technique employed to analyse this distribution, it may be possible to identify different levels of interaction between groups of settlements in the landscape (this possibility is discussed in more detail in the next section).

In considering the potential of material culture and rural site distribution analysis to complement existing research dealing with different aspects of rural societies in the Roman period in Britain, the following research gap was identified:

Research gap: There is lack of research based on processual and phenomenological approaches that addresses the issue of heterogeneous identity in Roman-Britain by simultaneously investigating the distribution of material culture and rural sites, and the relationship between these sites and material culture with each other.

In considering this research gap, the following research questions are proposed for the current investigation:

1. Do Romano-British sites in the landscape reflect diverse identities?
2. How are diverse identities related to material culture in these sites?
3. Are diverse identities related to surrounding landscapes?
4. How did social identities in Gloucestershire and Shropshire evolve?

3.2 The network approach

In order to contribute to filling the research gap identified in the previous section, a network approach is proposed. This approach consists of the application of network theory to the study of the distribution of sites in the landscape using similarities of material culture across sites. In order to visualise the potential of this approach to study the distribution of material culture and rural sites in the landscape, a brief explanation of network theory is provided.

Network theory is part of graph theory first introduced by Leonhard Euler in the 1700s (Euler 1736). This network theory considers the existence of nodes that can be connected by links or edges. Nodes can represent individuals, groups, organisations, societies, etc. (Katz et al. 2004, 308). Networks within this context are described by means of a number of standard indicators (see Jackson 2008, 20).

The type of networks considered pertinent to this thesis are weighted networks (i.e. networks having weighted links). This is because two sites can share a fraction of the existing material culture in a sample of archaeological sites. Consequently, the indicators relevant for the current research and that can inform about weighted networks are strength and modularity class (Newman 2001, 2004; Barrat et al. 2004; Blondel et al. 2008; Opsahl et al. 2010).

The strength indicator is a measure of the involvement of a node in the network (i.e. it measures the relevance of a node in linking other nodes in the network) and is estimated by adding the weights of its links. A node with a high strength value means that it is highly connected to other nodes in terms of the number of links and the weights in these links. Formally, the strength indicator is defined as (Opsahl et al. 2010):

$$s_i = \sum_1^N w_{ij} \quad (3.1)$$

where s_i is the strength value of node *i*, and w_{ij} is the weight of the link between nodes *i* and *j*.

The modularity class indicator, on the other hand, is used to determine clusters of nodes that in the current research would represent broad identity classes. Clusters that are estimated by Gephi software (see Bastian et al. 2009) use the Louvain optimisation algorithm which corresponds to an iterative algorithm that is based on the following equations (Blondel et al. 2008; Agarwal 2012, 104).

$$Q = \frac{1}{2m}\sum_{ij}\left[A_{ij} - \frac{k_i k_j}{2m}\right]\delta(c_i, c_j) \quad (3.2)$$

$$\Delta Q = \left[\frac{\Sigma_{in} + k_{i,in}}{2m} - \left(\frac{\Sigma_{tot} + k_i}{2m}\right)^2\right] - \left[\frac{\Sigma_{in}}{2m} - \left(\frac{\Sigma_{tot}}{2m}\right)^2 - \left(\frac{k_i}{2m}\right)^2\right] \quad (3.3)$$

Equation 3.2 is the modularity measurement and measures the density of links inside clusters as compared to links between clusters, where A_{ij} is the weight of the link between nodes *i* and *j*; $k_i = \sum_j A_{ij}$ is the sum of the weights of the links attached to node *i*; c_i is the cluster to which node *i* is assigned; the δ-function $\delta(u,v)$ is 1 if $u = v$ and 0 otherwise; and $2m = \sum_{ij} A_{ij}$. It gives values between -1 and 1. Equation 3.3, on the other hand, represents the gain in modularity *Q* obtained by moving an isolated node *i* into a determined cluster *C*, where Σ_{in} is the sum of the weights of the links inside *C*; Σ_{tot} is the sum of the weights of the links incident to nodes in *C*; k_i is the sum of the weights of the links incident to node *I*; $k_{i,in}$ is the sum of the weights of the links from *i* to nodes in *C*; and m is the sum of the weights of all the links in the network.

The methodology used to identify clusters of nodes consists of estimating a modularity value for each node by means of Expression 3.2 under the assumption that each node belongs to a single class (i.e. the number of nodes is equal to the number of classes). After that, gains in modularity values are explored by means of Expression 3.3 by assuming that determined nodes belong to the same class. If there is an increase in the value of modularity in these nodes, then it is assumed that they belong to the same class. In contrast, if modularity values decrease, then the opposite is concluded. This process is repeated iteratively until no gain in modularity values is possible.

A refinement of existing modularity algorithms was introduced by Lambiotte et al. (2008) which corresponds to a dynamic approach that uses a resolution (or time) parameter to determine the number of clusters in a network. It is based on the idea that the size of stable clusters increases with time, and time can be considered in this context as a resolution parameter (Fortunato, 2010, 46). Thus, by selecting a specific value of the parameter, a number of clusters can be obtained depending on the structure of the network. For example, in the limiting case when time is zero, each of the nodes is in its own community. In contrast, when time tends to infinite, the modularity algorithm normally leads to two stable clusters (Lambiotte et al., 2008, 7). In summary, the Louvain optimisation method is used to identify clusters under a selected value of the resolution parameter. As explained below, both developments have been adopted in this thesis.

In order to illustrate the ability of the strength and modularity class indicators to describe a network, consider the following Figure.

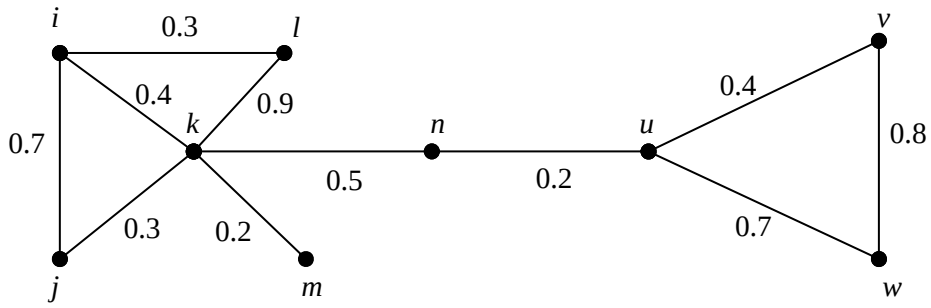


Figure 3.1. Network graph.

This particular network can be described in terms of strength and modularity class. For example, the strength of node *i* is 1.4 (i.e. the sum of the weights of its links: 0.3 + 0.4 + 0.7). In this example node *k* is the node with the highest strength (i.e. a value of 2.3) implying that this node is relevant and central in the network because it directly and indirectly bridges a number of nodes. In contrast, node *m* is the node with the lowest strength (i.e. a value of 0.2) implying that the structure of the network would not be strongly affected if this node was deleted. Regarding modularity class, this network is composed of two clusters. One of them is composed of nodes *i, j, k, l* and *m*. The second cluster is formed of nodes *u, v* and *w*. As illustrated in this example, it is possible to characterise this network both in terms of groups of nodes that belong to the same cluster, and nodes that have an important role in bridging different areas of the network.

The current research extends the work developed by the author in his master studies by means of the introduction of a type of network approach referred to here as *Endogenous Cultural Material Network Model* (ECMNM). It consists of a network model of site distribution that uses similar material culture (e.g. ceramic) as links. In this network, two sites are said to have a link when they have the same type of material culture. The objective of introducing the ECMNM is to explore possible heterogeneous native identities, Roman

influence on rural society and native influence on Roman groups by means of processual and phenomenological approaches.

This model is said to be endogenous because it emerges from existing data without imposing *a priori* assumptions on site distribution or human behaviour. This differs from other existing models of site distribution in that they assume ex-ante patterns that are supported by economic or political considerations. Examples of these models are the Central Place Theory and Gravity Model, among others (Renfrew and Bahn 2000, 178; Hare 2004, 802). In considering these traditional models, the advantage of the proposed ECMNM is that it does not impose *a priori* any assumption of site distribution or economic/political behaviour preventing, in this way, the introduction of biases that may arise when interpreting the landscape from the point of view of our own contemporary social paradigm. In this sense, the ECMNM is silent and only reveals an existing arrangement of sites that is identified from a mathematical method that is based on graph theory. This makes the proposed ECMNM a key contribution of the current investigation.

3.3 Existing archaeological research based on the network approach

While network theory is not yet a mainstream part of archaeological research (Brughmans et al. 2020, 3), it has already been applied to archaeological investigations that study patterns and processes of interaction of past societies. Early works include, for example, Haggett and Chorley (1969) and Clarke (1972). However, resurgence in interest in network analysis after an initial peak of interest in the 1970s emerged only during the past decade (Brughmans 2010, 227; Isaksen 2013, 43).

Archaeological research based on network analysis normally defines settlements or sites as nodes and similar cultural material or artefacts contained within them as links (e.g.

two sites containing similar ceramic remains are connected). This approach has been used to investigate, for example, long-distance communication and trade patterns in the past (Phillips 2010; Gjesfjeld and Phillips 2013; Sindbaek 2013; Östborn and Gerding 2015); state formation, social hierarchisation and political systems (Mizoguchi 2009; Mol and Mans 2013); migration patterns of prehistoric societies (Mills et al. 2013); the rise of ethnic groups (Blake 2013); social relations within and between groups in prehistory (Coward 2010); and the analysis of archaeological data to define links between archaeological contexts (Östborn and Gerding 2014).

Other researchers have assumed different types of links to analyse archaeological networks, particularly when available cultural material and artefacts are too scarce to identify reliable links between sites. For example, Knappett et al. (2011) adopted modern distances between settlements as proxies of links (i.e. sites are linked if the separation between them is smaller than a determined distance) to generate maritime networks models with the purpose of studying Minoan palatial collapse.

Other academic works have employed language and cultural similarities between communities to define links between them. This is the approach adopted by Terrell (2010) to analyse social and cultural boundaries between communities in the Sepik coast of Papua New Guinea. Finally, intervisibility between archaeological sites has also been adopted as a link into a network framework by some researchers (see for example, Swanson 2003; Bitria 2008; Shemming and Briggs (2012).

A common aspect of the academic works based on the network approach is that they are descriptive and they do not normally employ indicators used in network theory such as modularity class or strength. That is, they have a tendency to describe the network but not to process this information using available tools based on this theory. As a consequence, it is not possible to obtain a more complete picture of site distribution from these studies. An

exception to this descriptive perspective is the work by De Montisa and Caschili (2012). These researchers investigated the hypothesis that the spatial patterns of the Nuraghes towers in Sardinia obeyed rules of intervisibility control over the surrounding territory. They processed visibility data obtained from DEM in order to describe the towers in terms of degree, betweenness centrality and clustering coefficient. By using this approach, the researchers identified dominant towers. Even though this work is closely related to the approach proposed here, it differs in some key aspects. Firstly, Montisa and Caschili used degree (i.e. number of links in a node), betweenness centrality and clustering coefficient to characterise the Nuraghes towers, but not to generate an endogenous network model of settlement distribution. Secondly, these researchers only considered the Nuraghes towers in their analysis. However, the proposed approach considers all types of sites and settlements because it assumes that cultural relationships are not exclusive to single monuments in the landscape. For example, there is no reason to assume that Nuraghes towers were not culturally related to contemporaneous field systems and other sites in the surrounding landscape that may have influenced their location. Finally, the researchers use unweighted links in their analysis which is a reasonable assumption for intervisibility analysis. However, unweighted links are not suitable for the current investigation because these links do not capture cases where sites share only a fraction of material culture. This is why weighted links were adopted in this thesis. In this case, the weight of a link represents the percentage of similarity between two sites in terms of material culture. These distinctions make the proposed approach a novel contribution to this research area.

Another relevant aspect of network analysis in archaeology is the study of network structure evolution. According to Brughmans (2010, 283), research on dynamic archaeological networks is scarce, and existing works consider mainly statical descriptions of nodes and links. This researcher explains that some archaeological works have addressed

the issue of network evolution by means of mathematical algorithms based on either rational principles (e.g. weighing the costs and benefits of maintaining connections in the work by Knappett et al. (2008) on past maritime networks) or stochastic processes (e.g. stochastic network growth in Bentley and Shennan (2003) who studied the spread and persistence of cultural traits) that allow a network structure to evolve. The current investigation also analyses the evolution of the ECMNM proposed in this thesis with the purpose of identifying the evolution of diverse identities. However, rather than imposing a subjective evolutionary mathematical algorithm, the approach adopted in this investigation consists of a comparison between static ECMNM in two different periods of time: Earlier and Later Roman Britain. The advantage of this approach is that identity evolution is interpreted from the changes in material culture over time rather than from an imposed subjective mathematical process (for a related discussion on challenges in network interpretation, see Brughmans et al. (2020, 12)).

3.4 Chapter summary

This chapter explains the potential of the study of material culture and rural site distribution, by means of processual and phenomenological analysis, to aid in gaining an understanding of the nature of rural societies in the Roman period in Britain. It is argued that this analysis can provide valuable information about different identities that coexisted in rural areas and how they influenced one another. In considering this potential, the following research gap was identified: "There is lack of research based on processual and phenomenological approaches that addresses the issue of heterogeneous identity in Roman Britain by simultaneously investigating the distribution of material culture and rural sites, and the relationship between these sites and material culture with each other".

In considering this research gap, a network approach is proposed to investigate the distribution of material culture and rural settlements in the landscape. This approach has the ability to process data on sites and links defined as similar material culture between these sites using network and graphs theory. The advantage of the network approach is that it can generate an *Endogenous Cultural Material Network Model*. That is, a model of site distribution that emerges only from existing data and not from *a priori* assumptions of site distribution based on economic or political considerations. This model has the ability to identify clusters of sites reflecting similar identities as well as the cultural influence of determined sites on the network.

The network approach has already been adopted in archaeological research. However, most of the existing works are descriptive, normally use unweighted links, and tend not to process relevant information to obtain endogenous models of site distribution. In addition, these academic works normally consider a single type of site such as hillforts and use unweighted links. In contrast, the proposed network is integrative and includes all the sites in the landscape because it recognises the fact that cultural identities were not confined to determined types of sites. This makes the proposed approach a novel contribution in the area of network analysis in archaeology.

CHAPTER FOUR: Material and methods

The objective of this chapter is to describe the methodology that is adopted to fill the research gap and to answer the research questions outlined in the previous chapter. It corresponds to a methodology referred to as mixed method approach (MMA) and was selected for two reasons. Firstly, the current investigation is based on a mix of quantitative (i.e. processual) and qualitative (i.e. phenomenology) analysis which is the core of MMA. Secondly, MMA has also been adopted to develop social network analysis. Because this thesis uses a network modelling approach, MMA can therefore be considered as a suitable methodological strategy for the purposes of the current study. This approach and the way in which it has been adopted in this dissertation are outlined below.

4.1 The Mixed Method Approach

MMA is defined by Johnson and Onwuegbuzie (2004, 17) as, "*the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study*". It is considered as a third methodological movement following the developments of quantitative and qualitative social science research (Creswell and Clark 2011a, 1).

The emergence of MMA as a third methodological approach has been subject to a fierce debate over a long period of time by pure quantitative and qualitative researchers who argue that mixing different research approaches is not possible from a philosophical point of view (Symonds and Gorard 2010, 121-123). Quantitative research is associated with the positivist philosophy which considers social observations in the same way that physical scientists treat physical phenomena. That is, it is based on the idea that social reality and

social laws can objectively be tested by means of hypotheses using numerical approaches that allow researchers to confirm or reject theoretical social relationships. In this paradigm, the observer is assumed to be separate from the entities that are subject to observation because there is only one truth corresponding to an objective reality that exists independent of human perception (Sale et al. 2002, 44).

Qualitative research, on the other hand, is based on the interpretivist and constructivist philosophical approaches. It rejects the positivist paradigm under the argument that there exist multiple constructed valid realities related to a phenomenon (i.e. reality is socially constructed and is constantly changing). Consequently, context-free generalisations are not possible because there is no access to reality independent of our minds (Johnson and Onwuegbuzie 2004, 14).

In spite of this disagreement, MMA has been accepted by the academic community and a number of investigations based on this framework have been published in formal academic journals (see for example Hogan and Berry 2011). This has been possible because supporters of MMA have provided strong arguments showing that mixing qualitative and quantitative data is feasible. For example, Johnson and Onwuegbuzie (2004, 16) explain that basic agreement between qualitative and quantitative academics has been facilitated by the replacement of positivism by postpositivism in quantitative research. To illustrate this, note that postpositivism also assumes a fixed reality that can be theorised by means of logical reasoning. However, in this philosophical paradigm this reality cannot be perfectly identified from empirical analysis because this analysis depends on the empirical approach adopted by the researcher as well as his/her own perception (Clark 1998, 1245). This is what facilitates the mixing of quantitative and qualitative research because both approaches provide different incomplete but complementary perspectives of the same phenomenon (Sale et al. 2002, 46; Johnson and Onwuegbuzie 2004, 16).

The successful integration of quantitative and qualitative data into the MMA has also been adopted to develop social network analysis and it is now a recognised research methodology in this area (see for example Dominguez and Hollstein 2014; Bellotti 2015). In this case standard mathematical techniques are employed to characterise the structure of a social network, and qualitative data obtained from interviews conducted in specific parts of the network are used to gain a better understanding of the nature of the network (examples are found in Bernardi et al. 2007; Edwards and Crossley 2009; Ryan 2013). The advantage of MMA in social network research is that the number of nodes that need to be interrogated by means of qualitative research is substantially reduced. This is because the quantitative phase permits the identification of similar nodes implying that only some of them need to be interrogated to understand the nature of the network. This is particularly beneficial in large networks where qualitative enquiry to all nodes is not feasible in practical terms.

4.2 The Mixed Method Approach adopted in the current investigation

The MMA adopted in this dissertation is an extension of the traditional MMA used in social science research other than archaeology. The traditional MMA is based on data obtained from living people through questionnaires and interviews; this data collection is clearly not possible in archaeological research. Consequently, the methodological extension proposed in this thesis considers quantitative and qualitative data obtained from indirect sources, namely, network analysis; and phenomenology. This extension is another contribution of the current investigation and is explained as follows.

In the current study, a network approach is proposed to collect quantitative data that will be used to answer the first two research questions described in Section 3.1. In this approach, nodes correspond to archaeological settlements during the Roman period in

selected areas in the Severn valley (i.e. Gloucestershire and Shropshire) and links corresponds to similar material culture (i.e. two sites are said to be linked to some extent when they have the relatively similar types of material culture). The modularity class indicator will be used to identify groups of sites reflecting similar identity. The strength indicator, on the other hand, will be employed to identify dominant sites in terms of material culture.

The analysis will be complemented with a phenomenological approach to landscape archaeology which postulates that direct engagement and experience with qualitative aspects of archaeological remains and landscapes in the present can be used as a way to deal with past interpretations (Bruck 2005, 50). This approach will be adopted with the purpose of determining whether some of the features of the resulting network model were also explained by functional and/or symbolic aspects of the landscape in order to answer the third research question.

Because network analysis is a quantitative technique and phenomenology is a qualitative technique, the proposed methodology is an extended version of a type of mixed method design referred to by Creswell and Clark (2011b, 71) as *explanatory sequential design* and is explained as follows. This design consists of the collection and analysis of quantitative data (i.e. Phase 1) followed by the subsequent collection and analysis of qualitative data (i.e. Phase 2) based on the results obtained in quantitative phase. The aim of Phase 2 is to contribute to explaining the results obtained in phase 1. In this design, the philosophical assumption of Phase 1 corresponds to postpositivism given its quantitative nature, and the philosophical assumption of Phase 2 corresponds to phenomenology because it relies on the researcher's own experience of the landscape. These phases are explained in more detail below.

4.2.1 Phase 1 of the sequential mixed methods design: Network analysis

The methodology adopted to generate the *Endogenous Cultural Material Network Model* (ECMNM) is explained as follows.

In the network approach, a link is formed when two sites have similar material culture. Because it is not clear what similarity means in this context, an indicator of similarity is proposed in this thesis. It consists of a number of indicators related to material culture items that are outlined in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service[2]. A total of 55 potential indicators were found in this database. However, a pilot analysis revealed that only 41 indicators were appropriate for the network analysis for different reasons (see Subsection 4.5.1 for a more detailed discussion). First, some archaeological remains are fragmented and not available in all the sites implying that the inclusion of these indicators may introduce potential biases (e.g. plant taxa). Second, information on the excavated area was not reported in several sites. This made it impossible to include some indicators that depend on this information (i.e. the number of some determined archaeological remains was adjusted by dividing this number by the excavated area). Third, related to the previous comment, the excavated area reported in some studies is very small implying that the adjustment consisting of dividing the number of an archaeological remain by this area introduced significant biases. Fourth, some indicators were categorised by means of the interquartile criterion. However, this strategy did not work well with indicators that are not normally distributed. Fifth, a significant number of sites contain material culture remains that were not quantified. For these remains, binary variables were adopted (i.e. it is or it is not present). The use of this type of variable may introduce biases because it does not consider the variance of a remain between the sites.

[2] Available at http://archaeologydataservice.ac.uk/archives/view/romangl/

Sixth, some sites seem to be poor in material culture. However, they may have been excavated in peripheral areas of settlements. Finally, some sites were poorly excavated implying that the data obtained from these sites may be biased.

Following the criterion described in Section 2.4.2, these indicators were classified according to twelve categories reflecting different types of lifestyles/activities. As explained in that section, this thesis adopts a concept of collective identity that is based on the idea that a social identity is composed of a mix of individual identities that are reflected in determined behaviour/habits. In this concept, material culture patterns in the archaeological record are linked to these behaviour/habits (see Figure 2.2). Because behaviour cannot directly be observed, lifestyle/activities are used as proxies of behaviour (see Figure 2.3).

In considering these ideas, the strategy adopted in the current research to explore collective identities consists of two steps. Firstly, the material culture indicators were associated with twelve specific types of lifestyle (e.g. domestic) and activities (e.g. transport) that imply behaviour. The criteria and justification used to classify these indicators are summarised in Table 4.1, and the lifestyle/activity types selected for each indicator are presented in Table 4.2. Secondly, combinations of lifestyle/activity types obtained from the network analysis were used to identify diverse collective identities.

Table 4.1. Criteria and justification to classify the material culture indicators available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service into lifestyle/activity types.

Material culture	Justification and references
Coins distribution and quantity	Economic activities related to commerce and trade (Allason-Jones2011, 23); payment for services such as army defence services (Guest 2008, 55). Household lifestyle because coins may reflect wealth (Allason-Jones 2008, 113; Ferris 2012, 17). Ritual when found deposited (Walton and Moorhead 2016, 841).
Pottery	Economic activity related to pottery production (Allason-Jones 2011, 68; Smith 2017, 195). Used for food preparation (Allason-Jones 2011, 162). Household lifestyle because fine pottery was displayed during domestic activities such as dinner (Allason-Jones 2008, 108).
Building form, building material, tiled roof, painted plaster wall, structural worked stone, ceramic building material, window glass, tessellated floor mosaic, hypocaust	Building lifestyle related to building form, material, architectural elaboration and Roman influence of house architecture (Black 1985, 77; Allason-Jones 2008, 89-93; Allason-Jones 2011, 180; Smith 2016, 44-64).
Briquetage	Economic activity associated with salt production (Smith 2017, 206).
Corndrier	Economic activity associated with crop processing (Millet 1990, 2002; Lodwick 2017, 63)
Storage	Economic activity related to cereal processing (Lodwick 2017, 72)
Bathouse	Personal grooming and recreation because bathhouses were used for personal hygiene, relaxation and social relationship (Allaso-Jones 2008, 65; Smith et al. 2018, 62)
Evidence metal-work, iron slag	Economic activity related to metal production (Paynter 2006, 271; Lang 2017, 857; Smith 2017, 174)
Evidence bone-work	Economic activity because bone was used as raw material for the production of personal items, dressing, tools and recreation objects (Smith 2017, 210)
Hobnails	Personal appearance because hobnails were used in boots (Allason-Jones 2008, 97; Allason-Jones 2011, 48)
Bracelets, brooches, finger rings, hairpins, other dress accessories (e.g. jet and shale bracelets, armlets and beats of glass)	Personal appearance because these objects were used as personal adornment (Brindle 2018, 31 and 51)
Hawkes and dunning buckles	Personal appearance normally associated with the army (Allason-Jones 2011, 200)
Toiletry cosmetics (e.g. cosmetic spoons, grinders, palettes) and Late Roman nail cleaner	Items used for personal grooming (Crummy and Eckardt 2003, 45; Brindle 2018, 31)
Military fitting weapons	Items related to defence (Appels and Laycock 2007, 61 and 277; Allason-Jones 2008, 39)

Table 4.1. Criteria and justification to classify the material culture indicators available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service into lifestyle/activity types.

Material culture	Justification and references
Inscriptions, graffiti, writing equipment	Intellectual activity reflected as literacy (Eckardt 2014, 178-179 and 187; Smith 2018, 86)
Equine transport	Animals used for transport and military needs (Allen 2017, 130-132)
Religious objects	Objects that appear to have been specifically manufactured for religious use. For example, pipeclay Venus figurine and miniature weapons (Smith 2018, 139 and 178)
Knife tools	Used for domestic tasks (e.g. cutting material) and food preparation such as butchering, cutting, slicing and paring (Allason-Jones 2011, 168-169; Allen 2018, 103). Economic activity such as leather working and non-cereal crops harvesting (Allason-Jones 2011, 86 and 108)
Agricultural tools	Economic activity related to food production (Allason-Jones 2008, 83-86; Lodwick 2017, 48 and 51-57)
Household objects furniture	Household lifestyle because these objects are related to comfort, decoration and adornment (Allison-Jones 2008, 93)
Security objects	Items used for security such as locks and keys (Smith et al. 2018, 50)
Recreation objects	Objects used for recreational activities. For example, gaming counters and boards (Smith et al. 2018, 66)
Weighing objects	Economic activity because they correspond to tools used for weighing goods during commercial transactions (Allason-Jones 2008, 22; Allason-Jones 2011, 41-45; Brindle 2017, 238)
Fibre processing, weaving, spinning, sewing	Economic activity related to textile production (Smith 2017, 214 and 218-222)
Quernstones, millstones	Economic activity and food preparation because they were used for food production and grain processing (Allason-Jones 2011, 89, 111 and 169).
Glass objects	Personal appearance because these objects were normally used as personal adornment items (Brindle 2018, 47)
Vessel glass	Economic activity related to glass production and trade in glass (Allen 1998, 17; Smith 2018, 194). Domestic lifestyle because vessel glass was used for storage and serving food and drinks (Allason-Jones 2011, 162 and 175)
Jet and shale objects	Personal appearance and recreation because some of them were used as personal adornment items and gambling (Eckardt 2014, 116; Brindle 2018, 46; Smith 2018, 83)
Fish, shell, animal taxa, plant taxa	Economic activity associated with production and trade of food (Allason-Jones 2008, 86; Smith 2017, 209). Associated with diet (Allason-Jones 2011, 105-108; Smith et al. 2018, 57-61)

Table 4.2. Lifestyle/activity types and material culture available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service (the highlighted material culture remains are the ones that were used in the network analysis).

	Lifestyle/activity type											
Material culture	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
Coins distribution		X										X
Coins quantity		X										X
Pottery		X	X									X
Building form	X											
Building material	X											
Tiled roof	X											
Painted plaster wall	X											
Structural worked stone	X											
Ceramic building material	X											
Window glass	X											
Tessellated floor mosaic	X											
Hypocaust	X											
Briquetage												X
Corndrier												X
Storage												X
Bathhouse								X		X		
Evidence metal-work												X
Iron slag												X
Evidence bone-work												X
Hobnails									X			
Bracelets									X			
Brooch distribution									X			
Brooch quantity									X			
Finger rings									X			

Table 4.2. Lifestyle/activity types and material culture available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service (the highlighted material culture remains are the ones that were used in the network analysis).

	Lifestyle/activity type											
Material culture	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
Hairpins									X			
Hawkes and dunning buckles									X			
Other dress accessories									X			
Toilet cosmetic										X		
Late Roman nail cleaner										X		
Military fitting weapons							X					
Inscriptions					X							
Writing equipment					X							
Graffiti					X							
Equine transport				X			X					
Religious objects											X	
Knives tools		X	X									X
Agricultural tools												X
Household objects furniture		X										
Security objects						X						
Recreation objects								X				
Weighing objects												X
Fibre processing												X
Spinning												X
Weaving												X
Sewing												X
Quernstones			X									X
Millstones			X									X

Table 4.2. Lifestyle/activity types and material culture available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service (the highlighted material culture remains are the ones that were used in the network analysis).

	Lifestyle/activity type											
Material culture	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
Glass objects									X			
Vessel glass		X	X									X
Jet objects									X			
Shale objects									X			
Fish			X									X
Shell			X									X
Animal taxa			X									X
Plant taxa			X									X

Note that several indicators such as coins may also inform about religion because they have been found in deposits as a result of ritual practices (e.g. Mattingly 2006, 346; Walton and Moorhead 2016, 841). While this information is very useful to inform about religion identity, it was omitted because it is not available in a number of sites used in the sample.

Using suitable indicators of the 55 material culture indicators available in the database, weighted links were employed in the network analysis. For example, if two sites share 75% of these indicators, then it was assumed that their weighted link has a value of 0.75. In order to obtain these weighted links, the indicators were translated into variables than can be used to obtain quantitative measures of similarity.

A pilot analysis was carried out with the purpose of determining which of the 55 available material culture indicators have the potential to inform about weighted links (see Section 4.4) and the type of variables that are suitable to express these indicators as quantitative data. This information is presented in detail in Section 4.5.2.

The information related to nodes and links was used as an input to generate the ECMNM. For this purpose, Gephi software was employed (Bastian et al. 2009). This software uses network and graph theory to process information that consists of nodes and existing weighted links. After processing this information, it assigns to each site a modularity class value. This is done by means of the Louvain optimisation algorithm (Blondel et al. 2008) and the resolution parameter of the refinement proposed by Lambiotte et al. (2008) (see Section 3.2). Following the work by Carvalho et al. (2018), the approach adopted in the current investigation consists of selecting different values of the resolution parameter and for each of these values, the clusters that form part of the network. After an inspection of the results, the value of the resolution parameter that generated the most reasonable set of clusters in terms of material culture was selected.

In this step, the strength indicator was also estimated using the weights of the links between the sites in the network (see Section 3.2). This indicator was used to identify sites that bridge clusters in the landscape in terms of occupying a central position in a cluster, and to select subsamples for the phenomenological stage.

4.2.2 Phase 2 of the sequential mixed methods design: Phenomenology

The phenomenological approach postulates that direct engagement and experience with qualitative aspects of archaeological remains and landscapes in the present can be used as a way to identify patterns and to deal with past interpretations (Tilley 2004, 274). It

emerged as a reaction to the Cartesian positivist approach to landscape, arguing that this approach is an artificial external quantitative two-dimensional representation of the landscape that fails in capturing qualitative aspects of human experience inside three-dimensional landscapes (Bruck 2005, 48).

According to the phenomenological approach, direct experience with the landscape can inform about past interpretations because the landscape and humans are intimately related in a bidirectional or reciprocal relationship that can be understood through embodiment: individuals affect the landscape through human activities, and the landscape, in turn, affects individuals and social activities because it provides the medium for social practices. That is, landscapes provide affordance for living as well as a number of constraints that not only influence social activities, but also individuals' perceptions of the world (Tilley 2010, 26-35). This reciprocal relationship is also supported by a recent theoretical development referred to as Material Engagement Theory. This theory states that cognition and material things form part of the same process, and this process is characterised by a bidirectional relationship between human cognition and material things (Malafouris 2020, 4). This theory consists of three hypotheses. The first is the hypothesis of extended mind and postulates that the mind and things are interdependent. That is, matter and mind correspond to a continuity, and experience can be incited and constitutively shaped by the use of material objects and artefacts (Iliopoulos 2018, 46). The second hypothesis, referred to as the hypothesis of enactive signification, is a reformulation of the relationship between things and meaning. It postulates that material signs are not really symbols that represent a concept. They create concepts. That is, material signs do not stand for reality; they bring forth reality and become part of it (Malafouris 2013, 118; March 2019, 137). Finally, the third hypothesis, referred to as the hypothesis of material agency, argues that things have a causal efficacy in human thought and action. In this case, material plays an active role as an

agent in terms of affordance (Iliopoulos 2019, 53; Malafouris 2013, 118). For example, the act of drinking is possible when there is a material that affords drinking.

The bidirectional/reciprocal relationship between landscapes and people is particularly relevant for the current investigation because it indicates that landscapes form part of the social identities of the human groups who inhabited them (Tilley 2010, 33). For example, knapping a flint blade was not only possible because the landscape contained resources that afforded this activity. It was also possible because people in the past had traditions and skills that were developed through engagement with the landscape over years and generations (ibid. 303).

In considering this view, affordance is seen in this thesis not only as available resources that facilitate economic, social and symbolic expressions, but also as resources that facilitate the development of traditions and skills contributing, in this way, to the formation of social identities over long periods of time. In this regard, the phenomenological approach has the potential to inform about social identities because it involves direct engagement with the landscape which assists in the identification of affordance, and its possible association with identity formation. In contrast, Cartesian approaches (i.e. mapping, photographing, digitizing, etc.) are less likely to identify evidence of diverse identities in the landscape because, as pointed out by Thomas (2008, 301), they normally consider the landscape as a set of objects and entities that can objectively be described by external observers detached from the landscape. This distinction can also be understood from the point of view of absolute and relative space. Absolute space is linked to the Cartesian point of view and assumes that space exists independently of matter. That is, it is considered as a neutral container of things. In contrast, relative space is a space that exists only with reference to elements and processes under consideration. In other words, it is a space whose properties are not fixed and depend on the configuration of the relations among

relevant entities (Meentemeyer 1989, 164; Couclelis 1999, 32 and 36). Consequently, affordability and the phenomenological approach are associated with the concept of relative space. In relation to this point, it is important to clarify that the network analysis developed in this thesis is not a Cartesian approach to the landscape. It is a quantitative strategy developed to process information related to material culture in order to identify potential identities. However, the linkage of these identities with the landscape is explored by means of phenomenological analysis implying that the proposed network methodology is related to the concept of relative space. This is because the relations between archaeological sites in terms of material culture, and the relations between these sites and elements of the landscape is what defines the properties of the space that surrounds these sites.

An important characteristic of landscapes is that they have changed over the centuries and what remains are geological and topographic 'bones' of the land such as rocks, hills, valleys, etc. (Tilley 2008, 274; Tilley 2010, 30). In considering this limitation, this investigation is focussed on geological and topographic remains that have the potential to inform about resource affordance. The assumption that is adopted in relation to this point is that similar social identities had a tendency to experience similar landscape affordances. It is recognised, however, that the bidirectional relationship between landscape and humans is much more complex as inferred from the principles of the Material Engagement Theory.

The way in which the phenomenological approach was employed is based on a number of phenomenological principles now outlined. According to Tilley (2008, 271), phenomenological analysis in landscape archaeology is based on six principles/ideas, namely, embodiment; temporality; places and paths; sensory experience; poetics and the body; and nature and culture. Embodiment refers to the direct involvement of the researcher in the landscape in what is being described or understood implying, therefore, that the phenomenologist's body is the primary tool of research. Temporality refers to the premise

that the landscape is better understood when one experiences the landscape over a longer period. Places and paths are related to the idea that humanised landscapes consist of places (e.g. rocks, hills, fields and settlements) and routes of movements between the places and the role of the phenomenologist is to describe the individual experiences of different types of landscapes concerning places and routes between them. Sensory experience is related to the idea that the landscape experience is a multisensory one that involves vision, sound, smell and taste. Consequently, the landscape should be described from a multisensory point of view. Poetics and the body refer to the limits of one's own body, implying that landscape investigations can be carried out at small scales. Finally, nature and culture are associated with the idea that landscapes offer affordances for living as well as constraints. Because affordances and constraints influence forms of perception and activity, they have to be taken into account when conducting phenomenological studies.

It is important to highlight the fact that the phenomenological approach has been criticised by a number of researchers who argue that relationships identified from the phenomenological analysis may reflect only accidental associations reflecting hyper-interpretations of archaeological evidence (Bruck, 2005, 51; Fleming, 2006, 275). Related to this criticism, it is also argued that phenomenological interpretations are subjective because they are influenced by several factors such as class, gender, age and the natural variability of the human body (Hamilton et al., 2006, 34). It is also argued that the phenomenological approach does not have an explicit methodology making it difficult to carry out research when using this approach (Rennell, 2012, 510).

In spite of these criticisms, the current investigation has adopted the processual (Cartesian based network analysis) and phenomenological approaches because they are considered as complementary tools to explore different quantitative and qualitative aspects of diverse identities in the same rural Roman-Britain landscapes which is the core of the

mixed method strategy proposed in this thesis. In particular, phenomenology (i.e. Phase 2) was applied on selected key sites that were identified as relevant according to the results obtained from the network analysis in Phase 1, a strategy that is referred to as ego-network approach in the mixed method (see Edwards and Crossley 2009).

4.3 The sampling strategy

Two sampling strategies were adopted in the current investigation: one for phase 1 and one for phase 2. They are explained as follows.

4.3.1 Sampling strategy for Phase 1

The research was developed in two areas in the Severn Valley: Gloucestershire and Shropshire. There are four reasons for selecting these areas. Firstly, they correspond to two extremes of the valley, making it possible to determine regional differences of collective identity. Secondly, these areas are large enough to include a significant number of sites and, consequently, to identify patterns from the network analysis. Thirdly, there is a list of rural settlements with significant archaeological data related to the Roman period in these areas reported by contributions in published academic works as well as grey literature. This information is available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service and the county journals/Britannia roundups for the last two years[3]. Finally, the network and phenomenological analyses have the potential to extend the current state of the knowledge that exists in the Severn Valley and other areas in the proximity such as the Thames Valley, and to test existing theories that have been developed

[3] http://archaeologydataservice.ac.uk/archives/view/romangl/

to explain some findings in these areas. For example, variations at the micro-level of small finds such as personal adornments, fasteners, fittings and agricultural items as well as settlement shift/reorganisation have been interpreted as variations of local identity (Wiggins 2014).

4.3.2 Sampling strategy for Phase 2

The sampling strategy adopted in Phase 2 of the investigation corresponds to stratified purposive sampling (Teddlie and Yu 2007, 90). That is, the sites were subdivided into clusters of similar material culture (i.e. sites were stratified in terms of clusters) using the modularity class indicator of the network analysis. After that, a small number of cases in each cluster were selected using the ego-network approach which corresponds to the selection of key nodes of the network (Edwards and Crossley 2009) and were studied intensively using a purposive sampling technique referred to as Diverse Cases technique. This technique consists of achieving the maximum variance along relevant dimensions (Seawright and Gerring 2008, 300). In the proposed research project, the relevant dimension is the node strength because this dimension has can provide information about both more and less integrated sites in the network.

4.4 Pilot analyses

Pilot analyses were carried out with the aim of testing Phases 1 and 2 of the proposed methodology and to determine limitations that may be addressed before developing the empirical part of the research. Methodological refinements resulting from the pilot analyses are discussed in Section 4.5. The results are presented as follows.

4.4.1 Pilot analysis for Phase 1

A subsample of sites in a 1,600 square kilometre area in North East Gloucestershire was employed (see Figure 4.2 below). According to the British Geological Survey[4], the underlying geology consists of rocks that were formed in shallow seas of this area, and is dominated by the great oolite group (i.e. sandstone, limestone and argillaceous rocks), followed by the lias group (mudstone, siltstone, limestone and sandstone) and the inferior oolite group (limestone, sandstone, siltstone and mudstone) (Figure 4.3).

Some sites in the pilot area were omitted because they do not contain sufficient information in relation to material culture. The final subsample included a total of 22 sites. They are described in the following table (a more detailed description of these sites is presented in Tables S.1 and S.2 in the Supplementary Information section).

Table 4.3. Sites considered in the pilot analysis.

Site ID	Description
14017: Vineyards Farm, Charlton Kings	Farm
14023: Barnsley Park	Villa
14026: Bourton-on-the-water, Salmondsbury Camp	Nucleated settlement
14031: Claydon Pike	Farm
14032: Neigh Bridge, Somerford Keynes	Farm
14033: Whelford Bowmoor	Farm
14034: Stubbs Farm, Kempsford	Fam
14035: Thornhill Farm	Fam
14038: Withington	Villa
14041: The Ditches, North Cerney	Villa
14051: Totterdown Lane, Horcott	Farm
14054: Cotswold Community	Farm
14056: Kingshill North, Cirencester	Farm
14057: Middle Duntisbourne	Farm
14058: Duntisbourne Grove	Farm
14075: Quenington	Nucleated settlement
14080: Turkdean Roman Villa	Villa
14099: Arkell's Land	Farm
14111: Bourton-on-the-water, Cotswold School/Primary School	Nucleated settlement
14115: Northleach Bypass	Farm
14160: Roughground Farm	Villa
14169: Horcott Quarry	Farm

[4] Available at https://mapapps.bgs.ac.uk/geologyofbritain/home.html

Only 51 of the 55 potential indicators of identity were employed because four of them (i.e. animal taxa, crop taxa, fish and shells) contain fragmented data. Using these indicators, weighted links between sites were obtained. They are presented in the following tables.

Table 4.4. Weighted links between sites in the sample.

	14017	14023	14026	14031	14032	14033	14034	14035	14038	14041
14017										
14023	0.39									
14026	0.45	0.20								
14031	0.47	0.49	0.12							
14032	0.47	0.39	0.43	0.29						
14033	0.39	0.24	0.63	0.20	0.41					
14034	0.41	0.16	0.82	0.16	0.39	0.67				
14035	0.33	0.22	0.57	0.20	0.33	0.47	0.51			
14038	0.39	0.29	0.65	0.27	0.37	0.55	0.69	0.33		
14041	0.45	0.39	0.39	0.35	0.41	0.39	0.35	0.29	0.41	
14051	0.45	0.24	0.69	0.24	0.35	0.57	0.73	0.61	0.53	0.37
14054	0.39	0.29	0.45	0.35	0.35	0.49	0.47	0.53	0.43	0.39
14056	0.43	0.27	0.78	0.18	0.35	0.61	0.76	0.57	0.55	0.37
14057	0.41	0.22	0.86	0.12	0.41	0.65	0.86	0.59	0.65	0.37
14058	0.43	0.22	0.78	0.18	0.41	0.61	0.80	0.59	0.59	0.37
14075	0.41	0.27	0.75	0.18	0.43	0.59	0.76	0.45	0.65	0.45
14080	0.41	0.47	0.45	0.31	0.29	0.47	0.51	0.27	0.73	0.51
14099	0.35	0.14	0.55	0.18	0.33	0.57	0.61	0.59	0.47	0.35
14111	0.49	0.24	0.80	0.16	0.39	0.65	0.82	0.51	0.59	0.37
14115	0.41	0.25	0.76	0.12	0.39	0.61	0.73	0.49	0.59	0.47
14160	0.45	0.45	0.25	0.53	0.31	0.37	0.31	0.29	0.39	0.43
14169	0.45	0.18	0.57	0.27	0.33	0.57	0.59	0.45	0.55	0.39

Table 4.4. Weighted links between sites in the sample (continuation).

	14051	14054	14056	14057	14058	14075	14080	14099	14111	14115	14160
14054	0.53										
14056	0.71	0.57									
14057	0.73	0.47	0.82								
14058	0.71	0.51	0.82	0.88							
14075	0.59	0.47	0.73	0.78	0.75						
14080	0.47	0.41	0.47	0.47	0.47	0.51					
14099	0.59	0.57	0.61	0.63	0.61	0.53	0.35				
14111	0.67	0.51	0.78	0.86	0.82	0.75	0.51	0.61			
14115	0.63	0.45	0.71	0.76	0.73	0.73	0.49	0.57	0.76		
14160	0.39	0.41	0.33	0.25	0.31	0.27	0.43	0.35	0.31	0.29	
14169	0.57	0.65	0.57	0.57	0.57	0.59	0.47	0.75	0.61	0.53	0.45

Using these links, the network analysis generated an ECMNM that consists of three clusters of sites in the pilot area (see Figures 4.1). The clusters in the landscape are presented in Figure 4.2.

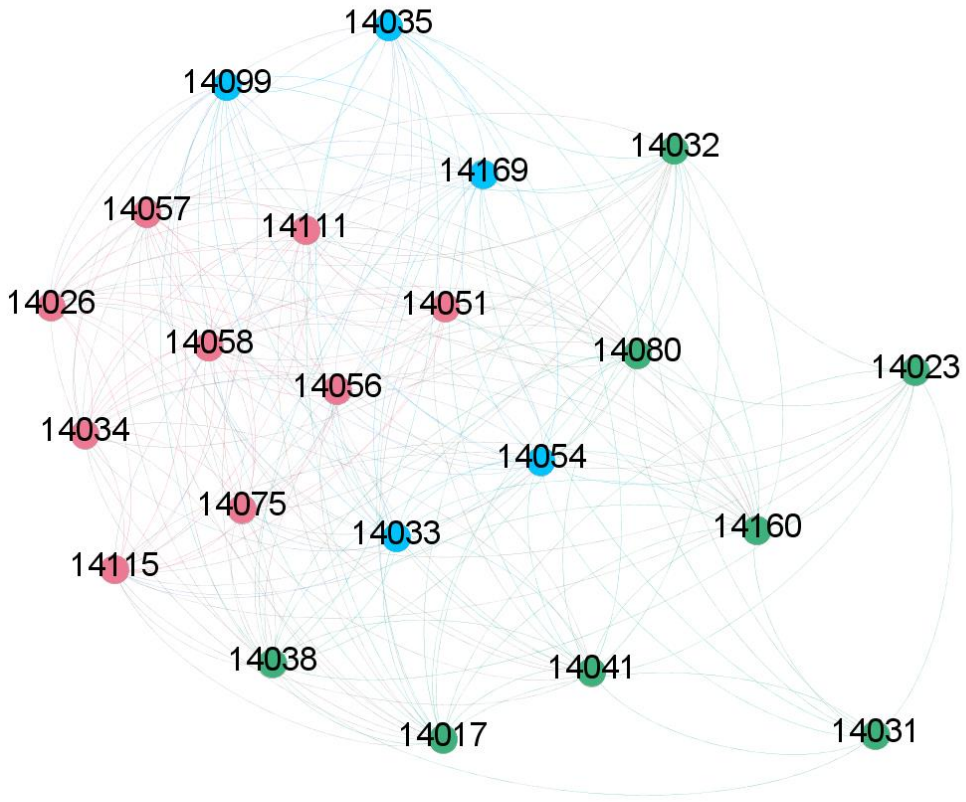


Figure 4.1. Cluster of rural sites in the pilot area.

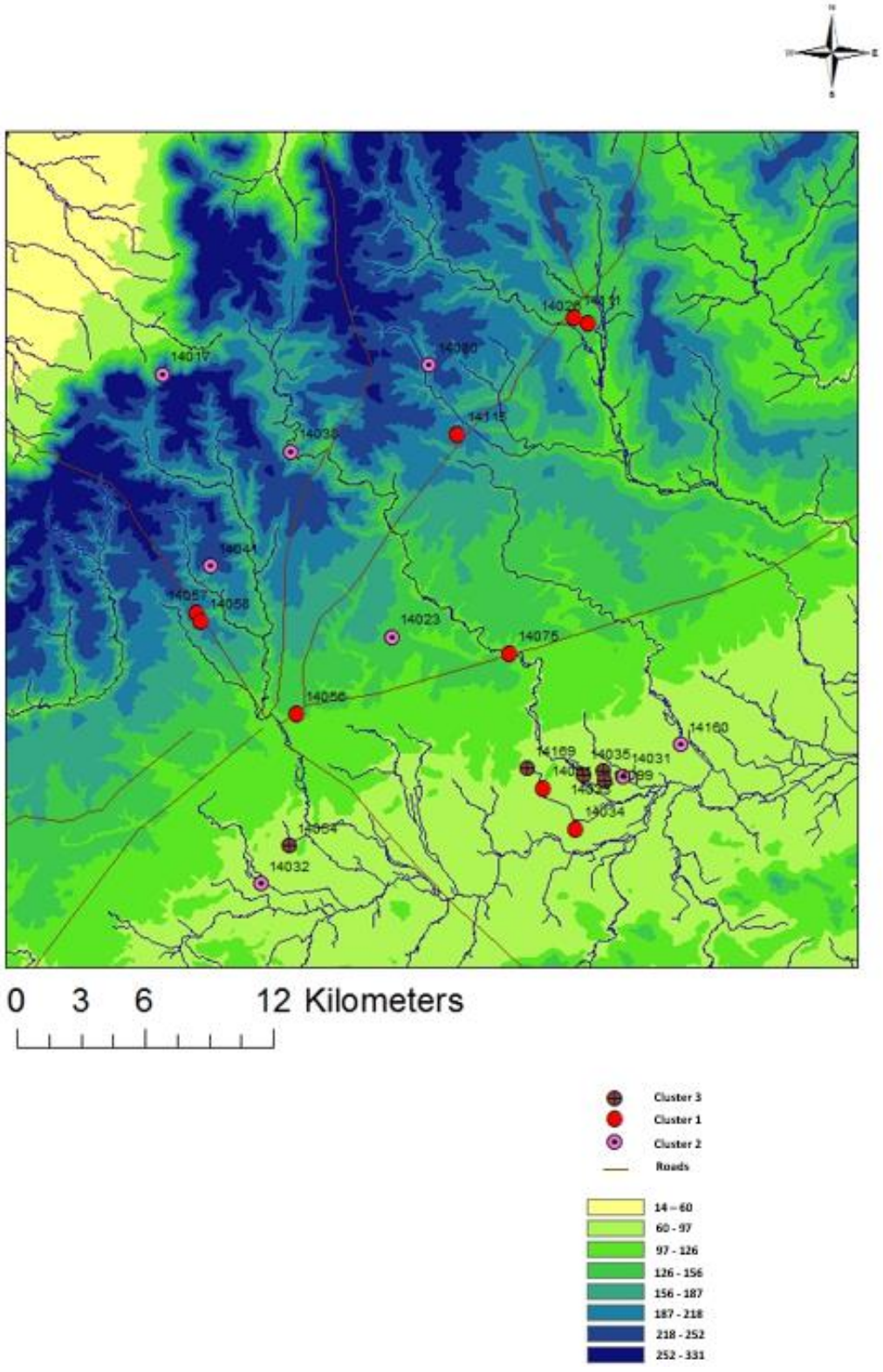


Figure 4.2. Clusters of sites in the landscape.

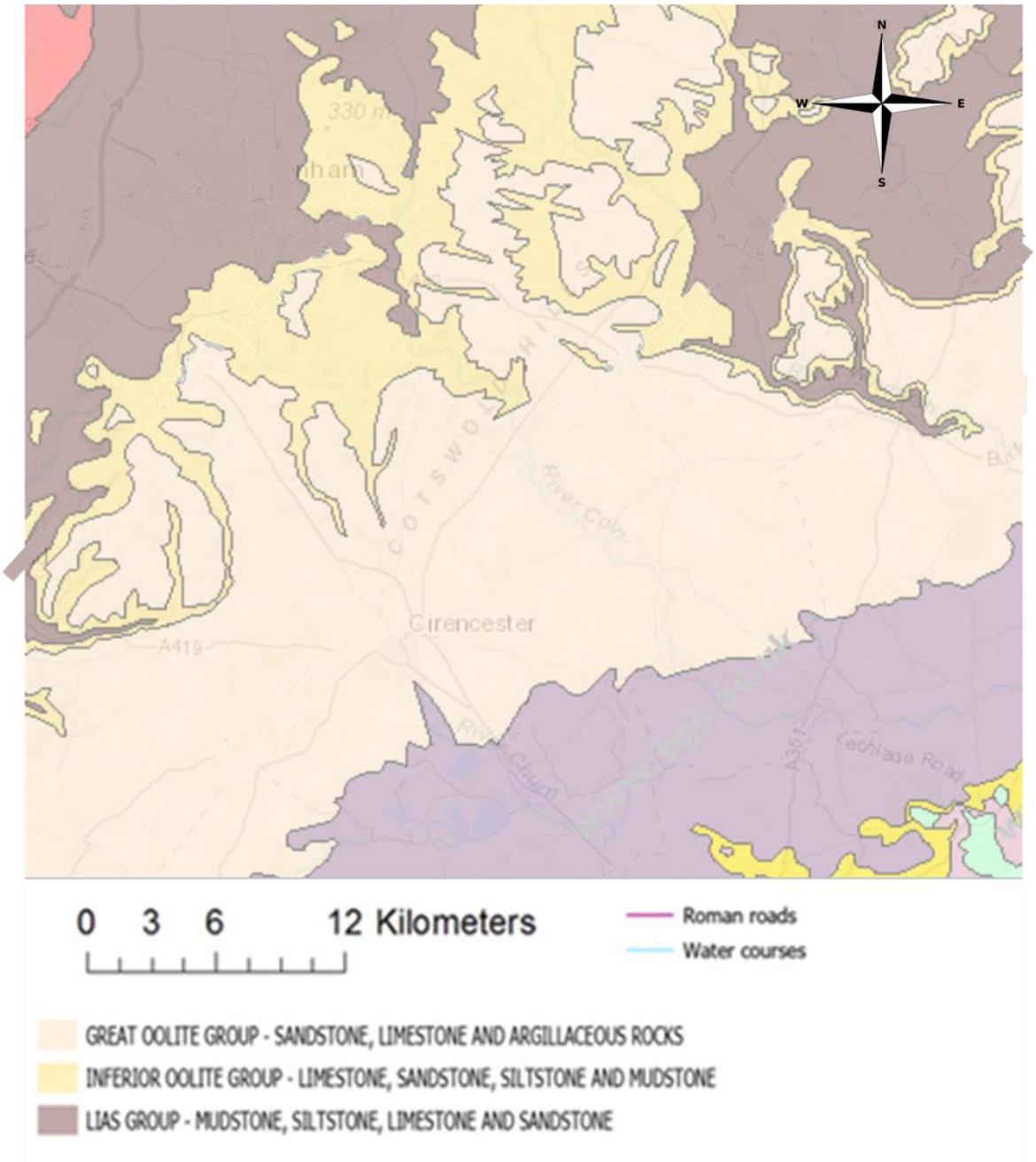


Figure 4.3. Underlying geology.

The existence of three clusters of sites suggests that three different broad identities occupied this landscape. General characteristics of these clusters are described below with the purpose of illustrating the potential of the proposed methodology.

Cluster 1 in Figure 4.2 (in red): This cluster is composed of the following sites (ID in bracket): Bourton-on-the-water; Salmondsbury Camp (14026); Stubbs Farm (14034); Totterdown Lane; Horcott (14051); Kingshill North, Cirencester (14056); Middle Duntisbourne (14057); Duntisbourne Grove (14058); Quenington (14075);: Bourton-on-the-water, Cotswold School/Primary School (14111); and Northleach Bypass (14115) (see Table 4.3). The weighted links between these sites are shown in the following table:

Table 4.5. Weighted links between the sites in the red cluster.

	14026	**14034**	**14051**	**14056**	**14057**	**14058**	**14075**	**14111**
14034	0.82							
14051	0.69	0.73						
14056	0.78	0.76	0.71					
14057	0.86	0.86	0.73	0.82				
14058	0.78	0.80	0.71	0.82	0.88			
14075	0.75	0.76	0.59	0.73	0.78	0.75		
14111	0.80	0.82	0.67	0.78	0.86	0.82	0.75	
14115	0.76	0.73	0.63	0.71	0.76	0.73	0.73	0.76

The sites in this cluster correspond to farms and nucleated settlements. Most of them are located in the proximity of Roman roads, although there are some sites occupying low lands in the proximity of rivers. According to Table 4.5, their weighted links have values over 59% suggesting that this cluster presents some degree of homogeneity in terms of similarities in material culture.

In relation to the material culture, this cluster is composed of sites containing relatively small numbers of material culture remains. However, there is variance across sites in terms of these remains suggesting that the network approach has the potential to identify

general patterns in material culture. Nonetheless, a deeper examination is needed to determine possible variations in identity within the cluster.

In relation to the strength indicator, Table 4.6 shows the strength for the sites in the red cluster and was calculated using the information presented in Table 4.4.

Table 4.6. Strength indicator values of the sites in the red cluster.

	14026	**14034**	**14051**	**14056**	**14057**	**14058**	**14075**	**14111**	**14115**
Network Strength	11.96	12.12	11.33	12.00	12.37	12.16	11.63	12.22	11.47

According to these figures, Middle Duntisbourne (14057) is the site with the highest strength values within the red cluster. This suggests that in this cluster, this site is the most integrated in the network in relation to similarity in material culture. It is inferred, therefore, that this site has a relevant role in bridging the red cluster with other clusters in the network. This site corresponds to a farm located along a Roman road on a hill. In contrast, Horcott (14051) is a farm and has the lowest strength implying that this is the least integrated site. It is located next to a river in low land.

Cluster 2 in Figure 4.2 (in pink): This cluster is composed of the following sites: Vineyards Farm (14017); Barnsley Park (14023); Claydon Pike (14031); Neigh Bridge, Somerford Keynes (14032); Withington (14038); The Ditches, North Cerney (14041); Turkdean Roman Villa (14080); and Roughground Farm (14160) (see Table 4.3). The weighted links between these sites are shown in the following table.

Table 4.7. Weighted links between the sites in the pink cluster.

	14017	14023	14031	14032	14038	14041	14080
14023	0.39						
14031	0.47	0.49					
14032	0.47	0.39	0.29				
14038	0.39	0.29	0.27	0.37			
14041	0.45	0.39	0.35	0.41	0.41		
14080	0.41	0.47	0.31	0.29	0.73	0.51	
14160	0.45	0.45	0.53	0.31	0.39	0.43	0.43

The sites in this cluster are mainly villas. In contrast to the red cluster, the sites in the pink cluster are located relatively distant from the main Roman roads and in the proximity of rivers. Half of them occupy high land and the rest are relatively low-lying. In considering the information presented in Table 4.7, it is inferred that the sites in this cluster are linked on average by 41% implying significant diversity within the cluster. In considering this result, the following thresholds are considered in this thesis to determine similarity between sites: sites that are linked by 60% or more are considered similar; sites that are linked by more than 20% and less that 60% are considered dissimilar; and sites that are related by less than 20% are considered unrelated.

In terms of the material culture, the sites in this cluster are rich in material culture and there is significant variance in material culture remains across the sites. As in the previous cluster, this evidence suggests that a deeper examination is needed to determine possible variations in identity within the cluster.

The strength indicator values of the sites in this cluster are presented in Table 4.8.

Table 4.8. Strength indicator values of the sites in the pink cluster.

	14017	14023	14031	14032	14038	14041	14080	14160
Strength	8.86	6.00	5.35	7.88	10.67	8.31	9.49	7.57

This table shows that Withington site (14038) (a villa) has the highest strength value. This suggests that this site has an important role in connecting the pink cluster with the other clusters in the network. This implies that while this site belongs to the pink cluster, it also shares some features with sites present in other clusters, such as the red cluster, as both lack of evidence of a number of material culture remains. Finally, the Claydon Pike site (14031) is the one with the lowest strength implying that this is the least integrated site in the pink cluster.

Cluster 3 in Figure 4.2 (in brown): This cluster is composed of sites Whelford Bowmoor (14033); Thornhill Farm (14035); Cotswold Community (14054); Arkell's Land (14099); and Horcott Quarry (14169) (see Table 4.3). They have all been classified as rural settlements and are located in the low-lying land of the pilot area. The weighted links between these sites are shown in the following table.

Table 4.9. Weighted links between the sites in the brown cluster.

	14033	**14035**	**14054**	**14099**
14033				
14035	0.47			
14054	0.49	0.53		
14099	0.57	0.59	0.57	
14169	0.57	0.45	0.65	0.75

The sites in this cluster correspond mainly to rural settlements and most of them are concentrated in a small low-lying area with a network of rivers. According to Table 4.9, the sites in this cluster are linked on average by 56% suggesting significant diversity within the cluster. They are more integrated than the pink cluster but less integrated than the red one in terms of material culture; the brown cluster is thus categorized as an intermediate class with respect to the other clusters.

In terms of the material, the sites in this cluster share some of the features that characterise the red and pink clusters. This suggests, as before, that the brown cluster reflects an intermediate class in this landscape.

In relation to the strength indicators, the values for the sites in the brown cluster are presented in Table 4.10.

Table 4.10. Strength indicator values of the sites in the brown cluster.

	14033	**14035**	**14054**	**14099**	**14169**
Strength	10.69	9.20	9.72	10.29	10.67

The site with the highest strength is Whelford Bowmoor (14033) meaning that this site is relevant in bridging the brown cluster with the other clusters in the network. The site with the lowest strength is Thornhill Farm (14035) implying that this is a peripheral site in the network in terms of material culture.

4.4.2 Pilot analysis for Phase 2

Five principles of phenomenology research in landscape archaeology proposed by Tilley (2008) were considered for Phase 2 (see Section 4.2.2). These principles were selected because the activities involved in them are physically feasible for a researcher to undertake. The feasibility was determined by a phenomenological analysis pilot carried out in two sites located in Shropshire (i.e. Sheinton (30027) and Redhill, Telford (30028)) after Phase 1 was finished (see Chapter 5). It was concluded from this pilot analysis that a maximum number of three sites could be visited per day in order to obtain reliable results. This was determined as follows.

According to Bailey (2005, 173), a radius of 5 kilometres is believed to be the maximum radius of daily exploitation for agriculture, and a radius of 3 kilometres of more intensive economic activity around a site. After visiting the pilot sites, it was found that embodiment engagement with the landscape is difficult for these radii because of the physical effort and distance involved. This limitation is particularly relevant for this study because several sites were selected to be visited. In considering this problem, it was found that direct embodiment engagement is feasible for a radius of 1 kilometre around the site. A larger radius of 3 kilometres was also considered, but the features contained at that distance were only analysed visually and with the use of a vehicle. Following the results from the pilot analysis, the following principles were adopted in the current investigation.

1) *Embodiment*: The phenomenologist's body was used as the primary tool of research in the selected sites.

2) *Places and paths*: According to Tilley (2008, 271), humanised landscapes consist of places and paths of movement between them. This researcher also argues that while landscapes may have changed, much also remains in the form of the geological and topographic "bones" of the lands (ibid. 274). In considering these ideas, each visit included a search for possible places (i.e. geological and topographic "bones", as well as archaeological remains) and paths.

3) *Sensory experience*: Phenomenological analysis involves multisensory experience of the landscape. Local visibility was considered for the current investigation because it is unlikely that other sensors provide reliable information from current altered landscapes. For example, vegetation may has changed over the centuries implying that taste and smell may

not be reliable sources of information. Likewise, sounds from modern technological innovations such as vehicles may obscure the sounds that may have been relevant in the past.

4) *Poetics and the body*: This idea is related to the fact that landscape research can be developed in small areas due to one's own bodily limitations (see the discussion on the phenomenological pilot analysis described above). In considering this fact, phenomenology was carried out in the surrounding landscape of each selected site. For the same reason, relationships between sites were not explored as they are separated by long distances.

5) *Nature and culture*: This point refers to the idea that natural and cultural (man-made) features in the landscape may have equal relevance for ancient societies. In relation to this idea, it is argued that in order to identify possible significance of either natural or cultural features, sensory affordances and constraints related to them (i.e. affordances which can be exploited through choosing one locale rather than another) should be analysed (Tilley 2004, 203; Tilley 2008, 273). An example of affordance analysis in phenomenological research is the work by Firnhaber (2007) who found that despite the good visibility of art rock sites in the Barrier Canyon, access to some of them is not easy because it involves scaling cliffs. In considering these ideas, sensory affordance and constraints were analysed in prominent features in the surrounding landscape of each selected site.

As a complement to these principles, possible connections between prominent features within and beyond the areas under study were also considered. Connections of this nature have previously been explored by means of phenomenological analysis. For example, Cummings (2002) found that chambered tombs of the Clyde group in south-west Scotland

were placed looking out to sea. Using these ideas and principles, the phenomenological investigation was focused on four main aspects of the landscape: places (prominent features); paths; affordability; and surrounding landscape.

4.5. Methodological refinements from the pilot analyses

Some important limitations were identified in the pilot analyses that needed to be considered before developing the empirical work of this investigation. These limitations and the strategies used to overcome some of them are described as follows.

4.5.1 Refinements for Phase 1

a) Site dating limitation: Before describing this limitation, it is important to clarify that no standard definitions for Earlier and Later Roman Periods were found in the literature. It is for this reason that these periods are defined in this thesis as before and after the start of the 3rd Century respectively, which is approximately half of the period of Roman occupation in Britain. This definition, although subjective, is a key aspect of this research because it made it possible to construct cultural networks for both periods with the purpose of identifying possible identity evolution in Gloucestershire and Shropshire. Having clarifying this definition, let us now consider the limitation.

It was difficult to date several of the indicators used in the analysis (e.g. building material) making it difficult to develop networks for Early and Late Roman periods. In order to overcome this problem, the sites in the full sample were classified according to these periods by identifying the sites main occupation period from primary sources. This strategy

was useful to select subsamples of sites reflecting different periods of time in the areas under study. However, significant overlap was found between these subsamples. For example, the main occupation period in several sites that were classified as Earlier Roman occurred between the 2nd and 3rd Century AD, and the main occupation period in several sites that were classified as Later Roman occurred between the 3rd and 4th Century AD. The existence of this overlap implies that interpretations from the network analysis have to be made with caution.

b) Limitations related to the material culture indicators: The results of pilot analysis and an inspection of the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service led to the conclusion that some indicators are not useful for the network analysis for different reasons. For example, only one site contained Late Roman cleaners and no site contained graffiti. As a consequence, these indicators did not contribute in providing significant differences between sites. In the case of building form, pottery, animal taxa, plant taxa, fish and shells, this information is fragmented and not available in all the sites. The main implication of this problem is that if this information was used to estimate weighted links, then a much reduced number of sites would be included in the analysis. In relation to jet and shale objects, the use of these indicators might introduce biases into the network approach because it is difficult to determine whether objects were made of true jet/shale remains or other black minerals such as cannel coal (Eckardt 2014, 109; Smith 2017, 194).

In considering these limitations, the following indicators were not used to estimate weighted links in the network analysis: pottery, building form, household object furniture, hawkes and dunning buckles, nail cleaner, briquetage, graffiti, fibre processing, jet and shale objects, plant taxa, animal taxa, fish, and shellfish. Following these omissions, 41 indicators

of the 55 available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service were employed to estimate weighted links across sites. The variables that were selected to express these indicators as quantitative data for the estimation of these links are described as follows.

Categorical variables based on distribution: In several sites, categories and quantity of some material culture are recorded in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service. For example, coins in different periods have been quantified in most of the sites in the sample. This implies that the methodologies developed Reece (1973 and 1984) and Brindle (2017, 230) to compare the distribution of coins across sites can be adopted to develop categorical variables for these remains. These methodologies for the case of coins are explained as follows.

According to Walton (2011, 26), the identification of patterns and profiles of individual sites has been possible thanks to the development of a framework of chronological divisions of Roman coins. An example is the framework developed by Richard Reece in 1972. This framework has received wider acceptance amongst numismatists and is considered today as the dominant framework in archaeological research (Lockyear 1996, 61; Walton 2011, 27). This chronological division is based on periods of coin production and considers twenty one periods (Reece 1972, 271): I (up to AD 41); IIa (41-54); IIb (54-69); III (69-96); IV (96-117); V (117-138); VI (138-161); VIIa (161-180); VIIb (180-193); VIII (193-222); IXa (222-238); IXb (238-259); X (259-275); XI (275-294); XII (294-317); XIIIa (317-330); XIIIb (330-348); XIV (348-364); XVa (364-378); XVb (378-388); and XVI (388-402).

A methodical extension that is based on this chronological division was proposed by Brindle (2017, 230). It consists of dividing the number of coins in each period at every site

by the extent of the area excavated (in hectares) and then comparing the resulting numbers between different types of rural sites in order to identify relevant differences among them. Using this methodology, significant variation of coins across sites in the Roman Britain countryside was identified by Brindle.

In terms of the current investigation, the methodologies proposed by Reece and Brindle are feasible for coins and brooches because, as explained above, they are both presented in terms of quantified categories in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service. The methodological approach adopted in this thesis is, therefore, to divide the number of these remains by the excavated area in each site, plot the distribution of these archaeological remains, and then visually compare them in order to determine similarities across sites (i.e. similar picks in the distribution) and to categorise them according to these similarities.

Binary variables: Binary variables are variables that can only take two values/attributes. In this investigation this variable was used to determine whether a specific material culture is or is not present in a site and was useful to record building remains, building material and artefacts that have not been quantified, among others. In particular, binary variables were used in the following archaeological remains: masonry, tiled roof, painted plaster wall, structural worked stone, window glass, tessellated floor mosaic, corndrier, inscriptions, hypocaust, storage, bathhouse, evidence of metalworking, evidence for bone-working, hobnails, and iron slag.

Categorical variables based on interquartile criterion: There are a number of objects that have been quantified and are available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service. In order to create categorical variables for

these objects, the interquartile criterion was adopted. The steps adopted in this technique are outlined below.

The first step consists of controlling the number of remains by the size of excavated area in order to reduce potential biases when comparing the sites in the sample. For this purpose, the approach by Brindle (2017, 230) was adopted. That is, the number of a determined material culture found in a site was divided by the extent of the area excavated in hectares. In the second step, the sites in the sample were arranged from the one having the smallest adjusted number of a determined object to the one with the highest adjusted number. In the last step, four categories were obtained by means of the interquartile criterion (i.e. smaller numbers than Q_1; numbers between Q_1 and Q_2; numbers between Q_2 and Q_3; and numbers larger than Q_3). The material culture that was categorised using the interquartile procedure corresponds to: quantity of coins, ceramic building material, bracelets, finger rings, hairpins, other dress accessories, toilet and cosmetic objects, military fitting weapon, writing equipment, equine transport, religious objects, knives tools, agricultural tools, security objects, recreational objects, objects associated with weighing, Spinning (spindlewhorls), weaving (loomweights), sewing, quernstones, millstones, glass objects, vessel glass, and quantity of brooches.

The use of the interquartile approach was useful to classify this material culture into different categories. However, some limitations were found. Firstly, there is no evidence of some specific objects in a significant number of sites in the sample. In order to prevent biases when including these sites into the interquartile calculation, they were assumed to belong to a single category and the interquartile criterion was applied to the rest. Secondly, the range of categories obtained from the interquartile criterion did not work well for some objects because the number of these remains does not follow a normal distribution. In these cases, this criterion was used only as a reference to determine the range of each category.

For example, suppose that the third interquartile of a particular object is 30 (i.e. there is a site contained 30 units of the object), and suppose that there are three sites containing 35, 220 and 250 units of the object. Because these numbers are larger than 30, they should be included into a single category (i.e. larger than the third interquartile). However, because the number 35 is closer to 30 than 220, the site containing 35 units was included in the category defined by the second and third interquartile. Finally, the approach by Brindle (2017, 230) created artificially large adjusted numbers in very small excavated areas. For example, a single object obtained from an area of 0.001 hectares would be translated as 1000 objects which is unreasonable (i.e. 1 divided by 0.001). In order to minimise interpretation biases from artificially large adjusted numbers, these numbers were reduced to the lower limit of the category where they were classified.

In relation to the omitted material culture indicators, on the other hand, if they have not been recorded in several sites in the sample or because this data is fragmented, they were not used to estimate weighted links. However, it was found that some of them could still provide additional insights of the clusters obtained from the network analysis. For example, while pottery animal taxa are both fragmented data, they are present in some sites in each cluster. Using this information, it was possible to make general comparisons between clusters. The indicators adopted for pottery and animal taxa are explained as follows.

For the case of pottery, it has the potential to inform about different aspects of ancient societies such as status, wealth, location, and links to other identities. In relation to status and wealth, some researchers have proposed the idea that fine pottery was obtained in higher proportion by wealthy people in order to gain status (see for example Willis 1998, 88; de la Bedoyere 2004, 18; Allason-Jones 2011, 162). In line with this argument, Booth (2004) proposes a methodology to classify archaeological sites in terms of socio-economic status. In this approach, higher ratios of fine and specialist assemblages to other ware

assemblages would reflect high status sites, and lower ratios would reflect low-status sites. This researcher defines fine and specialist pottery as samian ware; fine wares colour coated, mica dusted, glazed fabric, etc; amphora fabrics; mortarium fabrics; other white fabrics; and white slipped wares. Other wares are defined by Booth as Late Iron Age to Early Roman Belgic type wares; coarse wares; reduced coarse wares; black-burnished ware; and calcareous (particularly shell-tempered) wares (ibid. 2004, 40).

This methodology is suitable for the current investigation because the total number of sherds and the number of Amphora and Samian sherds are available in some sites included in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service. Using this information, the ratio (i.e. the proportion) of Amphora and Samian sherds to the total number of sherds was used as a proxy of fine pottery following the criterion by Booth (2004).

For the case of animal taxa, on the other hand, the ratio cattle/sheep-goat was used as a proxy of Roman impact on dietary traditions. The rationale of this indicator is based on the observation that native traditions were dominated by sheep/goat consumption. In contrast, sites with Roman influence were dominated by cattle consumption (Albarella et al. 2008, 1828; Mattingly 2006, 475).

c) Limitations related to the sites in the database: There are sites that cannot be included in the sample for different reasons. For example, some of them do not have information about the excavated area. As a consequence, they cannot be considered because a significant number of indicators depend on this information. Other sites were poorly excavated implying that the information obtained from these investigations is not reliable. Likewise, a number of sites such as 14026 in the red cluster of the pilot network do not have a significant number of material culture remains because, while classified as Roman, they were mainly

occupied during the Iron Age. Other sites correspond to areas of non-occupation such as cemeteries which are not relevant for the current investigation (i.e. the aim of this thesis is to identify diverse identities by exploring behaviour that is reflected in material culture in domestic settlements). In order to prevent the inclusion of non-suitable sites, a careful examination of the sites available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service was carried out. A description of the resulting sites considered in this investigation is presented in the Supplementary Information section of this thesis.

4.5.2 Refinements for Phase 2

The pilot analysis for Phase 2 revealed that it was not possible to visit all the sites in the sample for four main reasons. Firstly, as explained in Section 4.4.2, physical limitations make it impossible to explore all the sites in the sample in a reasonable period of time. Secondly, time and financial constraints made it impossible to investigate all them because this would involve 117 visits which was considered prohibitive in terms of time and cost. Finally, a significant number of sites are located in areas of urban development meaning that phenomenology may not be appropriate in these sites as the associated landscape has been altered significantly.

In considering these disadvantages, three criteria that are consistent with ego-network approach (see Section 4.2.2) were adopted for the selection of suitable sites. First, it is important to highlight the fact that the phenomenological stage (i.e. Phase 2 of the mixed method design) is contingent to the results obtained from the network analysis (i.e. Phase 1). Taking into account this linkage, three key results obtained from Phase 1 were adopted for the selection of sites (see Chapter 5). The first result corresponds to the findings from

sensitivity analysis (Section 5.4). That is, there are clusters (normally bigger ones) that are more robust through changes in material culture indicators suggesting that they are more likely to be associated with specific identities. Using this evidence, only sites that belong to stable clusters were considered in the phenomenological stage.

The second result obtained from Phase 1 corresponds to the values of the strength indicator assigned to each site. As shown in Chapter 5, this indicator indicates the degree of connectivity of a site in the network. Following this idea, sites with high, medium and low connectivity were selected for each stable cluster in order to explore this type of heterogeneity within a cluster. Second, sites located in landscapes that have been significantly affected by urban development were ruled out (these sites were identified by means of the satellite view function available in Google map).

Finally, among the candidate sites that satisfied these criteria, the ones that have been investigated more recently were selected. This is because more recent reports contain in general more complete and reliable information. This is particularly relevant to prevent potential interpretation biases arising from subjective relationships identified from bodily engagement with the landscape. In this regard, it is argued that while relationships can be found from phenomenological analysis, interpretations may be biased because the body is not neutral. That is, embodied experiences are influenced by cultural considerations suggesting that interpretations from one's own bodily encounters with landscapes may reflect contemporary perceptions and preoccupations rather than how people in the past perceived the landscape (Brück 2005, 55).

Using the criteria described above, 27 sites were proposed (see Tables S.1, S.2, S.3, and S.4 in the Supplementary Information section.). They are presented in the following table.

Table 4.11. Sites of stable clusters suggested for phenomenological analysis (numbers in brackets correspond to the years of the reports that were written when these sites were investigated).

Sites for the Earlier Roman period in Gloucestershire		
Cluster 1	**Cluster 4**	**Cluster 5**
14034 (2007)	14012 (1998)	14099 (2008)
14043 (2006)	14041 (2009)	14118 (2013)
14150 (2000)	14045 (2007)	14169 (2012)
Sites for the Later Roman period in Gloucestershire		
Cluster 6	**Cluster 7**	**Cluster 8**
14024 (2000)	14123 (2013)	14152 (2004)
14047 (1998)	14153 (2004)	14155 (2008)
14154 (2006)	14157 (1993)	14189 (2014)
Sites for the Earlier Roman period in Shropshire		
30005 (1992)		
30028 (2011)		
30030 (2007)		
Sites for the Later Roman period in Shropshire		
Cluster 12	**Cluster 13**	
30001 (1999)	30027 (2006)	
30018 (1961)	30029 (2013)	
30022 (2007)	30031 (2007)	

4.6 Chapter summary

The objective of this chapter is to describe the methodology adopted in the current investigation. It corresponds to an extension of a type of mixed method approach used in non-archaeological social science research referred to as explanatory sequential design. It consists of a first quantitative phase designed to obtain a network model of the landscape that considers archaeological sites in Roman-Britain as nodes and similar material culture as links, followed by a second qualitative phase designed to analyse key sites using the phenomenological approach to landscape. This methodology has the potential to inform about different identities and cultural influence from quantitative and qualitative

perspectives which is the aim of this dissertation, and can also test current theories dealing with these topics.

The methodology was applied to two regions: Gloucestershire, and Shropshire. They were chosen in order to cover a large area of the Severn Valley and also because there is significant available information in these areas from published and grey literature that can be employed to develop a network model of the landscape.

A pilot analysis was developed for the first quantitative phase with the purpose of determining whether the network approach has indeed the potential to identify clusters of sites from available material culture. Three clusters were identified in this analysis. The first one is composed of farms and nucleated settlements with a small number of archaeological remains. They are relatively homogeneous and most of them are located in the proximity of Roman roads. The second cluster is composed of villas that are rich in material culture and are located relatively distant from Roman roads and rivers. These sites are heterogeneous in terms of shared material culture remains. Finally, the third cluster is composed of rural settlements located in a small area with network of rivers. This cluster seems to be an intermediate group with respect to the other clusters in terms of heterogeneity in material culture. The results revealed that this methodology provides reasonable results and also has the potential to identify heterogeneous identities in the landscape. However, it also identified a number of limitations that needed to be addressed before carrying out the empirical element of this thesis.

Firstly, it was difficult to date some material culture remains available in database of the Archaeological Data Service. In order to overcome this problem, the sites in the sample were classified as either Early or Late Roman by identifying the site's main occupation period from primary sources. This facilitated the development of different

network models, one for each period. However, significant overlap was found in subsamples suggesting that the results from the network analysis have to be considered with caution.

Second, 14 material culture indicators of the 55 available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service do not significantly contribute to the estimation of weighted links across sites, either, because they are absent in most of the sites, or because this information is fragmented. This is why these indicators were not used in network modelling. However, pottery and animal taxa were used to describe general patterns in each identified cluster. This was done by considering partial information available in some of the sites that form part of a cluster.

Finally, a number of sites were not included in the study for several reasons. For example, some of them were occupied mainly during the Late Iron Age period, and others seem to have biased information about material culture due to poor excavation techniques.

A pilot study was also developed for the phenomenological stage of the mixed method approach. Three limitations were identified from this study. Firstly, it is not possible to visit all the sites in the sample because of time and resource constraints. Secondly, some sites are not suitable for phenomenological analysis because they are located in urban developments. Finally, due to bodily limitations, it was found that phenomenological research was feasible in relatively small areas around a site. In considering these limitations, 27 sites were selected for phenomenological research based on the following criteria: sites located mainly in rural areas with relatively recent reports and that are relevant in terms of the results obtained in Phase I (i.e. site selection for Phase II is contingent to the findings from Phase I) were considered; and phenomenological research was limited to areas with a radius of 1 kilometre with a defined central point.

Having described the methodology proposed for the current investigation and the limitations identified in the pilot analyses, the focus is now placed on the results. This is discussed in the next chapters.

CHAPTER FIVE: Results from Phase 1 of the sequential mixed methods design: network analysis

The objective of this chapter is to present the results from Phase 1 of the sequential mixed method approach employing network analysis. For this purpose, the chapter is organised as follows.

Section 5.1 provides a description of the areas under study: Gloucestershire and Shropshire. Section 5.2 reports the links across the sites in the sample that were obtained from the available material culture indicators (see Section 4.5), presents the selected ECMNMs obtained by means of the Louvain optimisation algorithm and the resolution parameter introduced by Lambiotte et al. (2008) available in Gephi software (see Section 3.2), and describes the main characteristics of these network models. Section 5.3 assesses the robustness of the selected ECMNMs by means of sensitivity analysis. Finally, Section 5.4 concludes the chapter.

It is important to clarify that this chapter only reports the results of Phase 1 of the sequential mixed method approach. Formal interpretations of these findings are discussed in Chapter 7 which integrates the results from Phases 1 and 2 of this approach, along with relevant references including excavation reports sources associated with the database.

5.1 The areas under study

The area considered for Gloucestershire corresponds to 13,200 square kilometres and is delineated by the following coordinates (Easting, Northing): 340000, 260000; 460000, 260000; 340000, 150000; and 460000, 150000. The geology of the northwest part of this county corresponds to the Cotswolds and is characterised by the presence of several

landscape features such as dry valleys, landslips and outlier hills with heights up to about 330 metres above sea level. The underlying geology is dominated by Jurassic limestone (mainly oolitic) formed around 210 to 140 million years ago (Gloucestershire Geology Trust 2005, 5; Cotswolds Conservation Board 2006, 3). The southeast part, on the other hand, corresponds to the Upper Thames Valley with heights between 60 and 100 metres above sea level. It lies between the oolitic limestone of the Cotswold Hills in the north and the mixed sand and clay strata covered by limestone in the south of the river (i.e. the Corallian Ridge). The Upper Thames Valley contains Oxford Clay from the dip slope of the Cotswolds and is covered by extensive gravel terraces and calcareous alluvium on the valley floor of the river (Fenner and Dyer 1994, 10). The topography of this area is presented in Figure 5.1, the geology in presented in Figure 5.2, and the nomenclature of this geology in shown in Figure 5.3.

The area considered for Shropshire corresponds to 7,200 square kilometres and is delineated by the following coordinates (Easting, Northing): 320000, 360000; 400000, 360000; 320000, 270000; and 400000, 270000 (see Figure 5.2). In general terms, the geology of this county consists of an axial NE–SW-trending Precambrian core that runs through the hills located south of Shrewsbury and west of the River Severn. To the north of this town and east of the river, the geology is dominated by the younger Permian and Triassic rock with a small area of Jurassic strata. A significant part of north Shropshire is covered by glacial till, with hills formed by outcrops of the Sherwood Sandstone Group (Historic England 2017, 1). The topography of this area is presented in Figure 5.4, and the geology in Figure 5.5.

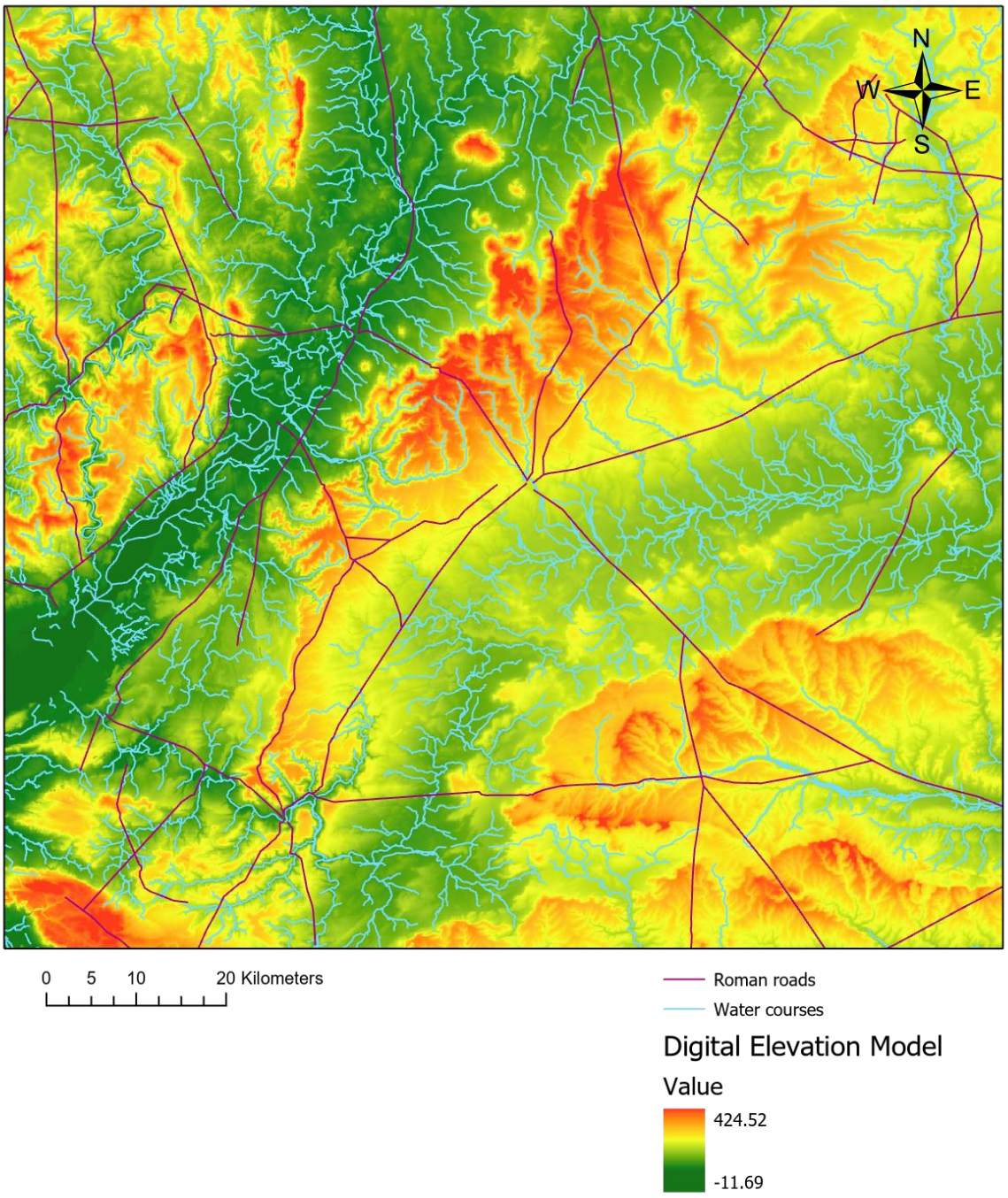


Figure 5.1. Topography of the area under study in Gloucestershire.

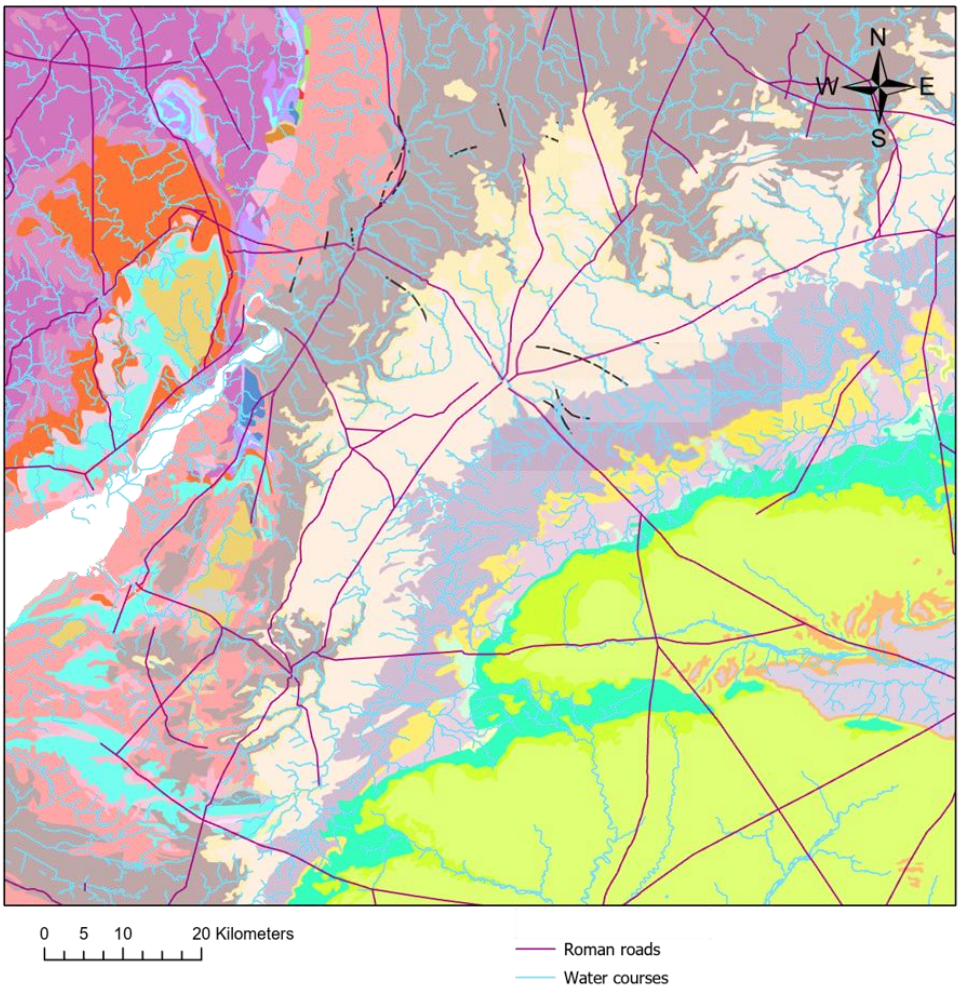


Figure 5.2. Geology of the area under study in Gloucestershire.



Figure 5.3. Geological nomenclature.

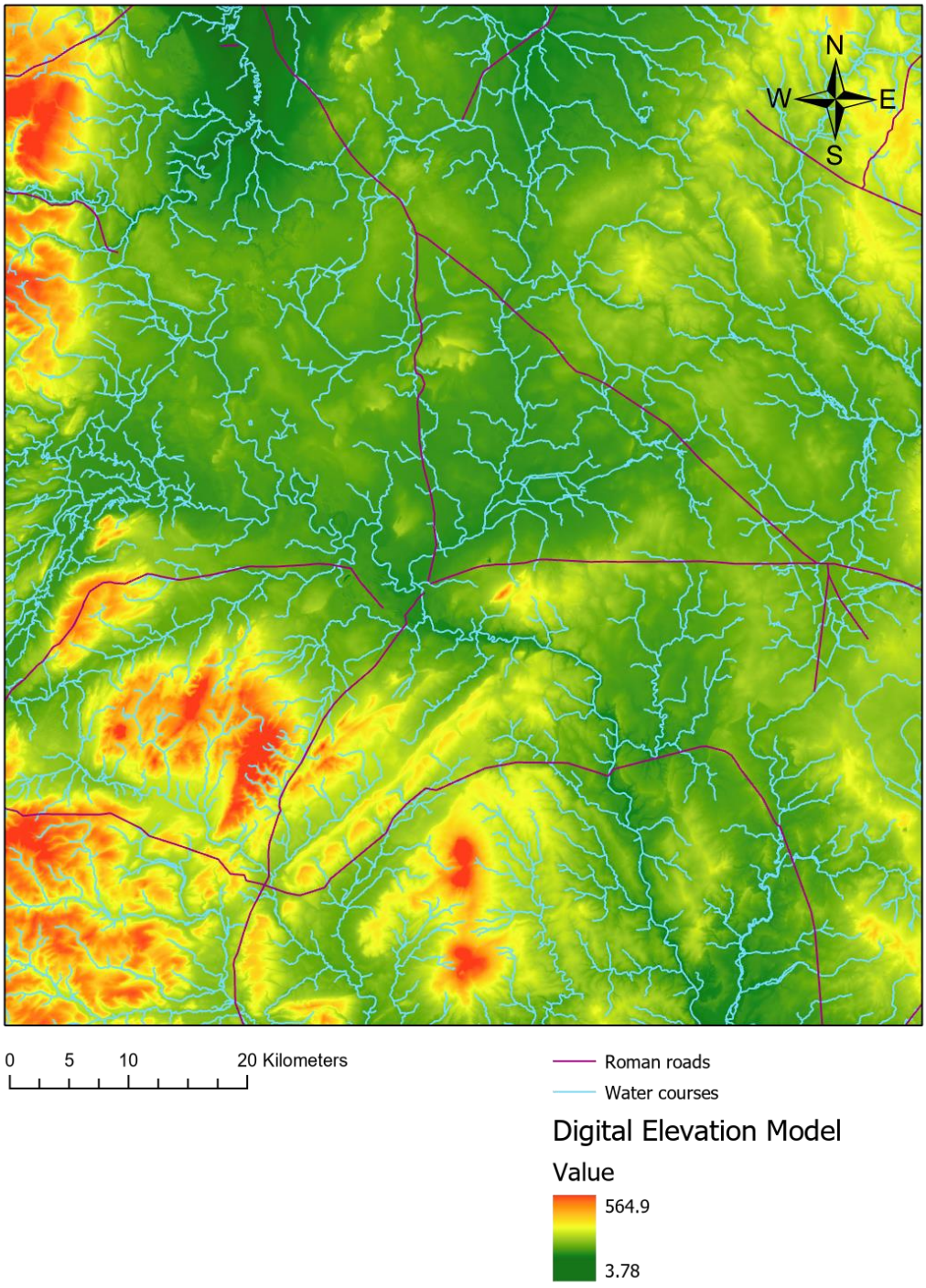


Figure 5.4. Topography of the area under study in Shropshire.

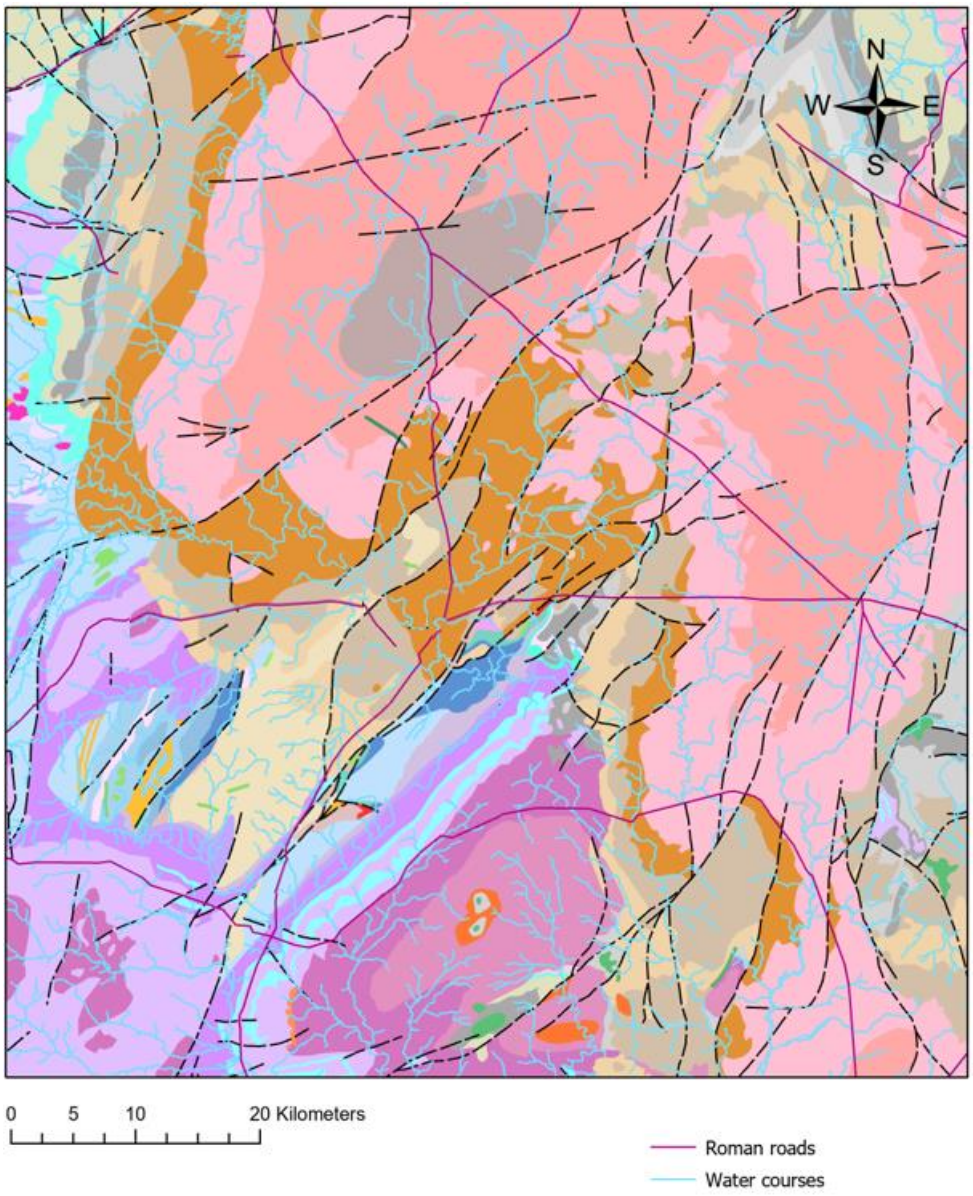


Figure 5.5. Geology of the area under study in Shropshire.

5.2 Endogenous Cultural Material Network Models (ECMNM)

Using the 41 available material culture indicators of similarity in the sample database (see Section 4.5.2), it was possible to obtain weighted links across these sites for each period and each area considered in the research. As can be seen in the tables in Appendices A, B, C and D, these links have numerical values between 0 and 1. For example, according to Table A1 in Appendix A, the value of the link between the sites at Rudgeway lane, Walton Cardiff (14052), and Dymock (14055) is 0.61. This means that these sites are 61% similar because they share this percentage of the indicators of similarity (i.e. either they share some material culture, or some of them are absent in both sites). This information was used to identify clusters of sites which is the topic of the next section.

The weighted links were processed by means of the Gephi software to obtain clusters of sites. After that, they were plotted in DEM. Using different resolution parameter values (i.e. a parameter in a mathematical algorithm that is based on the idea that the size of stable clusters increases with time, and time can be considered in this context as a resolution parameter whose value is determined arbitrarily (Fortunato, 2010, 46)), alternative ECMNMs were obtained for each period and areas under study. The resolution parameters values that generated reasonable ECMNMs were 1 (i.e. the default in Gephi software), 0.95, and 0.93. This is explained as follows.

According to Lambiotte et al. (2008, 7), large numbers of resolution lead the modularity algorithm to generate networks containing normally two clusters at most. Because the default number of 1 generated ECMNMs composed of two clusters of sites in most cases, this number was considered as the upper boundary of the resolution parameter. In contrast, values of this parameter smaller than 0.93 led the modularity algorithm to generate networks with too many clusters, some of them composed of two or even one site

which seemed unrealistic. This is because, according to Diaz-Andreu Garcia (2005, 1) and Jenkins (2008, 18), the notion of identity is a collective one in the sense that it reflects the role of individuals within a collective group and how they perceive themselves, and how others perceive them, as belonging to certain groups and not others. Consequently, it is difficult to justify the existence of a single site in a cluster because this would mean that this site reflects an identity that is not related to a collective group. It is for this reason that the number 0.93 was considered the lower limit of the resolution parameter as this number generated clusters that include a reasonable number of sites. It is important to clarify, however, that the database of the Rural Settlement of Roman Britain is a sample of a wider population implying that the small clusters generated under values of the resolution parameter smaller than 0.93 may have been representative of larger number of sites in the total population.

The ECMNMs obtained from the selected resolution values for each area and period under study are shown in the next subsections.

5.2.1 ECMNMs for Gloucestershire: Earlier Roman period

Three different ECMNMs were generated for the Earlier Roman period in Gloucestershire using the three selected values of the resolution parameter. For a resolution value equal to 1, a network composed of two clusters were obtained. One of them includes a mix of farms and villages and the other includes farms, nucleated settlements and a villa. This suggests a poor outcome because the model was unable to extract clusters composed of similar types of settlements. In order to obtain a more reasonable result, the resolution 0.95 was adopted. This resolution generated an ECMNM composed of four clusters. This network seems to be a reasonable outcome because the clusters contains similar types of

sites. However, this model was ruled out because the clusters are unbalanced: it includes two large clusters and two very small ones. This suggests that there is scope for extracting more clusters from the former by using a smaller resolution value. In order to explore this possibility, an ECMNM with resolution 0.93 was developed. While the imbalance in cluster size improved with this model to some extent, there are other additional considerations that make it a more reasonable ECMNM in comparison to the previous ones. These are as follows.

The ECMNM generated with a resolution value of 0.93 contains five clusters referred to as Clusters 1, 2, 3, 4 and 5. The sites included in these clusters are shown in Table 5.1 (see Table S.1 for more specific information). They are presented using colours because this information will be used in the sensibility analysis in Section 5.4. In this analysis, some determined material culture indicators will be omitted with the purpose of assessing whether the clusters remain robust. If these clusters are not robust, then some sites will move from their original cluster to others, and this can easily be identified by observing a mix of colours within a cluster after the change. The model is presented in Figure 5.6 (in this figure, the sites in Cluster 1 are represented as green circles; the sites in Cluster 2 as green crosses; the sites in Cluster 3 as red circles; the sites in Cluster 4 as red crosses; and the sites in Cluster 5 as blue circles).

Table 5.1. Sites included in the clusters of the ECMNM with resolution 0.93 (sites in brackets belong to the same settlement).

Cluster 1 (ID)	Cluster 2 (ID)	Cluster 3 (ID)	Cluster 4 (ID)	Cluster 5 (ID)
14034(F), 14037(F), 14043(F), 14131(F), 14132(F), 14134(F), 14147(F), 14150(F), 14156(F), 14159(F), 14168(F), 14170(F), 14180(F)	14008(F), 14055(F) 14158(F), 14163(F)	14018(V), 14062(V), 14125(V), 14151(V), 14164(F), 14173(V), 14174(F)	14012(F), 14015(N), (14019, 14082, 14101, 14144)(N), 14021(F), 14029(I), 14032(F), 14033(F), 14041(V), (14045, 14046, 14171, 14188)(N), 14086(F), 14187(F)	(14004, 14005)(F) 14052(F), 14099(F), 14102(F), 14118(F), 14166(F), 14169(F)

F: Farm; V: Villa; N: Nucleated settlement; I: Industry.

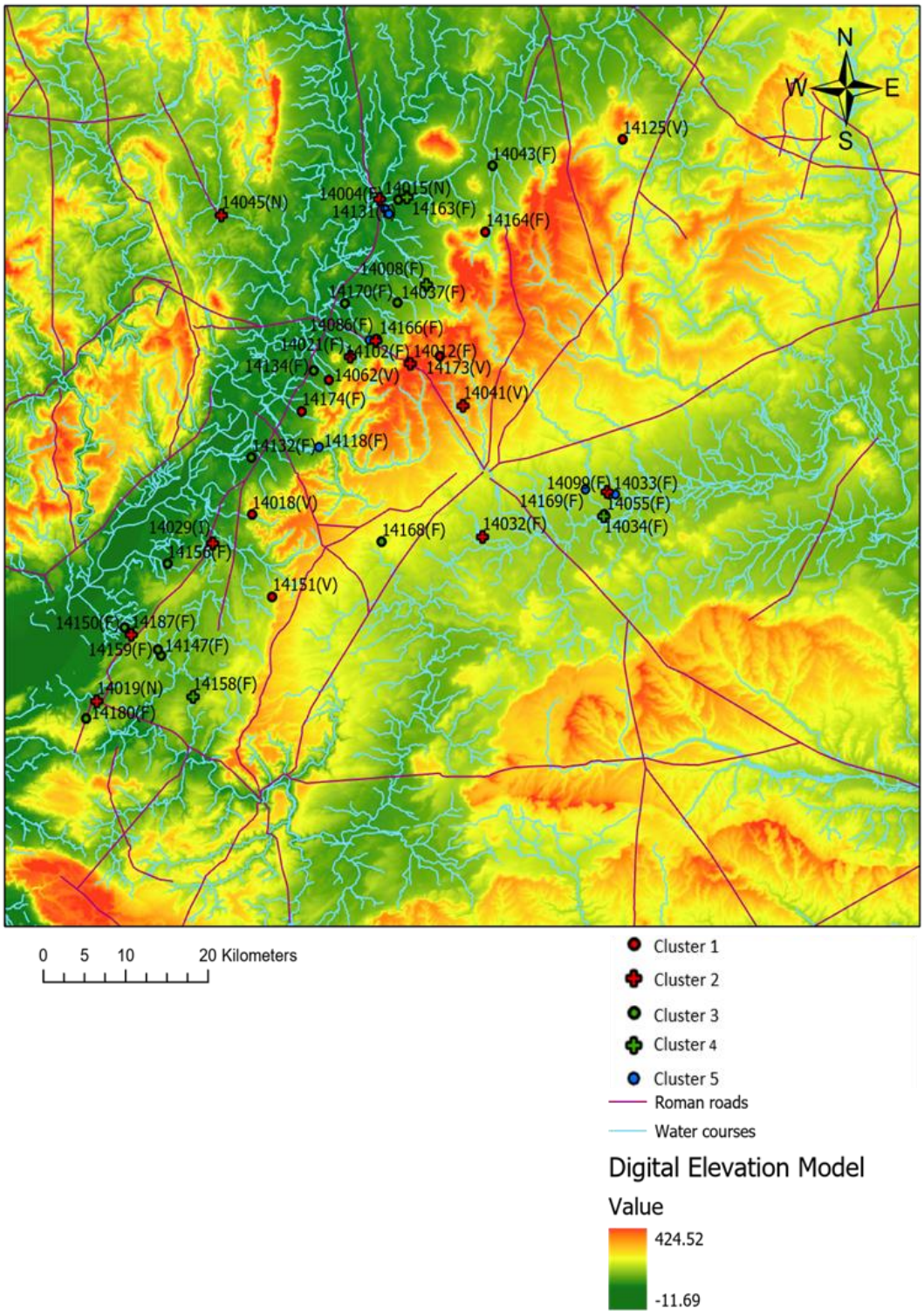


Figure 5.6. ECMNM for Earlier Roman period in Gloucestershire (resolution 0.93)

In comparing the clusters generated with resolution 0.95 and 0.93, it was inferred that the main difference between these ECMNMs is that one of the large clusters in resolution 0.95 split into two clusters (i.e. Clusters 1 and 2 in resolution 0.93). Likewise, the other large cluster in resolution 0.95 split into two clusters (i.e. Clusters 4 and 5 in resolution 0.93). There were also reasonable reallocations of sites between clusters. For example, the farm in Winchcombe (14164(F)) in a small cluster in resolution 0.95 was included in Cluster 3 (i.e. villages) in resolution 0.93. At first this appeared to be a mistake made by the algorithm because it is joining a farm with a group of villages. However, primary reports have suggested that this site could be a modest villa (Gilbert and Moore 2009, 63; Nichols 2014, 3). This is based on the fact that excavations carried out in this site have revealed buildings having characteristic villa features including stone foundations decorated with painted plaster, ceramic tiled roofs, and opus signinum. Nonetheless, the lack of other material remains such as hypocausts and mosaics has been considered as an indication that this site was a modest villa. This evidence suggests, therefore, both that this reallocation was appropriate and that the resulting ECMNM with resolution 0.93 provides a reasonable cluster differentiation. Likewise, Abbot's Leigh (14180(F)) was reallocated from the other small cluster in resolution 0.95 to Cluster 1 in resolution 0.93. This is a reasonable change because this site is poor in material culture which is a characteristic of this cluster (see the discussion below).

Finally, the site in the Ditches, North Cerney (14041(V)), remained in Cluster 4. That is, this villa was not reallocated into Cluster 3 which is the cluster of villas. This would seem to be because the algorithm combined in Cluster 4 sites that are in general rich in a range of material culture, which is the case of the site in the Ditches (see Trow 1988, 40). In contrast, the sites in Cluster 3 are in general richer in remains associated with high status building (this is formally discussed below).

The changes described above support the idea that the model in resolution 0.93 offers the most reasonable partition of the sites in the sample. In order to gain a better understanding of the clusters of this model, an inspection of the material culture within them was carried out. This is discussed as follows.

As explained above, one of the large clusters in resolution 0.95 split into Clusters 1 and 2 in resolution 0.93. It was found that Cluster 1 is more abundant in ceramic building material and other artifacts such as bracelets, brooches and toilet cosmetics. In contrast, Cluster 2 is more abundant in masonry and structural worked stone. It also contains more evidence of metalworking, iron slag and quernstones. In considering these differences, it appears that Clusters 1 and 2 are indeed different groups of sites in relation to the available material culture.

Regarding the other large cluster in resolution 0.95, the same conclusion was inferred. That is, two different clusters (i.e. Clusters 4 and 5) were extracted from the large cluster when adopting a resolution of 0.93. A simple inspection revealed that Cluster 4 is more abundant in a range of material culture than Cluster 5.

The results described above suggest, again, that the most appropriate candidate for the selected ECMNM is the one obtained with resolution 0.93. However, it is not clear whether this model is the result of either heterogeneous identities or poor/biased material culture in some sites that were interpreted by the algorithm as belonging to specific clusters. In order to identify possible biases and to justify the adoption of the ECMNM with resolution 0.93, a more detailed analysis of each cluster of this model is carried out as follows.

a) Cluster 1 (Poor in material culture): In order to study the main features of this cluster, consider Tables E.2, E.3 and E.4 in Appendix E. The red sections in Table E.1 indicates the material culture indicators that are common in the sites included in the cluster. In inspecting this table, it is inferred that the common factor between the sites included in Cluster 1 is lack of significant material culture in general suggesting a set of low status settlements. That is, this cluster is mainly characterised by sites containing buildings structures made of timber (there is only one exception) with few other archaeological remains.

In terms of the strength indicator in Table E.2, the sites that are most connected in the network are the following sites (in red): North Fiddington (14131(F)); Lower Knole Farm (14150(F)); and Abbot's Leigh (14180(F)). This is due to the fact that a lack of archaeological remains is a common feature in the network. Thus, the fact that these sites are very poor in material culture explains their higher connectivity. It is possible that the sites in North Fiddington and Abbot's Leigh are poor in archaeological remains because they are apparently located in the periphery of a settlement in Fiddington, and they were investigated only as part of an evaluation implying less intensive excavation (Gardner, 1998, 30; Miles, 1992, 2). This suggests that it may be difficult to link a determined type of identity to these sites. This is why they have to be considered with caution. In contrast, the Lower Knole Farm (14150(F)) site seems to be a more central settlement with poor material culture. In this regard, Lawler (2000, 13-19) explains that significant archaeological remains were expected to be found in a trench excavated in a small island of solid marl in this site over the surrounding alluvium. However, the few deposits found in this place suggest a site of low intensity that could be a short term settlement. Given this evidence, the site in Lower Knole Farm will be considered as the central node in the cluster.

On the other hand, the least connected site in the network is Stubbs Farm (14034(F)) (in light blue). This is because it contains some material culture such as coins and ceramic

building material (probably reflecting its proximity to a modest possible villa at Kempsford) that are less common in the network. This explains the observed lower connectivity. In spite of this, it also follows the low status sites pattern observed in this cluster. This is because it corresponds to a low-lying settlement located on particular marginal areas of land in terms of economic value and was apparently abandoned as a consequence of flooding (Booth et al., 2007, 75).

Despite these differences, this cluster contains sites that are relatively similar as shown in Table E.3. That is, all the weighted links have a value equal to or larger than 0.80 suggesting that they are at least 80% similar in terms of the material culture indicators. This is explained, again, by the fact that most of them contain few archaeological remains.

b) Cluster 2 (Poor in material culture. Evidence of structural worked material and economic activities including metalwork): The analysis of Cluster 2 is based on Tables E.4, E.5 and E.6 in Appendix E. According to Table E.4, the sites in Cluster 2 also contain few material culture remains. However, the presence of structural worked stones seems to be the main factor used by the algorithm to consider these sites as belonging to a different cluster. In addition, in most of them there is evidence of metalwork and quernstones suggesting that these sites were places of economic production. Other material culture remains identified in some of the sites are masonry and hobnails suggesting a degree of differentiation and higher economic productivity compared to the sites in cluster 1.

In relation to the strength indicator, Table E.5 shows that among the sites in the cluster, site 14158(F) (i.e. a farm and iron production site located north Bristol) is the most integrated in the whole network. As in the previous cluster, this may reflect the fact that lack of material culture is a common feature in a significant number of sites in the sample.

On the other hand, the site in Cossham Street, Mangotsfield (14008(F)), is the least connected one in the network suggesting that this site has some specific material culture that is not commonly shared by the sites in the sample. In inspecting Table 4.4, it appears that this material culture is millstone because there are only two sites in the sample containing this remain for the period and area under consideration. This suggests that this site had greater productivity. In relation to this possibility, it may be the case that this site was a watermill which would explain the artifacts discovered in this farm. However, evidence supporting this possibility has not been identified yet. Apart from these differences, the sites in Cluster 2 have a high degree of similarity of at least 83% as revealed by the weighted links in Table E.6.

c) Cluster 3 (High status building material. Lack of other types of remains): In order to explore the main characteristics of this cluster, consider Tables E.7, E.8 and E.9 in Appendix E. Table E.87 shows that all the sites in this cluster contain evidence of high-status building remains including masonry and tiled roofing suggesting that this was the main criteria used by the network algorithm to join these sites into the red circle cluster. In addition, most of them share other relevant material culture associated with building such as structural worked stone and remains associated with high-status settlements such as painted plaster wall, tessellated floor mosaic and hypocaust. Likewise, most of the sites share other material culture such as coins, hobnails and evidence of metalwork.

In relation to the other cultural material indicators used in the study, they were found to be lacking in the majority of sites, but were found to be present in a small number of sites. These indicators include bathhouse, bracelets, brooches, other dress accessories, military fitting weapons, inscriptions, knife tools, agricultural tools, weighing objects, weaving, sewing, and vessel glass. This variance in material culture suggests, therefore, that this

cluster includes sites that are not very similar and this is reflected in the weighted links which range from 51% to 88% (see Table E.9). It is inferred, therefore, that what this relatively heterogeneous group of sites have in common is the presence of material culture associated with high-status buildings. In fact, as shown in Table S.4, most of these sites correspond to villas. It is important to recognise, however, that most villa sites in this area only have villas excavated and not a wider complex that would have a bearing on apparent functionality.

In relation to the strength indicator, Table E.8 shows that the most integrated site in the network is Brookthorpe-with-Whaddon (14062(V)) and this, again, reflects the general pattern of the network of lack of material culture as a number of other archaeological remains are also absent in this site. In contrast, the site at Land off Greet Road, Winchcombe (14164(F)) is the one with the lowest value implying that among the sites in the cluster, this is the least integrated in the network. This is because this settlement contains remains that are not commonly found in the network (e.g. agricultural tools, weaving, sewing, and vessel glass).

d) Cluster 4 (Rich in a range of material culture remains): The main features of Cluster 4 are summarised in Tables E.10, E.11 and E.12 in Appendix E. The main characteristic of the sites included in this cluster is that they contain a significant number of material culture remains. However, not all of them share the same material which indicates that they are heterogeneous and explains why some of them are quite dissimilar. This is inferred from Table E.12 which shows weighted links ranging from 24% to 68%. In spite of this high degree of heterogeneity, the network algorithm joined the sites because, as shown in Table E.10, they have some specific features in common (e.g. none of them have tessellated floor

mosaic, hypocaust, and bathhouse; and all of them have brooches although in different quantities).

In relation to the strength indicator, Table E.11 shows that the site at Heneage Court, Falfield (14029(I)) is the one with the highest value of this indicator meaning that among the sites in the cluster, this is the most integrated in the network. This is due to the fact that this site is the one containing the least material culture remains in the cluster which, as before, is the common feature of the network. On the other hand, the site with the lowest value of the strength indicator is the site at Neigh Bridge, Somerford Keynes (14032(F)). This is because this site contains corndrier and storage which are rare remains in the network.

e) Cluster 5 (Rich in a range of material culture but few high status building remains): The relevant information that characterises this cluster is shown in the Tables E.13, E.14 and E.15 in Appendix E. This cluster is also characterised by having sites with different material culture. However, they were joined because they share two main features. Firstly, some specific material culture remains are absent in all of them. They include high status building remains (e.g. tessellated floor mosaic and bathhouse, among others) as well as material culture related to religious and specific economic activities (e.g. weighing objects and millstones). Secondly, other material culture remains are present in all these sites. They include structural worked stone and knife tools. This evidence suggests, therefore, that Cluster 5 includes sites with some degree of homogeneity in terms of building material and economic activity with respect to the other sites in the sample. This is reflected in Table E.15 which shows that similarity across sites in terms of weighted links ranges from 51% to 73%.

In relation to the strength indicator, Tables E.14 shows that the site at Fox's Field, Ebley Road, Stonehouse (14118(F)), is the most connected in the network. It corresponds to a farm with evidence of metal production located at the foot of the Cotswold ridge on the edge of the Severn Vale. As in the previous clusters, the higher connectivity of this site reflects the fact that a number of material culture remains are absent in this settlement. On the other hand, the site at Arkell's Land (14099(F)) is the one with the lowest value implying that this is the least connected site in Cluster 5. In considering the information in Table E.13, it appears that the reason for this lower connectivity is because this is one of the few sites in the sample that contains evidence of military fitting weapons making it a distinctive settlement across the network.

f) Other material culture: Section 4.5.2 explains that there are a number of material culture remains that are not available in all the sites in the sample. As a result, they were not used to derive ECMNMs. Nonetheless, partial information is available for the case of pottery and animal taxa. This information is considered in this part as a complement to gain a better understanding of the nature of the clusters that form part of the network model for the Earlier Roman period in Gloucestershire. This information is summarised in the following table.

Table 5.2. Pottery (percentage of amphora and samian with respect to the number of sherds) and animal taxa (ratio between cattle and sheep/goat).

Cluster 1			Cluster 2			Cluster 3			Cluster 4			Cluster 5		
Site ID	**Pottery (%)**	**Animal taxa**	**Site ID**	**Pottery (%)**	**Animal taxa**	**Site ID**	**Pottery (%)**	**Animal taxa**	**Site ID**	**Pottery (%)**	**Animal taxa**	**Site ID**	**Pottery (%)**	**Animal taxa**
14034(F)	3.30	NA	14008(F)	1.20	2.47	14018(V)	NA	NA	14012(F)	0.76	2.17	14004(F)	1.66	0.74
14037(F)	NA	NA	14055(F)	2.51	4.29	14062(V)	NA	NA	14015(N)	20.23	NA	14052(F)	1.18	1.23
14043(F)	8.70	1.71	14058(F)	1.11	4.25	14125(V)	3.98	NA	14019(N)	18.42	3.52	14099(F)	4.90	1.41
14131(F)	3.90	NA	14163(F)	1.76	2.03	14151(V)	NA	NA	14021(F)	NA	2.85	14102(F)	1.57	1.04
14132(F)	NA	NA				14164(F)	1.79	1.99	14029(I)	NA	NA	14118(F)	1.43	0.65
14134(F)	0.00	3.75				14173(V)	3.21	0.93	14032(F)	1.73	1.47	14166(F)	NA	NA
14147(F)	0.00	NA				14174(F)	1.62	0.61	14033(F)	14.59	4.85	14169(F)	3.04	0.57
14150(F)	0.00	NA							14041(V)	3.76	1.32			
14156(F)	0.90	NA							14045(N)	2.89	1.23			
14159(F)	NA	1.44							14086(F)	NA	NA			
14168(F)	0.00	NA							14187(F)	NA	0.38			
14170(F)	0.00	4.56												
14180(F)	NA	NA												
Mean	1.87	2.87		1.65	3.26		2.65	1.18		8.91	2.22		2.30	0.94
Mean*	1.01													

NA indicates not available data.
Mean omits the sites without data.
Mean* denotes mean without outliers.
Site 14019 in the red circle cluster includes sites 14082, 14101 and 14144 because they belong to the same settlement.
Site 14045 in the red circle cluster includes sites 14046, 14171 and 14188 because they belong to the same settlement.
Site 14004 in the red cross cluster includes site 14005 because they belong to the same settlement.

In relation to pottery, this table shows that in general there are marked variation across sites within a cluster in terms of selected fine and imported wares (measured as the ratio between amphora-samian and total number of sherds. See Section 4.5.2). Nonetheless, some patterns can be observed when considering the average of this indicator obtained from the sites in each cluster that contain this information. In order to draw these patterns out more clearly, a summary statistic is presented as follows.

Table 5.3. Summary statistic for pottery and animal taxa

	Cluster 1	**Cluster 2**	**Cluster 3**	**Cluster 4**	**Cluster 5**
Pottery	1.01	1.65	2.65	8.91	2.30
Animal taxa	2.87	3.26	1.18	2.22	0.94

In considering the means presented in this table, the following pattern for pottery were identified. Firstly, the highest mean is found in Cluster 4 which, as explained above, is the cluster containing sites that are rich in material culture other than high status building remains. Likewise, a high average is found in Cluster 3 which is a set of villas with remains

associated with high status buildings. While it is difficult to draw conclusions given the fact that pottery information is not available in all the sites, this comparison seems to support the view that these two clusters may include high status settlements. Secondly, the clusters with the lowest mean are Clusters 1 and 2. This is not surprising given the fact that these clusters, as explained above, are relatively poor in material culture suggesting low status settlements. It is important to take into account that this distinction is probably clearer in this period because samian and amphora are far more common in the Earlier Roman period (Willis 2011, 171; Willis 1996, 219).

It is interesting to note, however, that the site at College Farm, Dumbleton (14043(F)), in Cluster 1 contains an unusual high percentage of amphora and samian sherds (i.e. 8.70), with the large percentage of fine pottery given mainly by amphora (Coleman et al. 2006, 56). In considering this information, the high value of the fine pottery indicator mainly reflects a large quantity of amphora and this value is considered as an outlier in relation to the apparent trend in the green circle cluster. By taking off this site from the average (i.e. by obtaining the mean without the outlier and referred to as m* in the table), a low percentage of fine ware of about 1% is identified in this cluster suggesting, again, a possible set of low status settlements.

In relation to Cluster 5, it has values of the fine pottery indicator of 2.30 suggesting intermediate characteristics between the apparent highest and lowest status clusters, a fact that seems to be confirmed by the other material culture indicators considered in the investigation.

In relation to animal taxa, on the other hand, the information is relatively poor and available only in few sites. This may explain apparent contradictions that may reflect significant biases. For example, as explained above, it appears that Clusters 1 and 2 contain low status settlements. However, they have the highest value of the cattle/sheep-goat ratio

which seems a contradiction given the fact that the consumption of cattle over sheep and goat is associated with better food quality and higher status (Allen 2017, 112). In contrast, a higher ratio would be expected in Cluster 3 (i.e. the cluster of villas). However, it has a relatively low value with respect to the other clusters which, again, seems to be a contradiction. These contradictions suggest, therefore, that data on animal taxa is likely to be biased and this may reflect the fact that organic material is normally not well preserved. This might also be associated with location: sheep are more common on Cotswolds, and cattle in valleys which is opposite to the status of settlements (i.e. villa in Cotswolds and farms in valleys). Finally, another possible explanation for this apparent contradiction is that slaves looked after cattle for their masters because it is well known the fact that wealthy people had slaves in Roman Britain (Mattingly 2006, 294).

g) Summary: The results obtained from the ECMNM with resolution 0.93 revealed that the sites in the sample are mainly connected by lack of material culture remains, and clusters are formed when some sites present partial deviations from this trend. This has an important implication in relation to possible biases that may exist in this model. That is, lack of material culture may not necessarily reflect the nature of the sites in the sample, but may be indicative of poor excavation techniques or the selection of sites that are at the periphery of a distant settlement. In recognising this potential bias, the proposed ECMNM has to be used only as a reference and with caution. In spite of this potential problem, some clear patterns were identified from the analysis carried out above.

In order to facilitate the identification of these patterns, the information revised in this section is summarised in Table 5.4. In this table, the word *yes* indicates that all the sites in a determined cluster contain a specific class material remain listed in the first column, and the word *no* indicates that none of the sites in a cluster contain a determined material

culture remain. On the other hand, a cell with two crosses means either that the percentage of sites within a cluster having a determined material culture remain (for those that were analysed in terms of percentage) or the average of the quantity of a material culture remain in a cluster (for those that were analysed in terms of quantity) has the highest value in that cluster, and a single cross indicates the second highest value. For example, Table 5.4 shows that the cell that links brooches with Cluster 3 contains the word *yes* with two crosses. This means all the sites in this cluster contain brooches and this cluster, also, is the one with the highest number of brooches on average. Likewise, the cell that links masonry with Cluster 2 contains only a single cross. This means that not all the sites in this cluster contain masonry. Nonetheless, this is the cluster with the second highest percentage of masonry.

On the other hand, each cluster column has three indicators referred to as W, ↑SI and ↓SI. The first denotes weighted link and is used as a measurement of similarity across sites in a cluster. For example, the sites of Cluster 3 present similarities between 51% and 88%. The symbol ↑SI refers to the site with the highest strength indicator in a cluster. For example, the site at Cossham Street, Mangotsfield (14158(F)), is the one with the highest strength indicator in Cluster 2. Finally, the symbol ↓SI denotes the site with the lowest strength indicator in a cluster. This table will be used as a reference for further interpretations in Chapter Seven.

Table 5.4. Summary of relevant information related to the ECMNM with resolution 0.93.

Material culture	Cluster 1 W: 80%-100% ↑SI = 14150(F) ↓SI = 14034(F)	Cluster 2 W: 83%-93% ↑SI = 14158(F) ↓SI = 14008(F)	Cluster 3 W: 51%-88% ↑SI = 14062(V) ↓SI = 14164(F)	Cluster 4 W: 24%-68% ↑SI = 14029(I) ↓SI = 14032(F)	Cluster 5 W: 51%-73% ↑SI = 14118(F) ↓SI = 14099(F)
Coins (mean)		No	+	+ +	
Masonry (%)		+	Yes + +		
Tiled roof (%)	No	No	Yes + +	+	
Painted plaster wall (%)	No	No	+ +	+	No
Structural worked stone (%)	No	Yes + +			Yes +
CBM (mean)			+	+ +	
Window glass (%)	No	No	+ +	+	No
Tessellated floor mosaic (%)	No	No	+ +	No	No
Hypocaust (%)	No	No	+ +	No	No
Corndrier (%)	No	No		+	+ +
Storage (%)	No	No	No	+	+ +
Bathhouse (%)	No	No	+ +	No	No
Evidence metal-work (%)			+ +		+
Iron slag (%)		+	+ +		
Evidence bone-work (%)	No	No	No	No	No
Hobnails (%)	No			+ +	+
Bracelets quantity (mean)		No	+	+ +	
Finger rings (mean)		No	No	+ +	+
Hairpins (mean)	No	No	+	+ +	
Other dress access. (mean)	No	No	+ +	+	
Brooch (mean)	+			Yes + +	
Toilet cosmetic (mean)	+	No	No	+ +	
Military fit. weapons (mean)	No	No	+	+ +	
Inscriptions (%)	No	No	+ +	+	No
Writing equipment (mean)	No	No	No	+ +	+
Equine transport (mean)	No	No	No	+ +	+
Religious objects (mean)	No	No	No	+ +	No
Knives tools (mean)	No	No	+	+ +	Yes
Agricultural tools (mean)	No	No		+ +	+
Security objects (mean)	No	No	+	+ +	
Recreation objects (mean)	No	No	No	+ +	+
Weighing objects (mean)		No	+ +	+	No
Spinning (mean)	+	No	No	+ +	
Weaving (mean)		No		+ +	+
Sewing (mean)	No	No	+	+ +	
Quernstones (mean)			+	+ +	
Millstones (mean)		+ +	No	+	No
Glass objects (mean)	No	No	No	+ +	+
Vessel glass (mean)	No	No	+	+ +	
Pottery **Mean** **Men without outliers**	1.87 1.01	1.65	2.65	8.91	2.30
Animal taxa **Mean** **Mean without outliers**	2.87	3.26	1.18	2.22	0.94

5.2.2 ECMNMs for Gloucestershire: Later Roman period

As in the previous case, three ECMNMs were developed using three values of the resolution parameter. After an inspection of these models, it was concluded again that the one with resolution 0.93 seems to be the most appropriate to study divergent identities in the Later Roman period in Gloucestershire. The rationale for this choice is outlined below.

Two clusters were obtained with resolution 1. One of them is richer in all the material cultural remains used in this study than the other cluster. This suggests that the algorithm was able to extract two well defined different clusters. However, these clusters are heterogeneous in terms of the site types they include. For example, one of them contains villas, farms and nucleated settlements. This heterogeneity suggests that refinements using a lower value of the resolution parameter could potentially extract smaller clusters associated with different types of settlements. A first attempt was carried out with a resolution of 0.95 resulting in an ECMNM composed of four clusters. This ECMNM was unable to fully separate different types of settlements in specific clusters. On the contrary, one cluster in resolution 1 split into two clusters in resolution 0.95, both of them composed of villas and other types of settlements. The difficulty in separating clusters according to types of settlements may reflect either poor data related to poor excavation techniques (for example, several sites such as West Street in Bedminster, Bristol (14143(F)), and Brizen Farm, Shurdington (14162(F)), were investigated by means of evaluation excavations. Other sites were excavated over a long period of time. An example is Tockington Park Farm (14006(V)) which was excavated in 1888), material culture that was destroyed in the past, or that fashions and lifestyles started to overlap during the Later Roman period.

In order to identify whether this problem persisted, a final ECMNM was developed using a value of the resolution parameter equal to 0.93 which generated five clusters. While

this model was unable to fully separate different types of settlements, it provided a more distinguishable set of sites, and therefore this model was selected as a candidate to study diverse identity. This ECMNM contains five clusters which have been named Clusters 6, 7, 8, 9 and 10. The sites included in these clusters are presented in Table 5.5 (see Table 4.15 for a more detailed description of these sites) and the model is shown in Figure 5.7 (in this figure, the sites in Cluster 6 are represented as green circles; the sites in Cluster 7 as green crosses; the sites in Cluster 8 as red circles; the sites in Cluster 9 as red crosses; and the sites in Cluster 10 as blue circles).

Table 5.5. Sites included in the cluster of the ECMNM with resolution 0.93.

Cluster 6 (ID)	Cluster 7 (ID)	Cluster 8 (ID)	Cluster 9 (ID)	Cluster 10 (ID)
14011(N), 14017(F), 14023(V), 14024(V), 14027(F), 14028(F), 14047(V), 14080(V), 14087(N), 14090(N), 14098(V), 14110(F), 14139(V), 14149(V), 14154(N), 14160(V), 14178(F), 14181(F)	14010(I), 14106(I), 14108(I), 14123(F), 14127(I), 14143(F), 14145(F), 14146(F), 14148(F), 14153(F), 14157(F), 14165(F)	14060(N), 14061(F), 14115(F), 14117(F), 14133(F), 14142(F), 14152(F), 14155(F), 14162(F), 14172(F), 14175(F), 14179(I), 14182(F), 14189(F)	14095(F), 14105(F), 14107(I), 14128(F)	14006(V), 14025(V), 14038(V), 14069(F), 14116(F), 14136(R)

F: Farm; V: Villa; N: Nucleated settlement; I: Industry; R: rural settlement.

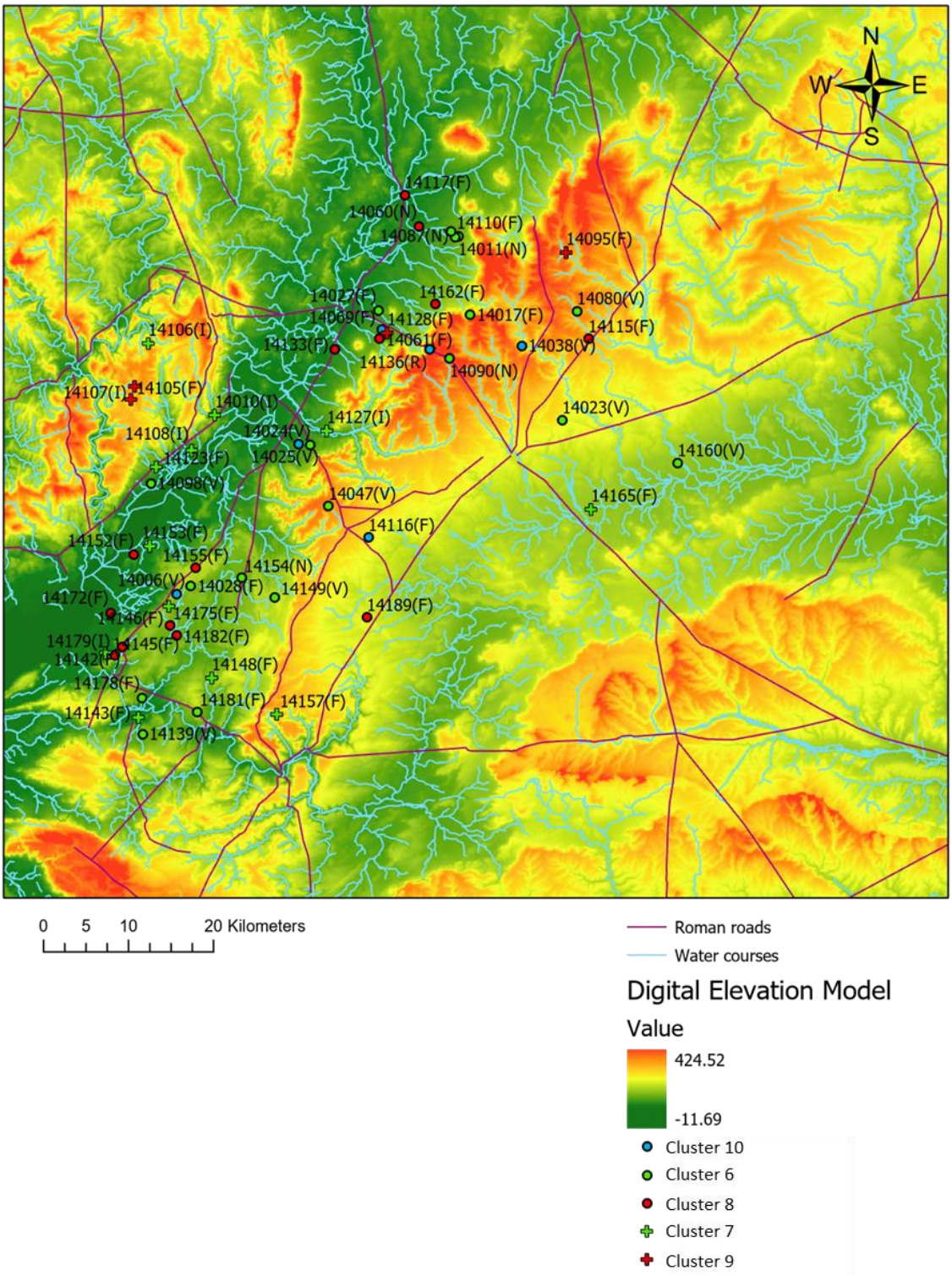


Figure 5.7. ECMNM for Later Roman period in Gloucestershire (resolution 0.93)

As explained above, this ECMNM contains clusters with a mix of sites suggesting that lifestyles may have overlapped to some extent during the Later Roman period, although it may also indicate biases in the available material culture.

In order to explore differences in material culture across these clusters, an inspection was made from the database revealing some patterns. In particular, Cluster 6 is relatively rich in material culture associated with high-status buildings, military weapons, literacy, dressing, religious and economic activity remains suggesting that this is a set of high-status settlements with relevant social and economic activity. Cluster 7 is relatively poor in material culture except some remains related to metal production activity. Cluster 8 is poor in archaeological remains in general, although it contains sites with evidence of economic activity such as agriculture, sewing and millstones. Cluster 9 contains few material culture such as tiled roof, ceramic building material, corndrier, and evidence of metal production, among others. Finally, Cluster 10 is relatively rich in remains associated with high-status buildings as well as other remains related to dress, appearance and literacy. This cluster is similar to Cluster 6 in terms of remains associated with high-status buildings. However, it differs in that it contains much fewer archaeological remains. This is why the algorithm considered Cluster 10 as a separate one. In order to gain a better understanding of these differences, a detailed analysis per cluster is presented next.

a) Cluster 6 (Rich in material culture): The main characteristics of the sites included in this cluster are presented in Tables E.16, E.17 and E.18 in Appendix E. Table E.16 shows that none of the sites included in this cluster share the same material culture indicators. Moreover, it is a very heterogeneous group with similarities ranging from 10% to 68% (see Table E.18). For example, the sites at Kingscote (14047(V)) and Inns Court/Filwood Park, Bristol (14139(V)), are both villas, but they are similar only by 24%. In fact, the only feature

that they have in common is that they are relatively rich in material culture suggesting high-status settlements. Nonetheless, diverse and overlapping identities may be present in this cluster.

In relation to the strength indicator, the site with the highest value is the site at Springfield Farm, Horton Villa (14149(V)). The reason why this is the most connected site of Cluster 6 in the network is because it is also the one with the fewest material remains (see Table E.16). As is shown below, the other clusters are in general relatively poor in material culture and this accounts for this higher connection. In contrast, the site at Frocester Court (14024(V)), another villa located at the foot of the Cotswold escarpment on one of the lower terraces of the River Severn, is the least integrated site of this cluster in the network (see Figure 5.8). According to Table E.16, this site contains most of the material culture remains considered in this investigation. Because the sites in the networks are in general poor in material culture, this explains the lower connectivity of this site. This finding suggests, therefore, a negative relationship between network connectivity and available material culture in this cluster.

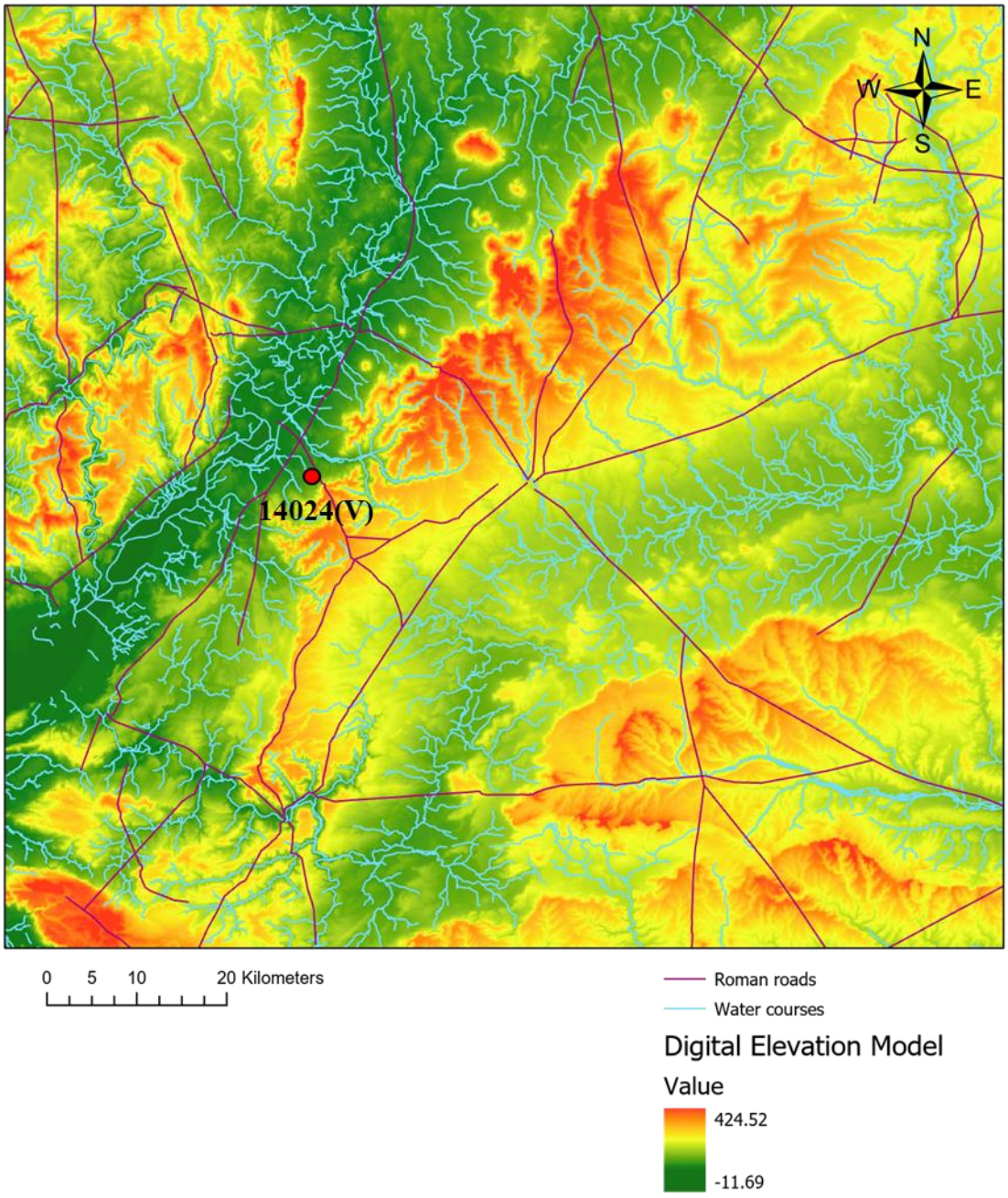


Figure 5.8. Location of the site at Frocester Court (14024(V)) on a lower terrace of the River Severn (represented as a red circle).

b) Cluster 7 (Poor in material culture. Evidence of metalwork): Tables E.19, E.20 and E.21 in Appendix E show the main characteristics of the sites included in this cluster. The information presented in Tables E.19 and E.21, suggests that Cluster 7 is homogeneous with similarity between sites ranging from 76% to 93%. This homogeneity is explained mainly by lack of material culture remains in all the sites in this cluster, except iron slag. This suggests that the sites in this cluster may represent low-status settlements devoted to the production of metal.

Regarding the strength indicator, the site at Church Lane, Alvington (14123(F)), has the highest value in the cluster. This higher network connectivity is explained, as before, by the lack of material culture remains in this site. In contrast, the site at Hortham Hospital, Almondsbury (14146(F)), has the lowest value meaning that among the sites in the cluster, this is the least integrated one in the network. This is because this site contains evidence of bone-working and security objects which are uncommon archaeological remains in the network.

c) Cluster 8 (Poor in material culture. No evidence of metalwork): Relevant information about the sites in this cluster is presented in Tables E.22, E.23 and E.24 in Appendix E. This cluster shows some degree of homogeneity although there is evident variance between the sites with similarity ranging from 51% to 98% (see Table E.24). The degree of homogeneity is explained by the lack of some material culture related to high building structures, military weapons, security objects and remains associated with some economic activities such as sewing in all the sites in the cluster. However, they show diversity in the existing material culture suggesting possible identity overlaps.

Regarding the strength indicator, the most connected site is the one at Little Abbey Camp Alveston (14155(F)) which, again, is the one with the fewest material culture remains

in the cluster. In contrast, the least connected site is the site at Long Cross, Bristol (14179(I)), which is a site that contains more archaeological remains, some of them quite atypical in the network such as recreational objects and remains related to literacy.

d) Cluster 9 (High status building and metalwork. Little evidences of personal and kitchen/food ways): Tables E.25, E.26 and E.27 in Appendix E summarise the main characteristics of the sites that form part of this cluster. This is a small cluster composed of sites that show some degree of homogeneity with similarities between 61% and 83%. The main characteristics of the sites in this cluster is that they all have tiled roof and iron slag, and most of them have masonry remains suggesting relatively wealthy places with economic activities that include metal work. However, they do not have some remains related to high status building such as hypocaust, tessellated floor mosaic or hypocaust. Likewise, remains related to literacy, some related to personal appearance, and remains related to economic activity other than metal work have not been found in these settlements.

On the other hand, the site with the highest strength indicator in this cluster is the one at Stock Farm, Clearwell (14105(F)). Its highest connectivity to the network is explained, as before, by the fact that it does not contain a significant number of archaeological remains which is the trend of the whole network. In contrast, the site at Brockworth Airfield (14128(F)) is the one with the lowest value of the strength indicator. This lower connectivity is explained because this site contains some material culture remains that are relatively uncommon in the network such as toilet cosmetics, weighing and spinning remains.

e) Cluster 10 (High status building and a range of material culture. No evidence of metalwork): In order to study the main features of this cluster, consider Tables E.28, E.29

and E.30. This is a small and relatively heterogeneous cluster with sites presenting similarities between 46% and 88%. The sites in this cluster are similar in that they all have some remains related to high status buildings including masonry, tiled roof and painted plaster wall; all of them have a significant quantity of coins, and none of the sites contain other building remains (e.g. hypocaust, bathhouse, etc.), military weapons, and remains associated with economic activity (e.g. agricultural tools, sewing, etc.), among others. However, they also are heterogeneous in relation to other material culture. For example, only one of these sites has inscriptions. This suggests that these settlements are relatively wealthy and may have exhibited diverse and overlapping identities.

Regarding the strength indicator, lack of material culture in the site at Royal George Hotel, Birdlip (14136(R)) explains its highest connectivity with the network. In contrast, the presence of toilet cosmetics, sewing, quernstones and millstones remains in the site at Eastbach Court, Barnfield (14006(V)), determines that this settlement is the least connected one as these remains are relatively uncommon in the network.

f) Other material culture: Having revised the main material culture indicators considered in this thesis, let us now explore available partial evidence of pottery and animal taxa. This is presented in the following table.

Table 5.6. Pottery (percentage of amphora and samian with respect to number of sherds) and animal taxa (ratio between cattle and sheep/goat).

Cluster 6			Cluster 7			Cluster 8			Cluster 9			Cluster 10		
Site ID	Pottery (%)	Animal taxa	Site ID	Pottery (%)	Animal taxa	Site ID	Pottery (%)	Animal taxa	Site ID	Pottery (%)	Animal taxa	Site ID	Pottery (%)	Animal taxa
14011(N)	NA	0.73	14010(I)	0.88	NA	14060(N)	NA	NA	14095(F)	NA	NA	14006(V)	2.02	2.25
14017(F)	5.86	0.18	14106(I)	0.00	NA	14061(F)	NA	NA	14105(F)	NA	NA	14025(V)	1.03	8.67
14023(V)	NA	0.53	14108(I)	0.00	NA	14115(F)	NA	NA	14107(I)	0.00	NA	14038(V)	1.78	0.33
14024(V)	NA	1.88	14123(F)	16.08	NA	14117(F)	4.67	3.36	14128(F)	1.37	3.00	14069(F)	NA	NA
14027(F)	NA	1.28	14127(I)	NA	NA	14133(F)	0.00	NA				14116(F)	NA	0.70
15028(F)	NA	NA	14143(F)	NA	3.5	14142(F)	0.49	NA				14136®	NA	NA
14047(V)	4.30	1.10	14145(F)	NA	1.29	14152(F)	0.84	1.00						
14080(V)	2.63	NA	14146(F)	0.00	NA	14155(F)	27.27	NA						
14087(N)	1.15	0.97	14148(F)	NA	NA	14162(F)	NA	1.08						
14090(N)	3.74	1.63	14153(F)	0.48	NA	14172(F)	2.70	0.84						
14098(V)	2.11	NA	14157(F)	NA	NA	14175(F)	1.75	NA						
14110(F)	NA	NA	14165(F)	NA	NA	14179(I)	NA	NA						
14139(V)	0.68	1.32				14182(F)	NA	NA						
14149(V)	NA	NA				14189(F)	0.72	NA						
14154(N)	NA	0.78												
14160(V)	4.24	1.11												
14178(F)	NA	NA												
14181(N)	NA	12.08												
Mean	3.09	1.97		2.91	2.40		4.81	1.57		0.69	3.00		1.61	2.99
Mean*		1.05		0.27			1.60							1.09

NA indicates not available data.
Mean omits the sites without data.
Mean* denotes mean without outliers.

According to this table, information about pottery and animal taxa is highly incomplete in some clusters, and there are also some very high values in some clusters which would suggest they are outliers when compared against the values of the other sites. In relation to pottery, it is possible to identify two outliers, one in Cluster 7 (i.e. the site at Church Lane, Alvington (14123(F))), and the other in Cluster 8 (i.e. the site at Little Abbey Camp Alveston (14155(F))). Both sites show very high values of the fine pottery indicator with respect to the other sites in the clusters that contain this indicator. In the case of the site at Church Lane, this may reflect a sample size bias because the size of the assemblage material is small containing only 143 poorly preserved sherds (Hood 2008, unpaged). Likewise, sample size bias may explain the high value of the fine pottery indicator in the site at Little Abbey Camp Alveston because only 11 sherds were found in this site (Young 2008, 12). When controlling for these apparent outliers, some patterns seems to emerge (see m* in Table 5.6 which is the average of fine pottery in the available non-outlier sites). A summary statistic table is presented as follows to facilitate the description of these patterns.

Table 5.7. Summary statistic for pottery and animal taxa

	Cluster 6	**Cluster 7**	**Cluster 8**	**Cluster 9**	**Cluster 10**
Pottery	3.09	2.91	4.81	0.69	1.61
Animal taxa	1.05	2.40	1.57	3.00	1.09

As expected, Cluster 6 has the highest percentage of fine pottery which is consistent with sites reflecting high status such as villas. In contrast, Clusters 7 and 9 present relatively low percentages of fine wares which seems to be in line with settlements of relatively low status. Finally, Clusters 8 and 10 present percentages of fine pottery in the mid-range suggesting sets of settlements with some level of wealth. This would be expected in Cluster 10 as it contains some villas. It is important to emphasise that these patterns have to be considered with caution because, as explained above, data on pottery is fragmented.

Regarding animal taxa, on the other hand, two outliers were identified, one in Cluster 6 (i.e. the site at Stonehill, Hanham (14181(F))), and the other in Cluster 10 (i.e. the site at St. Peter's Church, Frocester (14025(V))). Both sites contain very small assemblages which may account for the apparent bias in relation to the other sites. In removing these possible outliers, no reasonable pattern was found. For example, the material culture found in Cluster 9 suggests a set of low status settlements. However, this is the set with the highest cattle-sheep/goat ratio. A possible explanation for this finding is that this high ratio reflects the role of slaves in looking after animals for their masters. On the other hand, Clusters 6 and 10 seem to be sets of relatively wealthy settlements. However, both clusters have an average rate around 1 suggesting that consumption of cattle and sheep/goat was similar which is not what would be expected in wealthy settlements. Again, this may reflect the role of slaves in looking after animals for their masters in less wealthy farms and this may have distorted the

expected cattle to sheep/goat ratios. In considering the information presented in Table 5.7, it is concluded, therefore, that expected ratios were not identified as a result of the role of slaves described above, or because data on animal taxa is poor and has to be considered with caution.

g) Summary: As in the case of the Earlier Roman period, the results obtained from the ECMNM with resolution 0.93 for the Later Roman period revealed that connection between the sites in the sample is explained mainly by lack of material culture remains, and clusters are formed when some sites present partial deviations from this trend. As before, this suggests that potential biases may be present in the model due to possible poor excavation techniques or the selection of sites that are in the periphery of a distant settlement. Therefore, the model must be considered with caution. In addition, the selected ECMNM presents clusters with significant variation in material culture across sites. The inability of the algorithm to extract more homogeneous clusters may reflect either poor database, or the fact that identities in this period merged and overlapped making it more difficult to fully separate the sites into similar sets of settlements. Despite this, some trends were identified and are summarised in the table below which integrates the information described in this section. This table will be the basis for interpretations offered in Chapter Seven.

Table 5.8. Summary of relevant information related to the ECMNM with resolution 0.93.

Material culture	Cluster 6 W: 10%-68% ↑SI = 14049(V) ↓SI = 14024(V)	Cluster 7 W: 76%-93% ↑SI = 14123(F) ↓SI = 14146(F)	Cluester 8 W: 51%-98% ↑SI = 14155(F) ↓SI = 14179(I)	Cluster 9 W: 61%-83% ↑SI = 14105(F) ↓SI = 14128(F)	Cluster 10 W: 46%-88% ↑SI = 14136® ↓SI = 14006(V)
Coins (mean)	+				Yes + +
Masonry (%)	+				Yes + +
Tiled roof (%)	+	No	No	Yes + +	Yes + +
Painted plaster wall (%)	+	No	No	No	+ +
Structural worked stone (%)	+ +				+
CBM (mean)				+ +	+
Window glass (%)	+	No	No		+ +
Tessellated floor mosaic (%)	+	No	No	No	+ +
Hypocaust (%)	+	No	No	No	+ +
Corndrier (%)	+ +	No		+	
Storage (%)	+ +	No	No	No	No
Bathouse (%)	+	No	No	No	+ +
Evidence metal-work (%)	+ +	+	No	+	No
Iron slag (%)	+	Yes + +	No	Yes + +	No
Evidence bone-work (%)	+ +	+	No	No	No
Hobnails (%)	+ +	+		No	
Bracelets quantity (mean)	+ +			No	+
Finger rings (mean)	+ +	No			+
Hairpins (mean)	+ +	No		No	+
Other dress access. (mean)	+ +			No	+
Brooch (mean)	+ +	No	+		
Toilet cosmetic (mean)	+ +				+
Military fit. weapons (mean)	+ +	No	No	No	No
Inscriptions (%)	+	No		No	+ +
Writing equipment (mean)	+ +	No	+	No	No
Equine transport (mean)	+ +	No		+	No
Religious objects (mean)	+ +	No	No	No	No
Knives tools (mean)	+ +	No	+	No	
Agricultural tools (mean)	+ +	No	+	No	No
Security objects (mean)	+ +	+	No	+ +	
Recreation objects (mean)	+ +	No		No	+
Weighing objects (mean)	+ +		+		No
Spinning (mean)	+ +	+			No
Weaving (mean)	+	No	+ +	No	No
Sewing (mean)	+ +	No	No	No	+
Quernstones (mean)	+ +		+	No	
Millstones (mean)	+	No	No	No	+ +
Glass objects (mean)	+ +			No	+
Vessel glass (mean)	+ +			+	
Pottery Mean (mean without outliers)	2.84	2.91 (0.27)	4.81 (1.60)	0.69	NA
Animal taxa Mean (mean without outliers)	1.73 (1.13)	2.4	1.57	3.00	0.70

5.2.3 ECMNMs for Shropshire: Earlier Roman period

Unfortunately, the database available for Shropshire contains incomplete information for most of the sites in this county and, therefore, few sites were included in this study (see Table S.3 in the Supplementary Information section). Using these sites, three attempts were made with resolution 1, 0.95 and 0.93 in order to obtain an ECMNM. None of these were able to extract different clusters meaning that the resulting model in all these cases corresponds to a network composed of a single cluster. This could reflect poor data, small sample bias, or the existence of a single identity in this area during the Early Roman period. This ECMNM is shown in Figure 5.8.

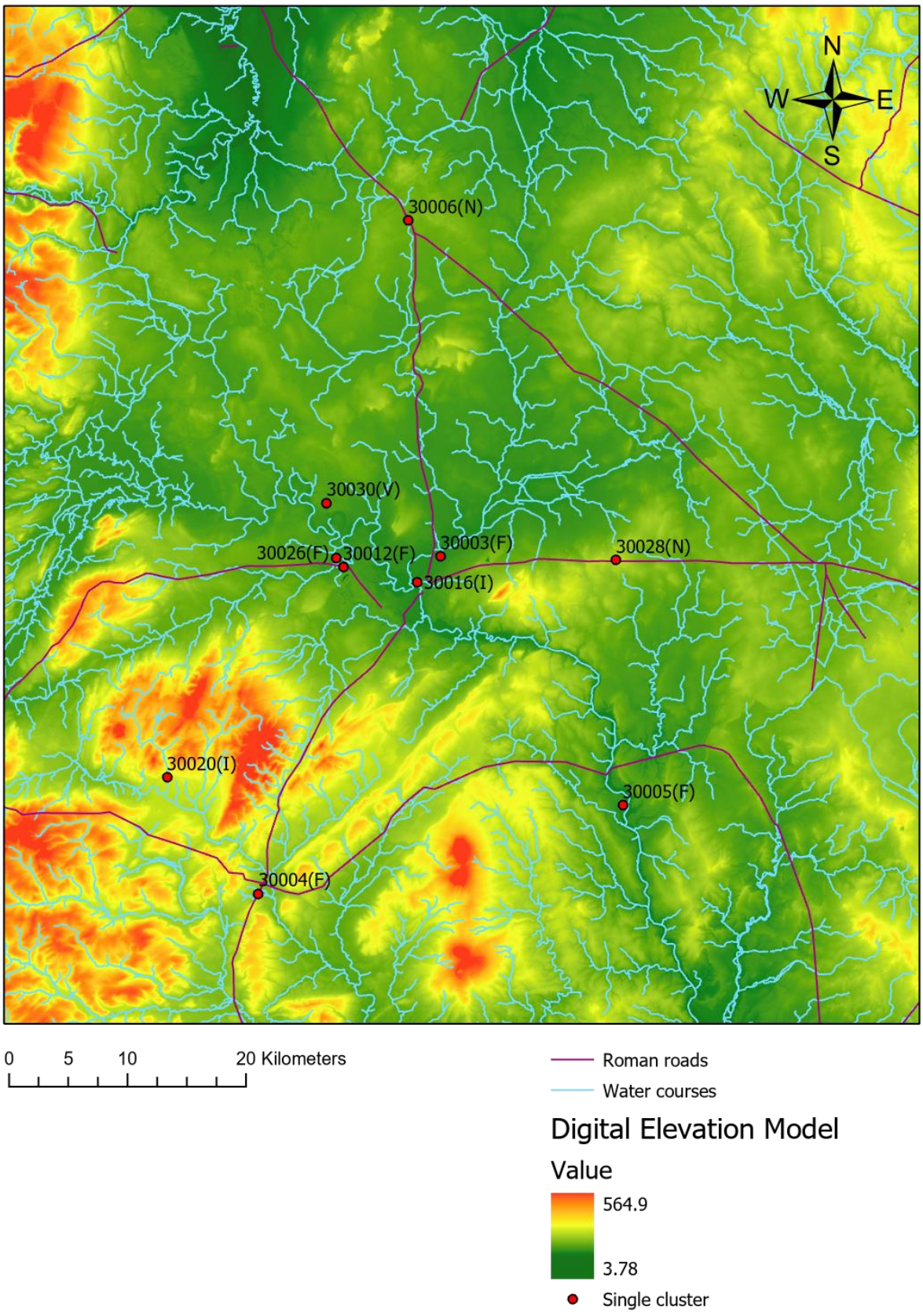


Figure 5.9. ECMNM for Earlier Roman period in Shropshire (resolution 1, 0.95 and 0.93)

The cluster of the ECMNM, named Cluster 11, includes a small percentage of sites containing high status building remains, and also there is evidence of metal work. However, a significant number of the material culture indicators adopted in this thesis are not present or they exist in very small quantities which is a marked regional difference. This may account for the algorithm being unable to extract different clusters. That is, it appears that the sites are strongly linked by a common feature which is lack of material culture.

This can also be inferred from the information presented in Tables E.31, E.32 and E.33 in Appendix E. According to Table E.33, the sites of this network present some degree of homogeneity with similarity ranging from 56% to 98%. As can be seen in Table E.31, this is explained by a common feature which is lack of a number of archaeological remains. In spite of this, there is also variance across sites as can be inferred from the strength indicator. In fact, the most integrated site is the one at Hay Farm, Eardington (30005(F)) and this is because this site does not have material culture remains at all. In contrast, the site at Alkmund Park, Berwick (30030(V)), is the least integrated and this is because this is the site with the highest number of the material culture remains. Note, however, that lack of several other remains accounts for the algorithm considering this site as part of the single cluster.

In relation to pottery and animal taxa, available information is very poor and will not be used to analyse the nature of this network because it is likely to be biased. In the case of pottery, in particular, there is significant variance in percentage of fine pottery across the sites. Several settlements do not have evidence of fineware, and others have a high percentage. This discrepancy may reflect poor data quality because the number of sherds obtained from these sites is in general very small. Data related to animal taxa is also not available.

5.2.4 ECMNMs for Shropshire: Later Roman period

As in the previous case, the data available in the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service for the Later Roman period in Shropshire is limited and incomplete in several sites. Consequently, only eleven sites were found suitable to develop an ECMNM for this period and county (see Table S.4). A first attempt was made using a value of the resolution parameter equal to 1. The resulting model was unable to extract clusters suggesting either poor quality data or the existence of a single identity in this area. In order to determine whether more clusters could be extracted, resolutions with values 0.95 and 0.93 were explored. The resulting models for both values are composed of two similar clusters. The only difference is given by the site at Whitley Chapel/Weir Meadow (30015(F)) which changed from one of the clusters in resolution 0.95 to the other in resolution 0.93. After revising the material culture in this site, it was found that this is a reasonable change because this site contains material culture remains that are consistent with the cluster in resolution 0.93 (e.g. masonry, tiled plaster and structural worked stone). This is why the ECMNM with this resolution was selected for the Later Roman period in Shropshire. A second reason is because the previous models have also been developed with resolution 0.93. As a consequence, using this value of resolution provides a form of model standardisation between periods and counties. The clusters of this model have been named Clusters 12 and 13. They are presented in Table 5.9 and the model is shown in Figure 5.9.

Table 5.9. Sites included in the clusters of the ECMNM with resolution 0.93 (sites in brackets belong to the same settlement).

Cluster 12 (ID)	Cluster 13 (ID)
(30001, 30007)(N), 30015(F), 30018(V), 30021(V), 30022(V)	30017(I), 30019(F), 30023(F), 30027(F), 30029(F), 30031(F)

F: Farm; V: Villa; N: Nucleated settlement; I: Industry.

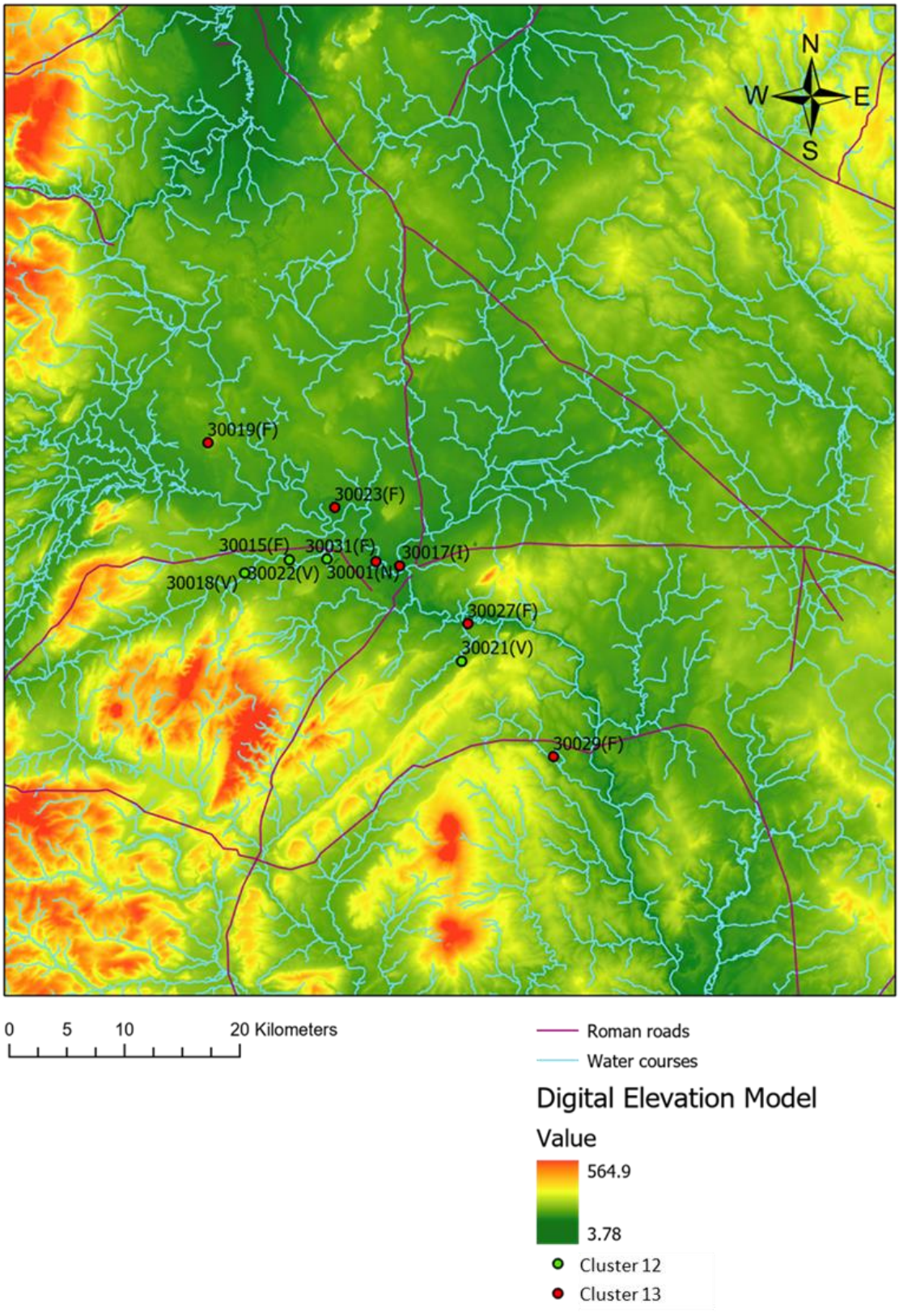


Figure 5.10. ECMNM for Later Roman period in Shropshire (resolution 0.93)

Cluster 12 is on average rich in most of the material culture considered in this investigation suggesting a set of relatively wealthy settlements. However, this has to be viewed with caution because most of the remains other than building remains were found only in the sites at Meole Brace (30001(N) and30007(N)) and Whitley Grange (30022(V)). Still the presence of masonry and tiled roof in all the sites in this cluster suggest a relatively wealthy set of settlements. In contrast, Cluster 13 is relatively poor in material culture, although it contains some sites with evidence of material culture such as brooches, quernstones and hobnails, among others. A deeper exploration of these clusters is presented as follows.

a) Cluster 12: The main characteristics of this cluster are summarised in Tables E.34, E.35 and E.36 in Appendix E. Despite the fact that this cluster is composed mainly of villas, it is relatively heterogeneous in material culture ranging from 44% to 88% in terms of similarity between the sites. This is explained by the fact that there are several archaeological remains that are not shared by all the sites. In fact, the only common remains are some associated with high status building (e.g. masonry, tiled roof and structural worked stone).

Regarding the strength indicator, the site with the highest value of this indicator is the site at Whitley Chapel/Weir Meadow (30015(F)). Its higher connectivity with the network is explained by the observed lack of material culture remains other than building material. On the other hand, the site with the lowest strength indicator is the site at Meole Brace (30001(N) and 30007(N)). Its lowest connectivity is due to the fact that this site contains remains that are rare in the network. They include painted plaster wall, ceramic building material, bracelets, other dress accessories, brooches, military fitting weapons, equine transport, knife tools, weighing, quernstones, millstones and vessel glass.

b) Cluster 13: Relevant information associated with this cluster is summarised in Tables E.37, E.38 and E.39. This is a very homogeneous cluster with similarities between 85% and 98%. This homogeneity is explained by a general lack of material culture in all the sites in the cluster.

In relation to the strength indicator, the site at Ellesmere Road, Shrewsbury (30023(F)) is the one with the highest value, and this high connectivity within the network is explained because this site does not contain any of the material culture considered in this study. In contrast, the site at Sheinton (30027(F)) has the lowest connectivity and this reflects the fact that this site contains brooches which are not common in this network.

c) Other material culture: Pottery and animal taxa were not considered in this network. This is because data on pottery is limited and available only in some sites of the sample. Data on animal taxa, on the other hand, is not available.

d) Summary: The same pattern identified in the previous ECMNM was found in this case. That is, the main connector of sites across the network is lack of material culture, and clusters are formed when there are partial deviations from this pattern reflecting sets of sites sharing some determined material culture. In the case Cluster 12, this deviation was caused by material culture associated with high status building. The following table summarises the information revised in this section for further reference in Chapter Seven.

Table 5.10. Summary of relevant information related to the ECMNM with resolution 0.93.

Material culture	Cluster 12 W: 44%-88% ↑SI = 30015(F) ↓SI = 30001-30007(N)	Cluster 13 W: 85%-98% ↑SI = 30023(F) ↓SI = 30027(F)
Coins (mean)	+ +	+
Masonry (%)	Yes + +	No
Tiled roof (%)	Yes + +	No
Painted plaster wall (%)	+ +	No
Structural worked stone (%)	Yes + +	+
CBM (mean)	+ +	No
Window glass (%)	+ +	No
Tessellated floor mosaic (%)	+ +	No
Hypocaust (%)	+ +	No
Corndrier (%)	+ +	No
Storage (%)	+ +	No
Bathouse (%)	+ +	No
Evidence metal-work (%)	+ +	No
Iron slag (%)	+ +	No
Evidence bone-work (%)	No	No
Hobnails (%)	+ +	+
Bracelets quantity (mean)	+ +	No
Finger rings (mean)	No	No
Hairpins (mean)	No	No
Other dress access. (mean)	+ +	No
Brooch (mean)	+	+ +
Toilet cosmetic (mean)	No	No
Military fit. weapons (mean)	+ +	No
Inscriptions (%)	No	No
Writing equipment (mean)	+ +	No
Equine transport (mean)	+ +	No
Religious objects (mean)	No	No
Knives tools (mean)	+ +	No
Agricultural tools (mean)	No	No
Security objects (mean)	+ +	No
Recreation objects (mean)	No	No
Weighing objects (mean)	+ +	No
Spinning (mean)	No	No
Weaving (mean)	No	No
Sewing (mean)	No	No
Quernstones (mean)	+	+ +
Millstones (mean)	+ +	No
Glass objects (mean)	+ +	+
Vessel glass (mean)	+ +	No

5.3 Sensitivity Analysis

One of the key aspects of the ECMNMs with resolution 0.93 studied in the previous section is that network connectivity is explained mainly by lack of material culture across sites. The formation of clusters occurs in general when either there are partial deviations from this trend in which the algorithm joins sites having some particular archaeological remains, or when determined archaeological remains are absent in a subset of sites. In considering this fact, it appears that there are remains that are more relevant in the formation of clusters than others such as the ones associated with high status buildings. In contrast, rare remains such as military fitting weapons seems to be less relevant. Thus, in order to assess the robustness of the ECMNMs considered in this research, some material culture indicators with different apparent degree of relevance in the formation of clusters were omitted in order to determine whether these models remain robust.

The selection of the indicators that were omitted in this analysis is based on the results obtained in the previous section according to the following rationale. A first sensitivity analysis was carried out by omitting masonry and tiled roofing because it appears that these remains are relevant in the extraction of clusters reflecting high vs. low status settlements. That is, the resulting weighted links when omitting these indicators were introduced into the Gephi, and this software was run under resolution equal to 0.93 in order to determine whether the resulting ECMNMs remains the same as before. Then, a second sensitivity analysis was developed which involved omitting metal work and iron slag as these indicators seems to have some relevance in the extraction of clusters. Finally, a third sensitivity analysis was carried out by omitting agricultural tools and military fitting weapons; this sensitivity analysis anticipated low impact in the models because these

remains are relatively rare in the database considered in this study. The results are presented as follows.

5.3.1 Robustness of the ECMNM for the Earlier Roman period in Gloucestershire

As shown in Table 5.1, the original ECMNM with resolution 0.93 for the Earlier Roman period in Gloucestershire studied in the previous section contains five clusters. This information is used as a benchmark for the following changes.

a) Omitting masonry and tiled roofing: After removing masonry and tiled roofing, the software generated an ECMNM with resolution 0.93 consisting of five clusters. These are presented in the following table.

Table 5.11. ECMNM with resolution 0.93 after removing masonry and tiled roof.

Cluster 14	Cluster 15	Cluster 16	Cluster 17	Cluster 18
14018(V), 14034(F), 14037(F), 14043(F), 14055(F), 14131(F), 14132(F), 14134(F), 14147(F), 14150(F), 14168(F), 14170(F), 14180(F)	14008(F), 14156(F), 14158(F), 14159(F), 14163(F), 14174(F)	14062(V), 14125(V), 14151(V), 14173(V)	14012(F), 14015(N), (14019, 14082, 14101, 14144)(N), 14021(F), 4029(I), 14032(F), 14033(F), 14041(V), (14045, 14046, 14171, 14188)(N), 14086(F), 14164(F), 14187(F)	(14004, 14005)(F), 14052(F), 14099(F), 14102(F), 14118(F), 14166(F), 14169(F)

In comparing Tables 5.1 and 5.11 it can be seen that there is generally a correspondence between the clusters of the original and the new model, particularly in the large clusters (Clusters 1, 4, and 5 in Table 5.1). This implies that the original model is relatively robust through the current sensitivity exercise. However, there are some changes that deserve attention.

The sites in Circle 1 were linked mainly by lack of several archaeological remains including lack of masonry and tiled roofing (see Table 5.2). By removing the latter, these

sites became less tied by lack of material culture. As a result, the sites at Park Farm, Thornbury (14156(F)) and Bradley Stoke Way, Bradley Stoke (14159(F)), were reallocated Cluster 2 (i.e. Cluster 15 in the new model) because it joins sites that contain evidence of metal work and iron slag. For the same reason, the site at New Moreton Farm, Standish (14174(F)), that used to be in Cluster 3 was reallocated into Cluster 2.

On the other hand, the site at Abbotswood, Swell (14018(V)), contains masonry and tiled roofing, and the site at Dymock (14055(V)) contains masonry. Because these sites are in general poor in other material culture, when masonry and tiled roof are omitted, both sites show a general lack of material culture which is the main characteristic of Cluster 1 (i.e. Cluster 14 in the new model). This is why these sites where reallocated into this cluster.

Cluster 4 (i.e. Cluster 17 in the new model) remained almost the same after the change, except for the incorporation of the site at Land off Greet Road, Winchcombe (14164(F)). This cluster is rich in material culture and the sites in this cluster have significant variance in archaeological remains. The site at Land off Greet Road is also rich in a number of material culture remains, but it was allocated to Cluster 3 (i.e. the set of villas) in the original model because the presence of masonry and tiled roofing plays a key role in linking these sites together. Thus, when these remains were removed, the richness of the other material culture remains resulted in the algorithm incorporating this site into the red cross cluster.

Finally, Cluster 5 (i.e. Cluster 18 in the new model) remained robust through the change. As can be inferred from Table E.13, this is explained by the fact masonry and tiled roofing do not play a relevant role in keeping the sites of this cluster together.

In summary, removing masonry and tiled roof caused reallocations of sites across some clusters, and this was more evident in the smaller ones. However, most of the clusters

remained reasonably the same implying that the model is relatively robust through this change.

b) Omitting metal work and iron slag: As a result of removing metal work and iron slag from the analysis, the software generated an ECMNM with resolution 0.93 consisting of five clusters. They are presented in Table 5.12.

Table 5.12. ECMNM with resolution 0.93 after removing metal work and iron slag.

Cluster 19	Cluster 20	Cluster 21	Cluster 22	Cluster 23
14008(F), 14034(F), 14037(F), 14043(F), 14131(F), 14132(F), 14134(F), 14147(F), 14150(F), 14156(F), 14159(F), 14168(F), 14170(F), 14180(F)	14029(I), 14163(F), 14187(F)	14018(V), 14055(F), 14062(V), 14125(V), 14151(V), 14158(F), 14173(V), 14174(F)	14012(F), 14015(N), (14019, 14082, 14101, 14144)(N), 14021(F), 14032(F), 14033(F), 14041(V), (14045, 14046, 14171, 14188)(N), 14086(F), 14164(F)	(14004, 14005)(F), 14052(F), 14099(F), 14102(F), 14118(F), 14166(F), 14169(F)

This model is very similar to the original one because the large clusters (Clusters 1, 4 and 5) were not greatly affected by the change. However, the small Cluster 2 was strongly affected and most of the sites of this cluster were reallocated. In particular, the site at West Drive, Cheltenham (4008(F)) was reallocated into Cluster 1 (Cluster 19 in the new model) and this is explained by the fact that this site shares several features with the sites of this cluster (see Tables E.1 and E.4). However, this site was not introduced into this cluster in the original model because the presence of metal work and iron slag made it slightly different. On the other hand, the sites at Dymock (14055(F)) and Cossham Street, Mangotsfield (14158(F)), of Cluster 1 were reallocated into Cluster 3 (Cluster 21 in the new model). This is because the elimination of metal work and iron slag made these sites more closely related to the sites in this cluster because all of them contain evidence of masonry and also because several remains are absent in all of them. In relation to the site at A46 Ashchurch Railway Bridge (14163(F)) of the original green cross cluster, it was not

reallocated, but was joined to the sites at Heneage Court, Falfield (14029(I)), and Cattybrook, Almondsbury (14187(F)) by the algorithm as a new cluster. Again, this change reflects the fact that removing metal work and iron slag made these sites more closely related (e.g. all of them have hobnails and brooches; and none of them contain many remains related to high status building, personal appearance, economic activities such as agriculture tools, military weapons, religious and recreational objects, among others). Finally, the site at Land off Greet Road, Winchcombe (14164(F)), of the original red circle cluster was reallocated into Cluster 4 (Cluster 22 of the new model). As before, this is because the elimination of metal work and iron slag made this site more closely related to the sites of the red cross cluster which is characterised as containing settlements that are in general rich in material culture.

c) Omitting agricultural tools and military fitting weapons: This is the last sensitivity analysis for the ECMNM of the Earlier Roman period in Gloucestershire. The objective of this exercise was to assess the robustness of this model when material culture remains that do not seem to be relevant in the extraction of clusters are removed. The resulting model is presented in the following table.

Table 5.13. ECMNM with resolution 0.93 after removing agricultural tools and military fitting weapons.

Cluster 24	Cluster 25	Cluster 26	Cluster 27	Cluster 28	Cluster 29
14034(F), 14037(F), 14043(F), 14131(F), 14132(F), 14134(F), 14147(F), 14150(F), 14156(F), 14159(F), 14168(F), 14170(F), 14180(F)	14008(F), 14055(F), 14158(F), 14163(F)	14018(V), 14062(V), 14125(V), 14151(V), 14173(V)	14015(N), (14019, 14082, 14101, 14144)(N), 14021(F), 14029(I), 14032(F), 14041(V), (14045, 14046, 14171, 14188)(N), 14086(F), 14164(F), 14174(F), 14187(F)	(14004, 14005)(F), 14052(F), 14099(F), 14102(F), 14118(F), 14166(F), 14169(F)	14012(F), 14033(F)

As expected, this table shows that the original model remained reasonably robust because three clusters (Clusters 1, 2 and 5) were not affected by the change, and the others

(i.e. Clusters 3 and 4) were only lightly affected. In order to understand these changes, note that Cluster 3 is a heterogeneous one containing sites with significant variance in material culture. However, they were joined in the original model because they have the absence of some specific remains in common and they all have brooches (see Table E.10). The elimination of agricultural tools and military fitting weapons increased homogeneity across the sites of this cluster because these remains are present in some of them only implying that they contributed to the observed heterogeneity. This effect, nonetheless, was not verified in the sites at Birdlip, Cowley (14012(F)), and Whelford Bowmoor (14033(F)) because these sites were more closely related as they share several of the material culture indicators. Thus, the elimination of agricultural tools in particular increased the similarity of these sites which is why the algorithm joined them as a new small cluster (Cluster 29 in the new model). On the other hand, the sites at Land off Greet Road, Winchcombe (14164(F)), and New Moreton Farm, Standish (14174(F)), were reallocated from Cluster 3 to Cluster 4 (Cluster 27 in the new model). Again, this is related to the increased homogeneity in the latter cluster as a result of the change. That is, the sites at Land off Greet Road and New Moreton Farm become more closely related to the sites of this cluster because diversity in material culture between them decreased.

d) Summary: The results obtained in this section shows that the ECMNM for the Earlier Roman period in Gloucestershire remained relatively robust through the three changes introduced in the sensitivity analysis. Apart from reallocations of some sites, the large clusters remained in general the same or were lightly affected. However, the small clusters were more affected. This suggests that more reliable conclusions of diverse identities may be obtained from the large clusters.

5.3.2 Robustness of the ECMNM for the Later Roman period in Gloucestershire

As before, in order to highlight changes in the ECMNM with resolution 0.93 when removing some of the material culture indicators, the information presented in Table 5.5 was used as a benchmark.

a) Omitting masonry and tiled roofing: The resulting model after removing masonry and tiled roofing is presented as follows.

Table 5.14. ECMNM with resolution 0.93 after removing masonry and tiled roof.

Cluster 30	Cluster 31	Cluster 32	Cluster 33	Cluster 34	Cluster 35	Cluster 36
14006(V), 14017(F), 14023(V), 14024(V), 14025(V), 14028(F), 14038(V), 14047(V), 14069(F), 14080(V), 14090(N), 14098(N), 14154(N), 14160(V)	14011(N), 14087(N), 14110(F), 14139(V), 14181(F)	14095(F), 14105(F), 14106(I), 14107(I), 14108(I), 14123(F), 14127(I), 14145(F), 14148(F), 14153(F), 14157(F)	14027(F), 14060(N), 14061(F), 14115(F), 14117(F), 14179(I), 14182(F)	14116(F), 14133(F), 14136(R), 14142(F), 14152(F), 14155(F), 14162(F), 14172(F), 14175(F), 14189(F)	14010(I), 14128(F), 14143(F), 14146(F), 14165(F)	14149(V), 14178(F)

According to Tables 5.5 and 5.14, the removal of masonry and tiled roofing strongly affected all the clusters of the original model. In particular, the large ones split into different clusters, and the sites of the others were reallocated.

In the case of Cluster 6 of the original model, this is a set of very heterogeneous sites and, as explained in Section 5.3.2, it appears that this cluster was created by the algorithm because it was not able to allocate them to other clusters given their high degree of heterogeneity (see Table E.16). Thus, when removing masonry and tiled roofing, this heterogeneity decreased in some sites and they were re-joined in two additional clusters. One of them (i.e. Cluster 31 in the new model) is composed of five sites that were linked

because they all contain structural worked stone, metal working and iron slag, and none of them have remains associated with high status buildings, literacy, religion, equine transport, security objects or weaving. The other cluster (i.e. Cluster 36 in the new model) contains two sites that also contain structural worked stones and iron slag, but a significant number of other remains are absent in both of them. Finally, Cluster 30 in the new model is closely related to the original Cluster 6 of the original model in the sense that none of the sites in this cluster share the same remains. After the change, three sites of the original Cluster 10 were reallocated into Cluster 6 (Cluster 30 of the new model) because it appears that they contain diverse material culture which is the main feature of this cluster. This occurred because masonry and tiled roof are relevant in joining the sites of Cluster 10 and the removal of these remains caused the disaggregation of this cluster.

In the case of Cluster 7 of the original model, the effect was similar. The common factor between these sites is the fact that several material culture remains are absent, except iron slag which was found in all of them (see Table E.19). Lack of tiled roofing in all of them and masonry in most of them contributed in linking these sites. The elimination of masonry and tiled roofing means that these sites become less tied and, as a consequence, two new clusters were created: Clusters 32 and 35. In terms of material culture, they are in general very similar but do have some differences that were used by the algorithm to classify them into two different clusters. For example, the sites in Cluster 32 contains evidence of metal work and iron slag. However, Cluster 35 only contains iron slag. Likewise, the number of archaeological remains that are absent in the sites of Cluster 35 is larger. On the other hand, the sites of Cluster 9 of the original model were reallocated into the new Clusters 32 and 35. This is because tiled roofing contributed in linking the sites of the red cross cluster because all the sites in this set contain this remain. However, when tiled roofing and

masonry were eliminated, the linkage became weaker and these sites became more closely related to the sites of Clusters 32 and 35.

Finally, a similar change was verified in Cluster 8 of the original model. That is, it split into two different clusters (Clusters 33 and 34 in the new model) with some reallocations from other small ones as a result of having less similarity in terms of lack of material culture.

b) Omitting metal work and iron slag: The resulting model when eliminating metal work and iron slag is shown in the following table.

Table 5.15. ECMNM with resolution 0.93 after removing metal work and iron slag.

Cluster 37	Cluster 38	Cluster 39	Cluster 40	Cluster 41	Cluster 42
14006(V), 14017(F), 14023(V), 14024(V), 14025(V), 14027(F), 14038(V), 14047(V), 14069(F), 14080(V), 14090(N), 14098(V), 14110(F), 14139(V), 14149(V), 14154(N), 14160(V), 14181(F)	14011(N), 14087(N)	14010(I), 14106(I), 14108(I), 14123(F), 14127(I), 14133(F), 14142(F), 14143(F), 14145(F), 14146(F), 14148(F), 14152(F), 14153(F), 14155(F), 14157(F), 14162(F), 14165(F), 14172(F), 14175(F), 14189(F)	14060(N), 14061(F), 14095(F), 14117(F)	14105(F), 14107(I), 14116(F), 14128(F), 14136(R)	14028(F), 14115(F), 14178(F), 14179(I), 14182(F)

The elimination of metal work and iron slag from the analysis also caused significant changes in the original ECMNM as can be seen in this table. Changes include cluster mergers, and others reallocation of sites. The first case is evident in Clusters 7 and 8. In inspecting Tables E.19 and E.2 it can be seen that both clusters are relatively similar in terms of lack of specific archaeological remains, but they differ in that the sites of Cluster 7 contain iron slag and most of them also evidence of metal work. In contrast, none of the sites of Cluster 8 contain these remains. Therefore, this major difference disappears when metal work and iron slag are both omitted which explains why these clusters merged after the change. Note, however, that some sites of Cluster 8 were reallocated into two new clusters (i.e. Cluster 40 and 42). The reason is because the sites in these clusters share a number of

the material culture indicators apart from metal work and iron slag. Consequently, the elimination of these remains made the sites more closely related. Similar explanations apply to the case of Clusters 6, 9 and 10 (see Tables E.16, E.26 and E.28).

c) Omitting agricultural tools and military fitting weapons: The model that was developed under this sensitivity analysis is shown in Table 5.16.

Table 5.16. ECMNM with resolution 0.93 after removing agricultural tools and military fitting weapons.

Cluster 43	Cluster 44	Cluster 45	Cluster 46
14011(N), 14017(F), 14023(V), 14024(V), 14027(F), 14028(F), 14047(V), 14080(V), 14087(N), 14090(N), 14098(V), 14105(F), 14110(F), 14128(F), 14139(V), 14149(V), 14154(N), 14160(V), 14178(F), 14181(F)	14010(I), 14095(F), 14106(I), 14107(I), 14108(I), 14123(F), 14127(I), 14145(F), 14148(F), 14153(F), 14157(F), 14165(F)	14060(N), 14061(F), 14115(F), 14117(F), 14133(F), 14142(F), 14143(F), 14146(F), 14152(F), 14155(F), 14162(F), 14172(F), 14175(F), 14179(I), 14182(F), 14189(F)	14006(V), 14025(V), 14038(V), 14069(F), 14116(F), 14136(R)

This table shows that apart from some site reallocations, the model remained fairly robust through this change. This is what was expected given the fact that military fitting weapons and agricultural tools are not common remains in the network.

In terms of site reallocations, the sites of the small Cluster 9 of the original model were reallocated into Clusters 6 and 7 (i.e. Clusters 43 and 44 of the new model). To understand this change, note that these sites in the original model are linked by lack of several material culture remains including agricultural tools and military weapons. Thus, when these remains were removed, the sites became less tied which is why they were reclassified by the algorithm. The same explanation applies to two sites of Cluster 7 of the original model that were reallocated into Cluster 8 (i.e. Cluster 45 in the new model).

d) Summary: The sensitivity analysis developed for the ECMNM with resolution 0.93 for the Later Roman period in Gloucestershire has revealed that this model is very sensitive to changes in material culture remains. Lack of robustness was observed when omitting remains that are found in several sites in the network such as masonry, tiled roofing, metal work and iron slag. However, the model remained robust thought the omission of material culture that is rare in the network. These results reinforce the idea that overlapping identities may have existed in this period which is why it was difficult for the algorithm to cluster sites according to settlement types, and also to keep clusters stable in response to changes in material culture remains.

5.3.3 Robustness of the ECMNM for the Earlier Roman period in Shropshire

As explained in Section 5.3.3, the same ECMNM was obtained for the Earlier Roman period in Shropshire under values of the resolution parameter equal to 1, 0.95 and 0.93. This model consists of a network composed only of a single cluster.

The three sensitivity exercises carried out in the previous models were applied in this case. However, the original model did not change implying that it is a robust ECMNM and that a single identity may have occupied this place in the Earlier Roman period. Nonetheless, this possibility has to be considered with caution because the sample used in this model is very small and also because the database may be biased as a result of probable poor excavation techniques.

5.3.4 Robustness of the ECMNM for the Later Roman period in Shropshire

Using the same strategy as for the previous models, Table 5.9 is considered as a benchmark for the following sensitivity exercises.

a) Omitting masonry and tiled roofing: The resulting model in this sensitivity analysis is presented in Table 5.17.

Table 5.17. ECMNM with resolution 0.93 after removing masonry and tiled roof.

Cluster 47	**Cluster 48**
(30001, 3007)(N), 30018(V), 30021(V), 30022(V)	30015(F), 30017(I), 30019(F), 30023(F), 30027(F), 30029(F), 30031(F)

This table shows that the model remained almost the same after omitting masonry and tiled roofing. The only change that was verified is that the site at Whitley Chapel/Weir Meadow (30015(F)) of Cluster 12 of the original model was reallocated into Cluster 13 (Cluster 48 in the new model). This is because this site is poor in all material remain except masonry, tiled roofing and structural worked stone. Since the sites of Cluster 13 are also poor in material culture, the site at Whitley Chapel/Weir Meadow became closely related to them when masonry and tiled roofing were removed from the analysis.

b) The other sensitivity exercises: The original model did not change after metal work and iron slag was omitted. Likewise, no change was identified when removing agricultural tools and military fitting weapons from the analysis.

c) Summary: The results obtained from the sensitivity analysis for the ECMNM with resolution 0.93 for the Later Roman period in Shropshire revealed that this model is robust

through the changes considered in this analysis. This means that the two clusters in this model may indeed reflect two well differentiated sets of settlements. However, because this model was obtained with a small sample, interpretations have to be made with caution.

5.4 Chapter Summary

The objective of this chapter was to report the results from Phase 1 of the sequential mixed method approach consisting of network analysis. Weighted links were calculated to determine similarities across sites in terms of the material culture indicators considered in this study. Using these links as inputs in the Gephi software, different material culture networks were obtained, one for each period (i.e. Earlier and Later Roman periods) and geographical area (i.e. Gloucestershire and Shropshire) considered in this thesis. After exploring different values of the resolution parameter available in this software, it was found that the most reasonable value was 0.93 because it generated networks with relatively well differentiated clusters. These networks were plotted into DEMs in order to obtain ECMNMs for the periods and areas under study.

In the case of the ECMNM for the Earlier Roman period in Gloucestershire, some clusters are rich in material culture related to high status buildings, others with material culture other than material buildings, and others poor in material culture. In relation to the ECMNM for the Later Roman period in Gloucestershire, the same pattern was found. However, there is significant heterogeneity between the sites within the clusters suggesting possible identity overlaps. Regarding the ECMNM for the Earlier Roman period in Shropshire, only a single cluster was obtained. This may reflect poor data quality, the small sample size, or perhaps the existence of a single identity. The latter possibility is based on the observation that most of the material culture indicators considered in this thesis are

absent in these sites suggesting that people in the Earlier Roman period in this area were not strongly influenced by Roman culture. This may be explained by the long distance between Shropshire and the regions with higher Roman influence. Similarly, the ECMNM for the Later Roman period in Shropshire may be biased as a result of poor data quality. In spite of this, two clusters were identified suggesting two possible coexisting identities in that period and geographical region.

Sensitivity analysis was carried out to assess whether these ECMNMs remained robust after removing determined material culture remains from the analysis (i.e. masonry and tiled roofing; metal work and iron slag; and agricultural tools and military fitting weapons). In the case of the ECMNM for the Earlier Roman period in Gloucestershire, the results revealed that the model remained in general robust, particularly with respect to large clusters, although some significant changes were found in the small clusters. Regarding the ECMNM for the Later Roman period in Gloucestershire, this model was strongly affected by the changes introduced by the sensitivity analysis, except for the case of the removal of agricultural tools and military fitting weapons. This may indicate that there are overlapping identities between clusters which may explain the high observed sensitivity. In relation to the ECMNMs for the Earlier and Later periods in Shropshire, both models remained highly robust through the changes. This result, however, has to be considered with caution because these models were obtained from poor data.

Finally, the results from the processual analysis revealed that the sites in the sample are located near water courses. It was also found that these sites are located in the proximity of Roman roads or in areas of low energy consumption from these roads suggesting that territorial communication placed a key role in the distribution of the sites. However, this finding applies to all the sites in the sample implying that this feature cannot be used to explain the nature of the clusters of the ECMNMs. This suggests, therefore, that divergent

identities are related mainly to material culture rather than geographical and geological considerations.

CHAPTER SIX: Results from Phase 2 of the sequential mixed methods design: Phenomenology

6.1 Introduction

This chapter presents the results of Phase 2 of the sequential mixed method approach adopted in this thesis using phenomenological analysis. The aim of this analysis is to gain a better understanding of the nature of the clusters identified in Phase 1 of the proposed methodology by attempting to experience the landscape of selected sites considered in this study. For this purpose, the methodology and refinements are described in Chapter 4 (see Sections 4.2.2, 4.3.2, 4.4.2 and 4.5.2).

Unfortunately, it was not possible to visit the suggested sites in Gloucestershire (see Table 4.11) because, at the time of the current investigation, the Coronavirus pandemic was a major health threat in the country making it very difficult to access the sites because of both health risks and mobility restrictions imposed by the government. However, on reflection, it was recognised that phenomenological data obtained in Shropshire was the most reliable data set and that the omission of Gloucestershire into the phenomenological analysis was therefore not a significant loss.

The data obtained from Gloucestershire was considered less reliable because, as revealed in the previous chapter, the material culture clusters of the networks in this county overlap in later periods suggesting a process of mixed identity formation. Thus, because local features of the landscape are normally fixed, this process can be explained mainly by mobility of material culture across clusters rather than the presence of local features which is the focus of the phenomenological approach. In contrast, there is no evidence of cluster overlaps in Shropshire. This suggests that these clusters reflect non-mixed identities that

may be linked to both relatively fixed material culture in the clusters as well as fixed features of the local landscape (e.g. wealthy sites might be placed in areas with higher access to natural resources). This means that patterns are more likely to emerge from the phenomenological analysis in the clusters in Shropshire. This argument is also consistent with the sequential mixed method methodology adopted in this thesis. To see this, note that in this methodology the phenomenological stage is contingent on the results obtained from the network stage. Thus, because it is already known that patterns are unlikely to be identified in Gloucestershire from the phenomenological analysis because of cluster overlaps, the use of Shropshire as a case study is a natural choice that is contingent to the network results. For this reason, the results obtained for Shropshire were used to propose possible phenomenological insights for Gloucestershire.

To conclude this section, it is important to clarify that this chapter only reports the results from the phenomenological research in terms of places, paths, affordability and surrounding landscape. Possible interpretations of the findings are offered in Chapter Seven which integrates the results from the network analysis (see Chapter Five), phenomenological analysis, and primary reports.

6.2 Results from phenomenological analysis in Shropshire

The previous chapter explains that the information related to the sites considered in Shropshire is often incomplete. As a consequence, it was difficult to identify sites that fully conform to the four criteria for phenomenological analysis described in subsection 4.5.2 (i.e. selection of sites based on the strength indicator, sites in stable clusters, sites in areas without significant urban development, and sites with recent reports.). That is, while it was possible to include sites with different values of the strength indicator within stable clusters, some of

them are located in areas with some degree of urban development, and others have primary reports that were written over a long period of time. In spite of these limitations, it was possible to gain a general understanding of the landscape of the selected sites.

As explained in Section 4.2.2, the focus adopted is this thesis corresponds to affordances offered by geographical and topographical remains ("bones") in terms of natural resources, movement along the surrounding landscape, and visibility. Thus, in order to facilitate the identification of affordances and possible links between the sites, social identities associated with them, and their surrounding landscape, general descriptions of the current knowledge of each site obtained from excavation reports are presented in each case followed by the respective phenomenological results.

Unfortunately, paleoenvironmental information in these reports is very scarce and fractional. This made it very difficult to support possible relationships between affordances and the use of natural resources identified from the phenomenological exercise. In order to overcome this problem to some extent, two strategies were adopted.

Firstly, fractional paleoenvironmental data obtained in other sites that are located in the proximity of the ones considered in the sample, was used as a proxy of the Roman environment in the latter. This strategy worked only for some sites in the sample because it was not possible to find sites with paleoenvironment information near the others.

Secondly, some studies that provide a general picture of the Roman environment in Shropshire were used to inform about general characteristics of the landscape of the sites in the sample. These studies indicate that the Roman landscape in the region remained well wooded with ancient woodlands that survived previous clearance carried out in the Later Iron Age, with intensive agricultural activity as inferred from enclosures and field systems (Dark 1999, 259; White and Hodder 2018, 6-7). There is also evidence suggesting that pasture was developed mainly in uplands, and cereal cultivation in lowlands (Dinn and

Edwards 2004, 32 and 58). This information will be considered in the phenomenological results which are shown as follows.

6.2.1 Phenomenological analysis for Shropshire: Earlier Roman period

The results from the network analysis revealed that Shropshire in the Earlier Roman period was characterised by a single cluster (i.e. Cluster 11 in Section 5.3.3). This is a surprising finding because this cluster contains sites of different nature including villas, farms and nucleated settlements. This result may suggest either poor available data in this sample or that a single identity existed in this region at that time. In order to explore these possibilities in more detail, the nature of this cluster was explored by means of phenomenological analysis considering a range of sites with different characteristics. This is shown as follows.

a) Cluster 11: Three sites were considered in the analysis. They are heterogeneous in terms of type and strength indicator (SI) value (see Table E.32) and correspond to a farm (i.e. 30005(F), SI = 7.96); a nucleated settlement (i.e. 30028(N), SI = 6.45); and a villa (i.e. 30030(V), SI = 5.71). The results are presented below.

Site at Hay Farm, Eardington (30005(F)):

The site at Hay Farm (NGR SO 73200 90300) was excavated in 1992 after some features were identified from aerial photography and geophysical surveys. Aerial photography showed non-conclusive archaeological amorphous marks within the application area. Geophysical survey was in general magnetically quiet, although it revealed evidence of a possible ditched enclosure. Finally, nine trenches were excavated, the

existence of archaeological features was only confirmed in trenches 1 and 2 (see Figures 6.1, 6.2, 6.3, 6.4, 6.5, and 6.6). Mainly Severn Valley wares were recovered from the excavations without evidence of imported ceramic suggesting a low status native dwelling. Evidence of a circular building was also found (Howlett 1992). However, the surrounding landscape was not explored.

In order to identify possible patterns of this site within the surrounding landscape, the area presented in Figure 6.7 was analysed by means of the phenomenological approach. This figure shows that most of the area under study is rural, except for two small villages located in the east (Quatford) and west (Eardington) of the site. This suggests that key features in this landscape have not been heavily altered.

The findings from the phenomenological analysis are provided in Figure 6.8 which presents a phenomenological model for the site based on the results. This model shows features in the landscape identified by letters and colours, arrows representing paths, and a red circle at the centre representing the archaeological site. The blue arrows correspond to paths of easy accessibility in terms of local visibility as well as physical effort. The yellow arrows reflect paths of moderate accessibility in terms of these two parameters. Finally, the red arrows correspond to paths of difficult accessibility. According to this model, this site is located in a farm/land that can be subdivided in three subareas (Figure 6.9). The subarea A contains the site (the circle in Figure 6.8) and corresponds to a depression with limited visibility to the surrounding landscape. However, this area offers easy access to subareas B, C, E and F. Feature B, on the other hand, is an area of the farm that is located in higher land offering easy access and visibility to feature J which is a relative flat area of farms (Figure 6.10). Access and visibility from feature B to feature K is partially limited because the latter contains a number of farms with irregular slopes (Figure 6.11). Finally, the subarea C is a

lower part of the land with limited visibility and accessibility toward feature K (Figure 6.12), but it is connected to feature F.

Feature D (Figure 6.13), on the other hand, is a very steep escarpment that is located in between subarea A and much lower lands represented by features G (farm), H (farm), the River Severn, and a hill identified as feature I (figure 6.14). While visibility from the eastern edge of subarea A to the east (i.e. features G, H, I and the River Severn) is relatively good (Figure 6.15), access is very difficult as a consequence of the height of the wall (feature D). However, features E and F are paths from subarea A that cross the wall towards the flat areas G, H and the River Severn (see Figures 6.16, 17 and 18).

The results are consistent with the suggestion by Howlett (1992) that this appears to be the site of a small community that selected a small subarea with low local visibility (subarea A). This would seem to be a good dwelling place for people who did not want to be seen for some reason. The selection of this place is an interesting strategy because a site a few metres away from the site (subarea B and the edge of subarea A) would have offered them significant visibility towards farming lands (features J, G and H). While access to the farms in features G and H and the river is prevented by the steep wall (feature D), it was not really a problem for this community because they had easy access to these lands through paths E and F. In considering these relationships, it appears that this small community looked for a safe hidden place that allowed them access to significant resources for agriculture (and possible resources from forest in Feature I) by means of paths, and good visibility over longer distances from closed areas of easy accessibility. While there is no paleoenvironment evidence to support the idea that these people had access to these resources, this is a possibility supported by the regional trend of forest and land resources available in the region (see Dark 1999, 259; White and Hodder 2018, 6-7).



Figure 6.1. Site at Hay Farm, Eardington.

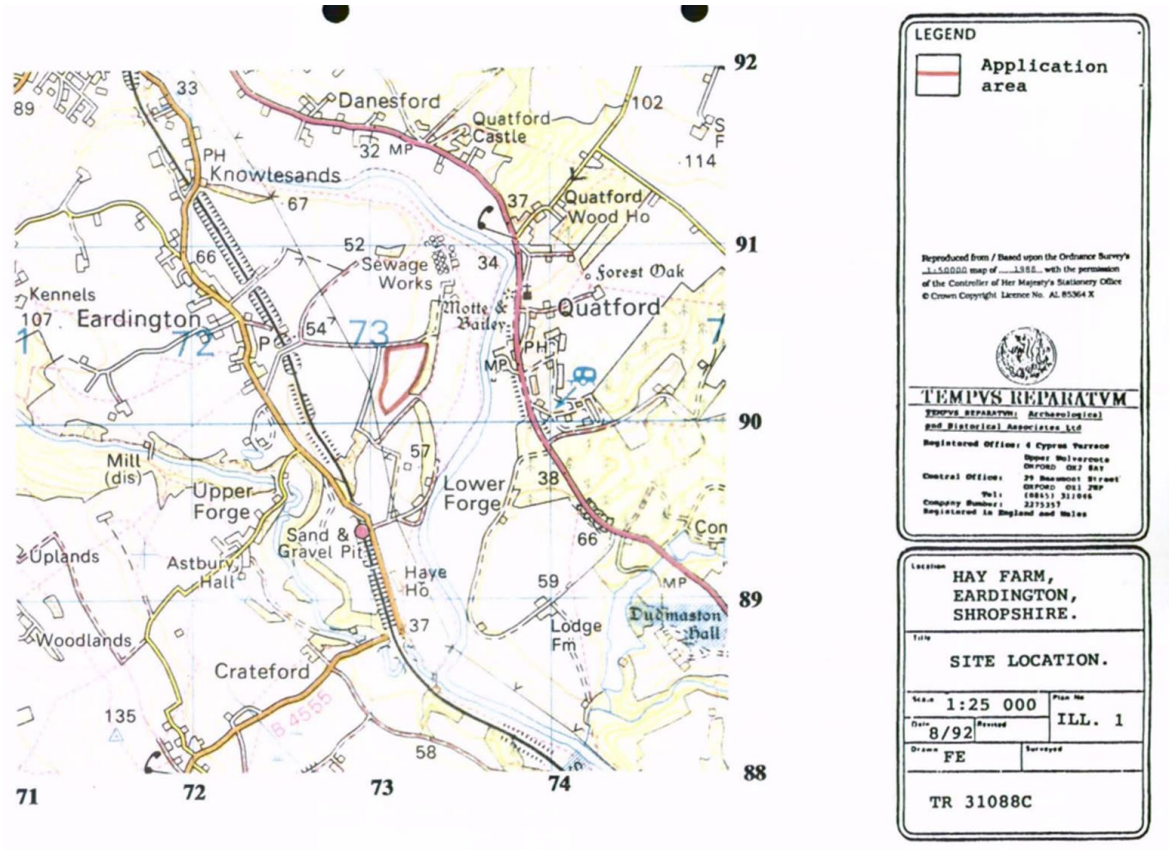


Figure 6.2. Map of the area under study. Scale 1:25000 (source: Howlett 1992)



Figure 6.3. Map of the area under study. Scale 1:2500 (source: Howlett 1992)

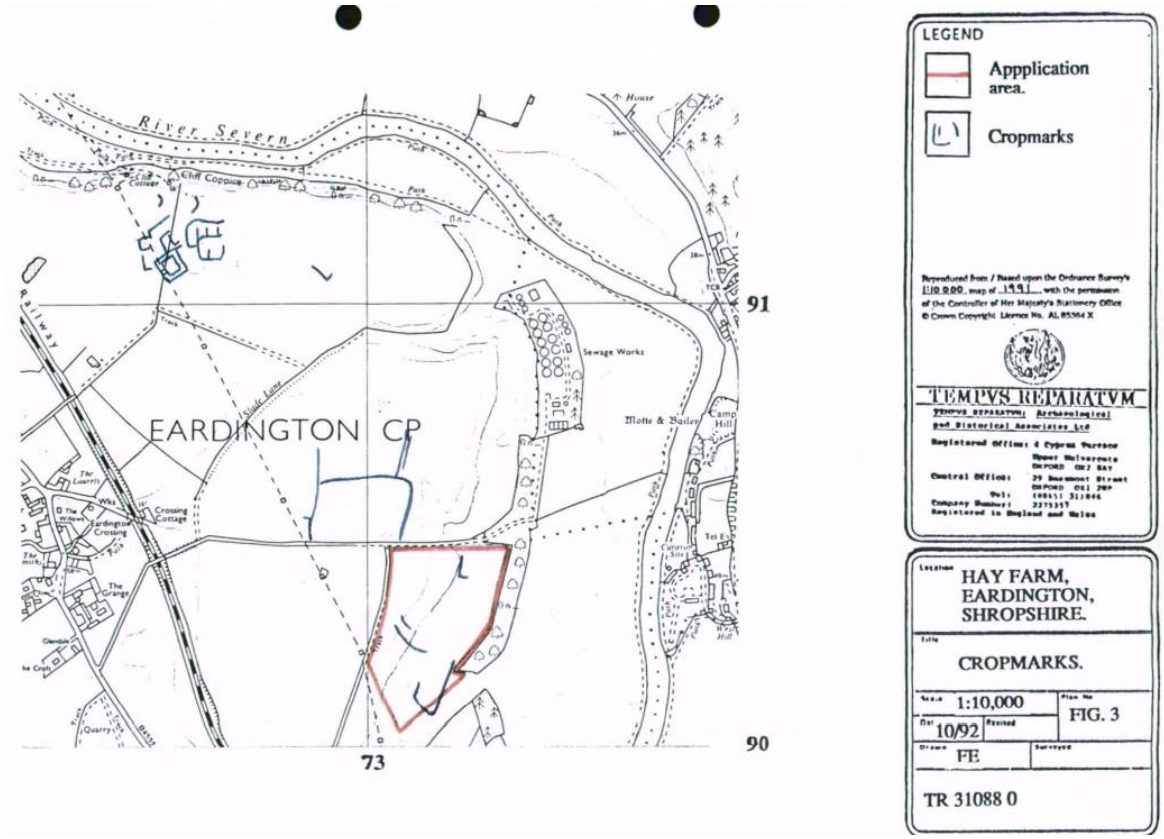


Figure 6.4. Crop marks. Scale: 1:10000 (source: Howlett 1992)

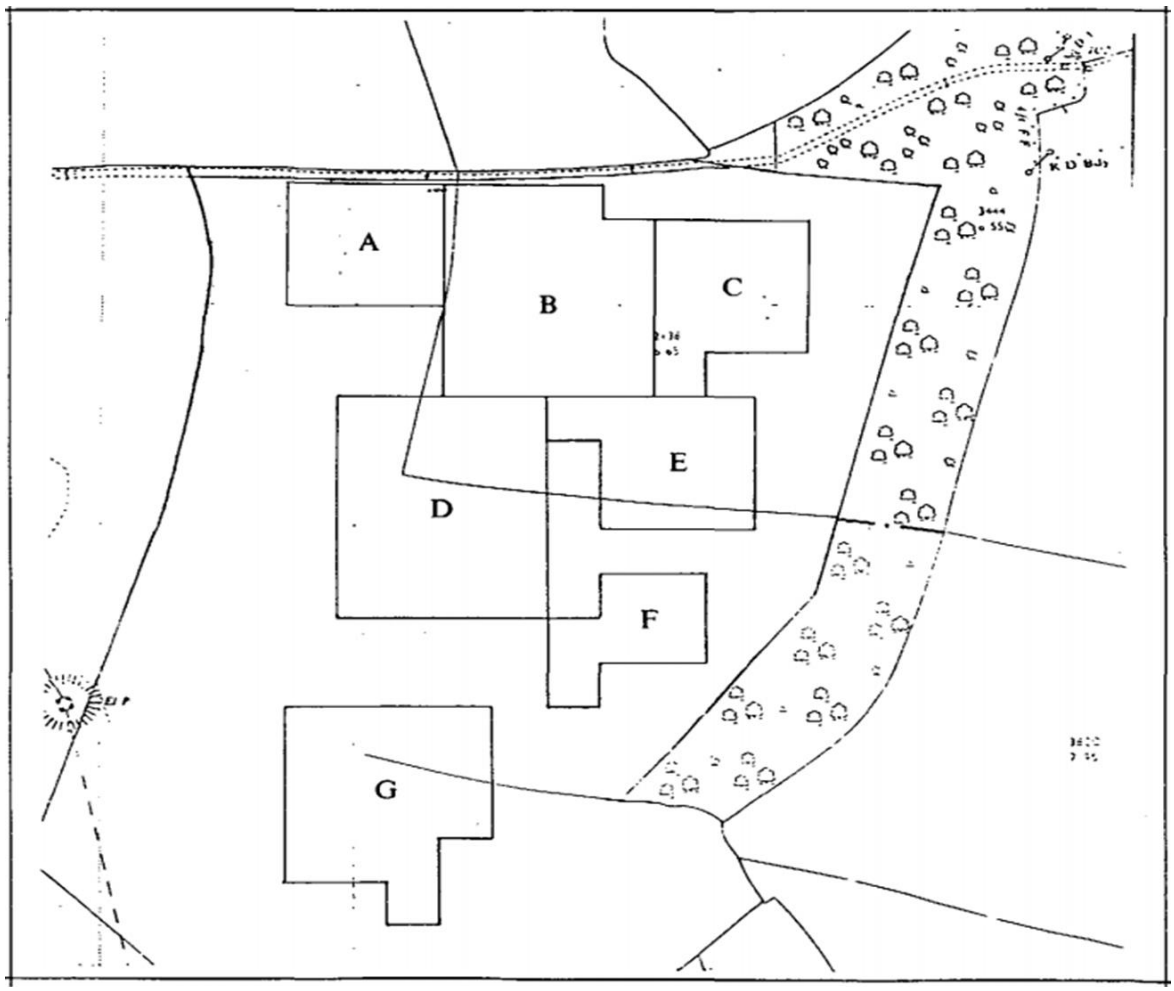


Figure 6.5. Greed location diagram for geophysical analysis. Scale 1: 2500 (source: Howlett 1992)

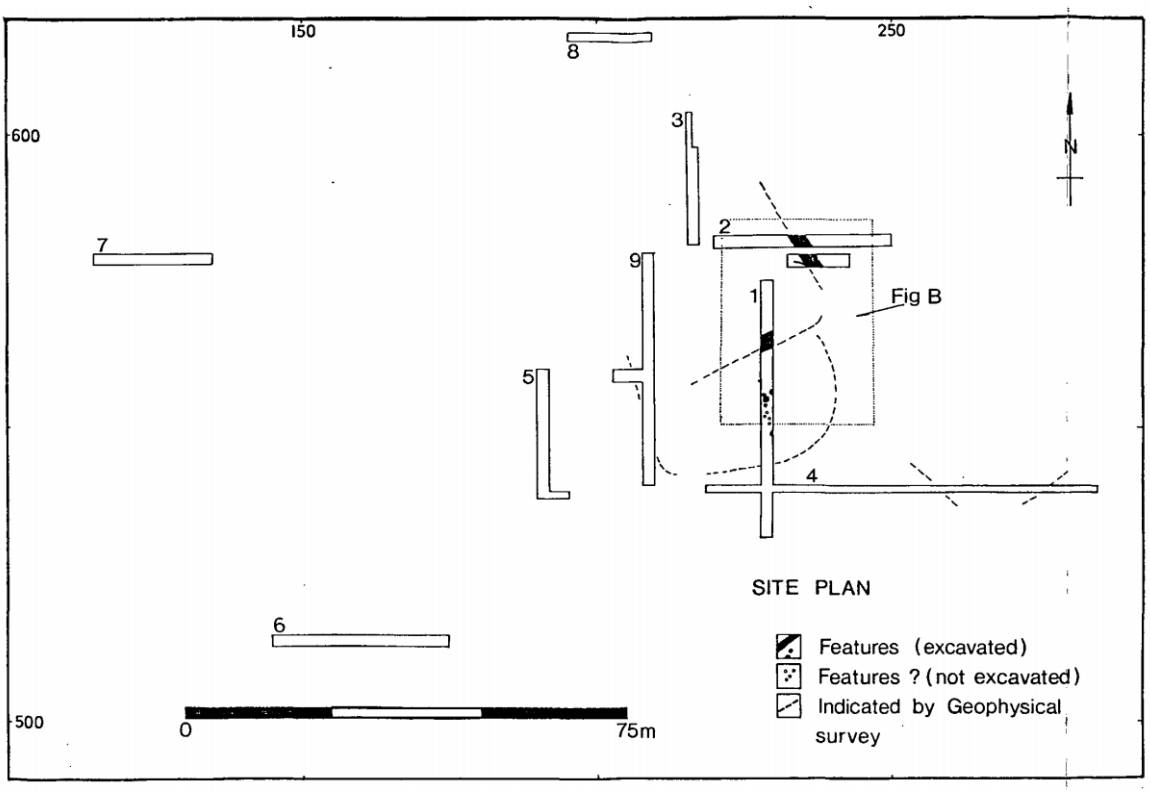


Figure 6.6. Trenches considered in the investigation (source: Howlett 1992)

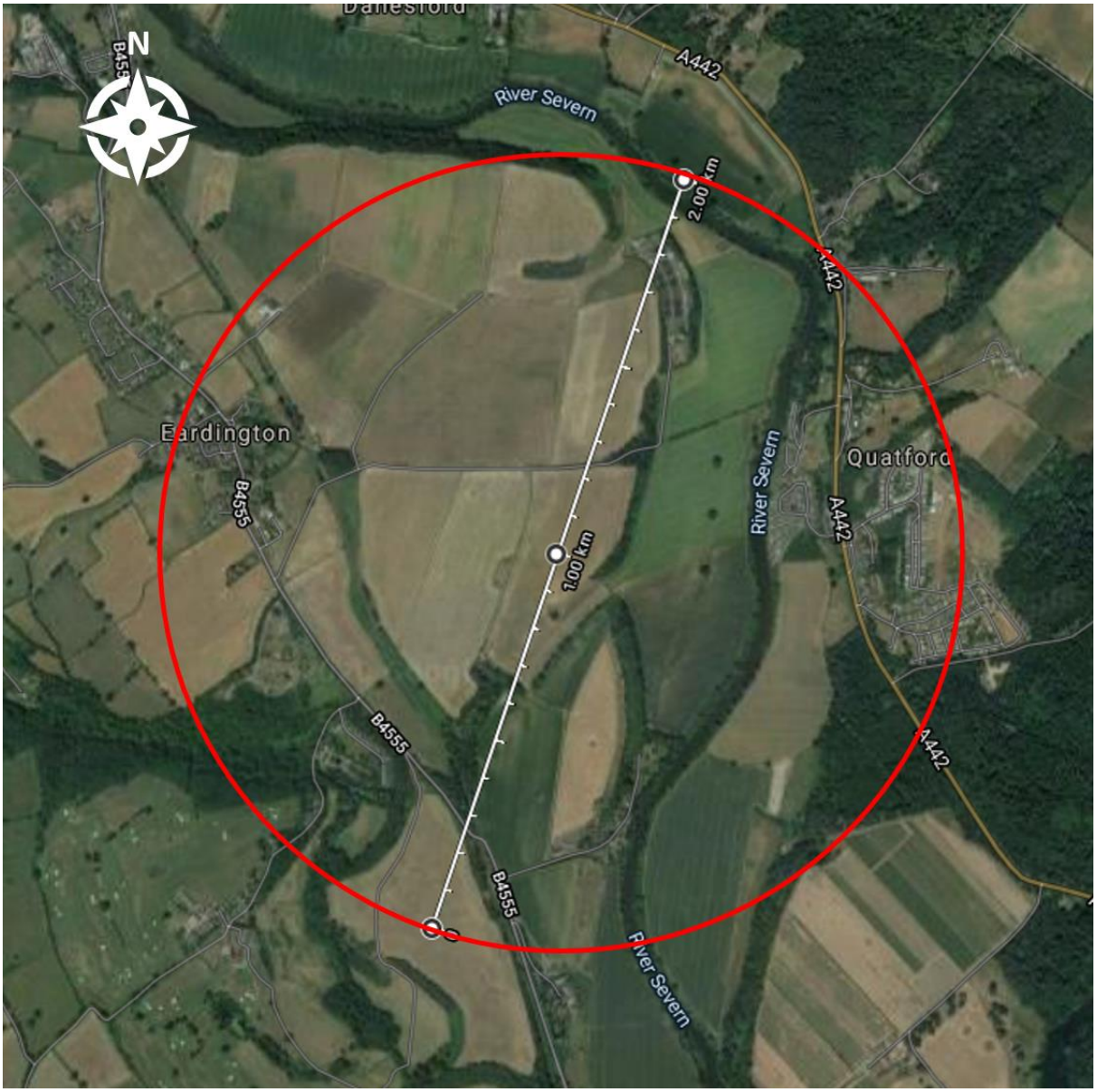


Figure 6.7. Circular area considered for phenomenological analysis. Site at the centre.

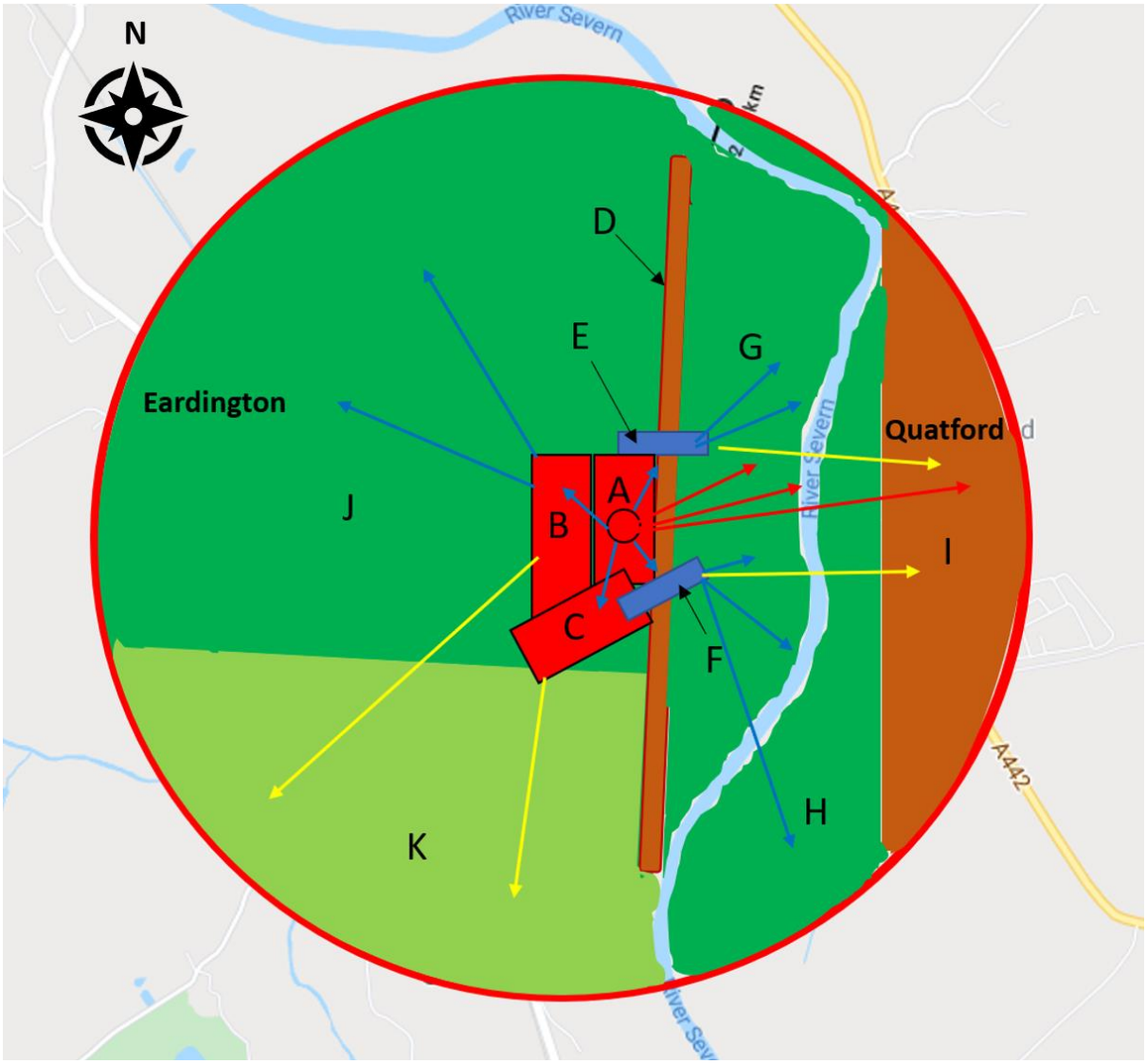


Figure 6.8. Patterns identified from the phenomenological analysis.



Figure 6.9. Subareas A and B.



Figure 6.10. Feature J.



Figure 6.11. Feature B and K.



Figure 6.12. Subarea C.



Figure 6.13. Feature D.



Figure 6.14. Features D, G, I and River Severn.



Figure 6.15. Visibility from the east edge of subarea A to Features G, I and the River Severn.



Figure 6.16. Path E towards feature G.



Figure 6.17. Path F seen from subarea C.



Figure 6.18. Path F see from Feature G.

Site at Redhill, Telford (30028(N)):

According to the information available in primary reports (see Mann 2011; Browne and Boon 2004), this site corresponds to a nucleated civilian settlement located at Redhill Reservoir in Telford (NGR SJ 7261 1097) (see Figure 6.19). It was identified through cropmarks revealing a series of enclosures covering the slope of a hill just east of Oakengates town with extensive views of the Shropshire plain (Figure 6.20). The ditches and trenches excavated by Mann (2011) and Browne and Boon (2004) are shown in Figures 6.20 and 6.21, respectively.

The site is dated from the 1st to 3rd centuries AD and, apparently, has a military origin. Fieldwork carried out in 2011 revealed evidence of a wooden building, a possible stone-built wall, two possible oven/furnace bases, and significant amounts of pottery and metal find of 1st to 3rd centuries AD, among others. The majority of the pottery remains corresponds to Severn Valley ware. Other pottery wares include Black Furnished, Mancetter/Hartshill and small fractions of samian and amphorae sherds. In relation to metal remains, they include brooches (Polden Hill and trumpet), coins, fragments of lead, copper alloy sheet and a nail. Finally, other findings include ceramic building material, fired clay and slag. In relation to environmental analysis, only three poorly preserved fragments of mammals were found and small quantities of charred cereal crop residues. Low levels of flake hammerscale were identified mainly in the surrounding of the hearths suggesting fine metal working. It appears that people in this settlement had access to wider trade links as evidenced by the presence of samian and amphorae pottery remains. These links may have been facilitated by local military groups.

This information suggests that this site was occupied by a civilian settlement with an economy based on agriculture and metalwork. However, no mention is made of the local landscape. This was explored by means of the phenomenological approach adopted in this

thesis. The area covered by this analysis is shown in Figure 6.22. It can be seen in this figure that the area under study is mainly rural. However, there are three main sub-areas reflecting important landscape alterations: a significant urban development southwest from the site which corresponds to a suburb of Telford town; a waste management company (i.e. SUEZ Recycling and Recovery UK Ltd) in the north part; and a dwelling with kennels and cattery unit northwest from the site. In spite of these developments, clear patterns were identified from the phenomenological analysis. The results are shown in Figure 6.23.

In the phenomenological model presented in this figure, the settlement is represented as a red dot at the centre of the circular area. It is located on a hill (brown feature H) that offers excellent local visibility and accessibility to the west, southwest and south. The green features A and B are farms that can easily be seen from the site and can also be accessed with minimal bodily effort (see Figure 6.24). Feature C (Figure 6.25), in contrast, is a farm located on a steep slope that makes accessibility more difficult in terms of physical effort and also prevents visibility to the southeast part of the area where feature D is located (i.e. a relatively flat farm).

On the other hand, feature E is the area where the waste management company is located and is surrounded by farms. This is an area of difficult access both in terms of local visibility and physical effort because it has lands with heterogeneous slopes. A similar pattern was found in the west part of the area under study. In contrast, the subareas G and F can easily be accessed and local visibility between these areas and the site is good (Figure 6.26). While the subareas G and F have been strongly altered (i.e. urban development and the kennels and cattery unit), it is likely that they were used for agriculture given the high degree of affordability from the site.

In relation to features beyond the area under study, only a prominent hill located southwest from the site in Shropshire Hills area was identified (Figure 6.27). It is difficult

to attach an obvious meaning to this feature. However, it may have been used as a landmark for spatial orientation.

The evidence from the phenomenological analysis revealed that the settlement was located in a privileged area with easy access to farmland located west, southwest and south from the site. This suggests that people in this settlement had easy access to farmland consistent with charred cereals. This may have offered the local people sufficient agricultural surplus for self-sufficiency and perhaps to afford trade. This, along with the evidence of metal work found by previous researchers, may explain why these people were able to afford some high-status items such as samian and amphorae pottery.



Figure 6.19. Site at Redhill, Telford.

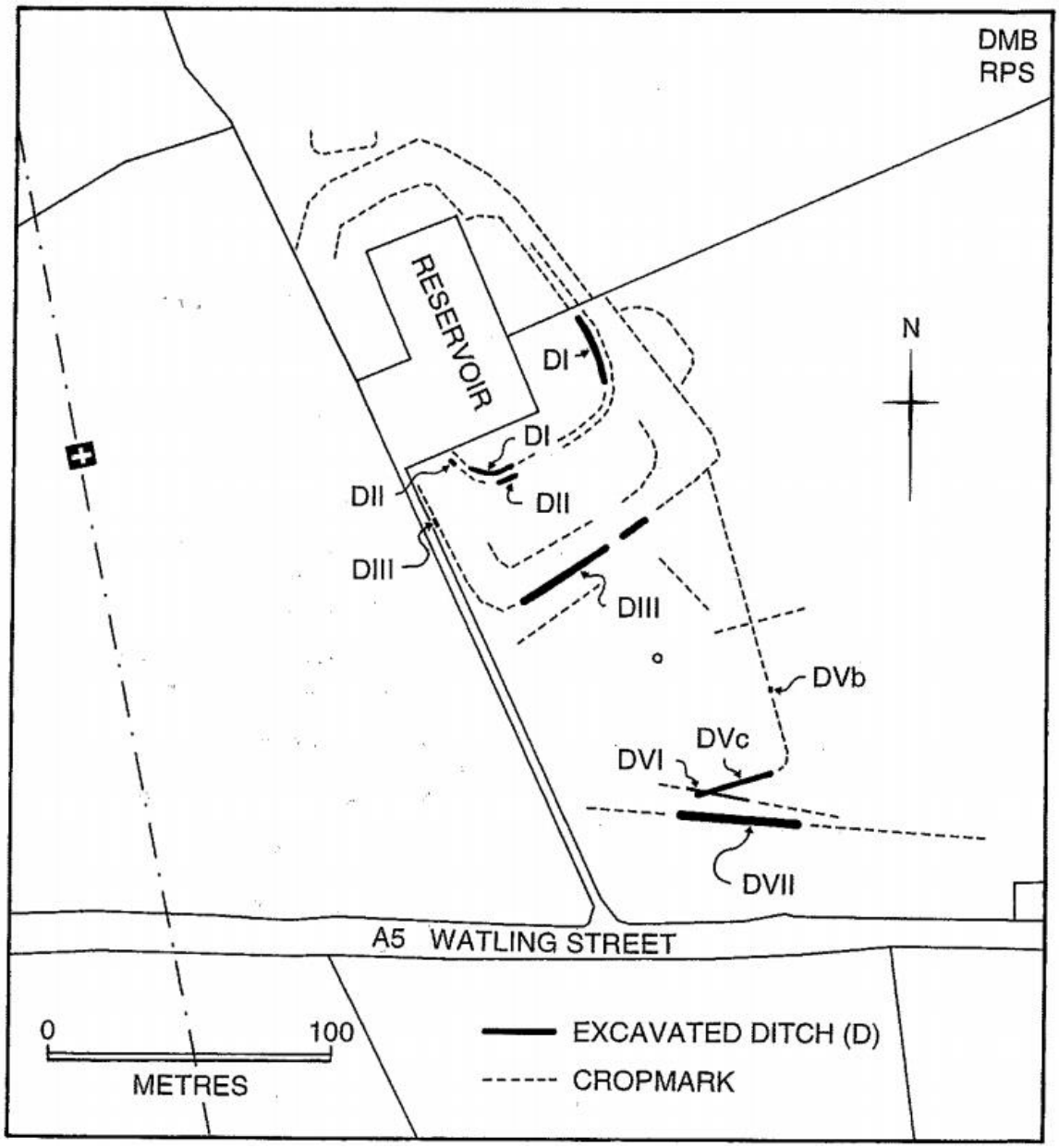


Figure 6.20. Map of cropmarks and ditches excavated by Browne and Boon (2004).

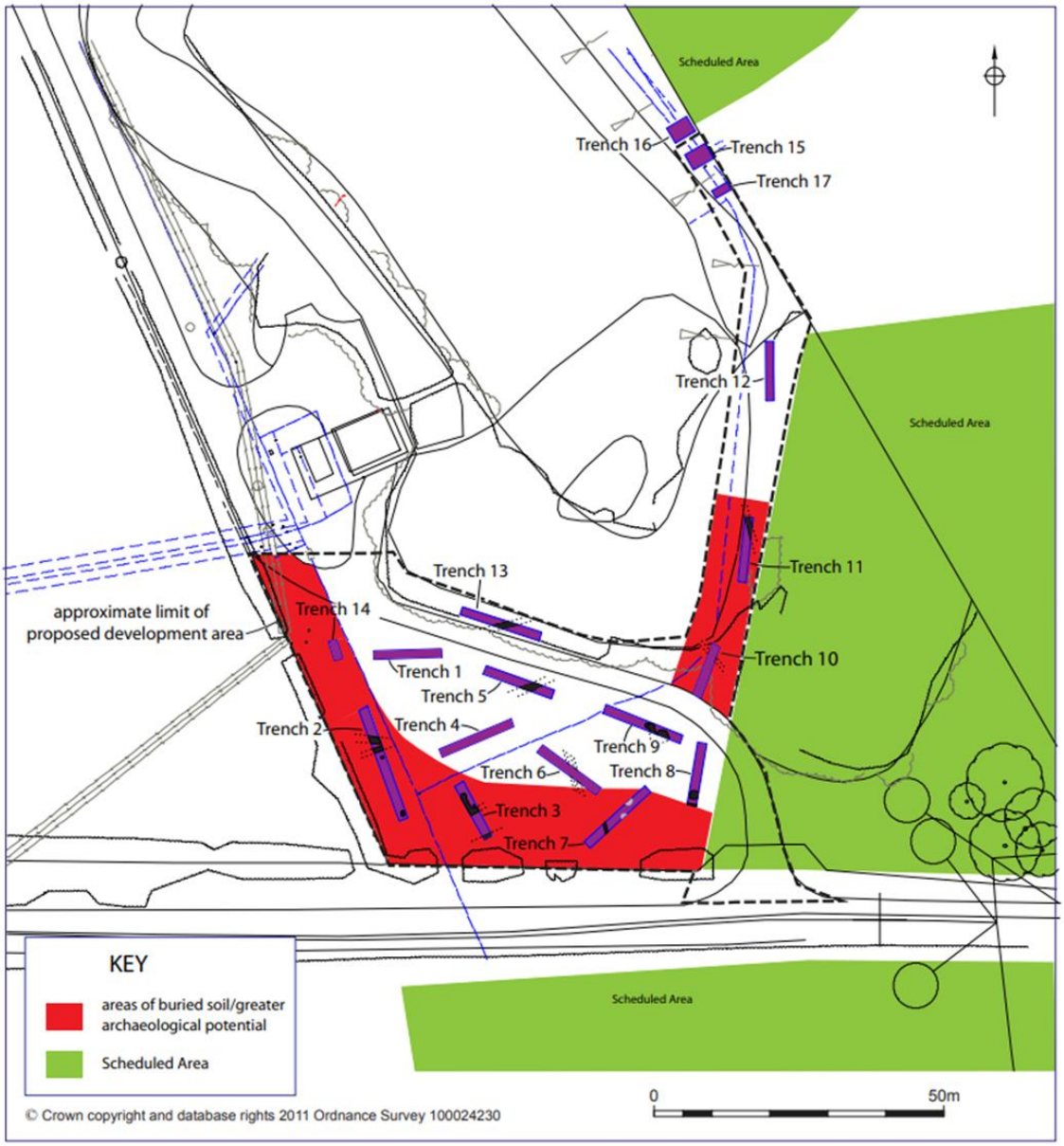


Figure 6.21. Location of the trenches excavated by Mann (2011).



Figure 6.22. Circular area considered for phenomenological analysis. Site at the centre.

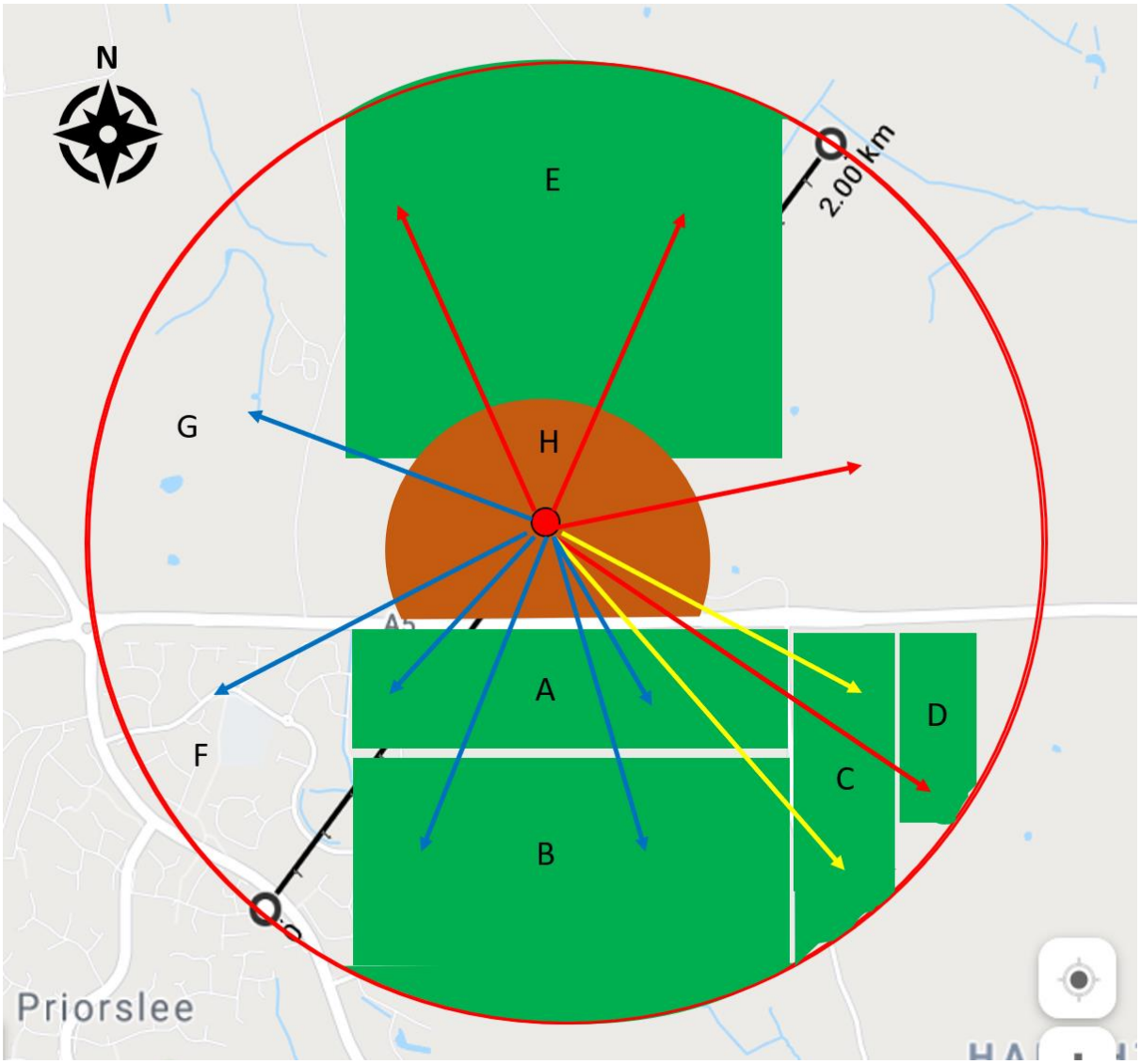


Figure 6.23. Patterns identified from the phenomenological analysis.



Figure 6.24. Features A and B.



Figure 6.25. Feature C.



Figure 6.26. Visibility from area G towards the site.



Figure 6.27. Prominent hill in Shropshire Hills area.

Site at Alkmund Park, Berwick (30030(V)):

This site is located in Almund Park, Berwick, north of Shrewsbury (NGR SJ 48190 15800) (see Figure 6.28). It was investigated as part of the Wroxeter Hinterland Project in 1996 (see Gaffney et al. 2007) by means of fieldwalking, geophysical survey and trench evaluation excavations (Figure 6.29). The results revealed a Roman building with heating system enclosed by a substantial V-shaped ditch suggesting a small villa. Material culture remains recovered from the trenches include a small assemblage (including Severn Valley wares, Black-burnished wares, samian, Nene Valley wares and Mancetter-Hartshill mortaria), tiles, opus signinum, mortar, vessel glass, window glass, possible copper alloy earring, harness fitting, iron nails, structural material, a single sestertius of Trajan, and a simple figurine which was deposited face-down in the ditch fill when the buildings were demolished. In terms of the surrounding landscape, fieldwork was carried out in order to identify patterns of scattered ceramic. However, other features in this landscape were not explored (Gaffney et al. 2007).

The area considered for phenomenological analysis is presented in Figure 6.30. As illustrated in this figure, the area under study is mainly rural with a small village southwest from the site named Rosehill. It consists of farmlands, roads and a trainline that crosses the landscape in the southeast-northwest direction. Lack of urban development suggests that significant features of the landscape have probably survived over a long period of time implying that phenomenological research is suitable in the site.

The phenomenological model resulting from the study is presented in Figure 6.31. This model shows that the site (red dot at the centre) is located on the top of a small hill that is surrounded by a first ring of land of lower altitude referred to as feature A (Figure 6.32). This feature, in turn, is surrounded by a second ring of even lower height (feature B in Figure 6.33). These features can easily be accessed from the site in terms of physical effort and

local visibility. Features C and D, on the other hand, correspond to dense woodland (Figure 6.34). There is access to woodland in easy proximity of the site. However, accessibility in terms of visibility and physical effort at longer distances is difficult and prevented by the steepness of the slope and by the high density of the woodland (Figure 6.35). Features E, F and G correspond to relatively flat farms located in areas of difficult accessibility in terms of physical effort and visibility (Figure 6.36). This is explained by the abrupt increase in the steepness of the land from the site towards these farms and by the presence of dense woodland (i.e. features C and D) that act as barriers between the farms and the site. Feature H is a set of small hills covered by trees in the north direction from the site. Accessibility to this feature is difficult because of both increasing steepness of the land and the Alkmund park pool which is located between the feature and the site (Figure 6.37). Feature I corresponds to a flat farm in the northern part of the area under study (Figure 6.38). Access to this farm in terms of visibility and physical effort is very difficult because of the increasing steepness of the site and the existing brambles between the site and the farm (i.e. Features D, H, and the Alkmund park pool). Feature J is an area of farmland with irregular slopes (Figure 6.39). Accessibility to the section of this land that is closer to the site is moderate in terms of physical effort with good visibility. However, accessibility in terms of both parameters becomes difficult at a greater distance as a result of the topographic diversity.

Finally, feature K is an extensive farmland of easy accessibility that is located southeast from the site (Figure 6.40 and 6.41).

Regarding features beyond the area under study, two significant features were identified. One of them is the River Severn situated west from the edge of the area under study (Figure 6.31) and the second is a prominent hill located southeast from the site (Figure 6.40) in Shropshire Hills area. In the case of the river, accessibility is very difficult because

it is steep and densely wooded to the east of the site. In the case of the hill, on the other hand, accessibility if constrained by the large distance between this feature and the site.

In considering these results, the following interpretation is proposed. The site was situated on the crest of a hill that can easily be seen from a wide area in the southeast of the landscape. This suggests that the inhabitants of this villa wanted to be seen because there are several areas nearby with restricted visibility where a settlement could have been placed. This probably reflects a signal of ownership and control over the flat farmlands located southwest as well as a signal of high status. This may be linked to the fact that these lands seem to be highly productive and appropriate for intensive cropping activities, a fact that is inferred from a paleoenvironmental analysis developed in a Later Roman site located in Ellesmere Road, Shrewsbury, about 2km southeast from Alkmund Park (i.e. in the direction of feature k). This analysis revealed abundant remains of glumes and grains of spelt wheat glume, and moderate remains of barley, oats and rye (Oxford Archaeological Unit 1996, 18). It is possible that the farmland in this site formed part of the settlement at Alkmund Park in the Earlier Roman period because it is located within the maximum radius of daily exploitation for agriculture (Bailey (2005, 173). This supports the argument that visibility was linked to this valuable land for agriculture.

It is interesting to notice that the prominent hill in Shropshire Hills area is located in the distance but visible from these farms. While it is unlikely that this hill played a significant role in this landscape, it is still a good reference for the location of these farmlands, and also to identify the location of other settlements that are also related to this hill such as the site at Site at Redhill analysed above. On the other hand, difficult access from the site to other areas in the landscape suggests that this site was well protected from these areas. That is, natural barriers provided this villa with protection and some level of isolation from areas other than the farmlands in the southwest. This, however, did not

prevent people of this settlement from accessing natural resources in the proximity. For example, the nearby woodland is highly accessible. Likewise, land that is suitable for pasture (i.e. feature J) is relatively accessible from the site. What it is not accessible is the River Severn. This suggests that the occupants of the villa obtained water from other sources. In this regard, it is not clear whether the Alkmund park pool served for this purpose because evidence indicating that it existed at Roman times was not found. However, there are watercourses in the woodland suggesting that some source of water existed near the site (Figure 6.42).



Figure 6.28. Site at Alkmund Park, Berwick.

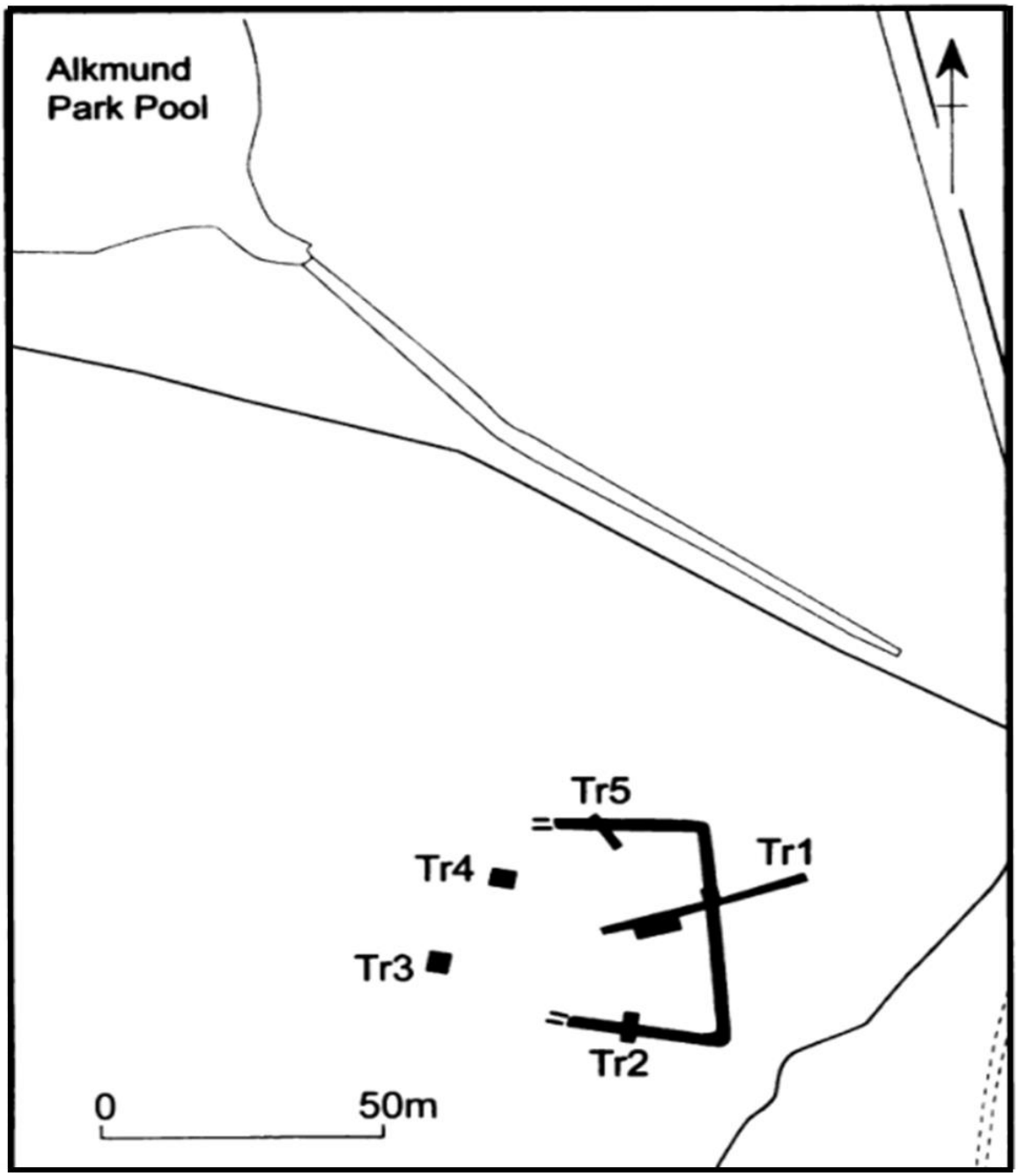


Figure 6.29. Gradiometry plot of enclosure and trench location (source: Gaffney et al. 2007)



Figure 6.30. Circular area considered for phenomenological analysis. Site at the centre.

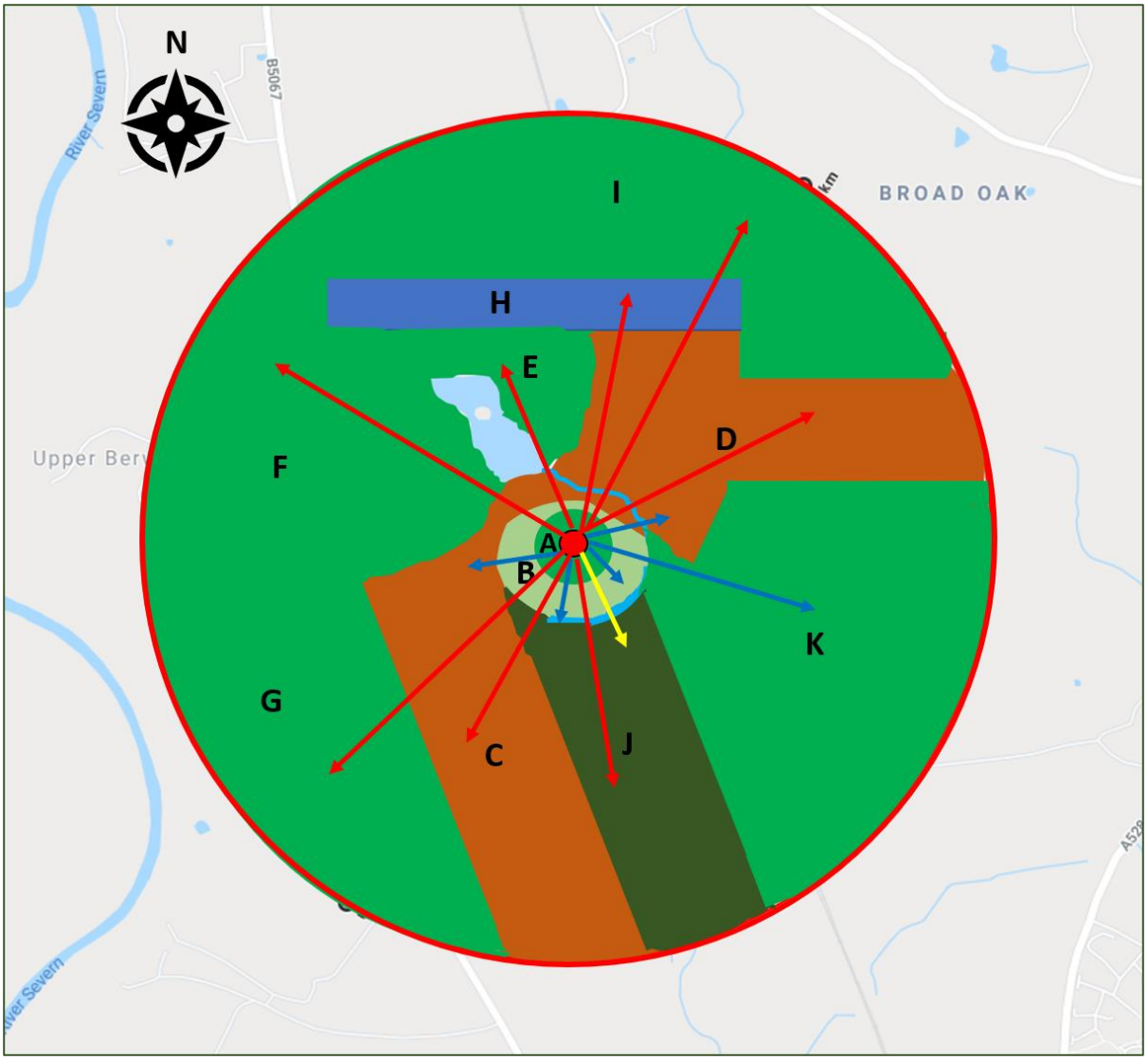


Figure 6.31. Patterns identified from the phenomenological analysis.



Figure 6.32. Feature A.



Figure 6.33. Features A and B.



Figure 6.34. Feature D: dense woodland in the proximity of the site.



Figure 6.35. Feature C: woodland with difficult access.



Figure 6.36. Feature G.

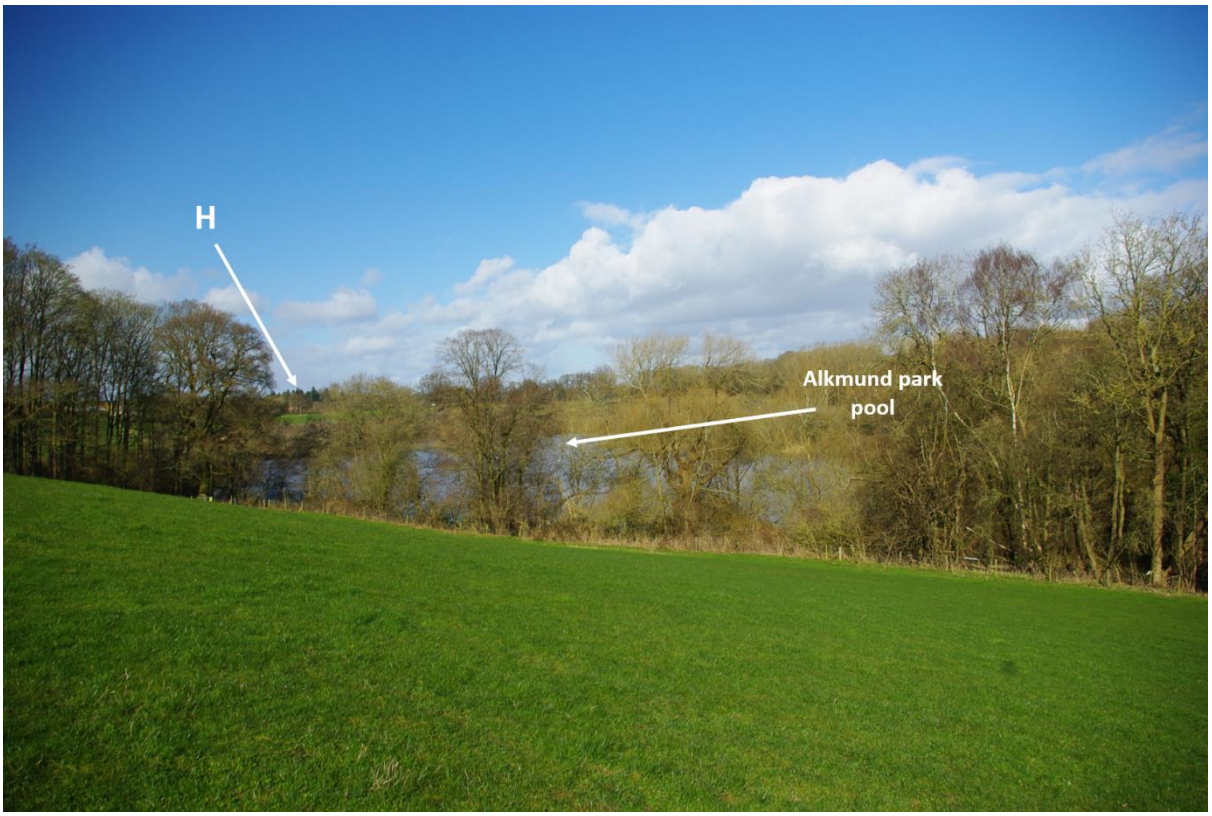


Figure 6.37. Feature H and Alkmund park pool.



Figure 6.38. Features H and I (the site is located beyond feature H).



Figure 6.39. Feature J.

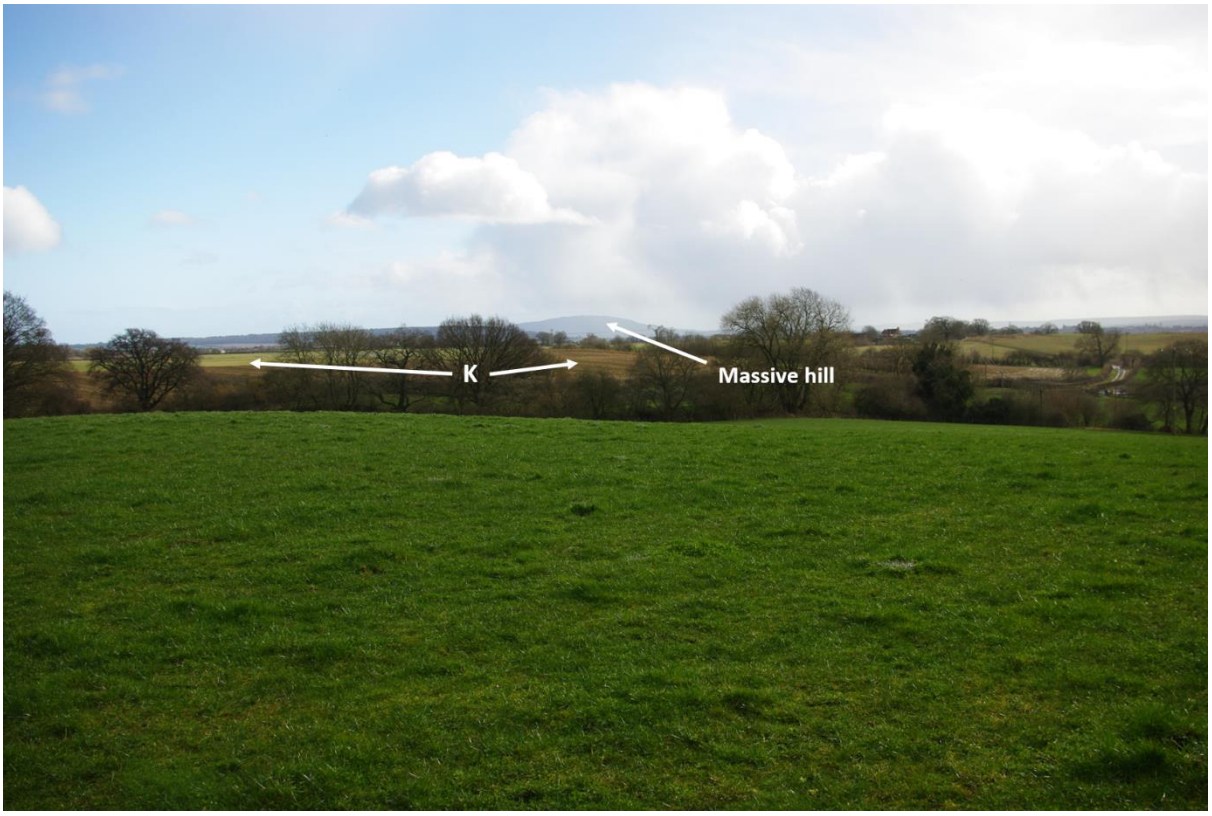


Figure 6.40. Feature K seen from the site and the prominent hill in Shropshire Hills area.



Figure 6.41. Feature K seen from the southwest edge of the area under study.


Figure 6.42. Watercourses in the forest.

b) Relationship between the sites of Cluster 11: The sites considered for phenomenological research for the Earlier Roman Britain period in Shropshire have in common that they all belong to the same single cluster. Evidence for this, as revealed in the network analysis, is the fact that a significant number of material culture indicators are absent in these sites. This is consistent with the findings of Newman and Pevsner (2007, 14) who argue that current evidence suggests a long term continuity from the Iron Age to the post-Roman period within the wider Shropshire landscape, and that the villa in Alkmund park (i.e. 30030(V)) was built within a native stile enclosure epitomizing the adoption of Roman house-building traditions with the existing landscape.

Despite this similarity, these sites are by no means identical. On the contrary, they differ in terms of both settlement type and specific material culture remains identified. In

particular, the site at Whitley Chapel/Weir Meadow (30005(F)) is a farm with few material culture remains. Lack of material culture is reflected in the high value of the strength indicator for this site (SI = 7.96) implying high connectivity in a network that is characterised by a general lack of material culture. Lack of archaeological remains in this farm has been used to suggest a low status native dwelling (Howlett 1992, 10). The site at Redhill (3028(N)), on the other hand, corresponds to a nucleated settlement that is richer in material culture. This is reflected in the lower value of the strength indicator for this site (SI = 6.45) implying that this site contains some remains that are not typical in the network. Finally, the site at Alkmund Park (30030(V)) is a villa richer in material culture than the previous sites, a fact that is reflected in an even lower values of the strength indicator (SI = 5.71) suggesting a higher status settlement in this region.

The results from the phenomenological research revealed additional possible patterns in terms of similarities and differences between these sites. In terms of similarities, it was found, as expected for people depending on agricultural production, that the sites are located in areas with easy to moderate access to farmlands and local natural resources. In relation to differences, on the other hand, local visibility seems to be linked to the strength indicator and status of the sites in this cluster. That is, the low status site (i.e. Whitley Chapel/Weir Meadow) with low material culture (i.e. higher values of SI) is found in an area of restricted local visibility. In contrast, the higher status site (Alkmund Park) is richer in material culture (i.e. lowest value of SI) and is highly visible from a wide area of the surrounding landscape. Finally, the site at Redhill occupies an intermediate position in relation to these considerations. A possible explanation for this apparent relationship is that people in higher status sites wanted to demonstrate this status by placing the settlement in areas with significant local visibility. This need for signalling status may have served as a way to reflect wealth, control over the surrounding landscape, and/or control over

slaves/tenants who needed to be kept in view when working in agriculture or in other activities. It is important to recognise, however, that this analysis might not be reliable because few sites in the cluster were considered for phenomenological analysis, and because the archaeological data for this region is in general poor.

6.2.2 Phenomenology analysis for Shropshire: Later Roman period

Two robust clusters were identified from the network analysis developed for the Later Roman period in Shropshire. One of them, referred to as Cluster 12, is characterised by sites rich in material culture remains and is composed mainly of villas. The other cluster, referred to as Cluster 13, includes mainly farms that are in general poor in material culture. These clusters were studied from the phenomenological approach by means of three selected sites in each of them. As before, this choice was based on the strength indicator, stable clusters, sites in areas without significant urban development, and sites with recent reports. Unfortunately, it was not possible to fully follow these criteria for this period because, as in the case of the Earlier Roman period, there are few sites in the Shropshire sample that satisfy these criteria. Having clarified this limitation, let us now show the results of the phenomenological analysis.

a) Cluster 12: Three sites were considered in the analysis (see Table E.35): Site 30001(N) (SI = 4.63); site 30018(V) (SI = 7.34); and site 30022(V) (SI = 6.22). The results from the phenomenological analysis carried out with these sites are shown as follows.

Site at Meole Brace (30001(N)):

This site is located in Shrewsbury (NGR SJ 48900 09700) (see Figure 6.43) and was investigated in 1988 by means of fieldwalking and geophysical survey (Figures 44 and 45). After strong anomalies were identified from these techniques, excavations were carried out in 1989-90 revealing archaeological remains and a road suggesting a roadside villa with different phases of development. The earliest phase (1st and 2nd century) is characterised by the road itself. The following phases (2nd and 3rd century) are represented by stone-packet postholes and the remnants of a rectangular building. The settlement in these phases seems to have had an emphasis on services and marketing activities providing services for the local community as well as travellers to and from Wroxeter. These activities were probably stimulated by the proximity to the road that communicated rural areas with the city. There is also evidence of residential and economic activities including agriculture and iron production. As revealed by paleoenvironmental analysis in the site, agriculture consisted of cereals (i.e. mainly glume and grains of spelt wheat and moderate quantity of barley and oats) produced in open cultivated ground. Finally, the latter phase (4th century) is characterised by a decline in non-agricultural activity that is reflected in a marked decline in coins and pottery in the 4th century.

In terms of material culture, the archaeological remains recovered from this site correspond to coins (2nd, 3rd and 4th century AD), pottery (mainly 2nd and 3rd AD dominated by Severn Valley wares and Black-burnished wares, with high occurrence of samian, amphorae and mortaria), a zoomorphic plate brooch, copper alloy bracelets, vessel fragment, vessel glass, iron slag, quern fragments, ceramic building material, iron tools, iron keys, iron nails, structural fittings, and weights, among others (Ellis 1991; Ellis et al. 1994). In relation to the landscape of the site, it was analysed as part of the Wroxeter Hinterland project with the aim of identifying patterns of dispersed cropmarks around Wroxeter and

possible trade connections with city and other parts (Ellis et al. 1994, 12). However, the immediate surrounding landscape was not examined.

The landscape of the area considered for phenomenological analysis has altered significantly as shown in Figure 6.46. In particular, there is a significant urban development in the northwest part corresponding to Meole Brace, a suburb of Shrewsbury. Likewise, the southwest fraction of the area contains part of the village Bayston Hill. In addition to these urban developments, there is a quarry (i.e. Tarmac Bayston Hill Quarry) located southeast implying significant alteration of the landscape. Finally, two important roads cross this area: A5; and A5112. They intersect at a roundabout near the site. In spite of these developments, a high percentage of this area remains as rural. This made it possible to identify some patterns from the phenomenological investigation. The results are shown as follows.

Figure 6.47 shows the phenomenological model obtained for site 30001(N). Feature A in this figure is an area containing a set of relatively flat farms (Figure 6.48). Accessibility in terms of physical effort and visibility to this feature from the site is easy suggesting that this was a possible major area for agricultural production. Feature B is another area of easy accessibility in terms of these two parameters located east from the site (Figure 6.49). It is characterised by farmlands with irregular slopes. Feature C is a hill of moderate accessibility in terms of physical effort and is located south from the site (Figure 6.50). It is in between areas A and D making it very difficult to access the latter from the hill. Feature D is a relatively flat farmland that can easily be seen from the hill represented by Feature C (Figure 6.51). While it is difficult to access the farmland in D from the hill, it can easily be reached from a path referred to as feature E (Figure 6.50). Feature F is another hill located east and southeast from the site (Figure 6.49) with a southeast end towards the path in Feature E. Access to this hill is moderate given the irregular slope of feature B and the steepness of the hill itself. Beyond this hill is the Tarmac Bayston Hill Quarry (feature G). Unfortunately, it

was not possible to visit this quarry because it is a private property and because access to this area is very difficult from the site. Feature H (Figure 6.52) is a small hill located northeast from the site in between features B and I (i.e. a farmland in the northeast part of the area under study). Accessibility to these features is moderate suggesting that they were probably used by people of the settlement. Finally, feature J is a flat urbanised area corresponding to a fraction of the Meole Brace suburb. It is interesting to note that this area is flat and looks like an extension of Area A towards the north, and an extension of area I towards the west. This suggests that prior to urban development, these three areas were connected and used for farming. In addition, visibility from areas A and J to the site is in general good and only partially prevented by modern features including houses, trees and bushes (Figure 6.53). This suggests that the site was highly visible in the past from the west half of the area under study.

Regarding features beyond the area under study, only one was identified which is the River Severn. It is located about 2.3 kilometres north from the site. The feature is moderately easy to access on foot despite the distance, because the land towards this feature is relatively flat. This river may have been used as a source of water or perhaps communication channel. However, it is unlikely that it was used for daily water needs given the distance suggesting that people of this settlement obtained water from other sources near the site. A possible candidate are watercourses present in feature J in Figure 6.47. These courses may be modern. However, their existence suggests that a possible source of water existed nearby in Roman times.

The results for the phenomenological analysis are consistent with the suggestion that this settlement had an emphasis on services and marketing activities providing services for the local community as well as travellers to and from Wroxeter. To see this, note that, as discussed above, this site is easily visible from much of the surrounding landscape and is

located next to an ancient road that leads to this city. This suggests that people in this settlement wanted to be visible to users of the road. Surplus obtained from these activities would explain why a significant amount of material culture was recovered in the site. Large areas of land suitable for agriculture (i.e. features A, B, D, I and J) that could be associated with cereal production as suggested by paleoenvironmental evidence, were also available for these people implying that additional surplus could have been obtained from trade, suggesting that this was a wealthy settlement. Proximity to small hills (features C, F and H) may have provided additional advantages such as areas of forest exploitation, protection, as well as observatory points for longer distances. In summary, this site seems to be a wealthy settlement located in a strategic area in this landscape for the exploitation of natural resources, agricultural production, and highly visible for potential trade with travellers.



Figure 6.43. Site at Meole Brace.

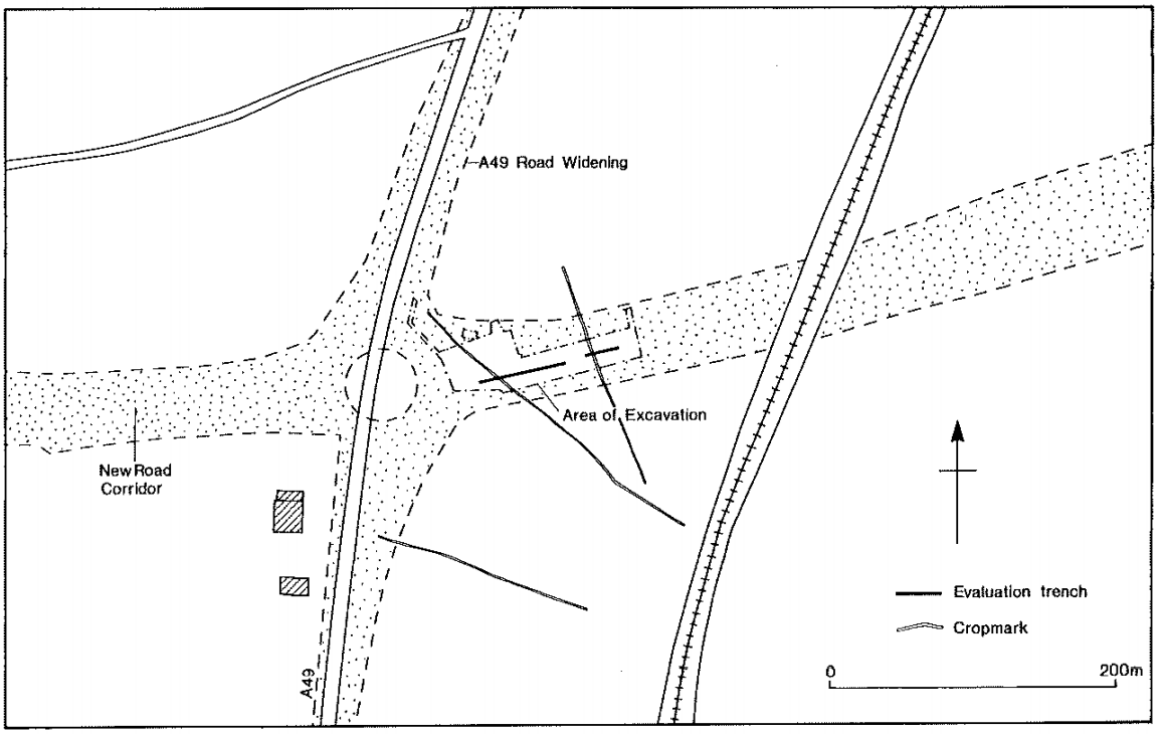


Figure 6.44. Location of excavation and linear cropmarks (source: Ellis et al. 1994)

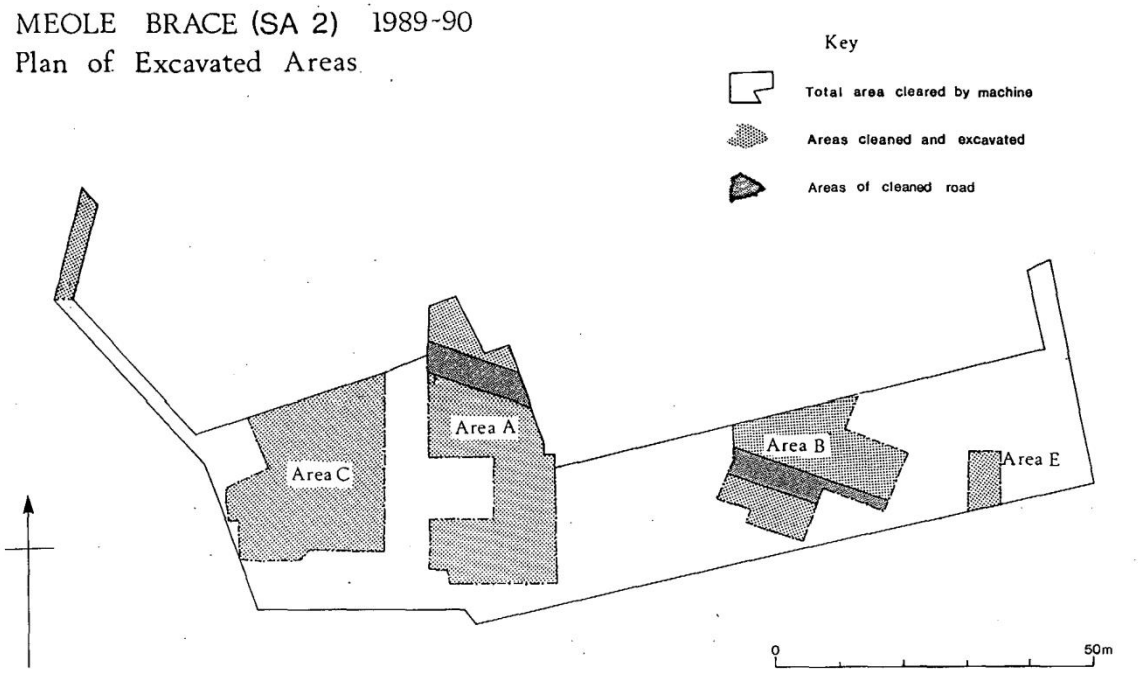


Figure 6.45. Excavated area (source: Ellis 1991)



Figure 6.46. Circular area considered for phenomenological analysis. Site at the centre.

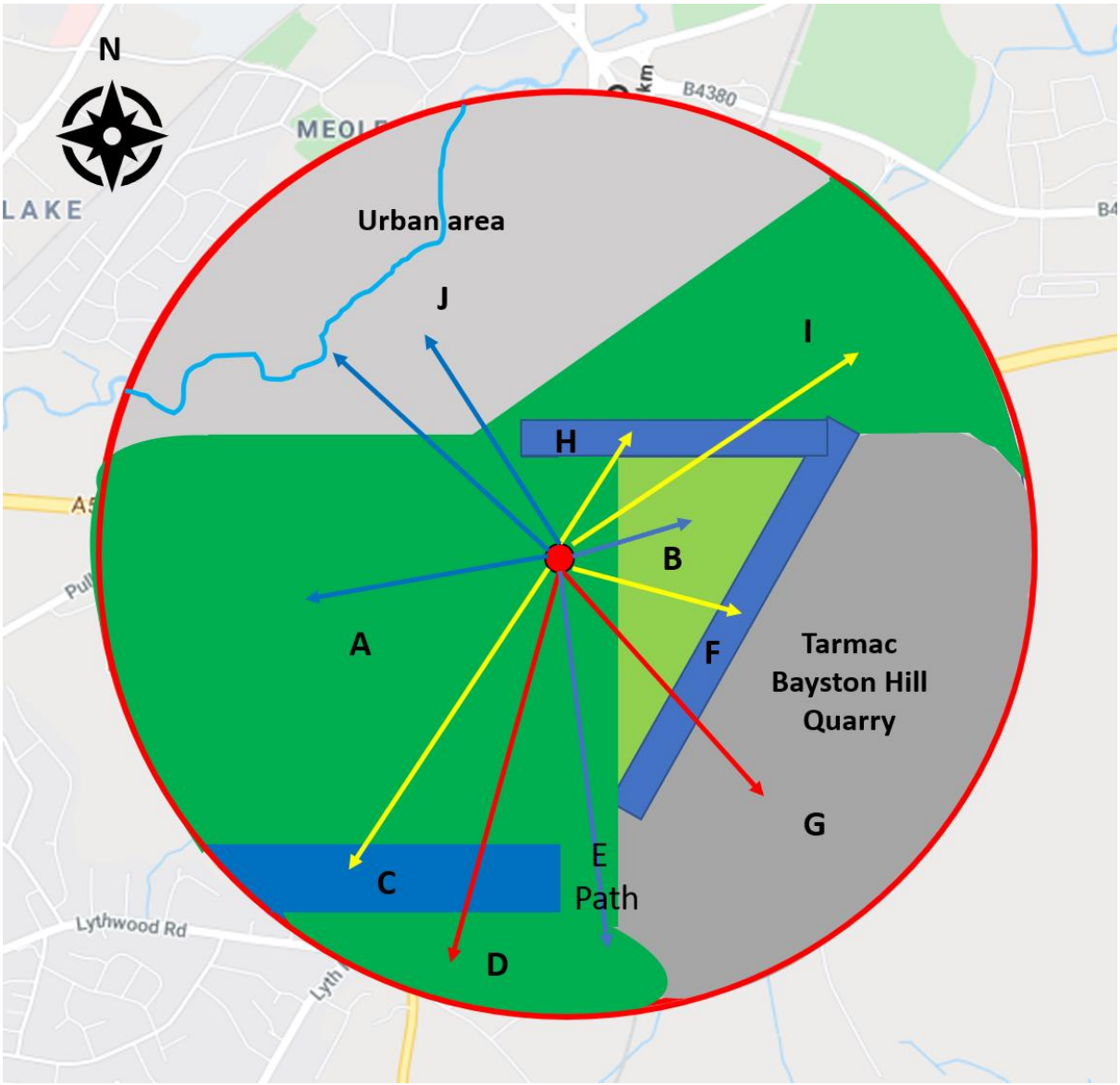


Figure 6.47. Patterns identified from the phenomenological analysis.



Figure 6.48. Feature A.



Figure 6.49. Features B and F.



Figure 6.50. Features A, C and E.



Figure 6.51. Feature D seen from the hill (feature C).



Figure 6.52. Features A, B, F and H.



Figure 6.53. Site 30001(N) seen from the west edge of the area under study.

Site at Lea Cross, Pontesbury (30018(V)):

This site corresponds to a villa and is located at Lea Cross, Pontesbury (NGR SJ 41780 08480) (Figure 6.54). This villa was first identified in 1793 where a mosaic pavement and a hypocaust were found. Excavations carried out intermittently in the site between 1956 and 1970 revealed dressed masonry building remains, stone walls, rubble containing tesserae, wall plaster, fragments of roof tiles, a corndrier, a glass object, and $2^{nd} – 4^{th}$ century pottery (Houghton, 1961; Frost, 2013). No mention of the surrounding landscape is made in the existing reports, and plans and aerial photographs were not considered in the report.

The area considered for phenomenological research is shown in Figure 6.55. The area is suitable for this research because it consists mainly of a rural landscape composed of several farms, watercourses and minor rural developments (i.e. Lea hamlet near the centre, Lea Cross hamlet southeast from the site, and Hinton village in the southwest edge of the area).

The results from the phenomenological analysis are presented in Figure 6.56. Feature A in this figure is an extensive area of flat farmlands that covers more than 50% of the landscape. It is crossed by a watercourse named Rea Brook (Figure 6.57). Accessibility to this feature is excellent in terms of both physical effort and visibility. Feature B is a steep band of land that increases in height towards the northwest (Figure 6.58). It leads to feature C which corresponds to farmlands located on a higher flat area (Figure 6.59). These lands can be reached easily on foot. However, visibility from the site is prevented by the band in feature B. Feature D is an area of farmland with varied slopes and moderate accessibility in terms of physical effort and visibility afforded by these slopes (Figure 6.60). Finally, feature E corresponds to hills located in the eastern edge of the landscape (Figure 6.61). Accessibility to these hills is difficult because of both their distance from the site and their steep slopes.

In relation to features beyond the area under study, only a prominent hill in the proximity named Earls hill located in the south direction of the site was identified (Figure 6.62). This hill is an excellent spatial reference in this landscape and may have been used for this purpose to some extent.

These results reveal that this villa was located in a seemingly privileged landscape for agricultural production. While no paleoenvironment evidence in this landscape was found to support this statement, this possibility is suggested by the context of this place which consists of extensive areas of flat land that could have been cultivated in the past without significant physical effort, and the abundant supply of water available nearby. Actually, this landscape is used today for significant agricultural production and has been classified as a strongly rural landscape based on the topographical characteristics of this area (see Gillespies 2018). Obviously, this does not mean that the same was valid in Roman times. However, the "bones" of this landscape suggest that a similar character may have existed in the past.

Good visibility towards the flat farmlands in Feature A suggests that this area may have been used for crops that require more attention. The flat farms in Feature C, in contrast, cannot be seen from the site. However, they can easily be reached and were probably used for the production of a range of a range of agricultural goods. The lands in Feature D are more varied in slope suggesting some possible areas of crops and pasture. On the other hand, it is not clear whether the Rea Brook existed in its current form in Roman times. However, the presence of a watercourse suggests that a source of water existed in the proximity. The large amount of land available for agricultural production may explain the apparently wealthy condition of this villa as revealed by the nature of the building remains identified in previous studies. That is, this amount of good quality land for agriculture may have provided the people in this villa with significant surplus. It is interesting to note, however,

that there is no woodland nearby suggesting that this people focused their activity on farming activities, or that some areas were probably woodland in the past. Finally, the site can be seen from a large proportion of the landscape (except from feature B) suggesting that this people wanted to be seen probably as a signal of ownership, landscape control, and status.



Figure 6.54. Site at Lea Cross, Pontesbury.

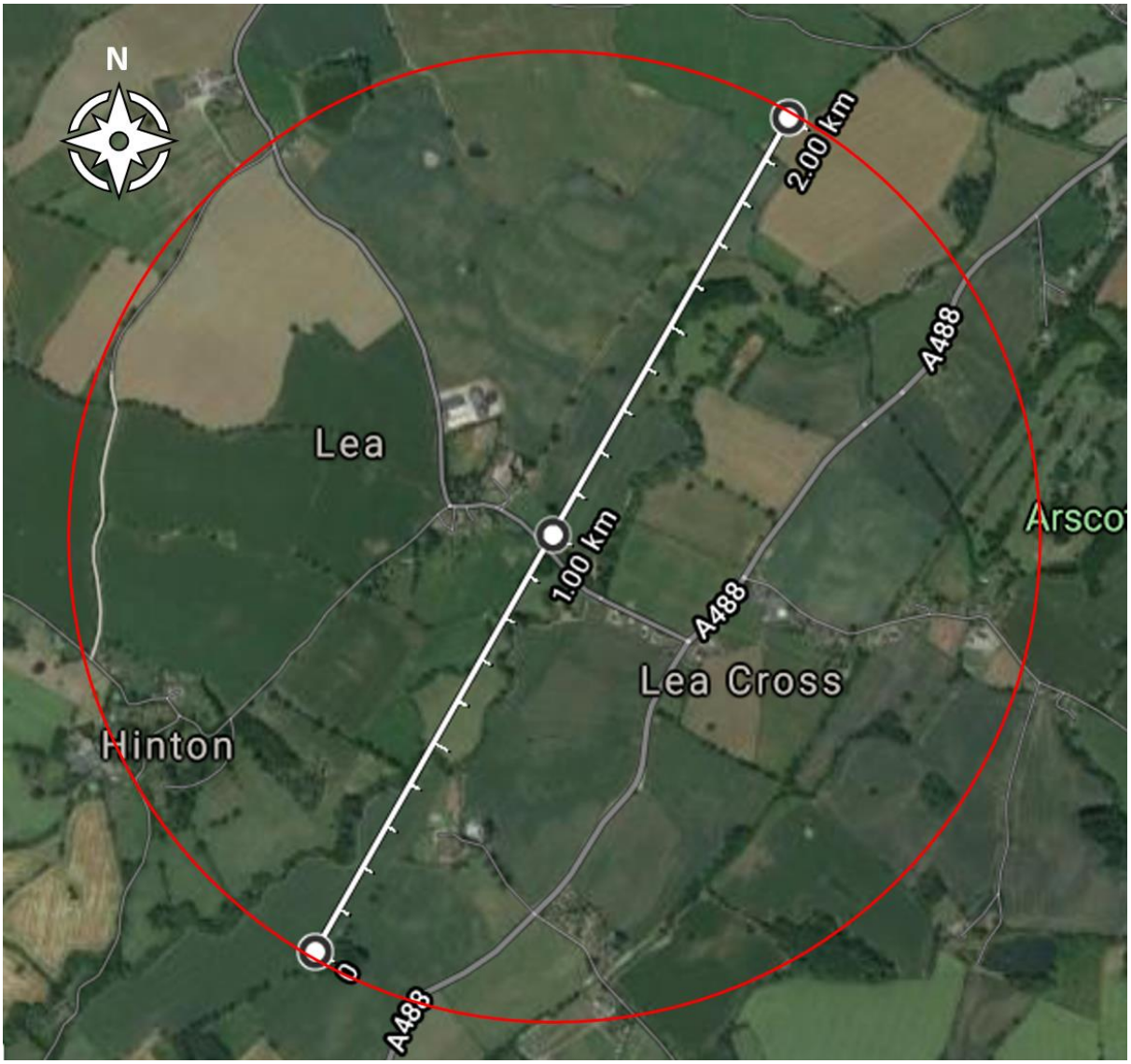


Figure 6.55. Circular area considered for phenomenological analysis. Site at the centre.

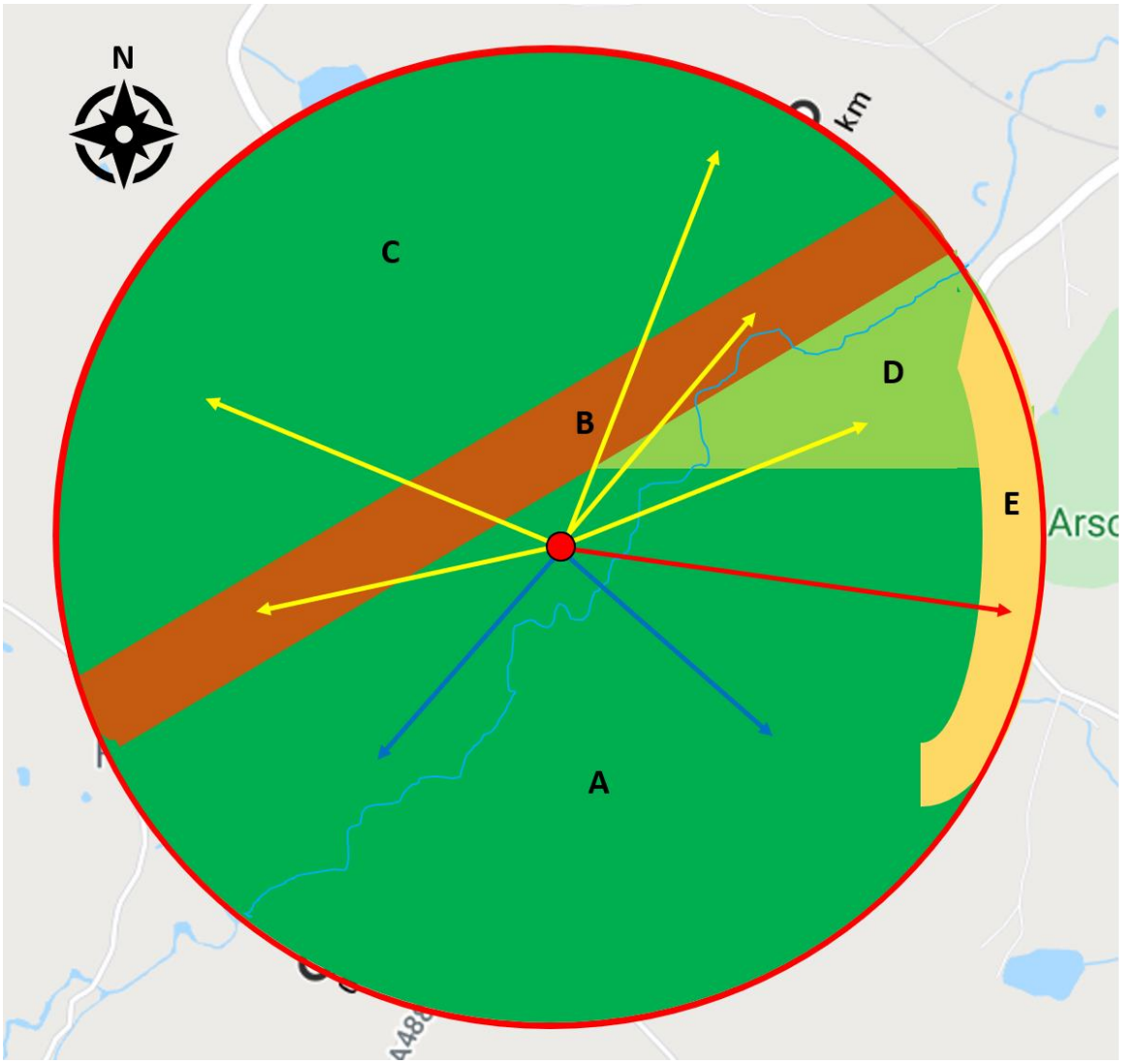


Figure 6.56. Patterns identified from the phenomenological analysis.



Figure 6.57. Feature A and Rea Brook.



Figure 6.58. Feature B.



Figure 6.59. Feature C.



Figure 6.60. Feature D.



Figure 6.61. Feature E.


Figure 6.62. Earls hill.

Site at Whitley Grange (30022(V)):

This site corresponds to a villa located in Whitley Grange (NGR SJ 45700 09630) (Figure 6.63). Archaeological features around this site were first mentioned in a report written in 1893 identifying the remains of a Roman building in Chapel Field at Whitley. In 1976, the area was evaluated by means of trial excavations revealing sandstone masonry, Roman tiles, and sherds of late Roman pottery including Severn Valley wares (Toms 1985). In 1995, the site was formally studied as part of the Wroxeter Hinterland Project by means of fieldwalking and geophysics based on the information obtained from the previous investigations. The latter provided very faint anomalies. This was followed by excavations revealing a villa complex consisting of hypocausted rooms, a bath house with a fine column base, a square room with a fine mosaic, a rectangular room, and other building structures (Figure 64). Other material culture recovered from the excavations include 3rd and 4th century pottery (mainly East Midlands shell-tempered, later Black-burnished, and Oxfordshire and Mancetter-Hartshill, and Severn Valley wares), ceramic and stone tiles, vessel glass, window glass, bracelet, nails, and a quern fragment, among others (Gaffney et al. 2007). The surrounding landscape of this site was not explored.

The area considered for phenomenological research is presented in Figure 6.65. This figure shows that this area is mainly rural with two small villages: Hanwood Bank located in the northwest edge of the area; and Hook-a-Gate in the southeast edge. Given the rural nature of this landscape, results obtained from the phenomenological analysis are considered reliable. These results are as follows.

The phenomenological model obtained for the site is presented in Figure 6.66. This site is placed on a flat plateau of very easy access referred to in this model as Feature A (Figure 6.67). Feature B is an extension of the plateau towards the north and consists of flat farmlands (Figure 6.68). Accessibility to these lands is easy in terms of physical effort.

However, local visibility is partially obscured by undergrowth in some parts. Feature C consists of a semi-circular area of land around the plateau of moderate accessibility that is characterised by a dramatic steepening of the slope (Figure 6.69). It leads to Feature D which consists of farmlands of irregular slopes (Figure 6.70). Given these slopes, accessibility to this feature in terms of physical effort and visibility is moderate. Feature E is a section of features C and D that is covered by trees (Figure 6.71). Accessibility to the edge of this woodland is moderate. However, access to the interior of the woodland is difficult as a result of the density of the trees. Feature F is a water course named Rea Brook (Figure 6.72). It crosses several features in this landscape and accessibility to this course varies along its length. In particular, accessibility to the Rea Brook in terms of physical effort and visibility is easy in features A, B and in the proximity of E. Finally, feature G is a set of small hills located northwest from the site (Figure 6.73). Accessibility is difficult given the distance and steepness of the hills.

In considering this phenomenological model, it is suggested that this villa was located in an area with excellent access to natural resources and land for farming. For example, the flat agricultural lands (features A and B) may have been used for agricultural goods that demand attention, frequent inspection, and good visibility. Likewise, lands with irregular slopes (features C and D) may have been used for less demanding crops and pasture. Woodland such as the areas in features E and G, if they existed in Roman times, may have provided wild animals, and wood for buildings and fuel. This landscape also contains water in close proximity to the site (feature F). While it is not clear whether the Rea Brook existed in the past, the existence of this watercourse suggests that a source of water was available in the distant past. Finally, it is interesting to note that this villa can be seen from the north and northwest areas of this landscape (Figure 6.74). This suggests that this people wanted to be seen because they could have chosen a less visible area in the

proximity (e.g. in features C or D). This may reflect a signal of status and control of this landscape apparently rich in natural resources which is consistent with the general pattern of the region (see Dark 1999, 259; White and Hodder 2018, 6-7).

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Figure 6.63. Site at Whitley Grange.

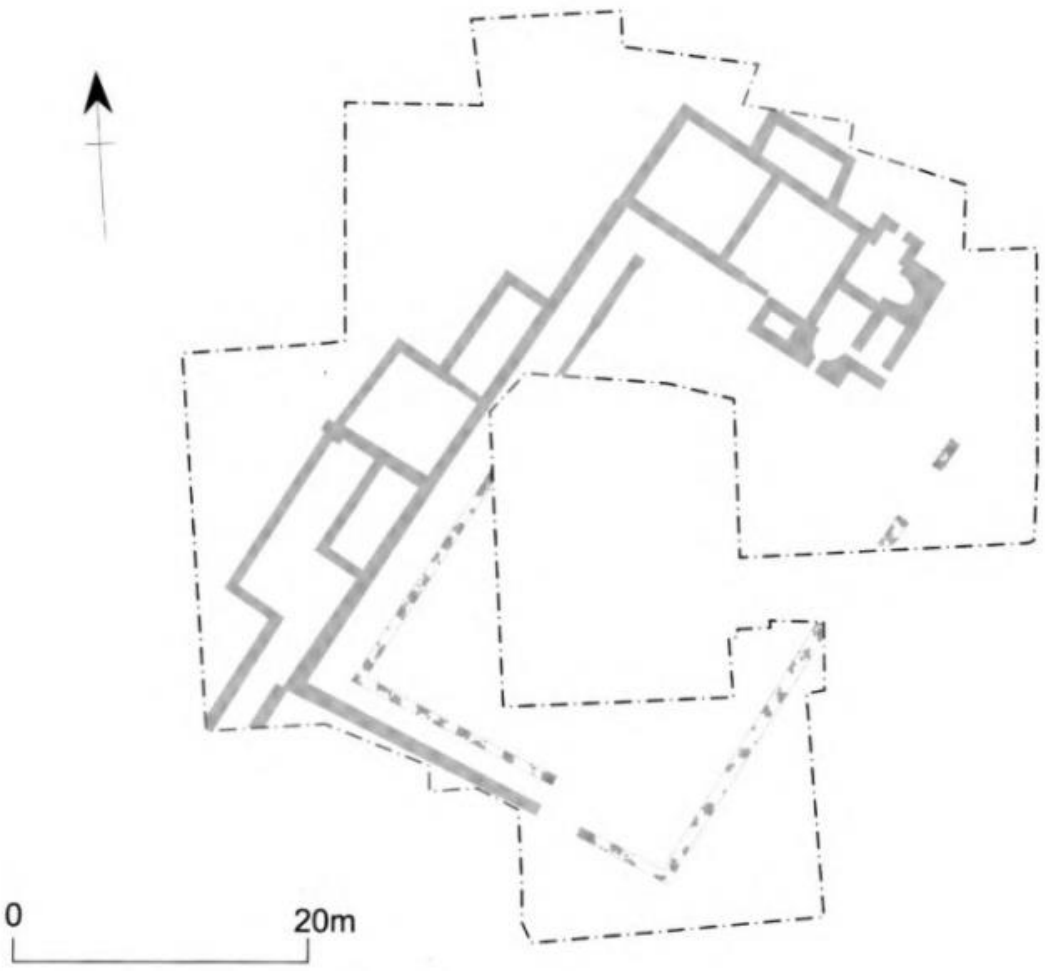


Figure 6.64. Excavated area at Whitley Grange (source: Gaffney et al. 2007)

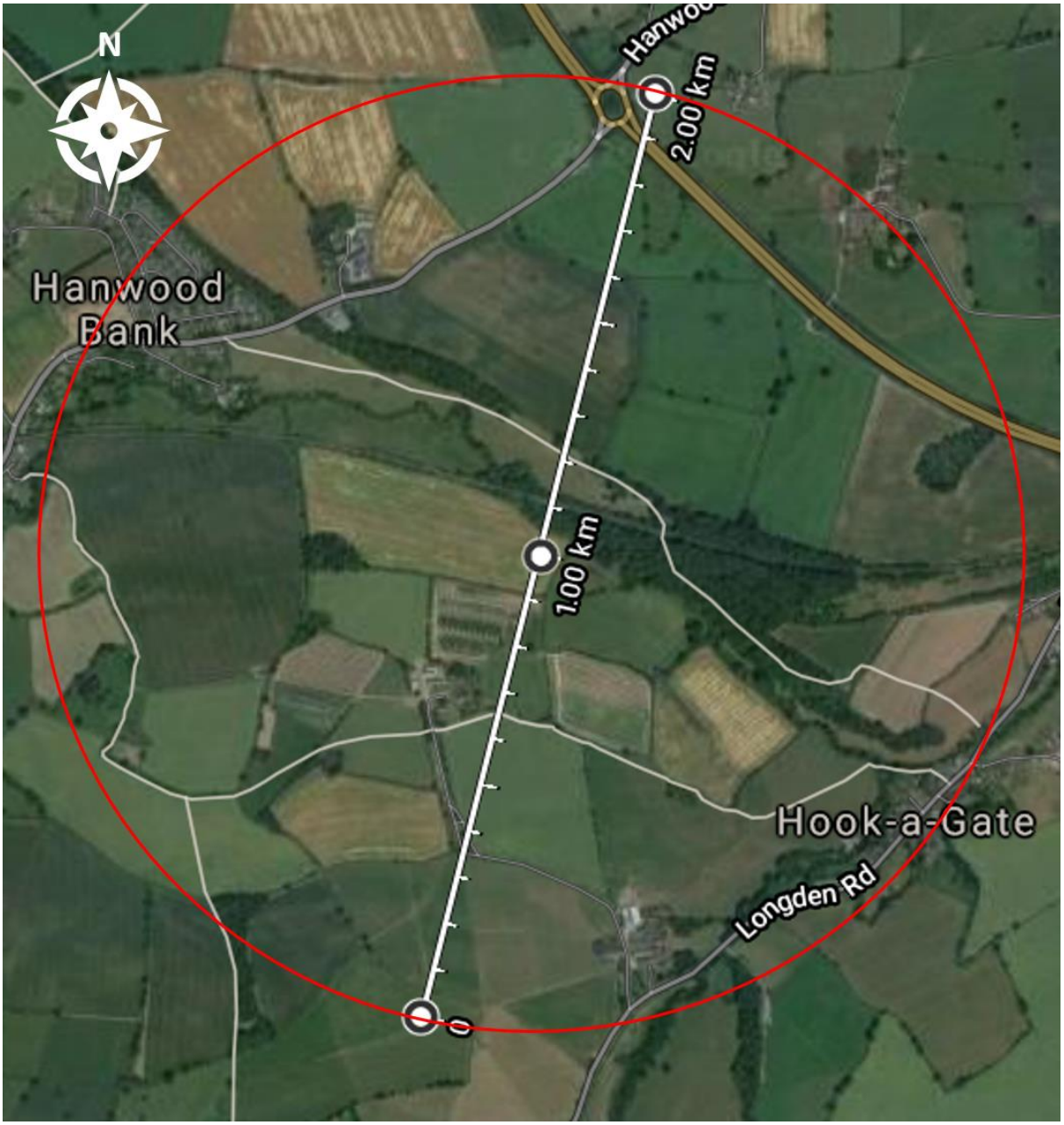


Figure 6.65. Circular area considered for phenomenological analysis. Site at the centre.

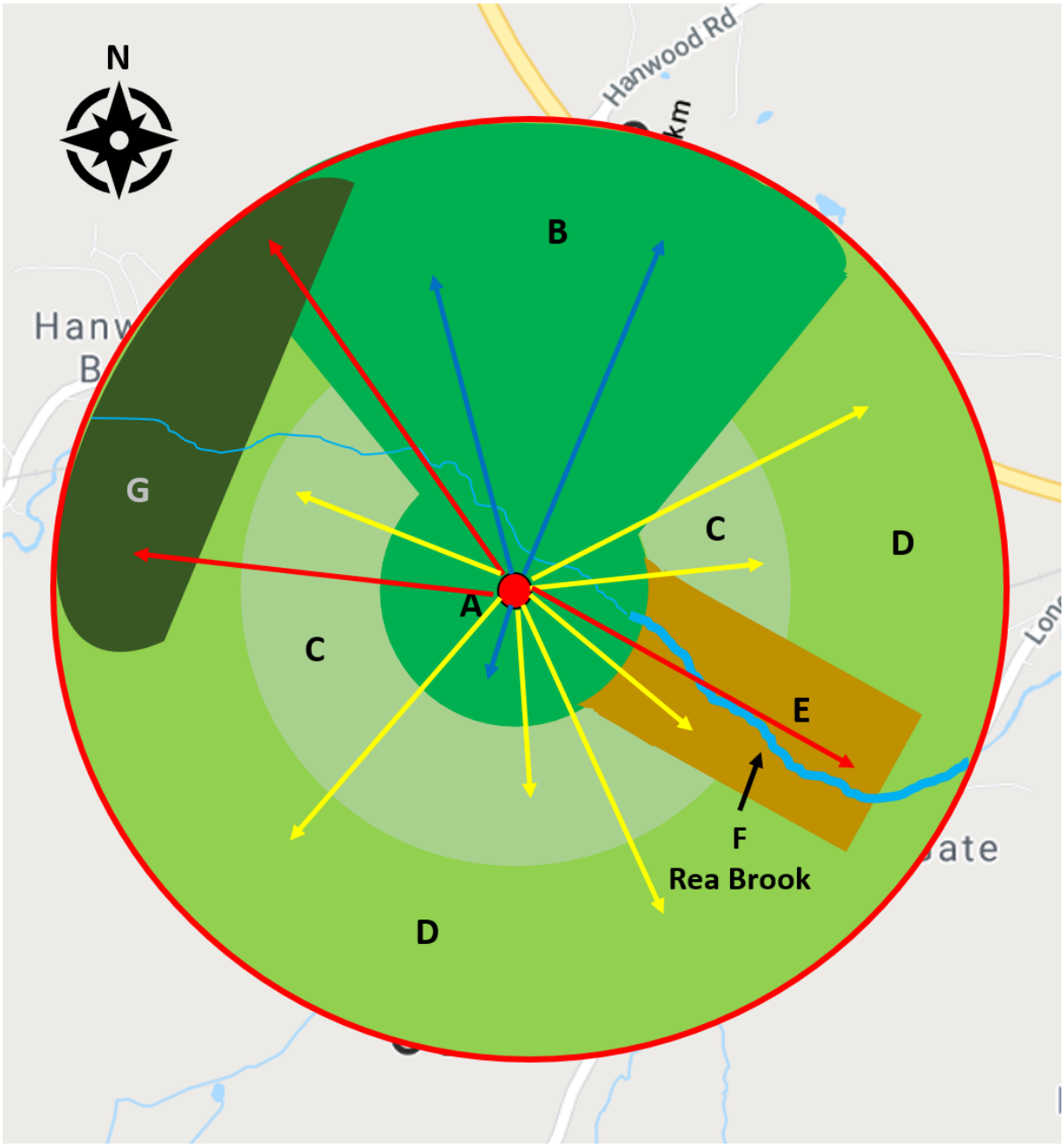


Figure 6.66. Patterns identified from the phenomenological analysis.



Figure 6.67. Feature A.



Figure 6.68. Feature B seen from the north edge of the area under study.



Figure 6.69. Feature C.



Figure 6.70. Feature D.



Figure 6.71. Feature E: woodland.



Figure 6.72. Feature F: Rea Brook.



Figure 6.73. Feature G.



Figure 6.74. Sites at Whitley Chapel and Whitley Grange seen from feature G.

b) Cluster 13: Three sites of this cluster were included in the study. They are all farms but are heterogeneous in terms of the strength indicator (SI) (see Table E.38). They correspond to sites 30027(F), 30029(F) and 30031(F) with SI values of 7.93, 8.16 and 9.10, respectively. The results from the phenomenological approach are presented as follows.

Site at Sheinton (30027(F)):

This site is located in the village of Sheinton (NGR SJ 61131 04063) (see Figure 6.75). In 2004 and 2006, a geophysical survey was undertaken in the hilltop of the village and in a farm on a river terrace overlooking the River Severn to the north and this revealed a number of features. Based on the results, trial excavations were carried out in the farm revealing decayed animal bones, a small copper alloy dragonesque brooch, fragments of Roman roof tile, and large fragments of domestic pottery that included mainly Black burnished ware 2 and Severn Valley wares of late 3rd and 4th century (see Figures 6.76, 6.77 and 6.78). It is suggested that the fragments of roof tile may indicate the remains of a possible high-status settlement on the top hill (Hannaford 2006).

Environmental analysis was not included in the study and the surrounding landscape was not described. Despite this lack of information, some patterns were identified from the phenomenological analysis. The area considered in this analysis is presented in Figure 6.79. As can be seen in this figure, apart from the village at the centre, there is no urban development, implying that the landscape has not been significantly altered.

The results from the phenomenological analysis is presented in Figure 6.80. According to this figure, the northern part of the area under study is characterised by good visibility and easy access from the site. This sub-area comprises the features A, B, C and D which correspond to farms and the River Severn (Figure 6.81). On the other hand, Feature E in a southern direction from the site consists of farms characterised by lands with varying

slopes. Moderate accessibility in this area is caused by these slopes because walking around is more demanding and visibility is hindered to some extent (Figure 6.82). Feature G in the west from the site, is characterised by significant irregular topography that prevents visibility. Walking around this area is also highly demanding. Similarly, Feature H in the southeast is difficult to access because it is a steeply wooded hillside (Figure 6.83). A farm exists in the southeast extreme of the area under study (Feature F) which is very difficult to access because it would involve passing through feature H.

Regarding features that are beyond the phenomenological research area, it was found that this landscape is surrounded by hills meaning that this settlement was relatively obscured from a longer distance. One of these hills is a large one named the Wrekin which is the site of an Iron Age Hillfort[5]. It dominates the rest in its height and is located north from the site (see the hill in the middle of Figure 6.81). Walking around the landscape, it was found that this hill facilitates spatial orientation significantly.

The results from the phenomenological analysis suggests that the settlement was located in a strategic place for the exploitation of natural resources. This is inferred from the easy access to the River Severn and the areas suitable for pasture and farming around this river. Area E which is moderately accessible also offered additional land for farming. On the other hand, the hill in area H with difficult access was not necessarily a negative feature in this landscape. While there is no environmental information about this hill, it appears to have been a forested area that may have offered abundant resources for building material and firewood. In addition, the visual shielding provided by the surrounding hills may have offered some sort of protection from other unfriendly communities. Finally, the

[5] A formal description of this hillfort is available in the Atlas of Hillforts of Britain and Ireland at http://hillforts.arch.ox.ac.uk/records/EN0090.html

prominent hill in the north offered an excellent reference for spatial orientation and it may have also be used as an observatory place for more distance areas.

The suggested association of topographical features with natural resources in this landscape is consistent with the patterns described for the region (see Dark 1999, 259; Dinn and Edwards 2004, 32 and 58; White and Hodder 2018, 6-7).



Figure 6.75. Site at Sheinton.

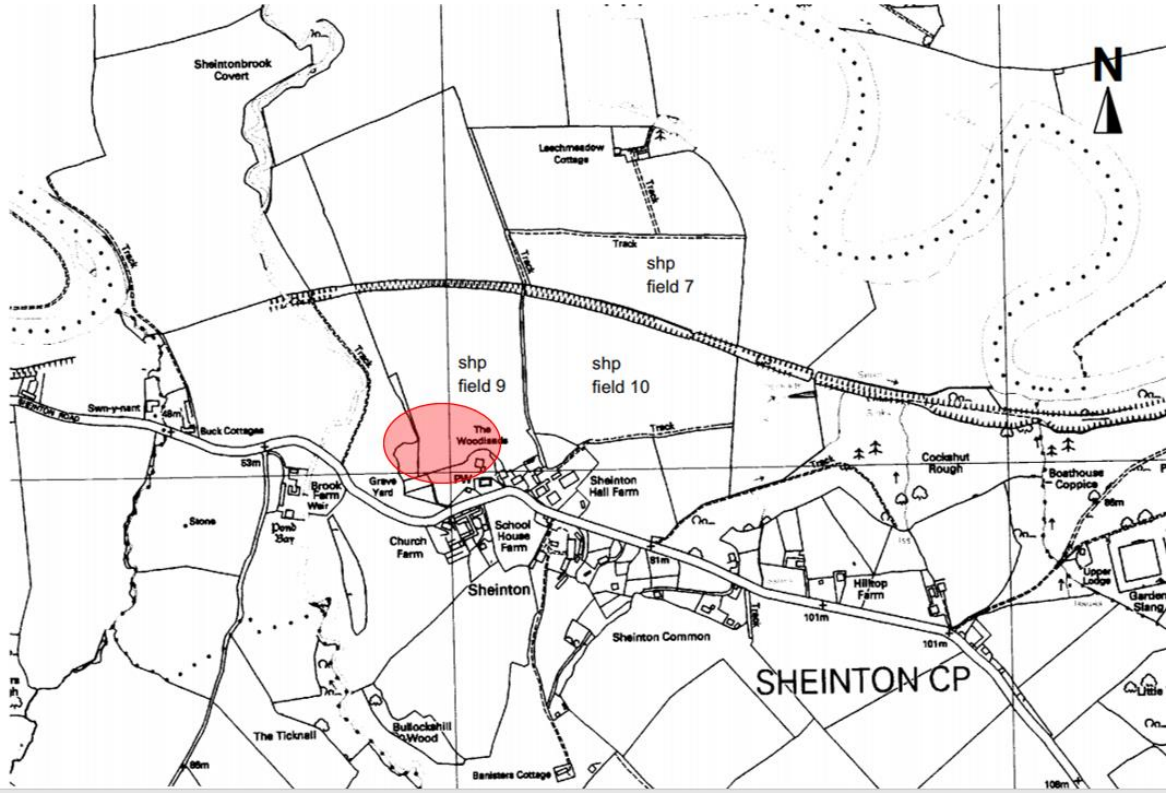


Figure 6.76. Sheinton village and the research area highlighted in red: 1:10000 scale (source: Hannaford 2006)

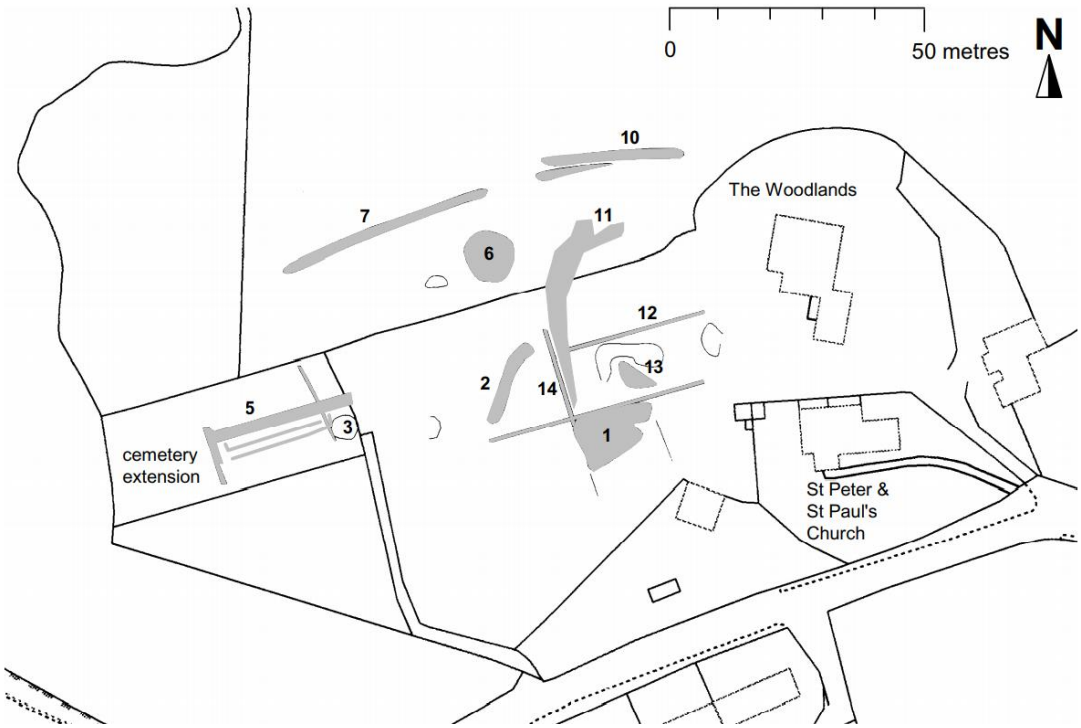


Figure 6.77. The study area, showing principal features identified by the geophysical survey; 1:1000 scale (source: Hannaford 2006)

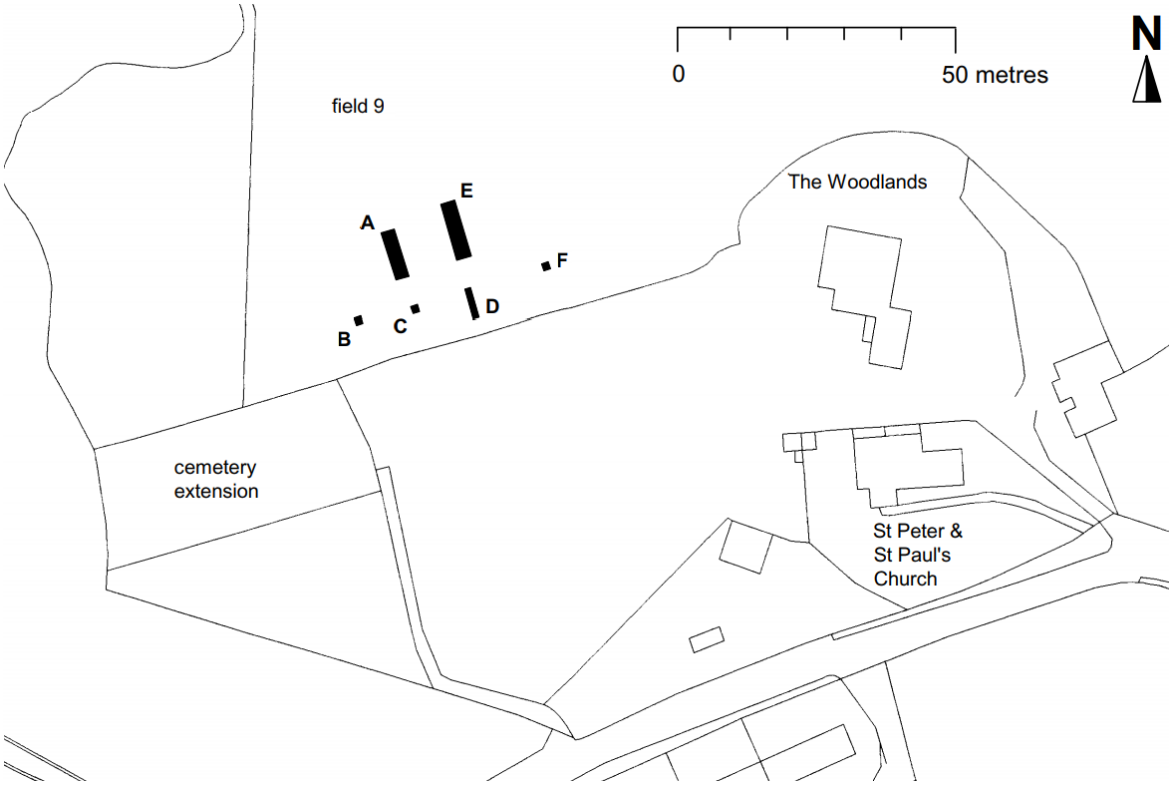


Figure 6.78. Trenches (A, D & E) and test pits (B, C & F): 1:1000 scale (source: Hannaford 2006)

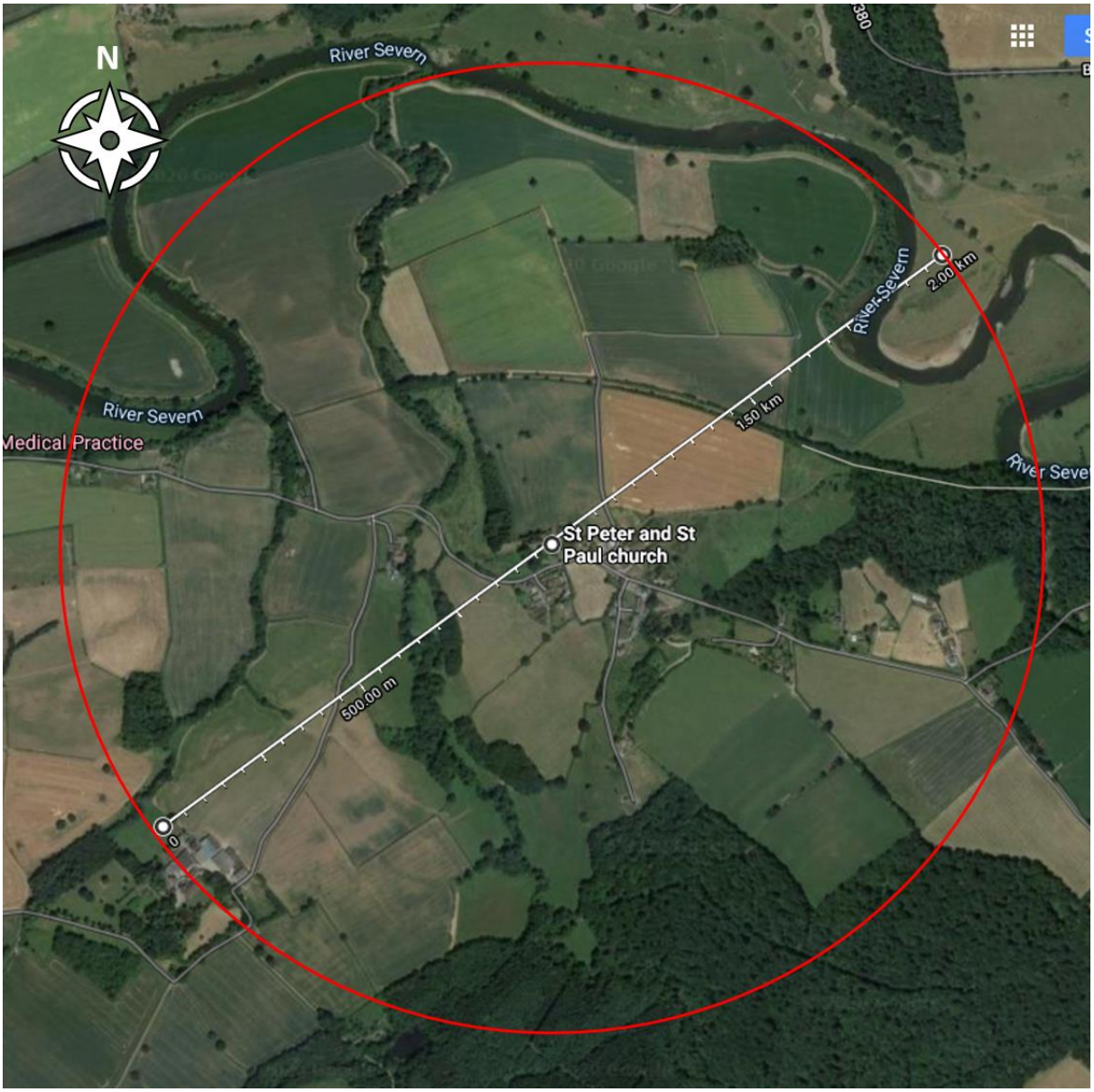


Figure 6.79. Circular area considered for phenomenological analysis. Site at the centre.

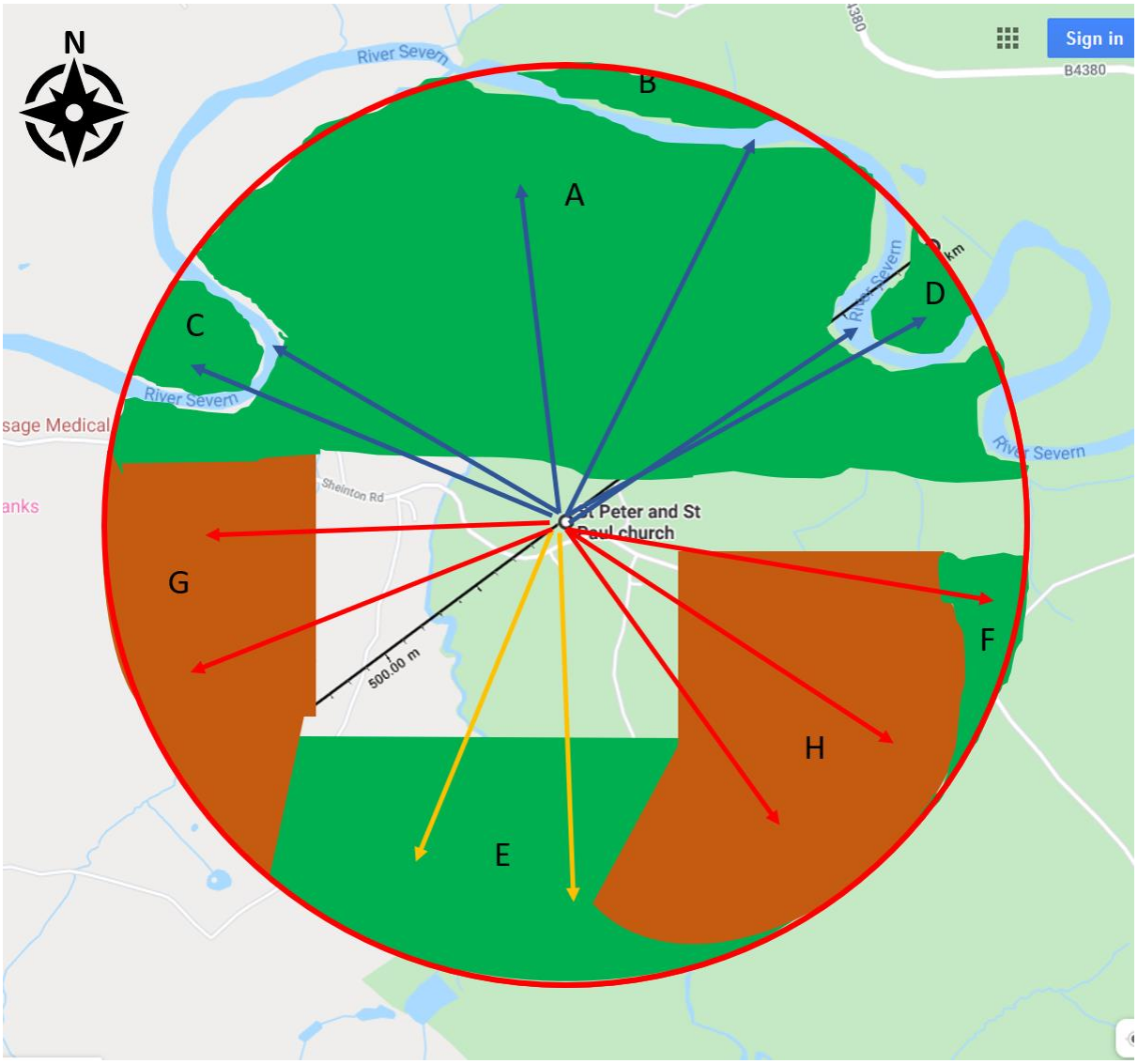


Figure 6.80. Patterns identified from the phenomenological analysis.

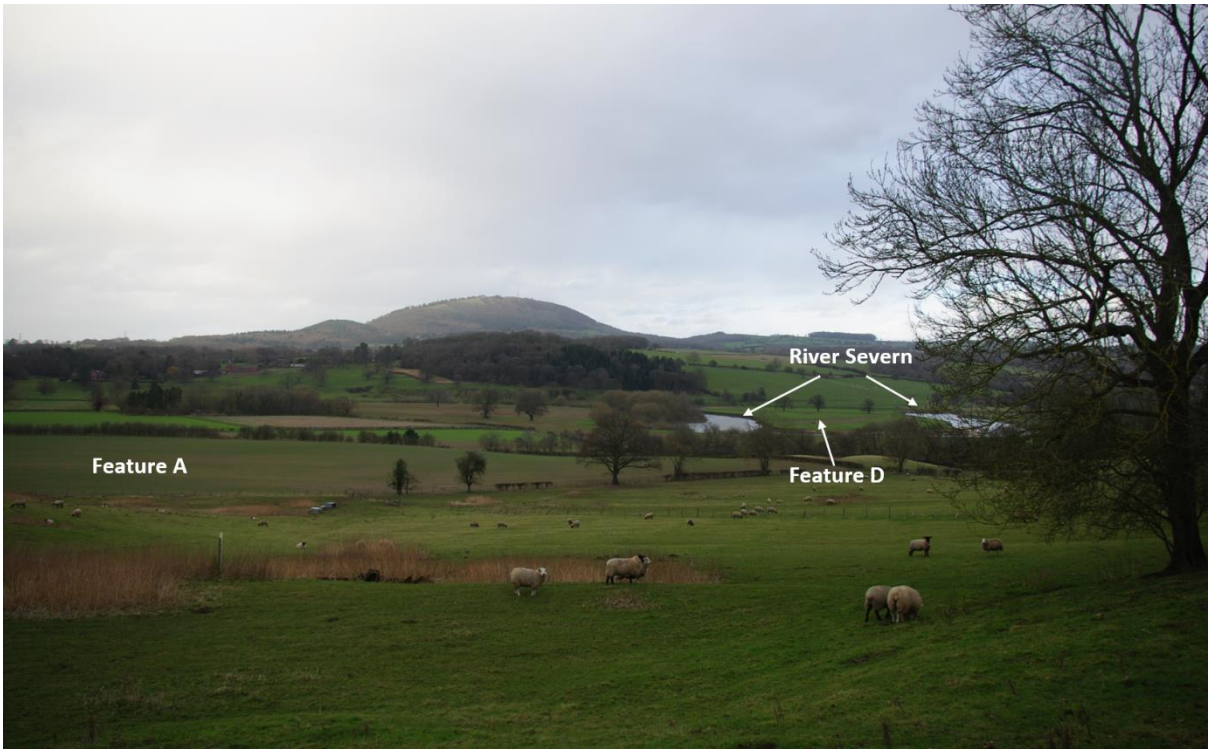


Figure 6.81. Features A, D, River Severn and Wrekin hill.



Figure 6.82. Feature E.

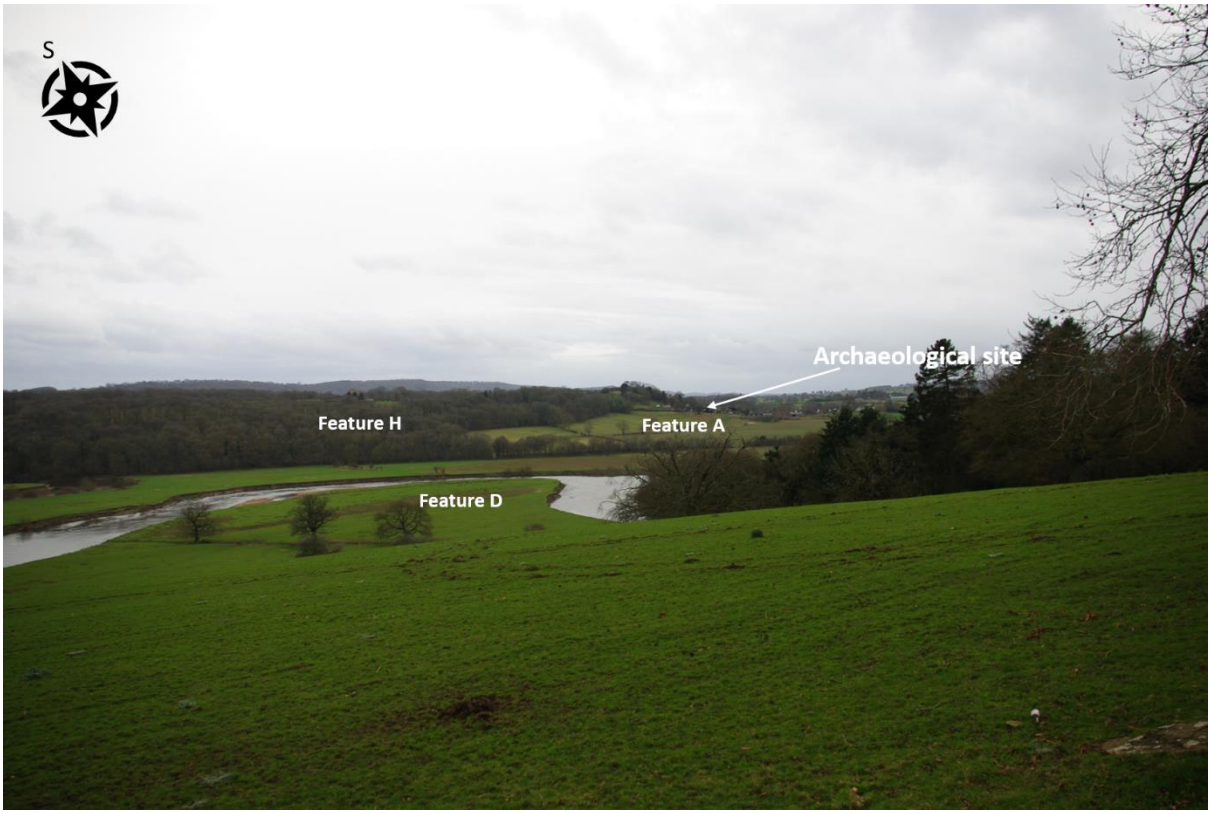


Figure 6.83. Features A, D, and the site seen from the northeast.

Site at Bridgwalton Quarry, Morville, Bridgnorth (30029(F)):

An assessment was carried out on the site (NGR SO 68560 92540) with the purpose of supporting a proposed extension of the existing quarry in Morville, Bridgnorth (see Figure 6.84). This involved geophysical survey and evaluation trenching activities developed in 2013 (Figures 6.85 and 6.86). As a result of this work, shards of Roman pottery dating to the 3rd century onwards (mainly Severn Valley wares with some Black Burnished ware and a small fragment of samian) and iron hobnails were recovered. Paleoenvironmental analysis identified a single cattle tooth, wheat and grasses. In considering this evidence, it has been suggested that the identified enclosure had a domestic function (Wood 2013).

Figure 6.87 shows the area considered for the phenomenological study. According to this figure, this landscape has not been modified by urban development. However, the site itself has been altered significantly by the quarry development. In spite of this, general patterns were identified as shown in Figure 6.88. In this figure, the green feature A is a large flat farming area characterised by easy access and good visibility. This area is limited by feature B in the southwest direction from the site which corresponds to a steep hill of difficult physical access (although visibility between the hill and the site is in general good), and which is covered by trees in several segments (Figure 6.89). Between features A and B there is an easily-accessible water course known as Mor Brook (Figure 6.90). Feature C corresponds to low hills that surround farming area A from the North (Figure 6.91). Accessibility from the site to these hills is moderate by distance and with gentle slopes. Feature D in the east direction from the site consists of farms located on sloping land that is lower towards the eastern direction from the site. Accessibility to this area is moderate basically because visibility from the site is prevented by the inclination of the land, although walking around this feature is not physically demanding. Finally, feature E in the west direction is an area of transition between Features B and C which is characterised by significant irregular slopes. Accessibility to this area is very difficult not only because of these slopes, but also because visibility is restricted (Figure 6.92).

Linking the results from the phenomenological analysis with the evidence by Wood describe above, it is suggested that this site was occupied by civilian people who found a place with a range of available natural resources for self-subsistence and possible surplus. In particular, feature A is a large flat area highly suitable for agricultural production with excellent visibility from the site. Likewise, feature D is also suitable for agriculture, although its slope and lack of visibility from the site may suggest a different agricultural management. In addition, proximity and easy access to the water course may also explain

the choice of this place. This conclusion, however, has to be considered with caution because no information showing that this water course existed in Roman times was found. On the other hand, it is interesting to note that features B and E are both wooded in several sections. This does not necessarily mean that it was the same in the past. But given the difficulty in accessing these features due to irregular and steep slopes, it is unlikely that they were used for agricultural tasks suggesting that they may have been areas of forest offering wood as a resource as well as wild animals. Finally, although the site can be seen from several features within this landscape, visibility is prevented beyond the area under study. In this respect, features B, C, D and D act as visibility barriers towards longer distances suggesting that people of this settlement did not want to be seen, and looked for a relatively self-contained landscape in terms of natural resources.



Figure 6.84. Site at Bridgwalton Quarry, Morville, Bridgnorth.

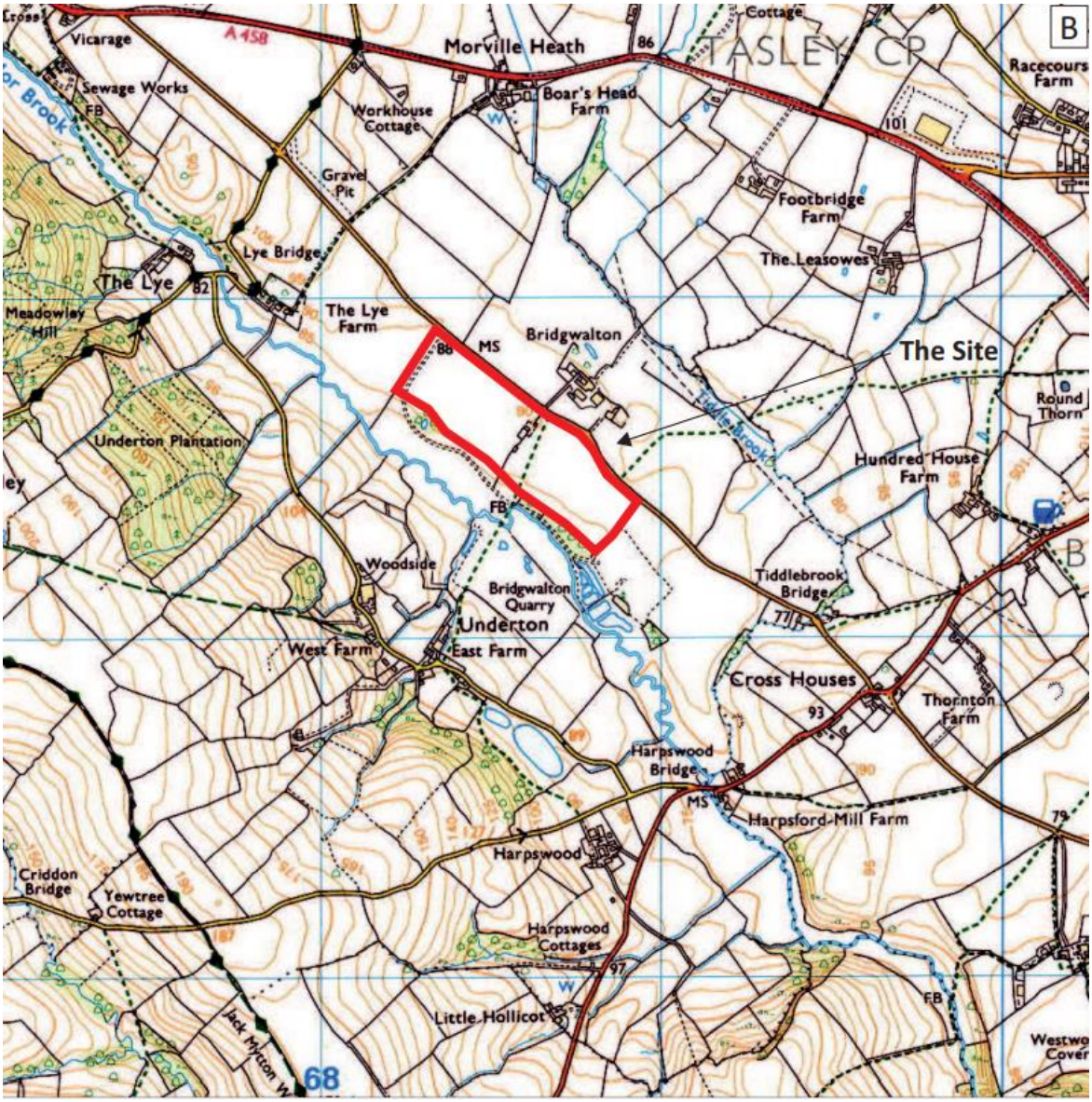
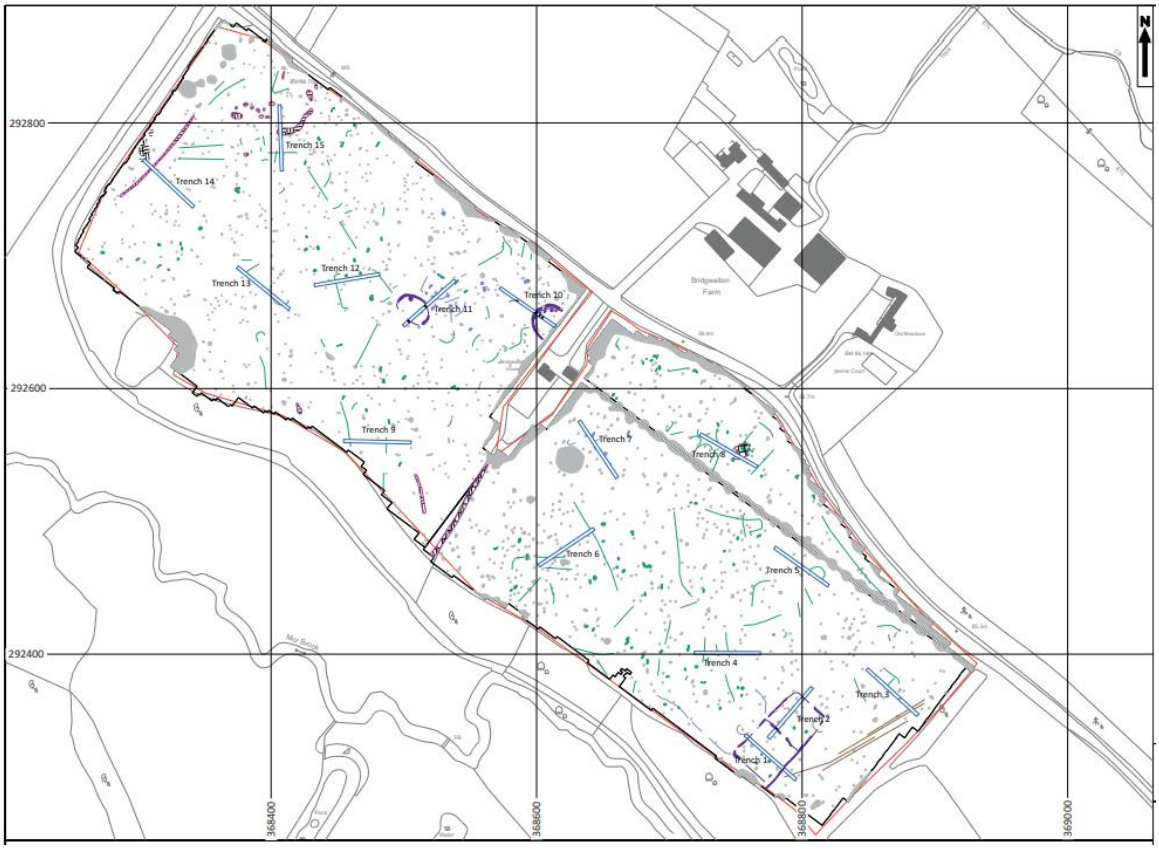


Figure 6.85. Area under study highlighted in red (source: Wood 2013)



6.86. The site, trenches marked in blue and archaeological features in solid black, superimposed on geophysical survey results: 1:2500 scale (source: Wood 2013)



Figure 6.87. Circular area considered for phenomenological analysis. Site at the centre.

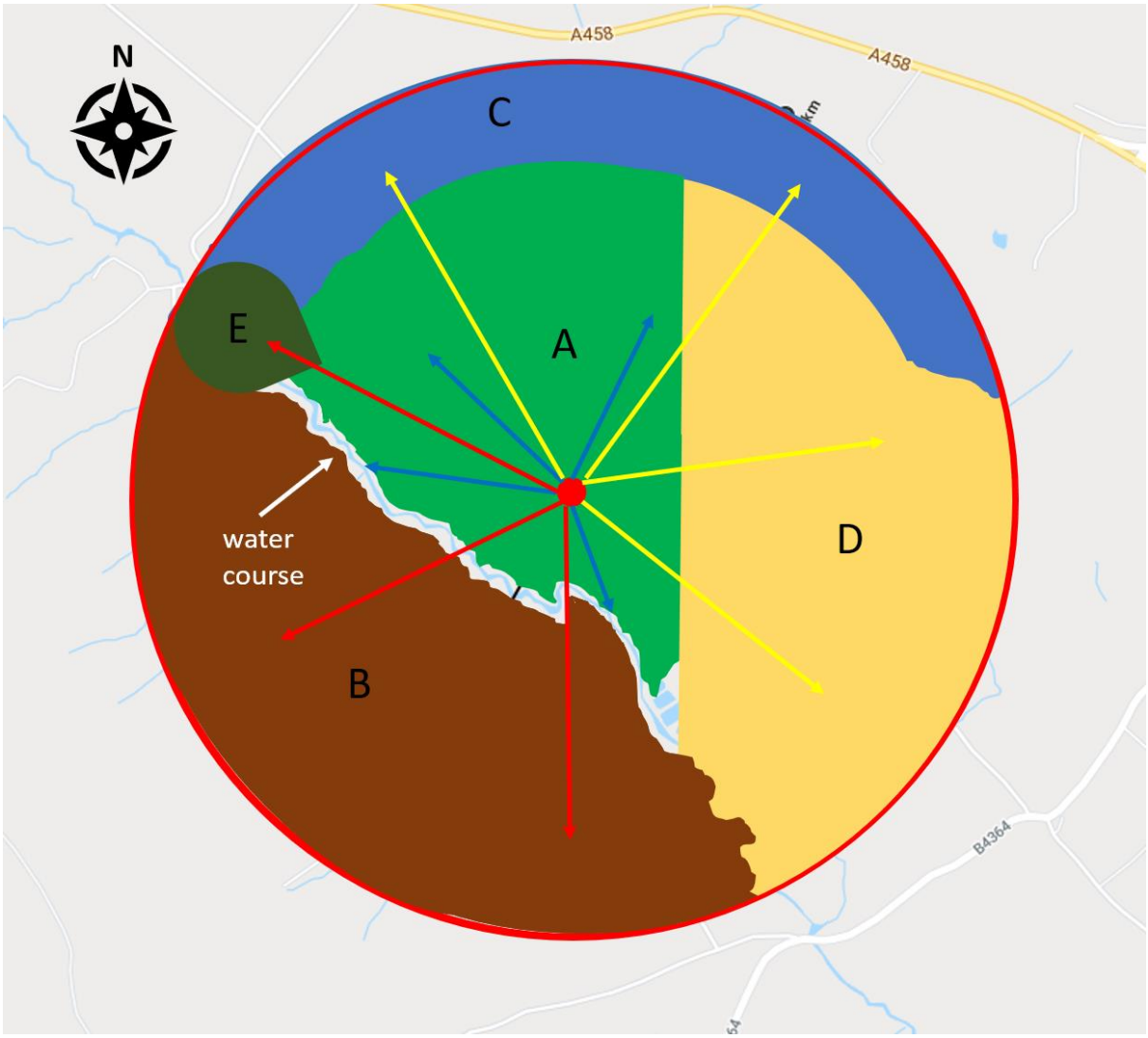


Figure 6.88. Patterns identified from the phenomenological analysis.



Figure 6.89. Features A and B.



Figure 6.90. Water course (Mor Brook).



Figure 6.91. Features A and C.



Figure 6.92. Feature E.

Site at Chilton Farm, Atcham (30031(F)):

This site and corresponds to a farm located in Chilton Farm, Atcham (NGR SJ 53150 09520) (Figure 6.93). It was identified from aerial photography revealing a doubled-ditched enclosure and a T-shaped arrangement of ditches (Figures 6.94 and 6.95). Evaluation trenches were carried out in 1996 as part of the Wroxeter Hinterland Project revealing a series of postholes, tiles and structural material suggesting a timber-framed building in the site. Fieldwalking was also carried out in the site making it possible to collect a Hadrian coin and pottery from the late 1st to early 2nd century through to the late 3rd or 4th century. They include mainly Severn valley wares, with some Verulamium and Mancetter-Hartshill wares, and a jar of late 2nd or 3rd century (Gaffney et al. 2001). The surrounding landscape was not considered in the study.

The area considered for phenomenological research is presented in Figure 6.96. As can be seen in this figure, this area is mainly rural with a very small urban fraction in the west edge corresponding to Atcham. This means that this landscape is reliable for phenomenological research.

Based on the phenomenological results, a phenomenological model was developed (Figure 6.97). As shown in this model, this is a simple landscape that can be divided in two major areas: a west one composed of features A and B; and an east area composed of features C and D. Feature A is a large plateau containing several flat farms (Figure 6.98). Accessibility around this plateau is easy as it requires minimum physical effort and local visibility is good. This is surrounded by feature B which corresponds to flat farmlands located at a lower height. Access to these lands is relatively easy in physical terms. However, visibility from the site is prevented by the plateau in feature A. Feature C is an extension of feature B in the east side of the landscape and corresponds to farmlands located at a lower height. Visibility to the lands in feature C is good with easy physical access. Finally, feature

D is similar to feature C. However, it was considered as a different part of this landscape because it is separated from feature C by the River Severn (Figure 6.99). The lands in feature D can also be seen from the site. However, physical access is very difficult because it requires crossing the River Severn which is only possible in current times by means of bridges.

Beyond this landscape, two important features were identified. One is Wroxeter city located about 2.5 kilometres from the site in the southeast direction. The other is the prominent Wrekin hill also to southeast of the site (Figure 6.100). This hill is an excellent reference point to view different areas in the region such as Wroxeter.

In considering these results, it is inferred that people of this settlement had an incentive to favour local visibility towards the east of the landscape where the River Severn is located. Otherwise, they would have selected a place located at a distance from the east edge of the plateau in feature A. A possible reason is that the river may have served as a trade and communication channel in Roman times (Smith 1996, 379). If this was the case, then people of this settlement would have had the opportunity to trade with travellers to and from Wroxeter because this city is located in close proximity to the river. This river may also have served as a source of water. On the other hand, the large amount of accessible flat lands in this landscape may have offered some level of surplus that could have been used for trade. Unfortunately, previous archaeological research did not find archaeological remains to support this possibility. However, this may reflect the fact that this site was explored only by means of two small trenches suggesting that richer material culture may have not been discovered yet. In this regard, it is interesting to note that paleoenvironmental analysis carried out in a field system in Atcham located about 1km southeast from the site, revealed charred wheat grain suggesting agricultural activity in the area (Hannaford 2000, 10). As argued above, this may have been developed for self-consumption and trade.



Figure 6.93. Site at Chilton Farm, Atcham.

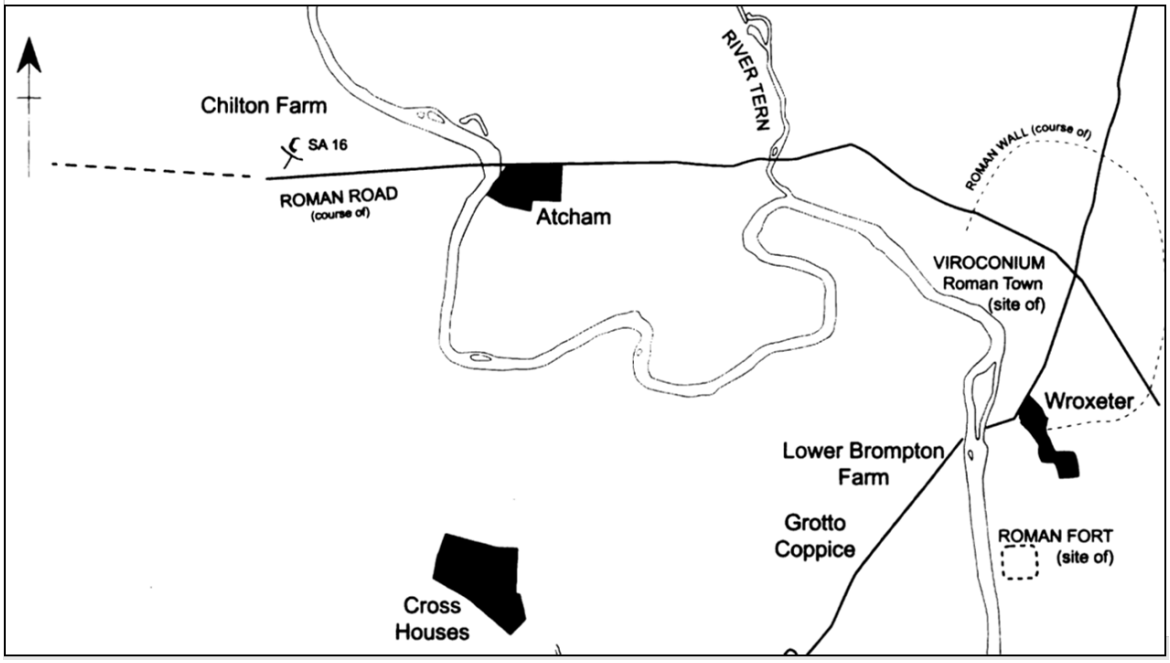


Figure 6.94. Map of Chilton Farm (source: Gaffney 2007).

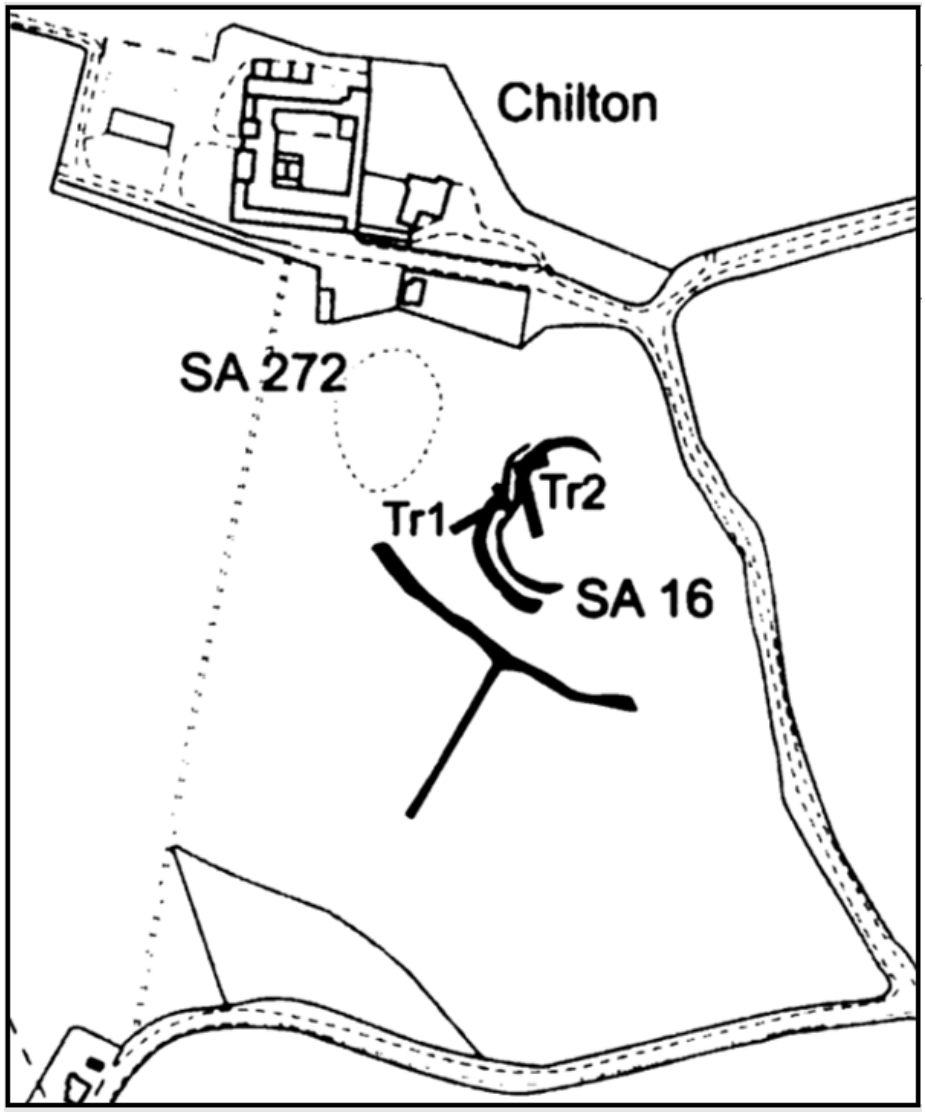


Figure 6.95. Chilton Farm, enclosures and trenches (source: Gaffney 2007).



Figure 6.96. Circular area considered for phenomenological analysis. Site at the centre.

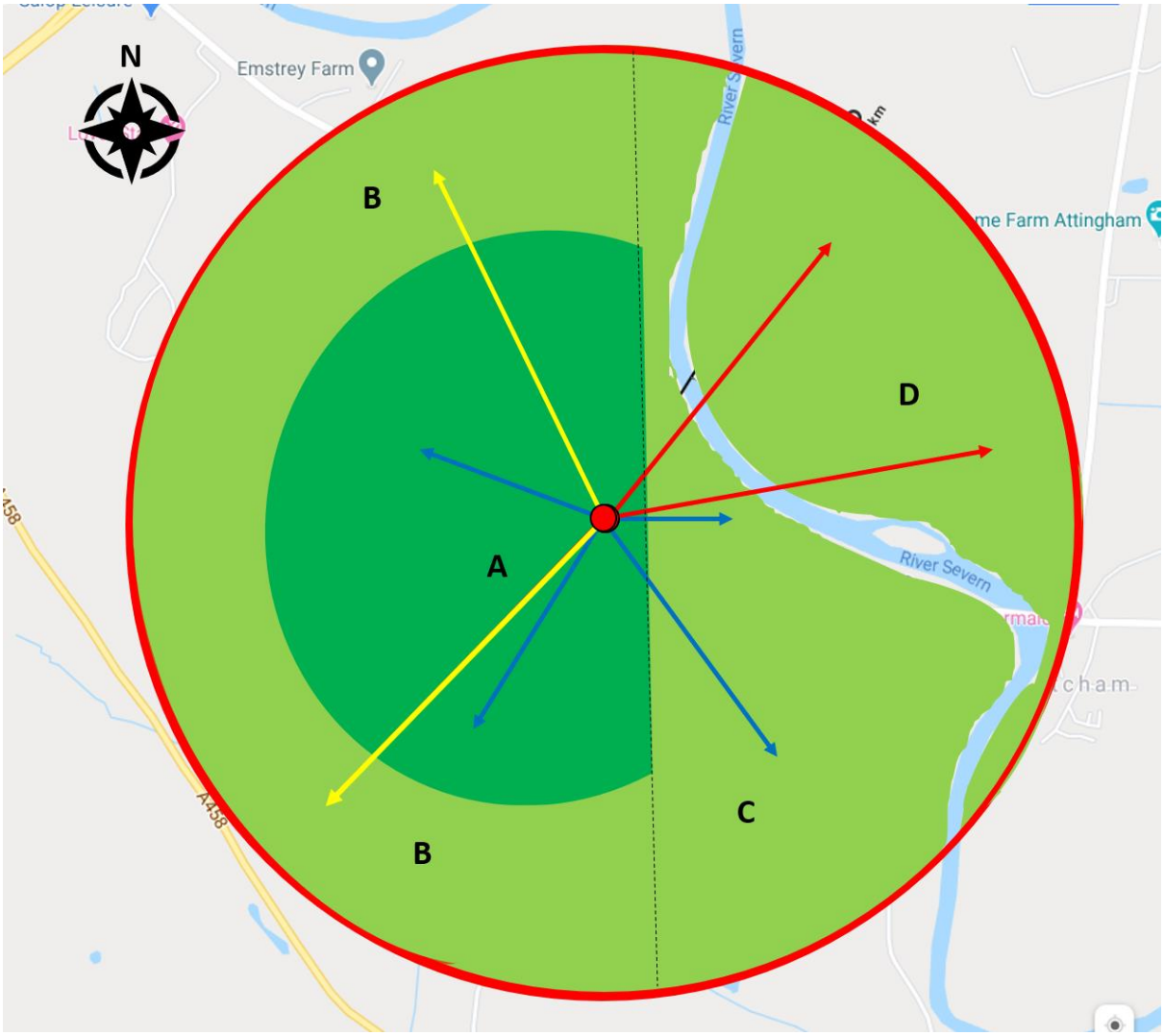


Figure 6.97. Patterns identified from the phenomenological analysis.



Figure 6.98. Feature A.

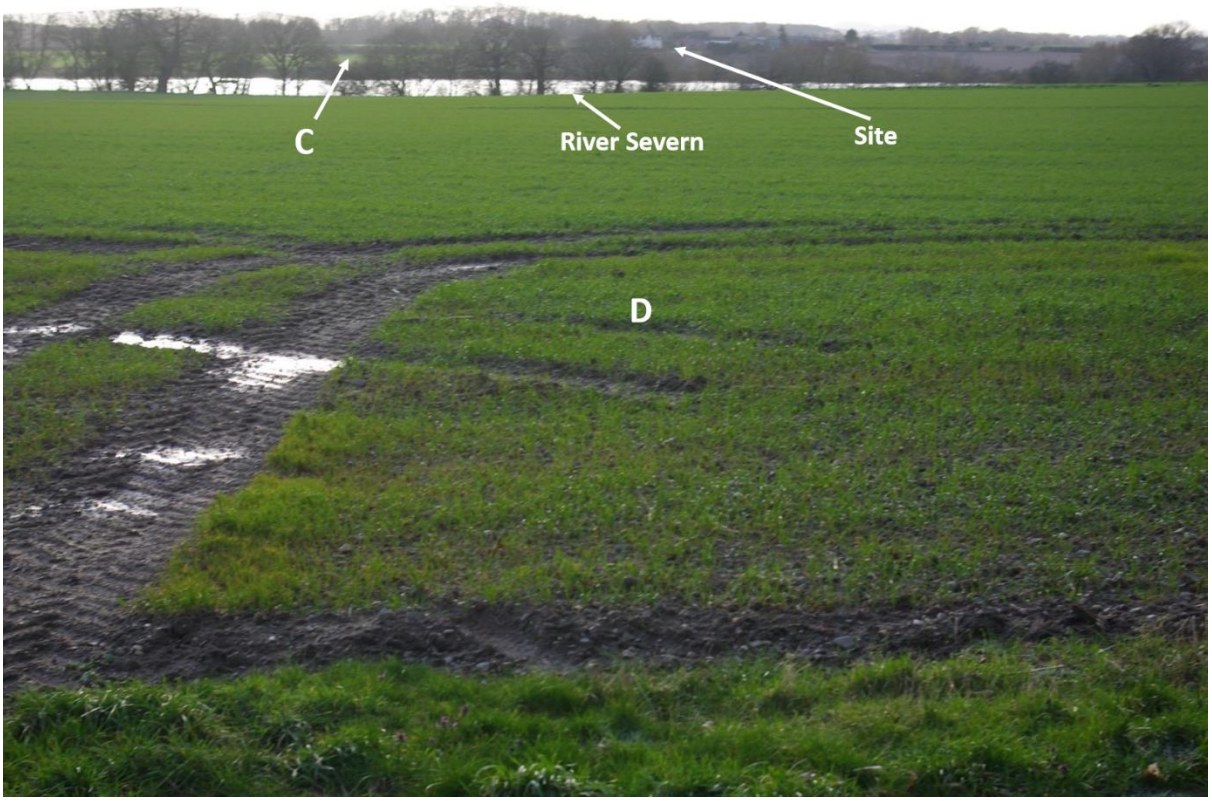


Figure 6.99. Features C and D seen from the west edge of the area under study.



Figure 6.100. Wrekin hill.

c) Relationship between the sites of the green and red clusters:

The sites at Meole Brace (30001(N)), Lea Cross (30018(V)) and Whitley Grange (30022(V)) of Cluster 12 have significant similarities in terms of the surrounding landscape. First, all of them are wealthy settlements in areas with a significant quantity of flat farmlands suggesting that they had the ability to generate surplus from agriculture. Second, it appears that all of them had access to natural resources such as water courses and woodland resources to some extent. Finally, these sites can be seen from a significant proportion of the area of the surrounding landscape suggesting that people of these settlements wanted to be seen. In the case of the site at Meole Brace, this high degree of visibility may be explained by the services and marketing activities that they apparently offered to travellers to and from Wroxeter. This may also reflect a signal of ownership, landscape control, and status attached to this site. In the case of the sites at Lea Cross and Whitley Grange, on the other hand, high

visibility may have been for the second reason (i.e. signal of ownership, landscape control, and status).

In spite of these similarities, there are also some differences that are captured by the strength indicator. While differences in this indicator may reflect biases in the database, they may also be associated with diverse functional aspects of these sites. In particular, the site at Meole Brace is the one with the lowest strength of the sites of Cluster 12 considered in the phenomenological analysis (i.e. SI = 4.63). This means that this is the least connected site in the network and this is due to the fact that material culture remains found in this settlement are not common in the network and were not found in the sites at Lea Cross and Whitley Grange. They correspond to ceramic building material, hobnails, brooches, military fitting weapons, writing equipment, equine transport, knives tools, security objects, weighing objects, and millstones. This diversity in material culture may be associated with several economic activities including services offered to travellers to and from Wroxeter. On the other hand, the site at Lea Cross is the one with the highest strength of the three sites of Cluster 12 and this means that this is the most integrated site in the network (i.e. SI = 7.34). This higher connectivity is explained by a lack of material culture remains with respect to the other sites in this cluster suggesting that it had a narrower set of economic activities. In fact, the results from the phenomenological analysis and the material culture found in this site (see Table E.35) suggest that the economic activities of this villa were focussed on agriculture and metal production. Finally, the site at Whitley Grange has an intermediate position with respect to the strength indicator (SI = 6.22). However, the value indicator of this site is closer to that of the site at Lea Cross suggesting that they are relatively similar. This is expected because both sites correspond to villas suggesting that they had relatively similar ways of living with respect to the site at Meole Brace.

The sites in Cluster 13, on the other hand, are also located in areas with access to farmlands and natural resources such as forests and watercourses/rivers. However, two of them are different with respect to the sites in Cluster 12. They correspond to the sites at Sheinton (30027(F)) and Bridgwalton Quarry, Morville Bridgnorth (30029(F)), and are different because there is significantly less available farmland in the surrounding landscape. This may explain why few material cultural remains have been identified in these sites. That is, people in these settlements were probably less able to generate agricultural surplus for trade activities and used farmlands mainly for self-subsistence. In addition, visibility beyond the area considered for phenomenological analysis in the sites at Sheinton and Bridgwalton Quarry is prevented by local features such as hills and lands with irregular slopes. This suggests that people in these settlements were less concerned about signalling status and control over the landscape which is consistent with the hypothesis of low status settlements. In this regard, it is argued that the site at Sheinton might be a high status one because fragments of roof tiles were found. However, the phenomenological result is not consistent with this argument. The similarity of the sites at Sheinton and Bridgwalton Quarry is also reflected in the values of the strength indicator (i.e. 7.93 and 8.16, respectively) reinforcing the idea lack of material culture in these sites correlates with the nature of their surrounded landscape. This conclusion, however, has to be considered with caution because these sites represent only a small fraction of the sites in Shropshire.

In relation to the site at Chilton Farm, Atcham (30031(F)), it was included as part of Cluster 13 by the network framework because few material cultural remains were identified in this site, a fact that is reflected in the high value of the strength indicator (i.e. SI = 9.10). However, its surrounding landscape is more consistent with the landscape of the high-status sites of the green cluster. That is, there is a significant amount of flat farmland which could produce agricultural surplus, and the site can be seen from a long section of the landscape

along the River Severn suggesting that these people wanted to be seen. As explained above, this may reflect a desire to be seen by travellers who used the river as a commercial channel to and from Wroxeter which is located nearby. The discrepancy between lack of material culture and the opportunity offered by the local landscape to generate surplus suggests either that this was an atypical site or that relevant and rich material culture in this site have not been identified yet. The latter possibility is plausible because only two small trenches were excavated in the site.

6.3 Chapter summary

The objective of this chapter is to show the results from Phase 2 of the sequential mixed methods design consisting of phenomenological research. This research was developed by considering prominent features and paths in the surrounding landscape of the sites included in this analysis. For this purpose, a circular area of one kilometre of radius with a site at its centre was used for physical engagement, and phenomenological models based on the results were developed for each site.

Only Shropshire was considered for phenomenological research because, unfortunately, the Coronavirus pandemic made it impossible to visit the sites in Gloucestershire as a consequence of the associated health risk and the social constraints introduced by the government. After reflecting on this drawback, however, it was decided that results from Shropshire are probably more reliable because there is no evidence of cluster overlaps over time, implying that distinctive local features of the landscape may be associated with specific clusters of the networks obtained for this country. In contrast, cluster overlaps in Gloucestershire suggest that heterogeneous identities emerged over time

and this was captured by mobile material culture across clusters but not features of the landscape as they are fixed, implying less reliability of phenomenological analysis.

The results for the Early Roman period revealed that the sites of the single cluster of the network for this period (i.e. Cluster 11) were all placed in the proximity of farmlands and natural resources suggesting that people in these settlements depended mainly on agricultural production and the exploitation of these resources, although some of them developed additional activities such as metal work. It was also found that richer sites with more abundant material culture (reflected in lower values of the strength indicator) have a tendency to be located in places with good local visibility. This suggests that people in these sites had an incentive to be seen, probably as a sign of status, ownership, control over the landscape, and/or control over slaves/tenants who needed to be kept in view.

In relation to the Later Roman period, a similar pattern was identified, but between the two clusters in the network for this period rather than sites within the clusters. That is, the high-status cluster (i.e. the cluster that contains villas and other sites with evidence of wealth) contains sites that are located in areas with abundant flat farmlands and natural resources suggesting that they had the ability to obtain significant resources and surplus from agriculture. In addition, these sites can be seen from a large proportion of their surrounding landscape suggesting that people in these settlements wanted to be seen. In contrast, the low-status cluster contains sites with less access to farmlands, and local visibility is more restricted. Only one exception was found in this case which corresponds to a site with very few material culture remains identified from previous research, but with a landscape with potential for significant economic surplus. It is inferred that this discrepancy may reflect the small area excavated in the site suggesting that richer material culture have not been discovered yet.

In considering these results, it is argued that similar patterns might be found in Gloucestershire for the Earlier Roman period because the clusters in this period are relatively stable with no significant overlaps. However, it is hypothesised that these patterns, if they exist, vanish in the Later Roman period as a consequence of cluster overlaps. This possibility is left for future research.

CHAPTER SEVEN: Discussion

7.1 Introduction

The objective of this chapter is to offer possible interpretations for the results obtained in Phases 1 and 2 of the mixed method approach adopted in this thesis (Chapters 5 and 6). For this purpose, the concept of collective identity discussed in Section 2.4.1 is adopted as the basis for interpretations. As outlined in that section, a collective identity is seen as a composite of individual identity types, and the latter can be linked to material culture by means of specific lifestyles and activities (see Figure 2.2). This is because objects express different aspects of identity (e.g. age, gender, ethnicity, beliefs, etc.) that are associated with a range of lifestyles, actions and behaviour patterns (Eckardt 2014, 9 and 174; Eckardt and Müldner 2016, 206). Thus, if a group of sites have the same material culture remains, then it is inferred that they share similar lifestyles/activities associated with these remains (see Tables 4.1 and 4.2) suggesting that they belong to the same collective identity. In the context of the current research, a collective identity is reflected by a cluster of sites having similar material culture indicators. Thus, an ECMNM composed of, say, three clusters, means that this network contains three coexisting collective identities.

According to the results obtained in Phases 1 and 2, some sites were joined into the same cluster because they have in common a lack of material culture remains. That is, while some sites in a cluster of this nature contain evidence of a small number of artifacts, they were not shared by all the sites in that cluster implying that what caused to be joined into a single group, is lack of material culture indicators. In contrast, others sites were joined into the same cluster because they share similar classes of material culture remains. In both cases, the results revealed that sites within a cluster are not identical because there is a degree of

variance in the material culture indicators considered in this thesis as well as in the surrounded landscape where they are located. Moreover, an apparent contradictory result in a site showing a high cattle to sheep/goat ratio found in a poor settlement, may be explained by slaves looking after animals for their masters. This possibility reinforces the idea that diverse identities coexisted during the Earlier and Later Roman Britain periods.

In order to deal with this variance, the concept of sub-identity is also considered for interpretation. This concept is referred to as either a constituent of a general identity or a subculture within a main culture (Swennen et al. 2010, 131; Tamura 1994, 238). In the context of the current investigation, therefore, a collective identity is reflected by a cluster in an ECMNM, and a sub-identity is a subset of sites within a cluster that share specific material culture indicators that are not present in the rest of the sites of the cluster. The use of sub-identities for interpretation, however, has to be made with caution. This is because subsets of sites within a cluster that contain a very small number of sites may not reflect a sub-identity, but rather, material culture deviations that may reflect different techniques and quality of excavation activities. This means that the variations in material culture expressions considered in this chapter have to be seen only as potential sub-identities.

It is also important to highlight the fact that the interpretations offered in this chapter have to be considered with caution because the results obtained in the previous chapters may be biased for several reasons: some sites were explored by means of poor excavation techniques; previous information about some sites was obtained from evaluation works; some findings recovered in previous work were obtained from peripheral areas of settlements; and some relevant material culture with potential to inform about identity were not included because they were fragmented and not available in all the sites. In addition, as explained in Section 4.5.1, the subjective definition of Earlier and Later Roman periods adopted in this thesis (i.e. before and after the 3rd Century, respectively) that was needed to

create cultural networks for both periods, was proposed because it was not possible to identify a standard and agreed definition for these concepts. The problem with the artificial 3rd Century cut off considered in this definition is that it does not address overlaps between some sites with higher occupation around this century. That is, there are some sites that were classified as Early Roman that overlap with some sites that were classified as Later Roman in terms of period of higher occupation (see part (a) in section 4.5.1 for more details).

In order to reduce these potential biases to some extent, the interpretations were contextualised using primary sources (i.e. excavation reports).

This chapter is organised as follows. Section 7.2 discusses some possible interpretations for the findings in Shropshire. Section 7.3 discusses interpretations for Gloucestershire and proposes possible phenomenological insights based on the results of Phase 2 in Shropshire. Finally, Section 7.4 use the interpretations to answer the research questions considered in this investigation.

7.2 Interpretations for Shropshire

Collective identities and sub-identities in Shropshire are explored in this section by considering first the Earlier Roman period followed by the Later Roman period. After that, a possible interpretation of identity evolution in this region is proposed.

7.2.1 Shropshire: Earlier Roman period

The results from the network analysis revealed that a single cluster (Cluster 11) existed this region in this period (see Table E.31). This is based on the fact that most of the material culture indicators considered in this thesis are absent in these sites. This suggests

that people in the Earlier Roman period in Shropshire were not strongly influenced by Roman ways which may be explained by the long distance that separates this region from the ones with higher Roman presence such as the south and east of Britain (Brindle 2018, 46). This, however, does not mean that these people adopted homogeneous lifestyles. On the contrary, there is variance with respect to the few material culture remains which is reflected in the weighted links between the sites (Table E.33), the degree of connectiveness in the network (Table E.32), and differences in relation to the surrounding landscape as revealed by the phenomenological analysis carried out in this region. This suggests that while a single collective identity characterised by lack of material culture seems to have occupied this region, it was composed of sub-identities.

To explore this possibility, the collective identity approach presented in Figure 2.2 is considered in this chapter (see the discussion in the introduction of this chapter). The links between material culture and lifestyles/activities of this approach are formally described and justified in Section 4.2.1 and Table 4.1, and summarised in Table 4.2. In the latter, each of the material culture indicators used in this investigation are linked to determined lifestyles and activities. This table presents key information for the identification of subgroups of sites within a collective identity associated with a cluster. Using this table, the information presented in Table E.31, and the information available in primary reports, potential distinctive subgroups were identified. This information is summarised in Table F.1 in Appendix E and is the basis for the identification of these subgroups.

In particular, two subgroups and a single site with distinctive material culture expression were identified in this table. Because they all belong to Cluster 11, they have been classified as C11.1, C11.2 and C11.3, respectively. The criterion adopted for the identification of these subgroups is based on the most salient material culture indicators found in the sites. This distinction is relevant because some sites have several material

culture remains. However, many of them were found in very small quantities and, therefore, were not considered as salient. Following this criterion, it was found that the C11.1 subgroup is characterised as containing sites with salient remains associated with two or more different economic activities, or activities that do not include agriculture. The C11.2 subgroup, on the other hand, is characterised as having significant high-status building remains. Finally, the site C11.3 is a site that does not contain any salient material culture.

In order to link these subgroups with their sites and their shared features for interpretation purposes, the following strategy was adopted for the clusters analysed in this chapter. It consists of creating tables for each subgroup that contain the sites in rows and lifestyles in columns. In these tables, prominent shared lifestyles within a group are highlighted in blue. That is, a column in blue means that the sites in a subgroup share the lifestyle represented by this column. On the other hand, there are several cases where a prominent feature is present in most of the sites in a subgroup. In recognising the fact that archaeological data is often imperfect and incomplete, and the fact that this means that this feature may have not been found in some sites, this feature is considered in this investigation as prominent for the whole subgroup even when being absent in a small number of sites. For the latter, the cells linking them to a column with a prominent lifestyle is left blank. Finally, in relation to economic activities, an additional strategy was adopted with the purpose of facilitating economic interpretations. That is, if a subgroup of sites is characterised as having evidence of several economic activities, then the economic activity column is highlighted in blue as before. In contrast, if a subgroup contains sites that only were involved in agriculture, then the economic activity column is highlighted in pink.

Having described this table representation strategy, the subgroups identified in Cluster 11 are presented in the following tables.

Table 7.1. Subgroup C11.1: Earlier Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30003(F)												
30004(F)												
30006(N)												
30012(F)												
30016(I)												
30026(F)												
30028(N)												

Table 7.2. Subgroup in C11.2: Earlier Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30020(I)												
30030(V)												

Table 7.3. Site C11.3: Earlier Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30005(F)												

The site C11.3 corresponds to the site at Hay Farm, Eardington (30005(F)), which is characterised by having very few material culture remains. This evidence suggests that this site was a low-status native dwelling/settlement that was apparently involved in pastoral

and farming practices for subsistence (Howlett 1992, 11). This is consistent with the conclusions obtained for this site from the phenomenological analysis (see Section 6.2.1).

The subgroup C11.1 contains sites that seem to have an emphasis on economic activities that include farming, pastoralism and other economic enterprises. Evidence of samian and amphorae pottery in most of them suggest that people in these sites were able to create surplus and to obtain some level of wealth from economic initiatives (Barker et al. 1991, 33 and 40; Bain and Evans 2011, 136; Ellis et al. 1994, 91-93). The ability to create surplus can also be related to the fact that these sites are located in the proximity of major Roman towns/cities and also near roads offering good communication channels between settlements. For example, the site at Duncote Farm (30003(F)) is located near Wroxeter and has good access to roads suggesting that this settlement was a productive unit that supplied horticultural, agricultural (mainly pastoral) and metalworking products to this city, the military of the *civitas*, and other markets (Ellis et al. 1994, 68). On the other hand, these sites are also characterised by lack of evidence of high-status building remains. This lack of building remains may indicate either low-status settlements with some level of surplus obtained from economic activities, or people who maintained native traditions while being engaged in economic enterprises.

The sites in this subgroup, however, differ in the types of economic activities that they developed. As shown in Table F.1 in Appendix F, some sites were engaged in metalworking activities, others in grain processing as inferred from quernstones remains, and others in the production of textile and tile-brick goods. This evidence suggests some degree of specialisation in these industries that apparently served the requirements of town dwellers in the proximity such as Wroxeter and Whitchurch (Ferris 1991, 2-4; Hannaford 1991, 9; Houghton 1966a, 8-10; Shaffrey 2018, 168). Evidence of imported pottery in some

of these sites reinforces this possible commercial connection with major Roman settlements (Barker et al. 1991, 33 and 40; Bain and Evans 2011, 136).

In relation to other material culture remains found in some of these sites, it appears that most of them did not play a role in terms of identity expression. For example, the military fitting weapons found in the sites at Sharpstones Hill Site E/Meole Brace (30012(F)) and Redhill, Telford (30028(N)) seem to belong to a previous occupation (Bain and Evans 2011, 132; Mann 2011, 7-10). Likewise, one fraction of CBM was found in the site at Duncote Farm (30003(F)) making it difficult to draw conclusions from this material culture remain. On the other hand, remains related to personal appearance (e.g. hobnails and Polden Hill brooches) found in the sites at Duncote Farm and Redhill suggest that this Roman lifestyle type was influenced by proximity to Wroxeter (Bayley and Butcher, 2004, 160; Ellis 1991, 13).

The subgroup C11.2 includes sites that contain significant high-status building remains suggesting that they represent wealthy settlements. Note that the site at Linley hall (30020(I)) also has an economic and functional industry focus. In fact, its proximity to a Roman lead mine may indicate that it formed part of an industrial complex (Page 1908, 257). However, it differs from the previous subgroup in that this focus is not the most salient identity attribute (however, this lack of material culture may reflect a lack of excavation report detailing information). The site at Alkmund Park (30030(V)), on the other hand, contains several material culture remains associated with different lifestyle types suggesting higher Roman influence (Brindle 2018, 46).

To finish this section, let us consider the phenomenological findings obtained in Chapter 6. It is interesting to note that the groups identified in the network analysis seem to be related to these findings. Firstly, it appears that the surrounding landscape offered them the ability to exploit local natural resources. In the case of the subgroups C11.1 and C11.2,

this exploitation was productive enough to create surplus from different enterprises in order to trade and increase wealth. Secondly, there is an apparent correlation between local visibility and groups. As explained in Section 6.2.1, local visibility is restricted in the low-status site at Hay Farm, Eardington, suggesting that people of this settlement did not have an incentive to be seen. That is, people in this settlement may have been concerned about subsistence rather than sending signals of wealth. In the case of subgroup C11.1, on the other hand, it appears that people of this set wanted to be seen as discussed in Section 6.3.1 for the site at Redhill. A similar conclusion was drawn by Bain and Evans (2011, 147) for the site at Sharpstones Hill Site E/Meole Brace who point out that display was an important factor in the location of the site. Since these sites have a prominent economic function, it is suggested that local visibility was favoured for commercial purposes (e.g. local marketing) as well as for signalling status. Likewise, the results from the phenomenological analysis suggest that people in the subgroup C11.2 also wanted to be seen, but for signalling status and landscape ownership because the economic functional feature is not prominent in this group of sites. Finally, another possible explanation for the selection of areas with significant visibility was for the control and supervision of activities carried out by slaves/tenants.

7.2.2 Shropshire: Later Roman period

The network for this period and region is composed of two clusters referred to as Clusters 12 and 13 which, according to the criteria defined in this thesis, represent two coexisting identities. The main characteristics of these identities are summarised in Table 5.10 which shows that Cluster 12 is composed of sites rich in material culture (i.e. high-status settlements), and Cluster 13 is formed of sites poor in material culture. This table also

shows that the sites of Cluster 12 are heterogenous with similarity ranging from 44% to 88% (i.e. weighted links) suggesting that this identity may contain different distinctive groups of sites. In contrast, the sites of Cluster 13 are relatively homogeneous with similarity ranging from 85% to 98% implying that none or few sub-identities may be contained in this cluster. This is explored as follows.

a) Cluster 12: According to the information presented in Tables E.34 and 5.10, this cluster is rich in high-status building remains (e.g. masonry and tiled roof) which is the common feature of the sites of this identity. In considering this evidence and the results from the phenomenological analysis (see Section 6.2.2), it is inferred that this identity comprises wealthy settlements that occupied areas with access to excellent farmlands and a number of natural resources such as forest, wild animals and water courses. The exploitation of these resources may have offered these settlements the ability to obtain significant surplus which is what may explain their wealthy condition. These sites are located in areas of good local visibility suggesting that people of this identity either wanted to be seen or wanted to control the landscape and slaves/tenants working for their masters. In relation to other types of material culture remains, they are present in only a few sites of the cluster, and this is the basis for the identification of two potential subgroups referred to as C12.1 and C12.2. The information used for the identification of these subgroups is presented in Table F.2 in the Appendix. The criterion used for the identification of these subgroups is based on the salient and more prominent material culture indicators identified in this table. For the subgroup C12.1, these indicators correspond to prominent building material culture expression, household lifestyle, kitchen and food ways, personal appearance, and diverse economic activity. On the other hand, the subgroup C12.2 is composed of sites with prominent

building material culture expression and an economy based on few economic activities. These subgroups are as shown in the following tables.

Table 7.4. Subgroup C12.1: Later Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
(30001 30007)(N)												
30015(F)												
30022(V)												

Table 7.5. Subgroup C12.2: Later Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30018(V)												
30021(V)												

The subgroup C12.1 is composed of sites that are rich in high-status building remains, a significant quantity of material culture associated with Roman ways, evidence of trade (i.e. coins and proximity to commercial channels that communicated rural areas with Wroxeter), and evidence suggesting that these settlements were engaged in several economic activities such as grain processing (i.e. quernstones), metalwork, agriculture and storage. In addition, the phenomenological results presented in Section 6.2.2 revealed that people in these settlements apparently wanted to be seen from the surrounding landscape. This may reflect their desire to signal status and control over local natural resources.

Alternatively, this may also reflect the desire to be seen from network routes for commercial purposes. For example, the site at Meole Brace (30001(N)), as explained in Section 6.2.2, had an emphasis on services, marketing, industry and productive activities providing services for the local community and travellers to and from Wroxeter (Evans et al. 1999, 22). Given these *in situ* economic activities, it is likely that they wanted to be seen for commercial reasons. Note that the site at Whitley Chapel/Weir Meadow (30015(F)) was included in this subgroup because it belongs to the same complex of the site at Whitley Grange (30022(V)).

The subgroup C12.2 contains sites that are all rich in high-status building remains, and apparently developed some economic and trade activities that might have offered them some level of surplus, as can be inferred from remains such as coins and corndrier. Lack of material culture other than building remains is another prominent feature of the sites in this set. This may reflect poor or incomplete excavation activities (see for example Houghton 1961; Silvester 1958). Alternatively, this may also reflect some level of rejection of Roman ways with respect to lifestyles/activities types such as personal appearance and household lifestyle, among others.

b) Cluster 13: This cluster contains sites that are very poor in material culture suggesting that it represents a low/middle-status native identity (see Tables E.37 and 5.10). However, it is possible to identify prominent features in some sites suggesting the existence of three types of settlements referred to as C13.1, C13.2 and C13.3: a site with industrial emphasis with some evidence of building material culture expression (C13.1); sites that would seem to have been mainly involved in agricultural production with some personal appearance expression (C13.2); and sites very poor in material culture that apparently developed

agricultural activities (C13.3). These groups of sites were inferred from the information presented in Table F.3 and are presented in the following tables.

Table 7.6. Site C13.1: Later Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30017(I)												

Table 7.7. Subgroup C13.2: Later Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30019(F)												
30027(F)												
30029(F)												

Table 7.8. Subgroup C13.3: Later Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30023(F)												
30031(F)												

The site C13.1 at Tern Bridge, Wroxeter (30017(I)), is characterised by a prominent industrial emphasis with some building material culture expression. It corresponds to a pottery factory and a grain processing unit. It is located about 1km northwest of Wroxeter suggesting that this unit supplied pottery and processed grains to this site (Houghton 1966b, 111). Lack of material culture is another distinctive characteristic of this site which is what makes it different from the related subgroup C12.1 Table 7.4.

The possible subgroup C13.2 contains sites with very few material culture remains and without conclusive evidence of any economic activity other than agriculture. This suggests low-status settlements based on a subsistence economy, a fact that is consistent with the findings obtained from the phenomenological results for the site at Sheinton (30027(F)) (see Section 6.2.2). This is also inferred from the fact that the number of material culture remains found in these sites is too small to be linked to wealthy social status. For example, only one coin was found in the site at Nesscliff Hill (30019(F)), a place of an Iron Age Hillfort[6]. However, people of these settlements may have been influenced by Roman ways to some extent in terms of personal appearance, although the number of remains associated with this lifestyle type is also too small to draw a definitive conclusion. An exception was found at the site at Bridgwalton Quarry in Bridgnorth (30029(F)) in which 77 iron hobnails were found in this site reinforcing the suggestion of some level of Roman influence in terms of personal appearance in this identity, perhaps as a way to signal some level of status among their reference group (Eckardt 2014, 59; Wood 2013, 6). Finally, no fine or imported pottery was found in these sites reinforcing the conclusion of low-status settlements (see Hannaford 2006; Hume and Jones 1961).

[6] Information about this hillfort is available in the Atlas of Hillforts of Britain and Ireland available at http://hillforts.arch.ox.ac.uk/records/EN0076.html

Finally, it appears that a third subgroup (C13.3) coexisted in Cluster 12 which includes sites with few material culture and apparently with some connection with a wider marketing network based ultimately on Wroxeter. This is inferred from evidence of samian and amphorae pottery found in these sites in small quantities that suggests some level of wealth and trade connectivity (Oxford Archaeological Unit 1996, 17; Fulford et al. 2017, 289), and also from the results of the phenomenological analysis for the site at Chilton Farm, Atcham (30031(F)) which suggests that this site was associated through the River Severn with a commercial route to Wroxeter (see Section 6.2.2).

In relation to the phenomenological results obtained in Section 6.2.2 for Cluster 13, the following relationships between the subgroups/sites and the surrounding landscape were identified. First, all the sites are located in areas with access to a range of natural resources. Second, in considering the results obtained for the site at Sheinton (30027(F)), it is suggested that the subgroup C.13.2 reflects people living in low-status settlements with a subsistence economy and with fewer incentives to be seen. Finally, in considering the results obtained for the sites at Bridgwalton Quarry and Chilton Farm, it is inferred the subgroup C13.3 is a set of sites having access to a rich diversity of land for agriculture and natural resources, and people of these settlements apparently wanted to be seen from some aspects of the landscape. This may reflect the desire to take advantage of the marketing network connections with Wroxeter.

7.2.3 Shropshire: Earlier and Later Roman period

The apparent subgroups identified in Shropshire suggests a possible evolving identity trajectory in this region that is presented in the model in Figure 7.1. However, as explained in Section 7.1, diversity in material culture that was identified between sites and

groups of sites within a cluster may not necessarily reflect sub-identities. They may also reflect different approaches adopted in excavations. This is why the suggested model has to be considered with caution.

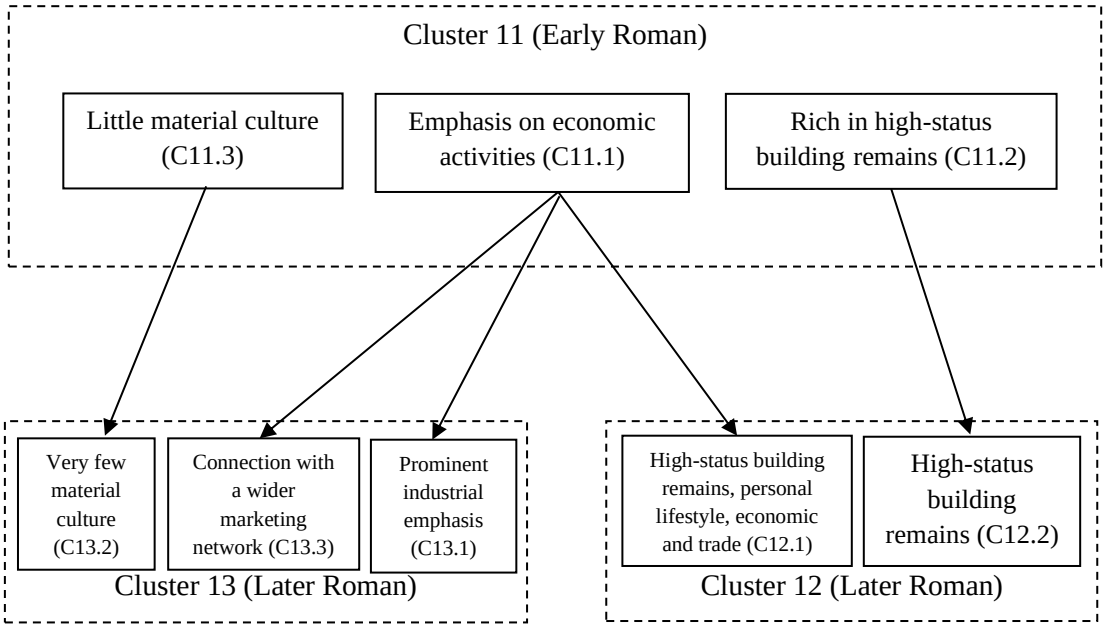


Figure 7.1. Possible identity evolution in Shropshire.

Before explaining the possible identity evolution proposed in Figure 7.1, it is important to clarify that this scheme does not inform about social mobility (i.e. groups of individuals who change their status condition). Having clarified this, let us now describe the possible identity formation in Figure 7.1.

In this figure a box outlined by a discontinued line represents an identity (i.e. cluster), and a small box outlined by a continuous line represents a sub-identity which contains information of the prominent lifestyle/activities types that characterise this sub-identity. In the Early Roman period, it appears that a single identity existed in Shropshire which was characterised by lack of material culture. This may reflect either an area of low-

status settlements or communities with a dominant native tradition. This identity, however, was not homogeneous and seems to have been formed of three sub-identities reflecting differences in wealth and economic activities within this group of people.

This earlier identity evolved into two identities in the Later Roman period: a relatively less wealthy one (i.e. Cluster 13); and a wealthy identity (i.e. Cluster 12). As shown in the figure, the former contains three sub-identities. One of them, which is characterised by having few material culture (C.13.2), seems to have been a continuation of a closely related sub-identity of the Earlier Roman period (C11.3) suggesting that subsistence rural communities were present in both periods. The other two sub-identities (C13.1 and C13.3) seem to be composed of sites with low levels of wealth and with a prominent economic function that apparently evolved from an earlier closely related sub-identity (C11.1). In one of them (C.13.3), this function seems not to be so relevant and apparently was limited to eventual commercial opportunities that may have arisen in the proximity of major commercial networks. In the other (C13.1), this function is more relevant but not large enough to create significant surplus. Lack of material culture in these sub-identities may also reflect a desire to maintain native traditions.

In relation to the wealthy identity in the Later Roman period (i.e. Cluster 12), it seems to be formed of two wealthy sub-identities. One of them (C12.1) is characterised by material culture informing about high-status building remains, personal lifestyle, economics and trade. It appears that this sub-identity also evolved from the sub-identity of the Earlier Roman period with emphasis on economic activities (C11.1) because it is also characterised by having a prominent economic function. However, this function seems to have increased in magnitude to a sufficient level to generate significant surplus to create wealth and to afford different items, some of them signalling status such as personal appearance (Eckardt 2014, 59). This suggests that the commercial network expanded over time, and people in

this group took advantage of this expansion. The other sub-identity (C12.2), on the other hand, seems to be a continuation of the one in the Earlier Roman period which is rich in high-status building material (C11.2). The only difference between these two sub-identities is that the latter is richer in material culture suggesting that over time, the inhabitants of villas and similar settlements became richer and adopted some Roman ways including personal appearance, recreation and cooking methods, among others.

Linking this result to the research on status described in Subsection 2.4.3, the identities that emerged in the Later Roman period show a clear difference. That is, Cluster 12 reflects a high-status identity that may be associated with landowners. In contrast, the low levels of wealth in the sub-identities in Cluster 13 suggest that it was formed of native as well as low-status individuals such as tenants, slaves and people involved in some industrial activities.

Finally, this identity evolution is consistent with the nativist model of identity formation described in the literature review because it reflects a polarisation between Roman and native identities suggesting native resistance to Roman ways (Webster 2001, 217; Hingley 2005, 40), even when there is evidence of significant Roman occupation in a number of native settlements such as the hillforts at the Wrekin and Nesscliffe Hill Camp (Lock and Ralston, 2017). In this case, the single identity in the Early Roman period led to two polarised identities: a native relatively less wealthy one composed of subsistence settlements and farming communities involved in some commercial activities; and a wealthy identity with evidence of Roman ways characterised by commercial settlements and villas. It is important to highlight, however, that the evolution of this identity may have been influenced by incomers who may have bought some lands introducing different lifestyles. Unfortunately, there is no data available to determine whether this migratory phenomenon really happened.

7.3 Interpretations for Gloucestershire

The ECMNMs for Gloucestershire obtained in Chapter 5 are more complex and contain several clusters showing variance in material culture. This suggests that Gloucester was an area rich in diverse identities and sub-identities. Interpretation for these identities are given as follows.

7.3.1 Gloucestershire: Earlier Roman period

The ECMNM for the Earlier Roman period in Gloucestershire is composed of five clusters that differ in terms of composition and quantity of material culture. As shown in Table 5.4, Clusters 1 and 2 contain sites that are relatively homogenous (i.e. weighted links larger than 80%) and poor in material culture which is what explains this homogeneity. They may represent identities associated with low-status settlements. In contrast, Clusters 3, 4 and 5 contains heterogeneous sites with significant variance in material culture suggesting that they are formed of several sub-identities. Interpretations for these clusters and possible sub-identities contained within them are provided as follows.

a) Cluster 1: As shown in Tables E.1 and 5.4, this cluster is composed of sites that are very poor in material culture suggesting low-status settlements. These sites are homogeneous with similarity (i.e. weighted links) ranging from 80% to 100%. It is interesting to note that there are sites containing some material culture remains associated with building material and personal appearance, among others. However, the number of remains is too small or is contained in too few sites in a subgroup to be considered as prominent for the identification of subgroups. For example, the site at Land at The Forge, Churchend, Slimbridge (14132(F))

contains only two small pieces of ceramic building material. Nonetheless, there is a clear prominent feature that suggests the existence of two distinct subgroups, and corresponds to evidence of diverse economic activities. That is, there is a set of sites that seems to have been involved in two or more economic activities. In contrast, a second subgroup seems to have been involved only in agriculture (see Table F.4 in Appendix F). These subgroups are shown in the following tables.

Table 7.9. Subgroup C1.1: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14034(F)												
14131(F)												
14132(F)												
14147(F)												
14150(F)												
14168(F)												
14180(F)												

Table 7.10. Subgroup C1.2: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14037(F)												
14043(F)												
14134(F)												
14156(F)												
14159(F)												
14170(F)												

The subset C1.1 includes sites that are characterised by having very few material culture remains. This may reflect the fact that these sites were investigated as part of evaluation trial excavations suggesting either that peripheral areas of the settlement were excavated and/or investigations only comprised a few evaluation trenches (see for example Miles 1992). However, archaeological evidence also suggests that they may have been native subsistence settlements that depended on agricultural and pastoral activities (Lawler 2000, 20; Miles 1992, 12). In spite of their indigenous nature, it appears that all of them were influenced by Roman ways at a low degree. This is inferred from the fact that small quantities of imported pottery (samian and amphorae) were found in most of these sites. Likewise, small quantities of ceramic building materials were found in the site at Land at The Forge, Churchend, Slimbridge (14132(F)) which is located about 17km southwest from Gloucester. Because this city was a centre of a large group of civilian producers of these materials (Mills 2013, 465), this suggests some Roman influence and connectivity between Gloucester and rural settlements (for recent evidence supporting this possibility, see Timby 2017, 335). There is also evidence of Roman influence in terms of personal appearance (i.e. brooches), building lifestyle (ceramic building material in the site at Stubbs Farm, Kempsford (14034(F)), and masonry in the site at Great Meadow, Bradley Stoke (14147(F))), and personal grooming (i.e. toilet cosmetics in the site at Great Meadow). This evidence, however, consists of very few remains to be considered as prominent features of this subgroup. This is why they have not been included in Table 7.9.

The other potential subgroup (C1.2), is relatively similar to the previous one in that it contains sites that are very poor in material culture. However, they all have evidence of economic activities other than agriculture suggesting that this is indeed a different sub-identity. As in the previous case, lack of material culture in these sites may indicate that evaluation excavations were carried out in peripheral areas of settlements (South

Gloucestershire Council 2001, 17). However, it may also indicate low-status native settlements that may have been involved in some economic activities for self-sufficiency or to serve local markets (Carlyle-Lancaster 2001, 16-18; Coleman et al. 2006, 94; Cuttler 2010, 68). For example, loomweights found in the sites at RAF Quedgeley (14134(F)) and Innsworth (14170(F)) indicate that people in these settlements were engaged in domestic textile production because this type of weaving technology was normally used for self-sufficiency (Smith 2017, 227). Nonetheless, their proximity to Gloucester (5km and 3km from Gloucester, respectively) suggests that these sites may have supplied some of their production to Glevum fort (i.e. a fort that was the origin of the city) and the subsequent colonia. Proximity to this fort may also explain possible Roman influence in the site at Innsworth (ceramic building material and finger ring). It is interesting to note that most of these sites have evidence of some levels of Roman influence (e.g. imported pottery, small quantities of remains associated with imported pottery, and larger proportion of cattle in relation to sheep/goats) that may be related to proximity to major Roman centres.

b) Cluster 2: Tables E.4 and 5.4 show that this cluster is also composed of sites that are poor in material culture in general. However, it differs from the previous one in that these sites all have evidence of structural worked material suggesting that some forms of Roman building were adopted. They also have a strong emphasis on economic activities including grain processing and metalworking. The lifestyles types associated with these sites are presented in Table F.5 in Appendix F. In considering this table, it is inferred that no subgroup can be extracted from this cluster. This is because all the sites share several features that suggest a homogeneous group which is also supported by the high values of the weighted links between the sites (i.e. equal or more than 83% as shown in Table E.6). The following table shows the prominent material culture expression shared by these sites.

Table.7.11. Cluster 2 (C2): Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14008(F)												
14055(F)												
14158(F)												
14163(F)												

According to this table and Table F.5, the prominent features of this group correspond to building material culture expression and evidence of more than one economic activity. It is interesting to note that some sites also have small quantities of other remains suggesting Roman influence in relation to personal appearance (sites at Dymock, Sewage Treatment Works (14055(F)), and A46 Ashchurch Railway Bridge (14163(F))), imported pottery (sites at West Drive, Cheltenham (14008(F)), Dymock, and A46 Ashchurch Railway Bridge), and large proportions of cattle over sheep/goat (sites at West Drive, Dymock, and A46 Ashchurch Railway Bridge). It is argued that sites with these characteristics are standard rural settlements given the small quantity of material culture associated with Roman ways (Nichols 2008, 85-87; Parry 1997, 21). However, it is also argued that this type of evidence is contradictory and difficult to interpret because it implies sites presenting characteristics of farmsteads as well as villa-type settlements (Catchpole 2002, 100). A possible explanation is that these sites were influenced by Roman ways given their proximity to areas with significant Roman presence (e.g. Gloucester, Cirencester and Bath) which may have frequently been visited to trade products such processed grains and metalwork.

To finish, note that this cluster shares several characteristics with the subgroup C1.2 described above. What makes these two groups different is the presence of building material

in the sites in the cluster (see Table F.5) suggesting that a key feature of this identity is related to building lifestyle expression.

c) Cluster 3: This cluster is characterised by having high-status settlements, mainly villas, with significant evidence of high-status building material, little evidence of other material culture (see Tables E.7 and 5.4), and evidence of several economic activities that may have been developed for self-sufficiency and trade. These sites are relatively heterogeneous (i.e. weighted links between 51% and 83%) suggesting the existence of different sub-identities. However, it is difficult to identify reliable sub-identities because it appears that the lack of material culture in several sites reflects archaeological evaluations based on limited excavations covering very small areas and focused mainly on building remains (see for example Darvill et al. 1989; Fowler and Walthew 1971, 50; Osgood 2002). Nonetheless, more homogeneous patterns emerged when linking the few remains with the different lifestyle/activities types considered in this thesis because some remains inform about the same lifestyle type (e.g. hairpins and brooch). Thus, using similarities in lifestyle/activities types, three potential subgroups were identified according to their prominent material culture: a subgroup that is only prominent in building culture material with very little evidence of other material culture and few economic activities (C3.1); a subgroup with prominent building remains, several economic activities and a range of a small number of material culture remains related to personal appearance, recreation, and personal grooming (C3.2); and a subgroup that is prominent in building material, several economic activities, and culture expression with evidence of personal appearance, household lifestyle, and kitchen and food expression (C3.3). It is important to clarify, however, that this subdivision may be biased as a result of excavation techniques focussed mainly on buildings. The

material culture remains used to identify these subgroups are shown in Table F.6 in Appendix F, and the lifestyles that characterise them are presented in the following tables.

Table 7.12. Subgroup C3.1: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14062(V)												
14173(V)												

Table 7.13. Subgroup C3.2: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14125(V)												
14151(V)												

Table 7.14. Subgroup C3.3: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transpo	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14018(V)												
14164(F)												
14174(F)												

As explained above, the subgroup C3.1 contains sites that are rich in building material, but poor in other material culture remains. This lack of material culture may indicate little Roman influence in lifestyle types other than building expression, suggesting modest villa-like settlements. For example, Coberley Villa (14173(V)) contains a very small proportion of imported pottery and current evidence shows an almost identical proportion of sheep/goat over cattle (Wessex Archaeology 2008, 11 and 15). It is possible that these sites were involved in some profitable economic activities because evidence of trade (i.e. weighing in the site at Brookthorpe-with-Whaddon (14062(V)) and several coins in Coberley Villa) suggests trade and rural commerce (Brindle 2017, 247).

The subgroup C3.2, on the other hand, is also a set of sites that are rich in high-status building material and have evidence of diverse economic activities such as metalworking and corndrier suggesting an emphasis on industrial and agricultural activities (Osgood 2002, 7). However, it differs from the previous subgroup in that it contains a wider range of remains that are associated with personal appearance, recreation and personal grooming. This evidence suggests that this subgroup had a higher degree of Roman influence, perhaps as a way to signal status (Eckardt 2014, 59). For example, the presence of a bathhouse is associated with typical Roman social recreational activity (Smith and Fulford 2018, 347). Likewise, evidence of literacy found in the site at Stanley Meadow, Hawkesbury (14151(V)), suggests the adoption of Latin which reflects strong Roman influence and important connections with the elite in the countryside who may have adopted writing artefact as a symbol of cultural aspiration (Eckardt 2014, 207; Smith et al. 2018, 75).

Finally, the subgroup C3.3 looks like an intermediate set in terms of Roman influence because it has more material culture than the subgroup C3.2, but it does not have evidence of a bathhouse or literacy. Evidence of diverse economic activities such as metalwork, grain processing, textile and trade suggests that these sites were connected to

local trade networks and markets which may explain the apparent Roman influence (Wessex Archaeology 2004, 24; Nichols 2014, 37). However, it is also possible that the sites at Land off Greet Road, Winchcombe (14164(F)), and New Moreton Farm, Standish (14174(V)), maintained diverse native traditions because there is evidence of continuity between the Late Iron Age and Earlier Roman period (Wessex Archaeology 2004, 23; Gilbert and Moore 2009, 4).

d) Cluster 4: According to the information presented in Tables E.10 and 5.4, this cluster includes sites that are very rich in a range of material culture remains. Variations in these remains makes the sites very heterogeneous with similarity between 24% and 68% suggesting an identity with significant Roman expression (see Table E.12). In spite of this high diversity and overlaps between the sites, some potential subgroups were identified based on differences in lifestyle/activities types presented in Table F.7 in Appendix F. As can be seen in this table, they share a significant number of attributes such as diversity in economic activity, personal appearance, household lifestyle, and kitchen and food ways. However, they differ in specific lifestyles and this was the criterion used to identify subgroups. These subgroups and their shared salient lifestyles are presented in Tables 7.15, 7.16 and 7.17.

Table 7.15. Subgroup C4.1: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
(14019, 82, 101,144)(N)												
14032(F)												
14086(F)												

Table 7.16. Subgroup C4.2: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14015(N)	■	■	■				■		■			■
14021(F)	■	■	■	■		■	■		■			■
14033(F)	■	■	■	■		■	■		■			■
14041(V)	■	■	■	■		■	■		■			■
(14045, 46, 171,188)(N)	■	■	■	■		■	■		■			■

Table 7.17. Subgroup C4.3: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14012(F)		■	■						■			■
14029(I)		■						■	■			■
14187(F)		■	■					■	■			■

The subgroup C4.1 contains farms and nucleated settlements with significant material culture associated with most of the lifestyles/activities considered in this thesis. A key characteristic of these sites is that they all contain evidence of literacy suggesting that they were highly influenced by Roman ways and were in contact with the elite (Eckardt 2014, 207; Smith et al. 2018, 75). The subgroup C4.2, on the other hand, is very similar in terms of material culture and also contains evidence revealing significant Roman expression. However, it differs from the previous group in that no evidence of literacy, recreation and personal gooming has been found in the sites of this subgroup. Finally, the subgroup C4.3 contains sites with much less material culture (e.g. lack of wealthy building remains), except material associated with personal appearance, household lifestyle, kitchen

and food ways (in most of the sites), and recreation (in most of the sites). As in the other subgroups, they were also involved in a range of economic activities which is one of the reasons for their inclusion in Cluster 4. Lack of material culture remains other than the ones described above may reflect that these sites were less wealthy. However, it may also reflect other possibilities. For example, the site at Heneage Court, Falfield (14029(I)), has an industrial focus, and the site at Birdlip, Cowley (14012(F)), seems to have been a short-lived roadside settlement (Fowler and Bennett 1974, 108; Parry 1998, 57).

e) Cluster 5: Tables E.13 and 5.4 show that this cluster falls between Clusters 3 and 4 in terms of material culture and Roman ways, and overlaps these identities to some extent. It is composed of heterogeneous sites with similarity values between 51% and 73%. However, when linking the material culture to different lifestyle/activities types, this heterogeneity vanishes and a fairly homogeneous pattern emerges because some of the remains that creates diversity across the sites inform about the same lifestyle. This is shown in Table F.8 in Appendix F and Table 7.18 below.

Table 7.18. Cluster 5 (C5): Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
(14004,05)(F)	■	■	■						■	■		■
14052(F)	■	■	■						■			■
14099(F)	■	■	■						■	■		■
14102(F)	■	■	■						■	■		■
14118(F)	■		■						■	■		■
14166(F)	■	■	■						■			■
14169(F)	■	■	■						■	■		■

As explained above, this table shows that this identity is relatively homogeneous in terms of lifestyle types and this is why no subgroups were identified. It contains sites with evidence of diverse economic activities (mainly metalwork, grain processing and agriculture) as well as Roman influence in terms of building remains but not to the extent exhibited by high-status settlements such as villas. This identity is also characterised by being prominent in personal appearance implying significant Roman influence in relation to this attribute. However, it differs from the previous two clusters in that household kitchen and food lifestyles (i.e. lifestyles inferred from quernstones and vessel glass remains in all sites) are also prominent features of this identity, and personal grooming is well represented in several sites.

In spite of these features, it is argued that these sites are rural with little wealth, but with a desire for items of Roman material culture and technology. For example, the sites at South-East of Tewkesbury (14004(F) and 14005(F)) present evidence of Roman influence. However, they contain a low proportion of samian pottery in comparison to Gloucester suggesting a rural settlement with little wealth (Walker 2004, 73). The same conclusion is inferred for the site at Gloucester Business Park Link Road, Hucclecote (14102(F)). That is, while this site has evidence of Roman influence, it received a small amount of continental and regional imported wares (Holbrook and Bateman 2003, 36).

The suggestion of rural settlements with little wealth can also be inferred from the available vessel glass evidence in some sites. These remains are considered high-status objects that inform about household and kitchen lifestyles and also the ability to participate in the trade network (Allen 1998, 17; Brindle 2017, 277). However, the quantity of vessel glass remains found in some sites is very small. For example, only a fragment of vessel glass was found in the site at Fox's Field, Ebley Road, Stonehouse (14118(F)), and only two fragments in the sites at South-East of Tewkesbury (Brett 2013, 8; Walker 2004, 44). This

suggests that this material culture did not have a significant impact in terms of Roman expression and perhaps it indicates an aspirational desire for items of Roman material culture and technology by people without significant wealth, a possibility that has been noted by Barber and Havard (2011, 34) for the site at Land North of Brockworth (14166(F)). This is plausible because in spite of the presence of vessel glass remains, traditional ways of preparing food (e.g. butchery on rural sites) have been identified suggesting native/non-villa rural assemblages without evidence of high economic or social status (Walker 2004, 83).

7.3.2 Gloucestershire: Later Roman period

Let us now consider the case of the Later Roman period in Gloucestershire. As shown in Chapter Five, the ECMNM obtained for this period is composed of five clusters. In contrast to the previous case, these clusters appear to be unstable suggesting significant identity overlaps. This section provides possible interpretations as follows.

a) Cluster 6: This cluster is composed of sites that are very rich in material culture (Tables E.16 and 5.8). However, they are very heterogeneous with similarities ranging from 10% to 68% and with important overlaps between the sites. What they have in common is that they all have evidence of a range of economic activities suggesting that the economic/commercial function was relevant for the creation of wealth, and they all have evidence of significant Roman influence. While these two prominent features are what characterises this identity, it was difficult to identify patterns given the diversity of material culture between the sites. As shown in the following table, this diversity was also found in terms of lifestyle/activities types which show significant overlaps between the sites making it very difficult to identify

reliable subgroups. In considering this problema, the criterion adopted to identify subsets of sites is based on the absence of determined lifestyle/activities types in some sites with respect to a subgroup (C6.1) that contains all of them. For example, the subgroup C6.2 is composed of sites without evidence of recreation and literacy, and these are the main salient features of this set of sites. A more detailed description of the subgroups of this cluster is presented in the tables below.

Table 7.19. Subgroup C6.1: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14023(V)												
14024(V)												
14047(V)												
14160(V)												

Table 7.20. Subgroup C6.2: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14011(N)												
14017(F)												
14027(F)												

Table 7.21. Subgroup C6.3: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14098(V)												
14139(V)												
14154(N)												
14178(F)												

Table 7.22. Subgroup C6.4: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14028(F)												
14080(V)												
14090(N)												

Table 7.23. Subgroup C6.5: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14087(N)												
14110(F)												
14149(V)												
14181(F)												

The subgroup C6.1 contains sites that have remains that inform about all the lifestyle/activities types considered in this study. It is composed of villas with large amounts of evidence revealing high-status people with high levels of Roman influence and

expression. Evidence of literacy suggests that these sites were occupied by the elite who probably had to deal with business responsibilities associated with the diverse economic activities developed in these settlements (Smith et al. 2018, 75). It is inferred that this people had significant wealth which is reflected in the need for security and defence. They also had time for leisure and non-productive activities as revealed by remains related to recreation and religion (Price 2000, 58; Smith et al. 2018, 51 and 61). It is possible that the high levels of influence of Roman ways in this subgroup are related to their proximity to major Roman towns such as Gloucester and Cirencester (no more than 20km) which may have been facilitated by equine transport.

The subgroup C6.2 is very similar to the previous one in the sense that it contains high-status sites with significant Roman influence (Barber and Walker 1998, 137; Parry 1998, 101; Rawes 1984, 32). However, the sites of this group do not have evidence of literacy, recreation, transport, personal grooming and religion, suggesting that this reflects non-elite wealthy people who did not have enough time for leisure and recreation, among others. Although, it is likely that this also reflects the fact that relevant evidence has not been found yet as a consequence of the location and scale of the investigations. That is, this may reflect the fragmented nature of the archaeological record. Nonetheless, the presence of security and weapon remains suggests that they had a significant level of wealth and were concerned about protecting material items.

The subgroup C6.3 is also a wealthy set of sites that share several features with the previous ones such as high-status building, household lifestyle, kitchen and food ways, recreation, personal appearance, and diverse economic activities. However, it has two key characteristics that makes this subgroup different: there is lack of evidence of literacy, transport and defence; and there is evidence of recreation suggesting that this people had enough resources to afford leisure.

The subgroup C6.4 is a set of sites that are rich in material culture remains and very similar to subgroup C6.1 in relation to remains that suggest high-status settlements such as literacy and decurity. But it differs from this identity in that some lifestyle/activities types are not represented. One possibility is that some archaeological remains have not yet been found. The other is that this is an identity with a strong Roman influence, but also with people who kept some local traditions (for some evidence supporting this possibility, see for example Fowler et al. 1976, 47).

Finally, the subgroup C6.5 includes sites with some levels of wealth evidenced by high-status building remains and some Roman influence in terms of personal appearance. However, other lifestyle/activities types related to Roman ways are not represented suggesting a wealthy group of settlements that kept several native traditions. This may be explained by the fact that some sites in this subgroup had their origin in the Late Iron Age and continued into the fourth century AD (Joyce 2010, 27 and 31). However, this may also reflect a bias in material culture resulting from excavation techniques that focused on building remains (see for example South Gloucestershire Council 2002).

b) Cluster 7: This cluster contains sites that are relatively homogeneous (similarities between 76% and 93%) and poor in material culture (Tables E.19 and 5.8). Lack of high-status building remains is a salient feature of this cluster. The few material culture remains in the sites of this cluster suggests some Roman influence in terms of personal appearance and household/kitchen lifestyle. This may be related to possible trade connections with major Roman areas that people of these settlements may have used to sell products from economic activities such as grain processing and agriculture. These characteristics suggest that this cluster corresponds to a relatively low-status native identity with some Roman influence and with the ability to obtain surplus from agriculture and other types of economic

activities. In terms of differences in lifestyle/activities types, three potential subgroups were identified. The criterion adopted to select these subgroups consisted of identifying prominent lifestyle/activities types. For example, the prominent features of the subgroup C7.3 are the focus on metalwork and lack of Roman ways expression. The resulting subgroups, as shown in more detail below, seems to reflect different degrees of cultural and economic integration. The material culture remains used to identify these subgroups are presented in Table F.10 in Appendix F, and the relationship between these subgroups and lifestyles is presented in Tables 7.24, 7.25 and 7.26 below.

Table 7.24. Subgroup C7.1: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14010(I)												
14143(F)												
14146(F)												
14165(F)												

Table 7.25. Subgroup C7.2: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14106(I)												
14108(I)												
14127(I)												
14145(F)												
14153(F)												

Table 7.26. Subgroup C7.3: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14123(F)												
14148(F)												
14157(F)												

The subgroup C7.1 contains sites that are richer in material culture suggesting some level of Roman influence in terms of personal appearance, household lifestyle, and kitchen food preparation. Metalwork, which by and large refers to low level smithing, is a common economic activity of the sites included in this sub-identity, although some of them were also engaged in grain processing. Access to trade connections and communication with major Roman settlements seems to be the principal trade channel for the production of some of the sites of this subgroup, and this may explain the apparent Roman influence (Barber and Holbrook 2000, 58). The presence of vessel glass in most of the sites of this set suggests that this people obtained enough surplus to afford some high-status items (Barber 2009, 72; Young 2003, 27 and 43), or they had the desire to obtain Roman items. In any case, native traditions seem to have been strong in this sub-identity.

The subgroup C7.2, on the other hand, contains sites with a significant metalwork industrial emphasis and with few remains suggesting both domestic activity and minor Roman influence in terms of personal appearance (Brett 2004, 14; Clarke, 2010, 18; Darch et al. 2003, 8-9; Young 2004, 67). However, it differs from the previous group in that evidence suggesting Roman influence in terms of household/kitchen lifestyle is not present. This evidence suggests a low-status sub-identity with strong native tradition, although lack

of material culture may also indicate that these sites are the components of larger settlements.

Finally, the subgroup C7.3 comprises sites without evidence of Roman influence in terms of personal appearance suggesting a group of people with native traditions. However, their relatively significant metalwork production may indicate that they had some connection with villas or other Major Roman settlements in the proximity (Hood 2008, 19; Young 1999, 12).

c) Cluster 8: This cluster is similar to the previous one in relation to material culture remains (Tables E.22, 5.8 and F.11 in Appendix F). However, it differs in that evidence of metalwork was not found suggesting that Cluster 8 is a parallel identity with a different economic focus. The subgroups are shown in the following tables.

Table 7.27. Subgroup C8.1: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14115(F)												
14117(F)												
14172(F)												

Table 7.28. Subgroup C8.2: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Securit	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14060(N)												
14061(F)												
14152(F)												
14175(F)												
14182(F)												

Table 7.29. Subgroup Cluster 8.3: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14133(F)												
14142(F)												
14155(F)												
14162(F)												
14189(F)												

Table 7.30. Site C8.4: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14179(F)												

None that apart from metalwork evidence, this cluster presents relatively similar patterns to the previous one in terms of subgroups suggesting that people in this identity were still connected to communication networks (for evidence, see Barber 2004, 3; Havard

2013, 8; Young 2008, 14). This can be seen when comparing the parallel features of subgroups C7.1, C7.2, C7.3, C8.1, C8.2 and C8.3.

It is interesting to note, however, that there is a site (C8.4) that does not follow these patterns suggesting higher diversity within the cluster. It corresponds to the site at Long Cross, Lawrence Weston, Bristol (14179(F)), which contains significant remains associated with diverse Roman lifestyle types including literacy (see Boore 1999). This indicates a relatively wealthy settlement that apparently obtained wealth from economic and industrial production, a fact that may explain the presence of a Weighing.

d) Cluster 9: This small cluster is related to Cluster 6 in that both of them have evidence of high-status building remains and metalwork. However, it differs in that evidence of personal appearance is not present in some sites, and evidence of Roman influence in terms of household/kitchen is not present in others (see Tables E.25 and 5.8, and Table F.12 in Appendix F). This suggests that this identity contains relatively wealthy sites that developed diverse economic activities including metalworking but with less Roman influence than Cluster 6. In terms of possible sub-identities, the sites of this cluster have some degree of homogeneity with similarities between 61% and 83%. However, they have some differences that were interpreted as one subgroup and a site that may reflect a second subgroup. Prominent differences between these units are personal appearance, building material culture expression, kitchen and food ways, transport and security. These differences were considered as the main criterion for the identification of possible subsets of sites. They are shown in the following tables.

Table 7.31. Subgroup C9.1: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14105(F)												
14107(I)												
14128(F)												

Table 7.32. Site C9.2: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14095(F)												

The subgroup C9.1 includes settlements that have high-status building remains and evidence of economic/industrial activities including metalworking and agriculture (evidence of textile industry is only present in the site at Brockworth Airfield (14128(F)). It is probable that these people created wealth from these economic activities and were probably engaged in trade with other Roman settlements in the proximity (Atkinson 1986, 8; Hickling 2007, 11). The latter is inferred from the presence of coins and weighing in some sites. In relation to other lifestyle types, current evidence shows some levels of Roman influence in terms of household and kitchen lifestyle evidenced by the presence of coins and vessel glass. Since the latter is considered a high-status item (Brindle 2017, 277), it is inferred that these people had significant levels of wealth and this is reinforced by evidence showing security items that may have been used to protect material goods (Smith et al. 2018,

51). Finally, lack of evidence related to personal appearance, intellectual activity, religion and recreation suggests that this identity was less influenced by Roman ways with respect to other wealthy sub-identities. However, it also may indicate limited areas of excavation.

The site C9.2 (i.e. The Park-Bowsings, Guiting Power (14095(F))), on the other hand, seems to be less wealthy because it contains fewer high-status building remains (only some tiled roof remains) and there is no evidence of high-status items such as vessel glass. However, it appears that these people were influenced by Roman ways in terms of personal appearance. Perhaps this influence reflects higher contact with Roman areas that may have been facilitated by horse transport.

e) Cluster 10: This is another wealthy identity cluster which is relatively rich in material culture and is characterised by sites with high-status building material and evidence of Roman influence in a range of lifestyle activities. However, it differs from other related subgroups in that it does not present evidence of metalworking activities (Tables E.28 and 5.8, and Table F.13). Given the presence of coins, it may be the case that these people obtained wealth from trading activities and services. In relation to other lifestyle types, some differences were found suggesting the existence of potential diversity in material culture expression in this cluster. As in the previous clusters, the criterion adopted for the identification of subgroups is based on the presence or absence of determined prominent material culture indicators. For example, a prominent feature of the site C19.2 is the presence of material culture associated with literacy. Using this criterion, a subgroup and three distinct sites were identified. They are shown in the following tables.

Table 7.33. Subgroup C10.1: Later Roman period in Gloucestershire.

`	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14006(V)												
14038(V)												
14069(F)												

Table 7.34. Site C10.2: Later Roman period in Gloucestershire.

`	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defenc	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14116(F)												

Table 7.35. Site C10.3: Later Roman period in Gloucestershire.

`	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defenc	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14025(V)												

Table 7.36. Site C10.4: Later Roman period in Gloucestershire.

`	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14136(R)												

The subgroup C10.1 contains sites with evidence of Roman influence in terms of personal lifestyle, personal grooming and recreation with some Roman household and kitchen expression suggesting proximity to road networks and major Roman areas (Masser and McGill 2004, 114). A prominent feature of this subgroup is the presence of bathhouse implying that this people had enough wealth to finance leisure and high-status social activities (Smith and Fulford 2018, 347; Thompson and Chelu 2009, 201).

The site C10.2 (i.e. Nesley Farm, Tetbury (14116(F))) is closely related because it also has evidence of recreation suggesting that this people had enough time for leisure. However, a salient characteristic of this settlement is that it contains evidence of literacy suggesting that this site was occupied by the elite, or perhaps in contact with elite individuals (Smith et al. 2018, 69).

The site C10.3 (i.e. St. Peter's Church, Frocester (14025(V))) has evidence of Roman influence in terms of personal appearance and household/kitchen ways (Gracie 1963, 157). However, it differs from the previous sites in that literacy and evidence of recreation is not present suggesting a slightly less wealthy settlement with fewer resources to afford free time.

Finally, the site C10.4 (i.e. Royal George Hotel, Birdlip (14136(R))) is poor in material culture other than high-status building remains and possible household lifestyle expression captured by a number of coins. This suggests either biased excavation techniques or a settlement that maintained native traditions (Brindle 2018, 45; Hemingway 1990, 6).

To finish this section, it is notable that some sites of this cluster share several features with some subgroups/sites identified in other clusters. For example, the site at St. Peter's Church (14025(V)) in Table 7.35 shares a number of features with the sites of the subgroup C7.1 of Cluster 7. These similarities suggest significant overlaps between identities and

subgroups. A possible identity evolution that may explain this overlap is discussed in the next section.

7.3.3 Gloucestershire: Earlier and Later Roman period

The information obtained in Chapter Five for Gloucestershire revealed an increase in material culture overlap between the sites in the sample from the Earlier to the Later Roman period. This was also confirmed in the sensitivity analysis developed in Section 5.4 which revealed less robust clusters in the Later Roman period through changes in material culture. In this regard, it is now recognised that variations in material culture reflect different identity expressions (Eckardt 2014, 27). In considering this idea, the explanation offered in this thesis for these overlaps is related to the subgroups identified above. That is, when linking material culture to the different lifestyle/activities types considered in this thesis, different patterns within the clusters emerged which were interpreted as potential sub-identities. This interpretation, however, has to be made with caution because, as explained in Section 7.1, this diversity may also reflect either diversity in archaeological excavation approaches or biases as a consequence of the small number of sites in some clusters. Keeping in mind these potential sources of biases, an identity representation based on the discussion developed for Gloucestershire is presented in Figure 7.2. Note that the clusters in this figure were arranged from left to right considering the increase in material culture complexity. For example, complexity in the Earlier Roman period follows the following sequence from left to right: Cluster 1, Cluster 2, Cluster 5, Cluster 3, and Cluster 4. Likewise, complexity in the Later Roman period follows the following sequence: Cluster 8, Cluster 7, Cluster 9, Cluster 10, and Cluster 6.

What it is interesting about this representation is that the number of potential sub-identities increased in the Later Roman period in all the clusters, suggesting that the overlaps reflect a process of mixing identities that led to a higher diversity in terms of lifestyle expression. Actually, as seen in the figure, there are several sub-identities that belong to different clusters in the Later Roman period that are very similar in a number of lifestyle types, a fact that reinforces this conclusion. This has important implications in terms of the dynamic and the evolution of Roman-British identities in Gloucestershire.

To explore these implications, a possible identity evolution for each cluster and subgroups of the Earlier Roman period is presented in Figures 7.3, 7.4, 7.5, 7.6, and 7.7. It is important to recognise, however, that some of the patterns depicted in these figures may be spurious given the poor data available in some sites. In addition, the evolutionary paths proposed in these figures are not necessarily the only possibilities. Nonetheless, they illustrate likely paths under some assumptions described in the discussion that follows.

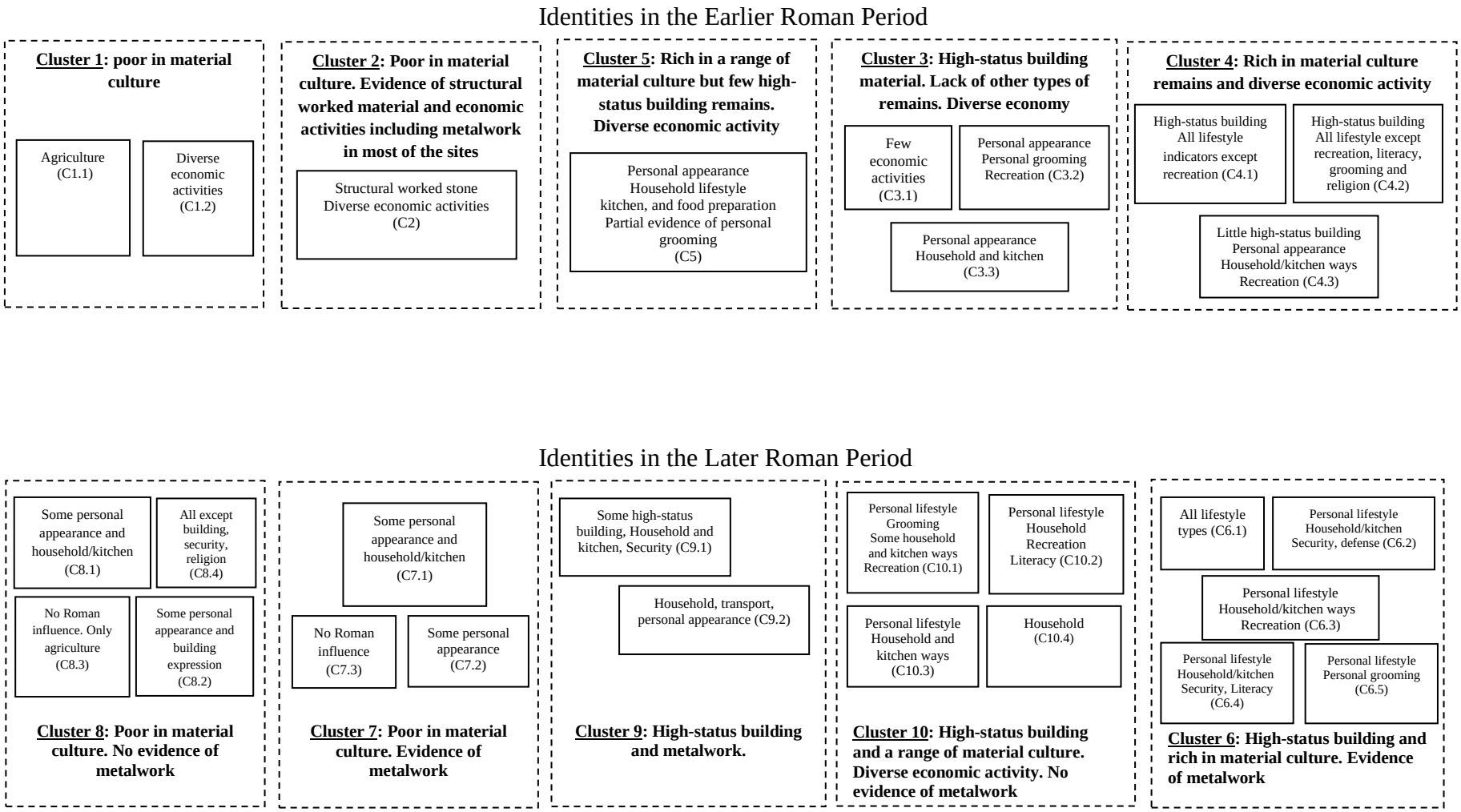


Figure 7.2. Identities and sub-identities in Gloucestershire

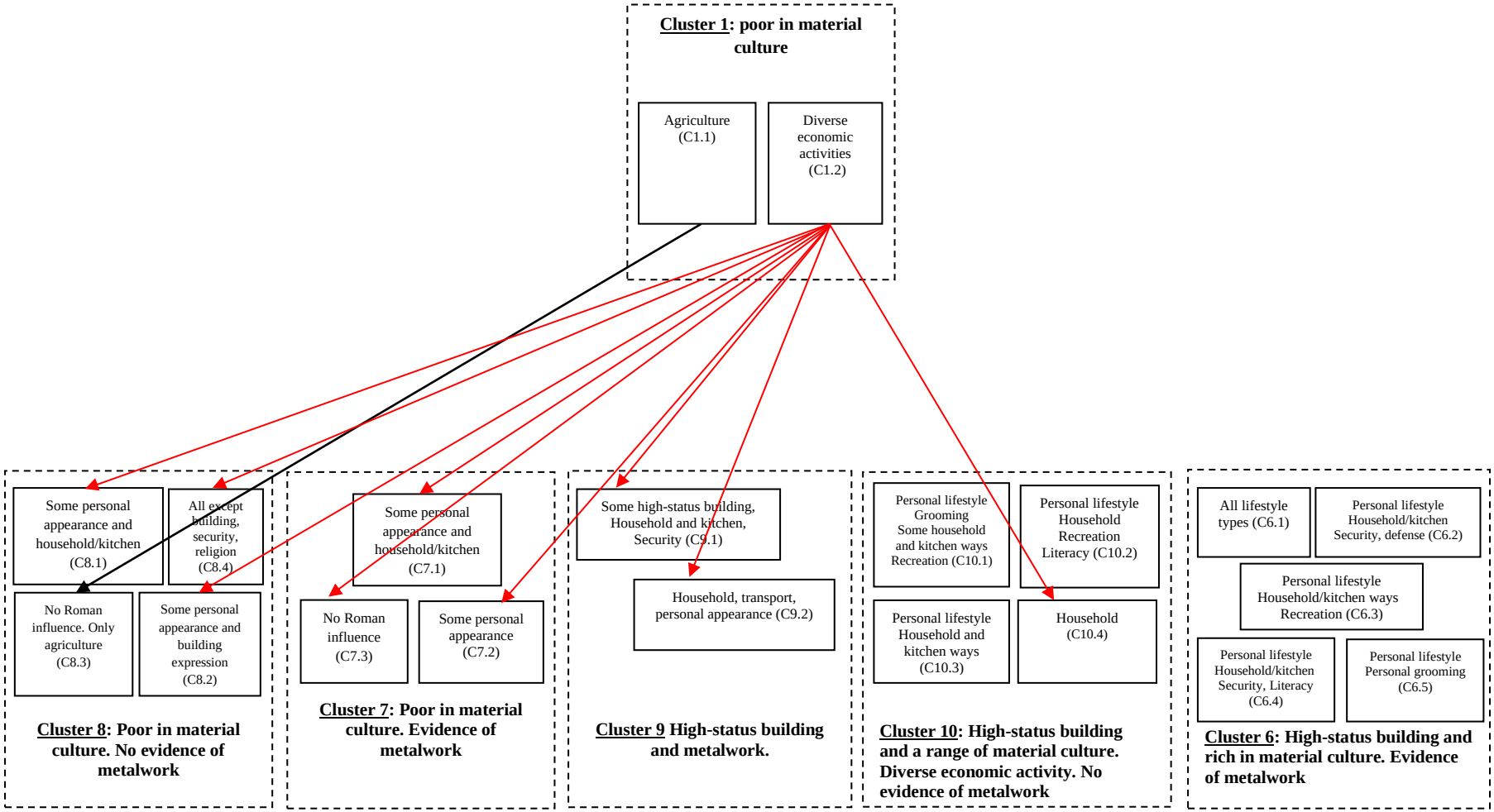


Figure 7.3. Possible identity evolution of the sub-identities of Cluster 1 in Gloucestershire.

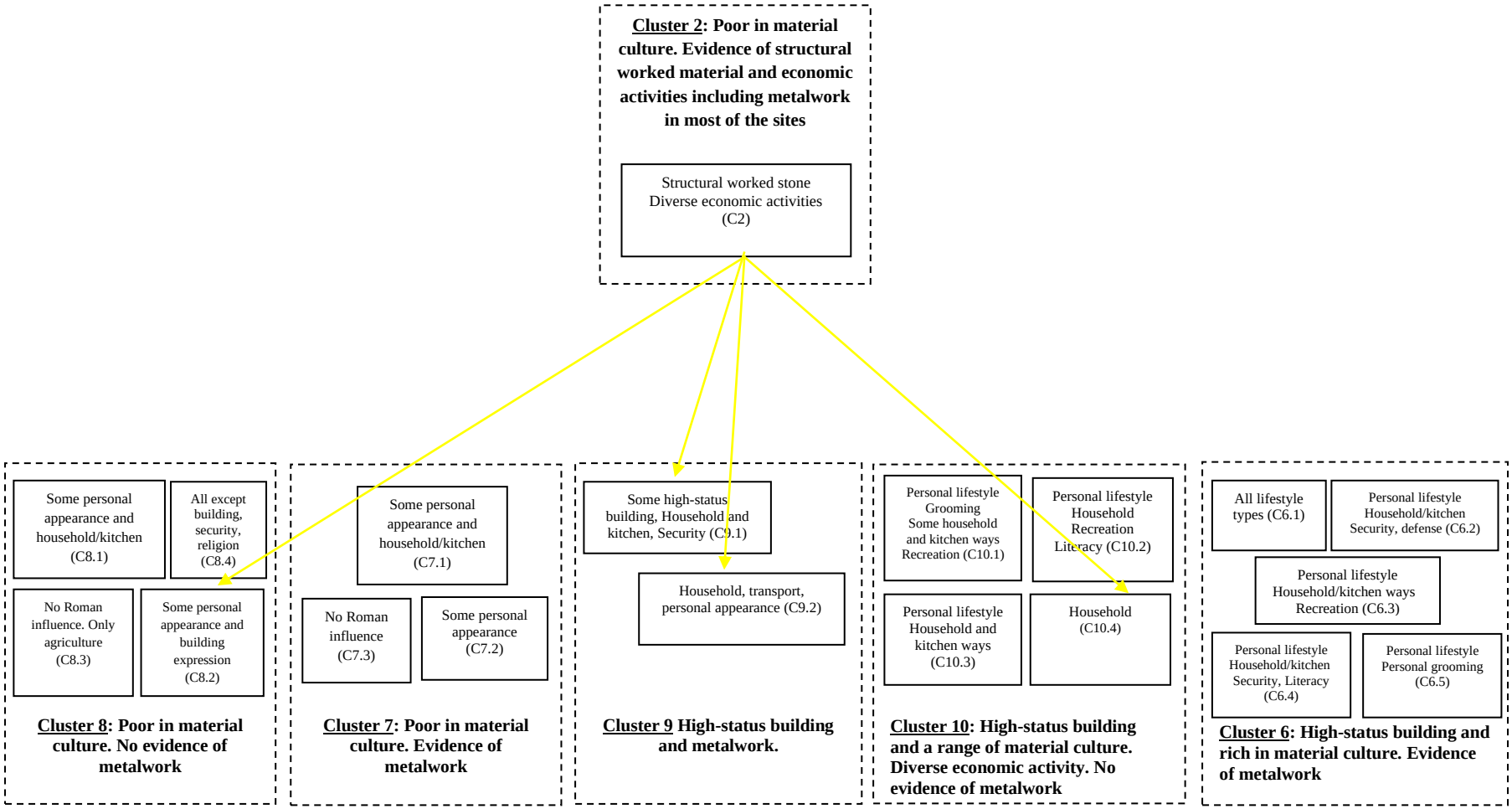


Figure 7.4. Possible identity evolution of the sub-identities of Cluster 2 in Gloucestershire.

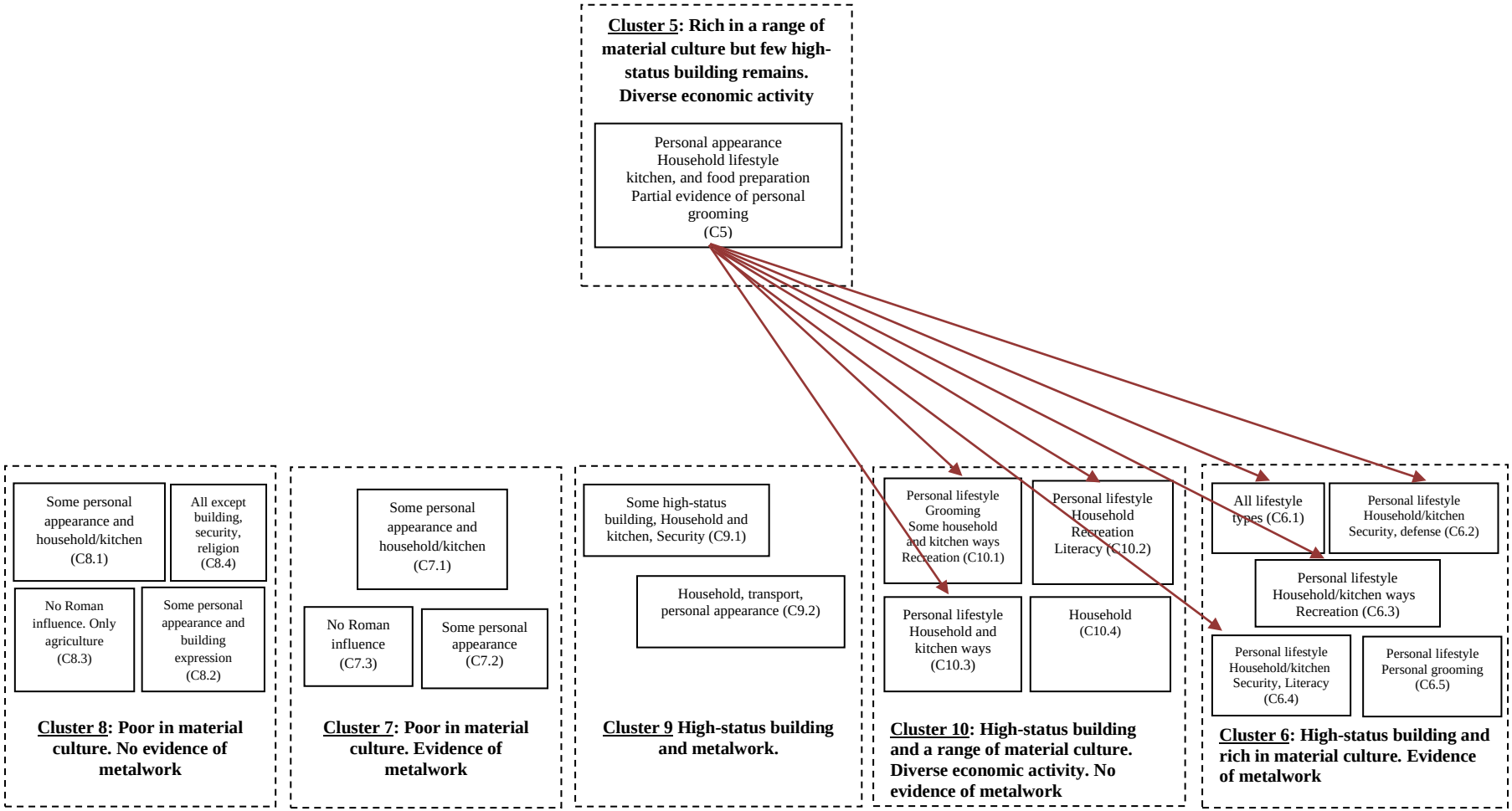


Figure 7.5. Possible identity evolution of the sub-identities of Cluster 5 in Gloucestershire.

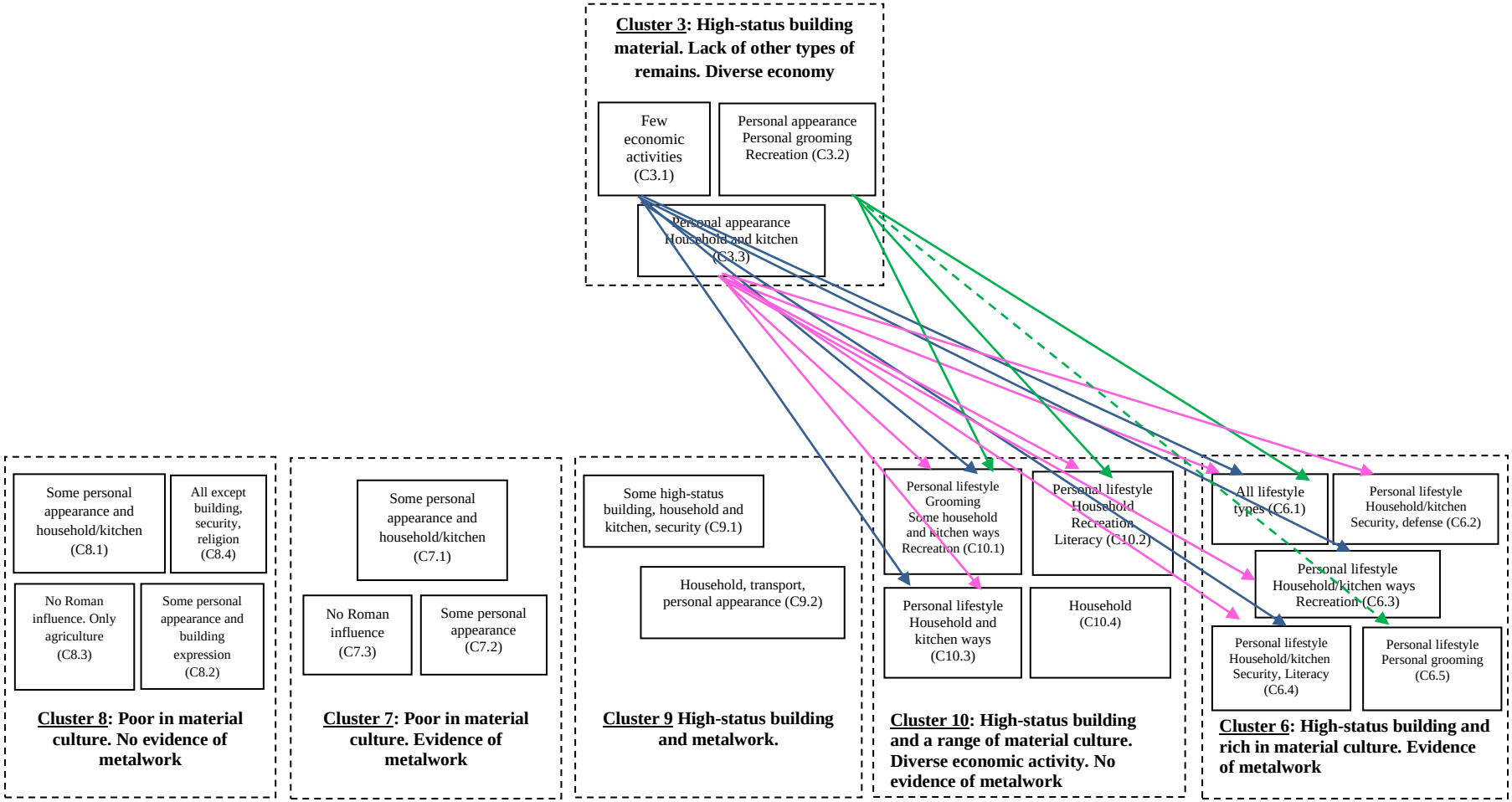


Figure 7.6. Possible identity evolution of the sub-identities of Cluster 3 in Gloucestershire.

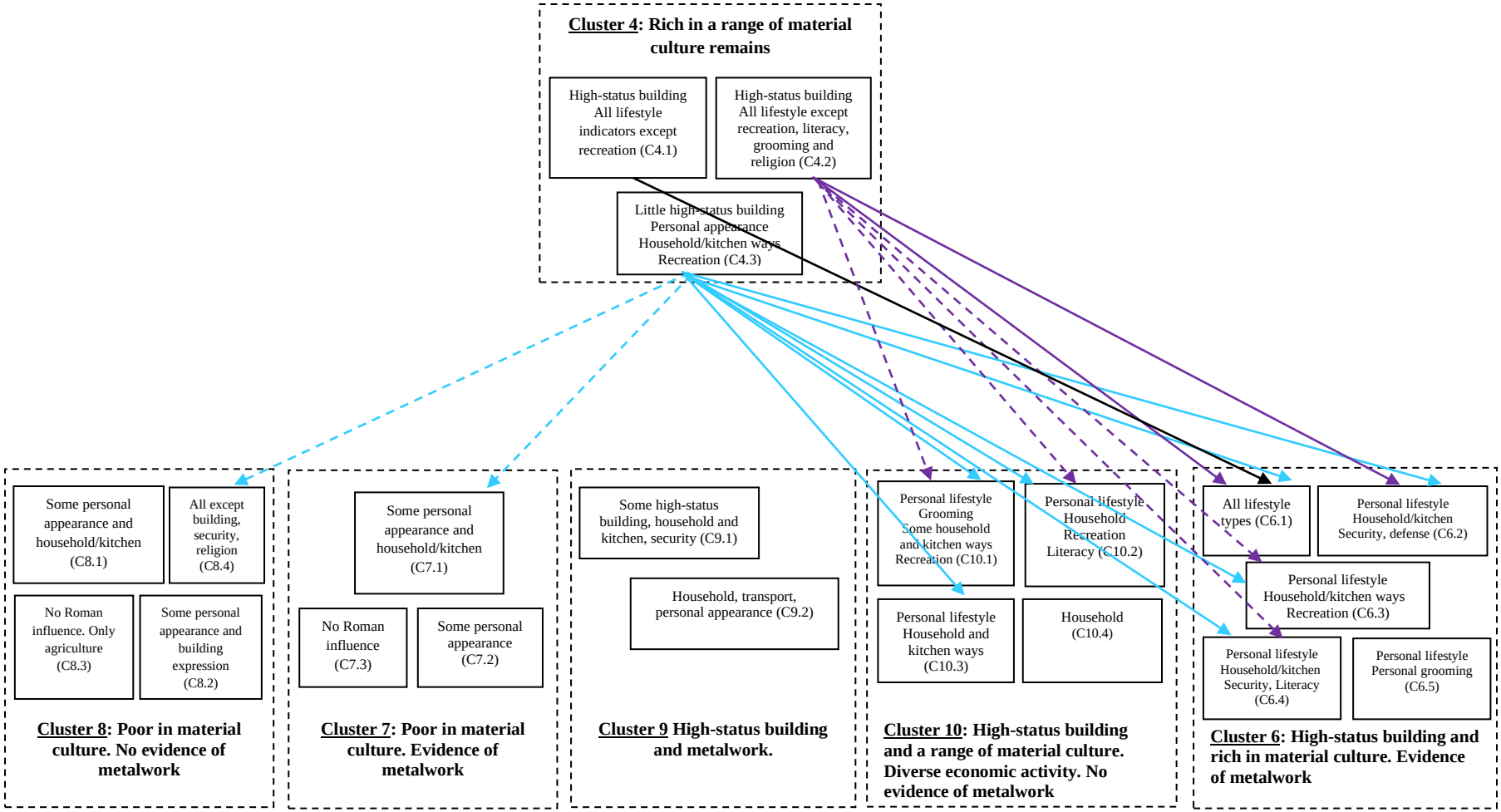


Figure 7.7. Possible identity evolution of the sub-identities of Cluster 4 in Gloucestershire.

In order to interpret this figure, it is important to clarify two considerations related to this model. First, as in the case of Shropshire in Figure 7.1, it does not reflect social mobility. Second, this model assumes an addition approach. That is, it assumes that identities either maintain their complexity or they become more complex over time in terms of economic and cultural expression. This is based on the observation that material culture revealing Roman influence increased in the Later Roman period suggesting that the lifestyles of many communities diversified over time. This means that situations where a complex identity in terms of lifestyle type (e.g. an identity that is characterised by having a prominent expression in terms of personal appearance and high-status building expression) leading to a simple identity (e.g. farmstead without exogenous cultural influence) are ruled out. Again, this does not mean that a particular society may have changed from a complex identity to another (i.e. social mobility). This only reflects a possible identity evolution assuming an increase in complexity. Having clarified this, the possible identity evolution presented in Figures 7.3, 7.4, 7.5, 7.6 and 7.7 is discussed as follows.

Under the assumption of increasing complexity, simpler sub-identities with native traditions may have evolved in complexity when people started to adopt new lifestyle/activities types reflecting Roman as well as diverse local influences. For example, native societies may have adopted some Roman personal appearance items over time. Some of them may have evolved further by adopting new economic activities from local traditions, and others by adopting new building expressions. This would have led to different sub-identities, some of them belonging to different identities in the long run. This is actually captured in Figure 7.3.

This figure shows the possible evolutionary identity paths of Cluster 1 which seems to be composed of two different sub-identities. Both consist of sites with few material culture remains suggesting low-status settlements. The main difference between these two

subgroups is that one of them seems to have depended only on agriculture, and the other on more than one economic activity. It is likely that the first subgroup did not produce enough surplus to finance Roman ways suggesting that this sub-identity remained the same. This is reflected in Figure 3 with a black arrow that links the sub-identity C1.1 with a particular similar sub-identity (C8.3) in Cluster 8. This linkage may also reflect lack of incentives to adopt Roman lifestyles. On the other hand, it is possible that the second sub-identity C1.2 led to diverse identities because it is composed of sites with more diverse economic activities that probably helped them to obtain higher surplus to finance Roman ways. This is also reinforced by the fact that they were located near major Roman centres suggesting that they had more opportunities to trade with people living in these centres. This proximity may also have played a role in terms of Roman influence which is what explains why evidence of imported pottery was found in some of these sites. However, lack of material culture suggests that the surplus they obtained was not sufficient for this subgroup to evolve into sub-identities rich in material culture associated with Roman ways. In considering this possibility, this subgroup may have evolved into sub-identities with diverse lifestyle expressions associated with few but diverse Roman and economic activity additions, as illustrated by the red arrows in Figure 3. Some of them may have maintained their traditions with few Roman-influenced additions (i.e. the arrows linking C1.2 with C8.1, C8.2 and C8.4); others may have followed a similar path but with additional economic activities such as metalworking (i.e. the arrows linking C1.2 with C7.1, C7.2 and C7.3); and others into sub-identities with few Roman-influenced additions except the adoption of higher-status building structures (i.e. the arrows linking C1.2 with the sub-identities C9.1, C9.2 and C10.4).

Figure 4, on the other hand, shows a possible evolutionary path of Cluster 2 which is composed of relatively homogeneous sites with prominent features related to building

material culture expression and diverse economic activities. This Cluster is very similar to Cluster 1 because it is also characterised by lack of material culture remains (although a few remains related to imported pottery and personal appearance have been found), and the sites are located near major Roman centres. However, they differ mainly in that the sites in Cluster 2 have evidence of Roman building remains. In order to identify possible identity evolutionary paths of this cluster, two indicators were considered. First, in considering the assumption that identities remained the same or evolved into more complex sub-identities, it is assumed that the identity represented by Cluster 2 maintained or extended their building material culture expression. Second, this cluster is poor in material culture with evidence of the ability to obtain some surplus from diverse economic activities that may have helped them to finance some Roman ways. This suggests that people in this identity may have had limited resources to evolved into sub-identities rich in material culture. This means that possible evolutionary paths may have consisted of few Roman ways additions. The resulting possible evolutionary paths that were inferred from these indicators are represented as yellow arrows in Figure 7.4. That is, this identity may have remained the same (i.e. the arrow linking C2 with C8.2) or may have evolved into slightly more complex sub-identities characterised by additional Roman lifestyle expression such as additional high-status building elements, household lifestyle, kitchen and food ways, and personal appearance, among others (i.e. the arrows connecting C2 with C9.1, C9.2 and C10.4). An alternative possibility is that the evolutionary path shown in Figure 4 was not necessarily constrained by low economic surplus, but reflects the incentives of people to maintain most of their traditional lifestyles over time

Figure 7.5 shows the possible identity evolution of Cluster 5. This cluster is composed of sites that are relatively homogeneous in terms of material culture remains. It is characterised by having evidence of diverse economic activities, prominent personal

appearance, household lifestyle, kitchen and food ways, personal grooming in several sites, and Roman building expression but not to the extent exhibited by high-status settlements. Under the assumption that an identity may remain the same or may evolve into more complex sub-identities in terms of material culture expression, it is possible that this identity evolved into a number of the sub-identities of Clusters 6 and 10 (see the brown arrows in Figure 7.5 connecting C5 to C6.1, C6.2, C6.3, C6.4, C10.1, C10.2, and C10.3). This is because these sub-identities are more prominent in terms of building lifestyle and other lifestyle expressions.

Figure 7.6 shows possible evolutionary paths for Cluster 3. This cluster is composed of three sub-identities characterised for containing high-status building material culture expression. However, they differ in relation to the presence of other material culture remains. One of them, in particular, is characterised by having very few remains related to lifestyle types other than building, and a small number of economic activities (C3.1). The possible evolutionary paths of this subgroup are represented in the figure with blue arrows. These evolutionary paths were inferred from the fact that this sub-identity is very rich in material culture associated with high-status building material. This implies that this subgroup may have evolved into similar sub-identities with additional lifestyle type expressions. The only candidates that satisfy these requirements are the sub-identities C6.1, C6.3, C6.4, C10.1, and C10.3 in Clusters 6 and 10.

Some sub-identities in these clusters were ruled out because, even when having significant building material culture expression, they are not as rich in high-status building material remains as the original sub-identity C3.1. An example is C10.4 in Cluster 4. The sub-identity C3.2, on the other hand, is also composed of sites that are very rich in high-status building material. However, it differs from C3.1 in that it also has prominent features related to personal appearance, personal grooming and recreation. This evidence suggests

that possible evolutionary paths are the ones represented by the green arrows connecting C3.2 with C6.1, C10.1 and C10.2. Note that the connection between C3.2 and C6.5 has been represented with a discontinuous green arrow to reflect a less likely evolutionary possibility. This is because the sub-identity C6.5 seems to be less complex than C3.2 because it does not contain evidence of recreation implying that the assumption of increasing complexity is not satisfied. However, lack of remains associated with recreation may reflect biases in archaeological excavations. This is why this path has also been considered as a possibility. Finally, the sub-identity C3.3 is less prominent in relation to high-status building expression than the other ones. But it is prominent in a number of other lifestyle types such as household lifestyle, kitchen and personal appearance. This evidence suggests that the possible evolutionary path for this sub-identity (represented with pink arrows in Figure 6) can be identified in similar or more complex sub-identities of Clusters 6 and 10. Likely possibilities are the sub-identities C6.1, C6.2, C6.3, C6.4, C10.1, C10.2 and C10.3.

Finally, Figure 7.7 shows the possible evolutionary path of Cluster 4. This cluster is characterised by having sites that are rich in material culture remains and is composed of three potential sub-identities. One of them is characterised by having all the lifestyle indicators adopted in this thesis, except recreation (C4.1). Because this sub-identity is already rich in most of these indicators, a likely evolutionary path if the one linking C4.1 with C6.1 because the latter is the only more complex sub-identity identified in the Later Roman period.

The sub-identity C4.2, on the other hand, is also rich in a range of material culture, expect literacy, recreation, personal grooming and religion. This sub-identity may have remained relatively stable (i.e. the purple arrow linking C4.2 with C6.2) or may have evolved into the most complex sub-identity C6.1. However, the linkage between C4.2 and some other sub-identities in Cluster 6 and 10 (i.e. C6.3, C6.4, C10.1 and C10.2) is more

difficult to justify because the assumption of increasing in complexity is not fully satisfied. This is because some of these sub-identities have additional lifestyle types in some areas, but less in others. For example, the sub-identity C6.4 does not contain evidence of transport and defence suggesting that it is less complex than C4.2. However, it has evidence of literacy which is not present in the latter. In recognition of the fact that lack of material culture in some subgroups of sites may reflect biases in excavation activities, the linkages between C4.2 and C6.3, C6.4, C10.1 and C10.2 have been represented with discontinuous lines.

Finally, the third sub-identity in Cluster 4 (C4.3) corresponds to a subgroup with very little Roman building expression, but with significant expression in terms of personal appearance, household lifestyle, kitchen ways, and diverse economic activities. The possible evolutionary identity paths of this subgroup are represented with light blue arrows. Lack of high-status building in this subgroup suggests that it may have evolved into sub-identities with low building material expression and some additional lifestyle expressions. There are two potential subgroups that satisfy this criterion: C8.4 which contains evidence of literacy; and sub-identity C7.1 which is very similar in material culture. Note, however, that the arrows that connect these subgroups are represented as discontinuous lines because these paths are more contested. That is, C4.3, C7.1 and C8.4 share a number lifestyle types. However, the number of indicators linking them are much smaller in C7.1 and C8.4 contradicting the assumption of increasing complexity over time. Despite this, these links are presented as a possibility because lack of more material culture indicators may reflect biases in archaeological techniques. On the other hand, the sub-identity C4.3 may also have evolved into the more complex sub-identities C6.1, C6.2, C6.3, C6.4, C10.1, C10.2 and C10.3.

In relation to these possible evolutionary paths, it is important to recognise that they may have been influenced by immigrants who may have bought land bringing different

ways of living. This is supported by the fact that there is no correlation between local/foreign origin and material culture found in graves proving that migration was an important feature in Roman Britain (Eckardt et al. 2014, 535).

This pattern of evolution is more aligned to a process of creolisation because it reflects the emergence of hybrid/mixed culture (Webster 2001, 218). This is because even when the evidence suggests an increase in the level of Roman influence over time, this was not homogeneous as revealed in Figures 7.3, 7.4, 7.5 and 7.6, a fact that may reflect unequal power relations between the groups of individuals that occupied this landscape. On the contrary, there are lifestyle-types in a significant number of sub-identities without evidence of Roman influence, and this is true even in high-status identities. This is interpreted as groups of people who maintained or adopted diverse native traditions even when involved in the process of spreading Roman influence. This, again, is consistent with the creolisation model of identity formation.

To finish this section, some results of the phenomenological analysis obtained for Shropshire are considered here to gain some possible insights in terms of identity evolution in Gloucestershire. As outlined in Chapter Six, the sites in Shropshire were located in areas with abundant natural resources suggesting that the exploitation of these resources was an important and transversal activity. However, higher-status settlements seem to have selected richer lands for agricultural production and also sites with good local visibility (i.e. visibility affordability) suggesting that they wanted to be seen in order to signal status and control over the local landscape, as a form of marketing to promote local production, or to supervise the work and activities carried out by slaves/tenants.

It is possible that similar considerations applied to Gloucestershire in the Earlier Roman period because the level of material culture overlap between the clusters in this period is much smaller implying that social limits between coexisting identities were better

defined. However, the emergence of closely related sub-identities in different clusters during the Later Roman period suggests that these possible links between identity types and local landscape may have vanished. For example, an identity that was characterised by having poor agricultural land with little Roman influence and poor local visibility may have evolved to a wealthy identity characterised by having an economy based on industrial production with some Roman influence in terms of personal appearance. Thus, because this evolved identity is still located in areas with low local visibility, the original correlation between low visibility and sites with low levels of wealth and Roman influence would have vanished. The possible loss of the correlations identified in Shropshire can also be inferred from the point of view of material culture agency which suggests that artefacts act as passive agents that influence human behaviour through affordances (Eckardt 2014, 8; Swift 2017, 103). In considering this view, it would be reasonable to argue that groups of people occupying similar landscapes and using similar objects would show similar social behaviour, because this behaviour would be influenced by the same material world consisting precisely of the surrounding landscape and the existing material culture (for a discussion supporting this argument, see Revell 2016, 19-40).

This view can be reinforced by the argument stating that societies shape the material world in order to achieve future expectations, but this shaped material world creates the conditions for ritualised actions that eventually lead to a stable identity expression (Gardner and Wallace 2020, 339). Consequently, a potentially differently shaped physical world would have emerged when diverse mobile material culture started to be adopted by different identities, because diverse material culture items may have been seen as different ways to achieve future expectations. This suggests, therefore, that even when sharing similar landscapes, the presence of new objects in the community may have triggered diverse cultural expression which is what is observed in the Later Roman period in Gloucestershire.

The theoretical loss of the correlations identified from the phenomenological analysis developed in Shropshire is another possible approach that may be used to test the apparent creolisation process in Gloucestershire and is left for future research.

7.4 Answers to the research questions

The results and interpretations given in this chapter have the potential to provide answers to the research questions considered in this study. These answers are presented as follows.

1. Do Romano-British sites in the landscape reflect diverse identities?

The findings suggest a positive answer. That is, the results revealed a diversity of cultural and economic expressions that can be classified broadly in three wide categories: Identities that maintained significant native traditions; identities that were highly influenced by Roman ways; and identities that showed mixed features. The latter are heterogeneous because they reflect a different mix of native and Roman lifestyles.

2. How are diverse identities related to material culture in these sites?

Diverse identities are related to material culture through lifestyle/activities types. That is, because material culture remains inform about specific lifestyle/activities types, combinations of these types were identified from material culture remains making it possible to identify heterogeneous identities and sub-identities. This also permitted the identification

of identity evolution paths discovering complex identity formation over the centuries in Roman Britain.

3. Are diverse identities related to surrounding landscapes?

Unfortunately, phenomenological analysis was only carried out in Shropshire as a consequence of the social restrictions imposed by the government to deal with the Covid-19 pandemic. Nonetheless, this partial evidence suggests a deeper relationship between features of the local landscape and social identities when the latter are culturally polarised. That is, richer identities seem to have more control over the surrounding landscape and have incentives to be observed in order to signal status and ownership, or as a strategy to attract individuals for commercial purposes. This suggests that landscape affordability associated with natural resources enabled these people to increase cultural and economic expression. However, while not proved in this thesis, this relationship seems to be much less clear when identities are mixed and show significant levels of cultural overlap. This is because identities occupying different landscapes may follow a process of cultural integration that would be captured as a mix of material culture, but not as a mix of features of the landscape because they are fixed at human scales. For example, landscape affordability in terms of natural resources may not be as relevant for an evolving identity that is adopting trading intermediation as economic expression.

4. How did social identities in Gloucestershire and Shropshire evolve?

The evidence revealed that social identity evolution was not homogeneous suggesting that diverse human groups followed different and parallel identity formation processes. That is,

societies in Shropshire seems to have followed a process characterised by nativism, and societies in Gloucestershire a process characterised by creolisation. This diversity in identity response is highly consistent with Mattingly's concept of discrepant experiences. That is, heterogeneous perceptions of history, culture and relationships between colonizer and colonized societies can explain the observed emergence of discrepant identities in the areas under study.

CHAPTER EIGHT: Conclusions

The Romanisation model introduced by Francis John Haverfield at the beginning of the 1990s dominated the research agenda for the issue of Roman Britain over a long period of time (Swift 2016, 74). In this model, groups of people who adopted Roman traditions are seen as civilised people who followed an idealised way of living. In contrast, native/indigenous societies are seen as uncivilised low-status people. This duality has been criticised because it is considered too simplistic in explaining the interaction between different cultures, with critics arguing that a grey area exists where mixed cultural expressions may emerge (Hingley et al. 2018, 297). This criticism has been reinforced by a number of studies that put in doubt the previously assumed Roman-native duality (see for example Gardner and Wallace 2020; Revell 2016; and the Ancient Identities: Iron Age and Roman Heritages project currently being developed in collaboration between the University of Durham and the University of Stirling). For example, isotopic analyses of skeletons have revealed significant diversity in terms of individuals' origin and mobility as well as complex patterns of food consumption in local areas of Britain during the Roman period (Chenery et al., 2010; Eckardt and Müldner 2016, 209). Likewise, recent research on status, gender and mobility has revealed that these attributes are associated with heterogeneous material culture expression (see for example Peachin 2011, 27; Eckardt et al. 2014, 535; Pearce 2016, 343; Sherratt and Moore 2016, 364; Eckardt and Müldner 2016, 217; Avery et al. 2019, 157). The identification of heterogeneity in material culture has led to the proposal of alternative models of cultural identity formation such as the emulation, nativism, creolisation, and discrepant experiences approaches, among others (Millett 1990b; Webster 1996; Webster 2001; Mattingly 2004 and 2006). It is argued that mixed cultural expressions may be found in rural areas because they contain a range of rural sites with different characteristics.

The results obtained in this thesis not only found evidence supporting this claim, but also identified possible identity evolution paths that are consistent with the alternative models listed above, and with the claim that conquered populations adopted varied responses to the Romans,. It is also possible that these identity evolution paths may have been further influenced by immigrants introducing additional ways of living (see Eckardt et al. 2014, 535; Eckardt and Müldner 2016, 213). In particular, the mixed method approach developed in this thesis was able to identify a diversity of heterogeneous clusters of sites in the Earlier and Later Roman Britain suggesting the coexistence of diverse identities in both periods. These clusters contain sites that are characterised by sharing one or more determined features. In some clusters, the shared feature is lack of material culture (i.e. there is evidence of some artifacts in some sites, but they are not shared by all of them). In others, they were joined into the same cluster because they shared a number of material culture remains. In addition, an apparent contradiction in the data showing a high cattle to sheep/goat ratio in a poor settlement may be explained by slaves looking after animals for their masters. This is an additional antecedent suggesting a high degree of identity diversity in rural Roman Britain. These results can be seen from three different perspectives: diverse identities; identity evolution; and types of social interaction. They are explained as follows.

Diverse identities were observed only in Gloucestershire in the Earlier Roman period. This can be explained by the fact that this region is closer to the most active Roman areas in Britain corresponding to the south and east (Brindle 2018, 46). This suggests that proximity to Roman areas had a stronger effect on the spread and adoption of Roman lifestyles. Another possible explanation is the increased socio-economic complexity of this area during the Later Iron Age when compared with Shropshire, which may explain why Roman influence was not absorbed evenly as suggested by the identified diversity in terms of identities and sub-identities. It is possible that this reflects both the difficulty of affording

Roman lifestyles amongst less wealthy low-status groups, and the desire to keep diverse native traditions. It appears that both possibilities hold because evidence of small quantities of luxury goods such as vessel glass were found in low-status sub-identities suggesting lack of resources for more expensive goods, and evidence informing about determined Roman lifestyles have not been observed in some wealthy sub-identities. In relation to the latter case, there is evidence revealing that it is difficult to associate local material culture to ethnic traditions. For example, isotopic evidence has revealed that specific material culture remains have been found in individuals of diverse social and biological origins (Eckardt 2014, 58). It would not be surprising, therefore, if local traditions were adopted by a range of identities including wealthy ones as suggested by this evidence.

Some sites in Shropshire were also influenced by Roman ways in the early Roman period but not to the extent and diversity experienced by people in Gloucestershire, which was influenced by more diverse Later Iron Age cultural traditions. This is inferred from the possible sub-identities identified in the single cluster in Shropshire this period. That is, Roman contact had some impact on this more remote area but it was not large enough to trigger identify differentiation. It is possible that this is a consequence of being much further away from central Roman areas suggesting higher native rejection to the new ways of living. Another plausible explanation is that the identity response observed in Shropshire is only one of several possibilities, and no other response was observed because potential native groups that would respond in other ways were not present in this area. In contrast, diverse responses were observed Gloucestershire because this area contained higher cultural diversity.

In relation to identity evolution, on the other hand, it was found that the evolutions observed in Shropshire and Gloucestershire are not the same. In the case of Shropshire, the single identity of the Earlier Roman period led to two different identities with distinctive

characteristics and few overlaps in terms of material culture. One of them corresponds to a low-status identity with low level of wealth that is composed of sub-identities that differ mainly in the types of economic activities that they developed. The other one contains wealthy sites and is composed of sub-identities showing different economic activities and different degrees of Roman influence. In contrast, the evidence in Gloucestershire indicates a much less polarised evolution in which original identities and sub-identities led to mixing new ones with significant overlap. This suggests that Roman presence triggered diverse responses from several native traditions that coexisted in this region that led to a range of identity expressions, a possibility that is supported by a number of researchers (see for example Revell 2016, 1-18).

This can be understood from the perspective of duality of structure. According to this view, social identities have a temporal dimension that is characterised by continuity and change. In this dimension, identities are maintained through routinised material practices (i.e. tradition), but they change over time when some practices change through contact with other ways of doing things (Gardner 2016, 499; Gardner 2002, 346). In considering this idea, the social polarisation observed in Shropshire may reflect unwillingness to change routinised material practices by the native societies that occupied this area. This suggests that Roman presence was not a strong stimulus for this people to trigger significant changes. In contrast, the existence of higher diversity of native traditions in Gloucestershire may be associated with the observed diverse responses to the Roman stimulus. Perhaps some of these traditions responded in the same way as the societies in Shropshire. That is, by maintaining their traditional practices leading to a more stable identity in time. But others, apparently, were more willing to experiment with other ways leading to significant identity evolution and diversity in terms of cultural and economic expression. According to Gardner

and Wallace (2020, 330) different choices of this nature may respond to diverse strategies adopted by different groups to shape their future.

Finally, in relation to the types of social interaction, it appears that Shropshire followed an interaction that is consistent with the nativist model of identity formation because it reflects a polarisation between Roman and native identities suggesting native resistance against Roman ways. This may also be explained by the distance of Shropshire from central Roman areas in Britain. That is, Roman people were probably less successful in imposing their rules in areas located far away from places with more centralised power. In contrast, the results for Gloucester suggest a process of creolisation because it reflects the emergence of hybrid/mixed culture that can also be explained by proximity to central Roman areas of influence consisting of unequal power relationships. The main implication of this finding is that identity evolution in Britain was very complex and cannot be captured by a single approach such as the traditional Romanisation model. On the contrary, it appears that different parallel identity processes evolved following specific social paths that depended on the influence of diverse traditions as well as proximity to centres of Roman power. This finding strongly supports Mattingly's discrepant experiences approach suggesting that people in Shropshire and Gloucestershire had different perceptions about the relationship between coloniser and colonised societies leading to the observed discrepant identities in these areas.

Note that complexity and diversity of groups and their relationships have already been recognised by some researchers (see for instance Revell 2009, 193). The novelty that this thesis adds to this debate is the proposal that the social process behind identity formation and evolution may not be the same, implying that each group may follow a distinctive process. That is, while creolisation could probably explain the identity evolution in Gloucestershire, it may not be suitable for other areas. In other words, this thesis proposes

that complexity is not only characterised by diverse social responses, but also by the social process behind identity evolution, suggesting that different parallel social mechanisms of identity formation may have coexisted during the Roman period in Britain. This, again, strongly supports Mattingly's discrepant experiences approach.

It is important to highlight the fact that this research and the conclusions offered in this chapter have to be considered with caution because a number of limitations might have introduced potential biases. They are described as follows. Firstly, it was difficult to date a number of material culture indicators making it difficult to make comparisons between different periods of time. In order to overcome this problem, the sites were classified according to the period of higher occupation. This, however, created some overlaps between the samples for the Earlier and Later Roman periods implying that some results may not hold. Secondly, the network analysis considered 41 material indicators. Nonetheless, they are only a subset of the available material culture remains. Unfortunately, some very important and informative ones such as pottery and animal taxa were not used because this information is fragmentary in several sites. The omission of these highly relevant indicators may have induced outcomes that do not fully reflect the nature of the real identities that occupied the areas under study. Thirdly, lack of material culture in some sites may not necessarily indicate that these people did not adopt them. On the contrary, it may be the case that these remains have not been discovered yet because excavations were carried out in very small areas, were carried out in peripheral areas of a settlement, research was developed using poor excavations techniques, or because the archaeological reports were based on evaluation exercises. This suggests that some results may be biased as a result of material culture omissions. Fourthly, some material culture indicators were not quantified. In order to introduce them into the analysis, they were expressed as binary variables (i.e. it is or it is not present). The problem with these variables is that they do not correct for intensity (i.e.

quantity per excavated unit). This means that biases may have been introduced by either over-estimating or sub-estimating the role of these indicators. Fifthly, the information for Shropshire is poor and it was only possible to obtain samples from a small number of sites. Sixthly, phenomenological analysis was only considered in Shropshire making it difficult to test hypotheses related to possible links between the local landscape and coexisting identities. Finally, interpretations of the phenomenological analysis in Shropshire was carried out considering a circular area with a radius of 1km given the limitations of research undertaken on foot. However, it is argued that people in Roman times used a landscape within a radius of 3km (Bailey 2005, 173). While longer distances were explored by means of a car, this may have introduced some biases in terms of the subjective correlations identified in the landscape.

In spite of these limitations, a general and reasonable picture of identity formation emerged from the proposed mixed methodology introduced in this thesis making this the main contribution of this dissertation. That is, the results obtained in this study reflect the potential of this novel methodological approach to identify heterogeneous and divergent identities from diverse material culture found in archaeological sites. In this context, status is important and seems to be related to the distinction between landowners on one hand and tenants and slaves on the other.

As explained in Chapter 4, the proposed mixed method is referred to as *explicative sequential design* and consists of a quantitative stage (i.e. Phase 1) followed by a qualitative stage (i.e. Phase 2). The quantitative stage uses network analysis to identify clusters of sites with the purpose of developing Endogenous Cultural Material Network Models. The qualitative stage, on the other hand, is contingent to the results from Phase 1 and consists of exploring clusters through phenomenological fieldwork. This approach was not only able to identify diverse identities, but also parallel evolving identity processes that have not fully

been explored in the literature from an empirical point of view. In addition, one of the key results from the phenomenological analysis carried out in the second stage, is that richer sites with more abundant material culture have a tendency to be located in places with good local visibility. This suggests that people in these sites wanted to be seen with the purpose of signalling status as a way to reflect wealth and control over the surrounding landscape, or as a way of controlling slaves/tenants who needed to be supervised. This result was aligned with the quantitative stage through the strength indicator (i.e. these sites have lower magnitudes of this indicator), and this highlights the value of the explicative sequential design of the proposed mixed methods approach.

These results demonstrate the potential and value of the proposed mixed method approach as a tool to identify, characterise and explain the diversity and evolution of heterogeneous identities from material culture remains across different archaeological sites. In fact, it appears that this is the first academic work to have introduced the mixed method approach to study the issue of identity formation. In considering this contribution, it is important to clarify that the possible biases listed above reflect mainly limitations of data rather than limitations of the methodology itself. Consequently, more robust results may be obtained when more reliable data is available in the future.

Given the potential of this novel methodology to identify the dynamic of divergent identities from material culture remains, possible extensions can be developed for future research. Some of them are listed as follows:

1. The approach could be scaled up to the full Roman Rural Settlement Project dataset to gain a better understanding of the dynamic of identity formation and evolution at the national level.

2. In addition, working with larger samples with sites having more available material culture indicators such as pottery and animal taxa would mitigate the data quality problem described in the limitations to some extent.
3. The approach could be applied to datasets from other chronological periods and/or geographic regions. This is feasible because the proposed mixed methodology was not designed exclusively for Shropshire and Gloucestershire Roman-Britain. On the contrary, it is general enough to be applied to any period of time and any geographical area that contains database of material culture remains found in diverse archaeological sites.
4. A phenomenological analysis could be applied to Gloucestershire in order to test the hypothesis that a link between determined local features of the landscape and diverse identities vanishes when these identities follow a process of creolisation.
5. The phenomenological stage could be carried out in larger areas and with the assistance a team of researchers in order to explore diverse interpretations of the landscape.
6. The same research can be developed in different areas to determine whether the results are robust and also to determine other possible identity evolution processes in Roman Britain.
7. The methodology could be applied to study identity formation in other countries and realities. For example, Roman influence in other provinces, or the influence of other ancient empires in other countries or social realities.

All these potential extensions are left for future research.

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APPENDIX A

Weighted links across sites in Gloucestershire: Earlier Roman period

Table A1. Weighted links in Gloucestershire: Earlier Roman period

Site ID (preceded by 14)	004 and 005	008	012	015	018	019, 082, 101, 144	021	029	032	033	034	037	041	043
004 and 005														
008	0.59													
012	0.49	0.56												
015	0.51	0.61	0.46											
018	0.44	0.66	0.56	0.51										
019, 082, 101,	0.34	0.29	0.39	0.41	0.39									
144	0.59	0.56	0.49	0.49	0.44	0.41								
021	0.54	0.71	0.59	0.63	0.61	0.41	0.51							
029	0.24	0.37	0.29	0.27	0.34	0.34	0.41	0.27						
032	0.51	0.49	0.66	0.41	0.49	0.29	0.56	0.54	0.32					
033	0.51	0.76	0.71	0.54	0.71	0.32	0.49	0.71	0.34	0.61				
034	0.51	0.85	0.63	0.56	0.76	0.32	0.56	0.73	0.37	0.59	0.83			
037	0.39	0.34	0.29	0.59	0.46	0.44	0.39	0.41	0.32	0.24	0.27	0.29		
041	0.54	0.80	0.66	0.54	0.71	0.27	0.56	0.71	0.37	0.63	0.85	0.88	0.27	
043	0.61	0.63	0.68	0.59	0.56	0.37	0.59	0.68	0.32	0.54	0.63	0.61	0.39	0.63
045, 046, 171,	0.51	0.59	0.49	0.44	0.51	0.24	0.46	0.56	0.39	0.54	0.63	0.66	0.27	0.61
188	0.61	0.83	0.63	0.61	0.71	0.37	0.56	0.66	0.32	0.56	0.78	0.85	0.34	0.80
052	0.56	0.78	0.49	0.61	0.68	0.29	0.51	0.63	0.22	0.44	0.63	0.71	0.39	0.71
055	0.34	0.44	0.49	0.46	0.44	0.37	0.59	0.39	0.37	0.54	0.41	0.44	0.39	0.46
062	0.63	0.46	0.54	0.41	0.49	0.29	0.46	0.54	0.32	0.54	0.59	0.56	0.29	0.54
086	0.54	0.61	0.46	0.54	0.49	0.37	0.51	0.59	0.32	0.41	0.56	0.56	0.39	0.54
099	0.68	0.76	0.59	0.59	0.54	0.32	0.61	0.68	0.29	0.54	0.66	0.73	0.39	0.68
102	0.49	0.71	0.46	0.61	0.66	0.34	0.44	0.61	0.20	0.44	0.61	0.63	0.37	0.61
118	0.56	0.88	0.68	0.56	0.78	0.29	0.56	0.73	0.34	0.61	0.88	0.95	0.29	0.93
125	0.56	0.85	0.68	0.54	0.76	0.29	0.54	0.71	0.37	0.61	0.88	0.93	0.27	0.90
131	0.54	0.85	0.66	0.54	0.76	0.27	0.54	0.71	0.34	0.59	0.85	0.93	0.29	0.90
132	0.59	0.78	0.66	0.59	0.73	0.34	0.51	0.68	0.34	0.59	0.83	0.85	0.37	0.88
134	0.56	0.88	0.68	0.56	0.78	0.29	0.56	0.73	0.34	0.61	0.88	0.95	0.29	0.93
147	0.46	0.71	0.39	0.54	0.68	0.29	0.44	0.54	0.24	0.34	0.56	0.66	0.34	0.61
150	0.63	0.88	0.63	0.61	0.68	0.29	0.56	0.78	0.29	0.56	0.83	0.85	0.34	0.88
151	0.66	0.93	0.59	0.66	0.73	0.34	0.56	0.73	0.29	0.51	0.78	0.85	0.39	0.83
156	0.61	0.90	0.61	0.61	0.71	0.29	0.56	0.78	0.32	0.54	0.80	0.88	0.34	0.85
158	0.63	0.88	0.63	0.63	0.63	0.37	0.63	0.73	0.34	0.56	0.78	0.83	0.37	0.83
159	0.59	0.54	0.59	0.54	0.59	0.32	0.46	0.54	0.22	0.46	0.59	0.51	0.41	0.54
163	0.68	0.76	0.54	0.51	0.54	0.27	0.51	0.59	0.29	0.51	0.68	0.71	0.34	0.68
164	0.56	0.83	0.68	0.56	0.73	0.29	0.59	0.73	0.34	0.63	0.88	0.90	0.29	0.95
166	0.71	0.66	0.51	0.54	0.56	0.37	0.51	0.54	0.29	0.46	0.56	0.66	0.34	0.59
168	0.56	0.80	0.66	0.51	0.71	0.27	0.51	0.66	0.34	0.59	0.83	0.88	0.27	0.85
169	0.54	0.68	0.59	0.59	0.63	0.39	0.54	0.61	0.27	0.44	0.66	0.66	0.37	0.68
170	0.56	0.73	0.51	0.61	0.63	0.37	0.56	0.63	0.37	0.51	0.68	0.66	0.46	0.68
173	0.56	0.88	0.68	0.56	0.78	0.29	0.56	0.73	0.34	0.61	0.88	0.95	0.29	0.93
174	0.51	0.66	0.51	0.71	0.51	0.34	0.56	0.73	0.34	0.49	0.63	0.71	0.41	0.68
180														
187														

Table A1. Continuation

Site ID (preceded by 14)	045, 046, 171, 188	052	055	062	086	099	102	118	125	131	132	134	147	150
052	0.44													
055	0.63	0.61												
062	0.61	0.44	0.78											
086	0.39	0.37	0.39	0.41										
099	0.49	0.59	0.59	0.37	0.32									
102	0.51	0.54	0.59	0.56	0.44	0.59								
118	0.59	0.59	0.71	0.66	0.44	0.63	0.68							
125	0.59	0.41	0.71	0.88	0.37	0.34	0.54	0.59						
131	0.66	0.63	0.88	0.76	0.44	0.56	0.56	0.71	0.68					
132	0.63	0.63	0.88	0.73	0.41	0.56	0.54	0.68	0.66	0.98				
134	0.63	0.61	0.85	0.73	0.44	0.54	0.56	0.68	0.66	0.98	0.95			
147	0.66	0.59	0.83	0.71	0.41	0.54	0.54	0.68	0.63	0.90	0.88	0.88		
150	0.66	0.63	0.88	0.76	0.44	0.56	0.56	0.71	0.68	1.00	0.98	0.98	0.90	
151	0.49	0.46	0.66	0.83	0.37	0.29	0.49	0.59	0.80	0.68	0.66	0.66	0.63	0.68
156	0.71	0.61	0.78	0.76	0.44	0.51	0.61	0.76	0.68	0.90	0.88	0.88	0.85	0.90
158	0.71	0.59	0.88	0.85	0.44	0.46	0.61	0.76	0.78	0.90	0.88	0.88	0.85	0.90
159	0.73	0.56	0.80	0.78	0.44	0.51	0.59	0.73	0.71	0.93	0.90	0.90	0.83	0.93
163	0.66	0.63	0.85	0.76	0.46	0.54	0.63	0.78	0.68	0.85	0.83	0.83	0.80	0.85
164	0.66	0.41	0.56	0.61	0.39	0.44	0.54	0.54	0.61	0.56	0.56	0.56	0.56	0.56
166	0.59	0.66	0.68	0.61	0.41	0.56	0.63	0.73	0.54	0.71	0.71	0.71	0.66	0.71
168	0.66	0.63	0.83	0.71	0.46	0.56	0.56	0.71	0.63	0.95	0.93	0.93	0.90	0.95
169	0.51	0.61	0.78	0.61	0.37	0.71	0.66	0.71	0.54	0.66	0.66	0.63	0.63	0.66
170	0.59	0.59	0.85	0.68	0.41	0.59	0.51	0.68	0.61	0.93	0.93	0.93	0.83	0.93
173	0.61	0.46	0.76	0.85	0.39	0.39	0.54	0.61	0.78	0.71	0.73	0.68	0.71	0.71
174	0.68	0.54	0.71	0.68	0.46	0.41	0.59	0.61	0.66	0.68	0.71	0.66	0.68	0.68
180	0.66	0.63	0.88	0.76	0.44	0.56	0.56	0.71	0.68	1.00	0.98	0.98	0.90	1.00
187	0.56	0.56	0.66	0.56	0.39	0.51	0.51	0.63	0.49	0.71	0.68	0.68	0.68	0.71

Table A1. Continuation

Site ID (preceded by 14)	151	156	158	159	163	164	166	168	169	170	173	174	180
156	0.68												
158	0.78	0.90											
159	0.71	0.93	0.93										
163	0.63	0.88	0.85	0.83									
164	0.51	0.63	0.61	0.59	0.59								
166	0.56	0.76	0.76	0.73	0.73	0.61							
168	0.63	0.90	0.85	0.88	0.85	0.56	0.71						
169	0.59	0.61	0.71	0.63	0.68	0.49	0.66	0.61					
170	0.61	0.83	0.83	0.85	0.78	0.54	0.68	0.88	0.68				
173	0.73	0.71	0.76	0.68	0.76	0.61	0.59	0.71	0.59	0.66			
174	0.61	0.73	0.78	0.71	0.71	0.61	0.66	0.71	0.56	0.63	0.68		
180	0.68	0.90	0.90	0.93	0.85	0.56	0.71	0.95	0.66	0.93	0.71	0.68	
187	0.54	0.71	0.66	0.71	0.73	0.44	0.56	0.71	0.63	0.66	0.56	0.56	0.71

APPENDIX B

Weighted links across sites in Gloucestershire: Later Roman period

Table B1. Weighted links in Gloucestershire: Later Roman period

Site ID (preceded by 14)	006	010	011	017	023	024	025	027	028	038	047	060	061	069
006														
010	0.56													
011	0.44	0.71												
017	0.39	0.41	0.39											
023	0.24	0.17	0.17	0.44										
024	0.29	0.12	0.17	0.44	0.46									
025	0.66	0.63	0.56	0.37	0.34	0.22								
027	0.56	0.56	0.59	0.46	0.24	0.29	0.61							
028	0.22	0.46	0.34	0.24	0.29	0.10	0.29	0.29						
038	0.68	0.59	0.54	0.39	0.37	0.24	0.88	0.59	0.24					
047	0.27	0.20	0.22	0.37	0.44	0.37	0.32	0.29	0.34	0.29				
060	0.63	0.78	0.61	0.49	0.22	0.12	0.68	0.63	0.34	0.63	0.22			
061	0.56	0.76	0.63	0.41	0.15	0.10	0.66	0.63	0.34	0.63	0.17	0.83		
069	0.68	0.56	0.51	0.37	0.29	0.29	0.68	0.59	0.24	0.71	0.24	0.63	0.61	
080	0.54	0.49	0.41	0.37	0.46	0.29	0.59	0.49	0.37	0.63	0.49	0.49	0.44	0.56
087	0.49	0.63	0.68	0.37	0.17	0.24	0.54	0.51	0.34	0.54	0.22	0.61	0.59	0.59
090	0.22	0.46	0.54	0.44	0.29	0.39	0.32	0.46	0.34	0.29	0.24	0.44	0.46	0.39
095	0.49	0.73	0.59	0.39	0.20	0.22	0.56	0.49	0.39	0.54	0.22	0.66	0.76	0.51
098	0.59	0.41	0.39	0.39	0.41	0.44	0.54	0.41	0.37	0.54	0.44	0.41	0.34	0.49
105	0.56	0.80	0.73	0.44	0.24	0.20	0.73	0.59	0.39	0.71	0.27	0.76	0.76	0.63
106	0.49	0.85	0.68	0.34	0.15	0.12	0.63	0.49	0.44	0.63	0.20	0.73	0.78	0.56
107	0.59	0.80	0.63	0.39	0.20	0.20	0.71	0.51	0.37	0.66	0.24	0.73	0.71	0.66
108	0.54	0.90	0.68	0.39	0.17	0.12	0.61	0.54	0.46	0.61	0.20	0.78	0.78	0.61
110	0.49	0.59	0.59	0.46	0.29	0.22	0.56	0.51	0.34	0.54	0.27	0.61	0.71	0.56
115	0.51	0.73	0.54	0.39	0.15	0.10	0.59	0.54	0.46	0.54	0.17	0.76	0.73	0.51
116	0.46	0.59	0.51	0.41	0.27	0.17	0.63	0.51	0.32	0.66	0.22	0.61	0.66	0.59
117	0.54	0.73	0.61	0.32	0.12	0.10	0.56	0.63	0.39	0.56	0.10	0.71	0.80	0.54
123	0.54	0.85	0.73	0.39	0.17	0.12	0.66	0.54	0.41	0.66	0.20	0.78	0.78	0.61
127	0.49	0.83	0.71	0.34	0.12	0.10	0.61	0.51	0.44	0.61	0.15	0.71	0.76	0.56
128	0.51	0.68	0.61	0.46	0.17	0.20	0.61	0.54	0.34	0.61	0.20	0.66	0.66	0.61
133	0.56	0.83	0.66	0.37	0.10	0.05	0.68	0.56	0.39	0.68	0.12	0.80	0.85	0.63
136	0.66	0.73	0.66	0.46	0.22	0.15	0.78	0.66	0.32	0.80	0.24	0.80	0.80	0.73
139	0.46	0.59	0.59	0.46	0.29	0.32	0.46	0.59	0.37	0.44	0.24	0.56	0.51	0.54
142	0.56	0.83	0.68	0.37	0.12	0.05	0.66	0.56	0.39	0.66	0.12	0.78	0.83	0.61
143	0.51	0.85	0.61	0.44	0.15	0.15	0.61	0.54	0.44	0.61	0.20	0.73	0.71	0.54
145	0.49	0.83	0.66	0.37	0.15	0.12	0.59	0.46	0.44	0.59	0.15	0.71	0.76	0.56
146	0.51	0.80	0.63	0.37	0.15	0.12	0.54	0.51	0.41	0.54	0.12	0.71	0.73	0.61
148	0.54	0.85	0.71	0.39	0.17	0.12	0.61	0.54	0.44	0.61	0.20	0.73	0.73	0.56
149	0.61	0.66	0.56	0.46	0.27	0.20	0.61	0.56	0.41	0.63	0.37	0.73	0.68	0.61
152	0.56	0.83	0.63	0.39	0.12	0.07	0.63	0.59	0.44	0.63	0.17	0.80	0.80	0.63
153	0.54	0.85	0.71	0.41	0.22	0.15	0.66	0.56	0.46	0.66	0.22	0.78	0.78	0.61
154	0.41	0.56	0.49	0.41	0.39	0.22	0.54	0.44	0.44	0.51	0.46	0.54	0.49	0.49
155	0.59	0.80	0.68	0.39	0.12	0.07	0.71	0.59	0.37	0.71	0.15	0.83	0.83	0.66
157	0.49	0.88	0.71	0.39	0.15	0.10	0.63	0.51	0.44	0.66	0.17	0.73	0.78	0.56
160	0.32	0.22	0.27	0.51	0.51	0.54	0.29	0.46	0.20	0.37	0.39	0.22	0.24	0.34
162	0.56	0.83	0.66	0.37	0.10	0.05	0.68	0.56	0.39	0.68	0.12	0.80	0.85	0.63
165	0.54	0.85	0.63	0.39	0.12	0.10	0.59	0.51	0.44	0.59	0.15	0.73	0.73	0.59
172	0.54	0.80	0.61	0.37	0.15	0.07	0.61	0.56	0.41	0.61	0.15	0.76	0.76	0.63
175	0.59	0.80	0.66	0.41	0.15	0.10	0.66	0.66	0.39	0.66	0.17	0.83	0.80	0.68
178	0.44	0.68	0.66	0.39	0.22	0.20	0.54	0.49	0.44	0.51	0.32	0.68	0.66	0.49
179	0.34	0.51	0.41	0.29	0.20	0.12	0.39	0.44	0.46	0.39	0.22	0.51	0.56	0.37
181	0.54	0.66	0.68	0.49	0.34	0.22	0.54	0.59	0.39	0.51	0.27	0.66	0.63	0.54
182	0.46	0.61	0.56	0.39	0.17	0.20	0.54	0.54	0.39	0.51	0.17	0.66	0.66	0.49
189	0.59	0.85	0.66	0.39	0.10	0.05	0.71	0.56	0.39	0.68	0.12	0.83	0.85	0.63

Table B1. Continuation

Site ID (preceded by 14)	80	87	90	95	98	105	106	107	108	110	115	116	117	123
087	0.46													
090	0.34	0.54												
095	0.46	0.51	0.46											
098	0.59	0.46	0.32	0.41										
105	0.59	0.66	0.49	0.78	0.49									
106	0.46	0.66	0.46	0.80	0.41	0.85								
107	0.56	0.66	0.39	0.73	0.41	0.83	0.80							
108	0.51	0.68	0.46	0.78	0.41	0.83	0.90	0.80						
110	0.46	0.54	0.49	0.68	0.41	0.71	0.63	0.63	0.63					
115	0.37	0.51	0.39	0.63	0.39	0.61	0.71	0.61	0.73	0.49				
116	0.49	0.49	0.37	0.61	0.44	0.66	0.66	0.63	0.63	0.56	0.59			
117	0.39	0.51	0.46	0.71	0.29	0.68	0.73	0.68	0.73	0.56	0.68	0.56		
123	0.51	0.68	0.46	0.78	0.41	0.88	0.90	0.85	0.93	0.68	0.68	0.68	0.73	
127	0.46	0.68	0.44	0.76	0.37	0.80	0.88	0.80	0.90	0.61	0.66	0.63	0.73	0.90
128	0.46	0.61	0.41	0.61	0.34	0.78	0.68	0.73	0.71	0.66	0.54	0.56	0.61	0.76
133	0.44	0.61	0.39	0.76	0.34	0.80	0.88	0.78	0.90	0.61	0.76	0.71	0.80	0.90
136	0.56	0.61	0.39	0.71	0.44	0.85	0.78	0.78	0.78	0.71	0.66	0.78	0.71	0.83
139	0.44	0.56	0.54	0.59	0.49	0.66	0.56	0.56	0.59	0.56	0.49	0.44	0.54	0.59
142	0.41	0.59	0.41	0.73	0.34	0.78	0.85	0.76	0.88	0.59	0.76	0.68	0.83	0.88
143	0.44	0.59	0.44	0.66	0.37	0.73	0.80	0.71	0.83	0.54	0.73	0.59	0.71	0.78
145	0.46	0.63	0.44	0.76	0.37	0.80	0.88	0.80	0.90	0.61	0.66	0.63	0.73	0.90
146	0.41	0.68	0.46	0.66	0.32	0.71	0.78	0.73	0.83	0.54	0.68	0.56	0.76	0.78
148	0.46	0.63	0.44	0.73	0.39	0.83	0.85	0.80	0.88	0.63	0.71	0.63	0.71	0.93
149	0.63	0.61	0.44	0.63	0.46	0.73	0.66	0.71	0.71	0.61	0.61	0.61	0.61	0.71
152	0.46	0.63	0.41	0.71	0.37	0.76	0.83	0.73	0.90	0.56	0.78	0.68	0.76	0.85
153	0.54	0.71	0.49	0.73	0.44	0.83	0.85	0.76	0.93	0.63	0.68	0.61	0.68	0.88
154	0.54	0.41	0.41	0.54	0.49	0.63	0.56	0.54	0.56	0.49	0.49	0.46	0.46	0.56
155	0.46	0.63	0.41	0.73	0.37	0.83	0.85	0.80	0.88	0.63	0.73	0.73	0.78	0.93
157	0.49	0.63	0.44	0.78	0.39	0.85	0.90	0.80	0.93	0.63	0.68	0.63	0.76	0.93
160	0.39	0.37	0.46	0.22	0.34	0.27	0.20	0.27	0.22	0.41	0.15	0.20	0.22	0.22
162	0.44	0.61	0.39	0.76	0.34	0.80	0.88	0.78	0.90	0.61	0.76	0.71	0.80	0.90
165	0.44	0.66	0.39	0.68	0.37	0.76	0.80	0.73	0.88	0.59	0.68	0.59	0.73	0.83
172	0.41	0.66	0.49	0.66	0.37	0.71	0.80	0.68	0.85	0.51	0.76	0.63	0.76	0.80
175	0.46	0.66	0.41	0.68	0.37	0.78	0.80	0.76	0.85	0.61	0.76	0.68	0.76	0.85
178	0.46	0.54	0.49	0.66	0.54	0.76	0.71	0.63	0.68	0.59	0.66	0.54	0.61	0.73
179	0.37	0.37	0.32	0.59	0.29	0.46	0.54	0.44	0.54	0.39	0.56	0.56	0.59	0.54
181	0.54	0.61	0.56	0.63	0.46	0.71	0.63	0.63	0.71	0.68	0.59	0.51	0.59	0.71
182	0.37	0.49	0.44	0.66	0.41	0.63	0.68	0.59	0.63	0.51	0.68	0.56	0.66	0.68
189	0.44	0.61	0.39	0.76	0.34	0.80	0.88	0.80	0.88	0.61	0.78	0.71	0.80	0.88

Table B1. Continuation

Site ID (preceded by 14)	127	128	133	136	139	142	143	145	146	148	149	152	153	154
128	0.71													
133	0.88	0.73												
136	0.76	0.76	0.85											
139	0.61	0.61	0.51	0.56										
142	0.85	0.71	0.95	0.83	0.54									
143	0.76	0.66	0.80	0.71	0.51	0.80								
145	0.93	0.71	0.88	0.76	0.61	0.85	0.76							
146	0.78	0.68	0.80	0.71	0.54	0.83	0.78	0.78						
148	0.85	0.73	0.85	0.78	0.59	0.85	0.76	0.85	0.76					
149	0.63	0.66	0.68	0.76	0.56	0.66	0.66	0.66	0.63	0.66				
152	0.83	0.68	0.93	0.80	0.51	0.90	0.80	0.83	0.80	0.80	0.73			
153	0.88	0.71	0.85	0.78	0.61	0.83	0.78	0.85	0.78	0.83	0.71	0.85		
154	0.49	0.49	0.49	0.56	0.51	0.49	0.51	0.51	0.49	0.54	0.61	0.49	0.56	
155	0.85	0.76	0.95	0.88	0.54	0.93	0.78	0.85	0.78	0.88	0.71	0.90	0.83	0.51
157	0.90	0.73	0.90	0.78	0.56	0.88	0.83	0.90	0.78	0.88	0.66	0.85	0.88	0.54
160	0.22	0.34	0.15	0.24	0.34	0.15	0.24	0.22	0.22	0.22	0.29	0.17	0.24	0.27
162	0.88	0.73	0.98	0.85	0.51	0.95	0.80	0.88	0.80	0.85	0.68	0.93	0.85	0.49
165	0.85	0.78	0.85	0.73	0.61	0.83	0.80	0.85	0.80	0.78	0.66	0.85	0.83	0.49
172	0.78	0.63	0.88	0.76	0.54	0.90	0.80	0.78	0.80	0.78	0.63	0.88	0.80	0.49
175	0.78	0.73	0.88	0.83	0.59	0.85	0.78	0.78	0.80	0.83	0.71	0.88	0.80	0.51
178	0.66	0.59	0.66	0.66	0.61	0.66	0.61	0.68	0.59	0.71	0.68	0.66	0.68	0.61
179	0.54	0.44	0.61	0.54	0.44	0.61	0.56	0.54	0.49	0.54	0.51	0.59	0.51	0.39
181	0.68	0.63	0.63	0.66	0.68	0.66	0.61	0.63	0.61	0.68	0.68	0.66	0.73	0.54
182	0.61	0.54	0.71	0.66	0.56	0.73	0.63	0.61	0.61	0.68	0.56	0.68	0.59	0.44
189	0.85	0.71	0.95	0.85	0.51	0.93	0.83	0.85	0.80	0.83	0.68	0.90	0.83	0.49

Table B1. Continuation

Site ID (preceded by 14)	155	157	160	162	165	172	175	178	179	181	182
157	0.88										
160	0.17	0.22									
162	0.95	0.90	0.15								
165	0.83	0.85	0.20	0.85							
172	0.85	0.80	0.20	0.88	0.80						
175	0.90	0.80	0.24	0.88	0.80	0.83					
178	0.68	0.71	0.20	0.66	0.61	0.59	0.63				
179	0.59	0.54	0.12	0.61	0.51	0.56	0.56	0.49			
181	0.66	0.66	0.34	0.63	0.63	0.63	0.63	0.63	0.49		
182	0.73	0.63	0.17	0.71	0.59	0.71	0.71	0.61	0.61	0.59	
189	0.93	0.88	0.15	0.95	0.83	0.85	0.88	0.66	0.61	0.61	0.71

APPENDIX C

Weighted links across sites in Shropshire: Earlier Roman period

Table C1. Weighted links in Shropshire: Earlier Roman period

Site ID	30003	30004	30005	30006	30012	30016	30020	30026	30028
30003									
30004	0.93								
30005	0.93	0.95							
30006	0.88	0.95	0.90						
30012	0.88	0.88	0.93	0.83					
30016	0.90	0.93	0.98	0.88	0.90				
30020	0.83	0.85	0.90	0.80	0.83	0.88			
30026	0.90	0.93	0.98	0.93	0.90	0.95	0.88		
30028	0.76	0.78	0.73	0.73	0.71	0.71	0.73	0.71	
30030	0.61	0.61	0.66	0.56	0.61	0.68	0.76	0.63	0.59

APPENDIX D

Weighted links across sites in Shropshire: Later Roman period

Table D1. Weighted links in Shropshire: Later Roman period

Site ID	30001, 30007	30015	30017	30018	30019	30021	30022	30023	30027	30029
30001 and 30007										
30015	0.51									
30017	0.46	0.93								
30018	0.49	0.85	0.78							
30019	0.46	0.85	0.88	0.73						
30021	0.44	0.88	0.80	0.83	0.78					
30022	0.49	0.68	0.63	0.66	0.63	0.76				
30023	0.44	0.93	0.95	0.78	0.93	0.80	0.61			
30027	0.44	0.88	0.90	0.73	0.88	0.76	0.56	0.95		
30029	0.46	0.90	0.93	0.76	0.90	0.78	0.59	0.98	0.93	
30031	0.44	0.88	0.90	0.73	0.93	0.83	0.61	0.95	0.90	0.93

APPENDIX E

Material culture, strength indicator and weighted link per cluster

Table E.1. Material culture in the sites of Cluster 1 (red colour indicates similarities across sites)

	Site ID												
Material culture	**14034 (F)**	**14037 (F)**	**14043 (F)**	**14131 (F)**	**14132 (F)**	**14134 (F)**	**14147 (F)**	**14150 (F)**	**14156 (F)**	**14159 (F)**	**14168 (F)**	**14170 (F)**	**14180 (F)**
Coins distribution (Pick)	No pick	0	0	0	0	0	0	0	0	0	0	0	0
Coins quantity (range)	0–3	0	0	0	0	0	0	0	0	0	0	0	0
Building material: masonry	No	No	No	No	No	No	Yes	No	No	No	No	No	No
Tiled roof	No	No	No	No	No	No	No	No	No	No	No	No	No
Painted plaster wall	No	No	No	No	No	No	No	No	No	No	No	No	No
Structural worked stone	No	No	No	No	No	No	No	No	No	No	No	No	No
Ceramic building material (range)	8–30	0	0	0	> 30	0	0	0	0	0	0	0–2	0
Window glass	No	No	No	No	No	No	No	No	No	No	No	No	No
Tessellated floor mosaic	No	No	No	No	No	No	No	No	No	No	No	No	No
Hypocaust	No	No	No	No	No	No	No	No	No	No	No	No	No
Corndrier	No	No	No	No	No	No	No	No	No	No	No	No	No
Storage	No	No	No	No	No	No	No	No	No	No	No	No	No
Bathhouse	No	No	No	No	No	No	No	No	No	No	No	No	No
Evidence metal-work	No	No	No	No	No	No	No	No	Yes	Yes	No	No	No
Iron slag	No	No	No	No	No	No	No	No	Yes	Yes	No	No	No
Evidence bone-work	No	No	No	No	No	No	No	No	No	No	No	No	No
Hobnails	No	No	No	No	No	No	No	No	No	No	No	No	No
Bracelets quantity (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Finger rings (range)	0	0	0	0	0	0	0	0	0	0	0	0–3	0
Hairpins (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Other dress accessories (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Brooch distribution/type (pick)	No pick	0	No pick	0	0	0	No pick	0	No pick	0	No pick	0	0
Brooch quantity (range)	0–2	0	7–21	0	0	0	> 60	0	2–7	0	7–21	0	0
Toilet cosmetic (range)	0	0	0	0	0	0	6–30	0	0	0	0	0	0
Military fitting weapons (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Inscriptions	No	No	No	No	No	No	No	No	No	No	No	No	No
Writing equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Equine transport (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Religious objects (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Knives tools (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural tools (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Security objects (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Recreation objects (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Weighing objects (range)	0	0	15-30	0	0	0	0	0	0	0	0	0	0
Spinning (range)	0	0	0	0	0	0	0	0	0	2–5	0	0	0
Weaving (range)	0	0	0	0	0	0–2	0	0	0	0	0	0–2	0
Sewing (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Quernstones (range)	0	1–3	0	0	0	0	0	0	0	0	0	0	0
Millstones	No	No	No	No	No	No	No	No	No	No	No	No	No
Glass objects (range)	0	0	0	0	0	0	0	0	0	0	0	0	0
Vessel glass (range)	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E.2. Strength indicator values of the sites in Cluster 1.

	14034 (F)	14037 (F)	14043 (F)	14131 (F)	14132 (F)	14134 (F)	14147 (F)	14150 (F)	14156 (F)	14159 (F)	14168 (F)	14170 (F)	14180 (F)
Strength	27.61	28.95	28.49	29.95	29.44	29.17	28.40	29.95	29.25	29.25	29.32	28.06	29.95

Table E.3. Weighted links between the sites in Cluster 1.

Site ID	14034 (F)	14037 (F)	14043 (F)	14131 (F)	14132 (F)	14134 (F)	14147 (F)	14150 (F)	14156 (F)	14159 (F)	14168 (F)	14170 (F)
14037(F)	0.83											
14043(F)	0.85	0.88										
14131(F)	0.88	0.95	0.93									
14132(F)	0.88	0.93	0.90	0.98								
14134(F)	0.85	0.93	0.90	0.98	0.95							
14147(F)	0.83	0.85	0.88	0.90	0.88	0.88						
14150(F)	0.88	0.95	0.93	1.00	0.98	0.98	0.90					
14156(F)	0.83	0.85	0.88	0.90	0.88	0.88	0.85	0.90				
14159(F)	0.80	0.88	0.85	0.93	0.90	0.90	0.83	0.93	0.93			
14168(F)	0.88	0.90	0.95	0.95	0.93	0.93	0.90	0.95	0.90	0.88		
14170(F)	0.83	0.88	0.85	0.93	0.93	0.93	0.83	0.93	0.83	0.85	0.88	
14180(F)	0.88	0.95	0.93	1.00	0.98	0.98	0.90	1.00	0.90	0.93	0.95	0.93

Table. E.4. Material culture in the sites of Cluster 2 (red indicates similarities across sites)

	Site ID			
Material culture	**14008 (F)**	**14055 (F)**	**14158 (F)**	**14163 (F)**
Coins distribution (Pick)	0	0	0	0
Coins quantity (range)	0	0	0	0
Building material: masonry	No	Yes	Yes	No
Tiled roof	No	No	No	No
Painted plaster wall	No	No	No	No
Structural worked stone	Yes	Yes	Yes	Yes
Ceramic building material (range)	0	0–2	0	0
Window glass	No	No	No	No
Tessellated floor mosaic	No	No	No	No
Hypocaust	No	No	No	No
Corndrier	No	No	No	No
Storage	No	No	No	No
Bathhouse	No	No	No	No
Evidence metal-work	Yes	No	Yes	No
Iron slag	Yes	No	Yes	Yes
Evidence bone-work	No	No	No	No
Hobnails	No	Yes	No	Yes
Bracelets quantity (range)	0	0	0	0
Finger rings (range)	0	0	0	0
Hairpins (range)	0	0	0	0
Other dress accessories (range)	0	0	0	0
Brooch distribution/type (pick)	0	0	0	No related
Brooch quantity (range)	0	0	0	2–7
Toilet cosmetic (range)	0	0	0	0
Military fitting weapons (range)	0	0	0	0
Inscriptions	No	No	No	No
Writing equipment	0	0	0	0
Equine transport (range)	0	0	0	0
Religious objects (range)	0	0	0	0
Knives tools (range)	0	0	0	0
Agricultural tools (range)	0	0	0	0
Security objects (range)	0	0	0	0
Recreation objects (range)	0	0	0	0
Weighing objects (range)	0	0	0	0
Spinning (range)	0	0	0	0
Weaving (range)	0	0	0	0
Sewing (range)	0	0	0	0
Quernstones (range)	3–10	0–1	0	3–10
Millstones	Yes	No	No	No
Glass objects (range)	No	No	No	No
Vessel glass (range)	No	No	No	No

Table E.5. Strength indicator values of the sites in Cluster 2.

	14008(F)	14055(F)	14158(F)	14163(F)
Strength	28.48	28.64	29.66	28.86

Table E.6. Weighted links between the sites in Cluster 2.

Site ID	14008(F)	14055(F)	14158(F)
14055(F)	0.83		
14158(F)	0.93	0.88	
14163(F)	0.88	0.85	0.85

Table E.7. Material culture in the sites of Cluster 3 (red indicates similarities across sites)

	Site ID						
Material culture	**14018 (V)**	**14062 (V)**	**14125 (V)**	**14151 (V)**	**14164 (F)**	**14173 (V)**	**14174 (F)**
Coins distribution (Pick)	IIa	No coins	VIII	No coins	VIII	No coins	III
Coins quantity (range)	14–38	0	> 38	0	0–3	0	14–38
Masonry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tiled roof	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Painted plaster wall	Yes	Yes	Yes	Yes	Yes	Yes	No
Structural worked stone	No	Yes	Yes	Yes	No	Yes	Yes
Ceramic building material (range)	0	0	0	0	8–30	> 30	> 30
Window glass	No	No	Yes	No	No	No	No
Tessellated floor mosaic	No	Yes	Yes	Yes	No	Yes	No
Hypocaust	No	Yes	Yes	Yes	No	Yes	No
Corndrier	No	No	No	Yes	No	No	No
Storage	No	No	No	No	No	No	No
Bathhouse	No	No	Yes	Yes	No	No	No
Evidence metal-work	No	No	Yes	Yes	Yes	No	Yes
Iron slag	No	No	Yes	Yes	Yes	Yes	Yes
Evidence bone-work	No	No	No	No	No	No	No
Hobnails	No	No	Yes	No	Yes	Yes	No
Bracelets quantity (range)	5–20	0	0	> 35	0	0	0
Finger rings (range)	0	0	0	0	0	0	0
Hairpins (range)	0	0	0	0	0–4	12–54	0
Other dress accessories (range)	> 65	0	0	0	0–2	0	0
Brooch distribution/type (pick)	No brooch	No brooch	No brooch	No brooch	Polden Hill	No related	No related
Brooch quantity (range)	0	0	0	0	2–7	21-60	7–21
Toilet cosmetic (range)	0	0	0	0	0	0	0
Military fitting weapons (range)	15–35	0	0	0	0	0	0
Inscriptions	No	No	No	Yes	No	No	No
Writing equipment	No	No	No	No	No	No	No
Equine transport (range)	0	0	0	0	0	0	0
Religious objects (range)	0	0	0	0	0	0	0
Knives tools (range)	> 18	0	0	> 18	1–3	0	0
Agricultural tools (range)	0	0	0	0	1–3	0	0
Security objects (range)	0	0	0	0	0	0	> 8
Recreation objects (range)	0	0	0	0	0	0	0
Weighing objects (range)	0	> 30	0	0	0	0	0
Spinning (range)	0	0	0	0	0	0	0
Weaving (range)	0	0	0	0	2–5	0	0
Sewing (range)	0	0	0	0	0–10	0	0
Quernstones (range)	0	0	0	0	0	0	> 25
Millstones	No	No	No	No	No	No	No
Glass objects (range)	0	0	0	0	0	0	0
Vessel glass (range)	0	0	0	0	3–8	0	3–8

Table E.8. Strength indicator values of the sites in Cluster 3.

	14018 (V)	**14062 (V)**	**14125 (V)**	**14151 (V)**	**14164 (F)**	**14173 (V)**	**14174 (F)**
Strength	25.08	26.10	24.11	23.35	21.81	25.33	25.34

Table E.9. Weighted links between the sites in Cluster 3.

Site ID	**14018 (V)**	**14062 (V)**	**14125 (V)**	**14151 (V)**	**14164 (F)**	**14173 (V)**
14062(V)	0.68					
14125(V)	0.66	0.88				
14151(V)	0.68	0.83	0.80			
14164(F)	0.59	0.61	0.61	0.51		
14173(V)	0.63	0.85	0.78	0.73	0.61	
14174(F)	0.63	0.68	0.66	0.61	0.61	0.68

Table E.10. Material culture in the sites of Cluster 4 (red indicates similarities across sites)

	Site ID										
Material culture (R=range)	**14012 (F)**	**14015 (N)**	**14019, 82,101, 144 (N)**	**14021 (F)**	**14029 (I)**	**14032 (F)**	**14033 (F)**	**14041 (V)**	**14045, 46, 171, 188 (N)**	**14086 (F)**	**14187 (F)**
Coins distr. (Pick)	III	No pick	IIa	0	Unind	III	Unind	No pick	III	No pick	0
Coins quantity (R)	3–14	> 38	> 38	0	14–38	> 38	3–14	14–38	3–14	3–14	0
Building masonry	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
Tiled roof	No	No	Yes	Yes	No	Yes	No	Yes	No	Yes	No
Paint. plaster wall	No	Yes	No	No	No	No	No	Yes	No	Yes	No
Struc. Work. stone	No	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	No
CBM (R)	8–30	0	8–30	0	0	> 30	2–8	0	0	0	0
Window glass	No	No	Yes	No	No	No	Yes	No	No	No	No
Tess. floor mosaic	No	No	No	No	No	No	No	No	No	No	No
Hypocaust	No	No	No	No	No	No	No	No	No	No	No
Corndrier	No	No	No	No	No	Yes	No	No	No	No	Yes
Storage	No	No	No	No	No	Yes	No	No	No	No	No
Bathhouse	No	No	No	No	No	No	No	No	No	No	No
Metal-work	No	Yes	No	No	Yes	No	No	Yes	Yes	No	No
Iron slag	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Bone-work	No	No	No	No	No	No	No	No	No	No	No
Hobnails	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Bracelets (R)	0	> 35	20–35	2–5	20–35	20–35	2–5	5–20	0	5–20	> 35
Finger rings (R)	3–10	> 33	10–33	3–10	0	10–33	3–10	10–33	0	3–10	> 5
Hairpins (R)	12–54	> 54	12–54	4–12	0	4–12	0	> 54	4–12	0	0
Other dress (R)	2–7	0	2–7	0	0	0	0	> 7	2–7	0	0
Brooch distribution/type (pick)	No related	Colchester Derivative/ Dolphin	No related	No related	Later Plate (2nd Century)	Polden Hill	Colchester Derivative/ Dolphin	No related	Polden Hill	Colchester Derivative/ Dolphin	No related
Brooch quant. (R)	21–60	> 60	21–60	7–21	21–60	> 60	7–21	> 60	21–60	7–21	> 60
Toilet cosmet. (R)	2–6	0	6–30	0	0	> 30	2–6	6–30	0	2–6	0
Mil. fit. Weap. (R)	0	0	15–35	0	0	15-35	0	> 35	0	0	0
Inscriptions	No	No	Yes	No	No	No	No	No	No	No	No
Writing equipm.	0	0	0–5	0	0	> 5	0	0	0	> 5	0
Equine transp. (R)	0	0	> 7	3–7	0	3–7	3–7	> 7	0	0	0
Relig. objects (R)	0	0	0–15	0–15	0	> 15	0	> 15	0	0–15	0
Knives tools (R)	3–18	0	> 18	1–3	0	> 18	3–18	> 18	0	3–18	0
Agr. tools (R)	3–5	0	0	3–5	0	> 5	1–3	> 5	3–5	3–5	0
Security (range)	0	0	5–8	0–3	0	5–8	3–5	> 8	0–3	3–5	0
Recreation (R)	0	0	> 30	0	> 30	0	0	0–30	0	0	> 30
Weighing obj. (R)	0	0	0	0	0	15–30	0–15	0	0	0–15	0
Spinning (R)	0	> 16	5–16	0–2	> 5	2–5	0	> 5	2–5	5–16	> 16
Weaving (R)	0	0	0	0	0	2–5	0	> 5	0	2–5	0
Sewing (range)	0–10	10–30	10–30	0	0	0	0	> 30	0	0–10	0
Quernstones (R)	0	> 25	10–25	10–25	0	3–10	0	> 25	0	10–25	> 25
Millstones	No	No	No	No	No	Yes	No	No	No	No	No
Glass objects (R)	0	> 31	7–31	1–7	7–31	1–7	0	> 31	0	1–7	> 31
Vessel glass (R)	0	> 73	> 73	3–8	0	8–73	3–8	> 73	3–8	> 73	8–73

Table E.11. Strength indicator values of the sites in Cluster 4.

	14012 (F)	**14015 (N)**	**14019, 14082, 14101, 14144 (N)**	**14021 (F)**	**14029 (I)**	**14032 (F)**	**14033 (F)**	**14041 (V)**	**14045, 14046, 14171, 14188 (N)**	**14086 (F)**	**14187 (F)**
Strength	23.09	22.36	13.55	21.45	25.59	13.01	21.11	14.39	24.14	17.27	24.30

Table E.12. Weighted links between the sites in Cluster 4.

Site ID	**14012 (F)**	**14015 (N)**	**14019, 14082, 14101, 14144 (N)**	**14021 (F)**	**14029 (I)**	**14032 (F)**	**14033 (F)**	**14041 (V)**	**14045, 14046, 14171, 14188 (N)**	**14086 (F)**
14015(N)	0.46									
14019*(N)	0.39	0.41								
14021(F)	0.49	0.49	0.41							
14029(I)	0.59	0.63	0.41	0.51						
14032(F)	0.29	0.27	0.34	0.41	0.27					
14033(F)	0.66	0.41	0.29	0.56	0.54	0.32				
14041(V)	0.29	0.59	0.44	0.39	0.41	0.32	0.24			
14045(N)**	0.68	0.59	0.37	0.59	0.68	0.32	0.54	0.39		
14086(F)	0.49	0.46	0.37	0.59	0.39	0.37	0.54	0.39	0.39	
14187(F)	0.51	0.71	0.34	0.56	0.73	0.34	0.49	0.41	0.56	0.39

*Site 14019(N) in the first column includes sites 14082, 14101 and 14144 (belong to the same settlement).
** Site 14045(N) in the first column includes sites 14046, 14171 and 14188 (belong to the same settlement).

Table E.13. Material culture in the sites of Cluster 5 (red colour indicates similarities across sites)

	Site ID						
Material culture	**14004, 14005 (F)**	**14052 (F)**	**14099 (F)**	**14102 (F)**	**14118 (F)**	**14166 (F)**	**14169 (F)**
Coins distribution (Pick)	0	Unidentified	Unidentified	No pick	0	0	0
Coins quantity (range)	0	0–3	0–3	0–3	0	0	0
Masonry	Yes	No	No	No	No	No	Yes
Tiled roof	No	No	No	Yes	No	No	No
Painted plaster wall	No	No	No	No	No	No	No
Structural worked stone	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ceramic building material (range)	2–8	2–8	0–2	0	0	2–8	0–2
Window glass	No	No	No	No	No	No	No
Tessellated floor mosaic	No	No	No	No	No	No	No
Hypocaust	No	No	No	No	No	No	No
Corndrier	No	Yes	No	No	No	No	Yes
Storage	No	Yes	No	No	No	No	No
Bathhouse	No	No	No	No	No	No	No
Evidence metal-work	Yes	No	No	Yes	Yes	Yes	No
Iron slag	Yes	No	No	Yes	Yes	Yes	Yes
Evidence bone-work	No	No	No	No	No	No	No
Hobnails	Yes	No	Yes	Yes	Yes	No	Yes
Bracelets quantity (range)	0	2–5	0–2	0–2	0–2	0	0–2
Finger rings (range)	0–3	0	0–3	0	0–3	0	0–3
Hairpins (range)	0	0	0	0–4	0	0	0
Other dress accessories (range)	0–2	0	0–2	0	0	0–2	0–2
Brooch distribution/type (pick)	No related	No related	Polden Hill	No related	Later Plate (2nd Century)	No related	0
Brooch quantity (range)	2–7	2–7	0–2	0–2	0–2	0–2	0
Toilet cosmetic (range)	0–2	0	0–2	0–2	0–2	0	0–2
Military fitting weapons (range)	0	0	0–15	0	0	0	0
Inscriptions	No	No	No	No	No	No	No
Writing equipment	0	0	0	0–5	0	0	0
Equine transport (range)	0–3	0	0–3	0	0	0	0
Religious objects (range)	0	0	0	0	0	0	0
Knives tools (range)	1–3	1	1	1	1–3	1	1
Agricultural tools (range)	1–3	1	1	0	1	1–3	0
Security objects (range)	0–3	0	0	0	0	0	0
Recreation objects (range)	0	0–30	0	0	0	0	0
Weighing objects (range)	0	0	0	0	0	0	0
Spinning (range)	0–2	0	0–2	0	0	0	0
Weaving (range)	0	0	0	0–2	0	2–5	0
Sewing (range)	0	0	0	0	0	0	0
Quernstones (range)	0	1–3	1	1	1–3	1–3	1
Millstones	No	No	No	No	No	No	No
Glass objects (range)	1	1	1	1	0	0	1
Vessel glass (range)	0–3	0–3	0–3	0–3	0	0–3	0–3

Table E.14. Strength indicator values of the sites in Cluster 5.

	14004, 14005 (F)	**14052 (F)**	**14099 (F)**	**14102 (F)**	**14118 (F)**	**14166 (F)**	**14169 (F)**
Strength	22.24	21.92	20.38	22.13	25.96	25.24	24.14

Table E.15. Weighted links between the sites in Cluster 5.

Site ID	**14004, 14005 (F)**	**14052 (F)**	**14099 (F)**	**14102 (F)**	**14118 (F)**	**14166 (F)**
14052(F)	0.51					
14099(F)	0.63	0.59				
14102(F)	0.54	0.54	0.59			
14118(F)	0.68	0.59	0.63	0.68		
14166(F)	0.68	0.66	0.56	0.63	0.73	
14169(F)	0.71	0.61	0.71	0.66	0.71	0.66

Table E.16. Material culture in the sites of Cluster 6 (red indicates similarities across sites).

	Site ID								
Material culture	**14011 (N)**	**14017 (F)**	**14023 (V)**	**14024 (V)**	**14027 (F)**	**14028 (F)**	**14047 (V)**	**14080 (V)**	**14087 (N)**
Coins distribution (Pick)	Unrelated	XIIIb XI	XIIIb XVa	XIIIb XI	XIIIb	XIIIa XIIIb	XIIIb XIV	Un.	XIIIb-XI
Coins quantity (range)	0-30	30-150	>650	150-650	0-30	>650	>650	>650	0-30
Masonry	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Tiled roof	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Painted plaster wall	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Structural worked stone	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Ceramic building material (range)	0	11-80	0	11-80	0	>80	0	0	2-11
Window glass	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Tessell. floor mosaic	No	No	Yes	Yes	Yes	No	Yes	Yes	No
Hypocaust	No	No	Yes	Yes	No	No	Yes	Yes	No
Corndrier	No	Yes	Yes	Yes	No	No	Yes	No	No
Storage	No	No	Yes	No	No	Yes	No	No	No
Bathhouse	No	No	Yes	Yes	No	No	No	Yes	No
Evidence metal-work	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Iron slag	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Evidence bone-work	No	No	No	Yes	No	No	No	No	Yes
Hobnails	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bracelets (range)	0-20	20-65	65-97	20-65	0-20	65-97	>97	>97	0-20
Finger rings (range)	0-10	0	40-100	10-40	0	40-100	>100	0	0
Hairpins (range)	0-30	0-30	30-50	50-100	0-30	>100	>100	30-50	0-30
Other dress accessories (range)	0	0-30	0-30	0-30	0	30-70	>100	70-100	0
Brooch distribution/ (pick)	0	Colchester derivative Dolphin	Colchester derivative Dolphin	Unr.	Unr.	Unr.	Colchester derivative Dolphin	Polden Hill and Trumpet derived	0
Brooch quantity (range)	0	40-80	80-120	40-80	0-40	>120	>120	>120	0
Toilet cosmetic (range)	0	10-40	10-40	10-40	0	0-10	>100	0	0-10
Military fitting weapons (range)	0-5	10-40	10-40	10-40	0	0	>40	0	0
Inscriptions	No	No	Yes	No	No	No	No	Yes	No
Writing equipment	0	0	20-100	0-20	0	20-100	>100	0	0
Equine transport (range)	0	0	0-20	0-20	0-20	>30	>30	0	0
Religious objects (range)	0	0-10	0-10	0-10	0	0	10-20	0	0
Knives tools (range)	0	7-30	30-100	7-30	7-30	>100	>100	>100	0-7
Agricultural tools (range)	0	0-7	>40	7-20	0	20-40	>40	0	0
Security objects (range)	0	0-10	10-30	0-10	0	30-60	>60	>60	0
Recreation objects (range)	0	0	0-20	0-20	0	0	>80	0	0
Weighing objects (range)	0	5-15	5-15	0-5	0	30-50	30-50	30-50	0
Spinning (range)	0	5-20	5-20	5-20	0-5	>50	20-50	0	0
Weaving (range)	0	0-8	0-8	8-20	0	0	0-8	0	0
Sewing (range)	0-40	0	0	0-40	0-40	>40	>40	0	0
Quernstones (range)	0-15	>50	0-15	15-28	15-28	>50	15-28	0	0
Millstones	Yes	Yes	No	Yes	No	No	Yes	No	Yes
Glass objects (range)	0	0	30-60	0-30	0	30-60	>100	0	0-10
Vessel glass (range)	0-10	80-200	>400	200-400	10-80	>400	>400	>400	0

Table E.16. Material culture in the sites of Cluster 6 (continuation).

	Site ID								
Material culture	**14090 (N)**	**14098 (V)**	**14110 (F)**	**14139 (V)**	**14149 (V)**	**14154 (N)**	**14160 (V)**	**14178 (F)**	**14181 (F)**
Coins distribution (Pick)	X XI	XIIIb XI	Unrelated	XIIIb XI	XI	XIIIb XVa	XIIIb XIV	XIIIa-XIIIb	0
Coins quantity (range)	150-650	150-650	0-30	150-650	>700	>650	0-30	150-650	0
Masonry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tiled roof	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Painted plaster wall	No	Yes	Yes	No	No	No	Yes	No	No
Structural worked stone	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ceramic building material (range)	0	0	0	0-2	0	0	0-2	0	0
Window glass	No	Yes	No	No	Yes	No	Yes	No	No
Tessell. floor mosaic	No	Yes	No	No	No	Yes	Yes	No	No
Hypocaust	No	Yes	No	No	No	No	Yes	No	No
Corndrier	Yes	No	Yes	No	No	No	Yes	No	No
Storage	No	No	Yes	No	No	No	Yes	No	No
Bathhouse	No	Yes	No	No	No	No	Yes	No	No
Evidence metal-work	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Iron slag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Evidence bone-work	Yes	No	No	No	No	No	No	No	No
Hobnails	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Bracelets (range)	0-20	>97	0	0-20	0	0	0-20	0	0-20
Finger rings (range)	0-10	40-100	0-10	0-10	0	40-100	0	>100	0-10
Hairpins (range)	0-30	50-100	0	0	>100	0	0-30	>100	30-50
Other dress accessories (range)	0-30	30-70	0	0-30	>100	>100	0-30	>100	0
Brooch distribution/ (pick)	Unr.	Colchester derivative Dolphin	Unrelated	Unr.	Unrelated	Polden Hill and Trumpet derived	Unr.	Unrelated	Developed T-shaped
Brooch quantity (range)	0-40	40-80	0-40	40-80	>120	>120	0-40	80-120	0-40
Toilet cosmetic (range)	0	40-100	0-10	0-10	0	0	10-40	0	10-40
Military fitting weapons (range)	10-40	0	0	0	0	>40	0-5	0	0
Inscriptions	No	No	No	No	No	No	No	No	No
Writing equipment	0-20	0	0	0	0	0	0-20	0	0
Equine transport (range)	0-20	0	0	0	0	0	0-20	0	0
Religious objects (range)	0	0	0	0	0	>20	0-10	0	0
Knives tools (range)	0-7	>100	0	7-30	0	0	7-30	0	0
Agricultural tools (range)	7-20	20-40	0-7	0	0	>40	0-7	0	0
Security objects (range)	0-10	0	0	0	0	30-60	0-10	0	0
Recreation objects (range)	0	>80	0	0-20	0	20-80	0	>80	0
Weighing objects (range)	0-5	0	0-5	0	>50	0	0-5	0	5-15
Spinning (range)	0	0	0	0-5	0	0	0-5	0	0
Weaving (range)	0	0	0	0	0	0	0-8	0	0
Sewing (range)	0	0	0	0	0	0	0	0	0
Quernstones (range)	0-15	>50	0	0-15	0	>50	15-28	>50	0-15
Millstones	No	Yes	N0	No	No	No	No	No	No
Glass objects (range)	0-10	30-60	0	0	0	>100	0-10	0	0
Vessel glass (range)	10-80	200-400	0	10-80	0	>400	80-200	200-400	0

Table E.17. Strength indicator values of the sites in Cluster 6.

Site ID																	
14011 (N)	14017 (F)	14023 (V)	14024 (V)	14027 (F)	14028 (F)	14047 (V)	14080 (V)	14087 (N)	14090 (N)	14098 (V)	14110 (F)	14139 (V)	14149 (V)	14154 (N)	14160 (V)	14178 (F)	14181 (F)
30.29	21.14	12.08	9.98	27.64	19.56	12.58	24.79	29.27	22.21	21.73	29.33	27.79	32.15	26.04	14.29	30.85	31.20

Table E.18. Weighted links between the sites in Cluster 6.

Site ID	14011 (N)	14017 (F)	14023 (V)	14024 (V)	14027 (F)	14028 (F)	14047 (V)	14080 (V)	14087 (N)	14090 (N)	14098 (V)	14110 (F)	14139 (V)	14149 (V)	14154 (N)	14160 (V)	14178 (F)
14017(F)	0.39																
14023(V)	0.17	0.44															
14024(V)	0.17	0.44	0.46														
14027(F)	0.59	0.46	0.24	0.29													
14028(F)	0.34	0.24	0.29	0.10	0.29												
14047(V)	0.22	0.37	0.44	0.37	0.29	0.34											
14080(V)	0.41	0.37	0.46	0.29	0.49	0.37	0.49										
14087(N)	0.68	0.37	0.17	0.24	0.51	0.34	0.22	0.46									
14090(N)	0.54	0.44	0.29	0.39	0.46	0.34	0.24	0.34	0.54								
14098(V)	0.39	0.39	0.41	0.44	0.41	0.37	0.44	0.59	0.46	0.32							
14110(F)	0.59	0.46	0.29	0.22	0.51	0.34	0.27	0.46	0.54	0.49	0.41						
14139(V)	0.59	0.46	0.29	0.32	0.59	0.37	0.24	0.44	0.56	0.54	0.49	0.56					
14149(V)	0.56	0.46	0.27	0.20	0.56	0.41	0.37	0.63	0.61	0.44	0.46	0.61	0.56				
14154(N)	0.49	0.41	0.39	0.22	0.44	0.44	0.46	0.54	0.41	0.41	0.49	0.49	0.51	0.61			
14160(V)	0.27	0.51	0.51	0.54	0.46	0.20	0.39	0.39	0.37	0.46	0.34	0.41	0.34	0.29	0.27		
14178(F)	0.66	0.39	0.22	0.20	0.49	0.44	0.32	0.46	0.54	0.49	0.54	0.59	0.61	0.68	0.61	0.20	
14181(F)	0.68	0.49	0.34	0.22	0.59	0.39	0.27	0.54	0.61	0.56	0.46	0.68	0.68	0.68	0.54	0.34	0.63

Table E.19. Material culture in the sites of Cluster 7 (red indicates similarities across sites)

	Site ID											
Material culture	**14010 (I)**	**14106 (I)**	**14108 (I)**	**14123 (F)**	**14127 (I)**	**14143 (F)**	**14145 (F)**	**14146 (F)**	**14148 (F)**	**14153 (F)**	**14157 (F)**	**14165 (F)**
Coins distribution (Pick)	XIIIb	Un.	0	0	0	Un.	0	Un.	0	0	0	0
Coins quantity (range)	30-150	150-650	0	0	0	30-150	0	0-30	0	0	0	0
Masonry	No	No	No	Yes	No	No	No	No	Yes	No	No	No
Tiled roof	No	No	No	No	No	No	No	No	No	No	No	No
Painted plaster wall	No	No	No	No	No	No	No	No	No	No	No	No
Structural worked stone	No	No	No	No	No	No	No	No	No	Yes	No	No
Ceramic build. material (range)	0	0	0	0	0-2	0	0-2	2-11	0	0	0	0-2
Window glass	No	No	No	No	No	No	No	No	No	No	No	No
Tessellated floor mosaic	No	No	No	No	No	No	No	No	No	No	No	No
Hypocaust	No	No	No	No	No	No	No	No	No	No	No	No
Corndrier	No	No	No	No	No	No	No	No	No	No	No	No
Storage	No	No	No	No	No	No	No	No	No	No	No	No
Bathhouse	No	No	No	No	No	No	No	No	No	No	No	No
Evidence metal-work	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No
Iron slag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Evidence bone-work	No	No	No	No	No	No	No	Yes	No	No	No	No
Hobnails	Yes	No	Yes	No	No	Yes	No	Yes	No	Yes	No	Yes
Bracelets (range)	0	0	0	0	0-20	0	0	0	0	65-97	0	0
Finger rings (range)	0	0	0	0	0	0	0	0	0	0	0	0
Hairpins (range)	0	0	0	0	0	0	0	0	0	0	0	0
Other dress accessories (range)	0	0	0	0	0	0	0-30	0	0	0	0	0
Brooch distribution/ (pick)	0	0	0	0	0	0	0	0	0	0	0	0
Brooch quantity (range)	0	0	0	0	0	0	0	0	0	0	0	0
Toilet cosmetic (range)	0	0	0	0	0	0	0	0	0	0	0	0-10
Military fitting weapons (range)	0	0	0	0	0	0	0	0	0	0	0	0
Inscriptions	0	0	0	0	0	0	0	0	0	0	0	0
Writing equipment	0	0	0	0	0	0	0	0	0	0	0	0
Equine transport (range)	0	0	0	0	0	0	0	0	0	0	0	0
Religious objects (range)	0	0	0	0	0	0	0	0	0	0	0	0
Knives tools (range)	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural tools (range)	0	0	0	0	0	0	0	0	0	0	0	0
Security objects (range)	0	0	0	0	0	0	0	10-30	0	0	0	0
Recreation objects (range)	0	0	0	0	0	0	0	0	0	0	0	0
Weighing objects (range)	0	0	0	0	0	15-30	0	0	0	0	0	0
Spinning (range)	0	0	0	0	0	0	0	0	>50	0	0	0
Weaving (range)	0	0	0	0	0	0	0	0	0	0	0	0
Sewing (range)	0	0	0	0	0	0	0	0	0	0	0	0
Quernstones (range)	28-50	0	0	0	0	15-28	0	0-15	28-50	0	0	0
Millstones	0	0	0	0	0	0	0	0	0	0	0	0
Glass objects (range)	0	>100	0	0	0	10-30	0	0	0	0	0	0
Vessel glass (range)	0-10	0	0	0	0	80-200	0	0	0	0	80-200	0-10

Table E.20. Strength indicator values of the sites in Cluster 7.

	14010 (I)	14106 (I)	14108 (I)	14123 (F)	14127 (I)	14143 (F)	14145 (F)	14146 (F)	14148 (F)	14153 (F)	14157 (F)	14165 (F)
Strength	35.28	35.57	36.66	36.86	35.12	33.57	35.00	33.09	35.33	35.96	35.98	34.30

Table E.21. Weighted links between the sites in Cluster 7.

Site ID	14010 (I)	14106 (I)	14108 (I)	14123 (F)	14127 (I)	14143 (F)	14145 (F)	14146 (F)	14148 (F)	14153 (F)	14157 (F)
14106(I)	0.85										
14108(I)	0.90	0.90									
14123(F)	0.85	0.90	0.93								
14127(I)	0.83	0.88	0.90	0.90							
14143(F)	0.85	0.80	0.83	0.78	0.76						
14145(F)	0.83	0.88	0.90	0.90	0.93	0.76					
14146(F)	0.80	0.78	0.83	0.78	0.78	0.78	0.78				
14148(F)	0.85	0.85	0.88	0.93	0.85	0.76	0.85	0.76			
14153(F)	0.85	0.85	0.93	0.88	0.88	0.78	0.85	0.78	0.83		
14157(F)	0.88	0.90	0.93	0.93	0.90	0.83	0.90	0.78	0.88	0.88	
14165(F)	0.85	0.80	0.88	0.83	0.85	0.80	0.85	0.80	0.78	0.83	0.85

Table E.22. Material culture in the sites of Cluster 8 (red indicates similarities across sites)

	Site ID													
Material culture	**14060 (N)**	**14061 (F)**	**14115 (F)**	**14117 (F)**	**14133 (F)**	**14142 (F)**	**14152 (F)**	**14155 (F)**	**14162 (F)**	**14172 (F)**	**14175 (F)**	**14179 (I)**	**14182 (F)**	**14189 (F)**
Coins distribution (Pick)	XIIIb	XIIIb	Unre.	XI	0	0	0	0	0	0	Unre.	XIIIb XI	Unre.	Unre.
Coins quantity (range)	30-150	0-30	30-150	0-30	0	0	0	0	0	0	0-30	>650	150-650	30-150
Masonry	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No
Tiled roof	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Painted plaster wall	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Structural worked stone	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Ceramic build. material (range)	0	0	0	11-80	0	0	0	0	0	0	0	0	0	0
Window glass	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Tessellated floor mosaic	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Hypocaust	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Corndrier	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Storage	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Bathhouse	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Evidence metal-work	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Iron slag	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Evidence bone-work	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Hobnails	Yes	No	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No	No
Bracelets (range)	0	0	0	0	0	0	0	0	0	0	0	20-65	0	0
Finger rings (range)	0	0	>100	0	0	0	0	0	0	0	0	10-40	10-40	0
Hairpins (range)	0	0	50-100	0	0	0	>100	0	0	0	0	30-50	30-50	0
Other dress accessories (range)	0	0	0	0	0	0	0	0	0	0	0	30-70	0	0
Brooch distribution/ (pick)	Colchester derivative Dolphin	Penanular	Penanular	Polden Hill and Trumpet derived	0	0	0	0	0	0	0	Polden Hill and Trumpet derived	Unre.	0
Brooch quantity (range)	0-40	0-40	80-120	0-40	0	0	0	0	0	0	0	>120	40-80	0
Toilet cosmetic (range)	0	0	0	0	0	0	0	0	0	0	0	40-100	0	0
Military fitting weapons (range)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inscriptions	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Writing equipment	0	0	0	0	0	0	0	0	0	0	0	20-100	0	0
Equine transport (range)	0	0	0	0-20	0	0	0	0	0	0	0	20-30	0	0
Religious objects (range)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Knives tools (range)	0	0	0	0	0	0	0	0	0	0-7	0	30-100	7-30	0
Agricultural tools (range)	0	0	0	0	0	0	0	0	0	0	0	0	20-40	0
Security objects (range)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Recreation objects (range)	0	0	0	0	0	0	0	0	0	0	0	20-80	0	0
Weighing objects (range)	0	0	0	0	0	0	0	0	0	0	0	15-30	0	0
Spinning (range)	0	0	>50	0	0	0	0	0	0	0	0-5	20-50	20-50	0
Weaving (range)	>20	0	0	0	0	0	0	0	0	0	0	0	0	0
Sewing (range)	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table E.22. Material culture in the sites of Cluster 8 (red indicates similarities across sites)

	Site ID													
Material culture	**14060 (N)**	**14061 (F)**	**14115 (F)**	**14117 (F)**	**14133 (F)**	**14142 (F)**	**14152 (F)**	**14155 (F)**	**14162 (F)**	**14172 (F)**	**14175 (F)**	**14179 (I)**	**14182 (F)**	**14189 (F)**
Quernstones (range)	0	0	>50	0-15	0	0-15	0	0	0	0-15	0	15-28	0-15	0
Millstones	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glass objects (range)	0	0	60-100	0	0	0	0	0	0	0-10	0	0	10-30	0
Vessel glass (range)	0	0	0	10-80	0	0	0	0	0	0	0	0	0	0

Table E.23. Strength indicator values of the sites in Cluster 8.

	14060 (N)	**14061 (F)**	**14115 (F)**	**14117 (F)**	**14133 (F)**	**14142 (F)**	**14152**	**14155 (F)**	**14162 (F)**	**14172 (F)**	**14175 (F)**	**14179 (I)**	**14182 (F)**	**14189 (F)**
Strength	34.17	34.22	31.11	32.12	36.31	35.88	35.62	36.58	36.31	34.27	35.60	24.77	29.72	36.16

Table E.24. Weighted links between the sites in Cluster 8.

Site ID	**14060 (N)**	**14061 (F)**	**14115 (F)**	**14117 (F)**	**14133 (F)**	**14142 (F)**	**14152**	**14155 (F)**	**14162 (F)**	**14172 (F)**	**14175 (F)**	**14179 (I)**	**14182 (F)**
14061(F)	0.83												
14115(F)	0.76	0.73											
14117(F)	0.71	0.80	0.68										
14133(F)	0.80	0.85	0.76	0.80									
14142(F)	0.78	0.83	0.76	0.83	0.95								
14152(F)	0.80	0.80	0.78	0.76	0.93	0.90							
14155(F)	0.83	0.83	0.73	0.78	0.95	0.93	0.90						
14162(F)	0.80	0.85	0.76	0.80	0.98	0.95	0.93	0.95					
14172(F)	0.76	0.76	0.76	0.76	0.88	0.90	0.88	0.85	0.88				
14175(F)	0.83	0.80	0.76	0.76	0.88	0.85	0.88	0.90	0.88	0.83			
14179(I)	0.51	0.56	0.56	0.59	0.61	0.61	0.59	0.59	0.61	0.56	0.56		
14182(F)	0.66	0.66	0.68	0.66	0.71	0.73	0.68	0.73	0.71	0.71	0.71	0.61	
14189(F)	0.83	0.85	0.78	0.80	0.95	0.93	0.90	0.93	0.95	0.85	0.88	0.61	0.71

Table E.25. Material culture in the sites of Cluster 9 (red indicates similarities across sites)

Material culture	14095 (F)	14105 (F)	14107 (I)	14128 (F)
Coins distribution (Pick)	Unrelated	Unrelated	XIIIb	0
Coins quantity (range)	90-700	90-700	30-150	0
Masonry	No	Yes	Yes	Yes
Tiled roof	Yes	Yes	Yes	Yes
Painted plaster wall	No	No	No	No
Structural worked stone	No	Yes	No	Yes
Ceramic build. material (range)	0	0	11-80	2-11
Window glass	No	No	Yes	No
Tessellated floor mosaic	No	No	No	No
Hypocaust	No	No	No	No
Corndrier	Yes	No	No	No
Storage	No	No	No	No
Bathhouse	No	No	No	No
Evidence metal-work	Yes	Yes	Yes	No
Iron slag	Yes	Yes	Yes	Yes
Evidence bone-work	No	No	No	No
Hobnails	No	No	No	No
Bracelets (range)	0	0	0	0
Finger rings (range)	10-40	0	0	0
Hairpins (range)	0	0	0	0
Other dress accessories (range)	0	0	0	0
Brooch distribution/ (pick)	Polden Hill and Trumpet derived	0	0	0
Brooch quantity (range)	40-80	0	0	0
Toilet cosmetic (range)	0	0	0	0-10
Military fitting weapons (range)	0	0	0	0
Inscriptions	0	0	0	0
Writing equipment	0	0	0	0
Equine transport (range)	20-30	0	0	0
Religious objects (range)	0	0	0	0
Knives tools (range)	0	0	0	0
Agricultural tools (range)	0	0	0	0
Security objects (range)	0	0	>60	0-10
Recreation objects (range)	0	0	0	0
Weighing objects (range)	0	0	0	0-5
Spinning (range)	0	0	0	0-5
Weaving (range)	0	0	0	0
Sewing (range)	0	0	0	0
Quernstones (range)	0	0	0	0
Millstones	0	0	0	0
Glass objects (range)	0	0	0	0
Vessel glass (range)	0	>400	0	0-10

Table E.26. Strength indicator values of the sites in Cluster 9.

	14095(F)	14105(F)	14107(I)	14128(F)
Strength	32.48	35.92	34.08	31.77

Table E.27. Weighted links between the sites in Cluster 9.

Site ID	14095(F)	14105(F)	14107(I)
14105(F)	0.78		
14107(I)	0.73	0.83	
14128(F)	0.61	0.78	0.73

Table E.28. Material culture in the sites of Cluster 10 (red indicates similarities across sites)

	Site ID					
Material culture	**14006 (V)**	**14025 (V)**	**14038 (V)**	**14069 (F)**	**14116 (F)**	**14136 (R)**
Coins distribution (Pick)	XI	XIIIb	XIIIb XVa	X XI	X-XI	Unrelated
Coins quantity (range)	30-150	30-150	>650	0-30	>700	>700
Masonry	Yes	Yes	Yes	Yes	Yes	Yes
Tiled roof	Yes	Yes	Yes	Yes	Yes	Yes
Painted plaster wall	Yes	Yes	Yes	Yes	Yes	Yes
Structural worked stone	Yes	Yes	Yes	Yes	No	Yes
Ceramic build. material (range)	>80	0	0	>80	0	0
Window glass	Yes	Yes	Yes	Yes	No	No
Tessellated floor mosaic	Yes	Yes	Yes	Yes	No	No
Hypocaust	Yes	Yes	Yes	No	No	No
Corndrier	No	No	No	No	Yes	No
Storage	No	No	No	No	No	No
Bathhouse	Yes	No	Yes	Yes	No	No
Evidence metal-work	No	No	No	No	No	No
Iron slag	No	No	No	No	No	No
Evidence bone-work	No	No	No	No	No	No
Hobnails	Yes	No	No	Yes	No	No
Bracelets (range)	0	65-97	65-97	0	20-65	0
Finger rings (range)	0	40-100	0	0-10	0	0
Hairpins (range)	0	0	0	0	50-100	0
Other dress accessories (range)	0	0	0	0	30-70	0
Brooch distribution/ (pick)	Develop. T-shaped	0	0	0	0	0
Brooch quantity (range)	40-80	0	0	0	0	0
Toilet cosmetic (range)	40-100	0	0	0	0	0
Military fit. weapons (range)	0	0	0	0	0	0
Inscriptions	No	No	No	No	Yes	No
Writing equipment	0	0	0	0	0	0
Equine transport (range)	0	0	0	0	0	0
Religious objects (range)	0	0	0	0	0	0
Knives tools (range)	0	0	0	0-7	0	0
Agricultural tools (range)	0	0	0	0	0	0
Security objects (range)	0	0	0	0-10	0	0
Recreation objects (range)	0	0	0	0-20	20-80	0
Weighing objects (range)	0	0	0	0	0	0
Spinning (range)	0	0	0	0	0	0
Weaving (range)	0	0	0	0	0	0
Sewing (range)	40-80	0	0	0	0	0
Quernstones (range)	28-50	0	0	0	0	0
Millstones	Yes	No	No	No	No	No
Glass objects (range)	0	60-100	60-100	0	30-60	0
Vessel glass (range)	0	>400	80-200	0	0	0

Table E.29. Strength indicator values of the sites in Cluster 10.

	14006 (V)	**14025 (V)**	**14038 (V)**	**14069 (F)**	**14116 (F)**	**14136 (R)**
Strength	26.64	30.61	30.35	29.11	29.60	35.66

Table E.30. Weighted links between the sites in Cluster 10.

Site ID	**14006 (V)**	**14025 (V)**	**14038 (V)**	**14069 (F)**	**14116 (F)**
14025(V)	0.66				
14038(V)	0.68	0.88			
14069(F)	0.68	0.68	0.71		
14116(F)	0.46	0.63	0.66	0.59	
14136(R)	0.66	0.78	0.80	0.73	0.78

Table E.31. Material culture in Cluster 11 (red indicates similarities across sites)

	Site ID									
Material culture	**30003 (F)**	**30004 (F)**	**30005 (F)**	**30006 (N)**	**30012 (F)**	**30016 (I)**	**30020 (I)**	**30026 (F)**	**30028 (N)**	**30030 (V)**
Coins distribution (Pick)	0	0	0	0	0	0	0	0	Unrelat.	Unrelat.
Coins quantity (range)	0	0	0	0	0	0	0	0	>50	>50
Masonry	No	No	No	No	No	No	Yes	No	Yes	Yes
Tiled roof	No	No	No	No	No	No	Yes	No	Yes	Yes
Painted plaster wall	No	No	No	No	No	No	No	No	No	No
Structural worked stone	No	No	No	No	No	No	Yes	No	No	Yes
CBM (range)	15-30	0	0	0	0-15	0	0	0	15-30	>30
Window glass	No	No	No	No	No	Yes	No	No	No	Yes
Tessellated floor mosaic	No	No	No	No	No	No	No	No	No	Yes
Hypocaust	No	No	No	No	No	No	No	No	No	No
Corndrier	No	No	No	No	No	No	No	No	No	No
Storage	No	No	No	No	No	No	No	No	No	No
Bathhouse	No	No	No	No	No	No	No	No	No	Yes
Evidence metal-work	No	Yes	No	Yes	No	No	No	No	Yes	No
Iron slag	Yes	Yes	No	Yes	No	No	No	No	Yes	No
Evidence bone-work	No	No	No	No	No	No	No	No	No	No
Hobnails	Yes	No	No	No	No	No	No	No	No	No
Bracelets quant. (range)	0	0	0	0	0	0	0	0	0	0
Finger rings (range)	0	0	0	0	0	0	0	0	0	0
Hairpins (range)	0	0	0	0	0	0	0	0	0	0
Other dress acc. (range)	0	0	0	0	0	0	0	0	0	>50
Brooch distribution/type (pick)	0	0	0	0	0	0	0	0	Trump derived	0
Brooch quantity (range)	0	0	0	0	0	0	0	0	>40	0
Toilet cosmetic (range)	0	0	0	0	0	0	0	0	>15	0
Military fit. Weap (range)	0	0	0	0	>10	0	0	0	>10	0
Inscriptions	No	No	No	No	No	No	No	No	No	No
Writing equipment	0	0	0	0	0	0	0	0	0	0
Equine transport (range)	0	0	0	0	0	0	0	0	0	>50
Religious objects (range)	0	0	0	0	0	0	0	0	0	>50
Knives tools (range)	0	0	0	0	0	0	0	0	0	0
Agricultural tools (range)	0	0	0	0	0	0	0	0	0	0
Security objects (range)	0	0	0	0	0	0	0	0	0	0
Recreat. objects (range)	0	0	0	0	0	0	0	0	0	0
Weighing objects (range)	0	0	0	>50	0	0	0	0	0	0
Spinning (range)	0	0	0	0	0-10	0	0	0	0	0
Weaving (range)	0	0	0	0	0	0	0	0	0	0
Sewing (range)	0	0	0	0	0	0	0	0	0	0
Quernstones (range)	0	0	0	>50	0	0	0	>50	0	0
Millstones	0	0	0	0	0	0	0	0	0	0
Glass objects (range)	0	0	0	0	0	0	0	0	0	0
Vessel glass (range)	0	0	0	0	0	0	0	0	0	>100

Table E.32. Strength indicator values of Cluster 11.

	30003 (F)	30004 (F)	30005 (F)	30006 (N)	30012 (F)	30016 (I)	30020 (I)	30026 (F)	30028 (N)	30030 (V)
Strength	7.62	7.81	7.96	7.46	7.47	7.81	7.46	7.81	6.45	5.71

Table E.33. Weighted links between the sites in Cluster 11.

Site ID	30003 (F)	30004 (F)	30005 (F)	30006 (N)	30012 (F)	30016 (I)	30020 (I)	30026 (F)	30028 (N)
30004(F)	0.93								
30005(F)	0.93	0.95							
30006(N)	0.88	0.95	0.90						
30012(F)	0.88	0.88	0.93	0.83					
30016(I)	0.90	0.93	0.98	0.88	0.90				
30020(I)	0.83	0.85	0.90	0.80	0.83	0.88			
30026(F)	0.90	0.93	0.98	0.93	0.90	0.95	0.88		
30028(N)	0.76	0.78	0.73	0.73	0.71	0.71	0.73	0.71	
30030(V)	0.61	0.61	0.66	0.56	0.61	0.68	0.76	0.63	0.59

Table E.34. Material culture in Cluster 12 (red indicates similarities across sites)

	Site ID				
Material culture	**30001 30007 (N)**	**30015 (F)**	**30018 (V)**	**30021 (V)**	**30022 (V)**
Coins distribution (Pick)	X XI	0	0	XIV	XI
Coins quantity (range)	>60	0	0	30-60	0-30
Building material: masonry	Yes	Yes	Yes	Yes	Yes
Tiled roof	Yes	Yes	Yes	Yes	Yes
Painted plaster wall	Yes	No	Yes	No	No
Structural worked stone	Yes	Yes	Yes	Yes	Yes
Ceramic building material (range)	>20	0	0	0	0
Window glass	No	No	No	No	Yes
Tessellated floor mosaic	No	No	Yes	Yes	Yes
Hypocaust	No	No	Yes	Yes	Yes
Corndrier	No	No	Yes	No	No
Storage	No	No	No	No	Yes
Bathhouse	No	No	No	No	Yes
Evidence metal-work	Yes	No	No	No	No
Iron slag	Yes	No	No	No	No
Evidence bone-work	No	No	No	No	No
Hobnails	Yes	No	No	No	No
Bracelets quantity (range)	0-10	0	0	0	>10
Finger rings (range)	0	0	0	0	0
Hairpins (range)	0	0	0	0	0
Other dress accessories (range)	0-10	0	0	0	0-10
Brooch distribution/type (pick)	Zoomorphic plate	0	0	0	0
Brooch quantity (range)	0-10	0	0	0	0
Toilet cosmetic (range)	0	0	0	0	0
Military fitting weapons (range)	0-10	0	0	0	0
Inscriptions	No	No	No	No	No
Writing equipment	0-10	0	0	0	0
Equine transport (range)	0-10	0	0	0	0
Religious objects (range)	0	0	0	0	0
Knives tools (range)	>10	0	0	0	0
Agricultural tools (range)	0	0	0	0	0
Security objects (range)	>10	0	0	0	0
Recreation objects (range)	0	0	0	0	0
Weighing objects (range)	>10	0	0	0	0
Spinning (range)	0	0	0	0	0
Weaving (range)	0	0	0	0	0
Sewing (range)	0	0	0	0	0
Quernstones (range)	0-20	0	0	0	0-10
Millstones	0-10	0	0	0	0
Glass objects (range)	0-10	0	0-10	0	0-10
Vessel glass (range)	>20	0	0	0	>20

Table E.35. Strength indicator values of the sites in Cluster 12.

	30001 30007(N)	**30015(F)**	**30018(V)**	**30021(V)**	**30022(V)**
Strength	4.63	8.29	7.34	7.66	6.22

Table E.36. Weighted links between the sites in Cluster 12.

Site ID	**30001 30007(N)**	**30015(F)**	**30018(V)**	**30021(V)**
30015(F)	0.51			
30018(V)	0.49	0.85		
30021(V)	0.44	0.88	0.83	
30022(V)	0.49	0.68	0.66	0.76

Table E.37. Material culture in Cluster 13 (red indicates similarities across sites)

	Site ID					
Material culture	**30017(I)**	**30019(F)**	**30023(F)**	**30027(F)**	**30029(F)**	**30031(F)**
Coins distribution (Pick)	0	VI	0	0	0	V
Coins quantity (range)	0	>60	0	0	0	30-60
Building material: masonry	No	No	No	No	No	No
Tiled roof	No	No	No	No	No	No
Painted plaster wall	No	No	No	No	No	No
Structural worked stone	Yes	No	No	No	No	No
Ceramic building material (range)	0	0	0	0	0	0
Window glass	No	No	No	No	No	No
Tessellated floor mosaic	No	No	No	No	No	No
Hypocaust	No	No	No	No	No	No
Corndrier	No	No	No	No	No	No
Storage	No	No	No	No	No	No
Bathhouse	No	No	No	No	No	No
Evidence metal-work	No	No	No	No	No	No
Iron slag	No	No	No	No	No	No
Evidence bone-work	No	No	No	No	No	No
Hobnails	No	No	No	No	Yes	No
Bracelets quantity (range)	0	0	0	0	0	0
Finger rings (range)	0	0	0	0	0	0
Hairpins (range)	0	0	0	0	0	0
Other dress accessories (range)	0	0	0	0	0	0
Brooch distribution/type (pick)	0	0	0	Dragonesque	0	0
Brooch quantity (range)	0	0	0	>10	0	0
Toilet cosmetic (range)	0	0	0	0	0	0
Military fitting weapons (range)	0	0	0	0	0	0
Inscriptions	No	No	No	No	No	No
Writing equipment	0	0	0	0	0	0
Equine transport (range)	0	0	0	0	0	0
Religious objects (range)	0	0	0	0	0	0
Knives tools (range)	0	0	0	0	0	0
Agricultural tools (range)	0	0	0	0	0	0
Security objects (range)	0	0	0	0	0	0
Recreation objects (range)	0	0	0	0	0	0
Weighing objects (range)	0	0	0	0	0	0
Spinning (range)	0	0	0	0	0	0
Weaving (range)	0	0	0	0	0	0
Sewing (range)	0	0	0	0	0	0
Quernstones (range)	>20	0	0	0	0	0
Millstones	0	0	0	0	0	0
Glass objects (range)	0	>10	0	0	0	0
Vessel glass (range)	0	0	0	0	0	0

Table E.38. Strength indicator values of the sites in Cluster 13.

	30017(I)	30019(F)	30023(F)	30027(F)	30029(F)	30031(F)
Strength	8.16	7.97	8.32	7.93	8.16	8.10

Table E.39. Weighted links between the sites in Cluster 13.

Site ID	30017(I)	30019(F)	30023(F)	30027(F)	30029(F)
30019(F)	0.88				
30023(F)	0.95	0.93			
30027(F)	0.90	0.88	0.95		
30029(F)	0.93	0.90	0.98	0.93	
30031(F)	0.90	0.93	0.95	0.90	0.93

APPENDIX F

Tables with the information used to identify possible subgroups within the clusters identified from the network analysis

Table F.1. Cluster 11: Earlier Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30003(F)	CBM								Hobnails			Agriculture Metal production
30004(F)												Agriculture Metal production
30005(F)												Agriculture
30006(N)			Quernstones									Agriculture Metal production Quernstones
30012(F)	CBM						Military fitting weapons					Agriculture Spinning
30016(I)	Window glass											Tilery
30020(I)	Masonry Tiled roof Structural worked stone Hypocaust											Agriculture Lead mining
30026(F)			Quernstones									Agriculture Quernstones
30028(N)	Masonry Tiled roof CBM	Coins					Military fitting weapons		Brooches	Toilet cosmetic		Agriculture Coins Metal production
30030(V)	Masonry Tiled roof Structural worked stone CBM Window glass Tessellated floor mosaic Hypocaust	Coins Vessel glass	Vessel glass	Equine transport			Equine transport	Bathhouse	Other dress	Bathhouse	Crudely carved stone figurine	Agriculture Coins

Table F.2. Cluster 12: Later Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
(30001 30007)(N)	Masonry Tiled roof Structural worked stone Painted plaster CBM	Coins Knives tools Quernstones Millstones Vessel glass	Knives tools Vessel glass	Equine transport	Writing equipment	Security objects	Military fitting weapons Equine transport		Hobnails Bracelets Other dress accessories Brooch Glass objects			Agriculture Coins Metal-work Iron slag Knives tools Weighing Quernstones Millstones Vessel glass
30015(F)	Masonry Tiled roof Structural worked stone											Agriculture
30018(V)	Masonry Tiled roof Structural worked stone Painted plaster Tessellated Hypocaust								Glass objects			Agriculture Corndrier
30021(V)	Masonry Tiled roof Structural worked stone Tessellated Hypocaust	Coins										Agriculture Coins
30022(V)	Masonry Tiled roof Structural worked stone Window Glass Tessellated Hypocaust	Coins Quernstones Vessel glass	Vessel glass					Bathhouse	Bracelets Other dress accessories Glass objects	Bathhouse		Agriculture Coins Storage Quernstones Vessel glass

Table F.3. Cluster 13: Later Roman period in Shropshire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
30017(I)	Structural worked stone		Quernstones									Pottery factory Quernstones
30019(F)		Coins							Glass objects			Agriculture Coins
30023(F)												Agriculture
30027(F)									Brooch			Agriculture
30029(F)									Hobnails			Agriculture
30031(F)		Coins										Agriculture Coins

Table F.4. Cluster 1: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14034(F)	CBM	Coins							Brooch			Agriculture Coins
14037(F)			Quernstones									Agriculture Quernstones
14043(F)									Brooch			Agriculture Weighing
14131(F)												Agriculture
14132(F)	CBM											Agriculture
14134(F)												Agriculture Weaving
14147(F)	Masonry								Brooch	Toilet cosmetic		Agriculture
14150(F)												Agriculture
14156(F)									Brooch			Agriculture Metalwork
14159(F)												Agriculture Metalwork Spinning
14168(F)									Brooch			Agriculture
14170(F)	CBM								Finger rings			Agriculture Weaving
14180(F)												Agriculture

Table.F.5. Cluster 2: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14008(F)	Structural worked stone		Quernstones Millstones									Agriculture Metalwork Iron slag Quernstones Millstones
14055(F)	Masonry Structural worked stone CBM		Quernstones						Hobnails			Agriculture Quernstones
14158(F)	Masonry Structural worked stone											Agriculture Metalwork Iron slag
14163(F)	Structural worked stone		Quernstones						Hobnails Brooch			Agriculture Iron slag Quernstones

Table F.6. Cluster 3: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14018(V)	Masonry Tiled roof Painted plaster wall	Coins Knives tools	Knives tools				Military fitting weapons		Bracelets Other dress			Agriculture Coins Knives tools
14062(V)	Masonry Tiled roof Painted plaster wall Structural worked stone Tessellated Hypocaust											Agriculture Weighing
14125(V)	Masonry Tiled roof Painted plaster wall Structural worked stone Window glass Tessellated Hypocaust	Coins						Bathhouse	Hobnails	Bathhouse		Agriculture Coins Metalwork Iron slag
14151(V)	Masonry Tiled roof Painted plaster wall Structural worked stone Tessellated Hypocaust	Knives tools	Knives tools		Inscriptions			Bathhouse	Bracelets	Bathhouse		Agriculture Corndrier Metalwork Iron slag Knives tools
14164(F)	Masonry Tiled roof Painted plaster wall CBM	Coins Knives tools Vessel glass	Knives tools Vessel glass						Hobnails Hairpins Other dress Brooch			Agriculture Coins Metalwork Iron slag Knives tools Agricultural tools Weaving Sewing Vessel glass
14173(V)	Masonry Tiled roof Painted plaster wall Structural worked stone CBM Tessellated Hypocaust	Coins							Hobnails Hairpins Brooch			Agriculture Iron slag Coins
14174(F)	Masonry Tiled roof Structural worked stone CBM	Coins Vessel glass	Quernstones Vessel glass			Security objects			Brooch			Agriculture Coins Metalwork Iron slag Quernstones Vessel glass

Table F.7. Cluster 4: Earlier Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14012(F)	CBM	Coins Knives tools	Knives tools						Hobnails Finger rings Hairpins Other dress Brooch	Toilet cosmetic		Agriculture Coins Knives tools Agricultural tools Sewing
14015(N)	Masonry Painted plaster wall Structural Worked stone	Coins Vessel glass	Quernstones Vessel glass				Military fitting Weapons		Hobnails Bracelets Finger rings Hairpins Brooch Glass objects			Agriculture Coins Metalwork Iron slag Spinning Sewing Quernstones Vessel glass
(14019, 82, 101,144)(N)	Masonry Tiled roof Structural Worked stone CBM Window glass	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport	Inscriptions Writing equipment	Security objects	Equine transport	Recreation objects	Hobnails Bracelets Finger rings Hairpins Other dress Brooch Glass objects	Toilet cosmetic	Religion. objects	Agriculture Coins Iron slag Knives tools Spinning Sewing Quernstones Vessel glass
14021(F)	Tiled roof Structural Worked stone	Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport		Security objects	Equine transport		Hobnails Bracelets Finger rings Hairpins Brooch Glass objects		Religion. objects	Agriculture Iron slag Knives tools Agricultural tools Spinning Quernstones Vessel glass
14029(I)		Coins						Recreation objects	Hobnails Bracelets Brooch Glass objects			Agriculture Coins Metalwork Iron slag Spinning
14032(F)	Tiled roof Structural Worked stone CBM	Coins Knives tools Vessel glass	Knives tools Quernstones Millstones Vessel glass	Equine transport	Writing equipment	Security objects	Military fitting Weapons Equine transport		Bracelets Finger rings Hairpins Brooch Glass objects	Toilet cosmetic	Religion. objects	Agriculture Coins Corndrier Storage Knives tools Agricultural tools Weighing Spinning Weaving Quernstones Millstones Vessel glass
14033(F)	CBM Window glass	Coins Knives tools Vessel glass	Knives tools Vessel glass	Equine transport		Security objects	Equine transport		Hobnails Bracelets Finger rings Brooch	Toilet cosmetic		Agriculture Coins Knives tools Agricultural tools Weighing Vessel glass
14041(V)	Masonry Tiled roof Painted plaster wall Structural Worked stone	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport		Security objects	Military fitting Weapons Equine transport	Recreation objects	Hobnails Bracelets Finger rings Hairpins Other dress Brooch Glass objects	Toilet cosmetic	Religion. objects	Agriculture Coins Metalwork Iron slag Knives tools Agricultural tools Spinning Weaving Sewing Quernstones Vessel glass
(14045, 46, 171,188)(N)	Masonry	Coins Vessel glass	Vessel glass			Security objects			Hobnails Hairpins Other dress Brooch			Agriculture Coins Metalwork Iron slag Spinning Vessel glass
14086(F)	Tiled roof Painted plaster wall Structural Worked stone	Coins Knives tools Vessel glass	Knives tools Vessel glass		Writing equipment	Security objects			Bracelets Finger rings Brooch Glass objects	Toilet cosmetic	Religion. objects	Agriculture Coins Iron slag Knives tools Agricultural tools Weighing Spinning Weaving Sewing Quernstones Vessel glass
14187(F)		Vessel glass	Vessel glass					Recreation objects	Hobnails Bracelets Finger rings Brooch Glass objects			Agriculture Corndrier Iron slag Spinning Quernstones Vessel glass

Table F.8. Cluster 5: Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
(14004,05)(F)	Masonry Structural worked stone CBM	Vessel glass	Vessel glass	Equine transport		Security objects	Equine transport		Hobnails Finger rings Other dress Brooch Glass objects	Toilet cosmetic		Agriculture Metalwork Iron slag Agricultural tools Spinning Vessel glass
14052(F)	Structural worked stone CBM	Coins Vessel glass	Quernstones Vessel glass					Recreation objects	Bracelets Brooch Glass objects			Agriculture Coins Corndrier Storage Agricultural tools Quernstones Vessel glass
14099(F)	Structural worked stone CBM	Coins Vessel glass	Quernstones Vessel glass	Equine transport			Military fitting weapons Equine transport		Hobnails Bracelets Finger rings Other dress Brooch Glass objects	Toilet cosmetic		Agriculture Coins Agricultural tools Spinning Quernstones Vessel glass
14102(F)	Tiled roof Structural worked stone	Coins Vessel glass	Quernstones Vessel glass		Writing equipment				Hobnails Bracelets Hairpins Brooch Glass objects	Toilet cosmetic		Agriculture Coins Metalwork Iron slag Weaving Quernstones Vessel glass
14118(F)	Structural worked stone		Quernstones						Hobnails Bracelets Finger rings Brooch	Toilet cosmetic		Agriculture Metalwork Iron slag Agricultural tools Quernstones
14166(F)	Structural worked stone CBM	Vessel glass	Quernstones Vessel glass						Other dress Brooch			Agriculture Metalwork Iron slag Agricultural tools Weaving Quernstones Vessel glass
14169(F)	Masonry Structural worked stone CBM	Vessel glass	Quernstones Vessel glass						Hobnails Bracelets Finger rings Other dress Brooch Glass objects	Toilet cosmetic		Agriculture Corndrier Iron slag Quernstones Vessel glass

Table F.9. Cluster 6: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14011(N)	Masonry Structural worked stone	Coins Vessel glass	Quernstones Millstones Vessel glass				Military fitting weapons		Bracelets Finger rings Hairpins			Agriculture Coins Metalwork Iron slag Sewing Quernstones Millstones Vessel glass
14017(F)	Masonry Tiled roof Painted plaster Structural worked stone CBM	Coins Knives tools Vessel glass	Knives tools Quernstones Millstones Vessel glass			Security objects	Military fitting weapons		Hobnails Bracelet Hairpins Other dress Brooch	Toilet cosmetic	Religious objects	Agriculture Coins Corndrier Iron slag Knives tools Agr. tools Weighing Spinning Weaving Quernstones Millstones Vessel glass
14023(V)	Masonry Tiled roof Painted plaster Structural worked stone Window glass Tessellated Hypocaust	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport	Inscriptions Writing equipment	Security objects	Military fitting weapons Equine transport	Bathhouse Recreation objects	Hobnails Bracelets Finger rings Hairpins Other dress Brooch Glass objects	Bathhouse Toilet cosmetic	Religious objects	Agriculture Coins Corndrier Storage Metalwork Iron slag Knives tools Agr. tools Weighing Spinning Weaving Quernstones Vessel glass
14024(V)	Masonry Tiled roof Painted plaster Structural worked stone CBM Window glass Tessellated Hypocaust	Coins Knives tools Vessel glass	Knives tools Quernstones Millstones Vessel glass	Equine transport	Writing equipment	Security objects	Military fitting weapons Equine transport	Bathhouse Recreation objects	Hobnails Bracelets Finger rings Hairpins Other dress Brooch Glass objects	Bathhouse Toilet cosmetic	Religious objects	Agriculture Coins Corndrier Metalwork Iron slag Bonework Knives tools Agr. tools Weighing Spinning Weaving Sewing Quernstones Millstones Vessel glass
14027(F)	Masonry Tiled roof Painted plaster Structural worked stone Tessellated	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport		Security objects	Equine transport		Hobnails Bracelets Hairpins Brooch			Agriculture Coins Knives tools Agr. tools Spinning Sewing Quernstones Vessel glass
14028(F)	CBM	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport	Writing equipment	Security objects	Equine transport		Hobnails Bracelets Finger rings Hairpins Other dress Brooch Glass objects	Toilet cosmetic		Agriculture Coins Storage Metalwork Iron slag Knives tools Agr. tools Weighing Spinning Sewing Quernstones Vessel glass
14047(V)	Masonry Tiled roof Painted plaster Structural worked stone Window glass Tessellated Hypocaust	Coins Knives tools Vessel glass	Knives tools Quernstones Millstones Vessel glass	Equine transport	Writing equipment	Security objects	Military fitting weapons Equine transport	Recreation objects	Hobnails Bracelets Finger rings Hairpins Other dress Glass objects	Toilet cosmetic	Religious objects	Agriculture Coins Corndrier Metalwork Iron slag Knives tools Agr. tools Weighing Spinning Weaving Sewing Quernstones Millstones Vessel glass
14080(V)	Masonry Tiled roof Painted plaster Structural worked stone Window glass Tessellated Hypocaust	Coins Knives tools Vessel glass	Knives tools Vessel glass		Inscriptions	Security objects		Bathhouse	Hobnails Bracelets Hairpins Other dress Brooch	Bathhouse		Agriculture Coins Metalwork Iron slag Knives tools Weighing Vessel glass

Table F.9. Cluster 6: Later Roman period in Gloucestershire (continuation).

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14087(N)	Masonry Structural worked stone CBM Window glass	Coins Knives tools	Knives tools Millstones						Hobnails Bracelets Hairpins Glass objects	Toilet cosmetic		Agriculture Coins Metalwork Iron slag Bonework Knives tools Millstones
14090(N)	Masonry Structural worked stone	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport	Writing equipment	Security objects	Military fitting weapons Equine transport		Hobnails Bracelets Finger rings Hairpins Other dress Brooch Glass objects			Agriculture Coins Corndrier Metalwork Iron slag Bonework Knives tools Agr. Tools Weighing Quernstones Vessel glass
14098(V)	Masonry Tiled roof Painted plaster Structural worked stone Window glass Tessellated Hypocaust	Coins Knives tools Vessel glass	Knives tools Quernstones Millstones Vessel glass					Bathhouse Recreation objects	Hobnails Bracelets Finger rings Hairpins Other dress Brooch Glass objects	Bathhouse Toilet cosmetic		Agriculture Coins Metalwork Iron slag Knives tools Agr. Tools Quernstones Millstones Vessel glass
14110(F)	Masonry Tiled roof Painted plaster Structural worked stone	Coins							Finger rings Brooch	Toilet cosmetic		Agriculture Coins Corndrier Storage Metalwork Iron slag Agr. Tools Weighing
14139(V)	Masonry Tiled roof Structural worked stone CBM	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass					Recreation objects	Hobnails Bracelets Finger rings Other dress Brooch	Toilet cosmetic		Agriculture Coins Metalwork Iron slag Knives tools Spinning Quernstones Vessel glass
14149(V)	Masonry Tiled roof Structural worked stone Window glass	Coins							Hobnails Hairpins Other dress Brooch			Agriculture Coins Iron slag Weighing
14154(N)	Masonry Tiled roof Structural worked stone Tessellated	Coins Vessel glass	Quernstones Vessel glass			Security objects	Military fitting weapons	Recreation objects	Hobnails Finger rings Other dress Brooch Glass objects		Religious objects	Agriculture Coins Metalwork Iron slag Agr. Tools Quernstones Vessel glass
14160(V)	Masonry Tiled roof Painted plaster Structural worked stone CBM Window glass Tessellated Hypocaust Corndrier	Coins Knives tools Vessel glass	Knives tools Quernstones Vessel glass	Equine transport	Writing equipment	Security objects	Military fitting weapons Equine transport	Bathhouse	Hobnails Bracelets Hairpins Other dress Brooch Glass objects	Bathhouse Toilet cosmetic	Religious objects	Agriculture Coins Storage Metalwork Iron slag Knives tools Agr. Tools Weighing Spinning Weaving Quernstones Vessel glass
14178(F)	Masonry Structural worked stone	Coins Vessel glass	Quernstones Vessel glass					Recreation objects	Finger rings Hairpins Other dress Brooch			Agriculture Coins Metalwork Iron slag Quernstones Vessel glass
14181(F)	Masonry Tiled roof Structural worked stone		Quernstones						Hobnails Bracelets Finger rings Hairpins Brooch	Toilet cosmetic		Agriculture Metalwork Iron slag Weighing Quernstones

Table F.10. Cluster 7: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14010(I)		Coins Vessel glass	Quernstones Vessel glass						Hobnails			Agriculture Coins Metalwork Iron slag Quernstones Vessel glass
14106(I)		Coins							Glass objects			Agriculture Coins Metalwork Iron slag
14108(I)									Hobnails			Agriculture Metalwork Iron slag
14123(F)	Masonry											Agriculture Metalwork Iron slag
14127(I)	CBM								Bracelets			Agriculture Metalwork Iron slag
14143(F)		Coins Vessel glass	Quernstones Vessel glass						Hobnails Glass objects			Agriculture Coins Weighing Quernstones Vessel glass Iron slag
14145(F)	CBM								Other dress			Agriculture Metalwork Iron slag
14146(F)	CBM	Coins	Quernstones			Security objects			Hobnails			Agriculture Coins Bonework Quernstones Iron slag
14148(F)	Masonry		Quernstones									Agriculture Metalwork Spinning Quernstones Iron slag
14153(F)	Structural worked stone								Hobnails Bracelets			Agriculture Metalwo Iron slagrk
14157(F)		Vessel glass	Vessel glass									Agriculture Metalwork Vessel glass Iron slag
14165(F)	CBM	Vessel glass	Vessel glass						Hobnails	Toilet cosmetic		Agriculture Vessel glass Iron slag

Table F.11. Cluster 8: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14060(N)	Masonry Structural worked stone	Coins							Hobnails Brooch			Agriculture Coins Weaving
14061(F)	Structural worked stone	Coins							Brooch			Agriculture Coins Corndrier
14115(F)		Coins	Quernstones						Hobnails Finger rings Hairpins Brooch Glass objects			Agriculture# Coins Spinning Quernstones
14117(F)	CBM	Coins Vessel glass	Quernstones Vessel glass	Equine transport			Equine transport		Brooch			Agriculture Coins Quernstones Vessel glass
14133(F)												Agriculture
14142(F)			Quernstones									Agriculture Quernstones
14152(F)									Hobnails Hairpins			Agriculture
14155(F)	Masonry											Agriculture
14162(F)												Agriculture
14172(F)		Knives tools	Knives tools						Hobnails			Agriculture Knives tools Glass objects
14175(F)	Masonry	Coins							Hobnails			Agriculture Coins Spinning
14179(F)		Coins Knives tools	Knives tools	Equine transport	Writing equipment		Equine transport	Recreation objects	Bracelets Finger rings Hairpins Other dress Brooch	Toilet cosmetic		Agriculture Coins Knives tools Weighing Spinning
14182(F)	Masonry	Coins Knives tools	Knives tools						Finger rings Hairpins Brooch			Agriculture Coins Knives tools Agricultural tools Spinning Glass objects
14189(F)		Coins										Agriculture Coins

Table F.12. Cluster 9: Later Roman period in Gloucestershire.

	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14095(F)	Tiled roof	Coins		Equine transport			Equine transport		Finger rings Brooch			Agriculture Coins Corndrier Metalwork Iron slag
14105(F)	Masonry Tiled roof Structural worked stone	Coins Vessel glass	Vessel glass									Agriculture Coins Metalwork Iron slag Vessel glass
14107(I)	Masonry Tiled roof CBM Window glass	Coins				Security objects						Agriculture Coins Metalwork Iron slag`
14128(F)	Masonry Tiled roof Structural worked stone CBM	Vessel glass	Vessel glass			Security objects				Toilet cosmetic		Agriculture Iron slag Weighing Spinning Vessel glass

Table F.13. Cluster 10: Later Roman period in Gloucestershire.

`	Lifestyle/activity											
	Building lifestyle	Household lifestyle	Kitchen, food	Transport	Intellectual activity	Security	Defence	Recreation	Personal appearance	Personal grooming	Religion	Economic activity
14006(V)	Masonry Tiled roof Painted plaster` Structural worked stone` CBM Window glass Tessellated Hypocaust	Coins	Quernstones Millstones					Bathhouse	Hobnails Brooch	Bathhouse Toilet cosmetic		Agriculture Coins` Sewing Quernstones Millstones
14025(V)	Masonry Tiled roof Painted plaster Structural worked stone Window glass Tessellated Hypocaust	Coins Vessel glass	Vessel glass						Bracelets Finger rings Glass objects			Agriculture Coins Vessel glass
14038(V)	Masonry Tiled roof Painted plaster Structural worked stone Window glass Tessellated Hypocaust	Coins Vessel glass	Vessel glass					Bathhouse	Bracelets Glass objects	Bathhouse		Agriculture Coins Vessel glass
14069(F)	Masonry Tiled roof Painted plaster Structural worked stone CBM Window glass Tessellated	Coins Knives tools	Knives tools			Security objects		Bathhouse Recreation objects	Hobnails Finger rings	Bathhouse		Agriculture Coins Knives tools
14116(F)	Masonry Tiled roof Painted plaster	Coins			Inscriptions			Recreation objects	Bracelets Hairpins Other dress Glass objects			Agriculture Coins Corndrier
14136(R)	Masonry Tiled roof Painted plaster Structural worked stone	Coins										Agriculture Coins

SUPPLEMENTARY INFORMATION

Description of the sites included in the sample (extracted from the database of the Rural Settlement of Roman Britain Online Resource of the Archaeological Data Service)

Table S.1. Earlier Roman sites in Gloucestershire.

Site ID	Description
14004 and 14005 South-East of Tewkesbury Area C and D	Farm located on the crest of a low clay ridge in the Severn Valley. More intensive period of occupation between 2nd and 3th century.
14008 West Drive, Cheltenham	Farm located in Cheltenham. More intensive period of occupation between 2nd and 3th century.
14012 Birdlip, Cowley	Farm located 1km east of the Cotswold escarpment on the south facing slope of a low ridge. More intensive period of occupation between 1st and 2nd century.
14015 Tewkesbury, Cinema site	Nucleated settlement located near the confluence of the Rivers Avon and Severn. More intensive period of occupation between 2nd and 3th century.
14018 Abbotswood, Swell	Farm (possible a villa) located in Cotswolds Hills. More intensive period of occupation between 2nd and 3th century.
14019, 14082, 14101 and 14144 Abonae, Sea Mills;	Nucleated settlement located within the Roman port town of Sea Mills (Abonae) on the River Avon. More intensive period of occupation between 2nd and 4th century.
14021 Portway	Farm located between the Cotswold escarpment and Robinswood Hill. More intensive period of occupation between 2nd and 3th century.
14029 Heneage Court, Falfield	Industrial settlement located on the north slope of a knoll near a tributary of the River Little Avon. More intensive period of occupation between 1st and 2nd century.
14032 Neigh Bridge, Somerford Keynes	Farm located in the Upper Thames Valley, immediately south-west of the river. More intensive period of occupation between 2nd and 3th century.
14033 Whelford Bowmoor	Farm located on the immediate floodplain of the River Coln. More intensive period of occupation between 2nd and 3th century.
14034 Stubbs Farm, Kempsford	Farm located 1km north of the River Thames on the first gravel terrace. More intensive period of occupation between 2nd and 3th century.
14037 Arle Court, Cheltenham	Farm in the Severn Vale on sloping ground leading the valley of the Hatherley. More intensive period of occupation between 1st and 2nd century.
14041 The Ditches, North Cerney	Villa located on a south facing spur of limestone defined by the Bagendon Brook and River Churn. More intensive period of occupation between 1st and 2nd century.
14043 College Farm, Dumbleton	Farm located on a remnant 2nd gravel terrace of the River Avon. More intensive period of occupation between 1st and 3th century.
14045, 14046, 14171 and 14188 Dymock	Nucleated settlement located on a rise above the floodplain of the River Leadon. More intensive period of occupation between 1st and 2nd century.
14052 Rudgeway lane, Walton Cardiff, Tewkesbury	Farm located within the broad Valley of the River Severn. More intensive period of occupation between 1st and 2nd century.
14055 Dymock, Sewage Treatment Works	Farm, field system, and funerary site. It is located on the first gravel terrace of the Upper River Thames. More intensive period of occupation between 1st and 3th century.
14062 Brookthorpe-with-Whaddon	Villa located 6.4km south of Gloucester on the edge of the Severn Vale. More intensive period of occupation between 2nd and 3th century.
14086 Brockworth	Farm located about 6km SE of Gloucester. More intensive period of occupation between 1st and 2nd century.
14099 Arkell's Land	Farm located 750m north of the River Coln and straddling the south-west edge of the First Gravel Terrace of the Upper Thames Valley. More intensive period of occupation 2nd century.

Table S.1. Earlier Roman sites in Gloucestershire.

Site ID	Description
14102 Gloucester Business Park Link Road, Hucclecote	Farm located 5.5km east of Gloucester just north of Ermin Street Road and south of the Horsebere Brook. More intensive period of occupation between 1st and 3th century.
14118 Fox's Field, Ebley Road, Stonehouse	Farm located at the foot of the Cotswold ridge on the edge of the Severn Vale and 200m north of the River Frome. More intensive period of occupation between 1st and 3th century.
14125 Ebrington villa	Villa, field system, and funerary site located in the northern escarpment of the Cotswold Hills adjacent to a brook. More intensive period of occupation between 2nd and 3th century.
14131 North Fiddington, Ashchurch	Farm and field system located north of the Tirle Brook in the Severn Vale. More intensive period of occupation between 2nd and 3th century.
14132 Land at The Forge, Churchend, Slimbridge	Farm located on the eastern bank of the River Severn. More intensive period of occupation between 1st and 2nd century.
14134 RAF Quedgeley	Farm located east of the River Severn. More intensive period of occupation between 1st and 2nd century.
14147 Great Meadow, Bradley Stoke	Farm, funerary site, and field system located north Bristol. More intensive period of occupation between 1st and 3th century.
14150 Lower Knole Farm, Almondsbury	Farm and located on the edge of alluvial wetland (Severn Levels). More intensive period of occupation in the 2nd century.
14151 Stanley Meadow, Lower Woods, Hawkesbury	Villa located on a gentle north-west facing slope beneath the western edge of the Cotswold scarp. More intensive period of occupation between 2nd and 3th century.
14156 Park Farm, Thornbury	Farm located near the Severn estuary. More intensive period of occupation between 1st and 2nd century.
14158 Cossham Street, Mangotsfield	Farm, iron production, funerary site located north Bristol. More intensive period of occupation between 2nd and 3th century.
14159 Bradley Stoke Way, Bradley Stoke	Farm located near the eastern edge of the Severn Valley. More intensive period of occupation between 1st and 3th century.
14163 A46 Ashchurch Railway Bridge	Farm and funerary site located on the Second Terrace sand and gravels of the River Avon. More intensive period of occupation between 1st and 3th century.
14164 Land off Greet Road, Winchcombe	Farm located on ground sloping to the east towards the River Isbourne in the Cotswolds. More intensive period of occupation between 2nd and 3th century.
14166 Land North of Brockworth	Farm located near the foot of the Cotswold scarp and north of the Horsbere Brook. More intensive period of occupation earlier Roman.
14168 Quercus Road, Tetbury	Farm and quarry located in the southern Cotswolds. More intensive period of occupation between 2nd and 3th century.
14169 Horcott Quarry	Farm located on the Second Gravel Terrace of the Upper Thames Valley. More intensive period of occupation between 1st and 3th century.
14170 Innsworth	Farm and field system located in the Severn vale north of Gloucester. More intensive period of occupation between 2nd and 3th century.
14173 Coberley Villa	Villa located on a plateau in the Cotswolds. More intensive period of occupation: earlier Roman.
14174 New Moreton Farm, Standish	Farm located on the valley floor of the River Severn near the Cotswold Scarp. More intensive period of occupation between 2nd and 3th century.
14180 Abbot's Leigh	Farm located north of Gatcombe Roman settlement on a hillslope. More intensive period of occupation between 1st and 2nd century.
14187 Cattybrook, Almondsbury	Farm located in the lower Severn Valley. More intensive period of occupation between 1st and 2nd century.

Table S.2. Later Roman sites in Gloucestershire.

Site ID	Description
14006 Tockington Park Farm	Villa located on the slopes of the Severn Valley. More intensive period of occupation between 3th and 4th century.
14010 Millend Lane, Blakeney	Industry located on a steep north-east facing slope on the edge of the Forest of Dean, 1.6km west of the River Severn. More intensive period of occupation between 3rd and 4th century.
14011 Bishop's Cleeve, Gilder's Paddock/Home Farm/Church Road	nucleated village type settlement located on the gravels of the Severn Vale. More intensive period of occupation between 2nd and 4th century.
14017 Vineyards Farm, Charlton Kings	Farm located on the SW slope of the Cotswold escarpment below Wistley Hill. More intensive period of occupation Later Roman.
14023 Barnsley Park	Villa on the SW side of the Coln Valley between the Fosse Way and Akeman Street roads before they converged on Cirencester. More intensive period of occupation between 3th and 4th century.
14024 Frocester Court	Villa located at the foot of the Cotswold escarpment on the third River Severn Terrace. More intensive period of occupation between 3th and 4th century.
14025 St. Peter's Church, Frocester	Villa located near the foot of the Cotswold escarpment in the Severn Valley. More intensive period of occupation between 3th and 4th century.
14027 Wells' Bridge, Barnwood	Farm located 3km east of Gloucester on the southern bank of the Horsbere Brook. More intensive period of occupation between 2nd and 4th century.
14028 Lodge Farm, Alveston	Farm located near Alveston. More intensive period of occupation 4th century.
14038 Withington	Villa located in the Cotswolds within the Coln Valley. More intensive period of occupation between 2nd and 4th century.
14047 Kingscote	Villa located on a Cotswolds plateau. More intensive period of occupation between 2nd and 4th century.
14060 Stoke Orchard, Tredington Rise	Village type settlement (nucleated settlement) located on a gravel ridge in the Severn Vale. More intensive period of occupation between 2nd and 4th century.
14061 Upton St Leonards	Farm located on a slight clay rise in the Severn Vale. More intensive period of occupation between 2nd and 4th century.
14069 Trevor Road/Ashwood Way, Hucclecote	Farm 3.2km east of Gloucester, south of Ermin Street Roman Road and c 1km south of the villa at Hucclecote. More intensive period of occupation between 2nd and 4th century.
14080 Turkdean Roman Villa	Villa located near Cold Aston. More intensive period of occupation Later Roman.
14087 Bishop's Cleeve, Stoke Road & Cleeve Hall	Nucleated settlement located in the Severn Vale. More intensive period of occupation between 2nd and 4th century.
14090 Birdlip Quarry	Nucleated settlement located on a south facing slope of a shallow dry valley in the Cotswolds, adjacent to the course of Ermin Street Roman road. More intensive period of occupation between 2nd and 4th century.
14095 The Park-Bowsings, Guiting Power	Farm located on the high dip slope of the Cotswolds on a spur of land near a confluence of two headwater streams of the River Windrush. More intensive period of occupation between 2nd and 4th century.
14098 Chesters Villa, Woolaston	Villa located on the right bank of the Severn Estuary. More intensive period of occupation between 2nd and 4th century.
14105 Stock Farm, Clearwell	Farm (possible villa) located on a plateau in the Forest of Dean, 3.5km east of the River Wye. More intensive period of occupation between 3rd and 4th century.
14106 Eastbach Court, Barnfield	Industry located on high ground 2km east of the River Wye. More intensive period of occupation 4th century.
14107 High Nash, Coleford	Industry located in the Forest of Dean. More intensive period of occupation 4th century.
14108 Land to the east of Lydney	Industry located on the gravels, c 1km west of the River Severn. More intensive period of occupation between 3rd and 4th century.
14110 Cleevelands, Bishops Cleeve	Farm located in an area of alluvium adjacent to Dean Brook and on the Second Terrace of the River Avon. More intensive period of occupation between 2nd and 4th century.
14115 Northleach Bypass	Farm located lying 300m west of the Fosse Way on a plateau in the Cotswolds. More intensive period of occupation between 2nd and 4th century.
14116 Nesley Farm, Tetbury	Farm located in the southern Cotswolds. More intensive period of occupation between 2nd and 4th century.

Table S.2. Later Roman sites in Gloucestershire.

Site ID	Description
14117 Tewkesbury Hospital	Farm located north of the River Swilgate/Tirle Brook near the confluence of the Avon and Severn. More intensive period of occupation between 2nd and 4th century.
14123 Church Lane, Alvington	Industry and rural settlement located on the lower slopes of the Severn escarpment just west of the river. More intensive period of occupation between 3rd and 4th century.
14127 Stonehouse Wharf, Boakes Drive, Stonehouse	Farm located on the north banks of the River Frome.
14128 Brockworth Airfield	Farm located just below the Cotswold escarpment, 5km east of Gloucester and c700m south of Ermin Street. More intensive period of occupation between 2nd and 4th century.
14133 Quedgeley	Farm located on River Severn gravels 1.5km east of the river. More intensive period of occupation Later Roman.
14136 Royal George Hotel, Birdlip	Rural settlement located on the edge of the Cotswold escarpment adjacent to Ermin Street Roman road. More intensive period of occupation between 3rd and 4th century.
14139 Inns Court/Filwood Park, Knowle West, Bristol	Villa located in Inns Court to the west and Filwood Park. More intensive period of occupation between 2nd and 4th century.
14142 Henbury Secondary School, Henbury, Bristol	Farm located 3.3km NE of the River Avon. More intensive period of occupation Later Roman.
14143 West Street, Bedminster, Bristol	Farm located on the upper SE facing slope of the west side of the Malago Vale. More intensive period of occupation between 2nd and 4th century.
14145 St. Bede's Catholic School, Long Cross, Bristol	Farm located 1.9km north of the River Avon and 3km east of the Bristol Channel. More intensive period of occupation between 3rd and 4th century.
14146 Hortham Hospital, Hortham Lane, Almondsbury	Farm located on the edge of the Severn Valley 1km to the east of the Bristol Channel. More intensive period of occupation between 2nd and 4th century.
14148 Rodway Hill, Mangotsfield	Farm located on the southern facing flank of Rodway Hill, Mangotsfield. More intensive period of occupation between 3rd and 4th century.
14149 Springfield Farm, Horton villa	Villa located on a slight spur overlooking Hawkesbury Common. More intensive period of occupation between 3rd and 4th century.
14152 Cote Farm, Aust	Farm located in a single trench adjacent to the Severn estuary. More intensive period of occupation between 3rd and 4th century.
14153 Lower Farm, Cowhill	Farm located in the Severn estuary. More intensive period of occupation between 3rd and 4th century.
14154 Wickwar, Hall End Farm	Nucleated settlement located on a low ridge close to the Laddon Brook. More intensive period of occupation Later Roman.
14155 Little Abbey Camp Alveston	Farm located near Thornbury. More intensive period of occupation between 2nd and 4th century.
14157 Nimlet	Farm located in the southern Cotswolds 6km north of Bath. More intensive period of occupation Later Roman.
14160 Roughground Farm	Villa on the second gravel terrace of the Upper Thames Valley between the Rivers Leach and Thames. More intensive period Later Roman century.
14162 Brizen Farm, Shurdington	Farm located along the foot of the Cotswold scarp. More intensive period of occupation Later Roman.
14165 Down Ampney	Farm located on the gravel terrace of the Upper Thames valley, close to the Ampney Brook. More intensive period of occupation Later Roman.
14172 Henbury Level (Plot 5000), Avonmouth	Farm located in Avonmouth. More intensive period of occupation between 2nd and 4th century.
14175 Brook Way, Bradley Stoke	Farm located on a plateau within the Severn Vale. More intensive period of occupation between 3rd and 4th century.
14178 Upper Maudlin Street, Bristol	Farm located on a hillslope above the River Frome. More intensive period of occupation between 2nd and 4th century.
14179 Long Cross, Lawrence Weston, Bristol	Industry and rural settlement located near Bristol. More intensive period of occupation between 2nd and 4th century.

Table S.2. Later Roman sites in Gloucestershire.

Site ID	Description
14181 Stonehill, Hanham	Farm located 1.5km east of the River Avon. More intensive period of occupation between 2nd and 4th century.
14182 Baileys Court Farm, Stoke Gifford	Farm located in Stoke Gifford. More intensive period of occupation between 2nd and 4th century.
14189 The Wave, Washingpool Farm and Over Court Farm, Over	Farm located within the low-lying alluviated flood plain of the River Severn (Avon levels). More intensive period of occupation between 2nd and 4th century.

Table S.3. Earlier Roman sites in Shropshire.

Site ID	Description
30003 Duncote Farm	Farm located on the south-facing slope of a plateau by the River Tern, along with a field system to the west. More intensive period of occupation between 2nd and 3th century.
30004 Craven Arms	Farm located in the east of Watling Street Roman Road in the Valley of the River Onny. More intensive period of occupation between 2nd and 3th century.
30005 Hay Farm, Eardington	Farm located on a gravel terrace about 20m above the River Severn. More intensive period of occupation between 1st and 2nd century.
30006 Heath Road, near Whitchurch	Nucleated settlement located 2km south of the walled settlement at Whitchurch (Mediolanum). More intensive period of occupation between 2nd and 3th century.
30012 Sharpstones Hill Site E/Meole Brace	Farm located 450m south of the Rea Brook (a tributary of the Severn) on the north Shropshire Plain. More intensive period of occupation between 1st and 2nd century.
30016 Ismore Coppice, Wroxeter	Industry located 400m west of Wroxeter city walls by the River Severn. More intensive period of occupation 2nd century.
30020 Linley hall	Industry located on the west bank of the West Onny River. More intensive period of occupation 2nd century.
30026 Oak Street Head, Belle Vue, Shrewsbury	Farm located on a sand and gravel terrace on the north bank of the Rea Brook. More intensive period of occupation between 2nd and 3th century.
30028 Redhill, Telford	Nucleated settlement (probable military in origin) located north of Watling Street Roman road. More intensive period of occupation between 2nd and 3th century.
30030 Alkmund Park, Berwick	Villa located 1km east of the River Severn on a knoll of glacial sand and gravel. More intensive period of occupation 2nd century.

Table S.4. Later Roman sites in Shropshire.

Site ID	Description
30001 and 3007 Meole Brace	Nucleated settlement located 190m either side of a metalled and ditched road to the west of Wroxeter. More intensive period of occupation between 3th and 4th century.
30015 Whitley Chapel/Weir Meadow	Farm located south of the Rea Brook. More intensive period of occupation between 3th and 4th century.
30017 Tern Bridge, Wroxeter	Industry located on the banks of the River Severn, 1km NW of Wroxeter. More intensive period of occupation 4th century.
30018 Lea Cross, Pontesbury	Villa located near the Rea Brook. More intensive period of occupation between 2nd and 4th century.
30019 Nesscliff Hill	Farm located 1ha on a sandstone ridge rising out of the Shropshire plain. More intensive period of occupation between 2nd and 4th century.
30021 Yarchester	Villa located near Harley. More intensive period of occupation between 2nd and 4th century.
30022 Whitley Grange	Villa located just south of the Rea Brook. More intensive period of occupation between 3th and 4th century.
30023 Ellesmere Road, Shrewsbury	Farm located on part of a level river terrace overlooking the old course of the River Severn. More intensive period of occupation between 2nd and 4th century.
30027 Sheinton	Farm located on a low sand and gravel ridge/hill by a river terrace overlooking the River Severn to the north. More intensive period of occupation Later Roman.
30029 Bridgwalton Quarry, Morville, Bridgnorth	Farm located 18.3ha just north of the Mor Brook. More intensive period of occupation between 3rd and 4th century.
30031 Chilton Farm, Atcham	Farm located 280m west of the River Severn, 3.2km west of Wroxeter and just north of a major Roman road. More intensive period of occupation between 3rd and 4th century.