3.0 Core Data Results: Distribution of Sites and Archaeological Evidence for Salt-Production across the Study Area

This chapter presents the core results of this research project dataset, using the categories outlined in **2.0**. The main themes covered in this chapter are listed in Table 3.1.

Table 3.1 Key Themes in Chapter 3.0

Key Themes	Trends of site concentration
	Trends in chronological development of salt-production
	Identification of key areas of production
	Consideration of modern perception and recording of sites in the archaeological record (terminology)
	Profiling the archaeological record for salt-production in the study area
	Application of new categories in order to compare sites and regions
	Identification and overview of associated archaeological features and 'equipment' (briquetage)

3.1 Spatial and Chronological Site Distribution

This section focuses upon the occurrence and distribution of all sites across the study area, followed by a more detailed focus on two main variables: Site Type and Site Date.

The data will be presented in a series of detailed tables, summary tables, summary graphs and distribution maps. Most of the core data tables and maps are located within Appendix **10.1**. A table of all sites included within this research project can be viewed in Table 10.1.3. There is also a Site Gazetteer (Table 10.1.4 provided on a DVD at the back of **Volume Two**). This contains key information about each site and is intended to act as a reference both for readers of this document and those seeking information about salt-production sites in general. This is important because many of the sites do not have associated basic published material available.

Every site with even the slightest recorded potential association with salt-production was entered into the main site database and given a unique sequential **Site ID** number. During the assessment of the data, a few sites were either found to be duplicates and merged together, or found to be unsubstantiated and removed. As a result the Site ID lists do have gaps and missing numbers. A list of these missing numbers can be seen in Table 10.1.1, as well as a list of 15 sites from Somerset (Table 10.1.2) that were merged due to being 'Grouped Mound' records (the mounds were originally recorded separately).

3.1.1 Main Locations and Topographies

3.1.1.1 Study Area

In total after full assessment and filtering, the database contains **276** sites associated with salt-production covering the whole study area (Table 10.1.3 and Figure 10.1.1). Figure 10.1.1 is a distribution map of all the sites and clearly shows that some areas contained significant concentrations of sites. These areas (from SW-SE) are: Central Somerset Levels, Poole Harbour and the Isle of Purbeck (Dorset), Portsmouth, Langstone and Chichester Harbours (Hampshire and West Sussex) and Kent. Four areas in particular (Somerset, Dorset, Hampshire and Kent) are 'key areas of activity'.

3.1.1.2 Sites by County

Figure 3.1 (Table 10.1.5) shows the total number of sites by county; Figure 3.2 shows the county site totals by percentage. There is clearly a lack of Iron Age and Romano-British salt-production sites in Devon and East Sussex at this stage; however, this does not mean that sites will not be identified in the future. Very few sites were also recorded from Cornwall, the Isle of Wight and West Sussex.

In contrast, Somerset has 119 sites representing c.43% of the total sites. Kent has 89 (c.32%) sites. These two counties provide c.75% of the total sites. Dorset and Hampshire contain the third and fourth most sites; 34 and 21 respectively; together they contribute about 20% of the total.

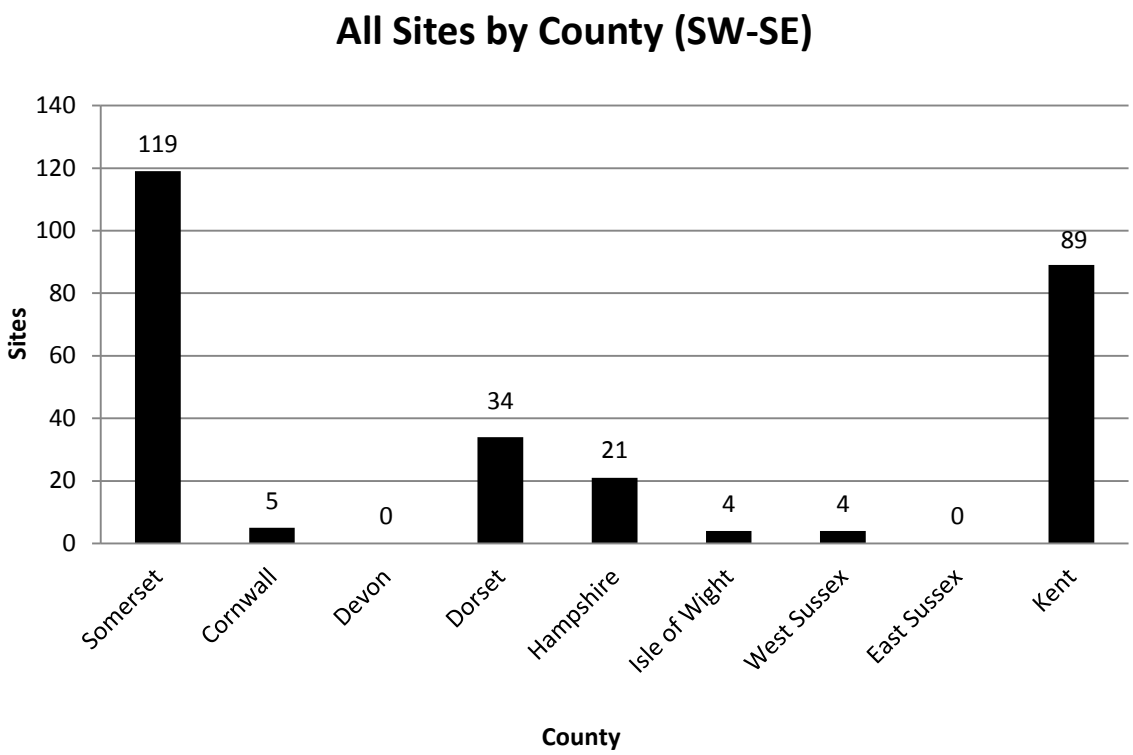


Figure 3.1 Total number of sites in the study area in order of County

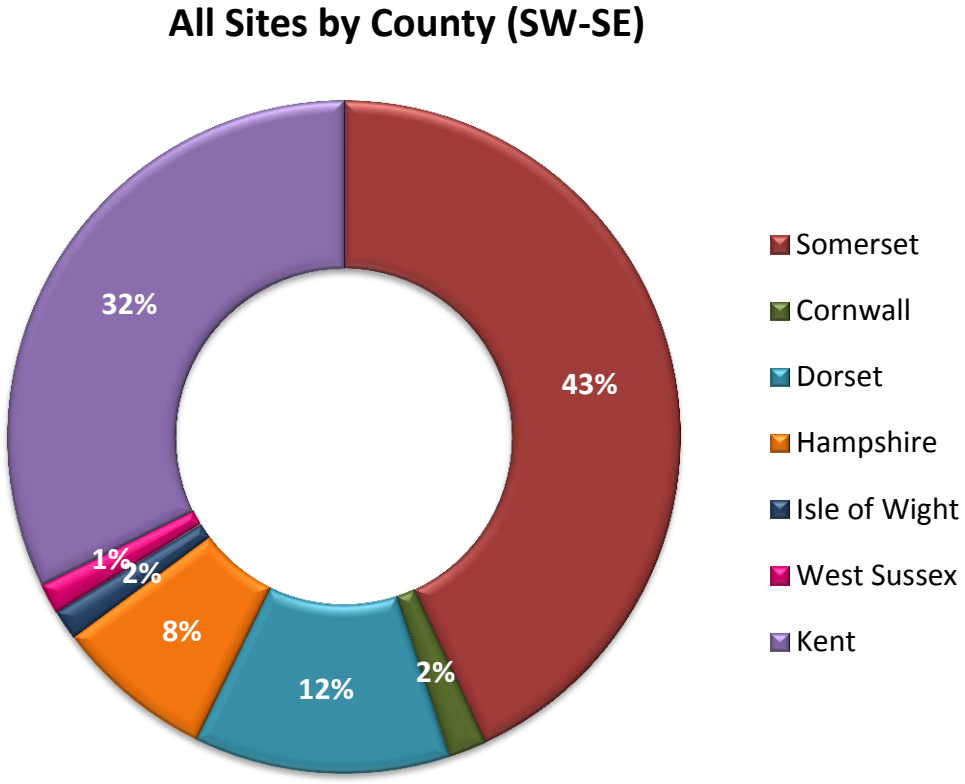


Figure 3.2 Percentage of Sites in Study Area by County

The distribution and concentration of sites are best viewed on a series of maps that are provided within Figures 10.1.1-10.1.19. Figure 10.1.1 shows the distribution of sites over the whole study area and subsequent maps focus upon specific areas of activity.

As can be seen in Figure 10.1.1, most of the sites are as expected, positioned near or on the coast. However, there are some inland sites within the Central Somerset Levels (Figures 10.1.2-10.1.6) and in several areas of Kent including Romney Marsh and in North Kent, including the Isle of Sheppey and the Medway Estuary (Figures 10.1.15 - 10.1.19).

3.1.1.3 Topography

Unsurprisingly, due to the necessity of access to seawater, most sites were either originally located on or near the shore, or further inland in marshes or estuaries fed by saltwater inlets. However, during the past 2000 years waterscapes and shorelines have often drastically changed, mainly due to land reclamation and drainage (destroying areas of marsh) or sea-level rise (eroding the coastline).

Clearly these changes can have massive implications for site survival and distribution. Often sites are being eroded on shores and sometimes lost to the sea. Sometimes sites are preserved inland due to land reclamation/drainage in marshes (Somerset Levels and areas of Kent) or land growth due to drift in the case of Romney Marsh, Kent. The effects of land drainage within the Romano-British period of the Somerset Levels will be further considered in **6.0**.

In order to explore the location of sites in more detail, the topography of each site was also recorded within the database using pre-defined categories, and the results can be seen in Table 10.1.6 and Figure 3.3. Some sites could be defined within more than one category.

Sites found on ‘Reclaimed Land’ were the most common type accounting for 140/294 instances (48%). Most of these sites are accounted for by over 100 sites within the Somerset Levels. ‘Marsh’ was the second most common accounting for 16% of instances, followed by ‘Shore’ (10%).

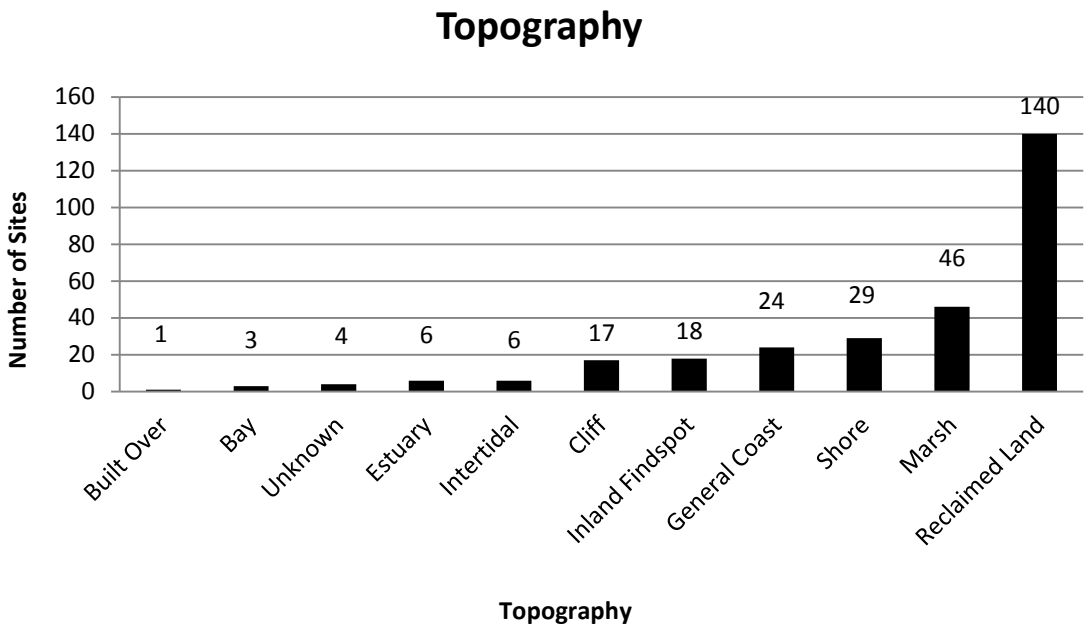


Figure 3.3 Types of topography where salt-production sites in the study area are located

In terms of site preservation, these results are encouraging, as sites within the top two categories are located away from the shoreline, and are less likely to be lost to coastal erosion and sea-level rise. Marshland sites are also likely to be minimally affected, although they are still at threat from farming and drainage works. Some of the sites on reclaimed land, although away from the coastline, are still going to be potentially affected by building development in some areas. However, modern planning conditions now often mean that developments in archaeologically sensitive areas are subject to archaeological investigation before completion (PPG16).

3.1.2 Dating Type and Site Chronologies

This section will present the site data in chronological order. Before discussing the results for site chronologies, it is firstly important to consider the accuracy of the dating methodology.

3.1.2.1 Assessing Dating Accuracy: Dating Type

The type of evidence used to date sites is an important factor when assessing the accuracy of the date recorded for each site. Therefore the original dating evidence

was recorded for all sites, or recorded as 'Unknown' if there was no mention of how the site was dated (or if the site remained undated). The results can be viewed in Table 10.1.7 and Figure 3.4; few sites were included in more than one category of dating, therefore there are 279 in total.

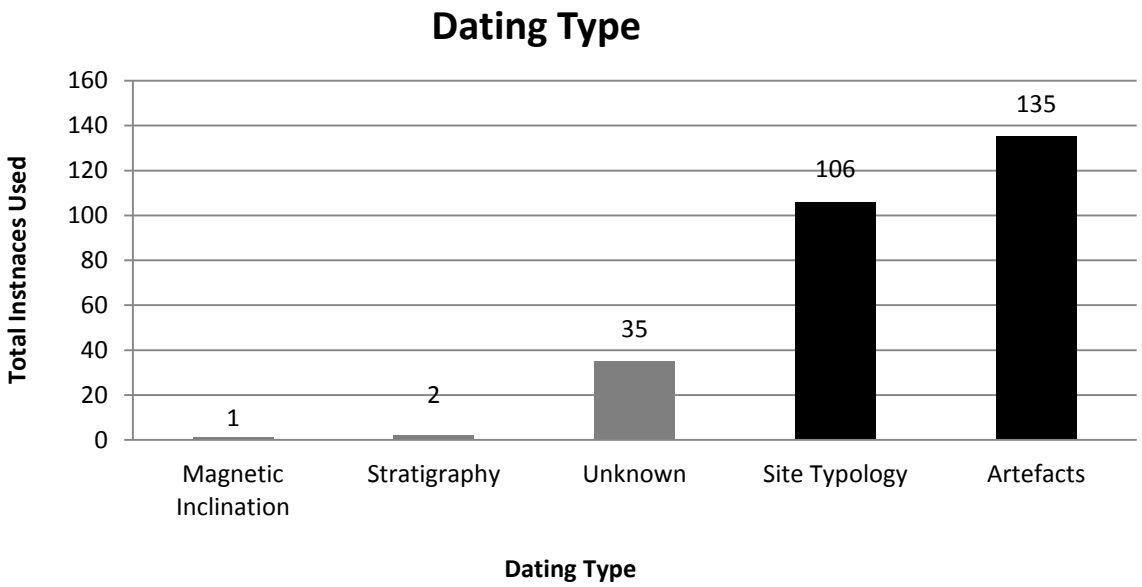


Figure 3.4 Types of archaeological evidence used for dating the study area sites

'Artefacts' are the most common means of dating representing 48% of the cases; closely followed by 'Site Typology' (38%).

The artefacts that provided dates were nearly always pottery vessels; pottery typology is a common way to date archaeological sites and is generally considered reliable when ascertaining general dates. Sites dated using typology, were, as expected, numerous, as many sites had no datable artefacts or stratigraphy. In this case, sites have been dated by analogies with similar, salt-production sites of known dates.

We should be cautious about using analogies with other salt-production sites, as the dates can be very general and in some cases potentially result in the 'blind leading the blind'. This form of dating therefore can be broad and subjective. Although it is still a useful tool, and when used this should be stated in the literature.

Only one site has been subjected to any formal scientific dating in the form of magnetic inclination dating, the details of which were outlined in **2.0**. The absence of radiocarbon dates for these sites is a clear sign that they are generally perceived as unsuitable for, or more likely not considered important enough to justify dating. Most of the sites have not been the subject of any formal research fieldwork, which would be more likely to have access to funding for scientific programmes.

Overall, around 138 sites are securely dated with a further 106 having approximate dates and 35 having no evidence of secure dating. This does affect the interpretation of the site dating. However, at least two thirds of the site dates are securely dated and therefore have a reliable basis for providing an overall picture of site chronology.

3.1.2.2 Site Chronology: 'Best Date'

As stated within the research methodology (Appendix **10.0** and **2.0**)**,** dates were recorded in four categories: Earliest Date, Latest Date, Best Date and Specific Date. This was in order to address inconsistencies in the dates given for sites and to record as much information as possible, which could be used to compare the sites across time.

As stated previously, recording site dates is challenging, as many of the dates are subjective, and as shown in **3.1.2.1**, only 135 sites were recorded as using more secure artefact-based dating, usually in the form of diagnostic pottery stratified within the site. However, given that this form of dating relies upon the presence of pottery assemblages that are securely stratified, it is not surprising that this form of dating is not common, as many sites are damaged, and many either do not contain pottery, or only very limited quantities.

Therefore, it was common to see only very broad periods recorded for sites within databases/site records/archives. Therefore, the four different categories of site dating was designed to cover 'all bases'.

The ‘Earliest’ and ‘Latest’ site dates were directly taken from the original dating suggested in the site records, which more often than not was obtained from the HER record. This, however, was not a particularly useful means for comparing the dates of sites overall, so only the category ‘Best Date’ is presented here in detail. In fact it is this Best ‘period’ date and the actual date (if recorded, for example ‘2nd century AD’) that is used throughout this thesis when referring to site chronologies.

The ‘Best Date’ was determined by considering the ‘Earliest’ and ‘Latest’ dates, as well as the whole site record and the overall context of the site, including evidence for the main phase/s actually associated with salt-production directly. ‘Best Date’ uses general period categories (i.e Iron Age) as opposed to actual date (i.e 1st century AD) in order to provide a consistent terminology compare sites. The use of periods as opposed to calendar dates, is also used because there is a small number of sites where specific dates have been recorded.

This does mean that some sites inevitably have a very long-spanning ‘Best Date’ period, such as ‘Late Iron Age-Late Roman’, because of limitation of dating, and phasing. Inevitably also, there will be some sites that had a hiatus in production, potentially several, during such a long period (see below). However, in general, most sites appear to have only one main phase or shorter period of salt-production. This has been taken in to consideration when gauging the general chronological development of salt-production through each region of the study area.

It is important to reflect on the ‘real time life span’ of sites across time. The discussion of individual site chronologies is limited because even when a site is dated by pottery typology, in some cases it can still only provide an ambiguously broad date, for example ‘2nd-3rd Centuries AD.’ or ‘Middle 1st-Early 2nd Centuries AD’.

This means the sites are potentially recorded with a date spanning more than a century, even if in reality, the site was only used in ‘real time’ for 1 season or year, or 5 seasons and years.

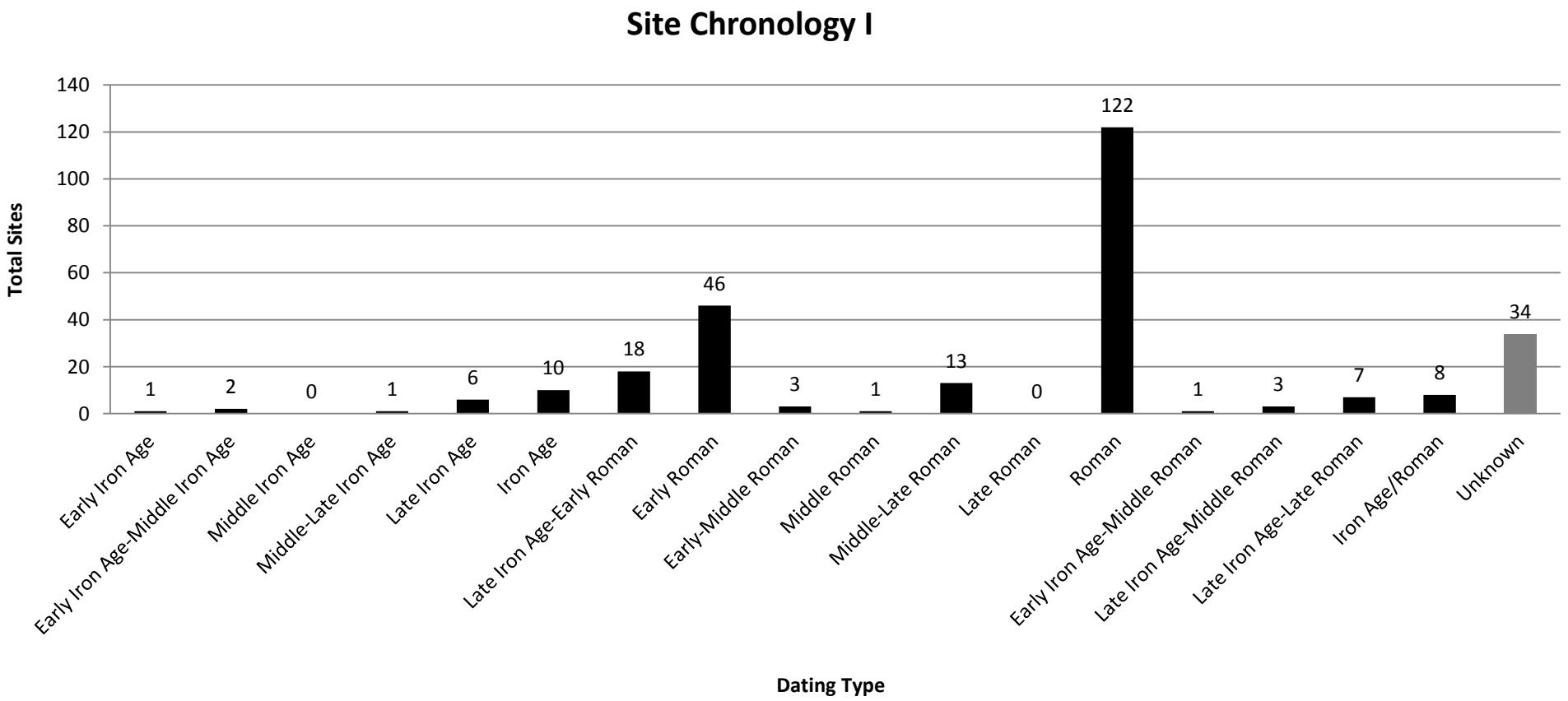


Figure 3.5 All periods recorded for sites presented in general chronological order

Therefore, it has been possible to identify very general chronological trends in this research project, whilst acknowledging that this remains too generalised to make certain assumptions about the significance of salt-production in smaller, more detailed quantities of time.

The results of the 'Best Date' analysis are presented in Table 10.1.8 and Figures 3.5-3.6.

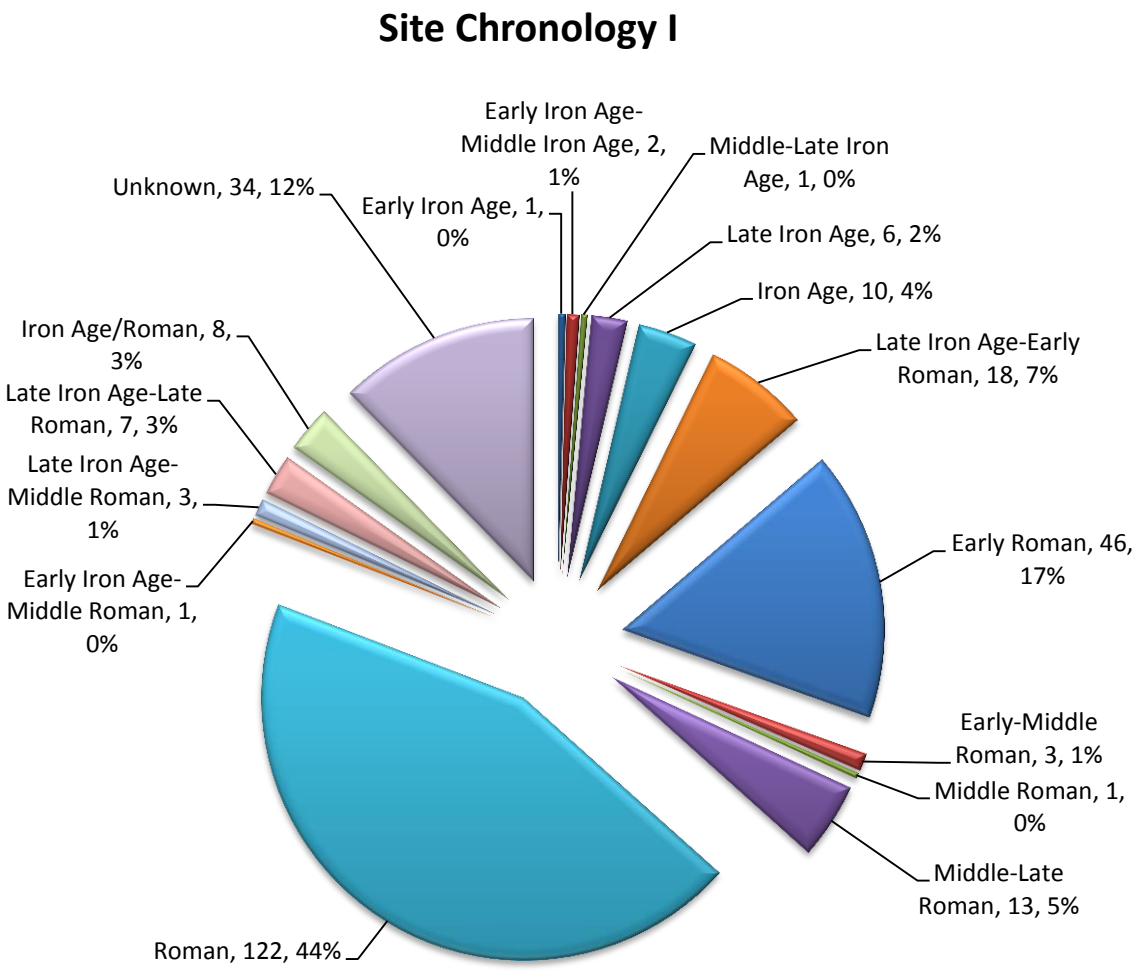


Figure 3.6 Percentage of Site Periods represented across the study area

Geographical comparison of all sites by 'Best Date' can also be viewed on a series of maps (Figures 10.1.20-10.1.27) which provides a general overview of site dates across the study area.

Figure 3.5 presents the total site numbers by period chronological order and shows the main period categories within 'Best Date'.

Figures 3.5-3.6 show the dominance of Roman sites within the whole dataset, with a total of 185/276 sites (67%).

Within this period, the general 'Roman' category was the most common (44%) and 'Early Roman' the next most common (17%). Of the Iron Age sites (20%), 'Late Iron Age/Early Roman' was the most common category (6%).

The results clearly show a large increase in sites dating from the Late Iron Age into the Early Romano-British period with 64 sites in operation by the 1st century AD. By the Middle-Late Romano-British period, only 28 sites were in operation which at first sight, suggests a decline in salt-production.

It is important to note here that the mound sites in the Somerset Levels account for 91 of the total sites in the database. The distribution of sites within the Central Somerset Levels are predominantly Romano-British in date. Only 12 of these sites were dated more closely to the 'Middle-Late Roman period' through recent pottery assemblage re-assessment (**6.0**). It is very likely that the *c*.70 sites in the same area that are currently only dated to 'Roman' (due to lack of investigation) also date to that period.

If that is the case, then the amount of Middle-Late Romano-British sites would rise to *c*.80 sites, and the number of general 'Roman' sites would be reduced to only *c*.52 sites. This would then clearly show a continuation of salt-production in Somerset into the Late Roman-British period.

The number of sites that currently sit within the very generic 'Iron Age', 'Iron Age/Roman' or 'Roman' categories does mean that detailed analysis of chronology is somewhat limited. Sites in the Hampshire area were particularly difficult to date due to mainly site preservation issues.

However, as with the sites in the Central Somerset Levels, many of these 'generic' sites would probably fit within the same dates of similar nearby sites.
The variety of chronological period categories recorded for the dataset does make it difficult to ‘gauge’ the chronological profile over the study area and within each county. Therefore, in order to provide a better assessment of chronological profile,

Figures 3.7-3.10 provide simplified overviews of the dates of Iron Age-Roman sites across the study area, dividing the sites into three broad chronological groups.

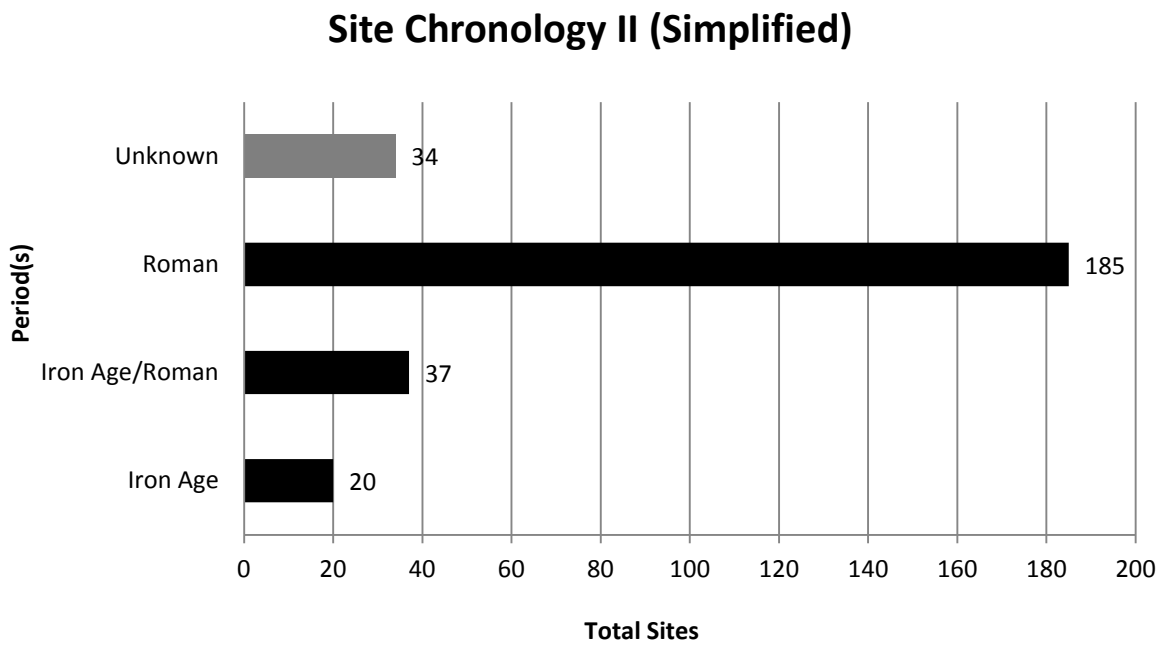


Figure 3.7 Chronology of sites by general period (excluding 'Unknown')

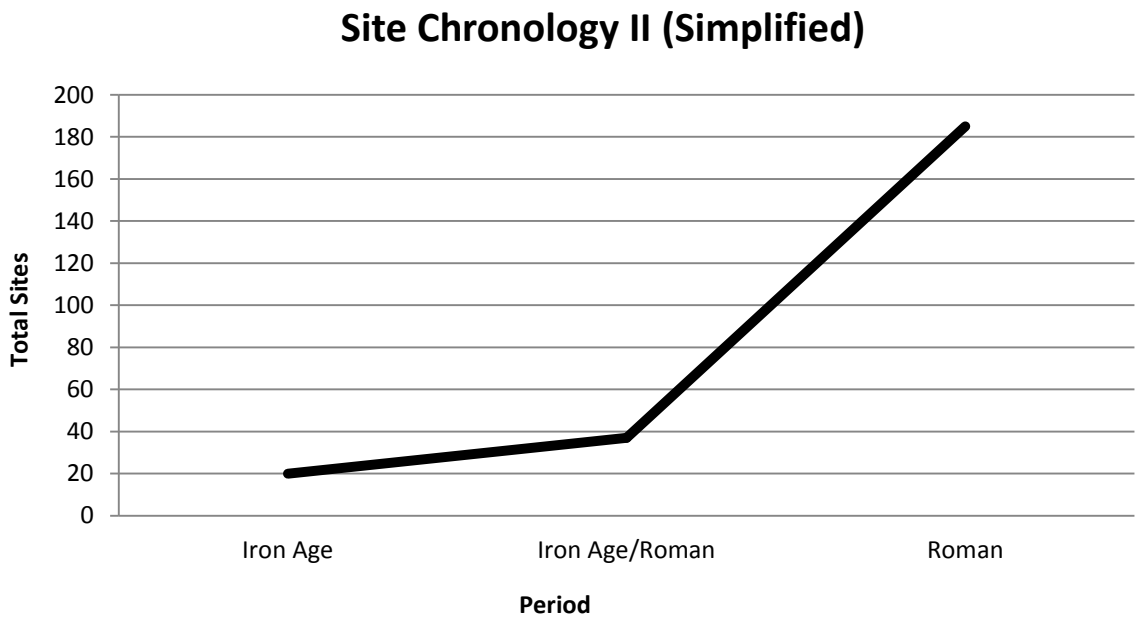


Figure 3.8 Timeline of salt-production by general period (excluding 'Unknown')

This clearly shows the increase in the evidence for salt-production sites in the Roman period, particularly in Somerset and Kent (Figure 3.10). However, this trend is not apparent in Hampshire and Dorset.

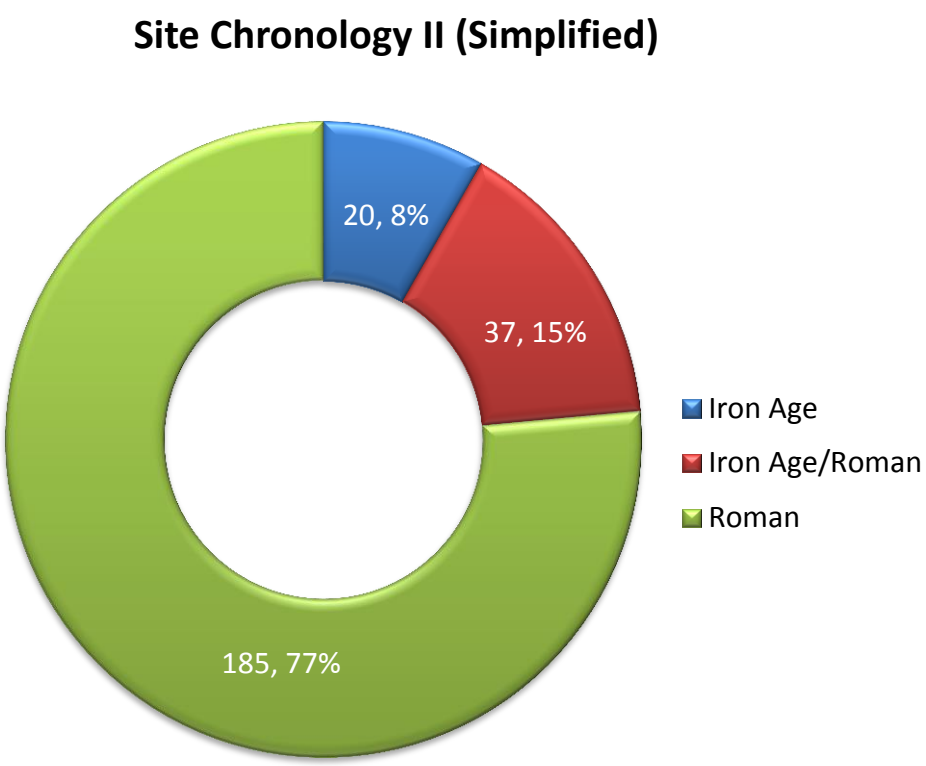


Figure 3.9 Percentage of sites by general period (excluding 'Unknown')

Despite the challenges with recording chronology, the results support that salt-production in southern Britain has spanned well over 800 years.

Further discussion and information about the significance of these chronologies will be provided in the regional evaluations of Kent (**5.0**) and Somerset (**6.0**), as well as in more detail in **7.0**.

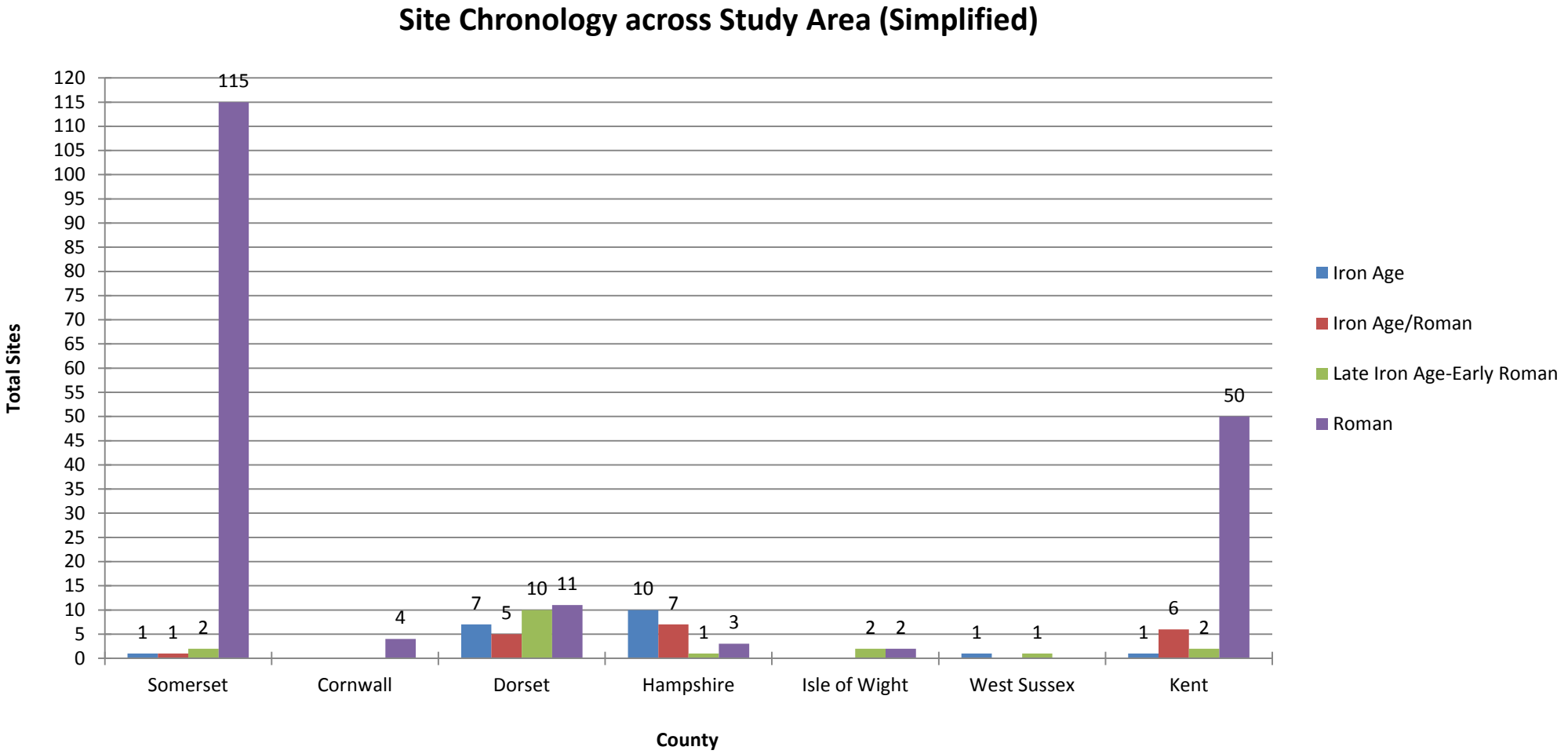


Figure 3.10 Chronological profile (simplified) for all sites across the study area

3.2 Defining Sites using 'Site Type' (Table 10.1.3)

A pre-determined set of five Site Type categories has been created by this research and assigned to sites *as determined by the archaeological evidence* (Table 3.2). These categories could be selected whilst recording each site in a pre-determined 'drop down box' and were created out in order to decrease the wide variety of terms originally used to describe these sites.

Table 3.2 shows the total number of sites assigned to the five categories and their definition.

Table 3.2 Total Site Type Categories recorded within the site database for each site

Site Type		Definition	Total Sites	
Actual Site		Sites with features and briquetage associated with salt-production or sites fitting enough criteria to have probably represented a damaged site	60	
Briquetage Findspot Only		Briquetage found on the site with no associated salt-production features	76	
Mounds	**Mound Associated Briquetage**	Sites with debris/waste mounds resulting from salt-production containing briquetage	33	113
	Mound Only	Site with mounds probably associated with waste from salt-production but with no direct evidence in the form of associated features or briquetage	80	
Unknown		Sites which at some point in history have been recorded as having an association with salt-production. However, currently there is no evidence to support this. This is because of damage, destruction or misinterpretation.	27	
Total			**276**	

3.2.1 Site Type for All Sites (Table 10.1.3)

All Site Types are listed within Table 10.1.3 and Figures 3.11-3.14 show the results for 'Site Type' applied to all sites across the study area.

The most common categories were 'Briquetage Findspot Only' and 'Mounds Only' providing 27% and 29% of all the sites respectively. The 'Actual Site' category is the third most common representing 22% of the total sites.

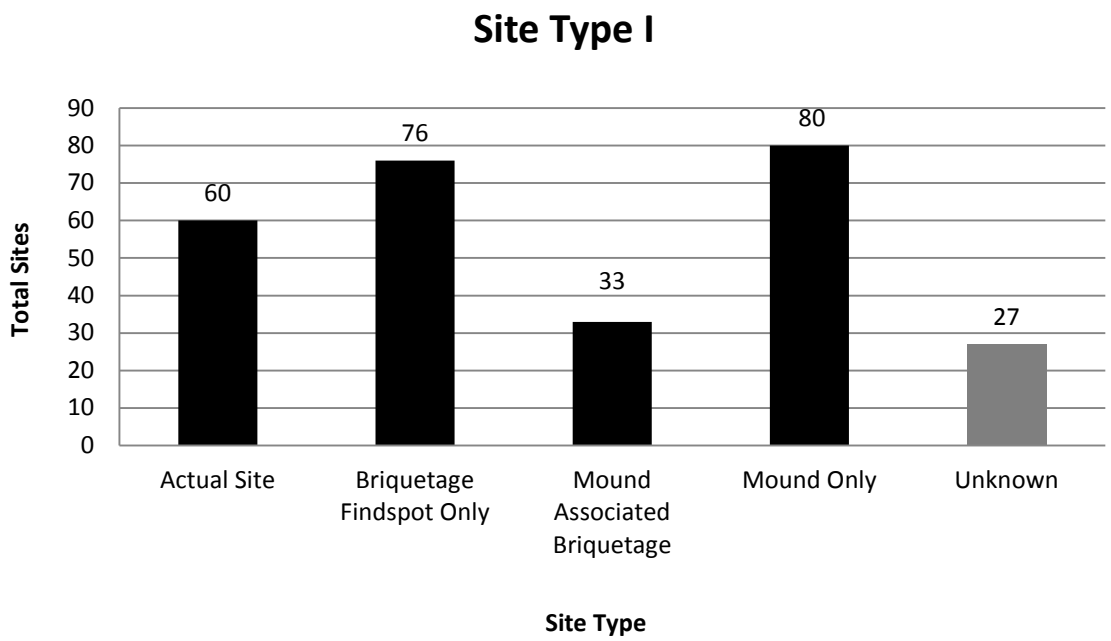


Figure 3.11 Site Types across the study area

These were locations that definitely produced salt *on-site*. This does not mean, however, that the other categories could not potentially represent the remains of salt-production sites as well.

The high percentage of Briquetage Findspots is not surprising given that most sites have been identified through briquetage rather than by any diagnostic features. It is far more likely that this material will survive when compared to earth features.

Most of the categories other than 'Actual Site' could potentially represent former salt-production sites. 'Mound Associated Briquetage Only' certainly represents managed areas of waste from salt-production, and these mounds form part of the wider environs of a salt-production site.

'Briquetage Findspot Only' could similarly represent an area of a salt-production site used to deposit waste. Alternatively, this category could also be all that remains of the damaged working area, as even if the ground features are destroyed, the briquetage will often remain. Identifying whether these findspots represent 'Actual Site', however, remains difficult and the presence of other features such as hearths is the only way of determining a site's true nature.

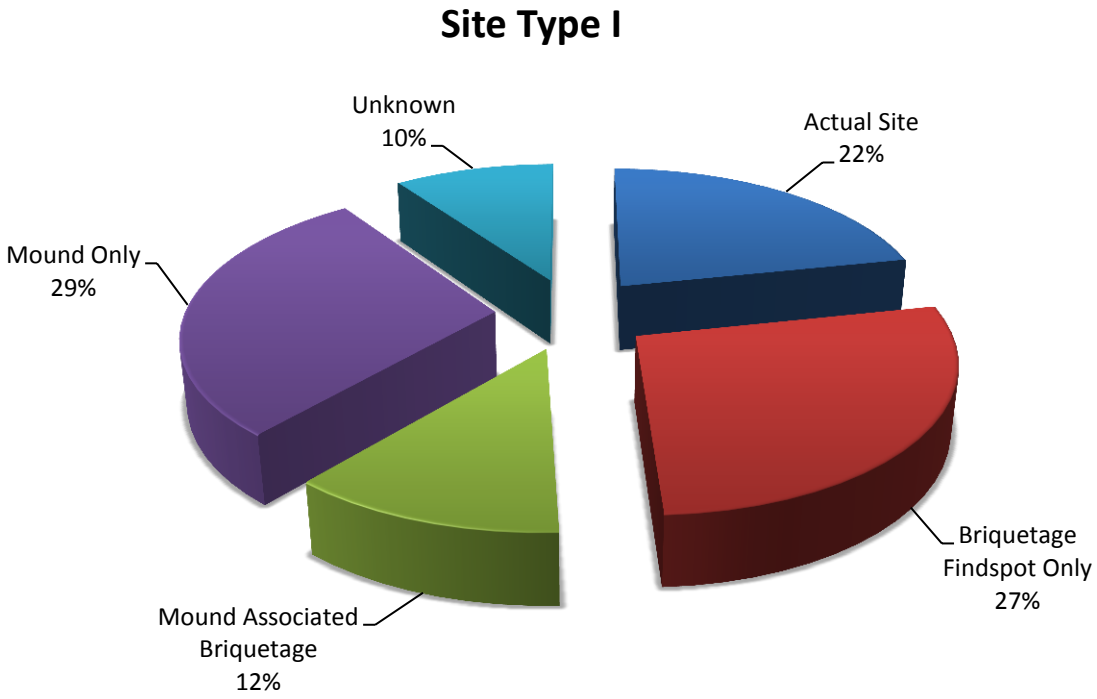


Figure 3.12 Percentage of sites by category of Site Type in the study area

It is also plausible that a few of these sites could represent sites that have either manufactured briquetage or processed salt away from the main salt-production site, this is considered further in **7.0**.

'Briquetage Findspots' mostly occur within areas containing 'Actual Site' clusters, such as Poole Harbour and North Kent. Therefore, many could represent extensions of a single site, which produced substantial debris and spread it over larger distances. Further work on briquetage technology on different sites could potentially be used to link disconnected debris sites with 'Actual Sites'.

The evidence for mounds dominates the study area which is clear when combining both the mound categories ('Mound Only and 'Mound Associated Briquetage'), together representing 41% of the sites (Figures 3.13– 3.14). This dominance is largely due to the large number of the mounds in the Central Somerset Levels from where there are at least 94 mound sites (**6.0**).

That only 10% of the sites could not have a Site Type other than 'Unknown' assigned is encouraging, and suggests that even though fragmented, most sites could still be assigned a meaningful Site Type.

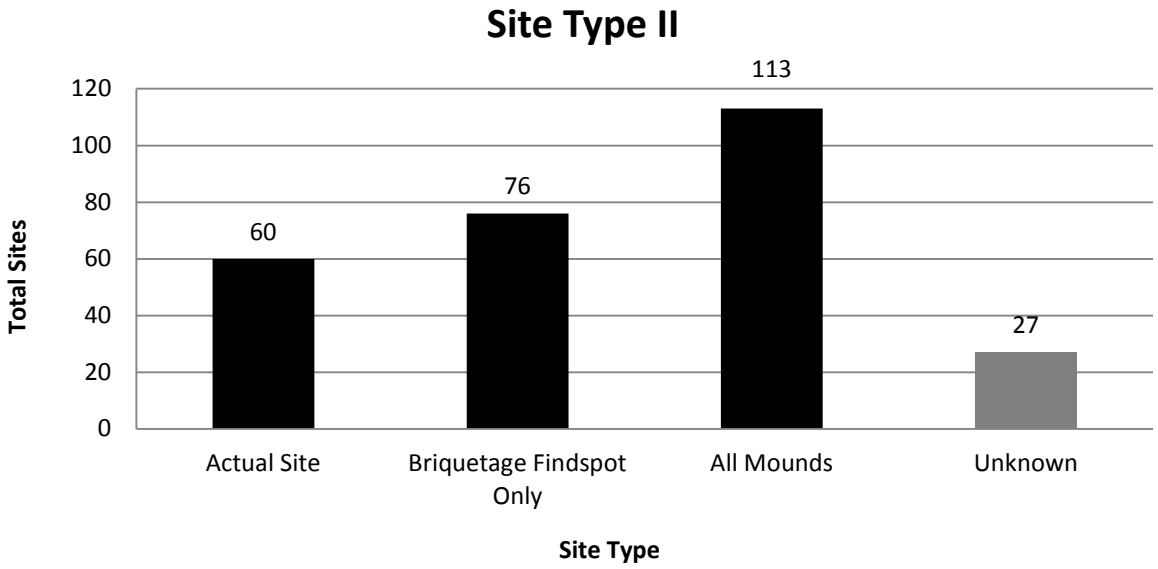


Figure 3.13 All sites categorised according to archaeological evidence in the study area. In this instance all mounds have been combined to show the dominance of this particular feature type

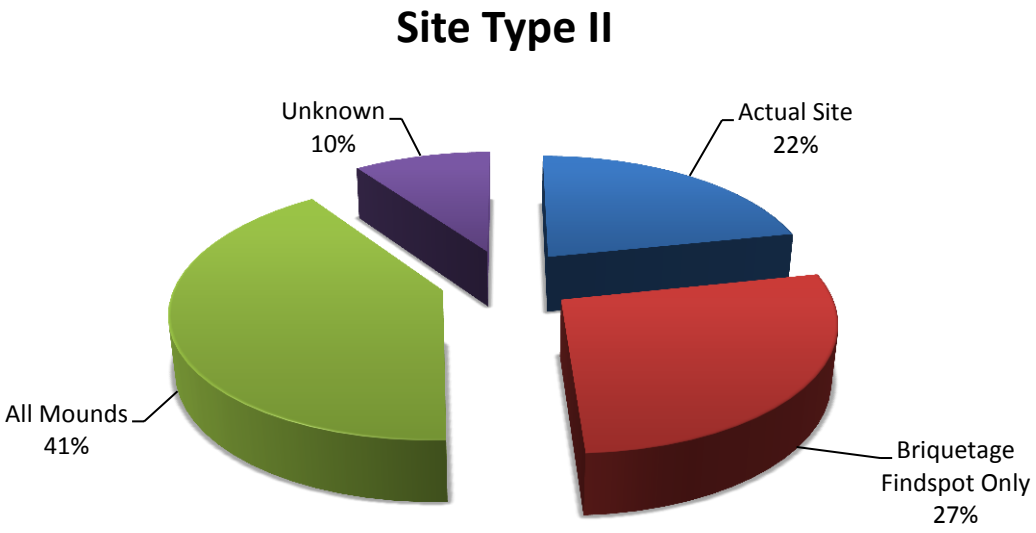


Figure 3.14 Percentage of sites by category of Site Type in the study area

3.2.2 Site Type by County (Table 10.1.9 and Figures 10.1.28-10.1.45)

This section presents the results for Site Type' in order of county (Table 10.1.9, Figures 3.15-3.16 and Figures 10.1.28-10.1.45). The percentages of site type within each key area of activity is shown in Figures 10.1.28-10.1.31.

Kent has the most ‘Actual Sites’ representing 24 of the 59 sites, whilst Dorset has the second highest with 18 and Hampshire the third highest with 8 sites (Figure 3.15). Similarly with ‘Briquetage Findspot Only’, Kent has the most sites with 29 out of 77 sites; followed closely by Somerset with 20 sites and Hampshire with 12 sites.

The categories ‘Mound Associated Briquetage’ and ‘Mound Only’ are dominated by sites in Somerset, representing 26/33 and 69/80 sites respectively. Dorset has only five ‘Mound Associated Briquetage’ sites and Kent has 11/80 ‘Mound Only’ sites (Figures 3.15-3.16). Nearly all these mounds represent the remains of waste from salt-production. The ‘Mound Only’ sites are also very likely to have similar contents (briquetage) but have yet to be subject to archaeological excavation to prove this.

Both the mound categories are therefore very unevenly distributed across the study area, which clearly shows that the management of waste at sites varied considerably in different regions. This will be discussed further in **4.0**, when waste management will be explored further.

As shown in Figure 3.16, ‘Actual Site’ and ‘Briquetage Findspot Only’ are the most common categories across the study area. Kent and Somerset are the only counties to have all four of the main Site Types (Figure 3.15). However, North Kent has the greatest diversity of Site Types (Figure 10.1.43).

As shown earlier (Figures 3.13-3.14), there was a low number (10%) of sites that assigned as ‘Unknown’. However, the occurrence of these sites is biased to Kent (24/27) (Figure 3.15, 10.1.31 and 10.1.43). This is mostly due to the occurrence of earthwork mounds that are considered to have been possibly associated with salt-production. However, it remains plausible that these mounds could be of a later date, and further archaeological investigation is required to confirm this.

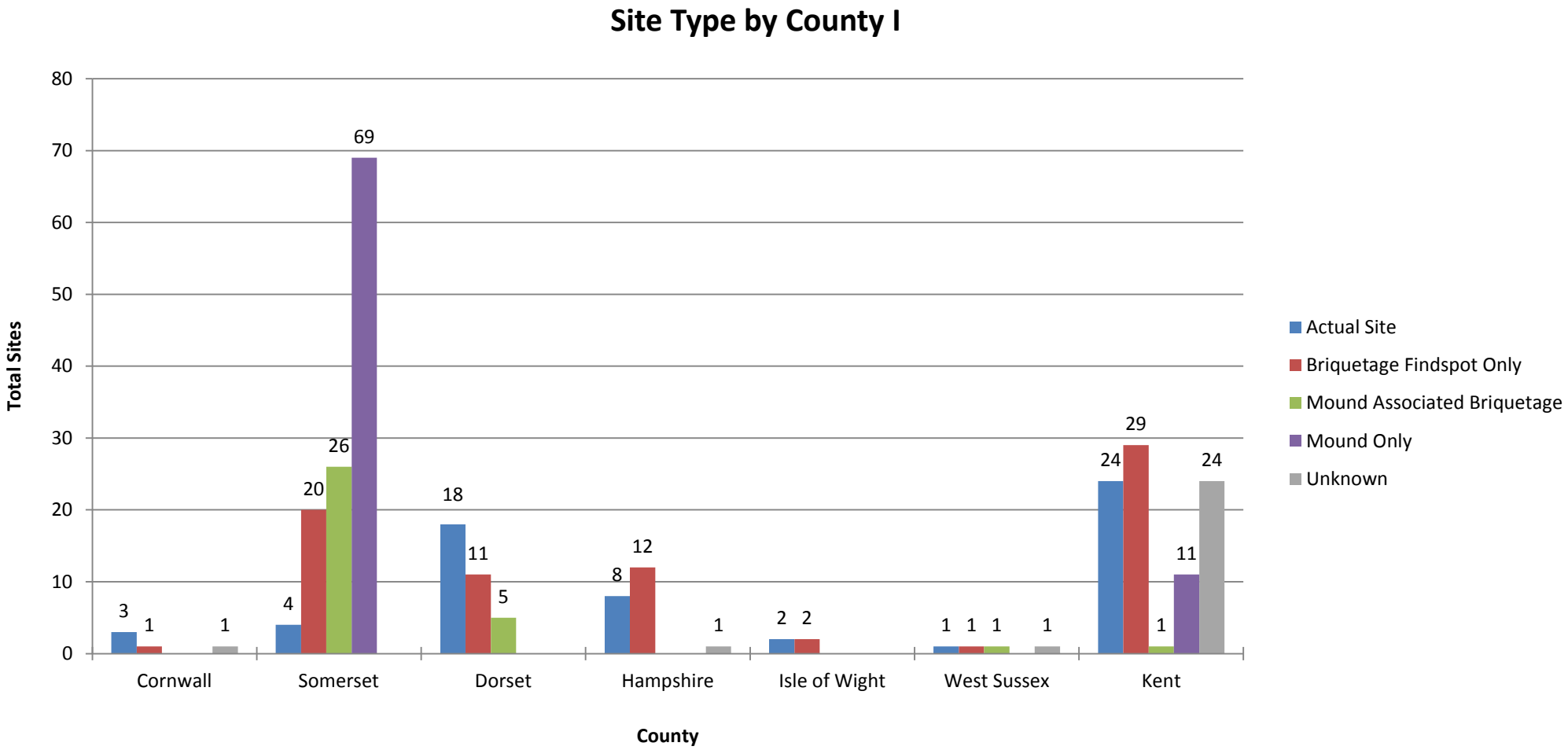


Figure 3.15 Site Type profiles for each county across the study area (I)

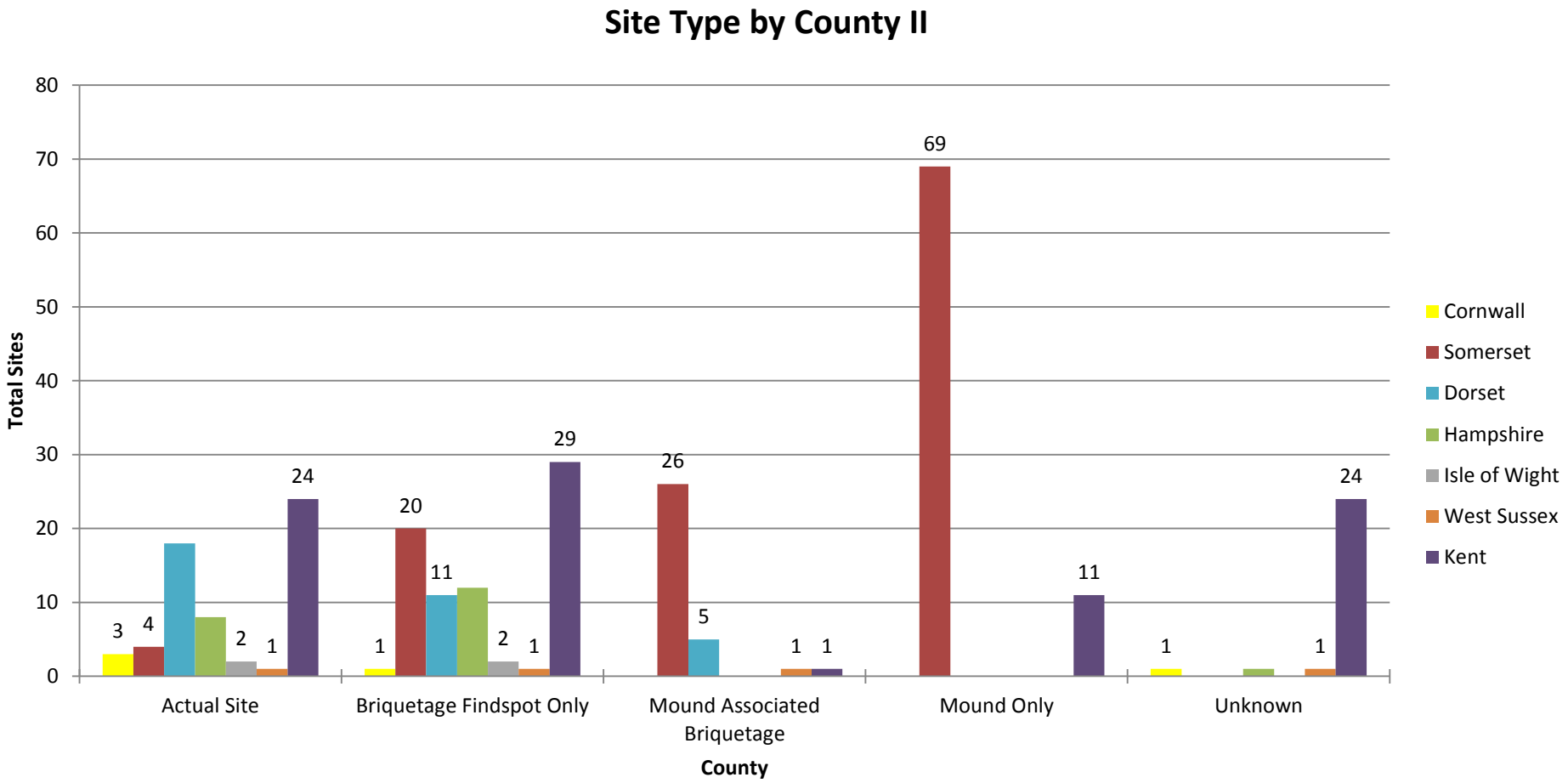


Figure 3.16 Site Type profiles for each county across the study area (II)

3.3 Nature of Salt-Production sites in the Archaeological Record

The creation of typologies and categories when recording archaeological remains has long been used as a way of recording evidence systematically, and importantly, providing a base upon which evidence can be compared. The use of 'types', 'labels' and 'categories' in archaeology has been the subject of critical scrutiny particularly in archaeological conferences over the last decade. We all agree that archaeology needs to be recorded in a consistent and professional manner. However, many also crave to have more flexibility in interpretation and a move away from functional 'processual' thinking.

There were two main methods used to record the types of sites within this research project. The first method was the recording of the original Site Terminology used within each source/reference as recorded within the Research Site Database. The second was outlined earlier and involved assigning a 'Site Type' to each site, which *directly related to the archaeological evidence*.

3.3.1 Original Terminology (Table 10.1.10)

As outlined in the research methodology (Table 10.0.6), there are a plethora of different terms used by the sources consulted to describe salt-production. It was found that these terms in relation to the actual recorded archaeological evidence were often inconsistent. Due to the way in which salt-production sites are perceived in archaeology, there is also a lot of ambiguity when recording the data which is often based upon unfounded assumptions.

The most commonly-used terms were selected as required for each separate source (reference) recorded for each site (Figure 3.17). Any other terms were recorded under 'Other Terminology'. Each site could have multiple sources. For example a site could have a HER record entry and a journal article reference which could have used different terms. Therefore each site could have been described by more than one term. To maintain consistency in the dataset, if the same term was used more than once for a site, only the first reference to the term was counted.

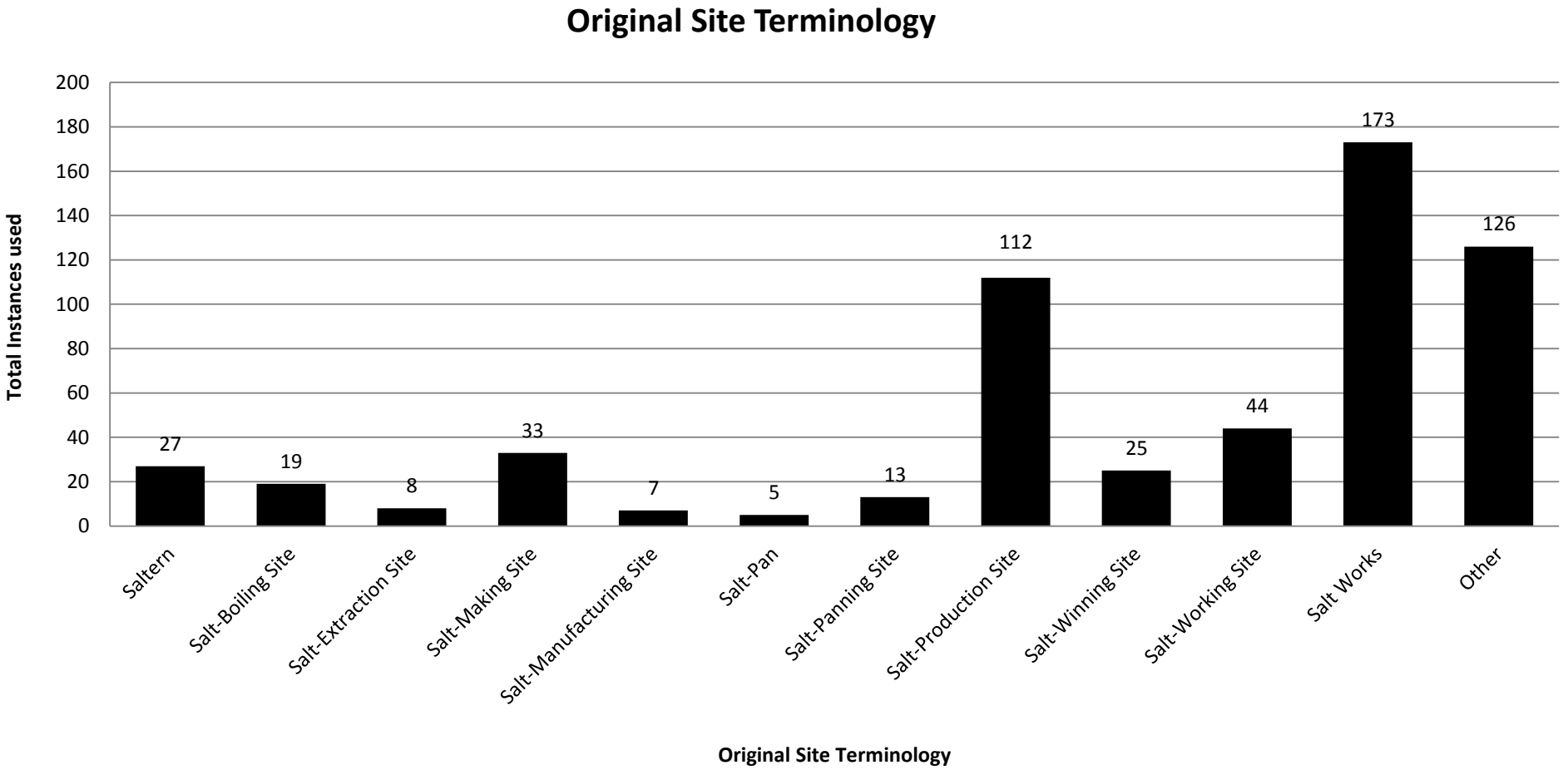


Figure 3.17 Original Site Terminology used for All Sites (Total=592)

Figure 3.17 and Tables 10.1.10-10.1.11 present the total number of different terms used for all sites within the database (there are a total of 592, as many sites had multiple terms).

The 11 most commonly used terms were analysed separately whereas the remaining terms have been amalgamated as 'Other' in Figure 3.18. 'Other' terms were used to describe 126 sites (21%), (Table 10.1.11).

The most commonly used term was 'Salt Works', which was particularly favoured by HER records, representing 29% of all the descriptions. The next most commonly-used term was 'Salt-Production Site' accounting for 19% of the sample (Figure 3.18).

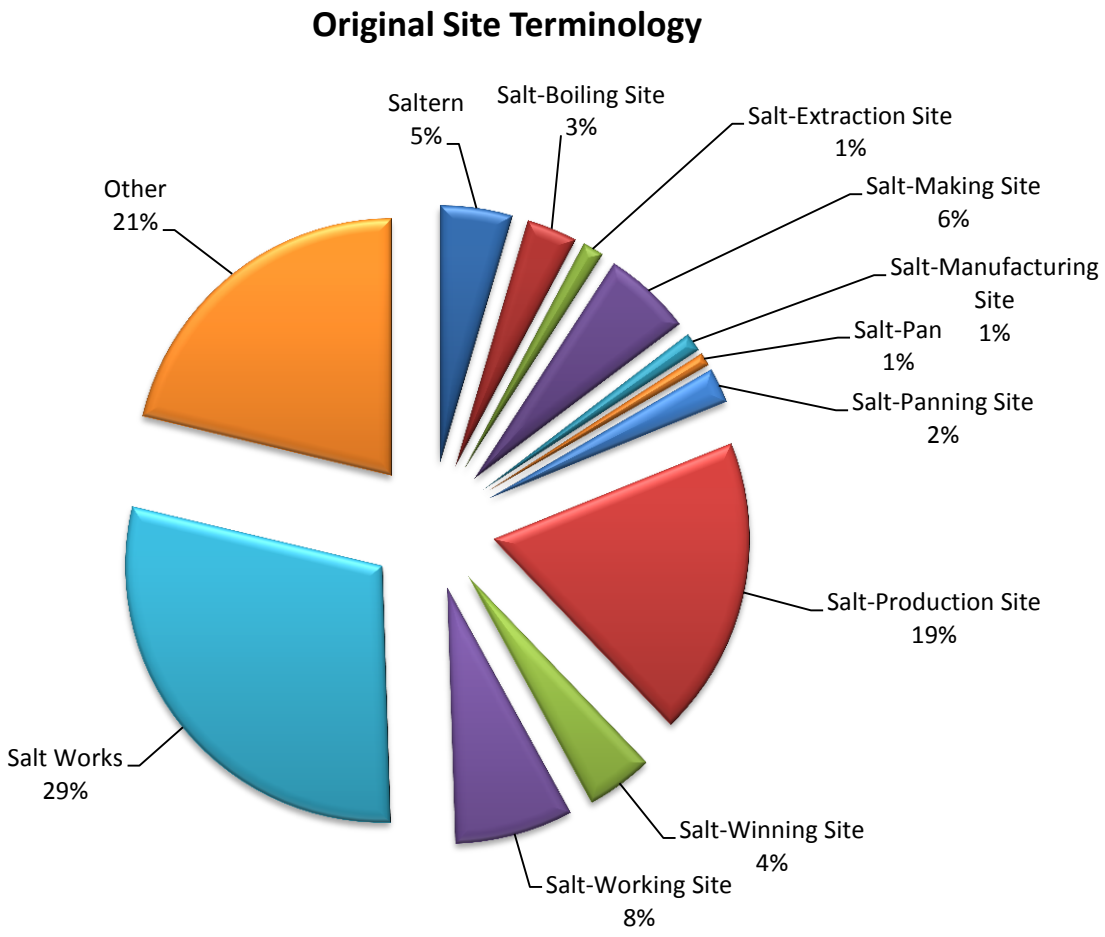


Figure 3.18 Percentage of Original Site Terminology used across the study area

When site terminology is plotted according to county, Kent has the most variety in the number of terms used (Table 10.1.10).

The implication of inconsistencies in site terminology for understanding the nature of sites is best shown by comparing these terms with the newly applied 'Site Types'.

3.3.2 Archaeological Remains V Subjective Terminology: 'Original Site Terminology' V New 'Site Types'

Comparing the use of original site terminology with the newly created Site Type will make it possible to see if there are any logical relationships between the two. The results can be viewed in Table 10.1.12 and Figures 3.19-3.23.

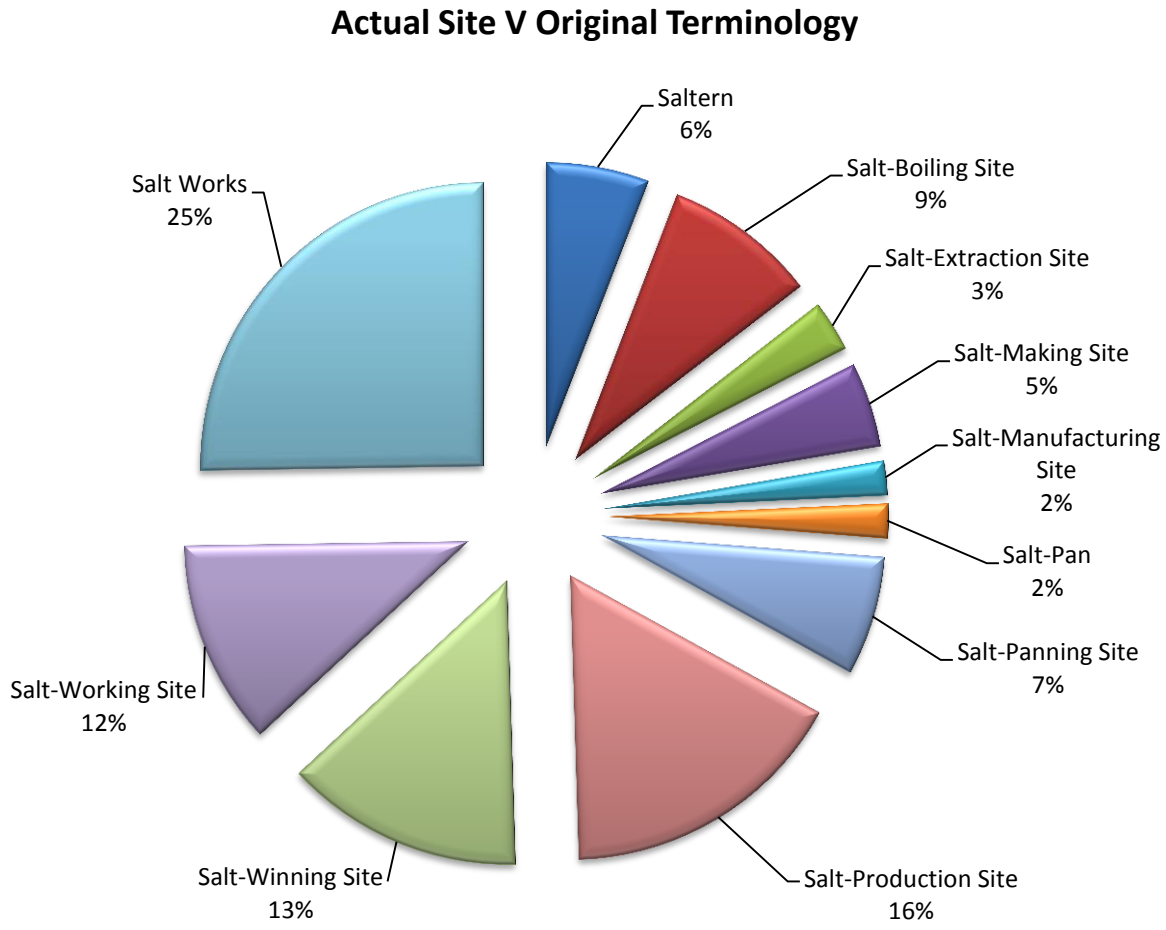


Figure 3.19 Percentage of Original Site Terminology cross-referenced with 'Actual Site'

The 'Original Site Terminology' was first compared with the amount of 'Actual Sites' in the dataset. The most common original term used to 'label' these sites was 'Salt Works' and 'Salt-Production Sites', which were popular across most Site Types and these are often the terms used within Historic Environment Records.

Again just to emphasise, 'Actual Sites' refers to those sites that are deemed to have enough evidence to be defined as a salt-production site. Therefore technically all the Original Terms listed in Figure 3.19 are valid. However, each term has a slightly different interpretation based upon the wording. Some of the original terms are more technologically or method based than others. As can be seen in Figure 3.19, all the main original terms were on occasion used to define 'Actual Sites'.

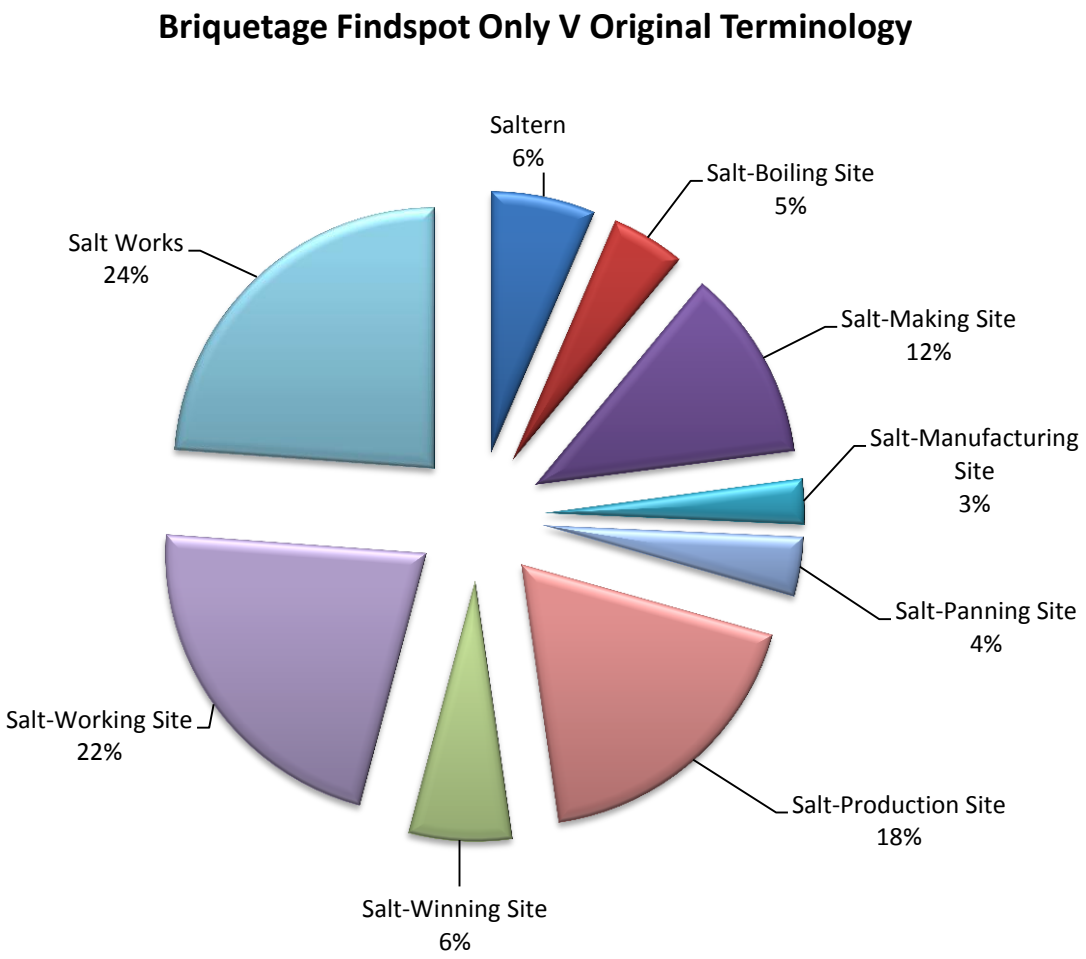


Figure 3.20 Percentage of Original Site Terminology cross-referenced with 'Briquetage Findspot Only'

Technically in the case of 'Briquetage Findspot Only', the use of the Original Terms shown in Figure 3.20 could all be incorrect. This is due to, as explained earlier, the fact that a briquetage findspot could represent a site that was used in producing salt but also could be a site that perhaps just created briquetage; or briquetage containing salt was distributed; or where the briquetage was being recycled.

‘Mound Associated Briquetage’ has also been originally defined using a variety of terms (Figure 3.21).

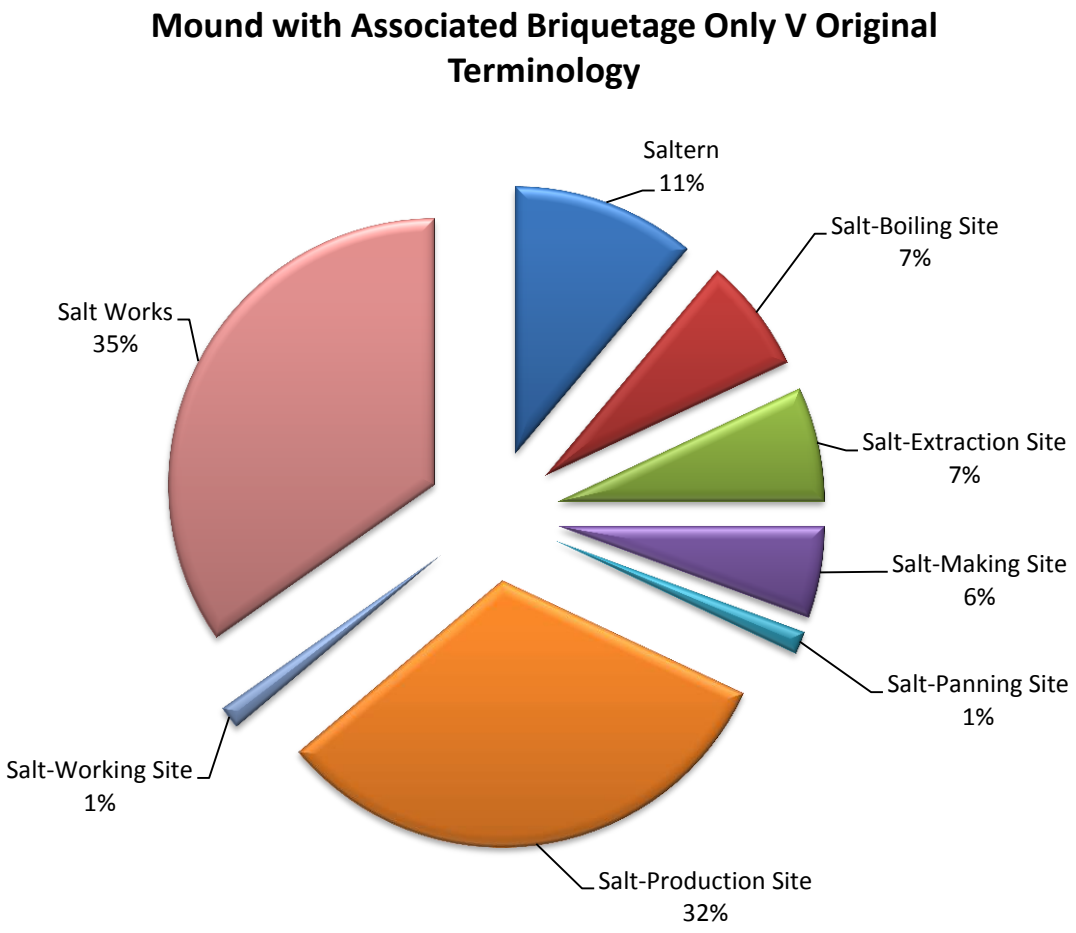


Figure 3.21 Percentage of Original Site Terminology cross-referenced with ‘Mound Associated Briquetage’

Unlike the previous category, this type is more directly associated with salt-production as the mound represents the remains of waste from the process. Therefore is does represent a part of the salt-production process and the terms could all technically be correct in their own right.

As was stated earlier, the type ‘Mound Only’ probably in most cases represents waste from salt-production. However, this cannot be confirmed due to a lack of archaeological investigation (Figure 3.22). Therefore it is difficult to attribute any terminology definately linked to salt-production.

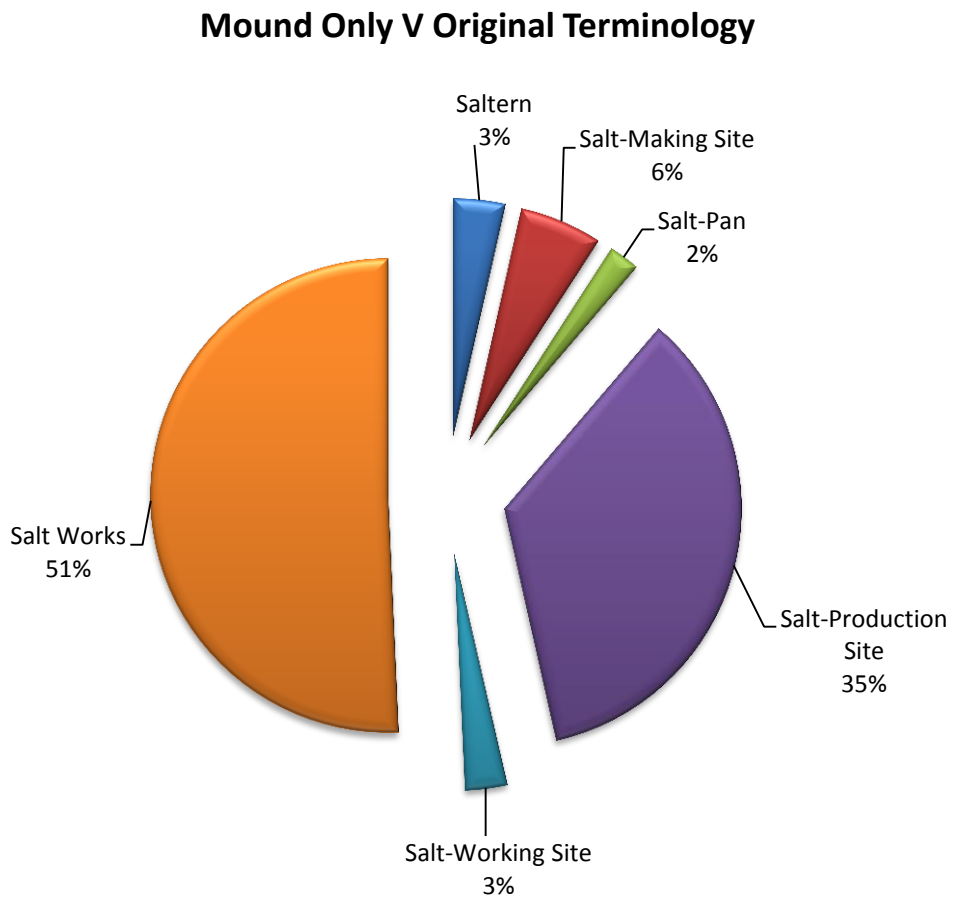


Figure 3.22 Percentage of Original Site Terminology cross-referenced with 'Mound Only'

The results for 'Unknown' are the most interesting, as this category means that no definite archaeological evidence could be found to determine that the sites were associated with salt-production (Figure 3.23). Therefore the use of any term other than 'Unknown' could be misleading.

However, this raises an interesting point. If there is no attempt to categorise the site then remaining 'Unknown' will hinder future researchers locating the site using pre-defined key recognisable terms within online searchable databases and Historic Environment Records

Clearly there are some issues to be considered when recording any archaeological sites. The use of generic terminology or categories makes it easier for researchers to search for sites within databases such as those employed by Historic Environment Records.

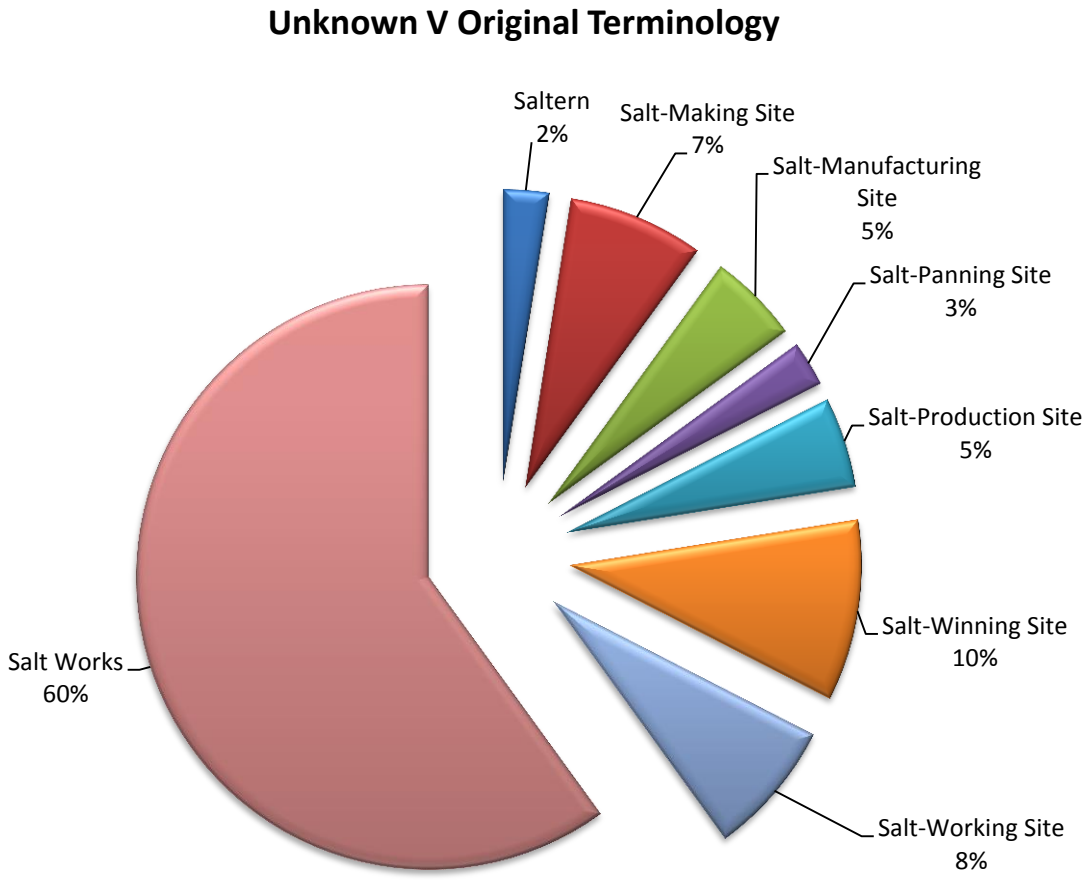


Figure 3.23 Percentage of Original Site Terminology cross-referenced with 'Unknown'

However, with the option of also searching using keywords, there is more flexibility when searching for specific information. With most online databases, there is the option for searching all of the site records (i.e not just the site category but also the site summary) using a keyword search. The 'Site Types' system, therefore provide a useful and simple method of recording sites, and these terms can be seen as 'sub-headings' of a 'Salt-Production Site'. Suggestions for a more consistent terminology are provided in the 'Quick Guide' in Appendix **10.6**

3.3.3 Archaeological Investigation Type (Table 10.1.13)

As highlighted previously, the location of salt-production sites can greatly affect preservation of the archaeological remains. The original terms used to describe sites also greatly influence assumptions about the nature of salt-production sites. The way in which a site enters the archaeological record is important and this influences the types of investigation used to explore the site.

The type of archaeological investigation method used to locate and identify the remains of each site has been recorded (Table 10.1.13). This was designed to assess whether there were particular trends in types of investigation undertaken and the potential impact this would have on overall understanding and interpretation.

There were 366 recorded instances of archaeological investigation spread over 269 sites. A total of 96 sites had been subjected to more than one type of archaeological investigation.

The survey showed that non-invasive techniques were favoured (c.80%), (Figure 3.24 and Table 10.1.13). Invasive techniques involved differing levels of excavation. This ranged from light troweling to reveal remains close to, or partially exposed upon, the surface, to larger-scale excavation of more deeply buried sites. Non-invasive methods predominantly include surveys aimed at investigating larger and more general archaeological landscapes including fieldwalking and coastal surveys.

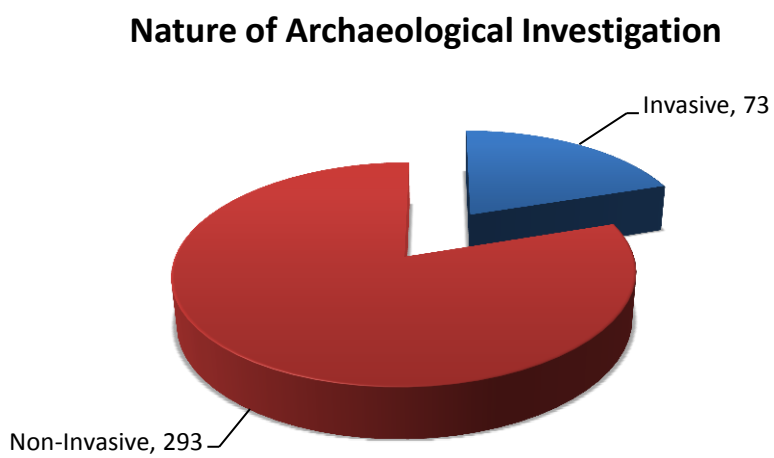


Figure 3.24 Percentage of archaeological investigation type: Invasive V Non-Invasive

Figures 3.25-3.26 provides an overview of the main types of archaeological investigation recorded. 'Field Observation' was the most common, providing 50% of the total investigation types.

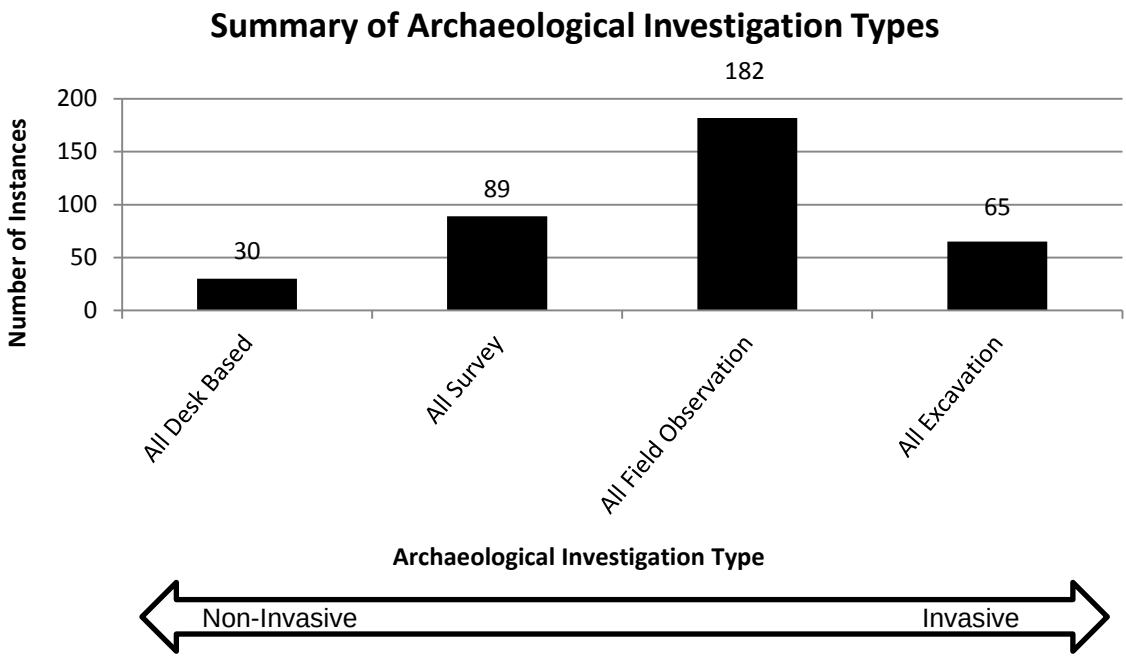


Figure 3.25 Overview of Archaeological Investigation Types recorded within the dataset (Total=366)

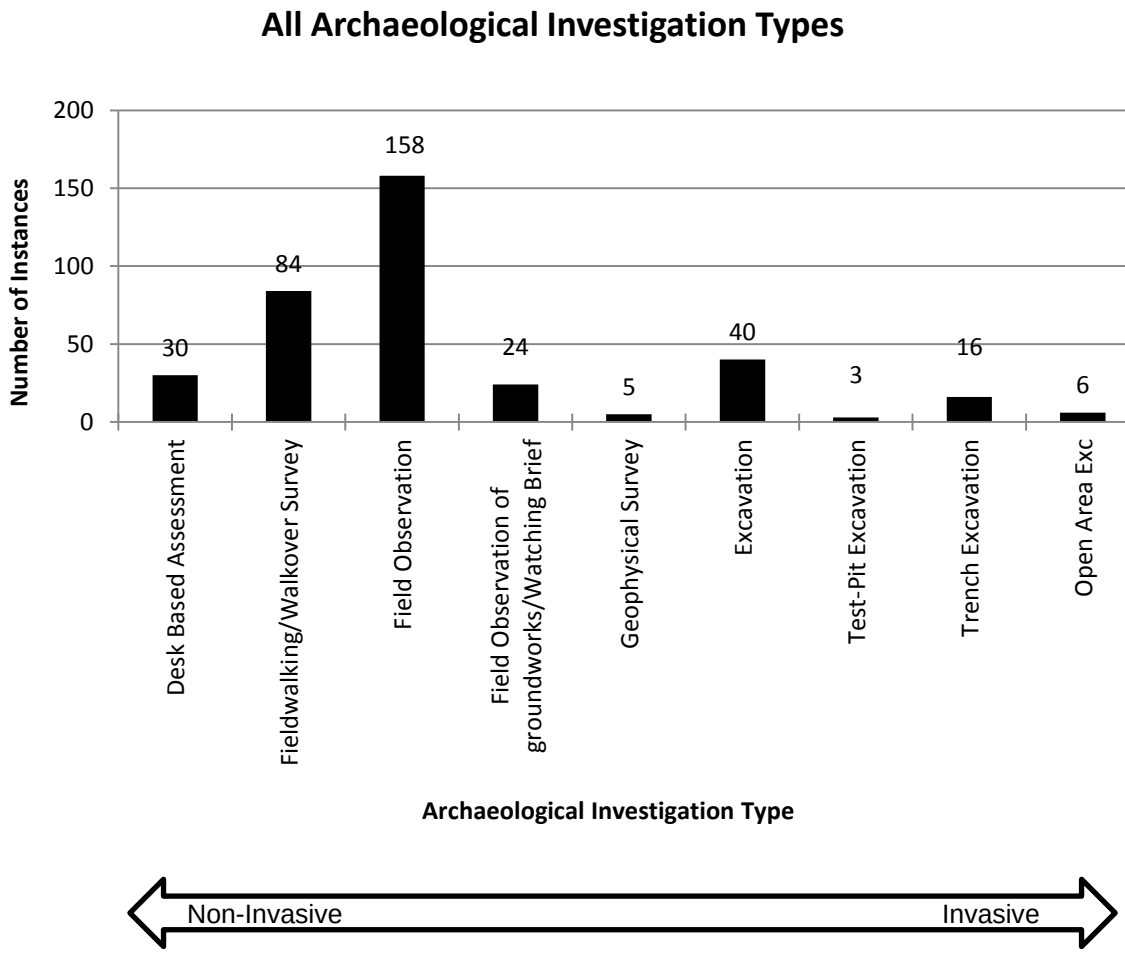


Figure 3.26 Archaeological investigation types split into detailed categories (Total=366)

As can be seen in both Figures 3.25 and 3.26, 'Desk-based assessments' provided 8% of the investigations. This non-invasive approach typically involves a literature and map review for nearby sites and other archaeological remains, which could suggest that a potential salt-production site exists. It often also means that sites are not visited and can result in a somewhat disconnected approach to site identification and interpretation.

The use of survey remains a popular archaeological tool and can include systematic fieldwalking as well as walkover surveys. Fieldwalking is effective in a landscape that has been subject to ploughing and erosion. It was particularly useful in the identification and mapping of salt-production site distribution in Romney Marsh, Kent (Reeves 1992).

Walkover surveys will similarly record finds of disturbed artefacts but also assess a site's location in the landscape including any visible ground works. Both these techniques are non-invasive and accounted for 23% of the investigation types.

Similarly, geophysical surveys are also effective and non-invasive, and provide a more specialised investigation of buried archaeological remains and occupation horizons. This technique involves using specialised, expensive equipment and is therefore not always available to all archaeological groups and researchers. However, over the last decade it has become commonly used. For the exploration of salt-production sites, however, it still remains heavily under used, reflected in the total of only 5 sites to have been subject to this investigation type in the study area.

Field observations have been split into two categories. The first consists of general visual observations, often made by members of the public, termed as simply: 'Field Observation'. The second category refers to informal or formal observation of groundworks by archaeologists, often classified as 'Watching Briefs'.

The informal observation of damaged sites is the dominant method of recording the presence of sites and any exposed archaeology (43%). Most often this is carried out on by individuals, who make notes of sites exposed by coastal erosion

and report it in literature or to the local historic environment record. This form of site identification is crucial in identifying salt-production sites, which are gradually being exposed and destroyed by the sea.

Excavation accounted for only 18% of the investigations. Approximately 50 salt-production sites have been subjected to this in the study area. Formal trench excavation has been the most popular type of invasive investigation (4%), followed by open-area excavation (1.6%) and test-pitting (0.8%). Test-pitting remains one of the most useful methods of sample excavating a site and causes minimal disturbance, but, as with geophysical surveys, it remains an underused technique.

Excavation remains the best method of understanding and identifying salt-production sites and, although destructive, will yield the most information if the location is appropriate for excavation. The low number of sites that have been subjected to archaeological excavation accounts for the fact that many sites are poorly understood.

Finally, the reasons for undertaking archaeological investigation were recorded (Figure 3.27). Again some sites had several different reasons for investigation.

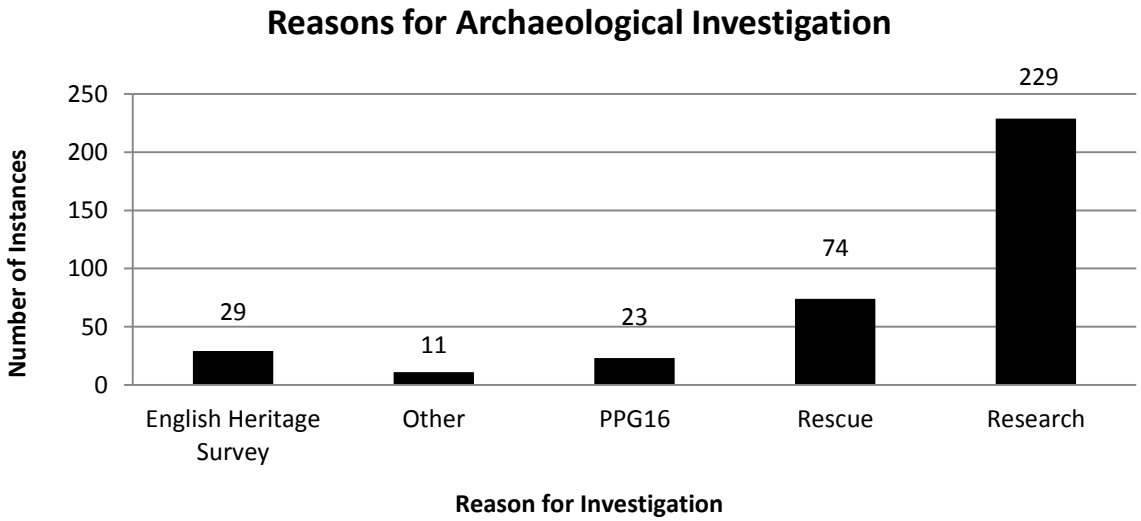


Figure 3.27 Reasons for carrying out different types of archaeological investigation on sites within the dataset (Total=366)

Most of the sites within the dataset were originally identified in the first half of the 20th century prior to recent protective legislation and policies. Therefore, as was

expected, most sites (68%) have been investigated for research purposes. 'Research' includes targeted investigation of salt-production sites where more knowledge about the archaeology of a particular location was required.

The relatively high percentage of 'Rescue' investigations (20%) was also expected, given the sensitivity of these sites to damage from coastal erosion. 'Rescue' archaeology is mainly concerned with the urgent recording often of new sites that are about to be completely obliterated either by human impact or by the sea. This form of investigation often has to be very flexible with quick decisions being made about methodology and recording.

English Heritage commissioned surveys provided 8% of the investigations, nearly all relating to a series of 'Rapid Coastal Assessments' carried out across southern Britain to address archaeology at risk.

There were 23 instances (6%) of sites being subject to archaeological investigation due to planning law (PPG 16). This low percentage reflects the lack of salt-production sites in urban areas. Marsh, coast and other liminal locations are not often subject to extensive building development.

There are arguments for and against investigating sites in this manner. It does mean that sites are subject to formal, planned excavation with reports. However they often comprise of incomplete 'linear archaeology' carried out in a short amount of time. This can result in a fragmented impression of the overall site. Also, due to time limitations, sites often have to be excavated more quickly and with less detail than research excavations.

This review has revealed the reactive nature of archaeological investigation towards salt-production sites. Often sites have not been the subject of planned or formal investigation because they are so fragmented in nature and located in liminal environments. Most sites are discovered by chance and rarely have projects been designed specifically to find and assess these sites.

The English Heritage 'Monuments at Risk' document (Gilman *et al.* 1998) did consider the state of salt-production sites in Britain, but did not go beyond the

assessment/consultation stage. Past research has often been restricted to local or, at most, county-based projects rather than a broad overview of sites in Britain.

3.4 Archaeology of Salt-Production (Tables 10.1.14-10.1.41)

This section concentrates upon the quantified archaeological evidence for salt-production in the study area. It provides a primary overview of the nature of salt-production in southern Britain during the Iron Age and Romano-British period. Firstly, simple presence or absence of archaeological evidence associated with salt-production is presented. Following this, a general overview of the nature of feature and briquetage data will be outlined and explored by common types.

This section is intended to provide the core data for the archaeological evidence associated with salt-production, and this will be explored and outlined in more detail throughout **4.0-7.0**. All technical information and core data tables are provided within the appendices (Tables 10.1.14-10.1.41), with summary graphs/tables in the main text.

3.4.1 Presence or Absence of Archaeological Remains (Table 10.1.14)

The basic presence or absence of archaeological remains associated with salt-production (features and briquetage) is presented in Figure 3.28.

Upon preliminary observation, Figure 3.28, (Table 10.1.14), there was a fairly equal number of sites with both briquetage and features present. However, in fact only 81/276 sites (29%) had both briquetage and features present (Figure 3.28). The ratio is biased by the many debris mounds distributed across the Somerset Levels. Although most, if not all, probably contain briquetage from salt-production, lack of investigation means that no briquetage has been recorded on these sites (they were recorded as 'Mound Only').

Overall there were 113 sites (40%) with no confirmed evidence for briquetage and 109 (38%) with no definite evidence for features. However, the fact that over half of the sites had more detailed archaeology recorded is encouraging.

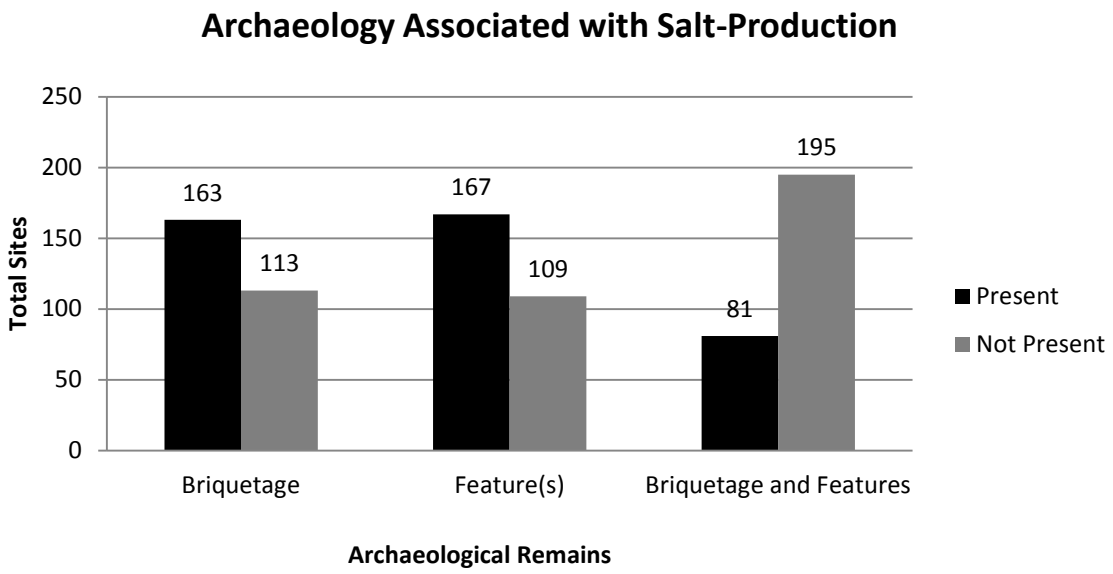


Figure 3.28 Presence/Absence of archaeological remains associated with salt-production (Total=276 sites)

All recognised sites by their very identification and inclusion in the archaeological record, have produced at least one of these two forms of archaeological evidence.

3.4.2 Overview of Archaeological Features Associated with Salt-Production (Tables 10.1.15-10.1.20)

This section presents quantified results for archaeological features recorded in the dataset. As stated in **2.2.2** (Figure 2.2 and Table 2.4), archaeological features were recorded in two main ways. The first was to record the features as they had been originally 'labelled'. This information can be found in Table 10.1.15. This records all the main feature information including the original feature name and measurements. In total, 61% of the sites had archaeological evidence with a total of 688 features.

In order to make more sense of the original data, the features were redefined, as outlined in **2.0**. However, it was important not to over-simplify this dataset, so two definitions were created. They are intrinsically linked. The main definition is recorded as 'General Feature Type', and then as a sub-heading of this, more detailed definitions were recorded as 'Detailed Feature Type'. This newly-defined dataset is listed in Table 10.1.16.

There is also a 'confidence rating' for each re-classified feature (also listed in Table 10.1.16 and summarised in Figure 3.29). This was completed in order to be 'transparent' about my confidence in assigning the function of these features. The decision was always based upon the location of the site, the presence of briquetage, and the presence of any similar sites nearby, especially in cases where sites were incomplete or damaged. It is hoped that this information will provide a good foundation for future researchers.

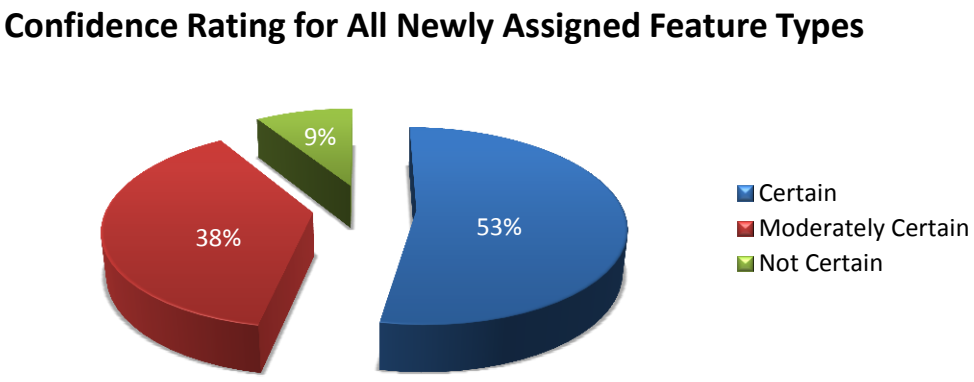


Figure 3.29 Confidence rating assigned to each new General and Detailed Feature Type based upon the quantity and quality of data provided for each original feature

The application of most new feature types were deemed as Category 1 'Certain' (248), followed by Category 2 'Moderately Certain (178) and Category 3 'Not Certain' (42), (Figure 3.29). The high percentage of 'Certain' (91%) and 'Moderately Certain' ratings is again encouraging given the fragmentary nature of the archaeology.

Figure 3.30 (Table 10.1.17) presents an overview of all recorded instances of 'General' Feature Types'. The types are presented in approximate order of the salt-production process with the general less well defined feature types at the far right (Table 10.1.17). The 'General Feature Type': 'Ditch/Gully' has been presented next to 'Water Management' in Figures 3.30-3.31 as it is probable that these features also related to Water Management.

The creation of 'General Feature Type' categories is important, as these were then linked to the Four Stages of Salt-Production' providing the best overview of salt-

production. Evidence for the Four Stages of Salt-Production is presented and discussed further in **4.0**.

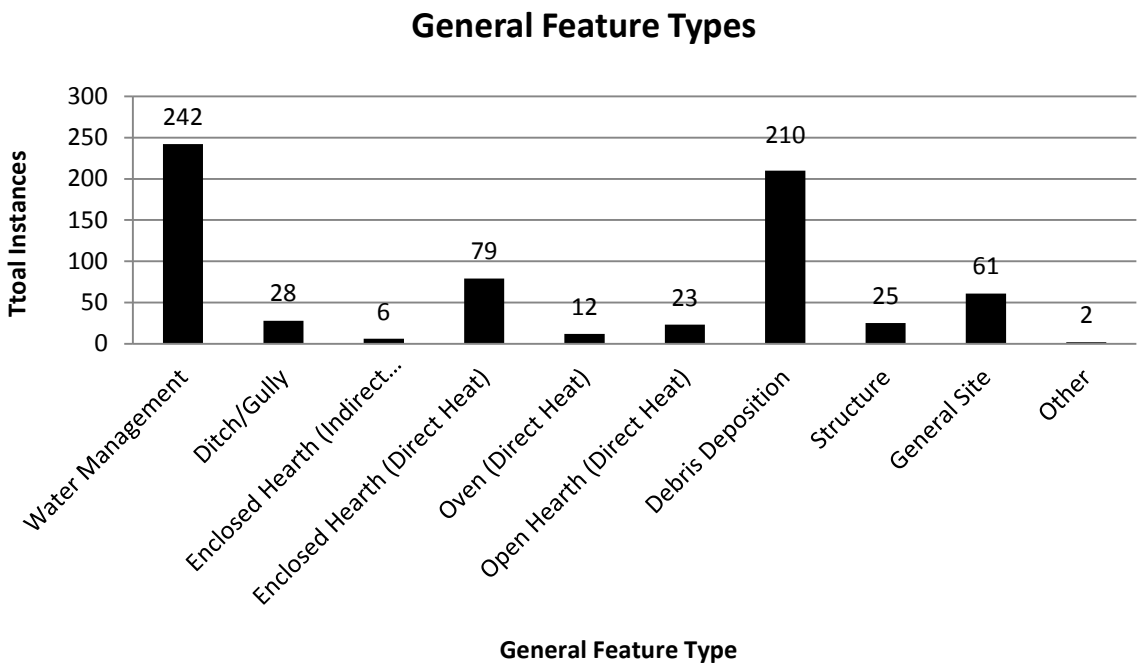


Figure 3.30 Total General Feature Types recorded within the site database (note: some sites have more than one occurrence of each feature type and the total represents total instances of feature) (Total=688)

The 'General Feature Type': 'Water Management', is the best represented in terms of archaeological evidence providing 38% of the total features recorded. This category is associated with the first stage of the salt-production process and mostly includes ditches and gullies that were constructed to supply saltwater to a site.

'Debris Deposition' represents the second most common type providing 31% of the total features recorded. Combustion structures created to heat brine or dry salt, are collectively the third most common General Feature Type (17%). 'Enclosed Hearth (Direct Heat)' was the most common heating structure (66%).

There is little evidence that Enclosed Hearths using the 'Indirect Heat' were ever popular in the study area. Enclosed Hearths using the Direct Heat method were commonly used and were effective for the evaporation of brine; examples of these are presented in **4.0**.

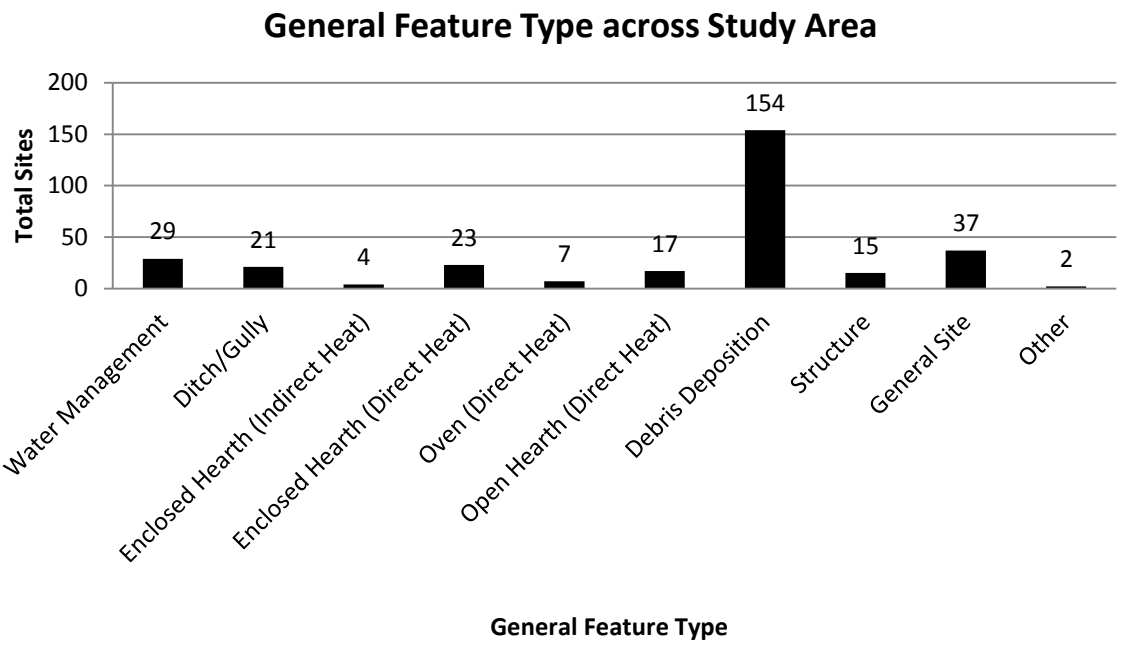


Figure 3.31 Total sites with evidence for each General Feature Type (Note: if more than one of each type was present on a site; only the first one was counted) Total=309

Figure 3.31 and Table 10.1.1.18 present the number of sites with evidence for each feature type (309). Some sites had more than one feature type. This shows that the data presented in Figure 3.30, provides a biased view of the archaeology, as for example, only 29 out of 276 sites (11%) had water management features. This far lower number of sites with water management features is more in line with expectations due to the poor preservation of this stage in salt-production (considered further in **4.0**).

Debris deposition features still dominate (56%); given that briquetage is the dominant indicator for salt-production, this result is expected.

Feature 'form' was recorded also, of which there 254/688 instances (Table 10.1.20).

3.4.3 Briquetage in the Dataset (Tables 10.1.21-10.1.41)

As explained in **2.0** (Table 2.5), briquetage was recorded within the database using original descriptions, and then was re-defined using definitions designed in

this research project. All the core briquetage data is provided within Tables 10.1.21-10.1.41.

The information is discussed in two main parts. The first presents the general briquetage data and the second provides more detailed briquetage data and explores potential chronological trends. Possible spatial trends in briquetage in some key areas of salt-production will be explored in **5.0-6.0**.

3.4.3.1 Overview of Briquetage Data

Each site recorded within the database was assessed for the presence or absence of briquetage. Briquetage was marked as 'Present' if there was *any* viable published, archived or fieldwork evidence that it was physically associated with the site. In some cases this included material not originally recognised as briquetage, but re-identified during this research.

As shown in Figure 3.28, 163/276 (59%) sites had briquetage recorded. Each one of these sites was assigned a unique **Briquetage Assemblage ID** (Table 10.1.21). In most instances only the presence of briquetage was recorded and no further details were provided (57%), (Figure 3.32 and Table 10.1.22). This greatly restricted detailed comparisons between assemblages.

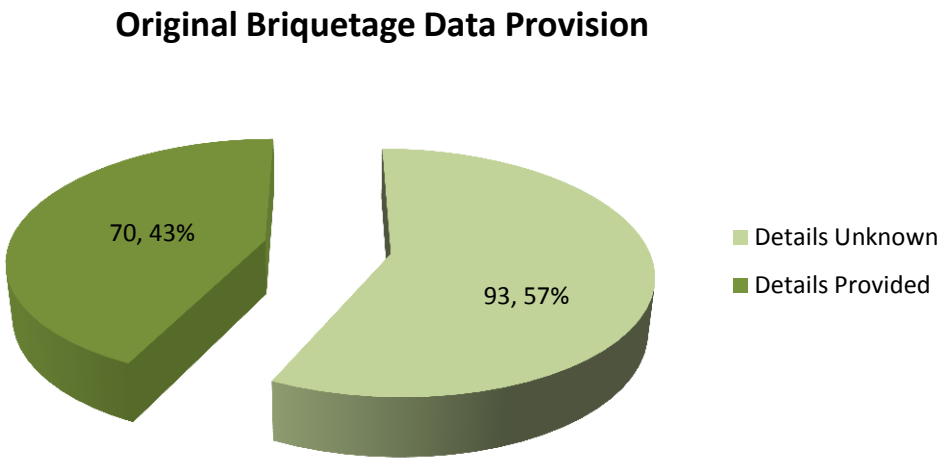


Figure 3.32 Percentage of briquetage assemblages where sufficient information was recorded to enable interpretation (Total=163)

This confirmed the limited state of knowledge about briquetage in the study area. Where details were known, they were entered into the site database under a series of pre-defined categories (Table 10.1.21). Four main categories were used to record briquetage form (Table 10.1.21 and Figure 3.33): 'Container', 'Support', 'Structural' or 'Other'.

The only definite information gained from the assemblages was the *presence* of these forms. In many cases, it was not possible to confirm the *absence* of these forms, as there was not enough specific detail provided. In these cases, the entry in the table was left empty (Table 10.1.21).

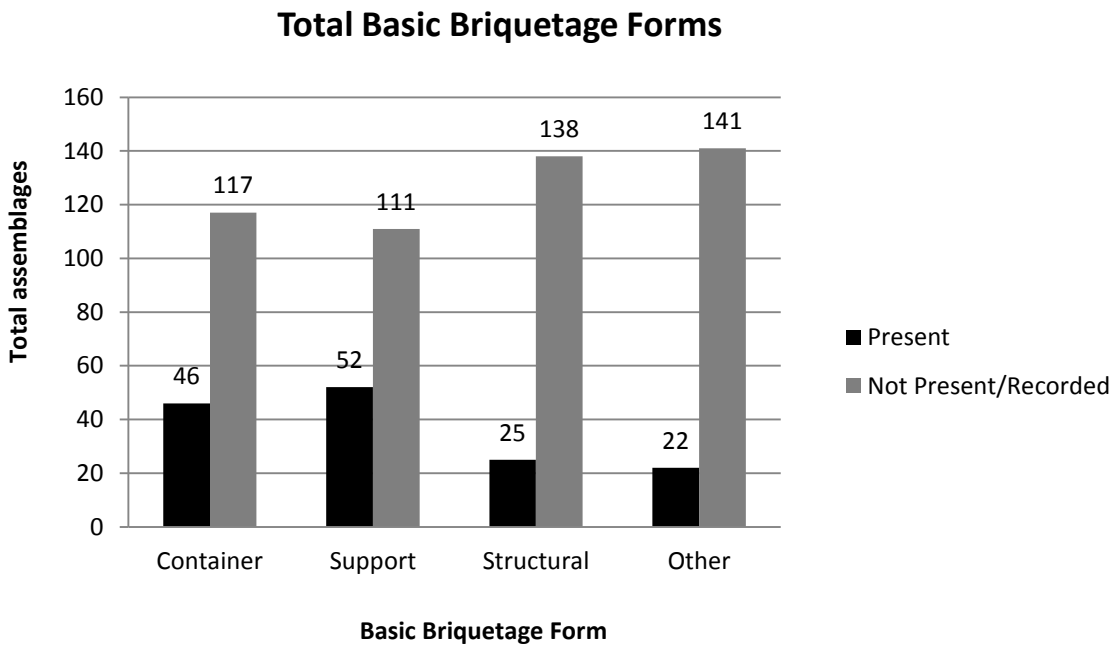


Figure 3.33 Total basic briquetage form presence across each site with confirmed briquetage (Total= 163 sites)

However, as presented in Table 10.1.21, for those assemblages where details were recorded, at least 17 did not contain supports and at least 22 did not have containers. It is difficult to make any detailed observations of the presence or absence of forms, however, the most commonly present forms are discussed below, and this at least provides a guide to the technology used between sites.

The most commonly *present/identified/recorded* form was 'Support' (32%), followed closely by 'Container' (28%). The low percentage of both forms is mainly

due to poor identification, recording and preservation. In reality it would be expected that, except for the few sites potentially using lead containers, he majority of salt-production sites would have had briquetage containers and supports in some form. Not surprisingly, ‘Structural’ (15%) was poorly represented as this often consists of amorphous clay lumps from hearth linings/structures that are difficult to identify.

3.4.3.2 Briquetage Types (Tables 10.1.23-10.1.41)

Despite the issues with inconsistent recording, it was possible to record some key detailed briquetage types within form categories. This section will compare evidence for the presence of different briquetage forms across the study area chronologically.

It is important to note here that the form type was recorded only once for each site (even if a site had multiple records). Where possible, any variations in the size of forms were recorded.

Briquetage Containers (Tables 10.1.24-10.1.25)

Briquetage containers were originally recorded using a variety of terms within site archives, databases and literature; the most common of these are listed in Table 10.1.24.

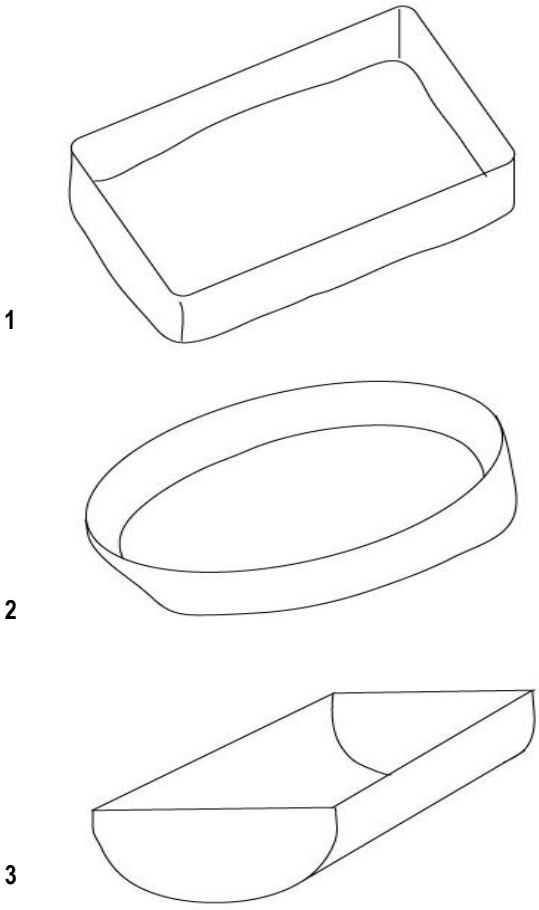
Six consistently represented briquetage container forms were identified within the study area during data collection (Table 3.3), all of which spanned both the Iron Age and Romano-British periods. These six main container types were grouped into basic overall types (Table 3.3 and Figure 3.34).

Identifying specific container form is problematic due to containers being so heavily fragmented. Most sherds are so small, that it is difficult to recreate their form. Often it was only possible to record them as 'flat sherds' from rectangular/sub-rectangular containers, or 'curved sherds' from cylindrical containers (Figure 3.34). However, even this produces issues as some flat containers were rectangular/sub-rectangular with curved sides.

Table 3.3 Main briquetage container forms found on Iron Age and Romano-British salt-production sites in southern Britain

Briquetage Container Form			Common Function
Flat-based	Rectangular	Type 1	Brine Evaporation
	Sub-Rectangular		
	Round	Type 2	
	Oval		
Curve-based	Cylindrical	Type 3	Brine Evaporation/Drying Salt?
	Trough		

However, it has still been possible in the most part to record different container forms based upon the three basic container types illustrated in Figure 3.34 (as listed in Table 2.5).



KEY

1. Rectangular/Sub-rectangular Flat-Based
2. Oval/Round Flat-Based
3. Cylindrical/Trough

Figure 3.34 Simplified illustration of the main container forms found on Iron-Age and Romano-British salt-production sites in southern Britain

As presented in Figure 3.33, 46 sites recorded the presence of briquetage containers, but detailed container type was only identified in 37 of these sites. However, it was still possible to record 57 instances of container type across those 37 sites (Tables 10.1.25-10.1.26 and Figures 3.35-3.36). At least 20 sites contained more than one type of container; but whether these were contemporary, remains unknown.

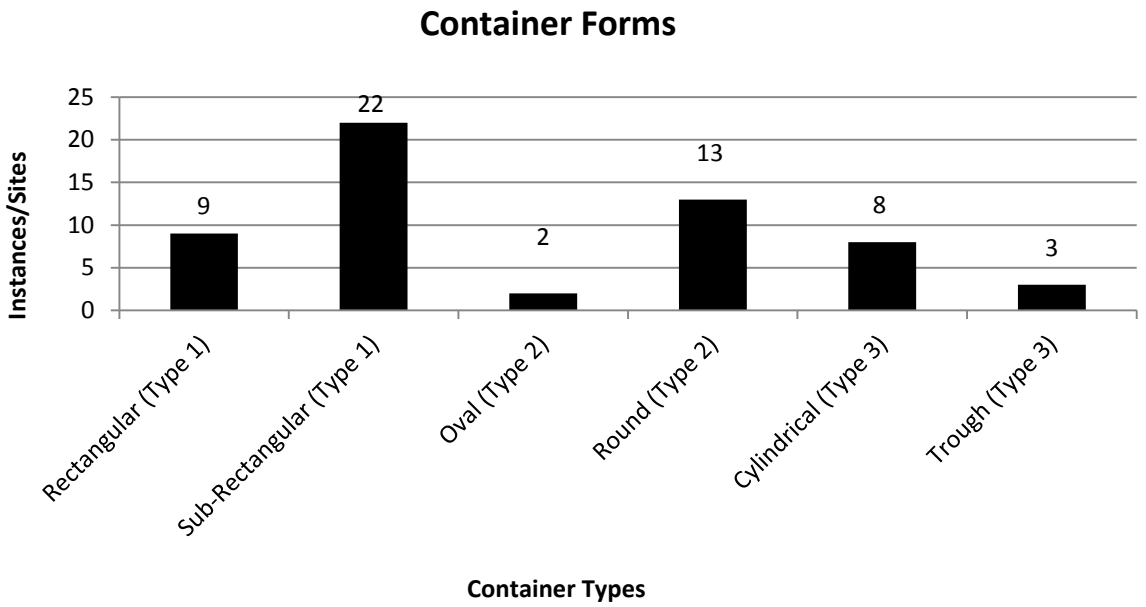


Figure 3.35 Recorded briquetage container forms (Total=57 instances across 37 sites)

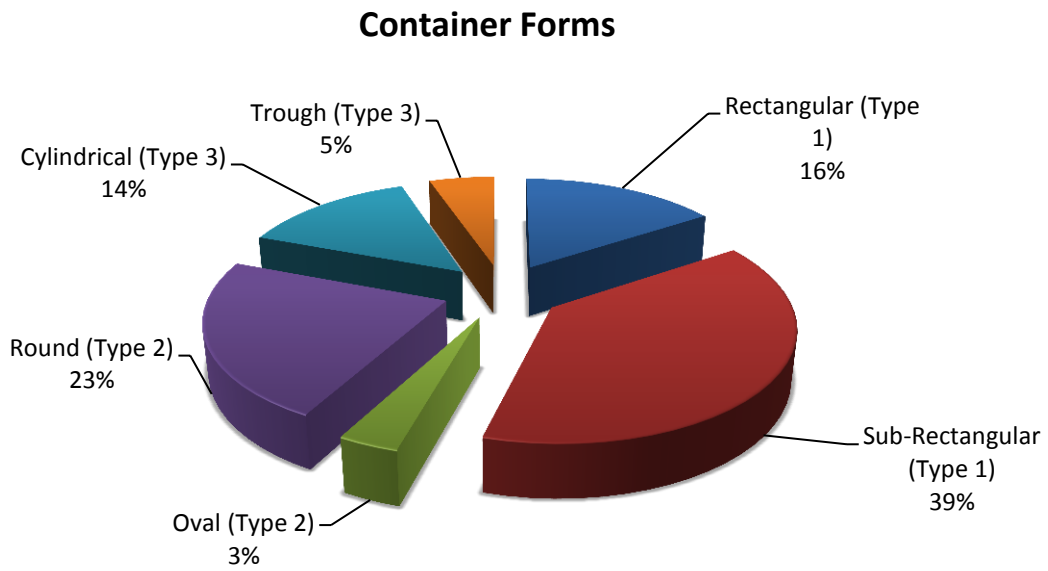


Figure 3.36 Percentage of recorded briquetage container forms (Total=57 instances across 37 sites)

Sub-Rectangular and Rectangular containers (Type 1: 55%) were the most commonly recorded forms, closely followed by Round containers (Type 2: 23%). The latter is a relatively vague category, given that this could include completely round bowl-shaped containers or round containers with flat bases.

Unfortunately, 'round' was often the term originally used to describe the containers and without further investigation the form remains ambiguous.

Examples of Rectangular, Sub-Rectangular (Type 1) and Trough (Type 3) containers can be seen in Figures 3.37-3.38.

Figure 3.37 Unique example of a rectangular briquetage container found buried in Hoo, Kent (Site 315) (Type 1), (Author: 2007)

Most containers appear to have been plain. However, there is an example of a decorated container rim from Site 215, Poole Harbour (Figure 5.75). This container fragment was also perforated, which means its exact function is uncertain. This is discussed further in **4.6.5** (Figure 4.74).

The presence of recorded container types by county are presented in Figures 3.39-3.41.

Figure 3.38 Left: Reconstructed sub-rectangular container (based upon Poole Harbour types), (Type 1) Right: Trough or cylindrical container (based upon Poole Harbour and Lincolnshire types), (Type 3), (Author: 2003 and 2005)

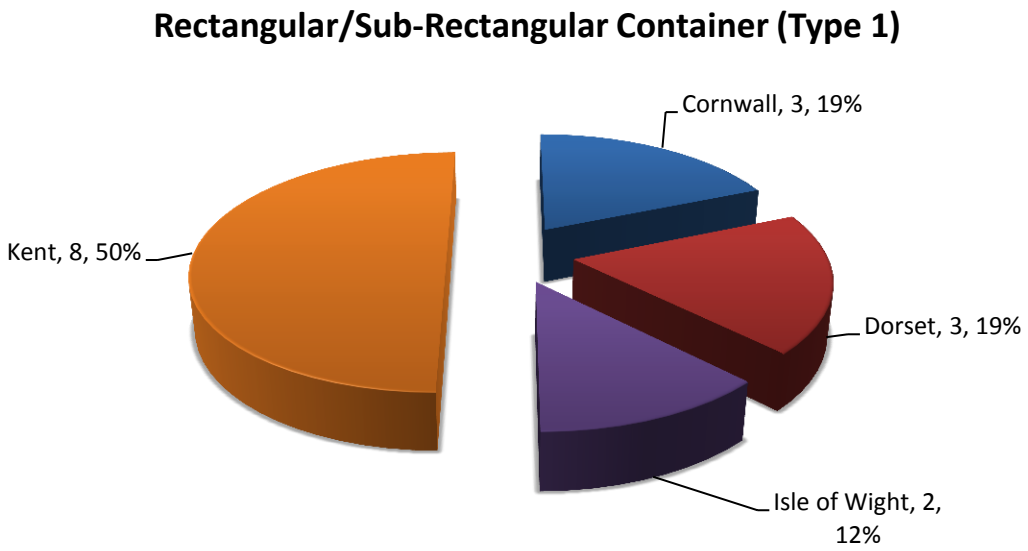


Figure 3.39 Rectangular/Sub-rectangular container forms (Type 1) by county (Total=16 sites)

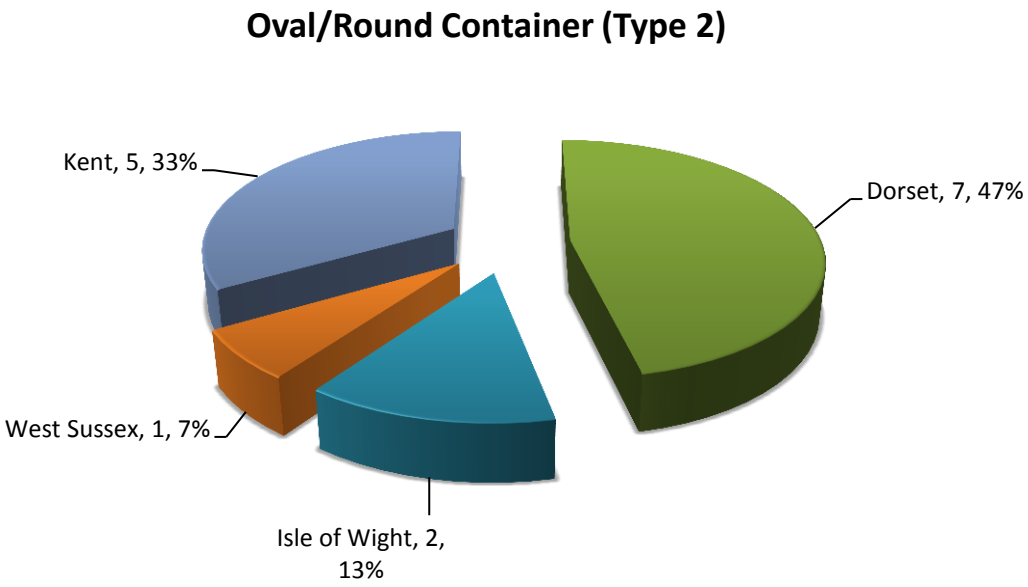


Figure 3.40 Oval/Round container forms (Type 2) by county (Total=15 sites)

The most obvious observation is the lack of evidence for containers in Somerset, which reflects that lead containers were probably used on many of the sites (**6.0**). However, after data processing, an unpublished briquetage report was discovered (Percival 2005), that stated that two potential small fragments from a flat-based briquetage container were identified from Site 166 in Central Somerset. It remains uncertain whether these do definitely represent briquetage containers, and this is considered further in **6.0**.

The results presented across Figures 3.39-3.41 clearly show that the briquetage container forms employed across Dorset are particularly well identified compared to other counties. This is due to the well-focused research that has been carried out in this area.

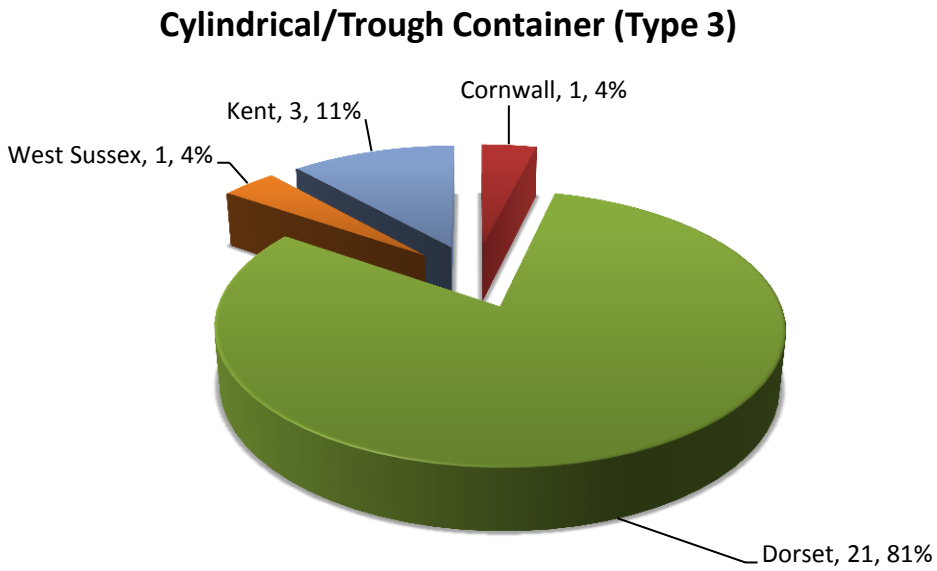


Figure 3.41 Cylindrical/Trough container forms (Type 3) by county (Total=26 sites)

It is difficult to conclude much from these county-based results due to the small sample, but Dorset sites do appear to use the cylindrical and trough-shaped containers more commonly. It is possible that this represents greater technological diversity in Dorset, perhaps due to it having such a long tradition of salt-production from the Iron Age. Whether these forms were indeed used for drying salt, or perhaps represent earlier, smaller round forms of briquetage remains unclear.

Although analysis of these general types suggests some variety in the use of container forms in southern Britain, in reality, there was probably far more diversity within each individual type, dependant on local preferences.

Finally, the container forms are presented in chronological order (Table 3.4). The earliest forms appear to be the Cylindrical (Type 3) and Sub-rectangular (Type 1) form used in the Early Iron Age, although admittedly these were only recorded on two sites. The Round (Type 2) form was in use from at least the Middle Iron Age

and the Oval (Type 3), Trough (Type 3) and Rectangular (Type 1) forms were used from at the least the Late Iron Age. There is generally less variety in container types across the Early and Middle Iron Age, however this could be due to a lower quantity of sites in general.

Table 3.4 Container forms cross-referenced by period

Period	Container Forms						Total	%
	Cylindrical (Type 3)	Oval (Type 3)	Round (Type 2)	Trough (Type 3)	Rectangular (Type 1)	Sub-Rectangular (Type 1)		
Early Iron Age-Middle Iron Age	1					1	**2**	**4**
Early Iron Age-Middle Roman						1	**1**	**2**
Middle Iron Age-Late Iron Age			1			1	**2**	**4**
Late Iron Age	2					2	**4**	**4**
Iron Age/Roman			1			1	**2**	**2**
Late Iron Age-Early Roman	1	1	5	1	2	6	**16**	**29**
Late Iron Age-Middle Roman			1			1	**2**	**4**
Late Iron Age-Late Roman			1	1	1		**3**	**5**
Early Roman	3	1	3		2	6	**16**	**27**
Early Roman-Middle Roman					2	1	**3**	**5**
Roman	1		1	1	2	1	**6**	**9**
Total	**8**	**2**	**13**	**3**	**9**	**22**	**57**	**100**

By the Late Iron Age, all of the main forms in Types 1-3 were in use for salt-production in southern Britain. These forms continue to be used throughout the Romano-British period, although Type 1 containers remain the most prevalent.

The Type 3 forms do not appear to have been as commonly employed in the study area, when comparing the quantities between this form (Type 3: 13 sites) and the flat-based Type 1 and 2 forms (44 sites collectively). It has been suggested that the Type 3 forms were used for drying salt and the creation of salt cakes, whilst the flat-based containers (Types 1 and 2) were used for evaporation (Table 3.3) at least in the case of the Fenlands (Lane and Morris 2001). This however does not appear to have been as clear in the study area, as it would have been expected that a more equal number of Types 1-2 and Type 3 would exist, if for example both

were employed on the same site. It is possible that the Type 3 forms could be mistaken for 'domestic' pottery wares on some sites, and it is certain that identification of container forms in general is relatively poor. However, it is also possible, that especially on sites that grew in size and importantly scale that only flat-based containers continued to be used most commonly as these would have greater capacity. It is also plausible that the formation of salt cakes in the Type 3 containers became almost 'obsolete' over time, as sites produced more salt. It is plausible that as the production and trade in salt increased, that the old method of distributing standard salt cakes went out of use, and the salt was distributed in larger quantities (perhaps in sacks). Then, when re-distributed from a market for example, the salt could be 'sold' according to weight as opposed to size of cake. This remains speculation at this stage, and further research is required to certainly prove this.

In reality, of all the data in the dataset, 'containers' remain the most ambiguous and in further need of assessment, which would involve further study just focused upon these forms. This was not possible within this research project as the 'whole site' was in focus, as opposed to only the 'equipment' used in production (briquetage).

Lead Containers

The consideration of containers here has been focused upon clay containers which dominate salt-production sites. There is also evidence that some sites potentially employed lead containers in the Romano-British period.

It seems likely that several Late Romano-British salt-production sites in the Somerset Levels used lead containers (**6.0**). This is due to the general lack of containers on the few sites that have been investigated (Brunning *pers comm*. 2008), including the sites investigated by fieldwork in this research (**6.0**).

It is plausible that many of the sites that had briquetage assemblages with no identified containers (71/163 sites: 43%) could represent sites that used containers made of lead or other material However, this remains speculative as it is possible that many of these sites did use containers and have simply not been identified. Of potential significance is that of the briquetage assemblages on sites certainly

containing supports (52/163 sites: 31%), 20, (40%) had no recorded briquetage containers.

Currently, the most reliable method of looking for lead containers is in the presence of lead on a site. With this in mind, there are two sites in Kent that are possible contenders for having used lead containers (Table 3.5).

Table 3.5 Sites with potential evidence for the use of lead containers in salt-production

Site ID	County	Feature		Best Date	Notes
32	Kent	55	Hearth/Hearth debris spread	Early-Late Roman	Lead globules
82		480	Debris Pit	c.70-150 AD.	Lead weights
		478	Natural saltwater inlet	c.2nd-3rd century AD.	General lead debris
		474	Shallow Pit	Middle 3rd century AD.	General lead debris

Site 32 in North Kent (Funton Marsh) had evidence for lead 'globules' being embedded in a large area of salt-production debris and waste (Miles 1965). Although oval flat based briquetage containers were found within this site, it is very likely that lead containers were also used. Dating the site was difficult and it could have potentially spanned the whole Romano-British period.

Lead was used on Site 82 from the 1st century AD.; this is evidenced by lead debris in a general 'debris pit' (Feature 480) and in the form of 37 lead weights probably used for fishing. Lead debris was also found in 2nd-3rd century contexts; within a 'shallow pit' (Feature 474) and in the fill of a natural saltwater inlet (Feature 478) (Table 10.1.15). However, there is no certain evidence that lead was also used for containers. This is particularly evidenced in the large quantity of round flat-based briquetage containers found at this site across the Late Iron Age-Late Romano-British period (Priestley-Bell 2006).

Briquetage Supports (Tables 10.1.27-10.1.41)

Briquetage supports were also recorded by a simple presence/absence basis. Four main types of briquetage support were identified across the study area: Pedestals, Bars, Slabs and Ad-hoc 'Supporting Material' (Structural).

As presented in Figure 3.33, briquetage supports were recorded at 52/163 sites. Again, not all of these sites provided details of the specific support form. However, supports were generally identified more readily than containers, as many supports maintain clear form, even if incomplete.

Original terminology used to record briquetage was also generally recorded (Table 10.1.27). Most material was identified on sites as 'briquetage' which was encouraging, although some material was recorded as 'kiln furniture', as there are significant issues in distinguishing pottery kiln furniture from briquetage in many regions. This is discussed further in **7.5.5.4**.

Pedestals (Tables 10.1.28-10.1.31)

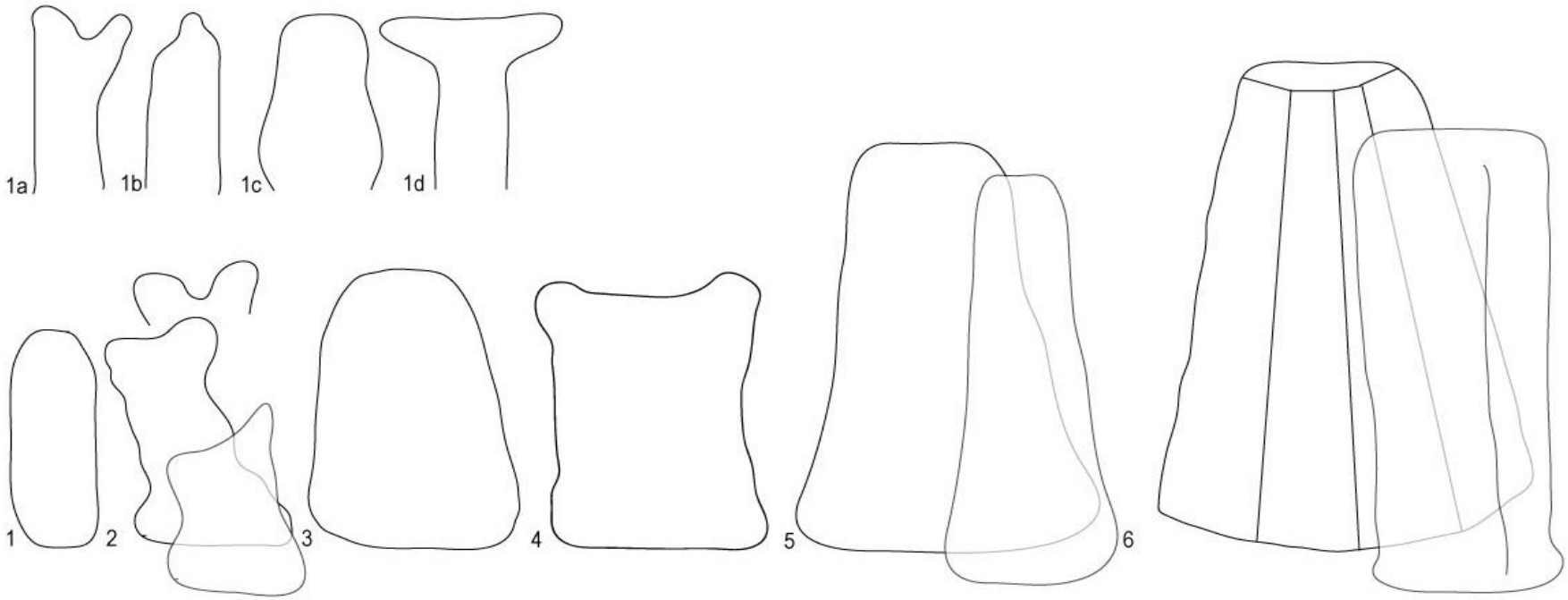
Of all the sites with the presence of briquetage (163/276: 59%), 32% (52/163) recorded the presence of supports, and 61% (32/52) of these sites recorded the presence of briquetage pedestals (Table 10.1.31).

Pedestals remain the easiest form to identify, and therefore their low numbers represent lack of briquetage identification, lack of form recognition, or lack of recording this detail. Despite the low number of recorded sites with pedestals, it has been possible for the first time in southern Britain to produce a basic pedestal typology (Figure 3.42 and Table 2.5). The thickness and height of the pedestals can vary greatly. Pedestals varied in thickness from between *c*.2.5 and 15cm and in height between *c*.4cm and >20cm.

As presented in the pedestal typology (Figure 3.42), four categories of pedestal were identified in the study area and these have been labelled: Rounded (Pedestals 1-1d, 2 and 5), Multi-Faceted (Pedestal 6), Brick/Block (Pedestals 3-4) and Unknown, (Tables 10.1.28-10.1.30 and Figure 3.42).

There were 55 instances of pedestals in total (including type 'Unknown'), from 32 sites. Rounded Pedestals are the most common form (Figure 3.43) representing *c*.85% of the total recorded pedestal types (Figures 3.42-3.44).

Most Rounded Pedestals were small, simple plain, smoothed cylindrical rolls of clay, with some having splayed bases for stability (Type 1) (Figure 3.44).



KEY

1 Plain rounded 'cigar-shaped' pedestal

1a Round pedestal with forked or notched top

1b Rounded pedestal with pinched top and/or base

1c Rounded pedestal with 'skittle' shape

1d Rounded pedestal with T-shaped top and/or base

2 Twisted, 'squashed', squat pedestal often with a right angled, curved or notched top and finger impressions

3 Larger, robust 'brick or block' style pedestal

4 Large squat pedestal with curved top (could also be a central support from a pottery kiln)

5 Tall, slim or more robust rounded pedestal with flanged base

6 Large squared or multi-faceted 'building column' style pedestal

Figure 3.42 Examples of the main pedestal types found within Iron Age and Romano-British salt-production sites in southern Britain (not to scale but in order of size

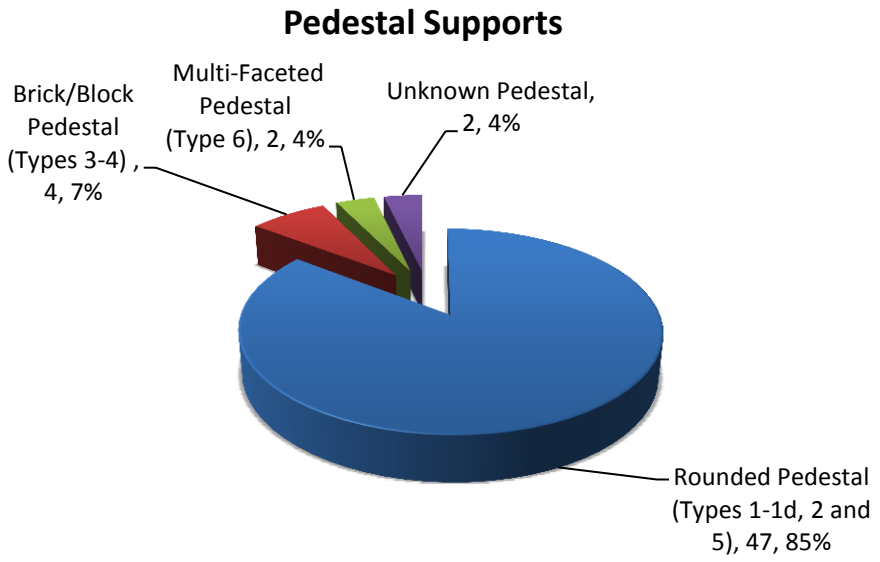


Figure 3.43 Percentage of different briquetage pedestal support types (Total=55 instances across 32 sites)

However, some of the Type 1 (and all the Type 2) pedestals had functional additions. This included a T-shaped top/base, or a pronged top/base (Types 1a-1d) or an angled L-shaped or notched top to better hold a container (Type 2), (Table 10.1.30; Figures 3.42 and 3.44). Therefore it was possible to create a more detailed typology for Rounded Pedestals (Types 1a-1d), (Figures 3.44).

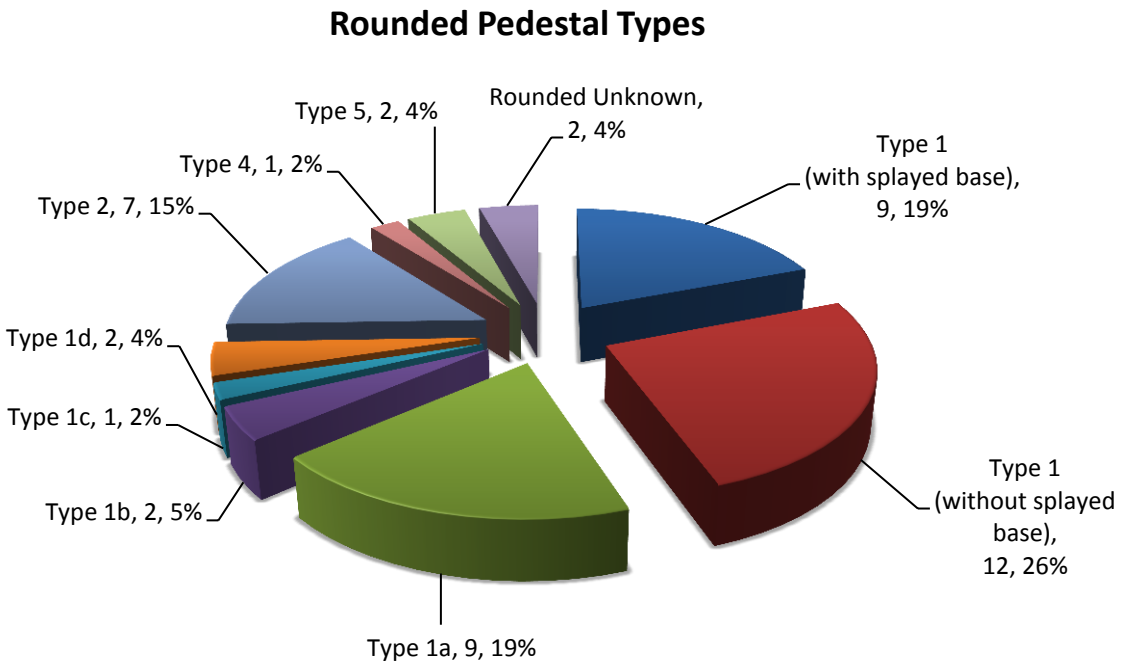


Figure 3.44 Total 'Rounded Pedestal' Types (Total=47 instances across 32 sites)

Of note is that the functional additions to the top or bases were restricted to the smaller Rounded Pedestals (Types 1-2).

Figures 3.45-3.47 present examples of pedestals across the study area.

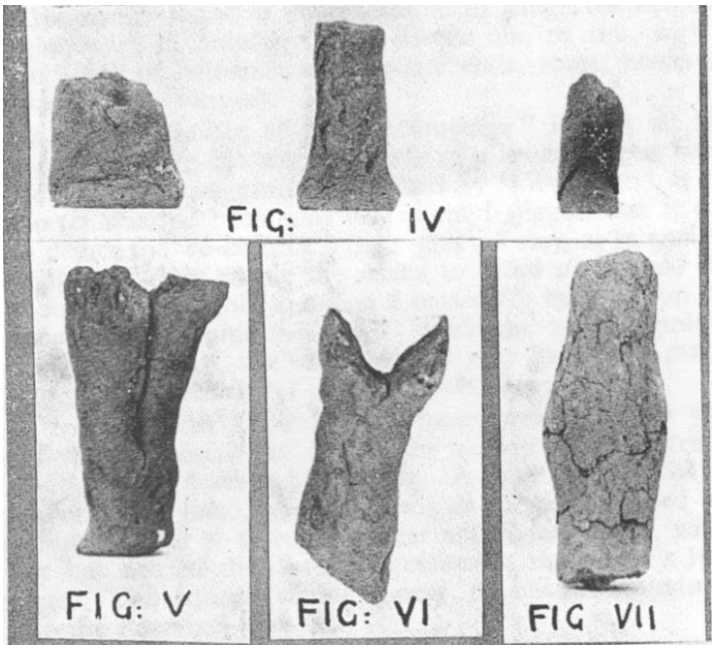


Figure 3.45 Examples of briquetage pedestals and bars from Hook, Hampshire (Site 11). Bottom left to right are examples of Types 1a and 1c (Fox 1937: Plate 2)

Site 11 contains an unusually varied selection of pedestals, some of which can be seen in Figure 3.45, and the Type 1c pedestal has only been identified at this site within the study area.

Pedestals are known to have been used from at least the Bronze Age within Britain (Palmer-Brown 1993). This research shows that they continued to be used in the study area throughout the Iron Age and into the Romano-British period.

Pedestals were unsurprisingly most common in the three main areas of site distribution (Somerset, Dorset and Kent) (Table 10.1.31 and Figure 3.48). Dorset had the most recorded sites with pedestals followed by Kent and Somerset. Pedestals were commonly used throughout the Iron Age and Romano-British periods in all three counties. However in the Central Somerset Levels, they appear to have been less commonly used after the 2nd century AD, when bars become more common (**6.0**).

Figure 3.46 Early Romano-British briquetage pedestals from Shapwick Road (Site 231), Poole, Dorset Left: Selection of rounded pedestals (Types 1-2) Right: Larger 'brick or block' type pedestal (Type 3) (Author: 2009 and 2004)

Figure 3.47 Left: Larger rounded pedestal from Lydd Quarry, Kent (Site 82) (Type 5) (Author: 2009) Right: The largest briquetage pedestal support in the study area from St George, Somerset (Site 239) (Type 6) (Author: 2006)

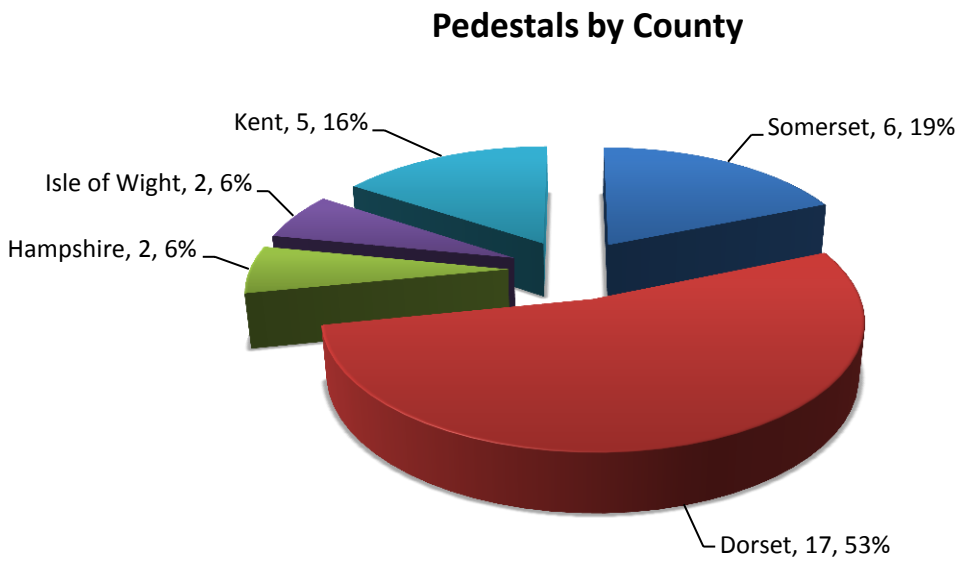


Figure 3.48 Total sites with the recorded presence of briquetage support pedestals (Total=32 sites)

Dorset had the most prolific use of pedestals as they formed a large part of the salt-production tradition within the harbour and similar forms were also probably used for pottery production.

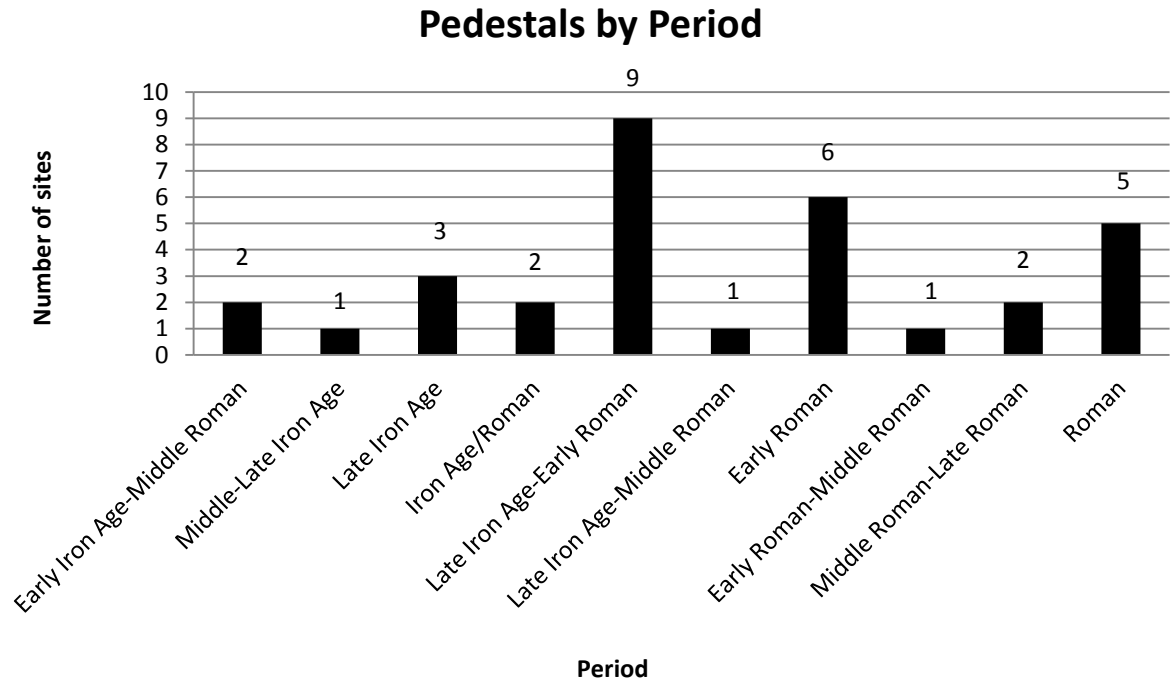


Figure 3.49 Total sites with recorded pedestal presence over time (Total=32 sites)

The greater number of sites with pedestals in the Late Iron Age/Early Romano-British period (Figure 3.49) most probably reflects simply an increase in the number of salt-production sites rather than the increased use of pedestals.

In general the use of the smaller, plainer pedestals remained most common throughout the Iron Age and the Romano-British period in the study area.

However on at least three sites, the pedestals used were substantially thicker and taller (Figure 3.47). Two of these are in Somerset (Site 294, Banwell Moor and Site 239 St Georges, Worle) and the other is in South Kent (Site 82, Lydd Quarry). Significantly, all appear to be of a very similar date, dating to between the Late Iron Age and Early Romano-British period.

The largest pedestals were used at Site 294 (*c*.>20cm), the second largest were at Site 239 (Figure 3.48: *c*.15cm in diameter) and the third at Site 82 (*c*.10cm in diameter). In Somerset, this probably reflects the use of larger lead containers over larger hearths. However, at Site 82, the larger pedestals do not appear to correlate with larger hearths, but are just the result of personal preference by certain salt producers at this site.

Bars (Table 10.1.32-10.1.34)

The second briquetage support type to be presented here are 'Bars' (often described as 'fire-bars'), (Tables 10.1.32-10.1.34 and Figures 3.50-3.54). There were 40 instances of different bar types recorded across 29 sites.

There were again enough records of bar form to design a general bar typology for southern Britain (Figures 3.50-3.51). Six main forms of bar were identified (excluding Type 6: Wedge: discussed separately below) (Figures 3.50-3.51 and Table 10.1.35).

There is potential for the blurring of identification between simple Rounded Pedestals (Type 1) (Figure 3.42) and the Type 2 Round Bar (Figure 3.50). The main difference will be length; the Type 1 Rounded Pedestals are very short, and for fragmented forms, the end of the Type 2 Bar will not generally be flat.

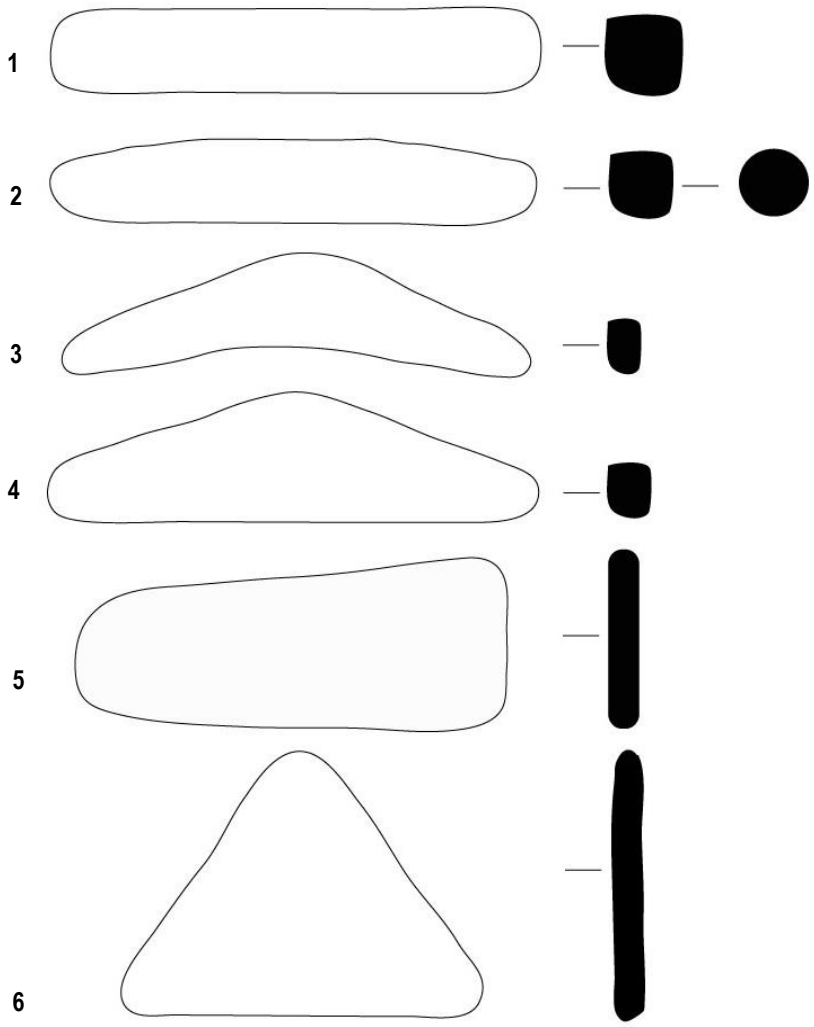


Figure 3.50 Typology of briquetage bars found across the study area in the Late Iron Age and Romano-British periods (Not to scale), (Wedge included here as it is a probable variant of Types 3-4)

However, if all else fails, scanning the entire assemblage will usually identify which forms are present as other more diagnostic fragments could be used for comparison.

Assigning briquetage form to some assemblages can however, often be based on comparisons with nearby sites, if there are no diagnostic fragments and no knowledge of popular local forms.

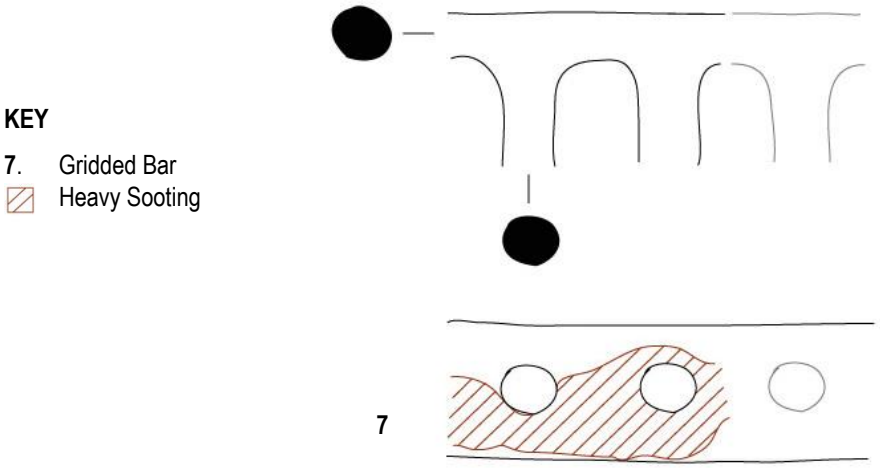


Figure 3.51 Bar Typology continued: Type 7 Gridded Bar (only found at Site 229, not to scale)

The most common bar profile was 'Square' (Type 1) occurring on 15 sites (Figure 3.52) representing 37% of instances. Only one Tongue-Shaped Bar (Type 5) was recorded (Site 225: Ower, see Figure 4.58). Therefore, this bar was probably used in pottery production, rather than contemporary salt-production at that site.

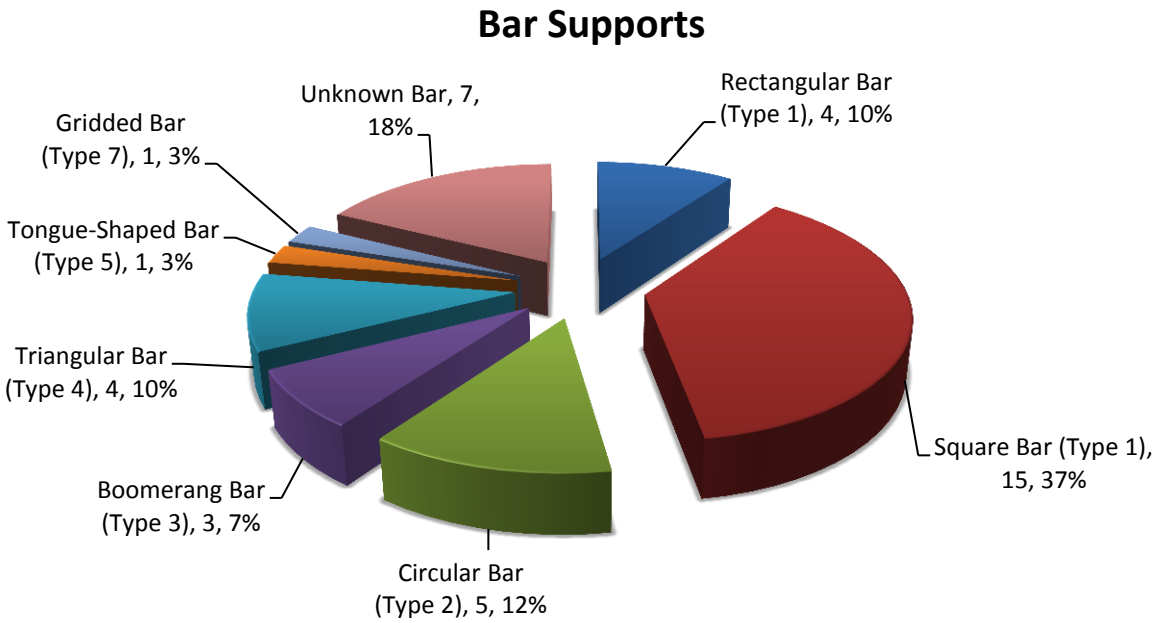


Figure 3.52 Percentage of briquetage support bar profiles (Total=40 bar types across 29 sites)

The thickness of common bars varied greatly between c.1.5-5cm. No complete examples of bars were found, making estimates of bar length difficult to ascertain.

If many bars spanned hearths horizontally, then potentially some bars could have been as much as c.30-50cm in length. However they could have been used in either upright or horizontal positions, dependant on the hearth form. This is explored further in **4.0**-**6.0.**

The number of sites with recorded bar presence is next presented in county and chronological order (Figures 3.52-3.54 and Table 10.1.34).

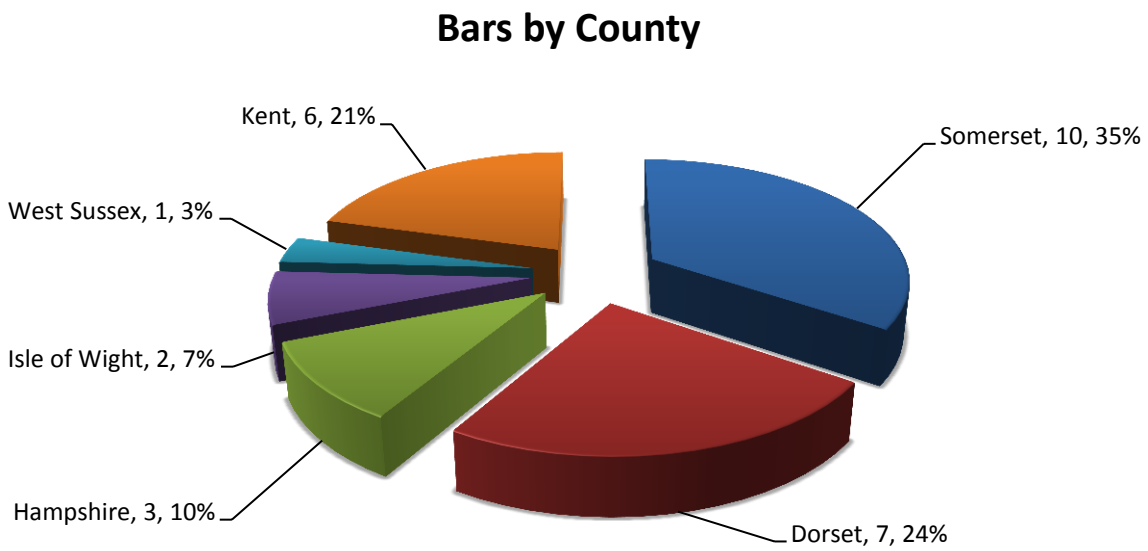


Figure 3.53 Total sites with bar presence across the study area (Total=29 sites)

Again, the three key areas of activity, (Somerset, Dorset and Kent) have the most evidence for bars due to the large quantity of sites. However, the largest quantity and concentration of bars can be seen in Somerset, where bars are commonly found in association with the debris mounds (Figure 3.53).

As stated earlier, in the Central Somerset Levels, bars appear to have been more common than pedestals by the main period of 3rd-4th century AD of salt-production (**6.0**).

Figure 3.54 indicates that bars generally were used from at least the Late Iron Age and then throughout the Romano-British period.

The ‘Type 4 Triangular Bars’ are only seen in Kent, and outside the study area, in Essex, suggesting a technological link between the two counties and this is considered further in **5.0**.

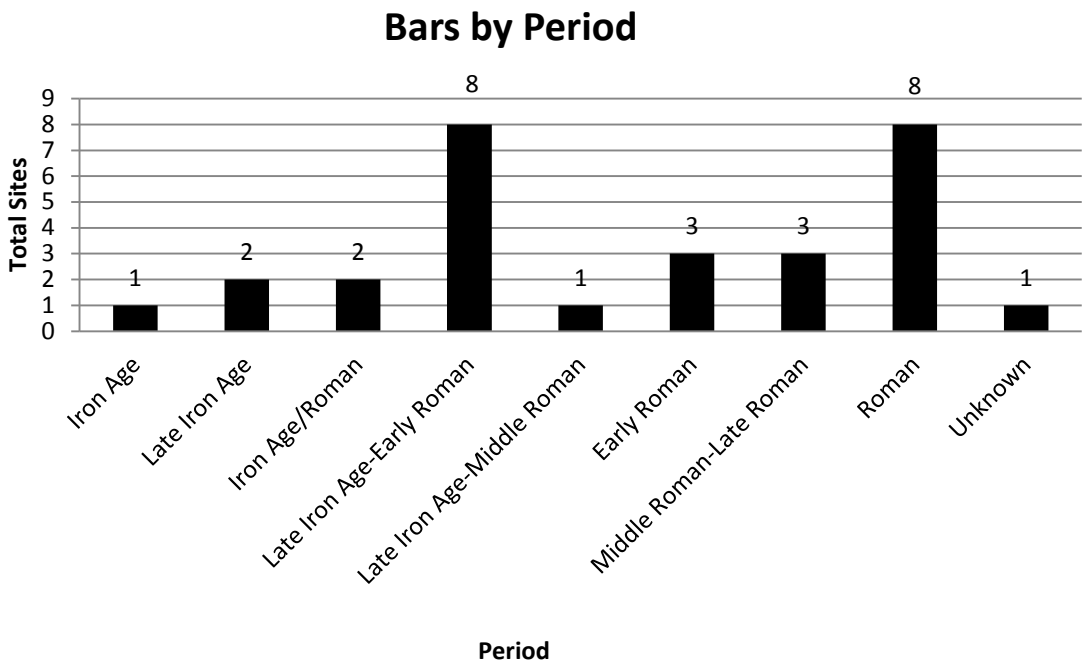


Figure 3.54 Total sites with recorded bar presence over time (Total=29 sites with bars)

Wedge (Table 10.1.35)

This triangular wedge-shaped form has been included within the Bar Typology in Figure 3.50: Type 6. This form has caused some confusion in Essex, where it more commonly appears, as the term ‘wedge’ was often used to define a broken bar which appeared triangular (De Brisay 1975). The term is now used to define squat triangular bars/slabs, although their exact function remains unclear, however in the case of Essex at least, it is considered that they are an adaptation of the larger triangular bar (Type 4), (*ibid*). Therefore they have been included within the bar typology here.

They only occur within limited locations in the study area; in Somerset (four sites) and Kent (four sites) (Table 10.1.35) and were used between from the Late Iron Age and throughout the Romano-British period. They occur most commonly and continuously in Site 30, Cooling, (Table 10.1.35: highlighted and Figure 3.55), which appears to represent a combined salt and pottery production site (Miles 2004).

Figure 3.55 Wedge (Type 6) support from Site 30, Cooling (Author: 2009)

Slabs (Table 10.1.36-10.1.38)

Another common briquetage support form is 'Slab'. These are mostly simple slabs of cut clay that were used in conjunction with either pedestal or bar supports (Figure 3.56).

There with 38 instances of slabs present across 31 sites (Tables 10.1.36-10.1.38 and Figure 3.57). Most slab forms were not recorded (18/37: 47%) and remain 'Unknown' (Figure 3.57).

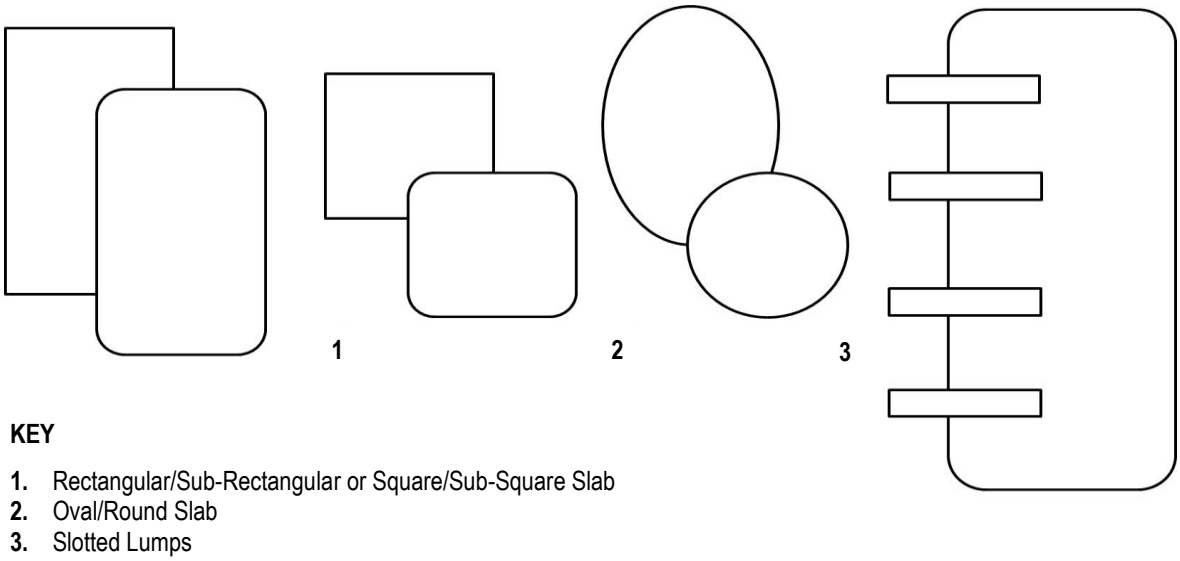


Figure 3.56 Basic Slab Typology

However, from limited observations, it is likely that most slabs were either Round (Type 2) or Square/Rectangular (Type 1) (Figure 3.57). These support types are easily assigned to other functions such as hearth lining and building material and this may explain why there are so many unrecorded forms.

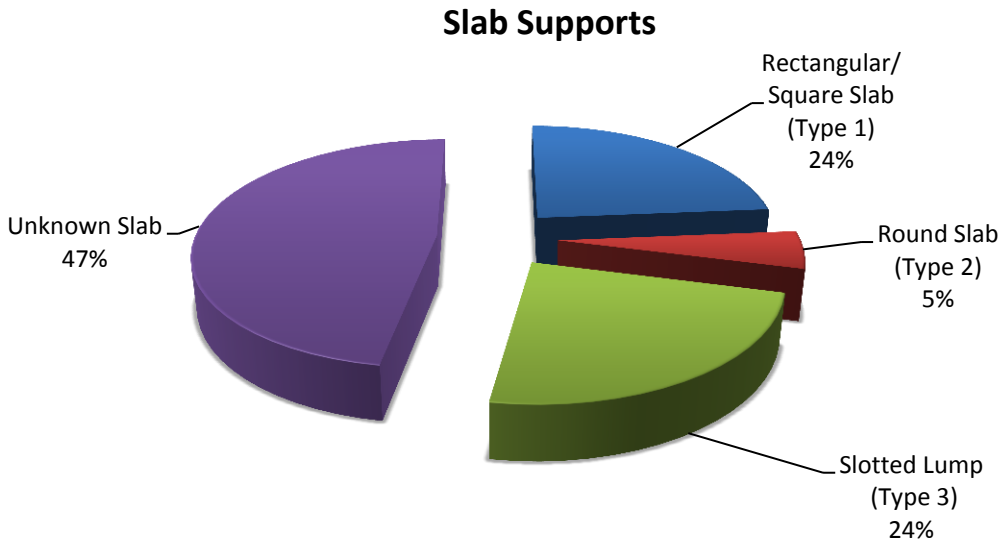


Figure 3.57 Total briquetage support slab types (Total=38)

These support forms also tend to be the most fragmented support type as they are often thin. There were three basic slab types (Table 10.1.37 and Figure 3.56: Types 1-3). Square and rectangular slab forms (Figure 3.56) were combined as it is difficult to separate the two when the slabs are very fragmented.

Many of the slabs in the study area have one smooth and one rough side and some are perforated. Similar slabs have been found on Late Iron Age-Early Romano-British salt-production sites in the Fenland area (Lane and Morris 2001).

Their form suggests that they were used as flat supports for containers, probably held on top of a support to provide extra protection for the container, creating a raised or suspended, if potentially unstable, floor. This interpretation is supported by similar finds in Lincolnshire, where slabs are thought to have been used in conjunction with hearth flues (Indirect Heat supply) (Lane and Morris 2001: 372). However, the slabs in the study area appear to be used with Directly Heated hearths.

The discovery in the Medway Estuary, Kent of 'Slotted Lumps' (Figure 3.56: Type 3 and Figure 3.57), shows that slabs could also be embedded at an angle directly within a hearth wall to support containers.

Some slabs found in Poole Harbour, Dorset were found to be particularly thin and rounded in form with decorated edges (Figure 3.58). They appear too thin to have provided any support and therefore it is possible that some may be flat fragments from containers. However, upon closer observation, some have more than one complete edge which does not support this theory.

Figure 3.58 Decorated briquetage slabs from Poole Harbour, Dorset Left: Site 231 at Hamworthy Right: 218 Boat House Clump, Upton, Dorset (Author: 2004)

Again their exact function therefore remains unknown. One possibility suggested for similar decorated slabs found at Peldon, Essex was that they functioned as lids for containers (De Brisay 1974). Although this seems unlikely, lids were perhaps used in the later stages of salt crystallisation.

Plain and perforated slabs have also been found in association with some Romano-British pottery kilns (Swan 1984) and even at some Late Bronze Age settlements (Brück 2007). In these cases as with the briquetage slabs, their exact function remains unclear.

Figures 3.59 and 3.60 (Table 10.1.38) present the presence of sites with recorded slabs by county and by period respectively. Slabs were used on sites within all three main areas of salt-production activity.

Most slabs have been recorded on Romano-British sites, but appears to have been incorporated into briquetage assemblages by at least the Late Iron Age (Figure 3.60).

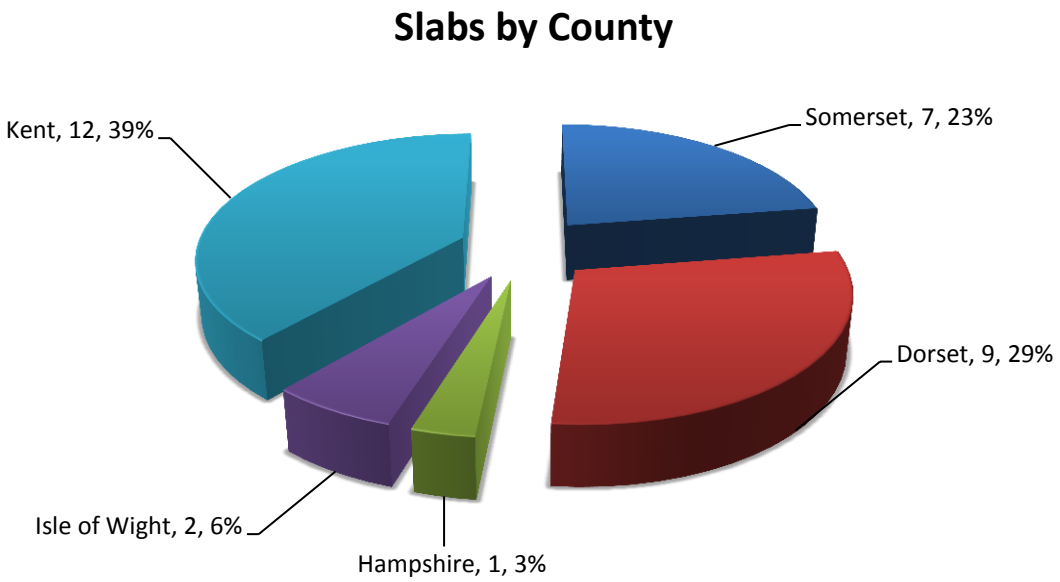


Figure 3.59 Sites with the presence of slabs across the study area (Total=31)

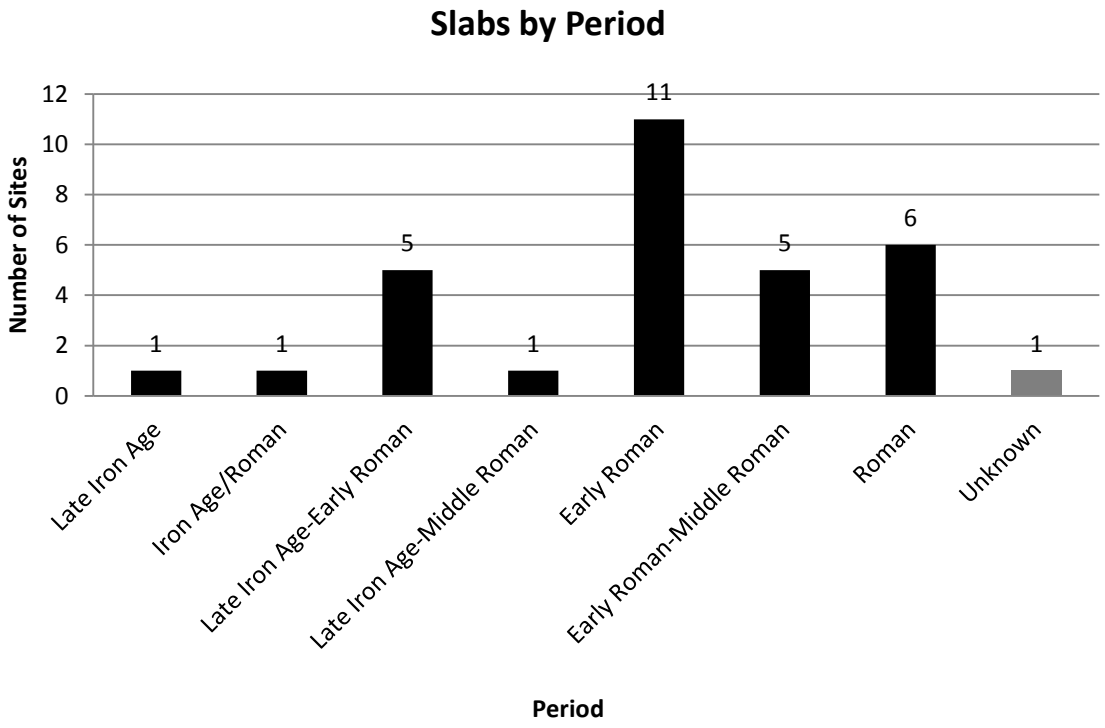


Figure 3.60 Slabs used on sites in chronological order (Total=31)

Ad-Hoc Supporting Material: Rods, 'Platforms' and 'Stabilisers' (Tables 10.1.39-10.1.41)

This section covers clay that have been created during salt-production from raw clay to stabilise containers over a hearth (Figure 3.61).

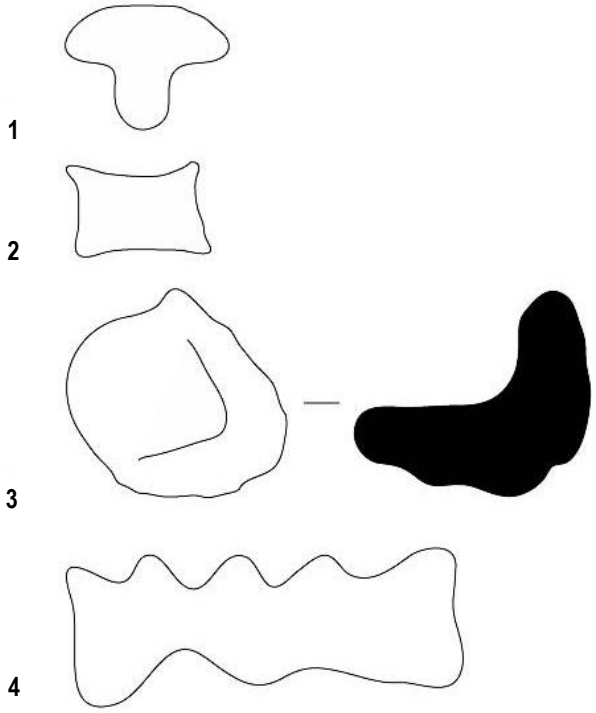


Figure 3.61 Typology of Stabilisers (ad-hoc briquetage supporting material)

Rods (Table 10.1.39)

Rods are represented by amorphous lumps of squeezed clay (Table 10.1.39, Figures 3.61: Type 4 and Figure 3.62). They are often similar to the Type 1 Rounded Pedestals, but not as 'carefully' created. They are often slightly curved in the centre and many of these forms appear to have been formed around another object, like other types of stabiliser.

Only six rods were identified across all assemblages. Four were recorded in Somerset, one in Dorset and one in Kent. There are probably many more of these forms in existence. However, they are very unremarkable in nature and will have

often been ignored or assigned amongst amorphous and miscellaneous 'Fired Clay' objects.

Figure 3.62 Example of briquetage rod (Ad-Hoc supports: Type 4) found near Sites 125 and 126 in the Somerset Levels (Author: 2009)

Platforms, Spacers and Pinch-Props (Tables 10.1.40-10.1.41)

Platforms and Stabilisers were first formally recognised, categorised and discussed by Morris (Lane and Morris 2001), when assessing briquetage assemblages from the Fenlands. Similarly to rods, they are not easily recognised and are made ‘ad-hoc’ during salt-production. Therefore even if preserved, they might just be consigned to amorphous fired clay.

The term ‘Platform’ (Type 3) is used to describe balls of raw clay which were attached to the top of the pedestals to keep them attached to the containers (Figures 3.61 and 3.63: c). However, only two of these were recorded across the study area (Table 10.1.40). Both examples (both near complete) were discovered during observations of briquetage from Iron Age/Romano-British sites in Poole Harbour, Dorset during this research.

It is not surprising that except for the chance discoveries of these two forms by the author, there were no other sites where this form was recognised and recorded. Preservation is clearly one affecting factor, as these objects consist of soft-fired clay and are therefore friable. However, the main factor is that of poor identification because detailed knowledge of these forms is rare. There are very probably many more of these forms from other sites awaiting identification.

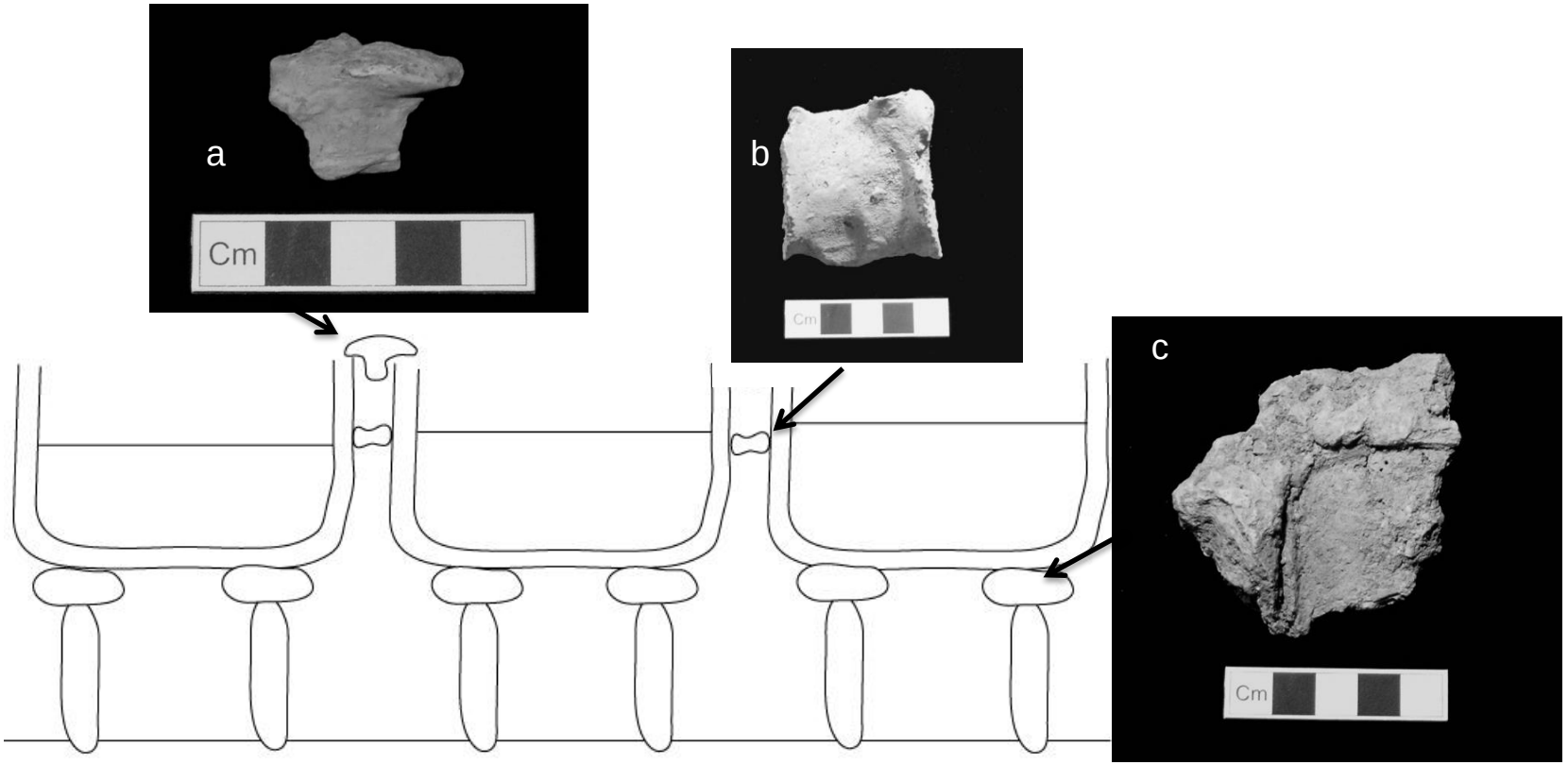


Figure 3.63 Diagram showing position of stabilisers a: Pinch-Prop from Sandy Ditch, Somerset Levels (Site 295), b: Spacer from Hobarrow Bay, Dorset (Site 214), c: Platform from 12 West Quay Road, Poole, Dorset (Site 215) (Author: 2009)

'Spacers' (Figure 3.61: Type 2) similarly, were lumps of raw clay that were attached to the sides of multiple containers to minimize movement whilst the containers sat above a hearth (Figure 3.63: b). Pinch-props (Figure 3.61: Type 1), (sometimes also known as 'clips) were again, small lumps of raw clay that were pushed into the tops of multiple containers to minimize movement (Figure 3.63: a).

Six Spacers' (Type 2) and four Pinch-props (Type 1) were identified across 11 sites (Table 10.1.41). Again as with Platforms, this low quantity is due to a low identification rate as well as poor preservation. These two forms are particularly informative about the way briquetage was used for salt-production, as its presence directly indicates that *more than one container* was used simultaneously within a single hearth. Therefore even with the absence of a hearth, these forms infer the use of multiple-container hearths nearby (**4.0**).

3.4.3.3 Briquetage Overview

In summary, there were nearly equal numbers of sites with evidence for the use of Pedestals and/or Bars and Slabs across the study area.

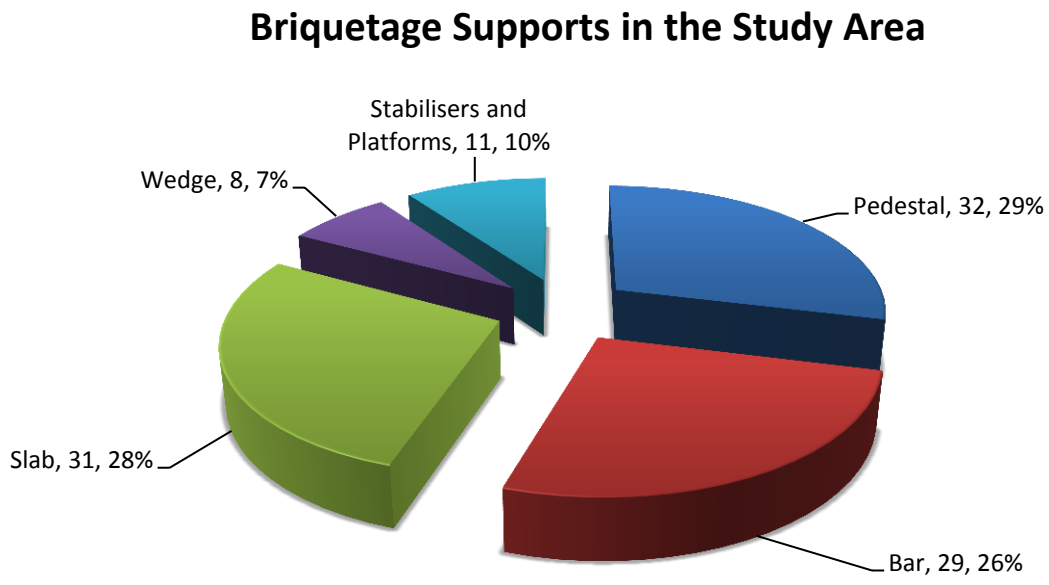


Figure 3.64 Summary of all main support types (Total=103)

A total of 32 sites recorded the presence of Pedestals; 29 sites had bars; 31 had slabs, 8 had wedges and 11 had Stabilisers (Figure 3.64).

Although not considered here in detail, general information about briquetage fabric including temper and colour was also recorded (Table 10.1.21). Information about temper was not commonly available in the literature. However, in general the temper reflected local sources. For example, the briquetage supports from the Central Somerset Levels was nearly exclusively tempered with organic material obtained locally from the marsh.

Containers were often observed to be more heavily tempered. This is not surprising given that these have a large surface area and require more strength. There were a variety of fabric colours on the exterior of briquetage, the most common fabric colour was a buff red/orange. Whilst handling briquetage within this dataset, it was common to be covered in a red dust, most resembling brick dust.

Fortunately, Lane and Morris (2001) provided an overview table of the main tempers used within briquetage across most salt-producing areas of South and Eastern Britain (Table 10.1.42).

'Salt colours' were also commonly observed. These colours have been described and discussed by Lane and Morris (2001) and commonly include lavenders, greys and yellows. It is thought that these specific colours are caused by the natural reaction of salt/water and heat on some briquetage and seem to appear most often on supports. The significance of briquetage surface colouration is discussed further in **4.6.3**.

3.5 Overview

This chapter has presented the assessment of core quantitative data generated by this research project.

The main outcomes of this chapter are listed below:

- The identification of key geographical trends in site distribution, which shows that salt-production was a significant activity in Somerset, Dorset, Hampshire and Kent

- Salt-production sites increased during the Late Iron Age and the most prolific period of production was in the Early Romano-British period
- There is a substantial decrease in salt-production sites in the 2nd century AD in most of the study area, but salt-production increases in Somerset
- There is a surprisingly large dataset for archaeological features associated with salt-production but a relatively poor dataset for briquetage forms
- Modern perception of sites can greatly impact the way in which salt-production sites are recorded and understood
- Simple 'Site Type' categories can provide a more accurate picture of salt-production than the inconsistent original terminology
- The challenges when attempting to categorise and compare salt-production sites have been highlighted

This chapter has revealed a complex picture for the current, understanding and record of salt-production sites in southern Britain. There are many factors 'working against' these sites. Although erosion and damage is clearly an issue, the way in which they have been interpreted and recorded is equally fragmented and problematic for their study.

Often the lack of data is due to a fragmented site. However even on those sites that have been subjected to more detailed investigation, there are still major inconsistencies in the way that there are recorded.

Modern perception of these sites, especially those located in southern Britain, is considered the *most significant issue* limiting current interpretation and even recording of many of these sites.

They are by their nature in peripheral, liminal places, and as most references to salt-production in general archaeological literature are focused upon the end product itself: salt, there is often far more emphasis placed on the distribution of salt as opposed to the production sites.

This chapter has presented the first step in achieving a better balance of understanding by focusing upon production sites as opposed to simply plotting the possible distribution of salt.

Quantifying and classifying site data has been very challenging, as it is so often very incomplete. However, even with the limitations described above, it has been possible to gain a chronological overview of salt-production, as well as new

insights into the technology of salt-production, which will be explored further in the next chapter.

The concentration of salt-production sites in Somerset, Poole Harbour, The 'Three Hampshire Harbours' and North Kent, reflect the fact that all had *ideal* environments to produce salt. All had areas where saltwater was controlled by areas of estuary, inlets and marsh. Perhaps this is another reason why there are much fewer sites in Cornwall and Devon; the coastline is very exposed through much of these counties and saltwater would have been less concentrated and more difficult to 'manage' as a result. Indeed the four sites that are recorded for Cornwall are all sites that are exposed such as clifftops or coastal edges.

The variety of features and briquetage forms indicates that technology was subject to individual or group choices by salt-producers. This significant observation will be considered further in **7.0**.

Although the quantitative data presented here provides the foundations of this research project, much of the content of Chapters **5.0**-**7.0** will be based upon qualitative approaches to the archaeology. The use of this approach addresses some of the limitations that are created by the simple application of categories and quantities for comparison. This is especially useful when attempting to explore the briquetage data further, which as has been shown, is particularly limited if viewing purely from a quantitative perspective.

The following chapters will show that significant new insights into the organisation and technology of salt-production can be achieved even with apparently limited datasets such as has been presented here, by looking at the wider context of sites in the landscape, as well as individual sites and production lifecycles, biographies and use of space.