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‘It rained a lot and nothing much happened’

Settlement and Society

in

Bronze Age Orkney

Caroline Jane MAMWELL

Submitted for the degree of Doctor of Philosophy

The University of Edinburgh

2017
Declaration

I hereby confirm that this is an original study conducted independently by the undersigned and that the work contained herein has not been submitted for any other degree or professional qualification. All research material has been duly acknowledged and cited.

Signed:  
C. J. Mamwell

Date: 24th July 2017
Abstract

This thesis addresses the question of an impoverished record for the Orcadian Bronze Age. It presents the first comprehensive synthesis of this period, which is overshadowed by its neighbours.

Factors that influenced the formation of the archaeological record in Orkney are investigated. The effects of agricultural improvement on archaeological survival, not previously examined in detail in an Orcadian context, are shown to have been particularly significant. It is found that destruction of sites of all periods took place on a large scale, especially in the 19th century, and that this went largely unrecorded, which has not hitherto been fully appreciated or understood. Critical evaluation of the chronology and scale of land improvement is shown to be of particular importance in understanding archaeological distributions of Bronze Age evidence. Areas of archaeological survival of Bronze Age relict landscapes in largely marginal areas are identified and the implications of site densities in these landscapes are examined. The apparently high density of Bronze Age occupation in these marginal areas may be a result of population pressure or social control.

Burial-related evidence is examined in light of the changing burial practices in the late 3rd millennium BC and thereafter. The exotic artefactual assemblage, especially metalwork, in both funerary and non-funerary contexts, is examined to discover possible explanations for its nature.

Typologies of Bronze Age settlements are proposed and their developmental trajectories and relationships are investigated. It is found likely that some at least of Orkney’s numerous broch sites could be the culmination of a multi-period settlement with roots in the second or third millennia BC. It is proposed that excavation of such sites may identify remains of the ‘missing’ high-status sites of the Orcadian Bronze Age.

The chronology, function and distribution of burnt mounds, and their relationship with settlements and funerary sites is examined. It is found that
there is an association between burnt mounds and settlements, and burnt mounds and funerary sites, in Orkney’s relict landscapes, and that this relationship may be applicable to the wider Orkney landscape.

A dearth of excavated and published sites, lack of diagnostic artefact assemblages and concomitant lack of chronological resolution are found to present difficulties in treating ‘the Bronze Age’ as anything other than a unitary period in Orkney. Understanding of Bronze Age Orkney suffers from limited excavation. There are no obvious high-status settlements and an absence of artefact types found contemporarily elsewhere in the British Isles. The current paradigm of the fragmentation of society at the end of the Neolithic inferred from this is examined and the evidence found to be equivocal. Alternative explanations for the apparent discontinuity exhibited at some sites towards the end of the 3rd millennium cal BC are explored. Recommendations for future research are made.
Lay Summary

This thesis addresses the question of the poor archaeological record of the Orcadian Bronze Age. It presents the first comprehensive synthesis of this period, which is overshadowed by its neighbours. Things that affected the recording of archaeological sites in Orkney are investigated. The effects of agricultural improvement on these sites, not previously looked at in Orkney, are important. Many sites were destroyed without being recorded especially in the 19th century.

Understanding when land improvement happened is shown to be of particular importance in understanding areas where Bronze Age sites survive, which are often on poor quality land that has not been used very much for farming in the modern period. The apparently high density of Bronze Age sites on this poorer land may be a result of population pressure.

The way people buried their dead changed from during the late 3rd millennium BC and unusual finds, especially metalwork, from both burials and other locations, are examined.

The types of settlements and houses that were built during the Bronze Age are investigated. Many of Orkney’s brochs may be built on top of older sites, and this could partly explain why there are no obvious high-status sites in the Orcadian Bronze Age.

The date, purpose and distribution of burnt mounds, and their relationship with settlements and burial sites is examined. Burnt mounds and settlements, and burnt mounds and burial sites, may be positioned close to each other in the poorer land where they currently survive, and this may have been the case in the rest of Orkney. There are few excavated Bronze Age sites in Orkney and it is difficult to date the Bronze Age closely as there are not very many radiocarbon dates for excavated sites.

There are no obvious high-status settlements and very few finds of the kinds common in the Bronze Age elsewhere in the British Isles. It is currently
thought that there is a breakdown of society at the end of the Neolithic because of this, but there is evidence both for and against this viewpoint. There may be other reasons why some settlement sites are abandoned at the end of the Neolithic. Recommendations for future research are made.
This thesis is respectfully dedicated to the memories of:

Anne Kirkness Brundle
27th April 1958 – 18th January 2011

and

Professor Magdalena Stefania Midgley
4th November 1952 – 21st July 2014

‘They lived regarded and died regretted’
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Conventions

All radiocarbon dates are quoted at 2 σ unless otherwise stated. Pre-1990 radiocarbon dates have been recalibrated using OxCal online, as have those quoted at 1 σ in the original publication. Errors have been increased on pre-1982 radiocarbon dates as advised by Ashmore (1998). Full details of the uncalibrated dates together with the version of OxCal and the calibration curve used may be found in Appendix 1.

List of Abbreviations

AMS Accelerator Mass Spectometry
ASMS Archaeological Sites and Monuments of Scotland series of surveys
DES Discovery and Excavation in Scotland
EBA Early Bronze Age
GIS Geographical Information System
HER Historic Environment Records
HES Historic Environment Scotland
HS Historic Scotland, the forerunner to HES
LBA Late Bronze Age
MP Member of Parliament
MBA Middle Bronze Age
NMS National Museums Scotland
NMRS National Monuments Record of Scotland
NSA New Statistical Account i.e. 2nd Statistical Account of Scotland
ON  Old Norse
ONB  Object Name Books of the Ordnance Survey
OS  Ordnance Survey
OSA  Old Statistical Account i.e. 1st Statistical Account of Scotland
ORCA  Orkney Research Centre for Archaeology
ORK  Prefix to the chambered tomb numbering system for Orkney used in Davidson & Henshall 1989; Henshall 1963
OSL  Optically Stimulated Luminescence
PTTL  Photo Transferred Luminescence
RCAMS  Royal Commission on the Ancient Monuments of Scotland
RCAHMS  Royal Commission on the Ancient and Historical Monuments of Scotland
ScARF  Scottish Archaeological Research Framework
SMR  Sites and Monuments Record
TL  Thermoluminescence
USF  Upper Stromness Flags
WHS  World Heritage Site
Key to parish abbreviations used in the tables in the appendices.

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<td>CRAB</td>
<td>CROSS AND BURRESS (SANDAY SOUTH)</td>
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<td>EAR</td>
<td>EVIE &amp; RENDALL</td>
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<td>KIRKWALL &amp; ST OLA</td>
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<td>SHAPINSAY</td>
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<td>SORO</td>
<td>SOUTH RONALDSAY (INCLUDES BURRAY)</td>
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<td>WEST</td>
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Chapter 1 Introduction

1.1 Background to the research

There is a perception that Bronze Age Orkney has a poor archaeological record. Compared to other areas of the British Isles, and contrasted in particular to the Orcadian Neolithic, this view initially appears to be justified:

*Compared with the architectural achievements of the fourth and earlier third millennium and those that were to follow in the first millennium, Orkney’s Bronze Age seems a dull time and has certainly not left many monuments at which to marvel* (Ritchie 1995, 95).

The Bronze Age is very much the poor relation in Orkney’s archaeological heritage, overshadowed by the preceding and succeeding periods. The majority of Bronze Age sites that have been surveyed or excavated are funerary in nature (e.g. Ballin Smith 2014; Dalland 1999; Downes forthcoming; Hedges, J. W. 1980; Hedges, M. E. 1977; Chapter 6) and there is little excavation or research literature concerned with non-funerary sites (e.g. Dockrill, Bond et al 2007; Hedges 1975; Toolis 2007a; Section 7.2; Table 7.1). Similarly the Bronze Age lacks syntheses: the most comprehensive previous review of the Orcadian Bronze Age is Øvrevik’s (1985) 32-year-old, 19-page, chapter in Renfrew’s *Prehistory of Orkney*, which, together with a ten-page chapter¹ in *Prehistoric Orkney* (Ritchie 1995, 86-95), remains the most frequently quoted source for the period (e.g. Downes 2005, 28-32; Farrell 2009, 59-67; Wickham-Jones 2006, 90-8 & 2015, 93-102).

The Orcadian Neolithic presents a marked contrast, with major settlement sites that are central to British Neolithic studies e.g. Skara Brae (Childe 1931a; Clarke & Shepherd in prep.), Rinyo (Childe & Grant 1939 & 1947), the Knap of Howar (Ritchie 1983a; Traill & Kirkness 1937) and Barnhouse (Richards 2005a). Orkney’s chambered tombs are equally impressive and have been the subject of much research (e.g. Challands et al 2005; Childe

¹ Entitled ‘A Prehistoric Recession?’
1956; Davidson & Henshall 1989; Renfrew 1979), whilst the henges of the Ring of Brodgar and Stones of Stenness (Renfrew 1979; Richards 2013; Ritchie 1976) are highly visible symbols of the pre-eminent Neolithic. The iconic status of the Orcadian Neolithic was reinforced in 1999, by the inscription of ‘the Heart of Neolithic Orkney’ on the World Heritage Site List and the concomitant focus engendered by its accompanying research agenda\(^2\) (Downes et al 2005; Downes, Gibson et al 2013; UNESCO 1999). As Barclay (2000, 275 & 2001) noted, the ‘luminosity’ of the Orcadian Neolithic ‘exercises a mesmeric effect’. This mesmeric effect is increasing, with the highly publicised ongoing excavation of the ceremonial complex at the Ness of Brodgar (Card et al 2017; Towers et al 2015 & 2017) and recent publications (e.g. Richards & Jones, R. (eds) 2016). The Neolithic inevitably overshadows other periods of Orcadian prehistory, particularly the Bronze Age.

Similarly the Orcadian Iron Age, with its 135 known brochs\(^3\), e.g. Gurness (with its exceptionally complete village: Hedges 1987b) and the remarkable Minehowe shaft (Card et al in prep.; Harrison 2005), is equally impressive in terms of its monument record and continues to attract research and excavation (e.g. Ballin Smith 1994; Carruthers 2015 & 2016; Hedges 1987a, b & c; MacKie 2002; Romankiewicz 2011).

The end of the Neolithic is envisaged as:

\[... \text{a period of social fragmentation and isolation which continues into the Early Bronze Age and is destined to last for the next thousand years} \] (Richards 1998, 531).

Orkney’s Bronze Age has therefore been viewed as something of an anticlimax, especially since the commonest non-funerary Bronze Age sites in Orkney are burnt mounds (e.g. Hedges 1975; Chapter 9), which are ‘individually, among the most boring sites with which a field archaeologist must deal’ (Barber & Russell-White 1990a).

\(^2\) In which the Bronze Age has a six-page summary (Card 2005a, 56-61).

\(^3\) See Appendix 11.
My title comes from a light-hearted lecture given in 2004 by the late Anne Brundle, Curator of Archaeology at the Orkney Museum. After discussing the spectacular Neolithic sites, she memorably declared: ‘The Bronze Age – it rained a lot and nothing much happened – let’s move on!’ So little attention has been paid to the Orcadian Bronze Age that it is difficult to know if this perception of low-key stasis is indeed the case or if it has simply become the accepted paradigm by default. It is the purpose of this thesis to investigate the issue and present a more balanced and nuanced account of the period in Orkney, in order to discover whether this view is valid and to analyse the reasons for it, questions that have not previously been addressed in any depth.

1.2 Definition of the study period

A starting point of c.2200/2150 cal BC is generally accepted for the Bronze Age in the British Isles (e.g. ScARF 2012a, 13-15), although there remains debate about what to call the period between the twenty-fifth and twenty-second centuries BC (e.g. Allen et al 2012, xxv-xxvi; Carlin & Brück 2012; O’Brien 2012). In recent years, a case has been made for the use of the term ‘Chalcolithic’ to distinguish this period when many innovations such as Beakers, metals and single graves were introduced (e.g. Needham 2012; Sheridan 2012a). Shepherd (2012, 164) considered that:

*There was a Scottish Chalcolithic .... It is most clearly expressed in terms of the two principal novelties of the third quarter of the 3rd millennium BC in Scotland ... metalwork and early Beaker graves (with non-funerary Beakers added to the picture).*

In Chalcolithic Orkney these ‘principal novelties’ are largely absent, with a complete lack of copper and a notable dearth of Beakers; the artefactual record of the succeeding Early Bronze Age in Orkney is similarly deficient in comparison with the rest of Britain with in particular a limited metalwork assemblage (Section 6.3.3) and an absence of developed forms of Beaker (Section 6.3.5). Some authors have even suggested that the Neolithic persists
in Orkney until c.2000BC (e.g. Card 2005a, 47; Farrell et al 2014, 232; Griffiths 2016, 254; Lee & Thomas 2012b, 17; Richards et al 2015).

For the purposes of this thesis and in order to facilitate comparisons with other areas of the British Isles I propose to follow the chronology outlined in the ScARF (2012a, 13-15) Chalcolithic and Bronze Age Panel Report:

- Chalcolithic c.2500/2450 – c.2200BC
- Early Bronze Age c.2200 – 1550BC
- Middle Bronze Age c.1550 – 1150BC
- Late Bronze Age c.1150 – 800BC

1.3 Study region

This thesis presents the results of a regional study of the Orcadian Bronze Age, following a tradition of archaeological syntheses within British prehistory, where boundaries are imposed to make sense of a complex environment by identifying regions that exhibit shared salient features. Such study regions may follow political boundaries (e.g. Childe 1935; Cummings & Robinson 2015; Driver 2013; Edwards & Ralston 2003; Evans 2008). Regions have alternatively been defined by significant landscape features such as watersheds, river catchment areas or mountainous terrain (e.g. Bevan 2004; Cockrell 2016; Mullin 2012; Olding 2016; Waddington 1999). Using the County of Orkney satisfies both approaches.

Islands and archipelagos present easily defined study regions, clearly demarcated by their coasts (e.g. Armit 1996; Broodbank 2000; Fleming 2005; Hunter 1996a; Parker Pearson 2012); Evans (1973) proposed that they could readily be used as laboratories to study cultural processes. Debate continues over the treatment of islands as ‘same’ or ‘other’ and the question of their isolation from, or connectedness to, the wider world (e.g. Broodbank 2008; Erlandson 2008; Fitzpatrick & Anderson 2008; Fleming 2008 & 2009; Terrell 2008), with some seeking to emphasise their connections within a wider region (e.g. Rainbird 1999 & 2007; Van de Noort 2006 &
Whilst acknowledging that the sea may act as a highway rather than as a barrier in maritime communities\(^4\) (Section 2.3.2), the core study region for the purposes of this thesis is limited to the islands of Orkney (Figures 1.1 & 1.2). Orkney is separated from Mainland Scotland by the Pentland Firth, whose strong tidal streams present considerable hazards to modern-day shipping (Sutcliff 1975, 169); crossing this stretch of water in prehistory would not have been a routine activity, neither would crossing the 69km of open water between Orkney and Shetland (Section 2.3.2). Although selected comparisons are made beyond the limits of the archipelago in this thesis, restricting the prime study area to Orkney – an archipelago of 70 islands totalling 975 km\(^2\) (Section 2.1) – is clearly justified.

1.4 Aims and objectives

This thesis aims to discover if the Orcadian Bronze Age really was a ‘dull’ time of ‘economic recession’ (Ritchie 1995, 86 & 95) and to develop an explanatory framework for the existence of this perception. It attempts to address related research questions that have previously been identified, and particularly ‘investigates the nature of Bronze Age settlement in Orkney’. This open-ended research question was posed in the *Heart of Neolithic Orkney World Heritage Site Research Agenda* precisely because so little is known of the subject (Downes et al 2005, 128-31). In order to conduct this investigation in a comprehensive manner, aspects of two further research questions from the same agenda are also addressed, namely:

- *Investigation of the nature, date and function of burnt mounds*
- *A review of existing evidence relating to the Late Neolithic – Early Bronze Age in Orkney, together with targeted fieldwork/artefact-based research in order to investigate this poorly understood period.*

I therefore build a wide-ranging synthesis of archaeological evidence relating

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\(^4\) In the same way that in other regions rivers may serve as important waterways to link rather than divide (e.g. Coles 1994; Sherratt 1996, 219-20, fig. 3).
to Bronze Age settlement and society in Orkney,

- initially determining the processes by which the archaeological record in Orkney has been formed;
- to reassess the evidence from excavated settlements, burnt mounds, burials, boundaries and artefacts;
- attempting to identify biases in data collection and distributions that have been introduced and, in particular,
- to discover how this information relates to the recognition and recording of Bronze Age sites of different types (Chapter 3).

The exceptional quality of well-preserved Neolithic and Iron Age sites has led to a failure to comprehend the scale of loss of archaeological sites within the islands. I seek understanding of the mechanisms that led to site survival or destruction in Orkney and therefore conduct the first significant study of the effects of agricultural improvement on the Orcadian landscape and concomitant archaeological survival,

- to permit realistic assessments to be made of the scale of loss, how much survives, and why;
- to consider possibilities for the preferential survival of some types of site in an Orcadian context;
- to discover and evaluate the impacts of historical agricultural practices on the survival and detection of archaeological remains (Chapter 4).

Areas of (exceptional) Bronze Age survival are determined from these data to examine the implications of site densities and settlement patterns in such areas for the rest of the Orcadian landscape, where site losses have been proportionately much more serious (Chapter 5).

I examine and summarise burial-related evidence in light of the changing burial practices in the late 3rd millennium BC and thereafter (Chapter 6).
• I particularly examine the limited artefactual assemblage, especially metalwork, in both funerary and non-funerary contexts, to discover possible explanations for its nature.

• I attempt to discover any indications in the surviving burial record of wealth or social stratification and examine the implications.

The nature of Bronze Age settlement is defined and explored (Chapter 7):

• to investigate the developmental trajectory and chronology of Orcadian house forms;

• to develop – within the constraints of the limited numbers of absolute dates available – an evolutionary explanatory model for architectural changes;

• to examine and evaluate the evidence for the existence of differential status in the settlement record of the Orcadian Bronze Age.

Evidence for the ‘fragmentation’ of society (Richards 1998, 531) at the end of the Neolithic is evaluated and alternative explanations sought (Section 7.3).

• Chronological evidence for site abandonment is considered.

• Possibilities for continuity in the archaeological record are determined and compared with those for discontinuity.

The evidence for Bronze Age boundaries in the landscape and their chronology are critically examined.

• Treb dykes, postulated to have Bronze Age origins (e.g. Lamb 1983a) are also re-evaluated (Chapter 8).

The chronology, nature and function of burnt mounds in Orkney, and the possible relationships of burnt mounds with Bronze Age settlement and funerary sites, are investigated (Chapter 9).
The question of the particular survivability of burnt mounds is considered and evaluated, in order to determine their usefulness (or otherwise) as proxy indicators of destroyed former Bronze Age settlements, as has been suggested elsewhere in the Northern Isles (e.g. Dockrill et al 1998; Hunter 1996a).

I finally aim to determine suitable directions for future research that might address at least some of the issues raised.

1.5 Methodology

The aims and objectives were accomplished via a thorough review of all available published and unpublished archaeological records relating to the period, including grey literature. Particular efforts were made to investigate non-archaeological historical and archival sources that are infrequently considered, such as agricultural records. The archaeological record from Bronze Age Orkney was interrogated to see what, if any, patterns emerged; all forms of surviving archaeological evidence were assessed, including excavation and survey records of settlements, burnt mounds, funerary sites and artefacts.

Site records were evaluated in a desktop assessment, initially interrogating the NMRS and the Orkney SMR, together with the Royal Commission Inventory (RCAMS 1946) and subsequent RCAHMS-sponsored surveys (e.g. Lamb 1980b & 1983b). Other sources consulted included surveys of particular monument categories (e.g. the Orkney Barrows Project: Downes 1997a; Downes & May 2005a & b), surveys conducted primarily for heritage management and coastline monitoring (e.g. Card 1998; Moore & Wilson 1998 & 2004), landscape studies (e.g. Hunter et al 1982; Lee 2012; Moore 2013) and grey literature relating to commercial archaeological fieldwork (e.g. Lawrence 2008; Sharman & Hollinrake 2007); information on otherwise unpublished sites was drawn from sources including Discovery and Excavation in Scotland (e.g. Braby 1996; Card 2014; Downes 1998a). The HERs of other regions were consulted for comparative material where
appropriate (e.g. Archwilio; Coflein).

Historical sources such as the First and Second Statistical Accounts of Scotland were examined for notes regarding early discoveries which are unrecorded elsewhere (e.g. Clouston, W 1927a, 134; Clouston 1845, 55-8) and for insights into the scale and scope of early agricultural improvement (e.g. Barry 1927b, 358-9; Clouston 1845, 61). Agricultural (e.g. HMSO 1948; Pringle 1874; Shirreff 1814; O’Dell 1939) and cartographic (e.g. ONB 1880; Mackenzie 1750) records were then compiled and used to assemble a picture of the pre-improvement landscape of Orkney with particular reference to land use, then to chart the progress of agricultural improvement across the County. Results from this exercise informed subsequent investigations of Bronze Age settlement and other archaeological distribution patterns.

An example of a database record sheet showing the basic data collected for each site is shown in Table 1.1 below; similar levels of basic data were collated for all sites. Site gazetteers, artefact catalogues and distribution maps were compiled for all classes of site and artefacts discussed here and these are contained in the Appendices, together with further information regarding the criteria influencing the inclusion of a particular site and the sources consulted in regard to each case. Site distribution maps were produced from this database, with distributions initially plotted by hand on Ordnance Survey 1:25,000 paper maps and overlays; distances between sites (e.g. Tables 9.1 & 9.5) were subsequently scaled from these maps. These large hardcopy plots were then transferred via Adobe Photoshop to electronic versions downloaded from Edina Digimap. Other cartographic sources (e.g. Mackenzie’s (1750) charts and the six-inch 1st and 2nd edition OS maps) were consulted in paper map format and latterly via high-resolution digital copies and Edina Digimap downloads, which were used to produce some of the

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5 Following supervisorial advice at the commencement of this research in 2007 GIS was not used: many of the sources employed (e.g. Mackenzie 1750, or the 1st and 2nd edition OS maps) were not compatible with GIS (although historic OS maps are now available as GIS downloads via Edina Digimap this is a recent development). Compilation of some of the distribution maps in this thesis would have been less time-consuming via GIS, but it is not considered that this research has been otherwise affected.
illustrations in this thesis (e.g. Figures 4.11, 5.16 & 7.49). An extensive database of radiocarbon dates for Orcadian and other relevant Bronze Age sites was compiled (Appendix 1) and this was used to produce the chronological charts (e.g. Chart 6.1 & 6.2) incorporated in the text.

Site visits and landscape assessments were undertaken selectively along with area walkover surveys. These were aimed particularly at ground-truthing of landscape variables to achieve a proper understanding of geographical features and their interrelationships with the archaeological and historical landscapes. This did not extend to any attempt at a phenomenological approach. Orkney’s major islands were visited, as were parts of the neighbouring regions of Caithness and Shetland, including Fair Isle at various dates between the start of this project in 2007 and 2016.

1.6 Summary

In attempting to determine whether ‘it rained a lot and nothing much happened’ and why this was believed, this thesis has become the first comprehensive synthesis of the Orcadian Bronze Age. It is the first detailed examination of the processes of agricultural improvement in Orkney to identify the impact that these factors had on the archaeological record, examining the scale and nature of the loss of the archaeological landscape over time in detail, in particular the impact on Bronze Age sites. Within the thesis, a development model for Bronze Age domestic architectural forms in Orkney is put forward. It attempts a new and holistic examination of the role of burnt mounds in relationship to settlements and funerary sites and in doing so provides a new perspective on the Orcadian Bronze Age. Key areas for future research are ultimately identified, along with suggestions as to how these might be addressed.
Table 1.1 Example of database entry sheet for Bronze Age funerary sites. (B=barrow; C= cist; Map number refers to distribution maps in Appendix 7)

<table>
<thead>
<tr>
<th>Map No.</th>
<th>NMRS No.</th>
<th>Site Name</th>
<th>Grid Reference</th>
<th>Parish</th>
<th>NMRS Class</th>
<th>No. B</th>
<th>No. C</th>
<th>Notes</th>
<th>Reference if applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>HY20SE19</td>
<td>Hoy Kingie Lang</td>
<td>HY 2725 0053</td>
<td>HOAG</td>
<td>CA, C</td>
<td>1</td>
<td>1</td>
<td>Kerb cairn at 254mOD; Disturbed; N/T\textsuperscript{8} contents</td>
<td>Robertson 2006</td>
</tr>
<tr>
<td>11</td>
<td>HY21NE30</td>
<td>Nistaben</td>
<td>HY 2994 1650</td>
<td>BIHA</td>
<td>C</td>
<td>0</td>
<td>1</td>
<td>2 crouched inhumations; ploughing; reburied</td>
<td>N/A</td>
</tr>
<tr>
<td>26</td>
<td>HY21NW2</td>
<td>South Seatter</td>
<td>HY 2339 1637</td>
<td>SAND</td>
<td>M</td>
<td>1</td>
<td>2</td>
<td>OBP/OK\textsuperscript{9}</td>
<td>N/A</td>
</tr>
<tr>
<td>27</td>
<td>HY21NW5</td>
<td>South Gyran</td>
<td>HY 2425 1543</td>
<td>SAND</td>
<td>B</td>
<td>1</td>
<td>0</td>
<td>Destroyed: many cists removed</td>
<td>ONB 1880, OS1/23/17/153</td>
</tr>
<tr>
<td>28</td>
<td>HY21NW9</td>
<td>Gyron Hill</td>
<td>HY 2410 1574</td>
<td>SAND</td>
<td>B</td>
<td>1</td>
<td>1</td>
<td>Steatite urn; cremation</td>
<td>Watt 1885</td>
</tr>
</tbody>
</table>

\textsuperscript{6} See list of abbreviations for key

\textsuperscript{7} Site classification on Canmore: CA=Cairn; C=Cist; M=Mound; B=Barrow

\textsuperscript{8} No trace

\textsuperscript{9} Site visited as part of the Orkney Barrows Project and confirmed as barrow.
Chapter 2 Climate and environment

2.1 Introduction

Orkney is an archipelago of around 70 islands\(^{10}\) (Figure 1.2) off the north coast of mainland Scotland, of which today only 16 support viable populations. Orkney lies at roughly 59° degrees North\(^{11}\), on the same latitude as Leningrad and the southern tip of Greenland (Berry 1985, 17). The total land area of Orkney is around 975 km\(^2\) (HMSO 1957, 15). The largest island is the Mainland\(^{12}\) and is home to the majority of the 21,349 population (2011 census). A further five islands are inhabited by amongst others, a small community of monks (Papa Stronsay), and single families (e.g. Auskerry). Many of the previously inhabited smaller islands were abandoned in the twentieth century e.g. Faray, an island which had a population of 83 in 1871; the last inhabitants left in 1947 (Leask 1985, 21).

2.1.2 Solid geology

Orkney’s geology consists largely of sedimentary rocks of the Upper and Middle Old Red Sandstone (Mykura 1976, 8-9; Appendix 5). These are mainly comprised of the flagstones of the Middle Old Red Sandstone: the Caithness flagstone and the Upper and Lower Stromness Flagstones (ibid). Easy access to these flagstones has strongly influenced the formation of Orkney’s archaeological record, since it is excellent quality building stone and

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\(^{10}\) No definitive total exists due to disagreement on the exact definition of an island.

\(^{11}\) The islands lie between 58° 41’ N and 59° 24’ N latitude, and between 2° 22’ W and 4° 25’ W longitude (Berry 1985, 17).

\(^{12}\) The Mainland is the name of the largest island of Orkney; it is incorrect to refer to it as either Mainland Orkney or the Orkney Mainland; it should also always be prefixed by the definite article. The boundary between the West and the East Mainland is Kirkwall. Islands to the north of the Mainland are known collectively as the north isles; islands to the south of the Mainland as the south isles. Locally this is subdivided into inner and outer north isles, based on proximity to the Mainland, and linked south isles (i.e. Burray and South Ronaldsay, since 1945 reached via the Churchill barriers). For simplicity’s sake I will refer only to the north and south isles based on their geographical location in relation to the Mainland. Orcadians never refer to the rest of Scotland as the Mainland; to distinguish between the two the term mainland Scotland will be used.
splits easily along the original bedding planes into flat building blocks. Consequently, although in the early Neolithic some houses were timber-built (e.g. Farrell et al 2014; Richards & Jones, A. M. 2016), from the mid-4th millennium BC onwards the building material used overwhelmingly was stone (Figure 2.1). This stone is readily available along the coastlines in most parts of Orkney, where it breaks into building block sized pieces naturally by the action of the sea, and was comparatively easy to quarry in prehistory. There are some exceptions to this, notably in the island of Hoy, comprised of Upper Old Red Sandstone, and Eday, which has the Upper, Middle and Lower Eday Sandstone (Section 5.8). These gritty sandstones, known as freestones, are good building stone only if quarried and cut with steel tools, but were used in Orkney from the twelfth century AD onward, particularly where intricate carvings and mouldings were required (Mykura 1976, 122-3; Figure 2.2). Freestones are not however conducive to prehistoric quarrying or construction. Even when found eroded naturally by the sea they do not break into convenient shapes in the same way as the flagstones. This type of stone is rarely found in prehistoric contexts but, when found, appears to have special significance. Pieces recovered from the Neolithic complex at the Ness of Brodgar, Stenness (Section 7.3.4) were deliberately brought to the site from some distance away and elaborately peck-dressed and decorated (e.g. Towers et al 2015, 17 & 23).

2.1.3 Superficial (drift) geology

Orkney was covered by ice-sheets in the Devensian glaciation, which has generally smoothed and rounded the landscape from the rocky escarpments and scree which previously existed (Mykura 1976, 113-16). The exceptions are Fitty Hill, Westray, and most strikingly in the island of Rousay, where the ice scoured the escarpments leaving a distinct terracing effect. There were local glaciers in Hoy, in the Rackwick valley and the Cuilags (ibid). The Devensian glaciation left behind boulder clay, mostly along the low ground, and exposed in coastal sections from 3 – 10m deep (ibid). Much of this boulder clay is of good enough quality to have been used for pottery making (Mike Copper,
pers. comm.); and was likely used as a resource throughout prehistory. Additionally these boulder clays have recently been shown to contain significant amounts of good quality flint\(^\text{13}\), particularly in the East Mainland and Northern Isles, derived from off-shore chalk (Hugo Anderson-Whymark, pers. comm.). Although it had been assumed that prehistoric flint was largely imported into Orkney, it now appears that the majority was locally sourced (ibid).

Orkney’s soils are principally formed of drifts derived from the flagstones of the Middle Old Red Sandstone (the Thurso and Canisby associations), together with areas of windblown shelly sand (the Fraserburgh association), particularly in Sanday, North Ronaldsay and parts of Westray (Dry & Sinclair 1985, 4-8; Appendix 5). There is also the Dunnet association, derived from the Hoy sandstones, and large areas of peat, including blanket bog in some areas (ibid). The soils mainly consist of podzols, peaty podzols, calcareous and non calcareous gleys, which have been made fertile by cultivation (ibid). In the Bilbster Series of the Thurso association, which covers the West Mainland, Rousay and parts of Westray, total soil depth is usually in excess of 1 metre, although in some areas the soil coverage can be much less (ibid).

2.1.4 Climate

Orkney has a hyper-oceanic environment, described as ‘warm and fairly dry’ below 30m OD, but ‘cool and moist’ above that (Berry 1985, 18-24). The dominant environmental factor in Orkney is the wind: it is rare to have a completely calm day, and Orkney is the third windiest place in the UK\(^\text{14}\). Prevailing winds are mostly westerly to south easterly but rarely from the north east (Figures 2.3 & 2.4). Due to its North Atlantic Oceanic environment Orkney has a high rate of cooling with increase in altitude, as much as 0.8°C per 100m, compared to 0.5 – 0.6°C in less oceanic regions (Berry 2000, 51-59).

\(^{13}\) In addition to the flint sources previously identified in North Ronaldsay and Swona (Wickham-Jones & Collins 1978).

2). This has a marked effect on vegetation, for example heath plants that are found only above 1,000m OD in the Scottish Highlands grow at 100m OD in Orkney (Berry 1985, 53). Vertical cooling and an increased wind chill factor in the exposed hills causes an abrupt decrease in agricultural viability with altitude, such that the lowland/upland division in Orkney lies at approximately 50m OD (Berry 1985, 53 & 2000, 52). There is a narrow temperature range between winter and summer, with average maximum summer temperatures reaching around 16°C and average minimum winter temperatures of around 2°C (Figures 2.5 & 2.6). Average rainfall is around 1,038mm a year (Figure 2.7), whilst sunshine averages around 1,172 hours a year (Figure 2.8). Daylight varies from 18.5 hours at midsummer to just over six hours in midwinter (Figure 2.9). This gives a relatively short growing season for crops of about five to six months, contrasted with the seven to eight months in lowland England (Berry 1985, 20).

2.1.5 Climatic limitations

Due to the brevity of the growing season, Orkney is beyond the viable range for wheat cultivation. Barley however grows to 60°N (Briggs 1978, 268) and so has been the dominant cultivated cereal since the Neolithic (Bond 2007b & d; Dickson 1983; Hinton 2005; Lynch 1983). The change from the naked barley of the Early Neolithic to the hulled barley of the later Neolithic was probably climate related, since hulled barley survives better during storage and would be better adapted to damp Northern Isles conditions (Bond 2007b, 157; Briggs 1978, 394). Even so, Orkney is towards the limit of its range, and, with the vagaries of the Orkney climate, harvest can be uncertain even today. For example the winter of 2014/15 was exceptionally wet, followed by a cold, wet spring, and the wettest May in four decades (Vetterlein 2015). Spring barley was planted four weeks late and subsequently failed in many locations e.g. Westray and Papa Westray whilst many farmers were unable to plant at all; at the same time cattle housed for

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the winter could not be turned out due to lack of grass growth and waterlogged pastures\textsuperscript{16} and the lack of fodder continued to cause major difficulties throughout the year\textsuperscript{17}. There was also unusually high mortality during lambing, both of lambs but also amongst ewes in poor condition\textsuperscript{18}.

Since this crisis occurred in the twenty-first century there were no human deaths due to starvation, however historical records paint a very different picture. There were serious famines in Orkney\textsuperscript{19} in 1634-5, when bitterly cold gales destroyed crops before they ripened: the starving population first ate their seed grain and livestock, then their dogs, and finally scavenged the shore for seaweed (Hume Brown 1904, 284-5 & 659-60). Some fled the islands or threw themselves in the sea in desperation, whilst others died in the fields: one minister and his servant went daily to bury the victims where they had fallen (ibid). It was claimed in a late eighteenth-century account that around 3 – 4000 people died in Orkney in these famines, although this is difficult to verify (Clouston, W 1927b, 286). Similarly the years 1695-99 were a time of nationwide famine in Scotland, known as ‘King William’s ill years’, although the famine started somewhat earlier in the Northern Isles (Cullen 2010; Cullen et al 2006; Low 1927, 153-5; Smith 1984, 40-1).

Prehistoric Orcadians could be expected to have experienced similar kinds of sudden crisis, although they might not have been affected as quickly as historical crofters who had the added burden of rent to pay\textsuperscript{20}. Tenant farmers under such conditions reach an economic crisis before reaching a subsistence crisis (Dodgshon 2005, 325). It is unlikely that short-term crises of this

\textsuperscript{16} Personal observation; Radio Orkney feature broadcast on the 22\textsuperscript{nd} May 2015.
\textsuperscript{17} The Orcadian, 4\textsuperscript{th} June 2015, 28.
\textsuperscript{18} Radio Orkney feature broadcast on the 22\textsuperscript{nd} May 2015.
\textsuperscript{19} Also in Shetland and Caithness.
\textsuperscript{20} Rents were paid in kind – in oats, bere (barley), meal, malt, butter and seal oil—which were stored in Kirkwall before export (despite the local famine conditions) (Hossack 1900, 120 & 127).
nature would recognisably appear in the archaeological record\textsuperscript{21}. This is especially so since there are no particular indications in Orkney’s palaeoenvironmental record of significant climatic events documented elsewhere (Section 2.2.3). Nonetheless it is clear that cereal cultivation must always have been a risky subsistence strategy in Orkney.

2.2 Bronze Age environment: landscapes

2.2.1 Introduction

There are a small number of environmental records available from Orkney that are thought to cover at least part of Bronze Age (Figure 2.10). Few of these records are associated with radiocarbon dates\textsuperscript{22}, while some of those which are available are unreliable (Farrell et al 2014, 233-4). Furthermore Orkney suffers from a lack of suitable sampling sites, together with hiatuses in sediment accumulation at some sites (ibid). The need for a more extensive programme of environmental coring in Orkney to resolve these issues has been highlighted (ibid), but the currently available information is summarised below.

2.2.2 Environmental records from Orkney

During the late 5\textsuperscript{th}/mid-4\textsuperscript{th} millennium BC Orkney’s predominately birch-hazel scrub vegetation, with its grass and herb rich understorey, declined, a change associated with increased human activity (Davidson et al 1976; de la Vega Leinert et al 2000; Keatinge & Dickson 1979; Moar 1969). There is some suggestion that, in sheltered areas at least, there may have been some true deciduous woodland at the beginning of this period with quite a dense canopy that probably included oak (Bunting 1994; de la Vega Leinert et al 2007). Woodland loss appears not to have been completely synchronous across

\textsuperscript{21} Nutritional stress and dietary deficiencies might be detected in human skeletal material (e.g. Lawrence 2012, 81, table 4); linking this to specific climatic/famine events would present considerable difficulties.

\textsuperscript{22} See Appendix 1, Table A1.15.
Orkney (Farrell et al 2014), but by the Bronze Age (at least in the West Mainland, the location of the majority of the records: Figure 2.10) the landscape was already largely an open treeless, heathland environment, but with some relict stands of birch-hazel scrub (Farrell 2009, 217-14 & 295-9; Jones 1979; Keatinge & Dickson 1979). The other islands of Orkney have produced few pollen sequences but these show broad agreement with the West Mainland: birch-hazel scrub/woodland replaced by an open heathland environment (Bunting 1996; Farrell 2009, 351-4; Tisdall et al 2013). At Whaness Burn, Hoy, patches of woodland, including Scots Pine, were present until the early 2nd millennium BC (Farrell 2009, 208-11; Section 7.12.2).

There is localised evidence for agricultural activity including grazing and cereal cultivation at a number of sites e.g. at Hobbister where animals were grazing on the fen in addition to the surrounding areas from the mid-3rd millennium BC onwards (Farrell 2009, 295-8 & 2015, 480; Figure 2.10, no. 7). There is further evidence at Hobbister and a number of other sites including Whaness Burn that the land was managed to improve grazing by burning heather to encourage new growth (Farrell 2009, 208-11; Figure 2.10, no. 23; Section 7.12.2).

At Blows Moss, South Ronaldsay (Figure 2.10, no. 25) grazing was taking place on the fen itself in the Early Bronze Age, but this activity moved to the drier fen edge and surrounding areas in the mid-2nd millennium BC (ibid, 351-4). Interestingly this was not a forced move: there is no indication that the surface of the fen became wetter at this time so as to prohibit grazing (ibid). Rather, it may be that there was a shift towards a more arable based economy, since there is an increase in evidence for barley cultivation from the mid to late 2nd millennium BC (ibid). Despite the evidence at Blows Moss that there was no increase in surface wetness here, it is at this time, in the mid-late 2nd millennium BC, that blanket peat formation took place at sites in Birsay and Harray\(^{23}\) in the West Mainland (Keatinge & Dickson 1979). Prior

\(^{23}\) Glims Moss, Mid Hill, the Burn of Rusht and the Braes of Aglath; see Appendix 1, Table A1.15 for radiocarbon dates.
to peat formation these areas were also being grazed, and here too the heather was controlled by burning to encourage new shoots (ibid, 593).

2.2.3 Bronze Age climate change

There is worldwide evidence for climate change both at the beginning and end of the Bronze Age, c.2250 cal BC and c.850 cal BC, known as the 4.2ka and 2.8ka events (See Appendix 5, Tables A5.15 & 5.16 & references therein). During these climate events, which each lasted for several hundred years, there were severe droughts in North America, Africa, Asia and Southern Europe, whilst Northern Europe experienced periods of wetter and cooler conditions (ibid). In the British Isles within this broad pattern there are regional variations. In addition to the major wet shifts of c.2250 BC and c.850 BC, another significant wet shift at c.1550 – 1500 BC has been recorded at 31 ombrogenous mires in Scotland, Northern England and Ireland (Anderson et al 1998; Barber et al 2003; Charman et al 2006; Hughes et al 2000; Langdon & Barber 2005; Swindles et al 2007a & b; Tipping 1995). These sites also recorded a series of overlapping wet shifts broadly encompassing most of the 2nd millennium BC, indicating that local factors were important. Similarly seven other Scottish sites reflect the 2.8ka and 4.2ka events, but at other times also responded to purely regional variations (Langdon & Barber 2005). Local variations saw some sites enter a wet phase when others were entering a dry phase, with broader regional differences observed between north and south Scotland (ibid). It has been suggested that Scotland saw widespread upland abandonment, particularly towards the end of the 2nd millennium BC, due to climate change (e.g. Burgess 1985, 1989 & 1992). Others have found no evidence to support such a conclusion (e.g. Dark 2006; Tipping 2002; Tipping, Davies et al 2008, 2384-5). The problem remains of relating any or all of these climatic variations to possible effects on the human communities as then reflected in the archaeological record (e.g. Tipping et al 2012).

In Orkney there are as yet no palaeoclimatic reconstructions that take all the climate proxies into account. Many environmental sequences are poorly
dated, which makes it difficult to determine which, if any, climatic factors were influencing responses. Evidence for animals grazing on the surface of the fen at Blows Moss, South Ronaldsay during the Early Bronze Age (Farrell 2009, 352) probably suggests a fairly dry environment. Local variations may be more influential than national trends. It appears that in Orkney grazing activity in marginal areas increased during the 2nd millennium BC, with more intensive arable cultivation focused elsewhere in the landscape (ibid, 391), and this may reflect a shift in activities related to a changed ability to exploit different environments in response to such local changes. Whilst there is some evidence of slightly wetter conditions during the Late Bronze Age, this had no appreciable significant effect on human activity (ibid, 384). At both Hobbister and Whaness Burn there is some evidence for wetter conditions c.1030 – 800 cal BC, which may relate to the 2.8ka event (ibid, 214 & 299). This increased wetness appears to have affected only the bogs themselves and low-lying areas, since grazing continued in the vicinities of both of these sites and also around Blows Moss (ibid, 385-6). Cereal growing continued in the vicinity of both Hobbister and Blows Moss at the same time, suggesting that the wider landscape remained largely unchanged (ibid).

2.2.4 Aeolian erosion

Aeolian erosion and accumulations of blown sand have been a factor affecting soil development in both Neolithic and Bronze Age Orkney (e.g. de la Vega Leinert et al 2000; Tisdall et al 2013). At Mill Bay, Stronsay phases of storminess and sand accumulation over grassy heathland used for grazing were a regular feature, however it was noted that:

_During the Bronze and Early Iron Age on Stronsay rather than climate deterioration leading to land abandonment the response appears to be changes in farming practices with varying levels of grazing intensity used to maximise resources_ (Tisdall et al 2013, 214).

Change in prehistoric farming practices to cope with aeolian erosion is a pattern seen elsewhere in Orkney e.g. Tofts Ness, Sanday (Dockrill, Bond et al 2007; Section 7.3.5); and the Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3); both sites where continued settlement required the
deployment of sophisticated agricultural techniques (Section 8.2). Both of the latter sites were eventually sealed beneath a dune system, where a subsequent cycle of deflation exposed the archaeological remains; dune deflation has recently revealed another area of Bronze Age settlement at Cata Sand, Sanday (Cummings et al 2016; Section 5.5.3).

2.3 Bronze Age environment: seascapes

2.3.1 Introduction

Orkney has been an archipelago since the beginning of the Holocene (Bates, Nayling et al 2012; Shennan & Horton 2002); water transport has been important since the first arrival of settlers in the Mesolithic. The Neolithic ‘farming package’ that flourished in Orkney in the mid-4th millennium BC (e.g. Richards, Downes et al 2016, 230-2; Sheridan & Higham 2006 & 2007) also had to cross the dangerous waters of the Pentland Firth. Most remarkably, the Orkney vole, *Microtus arvalis orcadensis*, was directly imported into Orkney from Europe during a long-distance Neolithic voyage (Martínková et al 2013). It is clear therefore that by the late 3rd millennium BC the inhabitants of Orkney had had ample time to perfect their seafaring skills.

2.3.2 The sea as a highway

Island communities were traditionally linked, rather than separated, by the sea. Sea-faring skills were learnt from an early age in Orkney, with children ‘messing about in boats’, learning at an early stage boat-handling skills that would stand them in good stead in later life (e.g. Towsey 2002, 3-7). This is also true in prehistory, from the Mesolithic onwards:

*The sea was important as a highway which both united and separated different areas and islands and it allowed for wider vistas and a clear sight of other lands* (Hardy & Wickham-Jones 2002).

Maritime links stretched widely. There are noted similarities in the prehistoric coarse stone tool assemblages of St Kilda with those of the Late
Neolithic and Bronze Age assemblages from Orkney and Shetland (Fleming 2009, 139). Similarly there is evidence intermittently throughout the Orcadian Bronze Age for contact with the rest of the British Isles in the form of exotic imports such as amber, gold and jet (e.g. Kirkness 1935; Petrie 1860; Sections 6.3.1 & 6.3.2), Shetland steatite funerary urns and domestic vessels (e.g. Forster 2011; Sharman 2009; Sections 6.3.4 & 7.6.3) and items of copper alloy (e.g. Cursiter 1908; Section 6.3.3): all of these items had to arrive in Orkney by boat. At a more local level, fishing, alongside the other hunter-gatherer resources of the sea and shore, was part of a mixed paleoeconomy (e.g. Dockrill & Bond 2009; Section 8.2). Significant numbers of deep-water fish, likely to have been caught up to 15km offshore, are present at Orkney sites from the Neolithic onwards (e.g. Nicholson 2007a & c; Wheeler 1983; Section 8.2), demonstrating the availability of suitable equipment and considerable skill in both fishing techniques and boat handling among the local population.

2.3.3 Seafaring techniques

Seafaring in the seas around Orkney most likely involved hide boats, which are lightweight, quick and comparatively easy to build, require no formal landing place and handle extremely well in surf (McGrail 2001, 182-3). All the raw materials necessary for their construction – cattle hide or sealskin, seal/walrus oil or other animal fat for waterproofing the hide, enough timber to make a lightweight wooden frame – would have been available in Bronze Age Orkney. Ethnographic examples such as the umiaks of the North Atlantic, powered by paddles, are constructed from green, untreated seal or walrus skins dressed with seal oil and caribou fat, and remain waterproof for four to seven days of continuous immersion (ibid, 416-17; Figure 2.11). They are extremely efficient cargo carriers: a 10.7 – 13.7m long umiak can carry nearly 2 tonnes of cargo yet be easily carried when empty by its crew (ibid). Similarly numerous Scandinavian rock carvings depict probably Bronze Age boats (e.g. Coles 2000 & 2005); a reconstructed hide boat based on one
interpretation of these proved both very seaworthy and capable of carrying a one tonne cargo (Marstrander 1976).

The waters around Orkney and Shetland are notoriously dangerous, with extremely strong tidal flows and currents (e.g. Sutcliff 1975, 76 & 169). Seafaring would have required both courage and a high level of competence including knowledge of the tides, currents and weather patterns. The geography of the islands of Orkney, grouped closely together in two clusters divided by the Mainland (Figure 1.2) promoted such developments:

... the islands form an excellent example of an island nursery – where a favourable configuration of islands in close proximity actively encourages sea travel and communication (Noble 2006, 109).

The Pentland Firth separating Orkney and mainland Scotland is only 11km wide at its narrowest point (Figure 1.1), making line-of-sight navigation possible on a clear day; once across the Pentland Firth the coastline may be followed south or west. Similarly the 69km voyage to Shetland may be accomplished by line-of-sight navigation using Fair Isle as an intermediate marker, although since Orkney’s low-lying islands are not visible from Fair Isle the return journey would require steering relative to Fair Isle which would still be in view behind the vessel.

2.4 Conclusion

Although Orkney, with its geographical and climatic limitations, could be seen as an inherently marginal environment for human endeavour, it is clear from the archaeological record that settlement has flourished here for millennia. This was not accomplished without hard work. Orkney’s soils are now man-made and are fertile only as a result of cultivation and enrichment (Sections 2.1.3 & 8.2). In compensation Orkney has the advantage of a ready

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24 Hints of Caithness contact come from sandstone and ceramic urns at Aucorn (Anderson 1883, 75) and Battle Moss that echo Orkney steatite forms (Sheridan 2007a, 171).

25 Personal observation; but on a clear day in perfect weather the visibility at sea is approximated by the formula: \( D \text{ (km)} = 3.8 \sqrt{H} \) (where \( D \) = visibility distance in km, and \( H \) = the target height in metres (McGrail 1998, 277-8).
supply of good-quality building stone and, it is now known, viable quantities of locally-sourced flint, together with access to the natural resources of the sea and shore (Section 8.2). To a population accustomed to maritime activity the seaways provided links to other areas, perhaps most regularly with Shetland but also further afield (Section 2.2.2): Orkney’s Bronze Age seafarers were clearly quite capable of undertaking voyages across treacherous seas, indicating that this was a people who were at home in their maritime environment.

As noted by Farrell (2009, 110-14 & 393-5), Orkney’s palaeoenvironmental studies are poorly dated with limited coverage of areas apart from the West Mainland (Figure 2.10), but their authors have been unable to detect significant local responses to pan-European climatic events. Although Tipping (2008, 2110) was referring to sites in the northern and upland regions of mainland Scotland and not to Orkney, his conclusion is nonetheless apposite:

Settlement took place in spite of the many contemporary disadvantages and hardships to farmers. This interpretation requires a new paradigm whereby we replace the image of a once benign landscape turned hostile with that of an enduringly harsh environment but one in which people could and very successfully did carve out a place for themselves.
Chapter 3: The formation processes of Orkney’s archaeological record.

3.1 Introduction

This chapter presents an overview of the formation processes behind the archaeological record in Orkney and explores the limitations of that record. This will be followed in Chapter 4 by an overview of the archaeological destruction wrought by agricultural improvement, which leads in Chapter 5 to a review of pockets of archaeological survival and how this relates to the surviving Bronze Age landscape of Orkney.

The main resource for an archaeological enquiry in Orkney (and indeed the rest of Scotland) is the NMRS, accessed online via Canmore\(^26\). A search of ‘archaeology only’ sites in Orkney currently produces 4,457 responses for all periods from prehistoric to industrial monuments. Faced with this wealth of material, it is vitally important to understand the nature of the source(s). Canmore is a valuable tool, but the records retrieved during an online search must be approached with a critical awareness of the origins of the information accessed, for example the Name Books of the Ordnance Survey (Section 3.6.2) or the observations of the Royal Commission Investigators for the County Inventories (e.g. RCAMS 1946; Section 3.7.1). This section summarises and reviews the history of previous approaches to Orkney’s archaeology to show how our current state of knowledge was achieved and the limitations that this history has imposed. This will focus where possible on Bronze Age sites where information is available, but also on sites of other periods where relevant: for example some chambered tombs are remodelled or reused in the Bronze Age (Section 6.2), similarly a number of Orkney’s brochs may be multi-period sites with earlier settlement components (Section 7.15).

\(^26\) https://canmore.org.uk/
3.2 Early literary sources

Orkney features briefly in classical sources in the first century AD (e.g. Salway 1981, 138-49; Stevens 1951) and is subsequently mentioned in a number of chronicles from the sixth to eighth centuries AD (e.g. Anderson 1922, vol. 1, 56-7; Anderson & Anderson 1961, 440-3). There is then literary silence until the twelfth century, when the pre-Norse inhabitants of Orkney are described in mythological terms in the *Historia Norwegia* (Ekrem & Mortenson 2003, 65), and the *Orkneyinga Saga* provides the first written reference to a specific Orkney site, when Earl Harald and his men take shelter inside Maeshowe at Yuletide 1153 (Barnes 1994, 189; Taylor 1938, 310), but this account preserves no record of the contents of the tomb; other prehistoric sites in Orkney are only mentioned obliquely.27

Before the sixteenth century, the history of Britain was largely defined by foundation myths; the first substantial antiquarian work came with Camden’s *Britannia* in 1586 (Parry 2007; Woolf 2007) which features Orkney, but only as a one-page summary of the known historical documentation (Gough 1806, vol 4, 526). To this period belongs the first, brief, account of Orkney’s (Neolithic) antiquities in Jo Ben’s 1592 *Descriptio Insularum Orchadiarum* (Johnston 1907; MacDonald 1936; Mitchell & Clark 1908, 302-24).

Scotland should have had its own equivalent of *Britannia*, when Sir Robert Sibbald received a Royal Commission in 1682 to produce a Scottish Atlas, one volume of which was to have dealt with antiquities (Withers 1996, 48-9). To this end Sibbald sent out requests for detailed information:

*Fail not to take notice of ... any ancient Monuments ... provided they be Real and not Fabulous* (ibid, 67-9).

Sibbald’s Atlas was never completed; however a lengthy contribution intended for the Orkney section was created c.1688 by the Rev. James

27 E.g. the two known Thing sites in Orkney, Tingwall and Dingieshowe, are both on broch mounds (Marwick 1952, 121; Sanmark 2012).
Wallace and subsequently independently published (Wallace 1693; Withers 1996, 56 & 72). This is the first detailed and illustrated account of archaeological discoveries in Orkney (Figure 3.1), also notable for the first use in Orkney of the term ‘Pight’s Houses’ (Small 1883, 29-32) in relation to building ruins, together with the earliest description of Bronze Age cists eroding from both the Links of Skaill (Section 6.3.2) and the Sands of Rothiesholm, Stronsay, where a ‘sepulchral urn’ was also recovered (ibid).

3.3 Antiquaries in the age of enlightenment

Antiquarianism thereafter became a respectable pursuit, with the work of notables such as William Stukeley (Piggott 1985) in the eighteenth century and the formation of the Societies of Antiquaries in both London and Scotland (MacGregor 2007; Pearce 2007; Smellie 1782); the first *Transactions* of the latter included an account of a visit to Orkney (Gordon 1792). Emphasis was very much on the discussion of artefacts presented at meetings (Marsden & Nurse 2007, 95-6) and the acquisition of such was the prime aim of some of the enthusiastic barrow diggers of the period (e.g. Douglas 1793; Smith 1856).

3.3.1 Orkney’s first excavation and survey

Orkney was not exempt from enthusiasm for antiquarian pursuits, and the first record of an Orkney excavation comes from the visit of Sir Joseph Banks in 1772, who, together with the Rev. George Low, Minister of Birsay parish, opened a number of probable Bronze Age burial mounds in an extensive barrow cemetery at Skaill Bay, Sandwick (Low 1776 & 1879, intro; Lysaght 1972 & 1974; Figure 3.2; Section 6.3.2). Low’s more detailed account of Bank’s excavations together with accompanying illustrations were lost before publication (Goudie 1915; Low 1879, intro) and the barrow cemetery has

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28 “The name Piets’-house, or Pights’-house, is indiscriminately applied in Orkney, as in other parts of Scotland, to all remains of buildings of great antiquity” (Petrie 1863, 32). Monteith (1845, 20) used this term in 1633 in Shetland.

29 The urn appears to have been a large composite steatite urn of a type also recovered from Linga Fiold, Sandwick (see Sharman 2009, 44-6).
since been destroyed without further record (Section 4.9). Bank’s party had nonetheless included a skilled surveyor, who made the first maps of both the barrow cemetery at the Links of Skaill and also the main sites of the Brodgar peninsula (Lysaght 1972 & 1974). Low also described a cemetery exposed by aeolian erosion in the Links of Trenabie, Westray; the majority of these remains appear from the grave goods to be Viking, but some features may have been Bronze Age barrows (Goudie 1915, 146-8).

The first attempt at any kind of systematic survey of Orkney antiquities comes from an unlikely source: the first *Statistical Account of Scotland*. Compiled between 1791 – 1794 by Sir John Sinclair, this consisted of the responses to 171 questions addressed to the Ministers of every parish in Scotland (Withrington & Grant 1983, 39-49). Some enquiries were on antiquities, including:

*Are there any barrows, or tumuli? Have any been opened? And what has been found therein?* (ibid).

These questions are well thought out for their time, and if answered diligently would have provided much valuable information. In the event not all Ministers shared Sir John’s enthusiasm for statistical enquiry, and although most of the Orkney responses included an answer to the antiquity questions, these varied considerably in both detail and length. Even the best accounts simply comment on the large numbers of tumuli or Picts’ houses in the district, and mention finds of bones or ashes etc., but locations are vague, and usually cannot be tied to a particular site (e.g. Anon 1927, 10; Izat 1927, 348-9; Watson 1927, 210). Nevertheless, there are useful snippets of information, including for example the only record of a destroyed souterrain in Shapinsay (Barry 1927b, 363-4; HY41NE12). An entry from the Rev. William Clouston of Sandwick, illustrates the level of detail that can be found in the better reports:

*In digging for stones, in one of these tumuli was found an urn shaped like a jar, and of a size sufficient to contain 30 Scotch pints. It*

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30 Known as the Old Statistical Account or OSA.
contained ashes and fragments of bones. The colour on the outside was that of burnt cork, and on the inside grey (Clouston, W 1927a, 134).

This urn is not recorded elsewhere, and although 30 Scotch pints (68 litres) is almost certainly an overestimate, it is a not dissimilar volume to the c.56 litre steatite urn recovered at Linga Fiold, Sandwick\(^{31}\), or the urn described by Wallace (Small 1883, 29-30; Section 3.2.2). This account is also the earliest record of an Orkney tumulus being quarried for building materials and heralds further accounts of the destruction of Bronze Age and other monuments (Section 4.4.6).

3.4 From antiquaries to archaeologists: the nineteenth century

In early nineteenth-century England barrow digging became more methodical, with the work of notables such as Sir Richard Colt Hoare, whose *History of Ancient Wiltshire* set new standards for excavation publication, continued by Thomas Bateman’s *Ten Years Diggings* (Bateman 1861; Colt Hoare 1812 & 1821; Marsden & Nurse 2007). Colt Hoare (1812, 19-23), recognising that there were different designs and construction methods in the sites he examined, attempted to create a monument typology, subdividing his barrows into twelve illustrated categories. This period also saw the publication of the enlarged edition of *Britannia*, which expanded the Orkney entry to six pages (Gough 1806, 526-32) but this is merely a synopsis of material already published elsewhere (e.g. Wallace 1700).

3.4.1 Early nineteenth-century Orkney

There is no Orcadian equivalent of Colt Hoare, and, although it appears that sites were being opened on an ad hoc basis, few records survive of antiquarian work during the first four decades of the new century. Barry’s (1805) *History of the Orkney Islands* is typical of the accounts of the period;

\(^{31}\) Estimated from description in Sharman (2009, 44-6), using the conical frustum formula:

\[
\text{volume} = \frac{1}{3} \pi h (r_1^2 + r_1 r_2 + r_2^2).
\]
in attempting to date the initial settlement of Orkney he was reliant on the extant texts (Section 3.2) and thus put the colonisation of Orkney sometime in the early 1st millennium AD (ibid, 68-77). He described numerous tumuli, probably largely Bronze Age barrows, but in general terms and without precise locations, although his account does convey the ubiquity of such sites in Orkney:

*The numbers found here are considerable; seldom single, but two, or three, or more in the same place; all of a circular form and different in dimensions; placed, without any distinctions of hill or dale, by the sea, or inland ... some [contain] urns with ashes, some stone coffins, in which the bodies have been deposited; and some, naked skeletons* (ibid, 94-5).

It would be fair to say that antiquarian enquiry stagnated in Orkney during the early nineteenth century; there appears to have been little local interest and Orkney seems to have been overlooked by antiquarians from elsewhere at this period, probably due to the logistical difficulties of visiting the islands. Most distinguished visitors were passing through Orkney on their way to somewhere else or as part of a more general tour and did little more than visit major Neolithic sites e.g. Sir Walter Scott in 1814 (Scott 1822, 428 & 1839a). This period saw however the first recorded excavation of what appears to have been a large burnt mound in Sanday (Wood 1826); the published description does not however include a detailed location and all the finds have been lost.

3.4.2 Local interest stirs (briefly)

It was not until 1837, with the foundation of the Orkney Natural History Society, complete with a museum in Stromness, that a local body emerged which took any interest in archaeology. The Rev. Charles Clouston, the first President of the Society, described some of the Society’s excavations:

*Barrows or tumuli are particularly numerous in Sandwick. I believe there are more than one hundred ... Eight of these, situated on the common have been opened in the last year. A minute description of each would be tedious; but a brief account ... must be interesting to the antiquarian* (Clouston 1845, 55).
The excavation descriptions are indeed brief (ibid, 55-8), but it appears likely that the ‘eight on the common’ are the largest barrows of the Linga Field cemetery; four of these were subsequently found to have been subjected to previous excavation (Downes 2005, 251). Interest in excavation and archaeology more generally appears to have waned and although papers were read at Society meetings only a very small selection was published, with few on archaeological topics (e.g. Charleson 1905). Little is known about the activities of Kirkwall’s Antiquarian and Natural History Society, established in 1844, also associated with a museum. It too failed to publish and was defunct by 1858 and the museum contents sold; some items, including steatite and ceramic urns from probable Bronze Age funerary sites in Sanday, were donated to the museum of the Society of Antiquaries of Scotland (Anon 1864a, 15-16; Watters et al 1995, 3).

It is unfortunate that these societies were not active, since Orkney’s agricultural revolution started to gather pace around the time of their foundation (Section 4.4) and massive land-use changes were occurring throughout Orkney, with concomitant destruction of field archaeology. An active local Society could have done much to fill some of the gaps in our knowledge; this role, however, largely fell to just one man, George Petrie (Section 3.5.3).

In the mid-nineteenth century there was a New Statistical Account of Scotland (NSA), which had broadly similar antiquities questions to the OSA. By far the best entry is that for Lady, Sanday in the form of a letter from Dr Wood describing in detail the relict prehistoric landscapes of barrows and settlement mounds at Tofts Ness (Section 5.5.1) and Els Ness (Section 5.5.2), otherwise largely unrecorded (Traill 1845, 134-42). Wood’s pre-1841 letter is also notable for the first use of the Orkney dialect term, now in common archaeological usage, cramp\textsuperscript{32}, in his description of what is clearly an

\textsuperscript{32} Fused glassy material created during the cremation process from a combination of elements used to fuel the pyre, and, whether deliberately or accidentally, often found fused to cremated bone (e.g. Callander 1936; Photos-Jones et al 2007). The word ‘cramp’ appears to derive from the dialect word \textit{kram} or \textit{krama} meaning a collection or heap of small objects,
extensive Bronze Age funerary landscape at Els Ness:

A number of the smaller heaps within the walls are formed of what the country people call cramp ... [it] resembles the refuse from a glass-blowers furnace. It is of a reddish colour, and contains portions of a coarse glass, stones, and sometimes fragments of earthen vessels. The sea-weed, with which the shores abound, must have furnished the fuel. This by long heat would be reduced to kelp, and, by a continuance of the heat, and the admixture of sand and stones, would, in process of time, produce the cramp (Traill 1845, 137).

The majority of the other respondents in the NSA answered antiquarian inquiries more briefly; but even the most minimalist of answers can hold useful information: for example, the NSA provides the only record of a probable souterrain at the Manse, South Ronaldsay (Gerard 1845, 193; ND49SE 13).

3.5 Archaeology emerges from chaos

The mid-nineteenth century saw attempts in the rest of Britain to place all the diggings that were taking place into a wider context and to inform the educated enquirer of nationwide developments in the now respectable discipline of archaeology (e.g. Akerman 1847, v). The Three Age system was published in English in 1849, revolutionising the emerging discipline of archaeology (Rowley-Conwy 2004; Worsaae 1849). The publication of Wilson’s (1851) Archaeology and Prehistoric Annals of Scotland saw the first account of Orkney’s archaeology set within a national context, including descriptions of Orkney’s numerous Bronze Age barrows (e.g. ibid, 44-55). This period saw Orkney join the mainstream of archaeological enquiry, with visiting and resident archaeologists. Competence varied, but there is at least a sense of attempting to impose some kind of order, and increasingly a trend to publish what was found.

such as small clods of earth, pieces of peat etc, with the phrase ‘lyin’ in a krama’ meaning crumbled or crushed (Jakobsen 1985, 459-60).
3.5.1 Lieutenant F. W. L. Thomas

The first detailed publication of Orkney’s archaeological sites comes from Lt Thomas, the officer commanding HM Survey Vessel Woodlark, whose survey of the Brodgar peninsula records a number of sites, particularly barrows, since destroyed or much reduced by agricultural improvement (Thomas 1852). Thomas was the first to attempt a typology of Orkney’s barrows, based on the classification in Akerman33 (1847), and also excavated alongside other notables e.g. George Petrie, James Farrer and the Rev. Charles Clouston, using the officers and crew of his ship as his workforce. Thomas provided in many cases the only report of these excavations, and these are detailed for their time; including Bronze Age features such as barrows at Black Knowe, Rendall and Skae Frue, Sandwick (Thomas 1852, 90-5, 107-10 & 127-34). We also have Thomas to thank for the only illustration of one of Clouston’s barrow excavations, and the only record of a series of sub-peat dykes at Hoxa, South Ronaldsay (ibid, 92-4, plate XV & 122-7; Section 8.4). He also records instances of the destruction of archaeological sites during the course of agricultural improvements, including some that are clearly Bronze Age barrows, and his language again emphasises the ubiquity of such sites:

... a man was actively engaged in opening tumuli, with no antiquarian interest, but with the view of employing the stones thus found to the erection of a farm-stedding [sic]. He had, as usual, turned up the coffins made of slabs of stone, with their accompaniment of burnt bones (ibid, 122).

3.5.2 James Farrer MP

Sadly, although Thomas did maintain his interests in archaeology (Thomas 1866, 1868 & 1890), it was elsewhere, and Orkney was left to suffer the depredations of James Farrer MP, ‘a notorious and sadly unmethodical antiquary’ (Childe 1931a, 4). Farrer spent most of his summer recesses in Orkney, and ‘excavated a considerable number of the Tumuli which abound

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33 He does not appear to have seen a copy of Colt Hoare’s (1812, 19-23) more detailed work, but Akerman uses a similar if abbreviated classification system.
in the islands’ (Petrie 1861, 353). Farrer’s enthusiasm for excavation was not matched by a zeal for publication and his reports are minimalist at best (e.g. Farrer 1857a, b & c & 1861): the fullest accounts of his work are by others (e.g. Petrie 1856 & 1861). There remain an unknown number of sites that were ‘Farrered’ without record other than a passing mention by the Ordnance Survey (Section 3.6.2) some years later e.g. the extensive barrow cemetery at Ravie Hill, Birsay (ONB 1880, OS1/23/1/98, 101 & 102).

3.5.3 George Petrie

That we have any details about Farrer’s excavations (e.g. that at Round Howe, Tankerness: Section 7.12.3) is largely due to the efforts of George Petrie (1818 – 1875). The quality of his work on chambered tombs – both recording Farrer’s many excavations and conducting his own (e.g. Petrie 1856, 1861, 1863 & 1868a) – is detailed enough to enable modern reinterpretation (Davidson & Henshall 1989, 6) and this assessment holds true for his reports on Bronze Age sites, for example his detailed plans of the cist burials and steatite urns discovered at Oram’s Fancy in Stronsay (Petrie 1870; Figures 3.3 and 3.4). A large collection of Petrie’s unpublished work survives in Scotland’s National Record of the Historic Environment, consisting of notebooks, drawings and correspondence along with Sir Henry Dryden’s illustrations (from Petrie’s sketches) of the excavation of many other Orkney sites; publication was abandoned on his death in 1875 (Hedges 1987c, 130-47; MacKie 2002, 242).

Petrie developed the first classification scheme for Orkney’s monuments, sub-dividing the generic ‘Pict’s Houses’ into three subtypes: Brochs; Barrows or Grave Mounds; and Pict’s Houses, which he now realised were chambered tombs (Petrie 1861, 358 & 1927, 20). He still used the term ‘chambered barrow’ fairly interchangeably for chambered tomb, and ‘tumuli’ remains as a generic term for any substantial mound, which had to be opened to confirm its identity.

In summary Petrie’s terminology (as used by him post 1859/1861) relied on
the following definitions:

- A *Tumulus* is a generic mound, which when opened may be either:
  - A *Pict’s House*, which is a
    - *Chambered tomb/ chambered barrow*
  - A *Broch*
  - A *Barrow*, in the modern sense of a Bronze Age burial place

Petrie did not attempt to classify his settlement sites, being content with the generic descriptor ‘ancient dwellings’ (e.g. Petrie 1868a).

Apart from his classification system, Petrie was also acutely aware that destruction on an epic scale was occurring, which only he appears to have cared about (Section 4.4.6). Petrie was struggling to record the evidence that was emerging in isolation, since apart from his collaborations with Farrer he had few contemporaries who engaged in debate on the islands’ archaeology. Petrie’s classification system was neither widely known nor adopted in Orkney at the time, and, having established to his own satisfaction that there were distinct types of sites, not least for the Bronze Age, his frustration at having to rely on second-hand reports by informants who still used ‘Pict’s House’ indiscriminately is apparent (e.g. Petrie 1866c, 216).

### 3.5.4 The late nineteenth century

Excavations continued, with a number of interested lairds investigating sites on their lands; although most sites saw some publication, excavation methods had not greatly improved; emphasis was still on interesting mounds being selected and rapidly cleared to expose the walling and for the retrieval of relics, with a concentration on chambered tombs (e.g. Clouston 1885) and brochs (e.g. Watt 1882). Bronze Age excavation during this period was restricted to the recovery of chance cists and urns disturbed during ploughing etc. (e.g. Traill 1876; Watt 1878 & 1885), but these are few compared to the
scale of agricultural improvements at the time (Section 4.4). This period was however notable for the first recorded finds of Bronze Age metalwork in Orkney, again chance discoveries during peat cutting and agricultural improvement (Cursiter 1887; Section 6.3.3). There was certainly no work in Orkney at this period comparable with some of the great excavations further south (e.g. Pitt Rivers 1887, 1888, 1892 & 1898). The most important development in the late nineteenth century was not primarily archaeological; the Ordnance Survey arrived to make the first accurate maps of the County.

3.6 Mapping the county

Early maps of Orkney dating from the sixteenth to eighteenth centuries are, as might be expected, vague and inaccurate, and were largely attempts at navigational charts for seafarers (e.g. Adair 1682; de Nicolay 1583; Moll 1745). However this changed in 1750 with the publication of Mackenzie’s hydrographic charts. Although again for navigation, they were not only reasonably accurate, but also included ‘distant views of the land’ including the township boundaries, known as hill-dykes (Section 4.2.2). Mackenzie’s (1750) charts thus provide the only County wide record of the pre-improvement landscape, showing township boundaries relatively unchanged from the preceding four centuries (Thomson 1996, xxii), but shortly largely to be swept away by a tsunami of agricultural improvement. They also provide a record of some sections of treb dyke, elements of which may have Bronze Age origins, considered below in Section 8.5.

3.6.1 The Ordnance Survey

1882 saw the publication of the 1st edition County Series six inch (1:10,560) and 25 inch (1:2,500) Ordnance Survey maps. These maps included

34 Large houses, churches and hill-dykes etc. were included as they could be landmarks when seen from the sea (Thomson 1996, xxii): Mackenzie was working in the days of sail when masthead observation would allow visibility further inland than is immediately obvious today.

35 The survey work for these maps took place between 1878 and 1880.
antiquities\textsuperscript{36}, and were annotated with descriptions such as ‘Pict’s House’, ‘Tumuli’ and ‘Cists found’. Helpful though these are (in some case providing the only record of a find or of a subsequently destroyed site), they also had serious consequences for future archaeological survey by introducing biases that have been perpetuated. To fully understand this, the production processes of these maps have to be appreciated.

3.6.2 The Original Name Books

The military engineers who conducted the surveys were not required to record place-names; these were added later by teams of sappers\textsuperscript{37}, sent into the field with tracings of the original surveys and proforma record sheets. In addition to the place-names they were instructed to garner information about local antiquities: these record sheets were subsequently collated and bound for the Ordnance Survey archives as the Original Name Books\textsuperscript{38} (Lamb and Turner 1991, 171-2). To this end they were required to consult three local ‘authorities’, who were often the minister, the laird and the schoolmaster (the three people who were least likely to have grown up in the district). The quality of the results depended on these informants and on the enthusiasm of the individual sapper: some were excellent, others much less so (ibid). A series of biases was thus introduced:

- The inclusion of archaeologically significant mounds relied on the ability of the OS surveyors to distinguish between natural and artificial hummocks.

- The compilers of the Name Books were required to add names for sites that had already been surveyed, not to add new sites to the maps.

- Any additional information on antiquities relied on the enthusiasm of

\textsuperscript{36} At the instigation of the Society of Antiquaries of Scotland (Davidson 1986).

\textsuperscript{37} Ordinary soldiers in the Royal Engineers.

\textsuperscript{38} The full title was the Original Object Name Books, but they are also referred to as the Object Name Books, or simply as the Name Books. The English Name Books were destroyed in an air raid in WWII; the Scottish Name Books had already been transferred to Edinburgh (Lamb & Turner 1991, 171-2).
the individual sapper.

- The three authorities consulted may not have been local to the area and so may have been unaware of historic finds or the significance of a particular site.

Such factors probably explain the fate of Big How(e), close to the Stones of Stenness. In 1848 this was planned and recorded by Thomas (1852, 102 & plate XII) as ‘a very large tumulus’ around 38m in diameter, but it was not included on the 1st edition OS map. The initial omission was subsequently compounded by the lack of local ‘authorities’, since the sources for this area are the Rev. Mr Reid, Finstown, and J. Bruce Esq., Kirkwall\(^3\) (ONB 1880, OS1/23/21/ 20). The only mention of its subsequent fate (and its recognition as a broch) comes from a note in 1923:

_A prominent mound … On levelling it down about 20 years ago it was found to be a broch_ (Cursiter 1923, 52).

That a site as substantial as Big Howe, previously surveyed and published, could be omitted from the 1st edition OS maps raises questions about the non-recognition of other, lesser sites. Certainly some conspicuous Bronze Age sites on the Brodgar peninsula went unrecorded by the Ordnance Survey although they too had been both planned and described in detail by Thomas (1852): neither the ‘two obscure contiguous circles’ (ibid, 98 & plate XII) i.e. the Wasbister Bronze Age double house (Card 2003; Section 7.4) nor the Bookan disc barrow (Thomas 1852, 97 & plate XII) were included in the 1st and 2nd edition OS maps. Similarly burnt mounds (Chapter 9) fared poorly with only 63 recorded at 47 sites (RCAMS 1946, vol. II) throughout Orkney, compared to the 297 burnt mounds at 252 sites now known (Appendix 8).

The Name Books are nevertheless a valuable but underused resource, largely due to the difficulties of accessing them: although now available online, they were until recently only available in person in Edinburgh. It is beyond the

\(^3\) The Stenness entries are generally poor e.g. the Stones of Stenness are merely: ‘Standing Stones, west of church. Applies to three ancient standing stones one of which is fallen. They are situated ¼ of a mile W. of the parish church’ (ONB 1880, OS1/23/21/ 20).
The overall result was a remarkable achievement; the subsequent problems arose when the world of academic archaeology began to treat the material as definitive (Lamb & Turner 1991, 171).

3.7 The early twentieth century

The new century did not immediately see any particular improvement in excavation standards, the emphasis remained on site clearance of interesting mounds (e.g. Charleson 1902, 1903 & 1904). The big advance in this period came with the first substantive survey of Orkney’s archaeology, the work of the Royal Commission on the Ancient Monuments of Scotland.

There are 8,746 entries in the Orkney Name Books, nearly a quarter of a million in all the Scottish Name Books.
3.7.1 Royal Commission Inventory of Orkney

In 1928 the Royal Commission started work on the Orkney and Shetland Inventory, the first systematic attempt to list and describe all 'Ancient and Historical Monuments and Constructions ... from the earliest times to the year 1707' (RCAMS 1946, vol I, ix). This sounds promising but the brief was much more restrictive: to visit all the antiquity sites marked on the 6-inch OS map, but crucially not to look for new sites (Lamb & Turner 1991, 172). This was a major missed opportunity since it perpetuated both the deficiencies and biases introduced by the original OS mapping system and some of the blanks areas on the map unfilled in 1882 survived.

These limitations were compounded by a lack of resources, since despite the massive scale of the task, the majority of the Orkney survey was conducted by a single Investigator, John M. Corrie. He spent three seasons in Orkney from 1928 to 1930, cycling around the County in all weathers, with his maps rolled up in a tube attached to his bicycle frame (ibid; Reynolds 1984, 99-101). Corrie had some assistance in the form of Royal Commission architects G. Watson and C. S. T. Calder; after Corrie’s health started to fail they completed the Orkney survey (ibid).

Corrie went beyond his brief wherever possible, investigating ‘blank’ areas on his own initiative, speaking to local enthusiasts, noting discoveries that were taking place at the time and then excavating on his own account (Corrie 1929 & 1931; ibid). For example the 63 burnt mounds at 47 sites recorded by the OS (Section 3.6.2) were increased to 179 burnt mounds at 140 sites (RCAMS 1946, vol. II). It seems that he would have liked to do much more; reading his notebook entries he comes across as an active and enthusiastic archaeologist. Heroic though Corrie’s survey undoubtedly was, the limitations imposed by the tight timescale and lack of resources meant that there remained gaps in the coverage.

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41 Dr. Raymond Lamb, when County Archaeologist, photocopied Corrie’s notebooks for the Orkney SMR; the originals are in the RCAHMS archive in Edinburgh.
Substantial sites such as brochs and chambered tombs were well-recorded in the *Inventory* (Table 3.1) as were Bronze Age barrows, reflecting both their visibility during the survey for the 1st edition 1882 OS maps and the numbers of such sites already known from early excavations (Sections 3.4.1 & 3.4.2).

<table>
<thead>
<tr>
<th>Site type</th>
<th>RCAMS 1946</th>
<th>Current total</th>
<th>% recorded by RCAMS 1946</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sites with burnt mounds&lt;sup&gt;42&lt;/sup&gt;</td>
<td>140</td>
<td>252</td>
<td>56%</td>
</tr>
<tr>
<td>Individual burnt mounds</td>
<td>179</td>
<td>297</td>
<td>60%</td>
</tr>
<tr>
<td>Sites with barrows</td>
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<td>246</td>
<td>66%</td>
</tr>
<tr>
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<td>75%</td>
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<td>28</td>
<td>18%</td>
</tr>
<tr>
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<td>66</td>
<td>89</td>
<td>74%</td>
</tr>
<tr>
<td>Brochs</td>
<td>124</td>
<td>134</td>
<td>90%</td>
</tr>
</tbody>
</table>

Bronze Age settlements<sup>43</sup> fared badly, which is partly accounted for by the lack of surface traces at eleven of the unrecorded sites, although the remaining twelve sites did have surface traces, and could theoretically have been recorded by the RCAMS Investigator (Table 3.2). The issues here are twofold: the limited resources and scope of the *Inventory* survey and the lack of recognition of site types. Seven of the 12 unrecorded Bronze Age settlements in Table 3.2 are double houses (see Section 7.4) a distinctive Orcadian Bronze Age house type (e.g. Buteux 1997; Downes & Lamb 2000a) but one that was unknown at the time of the *Inventory*; similarly three oval houses went unrecorded, a type that was only recognised following Calder’s (1956) work in Shetland<sup>44</sup>. The double house on Linga Holm was however marked as a tumuli on the 1st edition OS map of 1882 and included as a tumulus.

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<sup>42</sup> 'Sites with' for both burnt mounds and barrows indicates that the site was recorded under one reference in RCAMS 1946; more than one individual burnt mound or barrow may be recorded at a particular site. Burnt mounds are discussed in Chapter 9.

<sup>43</sup> Discussed in Chapter 7; see Appendix 12 for details and distribution maps.

<sup>44</sup> In Shetland Calder’s (1956) survey identified fifty-four oval house sites of which only five featured in the Shetland *Inventory* (RCAMS 1946, vol. III) as cairns or indeterminate sites.
mound in the *Inventory* (RCAMS 1946, vol. II, 335, no. 993); whilst the double house at Bookan Wasbister (unrecorded by the OS: Section 3.6.2) was included as two probable burial cairns (ibid, 263, no. 707).

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Surface Indications</th>
<th>Recorded</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taing of Beeman</td>
<td>Double House</td>
<td>No^45</td>
<td>Lamb 1987, 24, no. 109</td>
</tr>
<tr>
<td>Braebister</td>
<td>Double House</td>
<td>No</td>
<td>Lee 2012</td>
</tr>
<tr>
<td>Hesti Geo</td>
<td>Double House</td>
<td>No</td>
<td>Lamb 1989, 19, no. 53</td>
</tr>
<tr>
<td>Cantick Head</td>
<td>Double House</td>
<td>No</td>
<td>Lamb 1989, 19, no. 52</td>
</tr>
<tr>
<td>Holm of Faray</td>
<td>Double House</td>
<td>No</td>
<td>Lamb 1984, 21, no. 86</td>
</tr>
<tr>
<td>Shelly Knowe</td>
<td>Double House</td>
<td>No</td>
<td>Dockrill, Gater et al 2007</td>
</tr>
<tr>
<td>Auskerry</td>
<td>Double House</td>
<td>No</td>
<td>Lamb 1984, 34, no. 192</td>
</tr>
<tr>
<td>Rotten Loch</td>
<td>Oval house</td>
<td>No</td>
<td>Lamb 1989, 14, no. 17</td>
</tr>
<tr>
<td>Kraa-Tooes</td>
<td>Oval house</td>
<td>No</td>
<td>Downes 1998c</td>
</tr>
<tr>
<td>Linga Holm</td>
<td>Oval house</td>
<td>No</td>
<td>Lamb 1984, 34, no. 212</td>
</tr>
<tr>
<td>Tofts Ness</td>
<td>Mound</td>
<td>No</td>
<td>Dockrill, Bond et al 2007</td>
</tr>
<tr>
<td>Peerie Hill</td>
<td>Roundhouse</td>
<td>No</td>
<td>Moore 2013, 150-5</td>
</tr>
<tr>
<td>Bookan Wasbister</td>
<td>Double House</td>
<td>Yes^46</td>
<td>Card 2003 &amp; 2005a, 61</td>
</tr>
<tr>
<td>St Boniface Church</td>
<td>Eroding mound</td>
<td>Yes</td>
<td>Lowe 1998</td>
</tr>
<tr>
<td>Linga Holm</td>
<td>Double House</td>
<td>Yes^47</td>
<td>Lamb 1984, 34, no. 215</td>
</tr>
<tr>
<td>Round Howe</td>
<td>Known from report</td>
<td>Yes</td>
<td>Murray 2003</td>
</tr>
<tr>
<td>Berstness</td>
<td>Many mounds</td>
<td>Yes^48</td>
<td>Moore &amp; Wilson 2008a &amp; 2009a</td>
</tr>
</tbody>
</table>

The limitations of the *Inventory* survey was compounded by heavy-handed editing for publication after Corrie’s death in 1938, which saw many of his descriptions shortened, notably those of the burnt mounds, which Corrie had recorded in detail, but which were reduced to mere lists of locations (Lamb & Turner 1991, 172), whilst one pertinent monument category – treb dykes

^45 There are several other mounds in this area, one of which was recorded (RCAMS 1946, vol. II, 245, no. 635) but the double house was not.

^46 Recorded as two probable burial cairns (RCAMS 1946, Vol. II, 263, no.707).

^47 Recorded as a mound (RCAMS 1946, vol. II, 335, no. 993).

^48 A number of mounds were recorded in this area (RCAMS 1946, vol. II, 357, nos. 1049 & 1050): classification as to type and period has only been possible on excavation (e.g. Moore & Wilson 2008a & 2009a).
Corrie’s use of local informants added depth to some of his descriptions; but limitations were caused by the passage of time. The sappers who compiled the Name Books in 1880 had spoken to the farmers who had made the initial discoveries or destroyed the mounds reported during ‘improvements’, or at least to their sons. Corrie half a century later was a further generation down the line, and information had been lost in the meantime. This is illustrated by the Name Book description of the 1866 excavation of the Knowe of Redland (Section 3.6.2), where information had previously been provided by three local farmers; by the time of Corrie’s visit in 1928 (RCAMS 1946, vol. II, 327, no. 942) they were all dead.

3.7.2 The Orkney Antiquarian Society

With the formation of the Orkney Antiquarian Society in 1922 Orkney for the first time theoretically at least had a body concerned with the antiquities of the whole County, although the majority of papers in the Society’s Proceedings relate to historical rather than archaeological research. There was also a considerable location bias in the published reports, in favour of the Mainland parishes (Figure 3.5) that were within easy reach of the few Society members who were interested in archaeology, which consequently led to uneven recording; only one primary report came from any of the other islands (Cursiter 1930). A number of Bronze Age cist burials and urns disturbed during ploughing were however recorded e.g. at Blows, Deerness (Marwick 1929a & c; Figure 3.6); Backakelday, Holm (Marwick 1928a; Figure 3.7) Lochside, Stenness (Greig 1931; Section 4.5.2) and Hundatown, Harray (Kirkness 1927), together with the peat-cutting find of a plate from a jet necklace (Kirkness 1935).

Some of these finds reached a wider audience, with publication in the Proceedings of the Society of Antiquaries of Scotland in addition to the
Society’s own *Proceedings* e.g. another chance Bronze Age cist find at Castle, Rendall (Kirkness 1925a & b).

Marwick (1923a, 1924b, 1925a & 1927b) produced a series of papers on the antiquities of the North Isles, including much locally obtained information; whilst Fraser (1923, 1924, 1925, 1926, 1927, 1928 & 1929) did the same for some of the Mainland parishes. There are gaps in the coverage here also; Fraser, a native of Harray, examined only the West Mainland parishes that share a boundary with Harray; whilst Marwick’s coverage of the North Isles excluded Eday, Westray and Shapinsay. Few members undertook active fieldwork but Robert Rendall for example conducted field walking over several years, collecting flints and pottery around Wideford Hill (Rendall 1931 & 1934a); a Neolithic site was subsequently located using his records (Richards & Jones, A. M. 2016, 17-18). The Royal Commission were working in Orkney at the same time, and members of the Society were consulted by Corrie in his search for local information (RCAMS 1946, vol I, xv). The Society was short-lived however, and was formally wound up in 1941.

3.7.3 H.M. Ministry of Public Buildings and Works

The inter-war years saw major archaeological sites being taken into Guardianship by the Commissioners of H. M. Works Department. This was a somewhat mixed blessing, since their prime aim was to clear and conserve sites for public display. Some sites fared better than others: Skara Brae for example had the benefit of excavation under archaeological supervision followed by prompt publication (Childe 1931a). In marked contrast the Brough of Birsay and the Broch of Gurness were both cleared and conserved for public display with little or no formal recording of the process (Hedges 1987b, 1-14; Hunter 1986, 17-18).

Other major excavation works around this period included prehistoric sites in Rousay, where the laird, Walter Grant, was an enthusiastic excavator who collaborated both with J. G. Callander, Director of the National Museum of Antiquities of Scotland e.g. at Midhowe (Callander & Grant 1934a & b), and
with V. G. Childe at the Neolithic settlement of Rinyo (Childe & Grant 1939 & 1947). Grant’s excavations also included some of the many Bronze Age barrows on his estate (e.g. Grant 1933a & 1937), chance cist finds elsewhere in Orkney (e.g. Grant 1933b) and an unpublished burnt mound (Reynolds & Ritchie 1985; Figure 3.8).

Other major excavations of the period were Calder’s work in Eday and the Calf of Eday, where, with the co-operation of the local laird, Major Harry Hebden, and the support of the Society of Antiquaries of Scotland, he excavated four chambered tombs and several other mounds (Calder 1937, 1938 & 1939).

The results in this period were however uneven; major sites were well-excavated for the time and promptly published; simultaneously sites were cleared for public display without record. There remained no established mechanism for recording or excavating sites that were being destroyed in the course of agricultural work, beyond the serendipitous efforts of private individuals (e.g. Craw 1931; Grant 1939b). The Neolithic and Iron Age sites conserved for public display during this period remain iconic, but none of the major excavated sites were Bronze Age, beginning the process of the overshadowing of the Orcadian Bronze Age by the more illustrious preceding and succeeding periods.

3.8 The post Second World War era

The Second World War had a substantial effect, as archaeological excavations were halted, and a number of sites demolished without record to make way for major airfields and military camps (see Section 4.5.3). The OS Archaeology Division expanded after the war and, for the revision of the OS maps, began a programme of resurveying all known antiquities, including recording sites from aerial photographs, research and field reconnaissance in advance of the survey. A Scottish section based in Edinburgh was added in 1958, which worked closely with the Royal Commission (Phillips 1980). The surveyors were in Orkney in the 1960s, however their brief was only to
resurvey sites that had already been included in the 1st edition maps, or had come to light since then, not to actively look for new sites; although extra sites that came to their notice as part of this process were included (Lamb & Turner 1991, 173). Thus the biases that characterised the original survey for the 1882 1st edition maps (Section 3.6.2) were once again reinforced rather than weakened.

The 1960s saw the beginning of what was to become a new trend in Orkney, the (largely university led) research excavation. The first of these projects were the excavations at Skaill, Deerness between 1963 and 1981; unfortunately after the excavator’s death it was found that the surviving site records were minimal (Buteux 1997a). After this shaky start things improved, with major excavations from the 1970s onwards (e.g. Dockrill, Bond et al 2007; Hunter et al 2007a; Renfrew 1979; Richards 2005a).

The establishment of the Tankerness House (now the Orkney) Museum in 1968 meant that Orkney finally had a repository for all these newly excavated finds; although there was still no mechanism for dealing with chance discoveries. An ad hoc group of local enthusiasts attended chance cist finds and removed the contents; some of which were later published in summary (Hedges 1980). Archaeology in Orkney took another major step forward in 1978 with the appointment of the first County Archaeologist and the establishment of the Orkney SMR, and for the first time there was a locally-based authority to whom archaeological discoveries could be reported.

3.8.1 A revised Orkney Inventory?

There has never been a complete formal update to the original 1920s – 30s survey work of the Royal Commission (RCAMS 1946; Section 3.7.1), rather there has been a piecemeal approach. Some of the smaller islands were surveyed by a team from the University of Bradford (e.g. Hunter et al 1982 & 1984; Hunter & Dockrill 1982), whilst the new County Archaeologist initiated a programme of detailed survey work to update the newly established Orkney SMR, resulting in the publication of six new area surveys in the ASMS series.
(Lamb 1980b, 1982, 1983b, 1984, 1987 & 1989). These surveys included the three most completely agriculturally improved landscapes in Orkney (Table 4.3): Shapinsay (96.5% improved), Sanday (94% improved) and the East Mainland (93.5% improved). Despite this high level of improvement and concomitant destruction of sites (discussed in Chapter 4), in all of these areas previously unrecorded prehistoric sites were discovered: 16 in Shapinsay (Lamb 1987); 30 in the East Mainland parishes of St Andrews & Deerness (ibid; Steedman 1986); and most remarkably 63 in Sanday (Lamb 1980b) plus an entire relict landscape of over 300 mounds at Tofts Ness, including burnt mounds and Bronze Age settlement sites (Section 5.5.1). Eight Bronze Age double and oval houses (Chapter 7) were identified for the first time as a result of the ASMS surveys (e.g. Lamb 1982 & 1989; Appendix 12, Table A12.2); but the major gap in these later surveys is that there was no coverage of the majority of the Mainland, apart from St Andrews and Deerness, or the islands of Flotta, Burray and South Ronaldsay.

Archaeological survey in Orkney since this date has continued to be a random affair, dependant on the source of the project funding rather than any overall strategy. These surveys have ranged from targeting coastal erosion zones (e.g. Moore & Wilson 1997a & 1999a; Section 4.7); identifying sites as a tourism resource (e.g. Moore & Wilson 2004); as part of a land management scheme (e.g. Card 1998 & 1999a); in advance of commercial development (e.g. Card & Gee 2014; Card & Reay 2014; Lynn 2012a) or, increasingly, community archaeology and undergraduate training projects (e.g. Lee 2012; Lee et al 2014). There has also, since the granting of World Heritage Site status to the Heart of Neolithic Orkney in 1999, been a series of geophysical surveys of the sites and their inner buffer zones, which has added to the list of known (but as yet unexcavated) sites (e.g. OCGU 2008 & 2009; Ovenden et al 2009).

Site-specific surveys have also taken place, most notably for the Bronze Age the Orkney Barrows Project (Downes 1997a), intended to inform the future management strategy of such sites; the emphasis here was however on re-surveying known sites rather than seeking out those previously unrecorded (Downes 2005, 47).
That there is much still to be discovered is clear from the new Bronze Age sites recorded by a few examples of small-scale walkover surveys e.g. three burnt mounds at Newark Bay, South Ronaldsay (Lawrence 2008); a burnt mound and several possible prehistoric mounds at Nether Mousland, Stromness (Lee et al 2014); and a double house and three burnt mounds at Braebuster, Hoy (Lee 2012). All of these are in areas that are ‘blanks’ on the 1st edition OS maps (Section 3.6.2), and so have effectively been ignored by all subsequent surveys.

3.9 Discussion: research implications

In summary, the main themes specific to the development of Orkney’s archaeological record are:

Pre-sixteenth century
- Passing unreliable mentions in classical sources, Norse Sagas and Norwegian histories

Sixteenth century:
- Camden’s Britannia: the first brief account of Orkney.
- Jo Ben’s Descriptio: the first to mention archaeological sites.

Late seventeenth century:
- Wallace’s Description: first to describe Bronze Age burials amongst other sites.

Eighteenth century:
- Mackenzie’s 1750 charts: the first fairly accurate map of the County importantly showing land divisions.
- The first recorded ‘formal’ excavation of a barrow cemetery.
• George Low’s accounts of antiquities and first publication of an Orkney site in a learned journal.

• The first limited antiquity survey in the Old Statistical Account.

**Early-mid nineteenth century:**

• Barry’s *History*: general mentions of numerous Bronze Age barrows but without locational details.

• Limited outside interest apart from occasional tours.

• Local Natural History Societies formed but interest in archaeology appears short lived; no real attempt to develop excavation technique or classification.

• The New Statistical Account provides some reports of excavation unrecorded elsewhere.

**Mid nineteenth century onwards:**

• Lt Thomas completes the first detailed survey and description of Orkney's antiquities and attempts a barrow typology.

• Many more excavations but limited publication.

• Emphasis on clearing sites and recovering relics with little finesse.

• Petrie establishes his classification system.

• Major step forward with the detailed mapping of the Ordnance Survey, the first antiquity survey to attempt total coverage.

**Early-mid twentieth century**

• Local enthusiasm briefly grows with the short-lived Orkney Antiquarian Society.
• Chance finds recorded on an ad hoc basis.

• Work of the Royal Commission for the *Inventory*.

• Ministry of Works activities preparing sites for display, but no Bronze Age sites were included.

• The first professionally supervised excavations.

• Increasing publication and specialist reports.

**Post Second World War**

• Establishment of County Museum.

• Research excavations.

• Ad hoc reporting gives way to a County Archaeologist.

• Orkney SMR established.

• Some updating of the RCAMS 1946 *Inventory* but not universally.

• Selective field surveys.

The somewhat chequered history of excavation and survey in Orkney has to be borne in mind when considering site distributions. Although later surveys filled many gaps (Section 3.8), the fact remains that around 50% of Orkney, comprising the entire West Mainland, the East Mainland parish of Holm, and the islands of Flotta, Burray and South Ronaldsay (Figure 3.5), has not been archaeologically surveyed since the compilation of the Orkney *Inventory* (RCAMS 1946), the limitations of which (Section 3.7.1) in turn perpetuated many of the omissions of the original surveys for the 1st edition six-inch OS maps of 1882 (Section 3.6). All of these surveys took place against a

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49 Rapid coastal zone assessments have been carried out in some of these areas, but these were limited to a 50 – 100m strip adjacent to the coast edge including the foreshore (Moore & Wilson 1997a & 1998).
background of agricultural improvement and unrecorded destruction, the implications and scale of which are discussed in Chapter 4.

Biases can be created by a number of factors apart from survey inconsistencies, including unrecorded destruction of sites and the varying research aims of many of the surveys conducted. Other factors may also come into play such as the differential destruction of sites in the areas of better agricultural land, or the deliberate destruction of a particular type of site for building material (Section 4.4.6). Until the appointment of a County Archaeologist in 1978, there was no local body which consistently recorded the destruction of Orkney’s archaeology, and such records as do exist were gathered on an idiosyncratic basis. There was only periodically and for short lengths of time a local society that took an interest in such matters. It is only when comparing the scanty records of chance finds (as opposed to deliberate mound investigations) to, for example, Petrie’s accounts of sites being destroyed without record (Section 4.9) that it becomes clear that a significant number of sites have indeed been lost. These factors will be discussed in Chapter 4.

Further biases have been introduced by the selection of sites for excavation during the nineteenth century. Mound opening was the order of the day, and the bigger the better:

*Mr Farrer expressed a desire to open all the larger tumuli in the vicinity of the circle of standing stones ... Mr. Balfour ... suggested that a large tumulus ... by the name of Maes-how ... should be explored* (Petrie 1861, 353).

Since the biggest and most obvious mounds are brochs and chambered tombs, these are the sites that were most often targeted. From a modern standpoint, limited though some of the early records are, tombs and brochs have the advantage of being easily recognisable. For example, even though Barry (Section 3.4.1) did not realise at Quanterness that he was excavating a chambered tomb, his plan (Figure 3.9) makes its identity instantly obvious to modern eyes. Similarly brochs were recognised by antiquarians, and the finds were ‘interesting’ enough to be illustrated, or donated to the Society of
Antiquaries. Building on such antiquarian excavations, brochs and tombs have continued to be a subject of intense study, not just in Orkney but throughout Scotland; aided by the fact that it is often possible to identify these sites from surface appearance even when unexcavated (e.g. Davidson & Henshall 1989; Henshall 1963 & 1972; MacKie 2002 & 2007). Many prehistoric settlement sites however present as amorphous mounds with some structural stonework and could belong any prehistoric period (e.g. Lamb 1984, 33, nos. 188, 189 & 190; Section 5.4).

What must be strongly suspected throughout Orkney is that presence/absence of a site in a particular area has much more to do with differential survival, preferential excavation and recognition and the presence/absence of a detailed recent survey, rather than a true distribution pattern. It is impossible to state categorically that the current distribution pattern is a genuine reflection of the original distribution. It certainly cannot automatically be assumed that the site distributions on Canmore are a true reflection of the original occurrence of any site. The question of differential survival and its effect on distribution maps has been highlighted elsewhere (e.g. Halliday 2011; Stevenson 1975), however the issue has not been satisfactorily examined in Orkney. This will be addressed in Chapters 4 and 5, by an investigation of the scale of the unrecorded destruction of the archaeological record and an examination of areas with the potential for archaeological survival.
Chapter 4: Destruction without record

4.1 Introduction

Our perceptions of Orkney’s archaeological remains are skewed by an implicit assumption that present distribution is a reasonably accurate reflection of past distribution. Faced with the excellent preservation typical of Orcadian sites, which can be a little overwhelming to archaeologists based in less favoured areas of the UK, it is an assumption that is too easily made. Destruction from coastal erosion is an obvious threat (e.g. Gibson 2012; Section 4.7). The issue of the deliberate damage done to the Orcadian landscape by man, particularly in the last 200 years, is however rarely considered in the archaeological literature. Some notable exceptions discuss survival issues specifically relevant to Orkney’s Neolithic tombs (e.g. Davidson & Henshall 1989, 14-15; Fraser 1983, 235-6; Renfrew 1973, 132-7) but usually the survival question is given little consideration, ignored, or misunderstood, perhaps due to ignorance of the complex mechanisms involved (e.g. Hedges 1984a, 11-14; Land Use Consultants 1998, 67; Noble 2006, 104; Phillips 2003; Woodman 2000).

Some archaeological destruction has been caused by extraneous factors, such as Orkney’s recurrent role as a major wartime base (Section 4.5.3). There have also been documented episodes of wanton destruction (Sections 4.7 & 4.8.2). Undoubtedly the major historical factor in the unrecorded destruction of Orkney’s sites has been agricultural improvement. It has been noted that agricultural destruction is a major factor:

In the lowland zone – in effect the present day agricultural heartlands of the country – centuries of intensive farming have resulted in the reduction or obliteration of most of the upstanding archaeological monuments of the Bronze Age (Cowie & Shepherd 2003, 151).

The implications of this observation have never been addressed in Orkney, because archaeologists are accustomed to thinking of agricultural destruction
in terms of intensive ploughing necessary for arable cultivation. The majority of farmland in Orkney is however improved pasture used for grazing livestock, or to produce silage for winter fodder. The limited arable acreage consists mainly of barley grown as a fodder crop. Although it is acknowledged that there is ongoing damage caused by ploughing to archaeological sites, particularly barrows (e.g. Downes 1997a), implicitly the image of green fields and grazing cattle gives the impression of an undisturbed landscape. There is no such thing as natural pasture in these islands at the present day. Orkney’s grasslands are entirely manmade. The formation processes that the land underwent to go from unimproved heath to improved grassland are not fully appreciated by archaeologists. The stark contrast shown in Figure 4.1 between the improved and unimproved land on Wideford Hill highlights this clearly. This chapter examines in detail for the first time the historical factors that have influenced the formation of the modern Orcadian landscape. The techniques, timing and scale of agricultural improvements and their effects on archaeological survival are highlighted.

4.2 Orkney 1750 – 1830: an agricultural backwater

4.2.1 Introduction

In the rest of Scotland the first stirrings of agricultural improvement were felt soon after the Union of the Parliaments in 1707. Amongst the first Scottish improvers were MPs, who had observed English agriculture whilst travelling to Westminster and applied the techniques to their own estates (Symon 1959, 106-18). The pace of improvements gathered speed throughout the eighteenth century, with new crops introduced (notably turnips), new methods, agricultural publications and the formation of Societies of Improvers (ibid). Sir John Sinclair\(^{50}\) MP campaigned successfully in 1793 for the establishment of a Board of Agriculture and became its first President (ibid, 142). He instigated a nationwide county by county agricultural survey,

\(^{50}\) The same Sir John Sinclair as was responsible for the *Old Statistical Account* (OSA) (Section 3.3.1).
in which nearly everywhere in the UK provided impressive evidence of the pace of improvement (ibid).

4.2.2 Hill-dykes and commons

Orkney was an exception to this improving tendency. The ‘backwardness’ of Orcadian agriculture was thoroughly damned in the 1814 Board of Agriculture report, which gives us a description of an agricultural system little changed from medieval times:

_The arable and waste lands are divided from each other by what is called here a hill-dike ... Such fences are common through most of the islands, and are built of turf. They crumble down in the winter, are repaired again when the corn begins to rise, and all the proprietors, or their tenants, are compelled ... to repair and keep up a part of the hill-dike, proportioned to the extent of their farms or properties ... Very few inclosures have been made upon the infield or cultivated coast-side land, such frequently lying in run-rig and subject to common pasturage during the winter_ (Shirreff 1814, 55-6).

Shirreff was describing the traditional Orkney system of ‘townships’ _comprised of infield arable with some better quality pasture around the steadings, separated from the common grazing by a hill-dyke during the growing season. After harvest the ‘grinds’ (ON gate) in the dykes would be opened and the animals allowed to forage over the infield land throughout the winter (Fenton 1978, 89; Thomson 2001, 316–7). This system had been subject to legal enforcement since the sixteenth century and had probably been in use much longer. The first written reference to a hill-dyke comes from 1519, whilst an act of 1614 specifies the fines applicable for any breach of the hill-dyke regulations (Barry 1805, 459–60; Clouston 1914, 92–4, 1919 & 1925; Leith 1927). Fortuitously these dykes were of a sufficient scale and

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51 The land within the hill-dyke was allocated by a complex system where an individual farm would have of rigs of land scattered throughout the township (known as rig and rendall or runrig), with rights to the common grazing outside the hill-dyke (see Clouston 1919).

52 In Orkney ‘hill’ has two meanings: the first is the same as in common English usage, but it is also a generic term for rough uncultivated land, whatever the elevation. The expression ‘taken out of the hill’ means improving the land by ploughing/dRAINING/fencing etc. Land need not be on a physical hill. The ‘hill-dyke’ does not therefore imply an upland location for this type of land division.
distinctive enough to feature as navigational aids in Mackenzie’s (1750) charts, and these give us an invaluable picture of the pre-improvement Orkney landscape. There were some areas of enclosed and improved land, but these were the exception: the hill-dykes shown on Mackenzie’s (1750) chart define broadly the same township areas that appeared in the 1492 Rental (Thomson 1996, xxii). These township lands occupied prime positions and had been in cultivation for centuries, parts of them for millennia (Section 7.15). Inside the old township boundaries are therefore those areas where archaeological destruction occurred generally earliest and, since records are limited prior to the mid-late nineteenth century (Sections 3.2–3.4), will have gone unrecorded.

4.2.3 The implements of agriculture

The implements of agriculture in the eighteenth century had similarly been unchanged for centuries. In particular, the Orkney single-stilted plough was outdated compared to the ploughs that were being used elsewhere in the late eighteenth century. It was so light and ineffectual that it turned a furrow only three inches deep, and could be picked up and carried under the ploughman’s arm (Alison 1927, 21; Liddell 1927, 76). The Orkney harrow was similarly outdated and still had wooden teeth (ibid). The situation was neatly summarised:

_The implements used in carrying on the husbandry of Orkney are neither numerous nor of much importance_ (Shirreff 1814, 52).

It might be thought that little in the way of archaeological damage could be done with such implements, illustrated in Figure 4.2 alongside the Orkney spade. In fact it was the spade that was responsible for the most damage, and that not necessarily inside the hill-dykes.

4.2.4 The scarified turf: pre-improvement destruction

It might be considered that the stability of the boundary between infield and

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53 See Table 4.3 below and associated Figures referred to therein.
outfield through time would protect surviving archaeological remains on the uncultivated common beyond the hill-dykes, but this is not the case. The commons were a valuable resource to manure the infield:

_This practice of paring ... the surface of grass and heath grounds in a state of common ... has had an effect so destructive and extensive, as hardly to be believed without being seen ... tracts of valuable green sward ... have had their surface peeled off and carried away, leaving a space almost without soil or vegetation of any kind_ (Shirreff 1814, 100-101).

This is not an aspect of pre-improvement agriculture that receives much attention. That this description is not an exaggeration is corroborated by both Sir Walter Scott during his visit to Orkney in 1814 (Scott 1839a, 275) and an almost identical account of conditions at the Ring of Brodgar nearly forty years later:

_It must be observed that not only has the peat or turf been cut for fuel, but every layer of soil has been removed, as fast as it has formed, to serve as manure for the infield ... a barren and desolate aspect ... is produced by the paring of soil from the outfield, that is from all the land lying without the inclosures_, and the Ring of Brogar [sic] has had no sanctity with these barbarous depredators, _as the broken and scarified turf will witness_ (Thomas 1852, 103).

That this practice would have detrimental effects on archaeological sites is obvious, but quantifying these effects is harder. They would have been worse close to the townships. Shirreff (1814, 100) noted that the commons nearest the dykes were ‘pillaged first’. Archaeological targets for such treatment would have included rich prehistoric midden and midden-enhanced soils associated with settlement sites (Section 7.1). Whilst we can assume that damage was done at an early date to archaeological sites we lack explicit accounts from that period. Reports from 1880 show however that this practice continued through the nineteenth century:

ONB 1880, OS1/23/1/155 Knowe of Brenda (HY22SE 40): _A portion of this object has been removed for the purpose of top-dressing land_.

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54 Thomas uses the term inclosures for the township hill-dyke.
ONB 1880, OS1/23/17/25 Swartland (HY22SE1): The greatest part of it has been carried away recently for top dressing land.

Land was still bearing the scars of the earlier use of this practice in 1874, when areas that were totally devoid of soil were brought into cultivation by the creation of new soils:

In some parts the surface soil had been so completely carried off ... to restore which Mr. Scarth formed large compost heaps of black bog moss, mixed with quicklime, which, after being repeatedly turned over, were applied to the pared parts of the land as a thick top-dressing (Pringle 1874, 50).

Damage could be done to barrows, and, more significantly, to their associated cremation cemeteries (Section 6.1.2). A fortuitous record of just such destruction survives, regarding the barrow at Skae Frue, Sandwick (HY21SE8):

Several bowl-barrows are near, and scattered about the moor are many lumps of cramp or vitrified stone, some of which are built into the hill dyke of the adjoining townland of Warbuster (Thomas 1852, 110).

There were a number of barrows in this area, including another probable seven at Howan Wasbuster (HY21SE40). Cramp (Section 3.4.2) was recorded in ‘considerable quantities’ here in 1928 (RCAMS 1946, vol II, no. 711, 264-5), testifying to the significant damage to, if not complete destruction of, a large cremation cemetery during the course of turf paring activities. This cemetery may have been associated with a nearby substantial settlement site, covering an area of 5ha, detected by geophysical survey at Bookan Wasbuster (HY21SE18; GSB 2003; Robertson 2005) of which the only surviving surface traces at the present day are a Bronze Age double house55 (Figure 4.3). Soil samples from test pits at this site proved difficult to interpret, with evidence for anthropogenic soils but these were completely unlike other known Bronze Age examples, and bore more similarity to soils identified elsewhere as coming from post-1850 agricultural intensification (Cluett 2007, 207-12).

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55 Double houses are discussed in Section 7.6
The deep anthropogenic soils expected around such a large settlement were absent; interpretation was further complicated by a ferrous object found below the anthropogenic soil horizon in one test pit (ibid). Cluett (2007, 209) concluded that the anthropogenic horizon was formed later than the Bronze Age but before 1850, on the basis that the land was not used for arable production until the 1970s. I would suggest however that the deep anthropogenic soils likely to have been associated with the Wasbister settlement had been removed to fertilise the infield of the nearby Westbuster township (Figure 4.3), in the same way as the destruction of the barrows described by Thomas (1852, 110). This paring away of the turf and soils would have the effect of ‘zeroing the clock’ by removing much evidence of prehistoric land management, and account for the presence of the ferrous object found sealed below the anthropogenic soil horizon by Cluett (2007, 207-12). The improvement process, from the heath shown on the 2nd edition six-inch OS map (1902) to the fenced, improved grassland of the 1960 OS map, is the likely explanation for the similarity of the anthropogenic soils at Wasbister to those of other post-1850 improved soils identified elsewhere by Cluett (2007).

4.2.5 The early improving lairds

Whilst most of Orkney continued to follow the old traditional ways, by the late eighteenth century some improving lairds bucked the general trend, but they were the exception e.g. the new owner of the island of Shapinsay in 1793:

Previous to his purchase, nothing was to be seen over its whole extent, but a dreary waste ... Everything on this estate now happily wears a very different and more pleasing aspect ... the lands are substantially inclosed, and judiciously cultivated with the English plough, many barren fields are, by cultivation, made fertile (Barry 1927b, 358-9).

Most entries in the OSA (from which this account of Shapinsay is taken), present a picture of traditional hill-dyke and township agriculture (e.g. Malcolm 1927, 179) consistent with that described in 1814 (Section 4.2.2).
One of the first eyewitness accounts of deliberate destruction of an archaeological site for agricultural improvements was made c.1798 with regard to the demolition of the broch at the Loch of Tankerness (HY50NW3):

*The wall is nine feet thick. Bones and shells ... have been found in different apartments on the outside of the great wall. The minister, who considers modern inclosures, as more ornamental and useful in a country, rather than ancient ruins, has taken a great number of the stones of this building for inclosing his glebe* (Anon 1927, 10).

This illustrates another causative factor leading to destruction: quarrying for building materials and this is discussed in Section 4.4.6 below.

4.2.6 The kelp industry

Orkney’s agriculture was backward for a reason: that reason was the kelp industry\(^{56}\). The period 1780 – 1830 was that of the great kelp boom, when significantly more money was made from the kelp industry than from cattle. Kelp employed 3,000 people, producing 2,500 – 3,000 tons annually which sold for an average of £9 a ton, at a time when a good cow sold for £2 (Thomson 1983, 13, 49 & 111). This would have been the perfect time for an Orcadian Colt Hoare to emerge – a kelp laird with antiquarian interests, his pockets filled with gold from his kelp shores, the islands abounding with interesting mounds. Sadly it was not to be; conspicuous consumption rather than academic endeavour was the order of the day. Landowners neglected their estates and spent their kelp profits on new townhouses and high living in Kirkwall:

*Gentlemen have thus acquired from their bleak estates, sums of money, great beyond all former experience. This has gradually induced ... [them] to draw together in Kirkwall ... During winter, there are dancing assemblies and card assemblies alternately, every week* (Neill 1806, 7-8).

The kelp industry survived the end of the Napoleonic wars, as cheaper, and

\(^{56}\) Seaweed gathered, dried and burnt under controlled conditions in a kelp pit, to produce good quality alkali for export to the glass, soap and dye industries. In Orkney the term ‘kelp’ referred to the finished product i.e. the solidified blocks of alkali, whilst the seaweed that was burnt to produce kelp was known as ware or tangles: see Thomson 1983.
better quality, imported barilla was initially kept out by import duties. The crash came in 1830 when these duties were suddenly removed, causing bankruptcies amongst some of the more profligate of the kelp lairds (Thomson 1983, 92-5). The interesting mounds that constituted a visible component of the archaeological record were shortly to be swept away in a wave of agricultural improvement.

4.3 Improvements commence: 1830 – 1870

4.3.1 Introduction

The kelp crash saw those landowners who escaped bankruptcy forced to turn to their estates as a source of income. Apart from a few areas where improvements had begun early, in 1830 the majority of the Orkney landscape very much appeared as it had in 1750, as described by Shirreff in 1814 (Section 4.2.2). In most parts a necessary prelude to improvement was the division of the common hill land and its allocation to individual holdings.

4.3.2 Division of the commons

At the start of the nineteenth century around 108,000 acres (43,700ha) of commons existed in Orkney. The first division of these lands, in Stenness, was completed in 1815, although most commons were not divided until somewhat later. Details of the process are hard to come by for this period. The division was decided locally by the major landowners in each parish, and many of the records were destroyed when estates were broken up and sold. In 1927 for example many of the Earldom Estate records, going back to the sixteenth century, were destroyed, whilst the Shapinsay estate ledgers were burnt in 1962 (MacGillivray 2003, 22-5). The division of the commons seems to have been complete by the 1860s – 70s (Thomson 1981a), and

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57 The legislation required to divide the commons had existed since the 1695 Commonty Act (Thomson 1981a, 73).

58 See Appendix 4, Table A4.1 for approximate dates of division in each parish where known.
once the commons had been divided the process of improvement could begin.

4.3.3 A slow start

Even with the financial impetus to take action arising from the demise of the kelp industry, division of the commons and subsequent allocation to farmers took time, so that improvements inevitably got off to a slow start. Some few lairds were in a position to start at once, as they owned an entire island. Some islands, such as Shapinsay (Section 4.2.5) had already been improved for this reason. North Ronaldsay now followed suit. Here the island had been completely organised by the laird for kelp production, with small crofts and a population larger than the land alone could support (Thomson 1983, 96). Following the kelp crash of 1830 no time was wasted. In 1832 the island was divided into small farms, and the excess population of around 80 people was evicted and (in effect) deported to Eday (ibid; Tulloch 1974, 59-62; see Section 5.8.4).

The NSA provides a snapshot of the state of agriculture in the County in 1841. The picture varies considerably between different areas. In some places much of the land was still undivided, and the system of townships and hill-dykes prevailed e.g. in Westray (Armit 1845, 120), and in Evie and Rendall (Pitcairn 1845, 196-7). In contrast Lady Parish, Sanday, had seen great improvements in the previous 30 – 40 years, and it was predicted that a few more years would see the process completed (Traill 1845, 144). Similarly Sandwick was well ahead in the improvement stakes, with many farmers actively increasing their holdings. William Watt, Laird of Skaill, had by 1834 built seven miles (11km) of stone dykes to enclose his land and introduced new crops and farming methods (Irvine 2009, 159-60). By 1845 he is described as:

... by far the most extensive farmer in the parish and has for many years carried on an improved system of husbandry, enclosing and reclaiming waste land on a large scale, his last enclosure (sic) off the common, a few years since, including about 100 acres (Clouston 1845, 61).

There were some technological innovations. Single-stilted ploughs had been
replaced by a two-stilted mould board plough, and, by the time of the NSA records, harrows had iron teeth (Anderson 1845, 21; Clouston 1845, 61). One of the obstacles to more efficient agricultural production, lack of access to markets, was also removed during this period. In 1833 a regular steamer service was established between Leith, Aberdeen, Wick and Kirkwall (Cormack & Cormack 1971, 12-13). For the first time Orkney cattle could reach the markets in the south directly, and this led to much improved prices and profits (Dennison 1884, 273; Smith 1845, 221) providing further stimulus to expand improved grasslands for cattle rearing.

4.4 The spirit of improvement is aroused: 1870 – 1902

4.4.1 Introduction

By 1870 all the commons had been divided (see Appendix 4, Table A4.1) and there was no longer any barrier to improvements. To properly comprehend ‘agricultural improvements’ we must engage with the phrase. We have an unrealistic view of nineteenth-century agriculture; a sepia tinted image of horse drawn ploughs and a timeless way of life in a countryside little touched by industry. That this was not the case can be judged from examining contemporary accounts and statistics.

4.4.2 The scale and speed of improvement

A good illustration of the mood amongst Orkney’s landowning farmers in the late nineteenth century comes from a letter written in 1872 by Robert Scarth of Binscarth. In addition to reclaiming his own land (Section 4.4.4) he was factor for other Orkney estates and also the local agent for the Union Bank. This gave him a unique perspective on both farming and financial matters:

*I believe that we have thousands of acres of waste land in the Mainland of Orkney capable of making a fair return for capital skilfully applied to its improvement, and this belief is, I have reason to think, now shared in by many of the so-called ‘small lairds’ near me, who formerly kept their savings hoarded in the bank at 2½ per cent, and would as soon have thought of throwing it into the sea as of*
laying it out for drainage or lime, or in any attempt to improve their waste lands. If they go on, these small lairds promise soon to become large lairds, for the greater part of them have large shares of the waste, and the late prices of stock have fairly opened their eyes to where the profit lies. The spirit of improvement is now aroused all around me, and instead of deprecating improvement and the laying out of money, as I often used to meet with, I now have small lairds, and even tenants, asking advice as to drainage and the improvement of their wastes (Pringle 1874, 51).

Agricultural statistics are available from this period, and Table 4.1 below summarises the land use census returns at 5-year intervals from 1867 until 1995, from every farmer in Orkney. The early returns did not require area figures for rough grazing, only for the ‘crops and permanent grass’ i.e. the improved land. Rough grazing i.e. ‘mountain and heath land used for pasture’ is included from 1892, but it is unclear if this land had been fenced and possibly drained, or was still relatively undisturbed (O’Dell 1937, 206).

The figures that emerge are quite startling: in just 20 years from 1867 to 1887, an extra 12,725ha or 127 km² has been improved into the ‘crops and permanent grass’ category. The total land area of Orkney is around 975 km² (HMSO 1959, 15), so that over a tenth of the total land mass of Orkney had been improved in just 20 years. From a base line of 33,287ha in 1867 the cultivable land had jumped to 46,012ha by 1887: an increase of over 38%. The accuracy of these figures is borne out by contemporary reports of which this one from Rousay is typical:

Some farms have been doubled or trebled, by reclamation of waste lands, within twenty five years, and many small holdings taken out of the hill, where formerly there was nothing but stunted heath (Farrall 1874, 97).

By 1882 around 90% of the agriculturally viable land in Rousay had already been improved59.

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59 Rousay is an environmentally limited island, with only around 19.2km² (45%) of the island suitable for improvement, with the remaining 23km² consisting of upland heath and peat bog (See Section 4.9, Table 4.3 and Figure 4.19).
Table 4.1 Land utilisation in Orkney at 5 year intervals from 1867 – 1995

<table>
<thead>
<tr>
<th>Year</th>
<th>Improved land (ha)</th>
<th>Rough grazing (ha)</th>
<th>Total land use (ha)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1867</td>
<td>33,287</td>
<td>Not recorded</td>
<td>66,089</td>
<td>O'Dell 1939, 262</td>
</tr>
<tr>
<td>1872</td>
<td>36,382</td>
<td>Not recorded</td>
<td>72,291</td>
<td>&quot;</td>
</tr>
<tr>
<td>1877</td>
<td>39,704</td>
<td>Not recorded</td>
<td>72,291</td>
<td>&quot;</td>
</tr>
<tr>
<td>1882</td>
<td>44,757</td>
<td>Not recorded</td>
<td>76,512</td>
<td>&quot;</td>
</tr>
<tr>
<td>1887</td>
<td>46,012</td>
<td>Not recorded</td>
<td>76,024</td>
<td>&quot;</td>
</tr>
<tr>
<td>1892</td>
<td>43,140</td>
<td>22,949</td>
<td>66,089</td>
<td>&quot;</td>
</tr>
<tr>
<td>1897</td>
<td>43,106</td>
<td>25,185</td>
<td>68,291</td>
<td>&quot;</td>
</tr>
<tr>
<td>1902</td>
<td>43,646</td>
<td>21,320</td>
<td>64,966</td>
<td>&quot;</td>
</tr>
<tr>
<td>1907</td>
<td>43,514</td>
<td>22,058</td>
<td>65,572</td>
<td>&quot;</td>
</tr>
<tr>
<td>1912</td>
<td>43,787</td>
<td>19,578</td>
<td>63,365</td>
<td>&quot;</td>
</tr>
<tr>
<td>1917</td>
<td>44,006</td>
<td>24,648</td>
<td>68,654</td>
<td>&quot;</td>
</tr>
<tr>
<td>1922</td>
<td>43,626</td>
<td>25,780</td>
<td>69,406</td>
<td>&quot;</td>
</tr>
<tr>
<td>1927</td>
<td>43,564</td>
<td>27,716</td>
<td>71,280</td>
<td>&quot;</td>
</tr>
<tr>
<td>1932</td>
<td>43,651</td>
<td>28,538</td>
<td>72,189</td>
<td>&quot;</td>
</tr>
<tr>
<td>1937</td>
<td>44,067</td>
<td>28,734</td>
<td>72,801</td>
<td>HMSO 1939</td>
</tr>
<tr>
<td>1942</td>
<td>44,204</td>
<td>28,744</td>
<td>72,948</td>
<td>HMSO 1948</td>
</tr>
<tr>
<td>1947</td>
<td>42,988</td>
<td>26,728</td>
<td>69,716</td>
<td>HMSO 1952</td>
</tr>
<tr>
<td>1952</td>
<td>43,957</td>
<td>27,745</td>
<td>71,702</td>
<td>HMSO 1952</td>
</tr>
<tr>
<td>1957</td>
<td>44,526</td>
<td>27,811</td>
<td>72,337</td>
<td>HMSO 1959</td>
</tr>
<tr>
<td>1962</td>
<td>44,840</td>
<td>30,843</td>
<td>75,683</td>
<td>HMSO 1964</td>
</tr>
<tr>
<td>1967</td>
<td>45,803</td>
<td>33,515</td>
<td>79,318</td>
<td>HMSO 1969</td>
</tr>
<tr>
<td>1972</td>
<td>45,445</td>
<td>31,803</td>
<td>77,248</td>
<td>HMSO 1974</td>
</tr>
<tr>
<td>1977</td>
<td>44,933</td>
<td>31,334</td>
<td>76,267</td>
<td>HMSO 1978</td>
</tr>
<tr>
<td>1982</td>
<td>47,423</td>
<td>31,225</td>
<td>78,648</td>
<td>HMSO 1983</td>
</tr>
<tr>
<td>1987</td>
<td>48,256</td>
<td>28,384</td>
<td>76,640</td>
<td>HMSO 1988</td>
</tr>
<tr>
<td>1995</td>
<td>51,518</td>
<td>29,085</td>
<td>80,603</td>
<td>HMSO 1996</td>
</tr>
</tbody>
</table>

60 Yearly figures for individual counties are available from 1867 onwards. From 1996 Orkney is part of the Highlands & Islands district and figures are not readily available for Orkney alone. By 1995 grant-aided improvement had ended (Section 4.6.3) so the 1995 figure is a fair reflection of the current extent of improved land in Orkney.

61 By 1892 all the commons were divided and allocated to individual farms, so were included on the returns. It is unlikely that 2,872ha of improved land went out of cultivation, the discrepancy is probably due to farmers subjectively classifying the quality of their own land and including poorer quality improved grassland in the rough grazing totals.
Table 4.2 (below) gives examples of the scale of improvements by 1874 on a sample of ten of the larger farms, for which figures are available. By this time all the commons in Orkney had been divided and allocated to individual farms (Section 4.3.2), enabling both the dramatic enlargement of existing farms e.g. Binscarth, Firth (Section 4.4.4) and the creation of completely new holdings, such as the 182ha of New Holland in Holm.

<table>
<thead>
<tr>
<th>Farm name &amp; Location</th>
<th>Area c.1860</th>
<th>Area 1874</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huip, Stronsay</td>
<td>142</td>
<td>283</td>
<td>Pringle 1874, 23</td>
</tr>
<tr>
<td>Huntown, Stronsay</td>
<td>40</td>
<td>121</td>
<td>Ibid, 27</td>
</tr>
<tr>
<td>Mill of Ireland, Stenness</td>
<td>12</td>
<td>40</td>
<td>Ibid, 44</td>
</tr>
<tr>
<td>Binscarth, Firth</td>
<td>26</td>
<td>210</td>
<td>Ibid, 49-50</td>
</tr>
<tr>
<td>Firth, no further details</td>
<td>0</td>
<td>61</td>
<td>Ibid, 50</td>
</tr>
<tr>
<td>Quanterness, Firth</td>
<td>101</td>
<td>202</td>
<td>Ibid, 51</td>
</tr>
<tr>
<td>Saverock, Firth</td>
<td>24</td>
<td>121</td>
<td>Ibid, 51</td>
</tr>
<tr>
<td>Wideford &amp; Inganess, St Andrews</td>
<td>24</td>
<td>259</td>
<td>Ibid, 52</td>
</tr>
<tr>
<td>New Holland, Holm</td>
<td>0</td>
<td>182</td>
<td>Ibid, 56</td>
</tr>
<tr>
<td>Carra, S Ronaldsay</td>
<td>0</td>
<td>121</td>
<td>Ibid, 58</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>369</strong></td>
<td><strong>1,600</strong></td>
<td></td>
</tr>
</tbody>
</table>

4.4.3 Methods of improvement

The process of improvement was both thorough and archaeologically destructive. Subsoil ploughing and deep drainage were the order of the day. Drains were solidly built of stone, to the pattern shown in Figure 4.4. Ideally they were cut four feet (1.22m) deep, 20 inches (0.51m) wide at the top tapering to 14 inches (0.36m) wide at the bottom, spaced at 10 – 15 foot (3 – 4.5m) intervals across the field (Farrall 1874, 73; Smith 1843, 6-9). In Orkney a convenient source for some of the stone needed for both the drains and enclosing dykes was by robbing out archaeological sites (Section 4.4.6 below). Once the land was drained the serious business of ploughing could begin.
The subsoil plough designed by James Smith in Deanston, Stirling in 1831 weighed 400 lbs (181 kg), it was drawn by up to six horses and cut through the subsoil to a depth of 14 – 16 inches (0.36 – 0.41 m) (Smith 1843, 18 & 23-5). This plough was heavy enough to throw aside any stones weighing less than 200 lbs (90 kg) (ibid). The inventor of this plough used it successfully to improve his 200 acres, and his description is instructive:

A common plough, drawn by two horses, goes before the subsoil plough, throwing out a large open furrow of the active soil; the subsoil plough following, slits up thoroughly and breaks the subsoil, and the next furrow of active soil is thrown over the last opened furrow of the subsoil; the stones brought to the surface by the subsoil plough being thrown aside on the ploughed part of the land by a lad, thus the work proceeds until the whole field is gone over. The lad should carry a bag of wooden pins, that he may mark the site of the large fast stones which the plough cannot throw out, and which must afterwards be dug out with the pick, and perhaps blasted (ibid, 18).

Although, as this passage makes clear, stones encountered during subsoil ploughing were removed, by blasting if necessary, it is equally obvious that surface obstructions must be removed first. It is impossible to deep plough and drain land if that land is cluttered up, as in Orkney, with stone-built archaeological sites. It is rare in the old accounts to come across even a passing reference to the removal of obstructions; it is simply assumed that any obvious obstruction will be removed beforehand. These methods were expensive in labour and horsepower, and were beyond the reach of the smaller crofters, who often did not own a single horse (see Section 4.4.5). The use of subsoil ploughs is however documented in Orkney on the larger farms (Farrall 1874, 97), and, as the account from Binscarth shows (Section 4.4.4 below), the larger farmers also took drainage very seriously.

4.4.4 Large landowners: the Binscarth estate

By chance we have detailed records of the improvements at the Binscarth estate in Firth (Figure 4.5) and it can be seen what a devastating effect this type of total improvement had on the previous landscape and the archaeological sites it contained. In 1841 Binscarth farm consisted of 64 acres
(26ha) of cultivated ground and pasture within the old hill-dyke. The farm was then acquired by Robert Scarth (Section 4.4.1), who initiated the division of the commons (Malcolm 1845, 68; Pringle 1874, 49). By 1874 as a result of improving by draining, liming and enclosing the now-divided common land, Binscarth farm had increased to 520 acres (210ha) (Pringle 1874, 48-9).

The scale of the work required was impressive. For one bog, covering 60 acres (24ha), a 100 yard (91m) length of the main drain had to be cut 10 feet (3 metres) deep through bedrock at a cost of £100 (ibid). A network of stone-built smaller drains fed into this, which had to be repeatedly lifted and replaced due to blockages caused by iron panning. This problem was only cured when the entire area was ‘deep trenched and thoroughly limed’ (ibid). Following the drainage operations the entire farm was enclosed by stone dykes, and a twelve-acre (4.86ha) wood planted.

These improvements were complete by the time of the 1st edition six-inch OS map (1882), and Robert Scarth’s large enclosed fields were shown quite clearly (Figure 4.6). The fields indicated by red dots on Figure 4.6 are the better quality and most thoroughly improved land. The NMRS Canmore screenshot of this area (Figure 4.7) shows that there are no known archaeological sites surviving on this land. The blue dots on Figure 4.6 indicate areas that were given basic improvement and fenced, but which, due to their more upland nature, were not suitable for more intensive use. It is here that the archaeological sites survive, and, as shown in Figure 4.8, there is an extensive Bronze Age funerary landscape. The aerial photograph (Figure 4.9) shows the distinctive landscape, with the large fields divided by stone dykes clearly visible, as is a barrow on the shoulder of the hill. Presumably the Bronze Age settlement sites to accompany these burial mounds were in the valley bottom or on the lower slopes and were obliterated in Robert Scarth’s improvements. The only possible hint of any archaeological finds comes from the following comment, referring to the bog (above) whose drainage caused such problems:
Fine crops have been raised yearly on 60 acres, which was formerly a quaking bog, full of iron ore, and which in its natural state would not have summered a calf. In fact, the skeletons of several cattle, which had evidently perished in the bog, were found in draining it (Pringle 1874, 49).

It is difficult to know what to make of these reports. Since the bog was drained by deep trenching and drains cut into the bedrock it very likely that archaeological layers in its vicinity had been disturbed.

Scarth is also noted to have created two completely new farms of 150 acres (61ha) each for tenants on other parts of his estate, each reclaimed from heath-land ‘in precisely the same way as the improvements at Binscarth’ (ibid, 50).

4.4.5 Methods of improvement: small tenant farmers

Smaller farmers could not afford the horsepower or specialized equipment to improve land in the same intensive way as large estates like Binscarth (Pringle 1874, 54-5), but deep trenching by hand was a method open to everyone, and it is clear that many people did just that. The evidence before the Napier Commission in 1888 from Rousay crofters who had been evicted from their holdings and had had to start again on the hill land is striking (Thomson 2013, 321-30). These eight crofters had not only reclaimed all their own land, they had built the houses and other buildings that they required (ibid). The holdings were small, only around 10 – 14 acres (4 – 5.6ha), but only one of the eight crofters owned a horse, so that all land improvement was done by hand. Another example, at the top end of the scale of the smaller holders, comes from Kelton, St Ola, where the tenant had built new farm buildings and reclaimed 26 acres (10.5ha) of heathland (ibid, 330). This necessitated installing 30 chains (604m) of sub-surface stone drains and 15 chains (302m) of surface drains.

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4.4.6 Sites as stone quarries

Newly reclaimed land had to be fenced with stone dykes, drained with stone drains, have new stone roads for access, and have stone houses and steadings built in order to work the land. As a rule of thumb, Orkney dry stone dykes take one tonne of stone per metre of dyke, 1.2m high (Brian Omand, pers. comm.). It is clear that a colossal amount of both physical effort and materials were devoted to the 12,724ha improved between 1867 and 1887 (Section 4.4.2). It was necessary to extract new stone for this work, but it was also customary to quarry any convenient archaeological sites too: it has to be remembered that in Orkney from the 4th millennium BC onwards all settlement sites and Neolithic tombs were built from stone. The Name Book entries repeatedly record a depressing pattern of destruction, with a common theme of quarried sites:

ONB 1880, OS1/23/17/112 Knowe of Geoso (HY21NW19): The masonry has been removed for other use.

ONB 1880, OS1/23/17/178 Stackrue (HY21NE9): there also appears to have been circular walls, but these have been carried away for other purposes.

ONB 1880, OS1/23/1/177 Knowe Of Smirrus (HY22SE17): The stones used in building the farm house and offices at Howan were taken from the interior of this knowe.

ONB 1880, OS1/23/1/161 Knowe Of Forsakelda (HY22SE49): composed chiefly of broken stones on the surface, and large boulders in the interior. A quantity of the latter have been removed for building purposes.

As noted in Section 4.2.5, above the first recorded description of a broch being quarried for stone comes from 1798. Brochs have often been the first choice quarry site for the sheer quantity of stone conveniently available in one place. Oxtro Broch, Birsay (HY22NE4) was destroyed in 1847 for stone to extend the nearby farm of Boardhouse (ONB 1880, OS1/23/1/69; Petrie

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63 The most popular form of barbed wire was patented in the USA in 1874; it is unclear when it was first used in Orkney, certainly all the nineteenth-century accounts of improvements speak of building lengths of dykes. The expense of importing wooden fence posts along with the wire itself would hinder its use in Orkney even when readily available further south.
1874, 76-8). All that remains of the broch site, which had included a Pictish cist cemetery with a now lost symbol stone, is a sad little ring of stones in the field.

At least we know that these particular sites existed, even if they are now badly mutilated. It is also clear that much destruction went completely unrecorded, with this eye witness account of the destruction of tumuli or barrows in Sandwick from George Petrie in 1849 being typical:

_A few years ago about a hundred of these [tumuli or barrows] were to be seen [they] are fast disappearing before the agricultural improvements of the present age which appropriate and swallow up the materials of which these old sepulchral monuments are constructed, and what is more provoking still without any attention being given to preserve a record of their construction and contents (Petrie letter to Daniel Wilson, quoted in Davidson & Henshall 1989, 15, my emphasis)._ 

Nearly twenty years later the story was unchanged:

_Picts’ houses are rapidly disappearing, being swept away to make room for agricultural improvements, and in a short time scarcely a vestige of these interesting remains of the early inhabitants of Orkney will be left_ (Petrie 1866c, 225).

One of these Pict’s houses was the broch at Taft, Greeny which was removed c.1866 for building stone:

_Further examination of the structure of the passage was prevented by the removal of all the lintels and other stones suitable for building purposes. It is probable that the greater part of the stones used in the construction of all the other houses in the township of Greeny were taken from this broch, as the remains of the old steadings are of the same quality and character of stone. Supposing that eight farmsteadings were all built from this one broch, the wonder is that any vestiges of its structure should yet remain, and from this I conclude that it must have been a structure of the first magnitude_ (Watt 1882, 450).

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64 As discussed (Section 3.5.3 above) in Petrie’s 1849 terminology ‘tumuli or barrow’ could be almost any type of site.

65 Watt did not see the ‘excavation’ but records an account given him by David Stephen, the resident farmer. The ONB entry says the find was made ‘when the spot was in the process of
The destruction of many other sites was going completely unnoticed without even a brief mention after the event as had been the case at Taft, but occasionally evidence of this appears in unlikely places. The nineteenth-century stables at Kirbuster Farm Museum, Birsay for example have a large extensively cup-marked stone\(^{66}\) built into the side wall, of a size and style suggestive of a lintel from a Neolithic chambered tomb. There are no recorded sites nearby to explain the presence of this stone, and in fact Birsay is remarkably deficient in chambered tombs, with only one now known in the whole parish (see Appendix 10, Figure A10.1).

An added bonus from the destruction of a prehistoric settlement site would have been large quantities of the typical Orcadian prehistoric ashy midden (Section 7.1) with which to enrich the soil; the outcome was thus similar to that achieved by the destruction of barrows for ‘top dressing of the land’ (Section 4.2.4).

4.5 The twentieth century: 1902 – 1945

4.5.1 Introduction

Following the production of the 2\(^{nd}\) edition six-inch OS maps (1902), the next major survey in Orkney was in the 1960s with the work of the OS Archaeology Division (Section 3.8.1). Obviously much had happened in the intervening period, some of which can be pieced together from the available agricultural statistics and contemporary reports. Most notably the first half of the twentieth century saw two world wars which also stimulated agriculture in the County.

\(^{66}\) Thanks must be expressed to Neil Leask, custodian, Kirbuster Farm Museum, for drawing my attention to this stone.
4.5.2 The First World War

During the First World War in Orkney, as elsewhere, alongside military objectives the emphasis was on food production. Orkney had an enormous naval base in Scapa Flow and its associated service personnel to accommodate (Hewison 2000). Between 1912 and 1917 the area of improved land remained relatively stable (Table 4.1), probably reflecting the lack of manpower, with young men serving in the armed forces.

Agriculture in depressed post-war Britain suffered badly. Orkney however bucked the trend, with stable cattle prices and an owner-occupier revolution, as large estates were broken up and sold, the majority bought at reasonable prices by the sitting tenants67 (Symon 1959, 222-39; Thomson 2001, 417-21). Land reclamation and very deep trenching for drainage continued. The discovery of six cists at Lochside, Stenness in 1931 (Greig 1931) was one result. The cists were found in an area under improvement shown as completely untouched on the 1902 map, at a depth of 0.5 – 0.61m below ground level, a depth which can be seen in Figure 4.10. This clearly shows the thoroughness with which agricultural improvement was still being undertaken.

4.5.3 The Second World War

The Second World War saw legislation compelling farmers to bring marginal land into cultivation, in an effort to boost food production: non-compliance led to eviction (Symon 1959, 254-60). In Quanterness, St Ola for example over 600 acres (243ha) were improved during the war years using ‘huge modern mechanical drainers’ (Hewison 1985, 83). No finds were reported during this process, but several badly damaged sites have subsequently been excavated in this area: the Neolithic/Early Bronze Age settlement at Crossiecrown (Card et al 2016; Section 7.5.4) and the remnants of a Bronze

67 The price was generally set at equal to 20 years purchase i.e. 20 times the yearly rent, although often this was much reduced by the deduction of the amount of compensation the tenant would have been paid on vacating for improvements made during tenure (Thomson 2001, 420).
Age barrow cemetery together with an indeterminate prehistoric structure at Ramberry Head (Crozier et al 2016). Elsewhere in Orkney the situation was slightly different, since much agricultural land was expropriated by the War Department. No accurate figures exist for land taken by the authorities, but Orkney became in effect a military base. In addition to the fleet in Scapa Flow and the concomitant shore side installations, there were four military airfields, artillery and anti-aircraft batteries, radar installations, prisoner-of-war camps and around 40,000 military personnel (e.g. Dorman 1996; Hewison 2000; Lamb 2007). This amount of infrastructure required a great deal of land, and on this land were many archaeological sites: the airfields alone required in the region of 486ha of land (Lamb 2007). Since ‘there was a war on’ archaeological recording was not a priority, and an unknown number of sites were destroyed during construction works. Some we know existed, even if their destruction went unrecorded, for example a large and previously undiscovered site, of a size to be a broch, was removed by machine during the construction of Skeabreae airfield, together with a nearby souterrain (Marwick 1949, 236-9). Similarly at Hatston airfield a souterrain was discovered and destroyed, but in this case it was at least planned by the Ministry of Works first (ibid).

Less excusable was the damage done to known sites. Archaeological features seem to have been favoured locations for gun emplacements e.g. the concrete pillbox (HY31SE28) dug into the top of the Hillock Broch in Finstown (HY31SE4). Fields adjacent to Maeshowe chambered tomb were chosen as the ideal site for an army camp, which necessitated the bulldozing of much of an associated barrow cemetery (HY31SW12; Card 2005a, 58). In a similar vein the Ring of Brodgar and environs was used for military exercises. The henge ditch was employed as an obstacle in training the crews of Bren gun carriers. None of the stones appear to have been damaged during the war,

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68 Although V. Gordon Childe (1942) surveyed the chambered cairns of Rousay in 1941 there was no programme of rescue excavation in advance of military construction in Orkney to compare with work elsewhere (e.g. Grimes 1960).

69 Imperial War Museum photograph reference H10589 showing Bren gun carriers of the Ninth Battalion, Gordon Highlanders at the Ring of Brodgar, taken on the 18th of June 1941.
but the effects on the ditch deposits and the surrounding Bronze Age funerary landscape (e.g. HY21SE16 and HY21SE21; Section 6.1.4) have never been assessed.

4.6 Post-war grant aided improvement

4.6.1 Introduction

The Second World War emergency measures, introduced to increase food production, included large grants for bringing marginal land into production, together with livestock subsidies (Symon 1959, 255-8). In the post-war period, with rationing still in effect, these measures were continued and expanded (ibid, 263-5), whilst Britain’s membership of the European Union brought further grant-aided stimulus (e.g. EEC 1986 & 1988).

4.6.2 Effects in Orkney

The effects can be seen in Orkney, where an extra 5,268ha of improved land was created in the forty-year period between 1947 and 1987 (Table 4.1). There are scant archaeological records from this period considering the amount of land then being improved for the first time. Occasionally finds came to light, and practices had obviously not greatly changed from earlier times, as when a Birsay farmer, in 1957, noted the recent (unrecorded) destruction of a ‘great quantity of Pictish houses and stones’, which produced quantities of ashy material, spread on the fields for fertiliser. Substantial sites that had managed to survive thus far were now targeted for removal in the course of improvements. Quite by chance, an archaeologist heard of the imminent destruction of a mound at Bu, Stromness in the spring of 1977, which had so far survived as a large hillock in a cultivated field. An emergency five-week rescue excavation managed to record at least part of the subsequently destroyed broch (Hedges 1987a). The following year the destruction of Howe,

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70 Letter in the Orkney Library Archive dated 4th February 1957 from William Sabiston of Scutabreck, Birsay (OA ref D29/1/1). ‘Pictish’ here is used as a generic term indicating an antiquity of indeterminate age, rather than a Pictish settlement in the archaeological sense (Section 3.2).
another broch on the same farm, was delayed for several years to allow for a
more extensive excavation (Ballin Smith 1994). Apart from these two brochs
the only sites excavated in advance of, or discovered during the course of, the
improvement of 5.27 km² of land during this forty year period were the
barrow cemeteries at the Knowes of Quoyscottie, Birsay (Hedges 1977) and
Holland, St. Ola (Neil 1981); a probable 2nd/1st millennium BC settlement at
Linna Breck, Birsay (Hedges 1978) and eleven cists excavated on an ad hoc
basis between 1968 and 1978 (Hedges 1980). An unknown number of sites
were destroyed during this period; the figure is impossible to quantify.

4.6.3 The last gasp of agricultural improvement

The final phase of major expansion into the remaining hill land came in 1988
with the implementation of the EEC 5-year Agricultural Development
Programme for the Scottish Islands, during which land improvement works
such as drainage and reseeding attracted grant rates of 60% and upwards
(EEC 1986 & 1988; Land Use Consultants 1998, 68). These grants enabled
very marginal land to be improved, which was not otherwise financially
viable. In the period when these grants were available there was a significant
impact on the landscape, with a further 3,262 ha of land being improved
between 1987 and 1995 (Table 4.1 above). Much of this land was very
marginal for agricultural purposes, with areas such as moorland fringes and
coastal machair being utilised, and parts have now been allowed to revert to
their former state (Land Use Consultants 1998, 66 & 68). This is very
obviously shown in Figure 4.1. Bronze Age burial monuments which had
hitherto survived on this marginal land suffered severe damage during this
period. Of the 697 individual barrows recorded by the 1960s OS revision
(Section 3.8), some 147 had been completely destroyed by the time of the
Orkney Barrows survey in the 1990s, many of them in the recent past
(Downes 1997a, 5-6 & 2005, 46). That the majority of these sites were
scheduled ancient monuments provided little protection, illustrated by the
fate of the eleven barrows comprising the cemetery on Kirbister Hill
(HY22NE14), already damaged in 1929, when traces of five destroyed cists
were recorded (RCAMS 1946, vol. II, 25-6, no. 53). The site was scheduled in 1937, but when the land was reclaimed in the early 1990s the entire cemetery was ploughed out (Tony Taylor, pers. comm.). Subsequently the landowner noticed large quantities of ‘ashy material just like you’d take out of the fire’ in the vicinity of the barrows (ibid), suggestive of quantities of cremation pyre debris.

4.7 An insidious enemy: coastal erosion

Agricultural improvement has been the main culprit in the wholesale destruction of archaeological sites in Orkney71, but in the twenty-first century the majority of damage to the archaeological record by man is better controlled, and the main enemy now recognised is the sea (e.g. Gibson 2012).

Coastal erosion is affecting many hundreds of sites, for example all the coastal brochs72 in Orkney are actively eroding. Some of these brochs may represent multi-period settlements with Bronze Age components, as is the case at St Boniface Church, Papa Westray (Lowe 1998; Section 7.15); without excavation there is no way of adequately assessing what is lost. Most sites destroyed by the sea are lost without record.

Bronze Age sites are undoubtedly amongst these: examples at least partly excavated in response to coastal erosion are limited, but have included barrows and cists e.g. Lopness, Sanday (Innes 2016) or Rapness Cairn I, Westray (Barber et al 1996; Section 6.1.2); burnt mounds at Meur, Sanday (Hambly 2014; Toolis 2007a; Section 9.3.2) and Yorville, Rousay (Dockrill et

71 Although there have been some notable examples of destruction motivated by other reasons e.g. the Odin Stone and some of the Stones of Stenness in the nineteenth century (Hossack 1900, 398-400) and the Broch of Lingro, St. Ola in the twentieth century (reported in Rescue News March 1981, page 5; and in The Orcadian newspaper on the 26th February 1981, page 14). Similarly the Point of Buckquoy, Birsay, demonstrated by trial excavation in the 1960s/70s to be an extensive Bronze Age settlement occupied from the mid/late-3rd to mid-2nd millennium cal BC (Morris 1989, 71-107), was completely destroyed in the 1980s without any archaeological intervention in order to build a visitor car park for the Pictish/Norse site (Hunter 1986) on the Brough of Birsay (Anne Brundle, pers. comm.).

72 Apart from Midhowe (Callander & Grant 1934b) and Gurness (Hedges 1987b), which are now protected by sea walls. See Appendix 11 for details and distribution maps.
al 2009) and the chance discovery of the probable Bronze Age settlement at Cata Sand, Sanday (Cummings et al 2016; Section 5.5.3).

Although there have been occasional funded coastal surveys to assess the extent of the problem (e.g. Moore & Wilson 1997a, 1998 & 1999a) these surveys have not been followed by further action. The majority of the sites recorded by such surveys consist of midden deposits and stone walling, which may be hard to assign to period in the absence of diagnostic artefacts or structures. In one such survey, of 287 sites recorded\(^7\), 32% could not be even tentatively assigned to period (Moore & Wilson 1998, 11-12). This may lead to the introduction of biases in the archaeological record in favour of those sites that do have such features. For example a broch tower can be easily identified as such by the typical double-walled construction (e.g. Lynn & Bell 1987); an eroding Neolithic settlement site by the presence of Grooved Ware (e.g. Bond et al 1995); Viking/Norse and post-medieval sites by both artefacts and structural form (e.g. Wilson & Moore 1996). Other sites are less easy to identify, and this is true of the majority of Bronze Age sites, since Bronze Age pottery in Orkney is generally both undiagnostic and recognition of it hampered by the lack of known assemblages for comparative purposes (MacSween 2007, 281). Similarly whilst the presence in large numbers of certain type of coarse stone tools may suggest a Bronze Age date (Clarke 2006, 124-6) this would be unlikely to be obvious in a short section visible at an eroding midden site. In the absence of excavation all of these eroding sites are being destroyed without adding significantly to the archaeological record.

### 4.8 Case study: The island of Burray

**4.8.1 Introduction**

The island of Burray provides an excellent example of how a combination of factors stretching back for several centuries can bias the archaeological record as it now survives. Burray is one of the South Isles, now linked to the

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73. This survey included sites of all periods from the Neolithic through to the twentieth century, 144 of these were previously unrecorded sites.
Mainland by the Churchill Barriers but, pre-1945, a separate island, with an area of c.11km². The name comes from the ON borga [r]-ey literally the ‘island of the stronghold[s]’ (Marwick 1952, 167) in reference to the broch mounds visible from the sea. The RCAMS 1946 Inventory entry for Burray records three definite and two possible brochs, a Neolithic chambered tomb (destroyed in the nineteenth century) and a Viking hoard of silver (RCAMS 1946, vol II, nos. 861-67, 293-6). There is a notable absence of other sites, for example there are no reported chance finds of cists or burials, no burnt mounds, and no ‘indeterminate mounds’; evidence of a Bronze Age presence is lacking. In comparison the islands of Papa Westray and North Ronaldsay, both around 40% smaller then Burray, each have, in addition to brochs and chambered tombs, a number of burnt mounds (ten and seven respectively), together with numerous Bronze Age funerary sites.

4.8.2 Recent destruction

We now know that there is a concentration of prehistoric settlement on the east side of the island, in an area covered by sand dunes known as the North and South Links of Burray, shown in Figure 4.11. The farm associated with these links is the Bu of Burray; the ‘Bu’ place name indicates this to have been a high status Viking/Norse period settlement. The Links are used for commercial sand quarrying by a landowner unsympathetic to both archaeology and the planning process. An extensive prehistoric settlement complex over several acres has been destroyed without record by this operation (Smith et al 1988). Finds retrieved from the debris left by the sand extraction dated from at least the Early Iron Age to the Pictish period, whilst further unmonitored quarrying revealed human remains (ibid; Hunter 1993; Lawrence 2005; Sharman 2005). Sand extraction continues on the site with

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74 Some of Orkney’s brochs must have been standing to a considerable height in the Norse period and to Viking eyes were obvious strongholds. The broch of Mousa in Shetland (ON Moseyarborg) was reoccupied and used as a stronghold in the tenth century AD, in the twelfth century it withstood a siege (Taylor 1938, 311-2, 352-3 & 399).

75 Papa Westray also has two Bronze Age settlements: see Appendices 7, 8, 10, 11 & 12 for details.

76 ON ‘bú’ - a substantial estate occupied by an important person (Marwick 1952, 240-3).
limited archaeological access and no monitoring (Brend 2010b; Robertson & Sharman 2006).

There is also likely to have been pre-Iron Age activity in the Links. A Neolithic presence nearby is attested by the chambered tomb (Davidson & Henshall 1989, 106-7, ORK7) around 1km to the north, which is the only definite evidence for pre-Iron Age activity in Burray (but see also Section 7.15). In addition to the Links, there are two areas of coastally eroding midden indicating settlement activity, a possible chapel site and the seventeenth-century St Lawrence’s church (Figure 4.11).

4.8.3 James Stewart of Burray – an improving laird

It is improbable that the rest of Burray genuinely lacked prehistoric sites. The explanation for their absence lies in a combination of two apparently unconnected factors: the status of Burray as an important and wealthy (for Orkney) unitary estate, and to a lesser extent, the lack of a resident minister.

Burray has, so far as can be seen from the Rentals, always been one single estate, the head farm of which was at the Bu of Burray. It was a Crown estate, granted to the Bishopric of Orkney in 1494 (Clouston, J. S. 1927, 202) and by implication this would mean good quality land. By the early eighteenth century the island was in the possession of the Stewarts of Burray, who had built a fine house known as the Place of Burray at the site of the old Bu. A 1746 inventory of the estate, taken on the death of James Stewart of Burray, records luxury household goods unknown elsewhere in Orkney at that time (Marwick 1934). More importantly there was also one English plough, two Scots ploughs and a turnip drill plough, together with spares for the ploughs, quantities of carts, cartwheels, yokes and harnessing equipment (ibid). As discussed above (Section 4.2.3), the common Orkney plough at this time was single-stilted and largely ineffective. To have three modern imported ploughs, sets of spares, and a turnip drill at that time in Orkney was unheard of, and indicates both the wealth of the estate and the early improvement of the land.

Mackenzie’s 1750 chart shows a total of around 61% of the available land,
largely comprising the eastern half of Burray, inside the hill-dyke, with rough heath on the west and in the island of Hunda (Table 4.3 below; Figure 4.17a). This is confirmed by a 1774 account, which states that more than half of Burray is ‘either in corn grounds or laid down with rye grass’ and notes that the Bu was the first farm in Orkney to be enclosed and improved (Low 1879, 39-40). The island was still one estate under the management of the factor for absentee landlord Lord Dundas (ibid). By the time of the 1882 1st edition OS map, agriculture had expanded west, along both the north and south shores, shown here in Figure 4.17b, with a further 11% of land improved. The modern map (Figure 4.17c) shows only a few patches of unimproved heathland remaining, with a total of 89% of the available land now improved (Table 4.3).

Large parts of Burray were therefore already improved by the mid-eighteenth century, and, considering the equipment at the Place of Burray in 1746 probably well before. It would not be expected that finds made during improvements at that time would have been reported, unless the landowner or the minister were interested enough to record them. James Stewart of Burray was locally noted for his quarrelsome nature, violent temper and murderous activities (Hossack 1900, 216-7); not for antiquarian interests.

The Minister for Burray, a possible source of records of any recovered archaeological material (e.g. the father and son Rev. Cloustons in Sandwick: Clouston, W. 1927a & Clouston 1845) lived in the island of South Ronaldsay and held a service in Burray only every two to three weeks. After the Burray church fell into disrepair c.1800 the minister ceased to even visit. This continued until the new church and manse were built in 1874 (Gerard 1845, 194-5; Lamb 2006, 41-2; Watson 1927, 211). The entries for Burray in both the OSA and the NSA are consequently minimal (Gerard 1845; Watson 1927).

In Burray therefore a series of factors have combined to make the island seem almost an archaeological desert. An early improving laird with no interest in antiquities and an absentee minister led to a lack of reporting of chance finds, and this has been compounded subsequently by a landowner with no regard
for archaeology but rather a desire to commercially extract sand. Burray provides an illustration of the dangers of taking the absence of sites on a distribution map at face value without an understanding of the underlying historic processes.

4.9 Conclusion

It is clear from the evidence presented in this chapter that the effect of man on the Orcadian landscape has been immense. Superficially Orkney has a well-preserved archaeological landscape, but the extent of historic destruction becomes obvious under informed scrutiny. The major destructive force over the last two centuries has been agricultural improvement, which destroyed archaeological monuments on an industrial scale.

The landscape of 1830 was substantially unchanged from the medieval period, with small townships within their hill-dykes shown on Mackenzie’s (1750) chart. It is possible to estimate the amount of land enclosed within these hill-dykes to be around 286km$^2$ or 28,600ha (Table 4.3 below), representing around 32% of the available land$^{77}$. This arrangement was completely swept away in the course the nineteenth century. By 1867, when agricultural statistics began to be recorded (Table 4.1 above), only around 4,687ha had been improved in addition to the areas inside the hill-dykes in 1750. This comparatively small increase over the course of a century reflects the slow start of agricultural improvement in Orkney (Section 4.3.3). However in the following twenty years an additional 12,725ha of land was improved, as the pace of change gathered momentum (Section 4.4). Improvement followed a steady upward trend, such that from 1867 to 1995 the improved land increased from 33,287ha to 51,518ha, an increase of 18,231ha or 182km$^2$ (Table 4.1 above).

$^{77}$ Islands with an area of under 2km$^2$ have not been included in these figures. Some of these islands were inhabited in 1750 but lacked a hill-dyke e.g. Eynhallow (Section 5.4) and Papa Stronsay, the majority of which was under cultivation (e.g. Lowe et al 2000 & 2001; the 1595 Rental: Peterkin 1820, 89; Taylor 1938, 183).
Table 4.3 Estimated total areas and percentages of total area for improved/cultivated land inside the hill-dykes in 1750; land improved 1750 – 1882; land improved from 1882 – present day and area of remaining unimproved heath/bog. (Percentages rounded up/down and may not total 100%).

<table>
<thead>
<tr>
<th>Main islands (excludes c.71 km² comprising islands with area less than 2 km²)</th>
<th>Total land area in km² with total area improved shown in brackets</th>
<th>Land inside 1750 hill-dyke km²</th>
<th>Land inside hill-dyke in 1750 as % of total</th>
<th>Area improved from 1750-1882 km²</th>
<th>Area improved 1750-1882 as % of total</th>
<th>Area improved post-1882 as % of total</th>
<th>Total heath/bog km²</th>
<th>Heath/bog as % of total area</th>
<th>Shown on Figure No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Mainland N</td>
<td>192 (145.5)</td>
<td>58.5</td>
<td>30%</td>
<td>43.5</td>
<td>23%</td>
<td>43.5</td>
<td>23%</td>
<td>46.5</td>
<td>24%</td>
</tr>
<tr>
<td>West Mainland S</td>
<td>131.3 (92.3)</td>
<td>28.6</td>
<td>22%</td>
<td>30.55</td>
<td>23%</td>
<td>33.15</td>
<td>25%</td>
<td>39</td>
<td>30%</td>
</tr>
<tr>
<td>East Mainland</td>
<td>97.03 (90.73)</td>
<td>46</td>
<td>47.5%</td>
<td>29.61</td>
<td>30.5%</td>
<td>15.12</td>
<td>15.5%</td>
<td>6.3</td>
<td>6.5%</td>
</tr>
<tr>
<td>Hoy &amp; N Walls (N)</td>
<td>116.28 (7.98)</td>
<td>6.84</td>
<td>6%</td>
<td>0.57</td>
<td>0.5%</td>
<td>0.57</td>
<td>0.5%</td>
<td>108.3</td>
<td>93%</td>
</tr>
<tr>
<td>Graemsay</td>
<td>7.41 (6.27)</td>
<td>3.99</td>
<td>54%</td>
<td>0.57</td>
<td>8%</td>
<td>1.71</td>
<td>23%</td>
<td>1.14</td>
<td>15%</td>
</tr>
<tr>
<td>Part N &amp; S Walls</td>
<td>69.7 (17.63)</td>
<td>9.43</td>
<td>14%</td>
<td>4.51</td>
<td>6%</td>
<td>3.69</td>
<td>5%</td>
<td>52.07</td>
<td>75%</td>
</tr>
<tr>
<td>Flotta</td>
<td>6.97 (3.28)</td>
<td>2.05</td>
<td>29%</td>
<td>0.82</td>
<td>12%</td>
<td>0.41</td>
<td>6%</td>
<td>3.69</td>
<td>53%</td>
</tr>
<tr>
<td>Fara</td>
<td>3.28 (0.82)</td>
<td>0.41</td>
<td>12.5%</td>
<td>0.41</td>
<td>12.5%</td>
<td>0</td>
<td>0</td>
<td>2.46</td>
<td>75%</td>
</tr>
<tr>
<td>Burra</td>
<td>10.92 (9.75)</td>
<td>6.63</td>
<td>61%</td>
<td>1.17</td>
<td>11%</td>
<td>1.95</td>
<td>18%</td>
<td>1.17</td>
<td>11%</td>
</tr>
<tr>
<td>South Ronaldsay</td>
<td>44.07 (40.95)</td>
<td>19.11</td>
<td>43.5%</td>
<td>12.09</td>
<td>27%</td>
<td>9.75</td>
<td>22%</td>
<td>3.12</td>
<td>7%</td>
</tr>
<tr>
<td>Eday</td>
<td>22.68 (13.65)</td>
<td>4.83</td>
<td>21%</td>
<td>5.88</td>
<td>26%</td>
<td>2.94</td>
<td>13%</td>
<td>9.03</td>
<td>40%</td>
</tr>
</tbody>
</table>

These figures have been obtained by plotting the land inside the 1750 hill-dykes as shown on Mackenzie (1750); the land improved from 1750 – 1882 as shown on the 1st edition OS map, and the post-1882 figures from the land shown as currently under cultivation and grass on the modern OS maps. The areas in km² were calculated by applying a grid to the finished maps, counting the relevant number of grid squares and converting to square kilometres. These figures hence provide an estimate of land use at the appropriate time.
Table 4.3 continued

| Main islands (excludes c.71 km² comprising islands with area less than 2 km²) | Total land area in km² with total area improved shown in brackets | Land inside 1750 hill-dyke km² | Land inside hill-dyke in 1750 as % of total | Area improved from 1750-1882 km² | Area improved 1750-1882 as % of total | Area improved post-1882 km² | Area improved post-1882 as % of total | Total heath/bog km² | Heath/bog as % of total area | Shown on Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rousay | 42.24 (19.2) | 12.48 | 29.5% | 4.8 | 11% | 1.92 | 4.5% | 23.04 | 55% | N/A | 4.19 |
| Egilsay | 5.12 (4.48) | 0 | 0 | 1.92 | 37.5% | 2.56 | 50% | 0.64 | 12.5% | 4.19 |
| Wyre | 3.2 (2.88) | 1.92 | 60% | 0.32 | 10% | 0.64 | 20% | 0.32 | 10% | 4.19 |
| Sanday | 39.33 (37.06) | 17.67 | 45% | 15.39 | 39% | 4.56 | 10% | 2.27 | 6% | 4.20 |
| North Ronaldsay | 7.41 (6.84) | 5.13 | 69% | 1.14 | 15% | 0.57 | 8% | 0.57 | 8% | 4.20 |
| Shapinsay | 23.18 (22.42) | 13.49 | 58% | 7.98 | 34.5% | 0.95 | 4% | 0.76 | 3.5% | 4.21 |
| Gairsay | 2.28 (1.14) | 1.14 | 50% | 0 | 0 | 0 | 0% | 1.14 | 50% | 4.21 |
| Stronsay | 31.97 (27.83) | 21.39 | 67% | 5.52 | 17% | 0.92 | 3% | 4.14 | 13% | 4.22 |
| Westray | 39.84 (33.12) | 21.6 | 54% | 10.08 | 25% | 1.44 | 4% | 6.72 | 17% | 4.23 |
| Papa Westray | 7.2 (5.28) | 4.8 | 66.5% | 0.48 | 6.5% | 0 | 0% | 1.92 | 27% | 4.24 |
| Orkney Total | 904 (590) km² | 286 km² | 32% | 177 km² | 20% | 126 km² | 14% | 314 km² | 35% | N/A |

Mackenzie does not show a hill-dyke on his chart of Egilsay but this does not mean that the island was not inhabited or cultivated. Certainly Egilsay features in the 1595 Rental paying a substantial rent for such a small island of 9 lasts of bere and £20 in cash (Peterkin 1820), which implies a substantial area under cultivation. Probably the bulk of the land (1.92km²) shown as improved in 1882 was already in cultivation in 1750.
The current Orcadian landscape is consequently almost entirely improved, with the exception of some 314km² of rough heath and peat bog (Table 4.3) in largely upland areas which are either uneconomic or unsuitable for improvement⁸⁰.

The difficult question to answer is how much archaeological evidence has been lost through these and other activities. In light of the scale and the methods of improvement discussed in this chapter, and the propensity of sites to be quarried for building stone (Section 4.4.6), any figure for loss can only be speculative. Given the thoroughness with which agricultural improvements were carried out (Section 4.4), that there has been large-scale unrecorded⁸¹ destruction is clear. In 1750 approximately 28,600ha of land was enclosed by the hill-dykes (Table 4.3), but by the time of the publication of the 1st edition OS maps of 1882 (the first comprehensive survey of Orkney and the first to include archaeological detail, however incomplete: Section 3.6), improved land totalled 44,757ha, an increase of over 16,000ha⁸² (Table 4.1). Although the total of improved land then remained fairly static until work started on the Inventory (RCAMS 1946) in 1928 (itself somewhat limited in scope: Section 3.7.1), land used for rough grazing had increased by 4,767ha (Table 4.1) which is likely to have entailed further damage to sites (Section 4.4.2). There was then broadly a 50-year gap between the conclusion of the RCAMS (1946) Inventory surveys and the new surveys of the 1980s (e.g. Hunter et al 1982 & 1984; Lamb 1982 & 1989; Section 3.8.1), during which time an extra 4,189ha of land had been improved (Table 4.1). The coverage achieved by these later surveys was however incomplete, hence around 50% of Orkney has not been systematically surveyed since 1937 (Section 3.9), when the surveys for the Inventory (RCAMS 1946) were

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⁸⁰ The figures in Table 4.3 are not adjusted to allow for areas that have been improved/partially improved or cultivated but have subsequently been allowed to relapse into heathland e.g. the Quandale area of Rousay (Section 5.6).

⁸¹ Apart from occasional brief accounts in e.g. the OSA (Anon 1927, 10; Clouston, W 1927a, 134; Sections 3.3.1 & 4.2.5).

⁸² Together with un unrecorded area of rough grazing, which may have been at least fenced and drained (Section 4.4.2).
completed (Section 3.8.1): between 1937 and 1995 a further 7,451ha of land was improved throughout Orkney (Table 4.1).

The scale of pre-1882 destruction, unrecorded apart from occasional brief accounts (e.g. Anon 1927, 10; Clouston, W 1927a, 134; Thomas 1852, 122), is difficult to quantify. The only point from which to start is Petrie’s 1849 letter (quoted in Section 4.4.6), which states that upwards of 100 ‘tumuli or barrows’ were being swept away in the parish of Sandwick. This means 100 mounds large enough to be obvious; Petrie’s choice of words hint that these mounds contained significant structural stonework, which may suggest that he was not referring to ‘barrows’ in the modern sense:

[The agricultural improvements] ... which appropriate and swallow up the materials of which these old sepulchral monuments are constructed (Petrie 1849, quoted in Davidson & Henshall 1989, 15).

Sites that Petrie might have considered ‘tumuli or barrows’ in 1849 would have included large settlement mounds e.g. brochs, together with chambered tombs and Bronze Age barrows83 (Section 3.5.3).

Table 4.5 below provides speculative numbers for the sites that may once have existed, based on Petrie’s figures in Sandwick extrapolated to Orkney, for a range of site-types; it is apparent that a significant number of substantial sites are likely to have been destroyed. The resultant figures are at best indicative but even the most conservative result implies significant loss.

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83 Petrie refined his terminology c.1860 (Section 4.4.6) but in 1849 was still using the terms ‘tumuli or barrows’ to indicate a wide range of sites.
Since Petrie’s figure of 100 is likely to be an approximation and he failed to define mounds in terms of size or nature, this calculation has been made using varying combinations of possible sites and extrapolated for Orkney assuming that losses were similar and proportional to area. Rows (1) to (3) show estimates based on the assumption that Petrie’s 100 sites were either (1) all brochs or (2) all chambered tombs or (3) all barrows. Rows (4) to (7) show estimates based on combinations of sites. Row (7) assumes that Petrie’s 100 sites were comprised of all three site types and is hence the most conservative estimate of loss.

Table 4.4 Speculative estimates of original site densities in Orkney based on the possible permutations of sites that Petrie (writing in 1849) may have considered among his 100 ‘barrows or tumuli’, which had been destroyed in the recent past.\textsuperscript{84} See Appendices 7, 9 and 10 for site details.

<table>
<thead>
<tr>
<th>Site type</th>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
<th>Column E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current total of each site category recorded in Sandwich</td>
<td>Speculative original Sandwich total (Column A figure + 100 destroyed)</td>
<td>Percentage of surviving sites or combination of sites in Sandwich</td>
<td>Current total of each site or combination of sites recorded in Orkney</td>
<td>Projected original total of each site category or combination of sites in Orkney, extrapolated from the percentage survival rate in Column C</td>
</tr>
<tr>
<td>(1) Brochs</td>
<td>9</td>
<td>109</td>
<td>8%</td>
<td>135</td>
<td>1,687</td>
</tr>
<tr>
<td>(2) Chambered tombs</td>
<td>5</td>
<td>105</td>
<td>5%</td>
<td>89</td>
<td>1,780</td>
</tr>
<tr>
<td>(3) Barrows</td>
<td>134</td>
<td>234</td>
<td>57%</td>
<td>728</td>
<td>1,277</td>
</tr>
<tr>
<td>(4) Brochs + Tombs</td>
<td>14</td>
<td>114</td>
<td>12%</td>
<td>224</td>
<td>1,867</td>
</tr>
<tr>
<td>(5) Brochs + Barrows</td>
<td>143</td>
<td>243</td>
<td>59%</td>
<td>863</td>
<td>1,463</td>
</tr>
<tr>
<td>(6) Tombs + Barrows</td>
<td>139</td>
<td>239</td>
<td>58%</td>
<td>817</td>
<td>1,409</td>
</tr>
<tr>
<td>(7) Brochs + Tombs + Barrows</td>
<td>148</td>
<td>248</td>
<td>60%</td>
<td>952</td>
<td>1,587</td>
</tr>
</tbody>
</table>

\textsuperscript{84} Since Petrie’s figure of 100 is likely to be an approximation and he failed to define mounds in terms of size or nature, this calculation has been made using varying combinations of possible sites and extrapolated for Orkney assuming that losses were similar and proportional to area. Rows (1) to (3) show estimates based on the assumption that Petrie’s 100 sites were either (1) all brochs or (2) all chambered tombs or (3) all barrows. Rows (4) to (7) show estimates based on combinations of sites. Row (7) assumes that Petrie’s 100 sites were comprised of all three site types and is hence the most conservative estimate of loss.
Petrie’s ‘tumuli or barrows’ were those easily visible as substantial mounds, and his figures can have taken little or no account of the destruction of less obvious features; destruction which continued unabated a decade later:

_‘I continually hear of graves having been opened in one place and a Picts-house broken into in another, and the whole removed and destroyed’_ (Petrie 1927, 29, written in 1859).

Sandwick was one of the parishes well ahead in improvements by 1845, since William Watt, the Laird of Skaill (Figure 4.24), was an enthusiastic early improver and had already made significant improvements by 1834 (Section 4.3.3). The old hill-dyke around Skaill House is shown in Figure 4.25 with the location of Skaill House marked. Figure 4.26 shows the known archaeological sites around Skaill House, and there are marked gaps that coincide with the area of Watt’s early improvements (e.g. Clouston 1845, 61). There are very few reported sites within 1-2 km of his home farm in any direction. It is noticeable that there are no burnt mounds recorded in this area, which, given the ability of burnt mounds to survive in improved landscapes (Section 5.7) is considered to be testament to the thoroughness of the Watt improvements rather than reflecting past distribution. Petrie’s 1849 figures for destroyed sites in Sandwick almost certainly did not include the ‘immense abundance’ of tumuli which were visible at the Links of Skaill in the late eighteenth century (Lysaght 1972, 288; Section 6.3.2); these were likely to have already been destroyed during the course of Watt’s pre-1834 improvements (Section 4.3.3). Apart from the five barrows excavated around the time of Sir Joseph’s Banks’ visit in 1772 (RCAMS 1946, vol. II, no. 718, 267-8; discussed in Section 6.3.2 below) there is no record of the fate of the rest; their position falls within the archaeologically-blank area noted on Figure 4.26, and today there are no traces of any archaeological sites at the Links of Skaill (Figure 4.27).

There are hints from elsewhere in Orkney that the ‘immense abundance’ of tumuli at the Links of Skaill was not unusual and that such sites were commonplace in other areas, for example Barry’s (1805, 94-5) reference to the numerous groups of tumuli that could be found at a wide range of Orkney
locations (Section 3.4.1). A similar impression of both their ubiquity in Orkney, and that they were threatened with destruction, comes from Thomas (1852, 90):

[There are] ... great numbers of barrows scattered throughout the islands; I imagine that at least two thousand might be numbered; and ... half as many more have probably been removed or obliterated from within the inclosures ... These barrows ... may be seen upon the very top of a hill, or upon the brow, or halfway down, upon the moor, or by a burn, or by the sea side. They are single, or in confused groups.

Any estimate based on Petrie's remarks (Table 4.5) also takes no account of earlier losses, and this factor presents a particularly difficult exercise in quantification. There is likely to have been significant unrecorded destruction taking place on the lands associated with the old Orkney townships and in their immediate vicinity (Sections 4.2.2 & 4.2.4). For example no surface traces remain and there was no local knowledge of the broch shown 100m to the south east of Skaill House on Figure 4.26, which was discovered by geophysical survey (OCGU 2008; Ovenden et al 2009, 126, fig. 2). This broch may well have served as a convenient stone quarry during the early seventeenth century, when several wings of the present Skaill House were constructed, or possibly earlier: Skaill House is on the site of a twelfth/thirteenth century Norse cemetery (James 1999) which was presumably associated with a nearby settlement.

As noted (Section 4.6.3) the Orkney Barrows Survey found that 147 previously recorded barrows had been destroyed in the 30 years between the 1960s – 1990s (Downes 1997a, 5-6 & 2005, 46). Between 1967 and 1995 a total of 5,715ha of land were improved in Orkney (Table 4.1); i.e. in the intervening 30 years one barrow was destroyed on average for every 39ha of land improved. The first record of Orkney sites comes from the surveys for the 1st edition OS maps of 1882 (Section 3.6), when these maps were produced approximately 44,757ha of land (Table 4.1) had already been improved in Orkney (Table 4.3). Assuming the same ratio of destroyed barrows per hectare of improved land (1/39ha) suggests that 1,148 barrows
were destroyed in the pre-1882 wave of improvement, which, added to the around 728 recorded from 1882 onwards, gives an Orkney estimated total of at least 1,876 barrows. The quantification of historic site destruction will be discussed in more detail in Chapter 5, in a consideration of archaeological survival throughout Orkney.

This history of archaeological destruction highlights the pitfalls of making assumptions about modern archaeological distributions without a thorough understanding of the formation processes of the archaeological record. Recognition of the impact of these processes however enhances our understanding of the nature of the archaeological and historic Orcadian environment.
Chapter 5 Archaeological survival in an improved landscape

5.1 Introduction

Most of the economically and agriculturally viable land in Orkney (around 65% of Orkney’s landmass) has been subject to agricultural improvement (Table 4.3). This development of Orkney’s modern agricultural landscape has been extremely destructive of archaeological remains (Chapter 4). This chapter builds on the evidence set out in Chapters 3 and 4, to highlight that Orkney’s surviving archaeological distributions cannot be understood in isolation but must be set against its formation processes. Differing practices or underlying reasons must be considered in each area or island of Orkney for any real comprehension of biases, random or systematic differences between original, recorded and surviving archaeological evidence. Areas where Bronze Age sites may survive are examined below to illustrate this theme: these include upland areas now largely covered by blanket peat; coastal margins; small islands and other areas abandoned in the historic period and areas that are marginal for agriculture, hence remaining largely unimproved. Relict landscapes are identified and the implications of surviving Bronze Age site densities in these areas considered in relationship to the rest of Orkney.

5.2 Upland/blanket peat areas

The majority of the unimproved land in Orkney lies in the upland zone, where blanket peat has developed from the mid/late 2nd millennium BC onwards (Section 2.2.2). Evidence for both Neolithic and Early/Middle Bronze Age settlement and land use in these areas will consequently largely

85 ‘Relict landscapes’ is generally employed as a shorthand ‘for the easy visibility and a particular limited form of survival of some types of archaeological data’ (Fairclough 2011, 134); in this thesis the term is used in a similar shorthand sense to indicate areas where there is survival of a range of Bronze Age sites (both domestic and non-domestic) in a defined area of marginal/unimproved land.
remain invisible under peat of varying thickness (e.g. Whaness Burn: Lamb 1996; Section 7.12.2; sub-peat dykes: Sharman 2007c; Section 8.4.1). Remains exposed during peat cutting are only periodically mentioned in historic accounts and none of these were recorded in detail (e.g. Thomas 1852; Spence 1915); they are likely now to be obscured by re-growth of heather and peat.

There are no comprehensive palaeoclimatic reconstructions for Bronze Age Orkney (Section 2.2.3) and the upper altitude limit of Bronze Age (or indeed Neolithic) settlement is unknown. Modern arable cultivation and good-quality improved grassland is limited to the lowland zone below c.50m OD; the upper limit for agriculture (in terms of land improved for grazing) lies between c.75 – 100m OD, although due to Orkney’s hyper-oceanic climate much of this land is inherently marginal and can very easily revert to bog (Berry 2000, 54). Post-medieval settlement concentrated in the lowland zone (e.g. Mackenzie 1750; Table 4.3) but gradually expanded in the nineteenth century and today most settlement sites still lie below 75m OD86. The highest known Orcadian Neolithic settlement, at Stonehall Knoll, is situated in the modern upland zone at 65m OD, albeit in a very sheltered location (Richards, Brophy et al 2016), whilst that at Smerquoy, St Ola, which had evidence of Early Bronze Age settlement (Gee et al 2016; Section 7.3.5) lies at 47m OD. Both sites are outside the area of early post-medieval settlement and were improved in the period between 1882 and 1902, as shown on the 1st and 2nd edition OS maps.

The enclosures and prehistoric house surviving under a shallow covering of peat at Peerie Hill, Sandwick (HY21NW60; Moore 2013, 97-9 & 150-5) however, lie on a comparatively exposed hilltop at 68m OD, 1.4km inland on the Atlantic coast87. The enclosures consist of large orthostats and smaller stones set in a low bank (ibid, 150-5), not dissimilar to some of the sub-peat dykes and enclosures known from elsewhere in Orkney and tentatively

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86 As shown on the Ordnance Survey 1:25,000 Explorer maps of Orkney.
87 Site no. 28, Figure 9.17.
suggested to be of Bronze Age date (Section 8.4.1). Geophysical survey revealed a 16m external diameter roundhouse with stone-faced but midden-cored walls, which Moore (ibid) suggests may be a Late Bronze Age – Early Iron Age roundhouse; there may be a palimpsest of earlier structures on the same site.

The chronology of peat formation at Peerie Hill is unknown, but nearby environmental sampling sites may provide chronological clues. Land suitable for rough grazing was superseded by blanket peat formation at some sites in the West Mainland in the mid-late 2nd millennium cal BC and at others (in both the West Mainland and Hoy) in the late 2nd/early 1st millennium cal BC (Farrell 2009, 214 & 295-9; Keatinge & Dickson 1979; Section 2.2.2). The barrow at Mousland, Stromness lies 2km to the south of Peerie Hill, 1.2km inland at an elevation of 90m OD (Downes 1994a). Immediately prior to the construction of the barrow c.1951 – 1456 cal BC the soil consisted of acidic peaty humus, and the environment around the site was open heathland, primarily heather, interspersed with areas of grassland. Evidence for the burning off of vegetation (ibid, 147-50) is suggestive of rough grazing with periodic burning to control the growth of heather, as was observed at other Orkney sites of a similar date (e.g. Farrell 2009, 214; Keatinge & Dickson 1979; Section 2.2.2). Based on environmental similarities to other marginal Orkney sites, it appears likely that the Peerie Hill site became untenable for occupation towards the end of the 2nd/start of the 1st millennium BC, suggesting that the settlement itself may tentatively be assigned to the Middle/Late Bronze Age rather than the Early Iron Age.

The site at Peerie Hill illustrates the potential for Bronze Age settlement sites to survive in upland areas obscured by blanket peat. Further support for this premise comes from the possible Bronze Age settlement site exposed by peat cutting, associated with a burnt mound and sub-peat dykes at Overbist.

88 Burnt mounds in the Northern Isles are specialist buildings which are demonstrably Bronze Age; the dating evidence in support of this, their function, structural forms, implications for Bronze Age settlement patterns and their relationship with other Bronze Age sites, is discussed in Chapter 9. For the purposes of this chapter the presence of a burnt mound is taken as an indication of Bronze Age activity in the area under discussion.
Birsay, at an elevation of c.95 – 100m OD (Spence 1915; Section 8.4). Whilst it is clear that areas obscured by blanket peat have the potential for archaeological survival (e.g. Hobbister: Sharman 2007c), this potential will largely remain hidden: large-scale peat cutting no longer takes place in Orkney (personal observation), and in the absence of grant-aided schemes (Section 4.6.3) improvement of very marginal land is no longer financially viable.

5.3 Coastal margins

Coastal areas on the margins of the developed landscape may also provide limited areas of archaeological survival. Land on the coast is subject to salt spray and is more exposed than inland areas at equivalent height. As the coastline has receded due to erosion, historic settlement sites have often migrated further inland, leaving shoreline sites relatively undisturbed (e.g. along the Evie coast, where major farms of this district are set back from now-coastal eroding brochs (Figure 5.1), some of which may incorporate Bronze Age components: Section 7.15). A fenced margin is now usually left at the seaward edge to allow for further coastal erosion to take place without necessitating unduly frequent replacement of the field boundaries. This has created coastal strips where archaeological remains persist preferentially because of less intensive contemporary land use (e.g. Moore & Wilson 1997a & 1999a). At Cantick Head, South Walls for example, an array of Bronze Age sites survives in the coastal strip (Figure 5.2), including two double houses89, barrows and a burnt mound. Similar survival is seen in the Westness area of Rousay, where prehistoric settlement and funerary sites survive on the coastal edge of an otherwise intensively improved area (Section 5.6). The unimproved coastal margin may be wide and can incorporate the more exposed headlands, leading to pockets of survival adjacent to intensively improved landscapes. In South Ronaldsay for example only around 7% of land (c.3.12km$^2$) is unimproved (Table 4.3) but this includes a small headland

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89 The double house is a distinctive Bronze Age form in the Northern Isles and is fully discussed in Sections 7.4 – 7.8.
in the southern tip of the island (Figure 4.17c). Survey here has identified 150 sites of archaeological interest in an area of c.60ha, including prehistoric settlement sites, field systems and earthworks, although none of these sites can be assigned to period (Hedges & Constantine 2011; Lillie et al 2010).

5.4 Small islands

Many of the smaller islands in Orkney are either no longer, or sparsely, inhabited (Section 2.1), and their potential for archaeological survival may be illustrated by three examples: Eynhallow, Auskerry and Linga Holm\(^90\) (Figure 1.2). Eynhallow, an island with an area of around 62ha, has been uninhabited since 1851, when four crofting families, whose homes had been adapted from the remains of a twelfth-century monastery, were evicted to make way for sheep (Mooney 1923, 11). Since then the island has been used for rough grazing, leaving it as an unimproved landscape, with the exception of the infield around the monastery, which has since reverted to heath. The north east corner of the island has a relict landscape with two probable prehistoric settlement sites, a burnt mound, kerb cairns and a number of indeterminate mounds (Figure 5.3). A Bronze Age presence in Eynhallow is indicated by the funerary sites and burnt mound, suggesting that one if not both of the identified prehistoric settlement sites may also be of Bronze Age date. One of the settlement sites, Monkerhouse (HY32NE28), was the subject of a short excavation in the 1920s, which revealed a circular structure with an apparent hearth; but no diagnostic artefacts were recovered (ibid, 30-32; RCAMS 1946, vol. II, no. 614, 234). The subsequent occupation of the extant Norse monastery in Eynhallow by the crofters may have helped facilitate survival here\(^91\) (cf. Section 4.4.6).

\(^90\) These islands were chosen since they are the only small islands that each has at least two out of the three Bronze Age site types recorded: settlements, burnt mounds and barrows/cists. Other small uninhabited islands have only one type recorded e.g. Copinsay has a burnt mound (Figure 9.18); Cava and Fara have funerary sites (Figure 9.19); the Holm of Faray has a double house (Figure 9.20).

\(^91\) The initial construction of the monastery of course required a source of stone; it may have arrived by boat as ready-dressed stone, or possibly the monastery was itself sited on a prehistoric site.
The similar sized (around 72ha) island of Auskerry lies in an exposed location on the eastern fringes of Orkney (Figure 1.2). It is a largely unimproved island, although the density of known sites suggests that it was well-occupied in prehistory (Figure 5.4). Historic settlement has been largely absent but there is evidence of early Christian activity in a chapel site, which may overlie earlier settlement (HY61NE1; Lamb 1984, 34, no. 194; Figure 5.4, no. 5); there are no records pertaining to its use. Auskerry is mentioned in the 1595 Rental (Peterkin 1820, 87), when the island was uninhabited but used for grazing; this was also its use in the eighteenth century (Anderson 1927, 297). Historic settlement began in 1867, when the newly built lighthouse was manned (Lamb 1984, 34, no. 194), the 1st edition OS map shows cultivation limited to c.0.36ha adjacent to the lighthouse; on its automation in 1961 the island was again abandoned until reoccupation in 1981 by a crofting family who use the island as rough grazing for sheep. This unusual history has facilitated the high density of surviving archaeological sites (Figure 5.4). Bronze Age occupation can be demonstrated by the presence of a burnt mound and a double house, whilst a substantial prehistoric, possibly Pictish, settlement site 60m to the southwest of the chapel (ibid, no. 191) may indicate a high-status settlement, with possibly earlier origins (Section 7.15). The remaining nine probably prehistoric settlement sites cannot be assigned to period, but two of them lie within 120 – 180m of the burnt mound. No potential Bronze Age barrows were identified in Auskerry, but this does not preclude Bronze Age funerary activity: cists dug into the old ground surface (e.g. Greig 1931; Section 4.5.2; Figure 4.10) would not, in the absence of agricultural improvement, have been disturbed by later activity, hence would remain unrecorded.

Linga Holm, an island of around 62ha (Figure 1.2), is very similar in character to Auskerry; it too is an almost totally unimproved island with little occupation during the historic period, but with a high density of prehistoric sites (Figure 5.5). From at least 1595 to the end of the eighteenth century Linga Holm was uninhabited and used for seasonal grazing (Anderson 1927, 92).
297; Peterkin 1820, 87); by 1841 a single family was in residence but only ‘a small portion is under cultivation’ (Rintoul 1845, 157) and the island had been abandoned by the time of the survey for the 1882 1st edition OS maps. Bronze Age settlement and funerary activity can be demonstrated by the presence of a double house and a probable Bronze Age oval house\(^93\) (Figure 5.5), together with a barrow containing a cist, which had already been emptied without record when noted by the RCAMS (1946, vol. II, 335-6, no. 993). Other prehistoric settlements include a roundhouse\(^94\), and a substantial, possibly Pictish, house, which Lamb (1984, 37, no. 213) compared to that recorded in Auskerry (ibid, 34, no. 191), together with a further prehistoric settlement site and several indeterminate mounds. The OSA records the presence of ‘an old chapel in ruins’ in Linga Holm (Anderson 1927; 319) but this cannot now be located (Lamb 1984, 37, no. 217).

Eynhallow, Auskerry and Linga Holm are primarily suited to rough grazing rather than arable cultivation; this is also the case at Whaness Burn, Hoy, a similarly marginal landscape exploited for grazing in the 2\(^{nd}\) millennium cal BC (Lamb 1996; Section 7.12.2). The occupation of such landscape components in the Bronze Age might tentatively be linked to an increasing importance of sheep husbandry in this period (Section 8.2). The density of undisturbed prehistoric sites in these three small islands hints at the level of likely destruction in those other areas of Orkney more favourable to subsequent historic (and presumably prehistoric) settlement.

5.5 The relict landscapes of Sanday’s headlands

Sanday is a low-lying island\(^95\) differentiated from other areas of Orkney by both the absence of peat deposits and the presence of large areas of

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\(^93\) Oval houses may be Bronze Age by analogy with examples known from Shetland, discussed in Section 7.8.2.

\(^94\) Which does not preclude a Bronze Age date (e.g. Tofts Ness, Sanday: Dockrill 2007c; Section 7.9).

\(^95\) Most of Sanday lies below 25m OD and rises to a maximum of 65m OD in the south western peninsula (OS 1:25,000 Explorer Series Sheet 465).
windblown sand (Appendix 5, Figure A5.10). Sanday is the second most cultivated area in Orkney, with only 6% of land unimproved; 84% of the island was improved before 1882 (Table 4.3; Figure 4.20b); such early improvement usually contraindicates survival and hence the reporting of archaeological features (e.g. Section 4.8.3). The least favourable areas of Sanday for modern agriculture are the coastal peninsulas, partly due to their more exposed positions but also because of the accumulation of significant depths of windblown sand that protects underlying archaeological deposits (Figure 5.6). None of the peninsulas discussed here – Tofts Ness, Els Ness, Tres Ness and Spurness – were enclosed within the hill-dykes that defined the intensively-used land shown on Mackenzie’s (1750) charts (Figure 4.20a).

5.5.1 Tofts Ness

The Tofts Ness peninsula extends to c.1.5km² of low-lying machair, with rough grazing at the northern end; the southern part contains the focus of historic settlement (Dockrill 2007a). An undisturbed archaeological landscape was revealed here in 1818:

*The sand has lately blown away to the depth of nearly 20 feet [6m]⁹⁶, and has discovered the remains of buildings of a remote antiquity, inclosed by stone walls nearly half a mile in extent; some of the houses are very large, and roofed with stones of a prodigious size. There are circular tumuli, each containing three graves, none of which are more than four feet six inches in length (Anon 1818, 271-2).*

A subsequent account confirms the density of archaeological remains in the peninsula, and describes probable Bronze Age cists (Section 6.1.2) and kerb cairns:

*The greater part of the Ness has been enclosed with a chain of forts, which were connected by a stone-wall. Within this wall, the ground has been covered with buildings of various sizes: circles of stone set on edge, with frequently an upright central stone, are still to be seen, and numerous graves lined with flat stones, and also surrounded by*

---

⁹⁶ Comparable erosion has occurred at the Links of Noltland in Westray (Moore & Wilson 2011a; Section 7.6.3) and Cata Sand, Sanday (Cummings et al 2016; Section 5.5.3).
small circles of stones ... some of them contain human bones, others contain only ashes (Traill 1845, 136).

Although the landscape that survives today at the Tofts Ness peninsula represents a fraction of that originally revealed in 1818, archaeological survival here remains impressive, consisting of nine large mounds and around three hundred smaller mounds, with dykes, banks and enclosures, the majority of which appear to be prehistoric, including settlements and chambered tombs (Dockrill 2007a, 1-7; Dockrill, Gater & Simpson 2007, 128-31; Stevenson 1980; Figures 5.7 & 5.8).

Mound 11 was the subject of excavation and proved to be a multi-period settlement site, with continuity of occupation from the Neolithic to the Early Iron Age (Dockrill, Bond et al 2007; Section 7.3.5). Mound 8, Shelly Knowe, is a Bronze Age double house and adjacent burnt mound, both of which are easily identifiable from surface traces; however associated settlement elements have been revealed by geophysical survey including a roundhouse around 27m to the north west of the double house, and an infield area of anthropogenic soils (Dockrill, Gater & Simpson 2007, 120-6; Figures 5.9 & 5.10). The Tofts Ness peninsula was nonetheless always marginal for settlement or agriculture and required significant continuing efforts to maintain the fertility of the soils (Dockrill 2007d; Section 8.2). A selection of other major monuments on the south of the peninsula (Figure 5.8) were investigated using walkover survey, geophysical survey, test pitting and soil analyses (Dockrill, Gater & Simpson 2007); the results are summarised in Table 5.1.
<table>
<thead>
<tr>
<th>Mound Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Funerary site/prehistoric settlement?</td>
</tr>
<tr>
<td>7</td>
<td>Prehistoric settlement</td>
</tr>
<tr>
<td>8</td>
<td>Shelly Knowe: burnt mound, double house, roundhouse</td>
</tr>
<tr>
<td>11</td>
<td>Excavated: multi-period settlement</td>
</tr>
<tr>
<td>20</td>
<td>Prehistoric settlement</td>
</tr>
<tr>
<td>21</td>
<td>Prehistoric settlement</td>
</tr>
<tr>
<td>22</td>
<td>Funerary/prehistoric settlement?</td>
</tr>
<tr>
<td>23</td>
<td>Prehistoric settlement</td>
</tr>
<tr>
<td>24</td>
<td>Burnt mound</td>
</tr>
</tbody>
</table>

Test pits were excavated into the anthropogenic soils associated with the infield area around the double house and roundhouse at Shelly Knowe (Areas X and Y, Figure 5.8) and radiocarbon dates obtained from both the bottom and the top of the enhanced soils; in each case the upper layers of the profiles consisted of windblown sand (Ambers 2007; ibid; Simpson, Dockrill, Bull et al 1998). In Area X, dates of 1980 – 1520 cal BC, and in Area Y dates of 1740 – 1520 cal BC and 1220 – 920 cal BC (ibid) show that anthropogenic soil formation associated with the double house began in the early-mid 2nd millennium cal BC. Enhanced magnetic responses around the fringes of Mounds 6 and 22, but a magnetically quiet core, suggested that these substantial mounds may have been chambered tombs that acted as foci for later settlement (Dockrill, Gater & Simpson 2007, 128-9 & 138). The four further prehistoric settlement sites identified included two set 65 – 120m from the burnt mound (Mound 24; Figure 5.8). Without excavation, most of the boundary features on the Tofts Ness peninsula cannot be assigned to period, although surface traces indicate some time depth to their construction (Dockrill 2007a, 6) whilst some overlie mounds thought to be chambered tombs (e.g. Mounds 2 and 3: Stevenson 1980; Figure 5.7) thus supporting a post-Neolithic date. Some of the banks (e.g. Bank ‘B’ west of Mound 7, Figure 5.7) have the box-like orthostatic construction seen in the
sub-peat dykes of Eday (Dockrill 2007a, 6), which may be Bronze Age (Section 8.4.1). South of the excavated settlement site at Mound 11 a possible treb dyke survived, attributed to the Bronze Age (Lamb 1983a) but possibly Iron Age, as discussed in Section 8.5.1, especially since Mound 11 included Early Iron Age settlement components (Dockrill 2007c).

5.5.2 Els Ness

A comparable landscape to that at Tofts Ness was recorded on the Els Ness peninsula (Figure 5.6), with a similar arrangement of cairns and dykes:

... from Augmund’s Howe, there may be traced the remains of a wall thickly studded with circular forts ... enclosing fully a third of the whole Ness. ... The enclosed space is literally covered with tumuli and heaps of ruins ... these tumuli ... contained burned stones, ashes, bones and sea shells. In some of them, were graves lined with flat stones. Throughout the Ness, there are several circles of stones, with, for the most part, a central stone also set on edge. None of these stones are more than two feet above the ground ... all the circles measured nearly the same in circumference, about 36 feet [11 metres] (Traill 1845, 136-7).

Much of this landscape was destroyed by agricultural improvement in the 1750 – 1882 period (Figure 4.20b) and no finds were reported, but one chambered tomb (Quoyness: Childe 1952), a possible tomb (Augmund Howe: HY63NE3) and around 37 barrows (Downes 1998e; HY63NE5 & HY63NE6) survive in the unimproved portion of the Els Ness peninsula (Figure 5.11). One double cist containing a flexed inhumation has been partially excavated (HY63NE 5), confirming the identification of some of the ‘tumuli’ as probable Bronze Age funerary sites. Circles of stones with a central stone setting were also found at Tofts Ness, and four further examples somewhere near Kettletoft (Figure 5.6). By comparison with the Late Bronze Age example excavated at Tofts Ness (Dockrill 2007c, 46-8; Section 7.9) these may tentatively be identified as the remnants of roundhouses with stone facings to a turf-cored wall, the central stone representing the hearth. Traill (1845, 136)

97 This construction method is also seen at Skirmie Clett in Wyre (Section 8.4).
98 This is further supported by the large amount of cramp in this area: see Section 3.4.2
distinguished between tumuli with burials and those containing ‘burned stones, ashes, bones and sea shells’, which suggests midden deposits indicative of further settlement rather than funerary sites; some may have been burnt mounds.

5.5.3 Cata Sand and Tres Ness

The Tres Ness peninsula (Figure 5.6) was improved between 1750 – 1882 with no reported archaeological finds at this time (Figure 4.20c), although there are several surviving prehistoric sites including a chambered tomb and a broch on the fringes of the cultivated area (Figure 5.12). Tres Ness, in common with Els Ness, is connected to the rest of Sanday by a dune system, adjacent to a tidal bay known as Cata Sand. Deflation of the dunes revealed fourteen possible Bronze Age houses distributed along gravel banks and in the intertidal zone (Cummings et al 2016; Towrie 2015; Figure 5.12). These houses presented as circular stone spreads with dense scatters of coarse stone tools, including ard points and stone mattocks99, along c.1km of coastline (ibid). Geophysical survey around a concentration of structural remains at Grithies Dune (Figure 5.12) indicated a further settlement focus of c.400m². Excavation exposed structural elements including hearths, drains and orthostats, with an artefact assemblage indicative of Bronze Age date (Cummings et al 2016).

The settlement at Cata Sand cannot at present be more closely dated than a general attribution to the Bronze Age and, due to the severity of erosion, little can be said about the structural forms present there. The apparently dispersed nature of the settlement may possibly be an artefact of differential survival, but it parallels that seen at the Links of Noltland (Section 7.6.3). A Late Bronze Age date for the abandonment of the Cata Sand settlement seems likely, based on the later dune formation: the dune system just to the north, at the Bay of Lopness (Figure 5.6), developed in the late 2nd/early 1st millennia cal BC (Sommerville et al 2007). It is notable that abandonment of

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the site at Links of Noltland with subsequent dune formation was approximately synchronous (Hamlet 2014, 286-7, Moore & Wilson 2013; Hazel Moore pers. comm.).

Cata Sand joins a growing number of sites exposed by recent dune deflation in Orkney. It is increasingly obvious that Orkney’s dune areas should be regarded as possessing high archaeological potential, perhaps especially for Bronze Age domestic remains that will have trapped sand, accentuating dune formation (e.g. the Links of Noltland, Westray: Section 7.6.3).

5.5.4 Spurness

The surviving elements of the c.100ha prehistoric landscape at Spurness in the southern tip of Sanday (Figure 5.6) suggest a similar original density to that seen at aforementioned headlands. By 1882 the process of improvement had begun in the southern half of the peninsula (Figure 4.20b). The remainder of the peninsula was subsequently fenced and improvement commenced (Figure 4.20c), but this had been allowed to lapse into heathland by 1974, enabling a number of sites to survive there (Figure 5.13). These include one possible and three definite prehistoric settlements, two of which lie within 140m of a burnt mound (Hunter & Dockrill 1991, 28-9; Nichol 2012) together with a kerb cairn and a treb dyke (Section 8.5). Only the funerary site has been excavated, and dates to the early/mid 2nd millennium cal BC (Sharman 2007a). Prehistoric settlement is proven at three sites but is undated (Hunter & Dockrill 1991, 28-9; Nichol 2012); in the presence of other Bronze Age landscape components it seems reasonable to assume that at least one of the nearby settlements was Bronze Age in date.

5.6 Quandale and Westness, Rousay: contrasting survival

The extant pre-improvement landscape of Quandale presents a contrast in archaeological survival to the neighbouring heavily improved Westness area (Figure 5.14). The c.300ha of the Quandale area was within the Westside hill-dyke, and can be seen to be so on Mackenzie’s 1750 chart (Figure 5.15). In
1845 all the Quandale crofts, and some of the Westness holdings, were cleared of their tenants and the whole area merged to form Westness Farm; the remaining tenants were cleared between 1848 and 1859 (Thomson 1981b, 46-9). Inner and Outer Westness contained the best quality land, and were laid out into large squared fields, divided by drystone dykes, which are strikingly obvious on the 1882 1st edition OS map (Figure 5.16). In Quandale, drainage was improved by the construction of 45 miles (72km) of open ditches and the land was enclosed by six miles (10km) of stone dykes (ibid, 48); this land was not further improved but used only as rough grazing, whilst the infield land around the empty crofts (still visible in 1882: Figure 5.16) was allowed to revert to heath.

This combination of rough grazing and highly improved land has created an interesting example of differential archaeological survival. The recorded archaeological sites in the Quandale zone are shown in Figure 5.17 and those in the Westness area in Figure 5.18. The contrast is striking: Quandale has large numbers of burnt mounds and barrows scattered throughout the district; in Westness, sites survive only along the coastal strip and on the unimproved heathland at higher altitude above the improved areas. No archaeological finds were reported from the Quandale/Westness area before or during the clearances. In Westness, apart from the coastal strip, the only known archaeological finds are flint scrapers, leaf arrowheads and a stone axe found in the field above Midhowe Broch in the 1930s (Anon 1935, 438; 1936, 359; 1938, 9). By the time of the 1st edition OS maps, the lands of Quandale had been uninhabited for nearly forty years and consequently the ONB of 1880 contain little witness information about the area, with only four tumuli marked and without further details. In Westness there was effectively nothing archaeological left for the OS surveyors to map outside the coastal strip. Westness provides an example of early and total improvement, reminiscent of the total archaeological destruction seen in lands around

100 These ONB 1880 entries are the burnt mounds of Knowe of Dale: OS1/23/16/23 (HY33SE15); Lower Quandale: OS1/23/16/32 (HY33SE27); Quoyalonga Ness: OS1/23/16/17 (HY33SE5) and the barrow at Upper Quandale: OS1/23/16/31 (HY33SE21).
Binscarth, Firth (Section 4.4.4). A further factor influencing archaeological survival is coastal erosion: the majority of the Westness sites (Figure 5.18) are actively eroding, with broch towers now sectioned by the sea (e.g. South Howe: Dockrill et al 2010), demonstrating considerable erosion here since the Iron Age. Any sites that were closer to the shore in the Bronze Age will have already been destroyed.

Quandale’s relict landscape exhibits burnt mounds and barrows, interspersed with the ruins of nineteenth-century crofts, but prehistoric settlement sites are notably absent here (Figure 5.17). The neighbouring island of Eynhallow (Section 5.4) was cleared at the same period, and the cultivated land allowed to revert to heath in the same way, yet in Eynhallow, in addition to the burnt mound, kerb cairns and indeterminate mounds, two prehistoric settlement sites are known (Figure 5.3). Similarly in other areas discussed in this chapter, e.g. the Tofts Ness (Section 5.5.1; Figure 5.8) and Spurness (Section 5.5.4; Figure 5.13) peninsulas in Sanday, the well-preserved relict landscapes include burnt mounds, barrows and prehistoric settlement sites, some of which have been proven to be Bronze Age in date (e.g. Mound 11, Tofts Ness: Dockrill 2007b & c; Sections 7.3.5 & 7.9).

The crucial difference here may be the historic settlement pattern: none of the Sanday peninsulas are a focus for historic settlement, whilst in Eynhallow the twelfth-century monastery was occupied as a farm into the historic period; recycling of stone from prehistoric structures for building purposes, common elsewhere (Section 4.4.6), was unnecessary in these areas such that earlier settlement sites were not quarried for building stone. Contrastingly, in Quandale, it may be suggested that some at least of the nineteen crofts in the area (Figure 5.17) were built using stone reused from convenient prehistoric settlement sites. Many of these crofts were in their turn demolished and their fabric employed to construct some of the 10km of new stone dykes\(^{101}\) erected after the Quandale clearances (Thomson 1981b, 48), any remnant prehistoric structures may have been finally destroyed for their stone during this period.

\(^{101}\) A major undertaking, requiring around 10,000 tonnes of stone (Section 4.4.6).
Tentative support for this theory comes from the place-name evidence, particularly in the case of the house of Tafts, at the north end of Quandale. ‘Tafts’ is a corruption of ON topt, house-site, a common place-name element in Orkney, ‘usually, if not always, found applied to a site where there are traces of prehistoric building’ (Marwick 1952, 16). Tafts appears to have been the first historic settlement in Quandale, suggesting that it occupied the best land most likely associated with any prehistoric settlement site (Sections 7.1 & 7.15).

5.7 Extrapolations based on relict landscapes

There are thus pockets of archaeological survival in Orkney, despite the scale of agricultural improvement (Table 4.3). It is clear (Section 4.9) that the archaeological record is a poor reflection of original prehistoric site density. Extrapolating past site densities from current distributions has not been attempted for any class of sites of the Orcadian Bronze Age; or for other prehistoric sites in Orkney apart from chambered tombs (e.g. Childe 1942; Davidson & Henshall 1989, 14-15; Fraser 1983; Renfrew 1973, 132-7). Any attempt at reconstructing past settlement densities across Orkney based on the survival patterns discussed in Sections 5.2 – 5.6 can only be speculative; few of the relict landscapes have the full range of common prehistoric site types, as is shown in Table 5.2 below.

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102 First recorded in 1601 but stylistically argued to be considerably older (Clouston 1924, 12-14), Tafts was the most substantial dwelling in Quandale (hence its appearance on Mackenzie’s (1750) chart as a navigational aid).
Eynhallow had 25 inhabitants in the late eighteenth century (Leslie 1927, 243) and probably had about the same in 1750, but did not have a hill-dyke.

The lighthouse keepers were in residence by 1882 (Section 5.4).

Most of the island is unimproved rough grazing (Section 5.4).

Antiquarian accounts describe an extensive Bronze Age and Neolithic funerary landscape at Tofts Ness (Section 5.5.1).

Table 5.2 Types of sites in each of the relict landscapes discussed above, together with cultivation status in 1750, 1882 and today.

<table>
<thead>
<tr>
<th>Site</th>
<th>Inside hill-dykes i.e. subject to cultivation in 1750</th>
<th>Improved or under cultivation in 1882</th>
<th>Improved or in cultivation today</th>
<th>Barrows</th>
<th>Burnt mounds</th>
<th>Bronze Age settlement</th>
<th>Brochs</th>
<th>Other Prehistoric settlement</th>
<th>Chambered tombs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cantick Head</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Eynhallow</td>
<td>Yes&lt;sup&gt;103&lt;/sup&gt;</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Probably</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Auskerry</td>
<td>No</td>
<td>No&lt;sup&gt;104&lt;/sup&gt; (majority)</td>
<td>No&lt;sup&gt;105&lt;/sup&gt; (majority)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Linga Holm</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Tofts Ness&lt;sup&gt;106&lt;/sup&gt;</td>
<td>No</td>
<td>No</td>
<td>Rough grazing</td>
<td>Destroyed</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Destroyed</td>
</tr>
<tr>
<td>Els Ness</td>
<td>No</td>
<td>Yes (majority)</td>
<td>Yes (majority)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Tres Ness &amp; Cata Sand</td>
<td>No</td>
<td>Yes</td>
<td>Yes (majority)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Spurness</td>
<td>No</td>
<td>Yes for c.50%</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Probably</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Quandale</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<sup>103</sup> Eynhallow had 25 inhabitants in the late eighteenth century (Leslie 1927, 243) and probably had about the same in 1750, but did not have a hill-dyke.

<sup>104</sup> The lighthouse keepers were in residence by 1882 (Section 5.4).

<sup>105</sup> Most of the island is unimproved rough grazing (Section 5.4).

<sup>106</sup> Antiquarian accounts describe an extensive Bronze Age and Neolithic funerary landscape at Tofts Ness (Section 5.5.1).
Table 5.3 below shows the density of prehistoric settlement sites, definite/probable Bronze Age settlement sites\textsuperscript{107}, barrows and burnt mounds in the relict landscapes discussed in Sections 5.3 – 5.5. These figures are expressed as a ratio of sites to hectares, which is then extrapolated to the whole of Orkney, based on the 51,518ha of improved land recorded in Orkney in 1995 (Table 4.1). Few sites in these landscapes are closely datable. The extrapolations in Table 5.3 therefore unavoidably treat ‘the Bronze Age’ as a unitary period.

As can be seen from the calculations in columns E – F, there are considerable variations in numbers across Orkney when extrapolated from different relict landscapes. Row (8) of Table 5.3 indicates the overall mean numbers of sites extrapolated from all the relict areas, whilst rows (9) and (10) attempt to allow for possible distortions by removing areas potentially introducing skewing factors: row (9) excludes Quandale, since there are no settlements sites here but large numbers of surviving burnt mounds and barrows. Row (10) presents the mean numbers of sites based on Cantick Head, Eynhallow and Spurness, the only areas where all three Bronze Age site-types – definite/probable settlements, burnt mounds and barrows – are present. It is impossible to confirm which, if any, of these extrapolations gives the most accurate prediction of the number of sites that have been lost, but the averages presented in row (10) may be the closest acceptable approximation.

\textsuperscript{107} Assuming that the presence of burnt mounds and barrows in both Eynhallow and Spurness implies that at least one of the prehistoric settlement sites is these two areas is also Bronze Age. ‘Settlement site’ is used as a generic term to indicate a site with at least one probable Bronze Ageprehistoric house; this term is used rather than ‘house’ since some of the sites in the relict landscapes and elsewhere are known to be multi-period and/or more extensive e.g. Tofts Ness (Dockrill, Bond et al 2007) or Washbister, Stenness (Section 4.2.4; Figure 4.3) where the double house is the visible element of a settlement complex covering 5ha, of which no surface traces remain. In the relict landscapes discussed here and in subsequent chapters each discrete mound with evidence of domestic activity (see Section 7.1) is treated as a separate settlement. Similarly the term ‘prehistoric settlement’ excludes brochs (only present at Cantick Head).
Table 5.3 Estimated original numbers of prehistoric and Bronze Age settlements, barrows and burnt mounds in Orkney, calculated from the numbers of surviving sites in relict landscapes, extrapolated to the 1995 total of 51,518ha of improved land in Orkney. N.B. ‘Prehistoric settlements’ excludes brochs, present only at Cantick Head.

<table>
<thead>
<tr>
<th>Location used as basis for extrapolation</th>
<th>Area (ha)</th>
<th>A: Identified or probable barrows</th>
<th>B: Burnt mounds</th>
<th>C: Total number of prehistoric settlement sites</th>
<th>D: Number of those in column C definitely or probably Bronze Age settlement sites</th>
<th>E: Barrows</th>
<th>F: Burnt mounds</th>
<th>G: Prehistoric settlement sites</th>
<th>H: No. of those in column G definitely or probably Bronze Age settlement sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Cantick Head</td>
<td>60</td>
<td>4 (1/15ha)</td>
<td>1 (1/60ha)</td>
<td>2 (1/30ha)</td>
<td>2 (1/30ha)</td>
<td>3,434</td>
<td>857</td>
<td>1,717</td>
<td>1,717</td>
</tr>
<tr>
<td>(2) Eynhallow</td>
<td>62</td>
<td>2 (1/31ha)</td>
<td>1 (1/62ha)</td>
<td>2 (1/31ha)</td>
<td>1 (1/62ha)</td>
<td>1,662</td>
<td>831</td>
<td>1,662</td>
<td>831</td>
</tr>
<tr>
<td>(3) Auskerry</td>
<td>72</td>
<td>0</td>
<td>1 (1/72ha)</td>
<td>11 (1/7ha)</td>
<td>1 (1/72ha)</td>
<td>N/A</td>
<td>715</td>
<td>7,360</td>
<td>715</td>
</tr>
<tr>
<td>(4) Tofts Ness</td>
<td>150</td>
<td>Unknown</td>
<td>2 (1/75ha)</td>
<td>8 (1/18.75ha)</td>
<td>2 (1/75ha)</td>
<td>N/A</td>
<td>687</td>
<td>2,748</td>
<td>687</td>
</tr>
<tr>
<td>(5) Linga Holm</td>
<td>62</td>
<td>1 (1/62ha)</td>
<td>0</td>
<td>5 (1/12.5ha)</td>
<td>2 (1/31ha)</td>
<td>831</td>
<td>N/A</td>
<td>4,121</td>
<td>1,662</td>
</tr>
<tr>
<td>(6) Spurness</td>
<td>100</td>
<td>1 (1/100ha)</td>
<td>1 (1/100ha)</td>
<td>3 (1/33.33ha)</td>
<td>1(1/100ha)</td>
<td>515</td>
<td>515</td>
<td>1,547</td>
<td>515</td>
</tr>
<tr>
<td>(7) Quandale</td>
<td>300</td>
<td>23 (1/13ha)</td>
<td>10 (1/30ha)</td>
<td>0</td>
<td>0</td>
<td>3,963</td>
<td>1,717</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>(8) Average of 1 - 7</td>
<td>806</td>
<td>31 (1/26ha)</td>
<td>16 (1/50ha)</td>
<td>31 (1/26ha)</td>
<td>9 (1/90ha)</td>
<td>1,981</td>
<td>1,030</td>
<td>1981</td>
<td>572</td>
</tr>
<tr>
<td>(9) Average excluding no. 7</td>
<td>506</td>
<td>8 (1/63ha)</td>
<td>6 (1/84ha)</td>
<td>31 (1/16ha)</td>
<td>9 (1/56ha)</td>
<td>818</td>
<td>613</td>
<td>3,220</td>
<td>920</td>
</tr>
<tr>
<td>(10) Average of nos. 1, 2 &amp; 6</td>
<td>222</td>
<td>7 (1/32ha)</td>
<td>3 (1/74ha)</td>
<td>7(1/32ha)</td>
<td>4 (1/56ha)</td>
<td>1,610</td>
<td>696</td>
<td>1,610</td>
<td>920</td>
</tr>
</tbody>
</table>

N.B. 'Prehistoric settlements' excludes brochs, present only at Cantick Head.
There are around 728 barrows, 297 burnt mounds and 28 probable Bronze Age settlement sites recorded in Orkney. The figures from Table 5.3, row (10) suggest that of the order of 45% of barrows (728/1,610), 43% of burnt mounds (297/696) and 3% of Bronze Age settlements (28/920) once extant have been recorded. Cantick Head is the area with the widest range of surviving prehistoric sites of those discussed, despite being the area most constantly in agricultural use (Table 5.2); if Cantick Head is representative of the general density pattern within Orkney, then 21% of barrows (728/3,434), 35% of burnt mounds (297/857) and 2% of Bronze Age settlement sites (28/1,717) have been recorded. These figures appear high, but sites here survive only on the coastal margin (Figure 5.2). Since Cantick Head is only 0.5km across at its widest point this may reflect the original site distribution.

Barrows and burnt mounds are site types that have been recorded in relatively large numbers; a recording bias towards barrows has its roots in the antiquarian interest shown in such sites (e.g. Clouston 1845, 55; Low 1776). The survivability of burnt mounds in an improved landscape has been noted, as has their ability to be recognised (due to the visibility of fire-cracked stones in a blackened soil matrix) even when ploughed out, resulting in their possible usefulness as indicators of past settlement patterns (Barber & Russell-White 1990a; Hunter 1991 & 1996a). This will be discussed in Sections 9.5 and 9.7 below.

A conservative figure of 1,876 for the original number of barrows in Orkney may be extrapolated from known figures for losses in the 1960s – 1990s (Section 4.9); this is consistent in terms of scale order with the calculated averages in Table 5.3, excluding Cantick Head (row 1) and Quandale (row 7).

Brochs appear to occupy the prime, historically settled land, with 92% (124/135) situated inside the 1750 hill-dykes, a figure which rises to 97% (117/119) if Sanday's brochs are excluded (Section 7.15; Table 7.7; cf. Roberts

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108 See Appendices 7, 8 and 12. Quantifying Orkney's (non-broch) prehistoric settlement sites is beyond the scope of this thesis; Canmore (05/06/17) lists 214 settlements and 523 mounds and cairns, some of which are funerary but some may be settlements.
The current distribution of brochs across Orkney in relationship to the land inside the 1750 hill-dykes is shown in Table 5.4: their mean density is 1/220 ha of land improved in 1750.

<table>
<thead>
<tr>
<th>Island or Area</th>
<th>Land inside the 1750 hill-dykes (ha)</th>
<th>No. of recorded Brochs inside the hill-dykes</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Mainland</td>
<td>8,710</td>
<td>59 (1/148ha)</td>
</tr>
<tr>
<td>East Mainland</td>
<td>4,600</td>
<td>12 (1/383ha)</td>
</tr>
<tr>
<td>Hoy, N &amp; S Walls</td>
<td>1,627</td>
<td>6 (1/271ha)</td>
</tr>
<tr>
<td>Burray</td>
<td>663</td>
<td>4 (1/166ha)</td>
</tr>
<tr>
<td>South Ronaldsay</td>
<td>1,911</td>
<td>4 (1/478ha)</td>
</tr>
<tr>
<td>Westray</td>
<td>2,160</td>
<td>7 (1/308ha)</td>
</tr>
<tr>
<td>Papa Westray</td>
<td>480</td>
<td>3 (1/160ha)</td>
</tr>
<tr>
<td>Sanday</td>
<td>1,767</td>
<td>9 (1/196ha)</td>
</tr>
<tr>
<td>North Ronaldsay</td>
<td>513</td>
<td>1 (1/513ha)</td>
</tr>
<tr>
<td>Shapinsay</td>
<td>1,349</td>
<td>5 (1/270ha)</td>
</tr>
<tr>
<td>Gairsay</td>
<td>114</td>
<td>1 (1/114ha)</td>
</tr>
<tr>
<td>Stronsay</td>
<td>2,139</td>
<td>5 (1/428ha)</td>
</tr>
<tr>
<td>Rousay</td>
<td>1,248</td>
<td>8 (1/152ha)</td>
</tr>
<tr>
<td><strong>Orkney Total</strong></td>
<td><strong>27,281ha</strong></td>
<td><strong>124 (1/220ha)</strong></td>
</tr>
</tbody>
</table>

These locations potentially include some important Bronze Age settlements, since some brochs at least may be multi-period sites with Bronze Age components or direct antecedents (e.g. St Boniface, Papa Westray: Lowe 1998; discussed in Section 7.15). Apart from Cantick Head, however, none of the relict landscapes considered above have recorded brochs within them, which probably reflects their marginality.

Cross-checking against Cantick Head’s (the only example relict area that was inside the 1750 hill-dykes) single broch gives a density of 1/60ha, suggesting an Orkney total of 477 brochs by the methodology used here, compared to the total of 135 brochs currently recorded. Brochs were extensively quarried for their stone (e.g. Oxtro Broch, Birsay: Petrie 1874, 76-8; Section 4.4.6), and it
is known from geophysical survey that they can be removed without trace or a mention in the historical record (e.g. Skaill, Sandwick: OCGU 2008; St Peter’s Bay, St Andrews: Ovenden 2006); similarly there are examples where a brief notice mentions their total destruction (e.g. the Knowe of Redland: ONB 1880, OS1/23/22/28; Section 3.6.2). The figure of one broch/60ha at Cantick Head is very high compared to the averages in Table 5.4, which range from 1/114ha to 1/513ha, with an average for Orkney as a whole of 1/220ha. Similarly Cantick Head is the only example of a relict landscape with definite chambered tombs, of which it has two, giving a ratio of 1/30ha. When extrapolated to the entire area of Orkney this gives an estimated total of 1,717 tombs, compared to the 89 known examples, again a high total (but see Table 4.4). This may imply an unknown bias affecting this class of monuments or area, and it is possible that this also affects the totals for Bronze Age sites.

If any set of average figures (rows 1 – 10 in Table 5.3) gives even a poor approximation to ancient reality, then it is clear that very large numbers of Bronze Age (and other prehistoric) settlement sites have been destroyed without record in Orkney.

5.8 Differential survival case study: Eday

5.8.1 Introduction

Eday is one of the smaller islands of Orkney (Figure 1.2), 13km long and 4km wide at the widest point, with a total area of 22.68 km² of which 13.65 km² (60%) is improved land (Table 4.3). Eday is low-lying, with approximately 70% of the island below 50m OD, with a maximum height of 90 – 100m OD in the south west. Modern (and historic) settlement concentrates in the eastern areas of Eday, especially in the southeast.

Examining the archaeological record of the island of Eday, two features stand out: one is the absence of brochs, and the other is the comparatively low ratio

109 OS 1:25,000 Explorer Series Sheet 465.
of four barrows to ten burnt mounds (Figure 5.19). Recorded barrows in Orkney (728) outnumber burnt mounds (297) by 246%; the Quandale relict landscape shows broadly these same proportions (Table 5.3, row 7): on this basis Eday should have around 25 recorded barrows. Similarly, based on the average ratio from Table 5.4, Eday is predicted to have at least two brochs.

A comparison may be made with Eday’s western neighbour, Rousay, which has a total area of 42.24km$^2$, of which around 19.2km$^2$ (45%) is improved land$^{110}$. Much of the interior of Rousay is upland, steeply sloping from the coastal strip to an elevation of 200 – 250m OD; approximately 65% of the island lies at an elevation above 50m OD$^{111}$. To remove a possible source of bias, the 300ha relict landscape in Quandale, Rousay with its 23 barrows and 10 burnt mounds (Section 5.6) has been excluded from the calculations in Table 5.5 and the following discussion; Eday lacks comparable relict landscapes.

Although Eday is geographically almost half the size of Rousay, its improved land area is 84% of Rousay’s; theoretically Eday might be expected to possess broadly 84% of Rousay’s total sites of all types, but as Table 5.5, Columns G and H show, this is not the case: Eday has around 35% of the total expected sites compared with Rousay, and strikingly, although at 83% it achieves near proportional equivalence with Rousay’s burnt mounds, it has only 17% of the expected barrows. Similarly when extrapolated totals for the islands are compared (Table 5.5, Columns E and F), Rousay and Eday’s percentages of recorded burnt mounds are not dissimilar at 64% and 55% respectively of the predicted total, but the largest difference is in the number of barrows, with only 9% of the number predicted in Eday are actually recorded there compared to 59% in Rousay.

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$^{110}$ This total includes the 300ha of Quandale, which was inside the 1750 hill-dyke and subject to drainage and dyke building but subsequently allowed to lapse into heath (Section 5.6).

$^{111}$ OS 1:25,000 Explorer Series Sheet 465.
Table 5.5 Comparison of recorded and estimated numbers of a selection of sites in Eday and Rousay (excluding both the 300ha of the Quandale relict landscape and the sites contained within). Excluding Quandale, the total improved land in Rousay = 1,620ha, of which 948ha was inside the 1750 hill-dykes; total improved land in Eday = 1,365ha, of which 483ha was inside the 1750 hill-dykes (Table 4.3). Eday has 84% of Rousay’s total of improved land. See Appendices 7-12 and Lamb (1982) for site details.

<table>
<thead>
<tr>
<th>Site Type and ratio used (from Tables 5.3 and 5.4)</th>
<th>Recorded numbers of sites</th>
<th>Estimated original site numbers (from ratios in Table 5.3, row 10, based on total improved land; broch estimates from Table 5.4 based on land inside 1750 hill-dykes)</th>
<th>Percentage of estimated original sites recorded (A compared to C; B compared to D)</th>
<th>Predicted number of Eday sites based on 84% of Rousay total from column A</th>
<th>Percentage of sites recorded (in Column B) compared to predicted number from Column G</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Rousay</td>
<td>B: Eday</td>
<td>C: Rousay</td>
<td>D: Eday</td>
<td>G: Eday</td>
<td>H: Eday</td>
</tr>
<tr>
<td>(1) Burnt mounds (1/74ha)</td>
<td>14</td>
<td>10</td>
<td>22</td>
<td>18</td>
<td>64%</td>
</tr>
<tr>
<td>(2) Barrows (1/32ha)</td>
<td>29</td>
<td>4</td>
<td>51</td>
<td>43</td>
<td>57%</td>
</tr>
<tr>
<td>(3) Brochs (1/220ha)</td>
<td>8</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>200%</td>
</tr>
<tr>
<td>(4) Bronze Age settlements (1/56ha)</td>
<td>0</td>
<td>0</td>
<td>29</td>
<td>24</td>
<td>N/A</td>
</tr>
<tr>
<td>(5) Prehistoric settlements (1/32ha)</td>
<td>7</td>
<td>3</td>
<td>51</td>
<td>43</td>
<td>14%</td>
</tr>
<tr>
<td>(6) Total of rows 1 - 5</td>
<td>58</td>
<td>17</td>
<td>153</td>
<td>130</td>
<td>38%</td>
</tr>
<tr>
<td>(7) Chambered tombs (N/A)</td>
<td>18</td>
<td>8</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
There is no obvious reason why Eday should possess (proportionally) 83% of the total of burnt mounds expected in comparison with those found in Rousay, but only 17% of the number of barrows. Similarly although Rousay has an above-average total of brochs (compared to what the analysis in Table 5.4 would predict), this does not explain the absence of brochs in Eday. Neither Rousay (apart from brochs) nor Eday has particularly good survival of prehistoric settlement sites (Table 5.5, row 6). Although each has an excavated Neolithic site (Rinyo, Rousay: Childe & Grant 1939 & 1947 and Green, Eday: Miles 2013), together with a reasonable surviving number of chambered tombs (18 in Rousay and 8 in Eday), suggesting significant Neolithic populations, neither has known Bronze Age settlements, which we assume must have existed, based on the presence of burnt mounds and barrows.

Early (pre-1882) improvement to the land here seems to militate against reporting of sites (Section 3.9) but both islands have a similar early history of improvement: 40.5% of land in Rousay and 47% of land in Eday was improved prior to 1882 (Table 4.3). The majority of land in Rousay with agricultural potential was already improved by 1882, reflected in the mere 4.5% improved after this date; in Eday a further 13% of land was improved post-1882, leaving a total of 60% of Eday and 45% of Rousay as improved land. If early improvement alone influenced the lack of archaeological records then Rousay should fare worse than Eday; this is not the case.

Eday provides a very good example of how many and varied factors influence both settlement patterns and archaeological site survival. For such a small island, it has a complicated history of earlier settlement and use, explored further below.

5.8.2 Solid geology

Eday is one of the few islands in Orkney where solid geology is important. As discussed (Section 2.1.2), Orkney’s solid geology is comparatively simple, mostly composed of flagstone formed from lake bed silts, which makes
excellent building stone. Eday is geologically different; the Eday beds are a gritty sandstone, formed from alluvial and aeolian sand (Mykura 1976, 80-9; Figure 5.20). This type of stone would have been extremely hard to work in prehistory since it does not split easily but can only laboriously be shaped into building blocks. Eday has areas of Upper Stromness Flags (USF) in the south and west, which split readily along flat bedding planes and is the preferred vernacular building material. There is also some Eday Marl in the North West, with alternate beds of a sandy siltstone and a gritty sandstone, the former suitable (but not ideal) for building use. Easily worked building stone is thus of limited availability in Eday and has therefore always been at a premium.

It is noticeable that the major areas of the early recorded settlements, shown by the townships as defined by hill-dykes, correspond with the areas of USF (Figure 5.20). All these early settlement areas are along the shore with access to the sea, and are possibly sited there for fishing, seaweed and transport but probably also to take advantage of building stone from coastal exposures. The only known Neolithic settlement site, at Green, in the south end of the island (Miles 2011 & 2012; Figure 5.19, no. 3) is situated very slightly east of the USF, but close enough to be within easy reach. All the excavated structures at Green are built of USF, together with water-worn beach cobbles.

The Eday burnt mounds are clustered on cultivable land on the coastal fringes (Figure 5.19): the prime area for prehistoric settlements and the focus of historic settlement. The surviving barrows and chambered tombs are on higher land down the spine of the island. Some of these tombs were quarried in the nineteenth century e.g. Eday Manse (Davidson & Henshall 1989, 117, ORK 16; Figure 5.19, no.25), which was largely destroyed in 1821 in pursuit of stone to build the adjacent parish kirk. Since easily accessible good building stone in Eday is scarce and stone-built archaeological sites are convenient quarries (Section 4.4.6), it is perhaps to be expected that little evidence of

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112 This is not explicitly mentioned in the interim reports but is visible in the published photographs e.g. Miles 2011.
prehistoric settlement would survive here.

The lack of brochs in Eday is puzzling; in other heavily improved areas of Orkney they survive well, even in islands where there has been early and comprehensive improvement (e.g. Burray: Section 4.8). Brochs were high-status sites, and their absence merits discussion. Brochs have an association with the best-quality land (defined by the township land inside the hill-dykes on Mackenzie’s (1750) chart: Table 7.7; Section 7.15). As can be seen from Table 5.4 (above), although there is variation across Orkney, on average there is one recorded broch for every 220ha of the land inside the 1750 hill-dykes; on this basis Eday might be expected to have two brochs. It is unlikely that an island the size of Eday lacked brochs, rather that they have been destroyed and their materials recycled. A broad indication of the most favoured location for a high-status settlement in historic times is the location of the ‘gentleman’s houses’ on Mackenzie’s (1750) chart. Eday has three: one, Carrick House, the laird’s house, at the north end, at a site with the most sheltered landing place in Eday, and two in Greentoft Township at the south end of the island (Figure 5.19, nos. 27, 28 and 29). Greentoft (the name of both the township and one of the gentleman’s houses) comes from the ON grœn[a]topt, a green area associated with old (usually prehistoric) buildings (Marwick 1952, 49). This is supported by the frequent finds of large building type stones whenever the field immediately to the south of Greentoft farm is ploughed (Lamb 1984, 13, no. 32). There are three burnt mounds close by (Figure 5.19, nos. 8, 9 & 10), indicating that this area is also likely to be a focus of Bronze Age activity. The second gentleman’s house in the Greentoft Township was the Old Palace (Hebden 2008, 54), now called the Castle of Stackel Brae (HY52NE6). Trial excavation here has revealed a high-status medieval/post-medieval settlement site, which appears to have been established on the site of a prehistoric settlement, as yet undated (Brend

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133 Although other small islands lack brochs (i.e. Egilsay, Fara, Flotta, Graemsay and Wyre) Gairsay, one of the smallest islands at only 1.2km² with a total of 114ha of land inside the 1750 hill-dykes, has one broch (Appendix 11, Figure A11.6).

134 Carrick is a seventeenth name for the new house built on the site of the earlier head house, the original (Norse) place-name is lost (Marwick 1952, 48-9).
The likely locations for brochs in Eday would thus be at these ‘gentlemen’s house’ sites, two of which are associated with prehistoric settlement. As is argued elsewhere in this thesis (Section 7.15), the localities occupied by brochs may have seen earlier settlement.

5.8.3 Superficial geology

Apart from the area covered by peat, the soils of Eday consist of glacial till deposits around the coastal fringes (Figure 5.21). These are deeper at the south end, and are composed of drifts derived from the flagstone and Eday beds, comprising podzols, peaty podzols, calcareous and non calcareous gleys of the Canisby association (Macaulay Institute 1981a). This is not dissimilar to other areas of Orkney, but the main distinction in both Eday and the Calf of Eday is the quantity and quality of the peat deposits. This is the only area in Orkney where peat has been cut and sold commercially, a practice first recorded in the sixteenth century (Hebden 2008, 146-8). The main nineteenth-century market for Eday peat was the Scottish distilleries, and this continued until stopped by the First World War. In 1925 peat cutting resumed on a much larger scale, concentrated in the north west of the island at the Red Head (ibid, 192-6; Figure 5.21). This was on an almost industrial scale, although the peat was still cut by hand. This industry devastated the peat beds at the Red Head and they were exhausted by 1939, when the operations switched to the west side (Figure 5.21), before finally ending in 1945. Peat cutting continued in Eday thereafter for the use of the islanders. There was some small scale commercial cutting from the Bomo moss on the east side of the island into the first decade of the twenty-first century but this too has now ceased (ibid, 246; personal recollection).

The peat cutting operations at the Red Head have left a landscape of rough heathland, revealing sub-peat dykes, a prehistoric settlement and a chambered cairn at the Muckle Hill of Linkataing (Davidson & Henshall 1989, 141, ORK35; Lamb 1984, 14, no. 39; Nayling 1983; Sharman 2007b; Sharman & Robertson 2007; Figure 5.19) and sub-peat dykes are known from other areas of Eday e.g. near Vinquoy chambered tomb (Fowler 1987, 12).
Sub-peat dykes (certainly prehistoric and some at least appearing likely to be Bronze Age: Section 8.4) are probably the remnants of larger systems, since much will have been destroyed during the cutting operations\textsuperscript{115}. Similarly much of the large enclosure at the Fold of Setter (Lamb 1984, 16, no. 57; Section 8.4) and its associated sub-peat dykes have been destroyed since first recorded by Petrie (1927, 28) in 1859. The only find actually reported during peat cutting at the Red Head was of sherds from three Iron Age pots\textsuperscript{116}, found 1m below the surface in an undisturbed 1.4m deep peat bank (HY53NE34; Lamb 1984, 17, no. 62). There is no palaeoenvironmental data available from Eday on which to base an estimate of either the commencement or the rate of peat growth in this area. Speculatively\textsuperscript{117}, it can be suggested that if a further 1m of peat had grown in the approximately 2,000 years since the deposition of the pot (0.5cm/100 years), then the peat may have begun to accumulate c.800 BC. The nearby sub-peat prehistoric settlement at Linkataing, where a saddle quern was indicative only of a date from the Neolithic to the Iron Age (Sharman 2007b; Sharman & Robertson 2007), is likely to be at least Bronze Age in date but may be earlier. The sub-peat remains of Eday thus indicate that there was once extensive settlement in areas subsequently covered by the peat.

5.8.4 Early improvement influencing the lack of record

The laird responsible for the first improvements in the early nineteenth century was an absentee landlord, Samuel Laing of Papdale, Kirkwall. Under his ownership the south end of Eday around Greentoft was fenced and drained c.1824 – 1828, entailing the construction of 2,167 fathoms (nearly

\textsuperscript{115} Peat cutting itself need not necessarily destroy sub-peat remains, but in order to extract peat there have to be peat roads, or in the case of the Red Head, a peat railway. These are constructed with the materials to hand, large stones being ideal to form secure footings, or to float railway sleepers.

\textsuperscript{116} Orkney Museum accession no. 1982/210: ‘at least three Iron Age pots - two flat based, one hanging’ (Julie Cassidy, Orkney Museum, pers. comm.), no further information is available.

\textsuperscript{117} Peat accumulation is not constant elsewhere in Orkney e.g. at Whaness Burn, Hoy the rate appeared constant from the third millennium cal BC to the 1\textsuperscript{st} millennium cal AD, but appeared to accelerate from cal AD c.1070 onwards (Farrell 2009, 185-6).
Requiring approximately 4,000 tonnes of stone (Hebden 2008, 116-17; Tulloch 1974, 62). This was a deliberate ploy beloved of lairds with an industry to staff: settlers were not given enough land to adequately support themselves and their families, so they were forced to work for their new laird in his quarry. They also had to build new houses for themselves and break out new land for subsistence agriculture. A further group of 13 North Ronaldsay settlers went to Eday in 1881, although this may have been voluntary (Tulloch 1974, 62). It is hard to imagine less conducive circumstances for any archaeological finds to be reported even if they were made.
5.8.5 Discussion

Many factors conspired to make Eday appear deficient in archaeological sites (Table 5.5). The distinctive geology, with its limited supply of suitable flagstones for building, necessitated the recycling of building stone, which has limited site survival. The early initial improvements undertaken by an absentee landlord, with no resident authority figure taking an interest in any remains encountered compounded the lack of record from the early period. Further improvement by an influx of settlers forced to quickly break out new land also militated against survival and reporting. Peat cutting on an industrial scale denuded the Red Head area, with unrecorded damage and destruction of sub-peat remains.

By the time that the 1st edition OS maps of 1882 were being compiled, Eday had changed completely from the picture of the landscape and its subdivisions presented in Mackenzie’s 1750 survey. Comparing the extent of settlement as indicated by townships defined by the hill-dykes in 1750 (Figure 4.18a), with the improved land shown in the 1st edition OS map of 1882 (Figure 4.18b) shows the extent of change. Just over 78% of the land in Eday that was suitable for improvement had already been improved by 1882, with the area in cultivation more than doubling between 1750 and 1882 (Table 4.3). This was accomplished on the orders of an absentee landlord and in haste by the North Ronaldsay deportees, who would have had priorities other than antiquarian interests. This seems to be reflected in the work of the Ordnance Survey for the 1st edition maps: the ONB 1880 entries for Eday are very poor, with few details about any of the sites that had been surveyed for the 1st edition OS map. The most detailed site description in the Eday ONB is merely:

*Erd House Vinquoy Hill NE, Erd House Vinquoy Hill S On the north east end is to be seen the site of a small Underground house. Also on the south end are the remains of a middling large house with small chambers therein* (ONB 1880, OS1/23/4/36).

The ‘middling large house’ is Vinquoy Hill chambered cairn; this was
excavated by James Farrer MP and the laird of Eday in 1857 (Davidson & Henshall 1989, 168-9, ORK 53), which surprisingly is not mentioned. The site on the north east end is badly damaged but may also be a chambered cairn (HY53NE16; Lamb 1984, 9, no. 2). The one site marked on the map as a ‘Brough’ (ONB 1880, OS1/23/4/112) is another chambered tomb, Eday Manse (HY53SE7). There appear to be unrecorded sites in Eday, mentioned in general terms in the ONB general entry for the island but not planned by the OS surveyor:

There are the remains of three, or four, Broughs or Picts’ buildings as they are more commonly called by the people, there are also underground houses, Funeral Piles and Standing Stones, what is called Funeral Piles consist entirely of an elliptical shaped mass of small stones which have apparently from their appearance been subjected to fire (ONB 1880, OS1/23/4/86).

The ‘funeral piles’ are burnt mounds; the ‘underground houses’ marked as ‘Erd houses’ on the 1st edition OS map are now known to be chambered tombs119. The ‘Broughs or Pict buildings’, (apart from Eday Manse), are not marked on the 1st edition OS map, and the classification of these sites remains elusive. It is possible that in this general entry there exists the only record of the ‘missing’ brochs of Eday.

Despite all this, the Bronze Age sites that have survived reasonably well (Table 5.5) are burnt mounds (Figure 5.19), both in the south end of Eday in some of the better land, and also in the west side settled by the North Ronaldsay emigrants. This would seem to support the suggestion (e.g. Barber & Russell-White 1990a; Hunter 1991, 182-3, 1996a, 61) that burnt mounds may recognisably and preferentially survive in a heavily improved landscape; the significance of this will be further discussed in Section 9.5.

5.9 Conclusion

This chapter has highlighted major difficulties in reconstructing past site

119 See Appendix 10, Table A10.1 for details of Eday’s tombs.
distributions from limited surviving evidence; many and varied factors have contributed to site survival. Agricultural improvement has, as discussed in Chapter 4, been extremely destructive across Orkney; however there are pockets of general archaeological survival (Sections 5.3 – 5.6). The extrapolation of site density estimates from the few relict landscapes to Orkney as a whole (Table 5.3) suggests considerable potential variation in (projected) site numbers. The examples of Eynhallow, Quandale and Eday demonstrate the necessity of considering the historical and geological backgrounds in addition to the archaeological information in order to reach an informed opinion regarding site survival.

With the exception of Cantick Head, all of the landscapes discussed above survive because either they are covered by peat (Section 5.2), are remote locations such as small islands (Section 5.4) or are otherwise marginal for agriculture, such as Sanday’s headland sites (Section 5.5); all of these areas were similarly marginal or less-favoured locations during the Bronze Age. Indeed, in the case of the excavated Mound 11 at Tofts Ness, much hard work was required on the part of the Bronze Age inhabitants to ensure the continued viability of the site (Dockrill 2007d; Section 8.2). That Bronze Age settlement included such marginal locations suggests that the more favoured areas of Orkney were comparatively densely populated at the same time.

The most obvious explanation for this exploitation of marginal areas is population pressure but the pattern of landscape use could be caused by social organisation. It is possible that access to the prime settlement areas was controlled and limited to some particular group; others may have had no alternative other than occupation of poorer locations. A similar model of land and resource control by a competitive elite has been suggested for the Iron Age in the Northern Isles (e.g. Dockrill & Bond 2015b, 493-7; Sharples 1984, 121-2; Section 7.15). Bronze Age occupation of marginal sites may hint that this hierarchical control of land dates from an earlier period.
Chapter 6 Burials and associated artefacts

6.1 Introduction

This chapter comprises a brief survey of the burial-related evidence from Bronze Age Orkney and an assessment of its significance. The nature of the transition between the end of the main phase of the Neolithic use of chambered tombs in the early 3rd millennium cal BC (e.g. Schulting et al 2010) and the development of distinctive Bronze Age burial practices is investigated. Evidence for use and/or remodelling of Neolithic chambered tombs during the Chalcolithic/Early Bronze Age is considered with regard to changing burial practices in the 3rd millennium BC. Artefacts from Orcadian burial contexts are evaluated in light of those from elsewhere in the British Isles, and the contrast between the few elite burials with high-status grave goods and the unaccompanied majority is analysed.

6.1.1 The limitations of the archaeological record

Whilst the burial record is that element of Orkney’s Bronze Age about which most is known, there nonetheless exists a considerable bias in the number of individual archaeological records towards antiquarian accounts of variable quality (e.g. Clouston 1845, 55-8; Petrie 1856, 58-60; Thomas 1852, 107-10) and ad hoc excavations of chance finds (e.g. Greig 1931; Hedges 1980; Marwick 1929a), albeit the latter is now formalised under the terms of the Human Remains Call-Off Contract\(^{120}\) (e.g. Duffy 2005; Innes 2016; Toolis 2004). There have been two modern excavations of Bronze Age barrow cemeteries, which both had limited aims: that at the Knowes of Quoyscottie, Birsay (Hedges 1977) was a rescue excavation in advance of agricultural improvement, whilst that at Linga Fiold, Sandwick (Downes 2005, 58-6, 251-86) was aimed at formulating a management strategy for these remains in the face of ongoing plough, rabbit and cattle damage at the site. A further important Bronze Age funerary site has recently come to light as a result of

\(^{120}\) Excavation of chance finds of human remains funded by Historic Environment Scotland.
aeolian erosion at the Links of Noltland, Westray and is currently under investigation; it is closely associated with a Bronze Age settlement (Moore & Wilson 2011a; Section 7.6.3). Of these three cemetery excavations, only the Knowes of Quoyscottie has been fully published (Hedges 1977).

In compiling the database and distribution maps of Bronze Age barrows and cists (Appendix 7) it was necessary to consider a number of interpretation issues. The majority of surviving barrows have not been excavated and their designation as barrows relies primarily on observations in field survey. Reporting quality varies for antiquarian excavations, from comparatively detailed descriptions (e.g. Petrie 1856, 58-60) to the terse ‘stone cist and ashes found’ with an accompanying date recorded in the ONB and on the 1st edition OS maps (e.g. Rantan, Birsay: ONB 1880, OS1/23/1/14). Diagnostic artefacts were rarely recorded, and the majority of the human remains from these historic finds have been lost, making ascription to precise period difficult, but it is usually assumed that cremations and crouched inhumations in cists, within or without a barrow, are Bronze Age in date (cf. Downes 2005, 32-9). This assumption is challenged by the excavation at Howe, Harray of a ‘typical Bronze Age’ crouched inhumation in a cist, which dated to c.3083 – 2624 cal BC (Downes 2003b; Downes & May 2005b, 297-8), a late Neolithic determination that may cast doubt on attributions to the Bronze Age of other crouched inhumations from antiquarian excavations. Similarly, cremations associated with steatite urns (see Section 6.3.4 below) have been seen as definitively Bronze Age in date. The majority of dated steatite urns from Orkney are Bronze Age (Sheridan 2007a, 171-2 & 184), however there are also 1st millennium AD dates from samples associated with steatite urns containing cremations. One came from a chance find at Sebay, St Andrews, and another was found near Stromness in the eighteenth century, apparently from a cist within a barrow (Sheridan 2003a, 169, 2004a & c & 2006, 205). A steatite urn was also found along with cremated bones in one of a number of cists overlying the Broch of Oxtro in Birsay; one of these cists had a Pictish symbol stone for its cover (Petrie 1856, 59-60 & 1874, 76). There is therefore a degree of uncertainty in the distribution maps of probable Bronze Age
burial sites presented in Appendix 7; this issue persists even when early reports of burials considered to be unreliable have been excluded\textsuperscript{121}.

6.1.2 Synopsis of Bronze Age burial practices in Orkney

Bronze Age burials, certain and probable, are numerous in Orkney. Around 728 barrows and 297 cists are known; 199 of these cists were within barrows. This section presents an overview of the results from excavated Bronze Age burials where an account of the excavation, however limited, has been published\textsuperscript{122}. Burial rites represented include both inhumation and cremation and the radiocarbon determinations available from Bronze Age burial contexts are shown in Charts 6.1 and 6.2 below. Inhumation was practised throughout the Chalcolithic and Bronze Age (Chart 6.2) whilst, as shown in Chart 6.1, the majority of the dates for cremation burials fall between c.2200 and 1300 cal BC. One of the cremations in the cist at Sand Fiold, Sandwick may however be later: a date of c.1000 – 800 cal BC was obtained from plant fibres\textsuperscript{123} placed over the cremation, which was not itself directly dated (Dalland 1999, 404-8; Section 6.2.2), suggesting that cremation may have been in use into the first millennium BC and thus throughout the Bronze Age.

\textsuperscript{121} The rationale behind the inclusion/exclusion of these reports may be found in Appendix 7.
\textsuperscript{122} Summarised in Appendix 7, Table A7.3.
\textsuperscript{123} Identified as a base layer of grasses directly over the cremation, with overlying sedge stems and leaves laid at right angles (Carter et al 1999).
Chart 6.1 Radiocarbon dates obtained from Chalcolithic/Bronze Age cremated human bone from burial contexts in Orkney. See Appendix 1, Table A1.1 for details and references. (Excludes the cremations from the Links of Noltland for which full details are not yet available).
Chart 6.2 Radiocarbon dates from Chalcolithic/Bronze Age inhumations in Orkney. All direct dates of human bone, (see Appendix 1, Table A1.1 for details and references); includes two dates from Isbister that may be Late Neolithic rather than early Chalcolithic.
Recent excavations at the Links of Noltland, Westray, have uncovered a well-preserved inhumation and cremation cemetery with around 65 burials, including fifteen in a large reusable cist (Moore & Wilson 2010a, 2011b & 2013; Section 7.6.3). Results of radiocarbon assays for 33 of the 65 individuals in this cemetery range from 2200 – 1960 BC to 980 – 820 BC, and are reported to be evenly distributed across this range (Hazel Moore, pers. comm.; Moore & Wilson 2011a, 38). The radiocarbon dates are currently undergoing Bayesian modelling for future publication and details are not yet available of how these dates relate to individual inhumations or cremations, but there appears to be overlap in burial practices, possibly more so in the earlier part of the sequence (Hazel Moore, pers. comm.).

The majority of reported Bronze Age burials in Orkney, both cremations (e.g. Crantit, St Ola: Marwick 1924c; shown in Figure 6.1), and inhumations (e.g. West Puldrite, Rendall: Corrie 1929; shown in Figure 6.2), were found in cists. This may partly reflect reporting bias: cists impede and can damage the plough and have to be physically removed when encountered, therefore more likely to be reported; a burial lacking a cist or similarly robust container would not cause an obstruction and might easily be destroyed unnoticed, without report. Cists may contain several individuals, and cremations and inhumations have occasionally been found together in the same cist (e.g. Riff, Rendall: Downes & May 2005b, 298-9; Backakelday, Holm: Marwick 1928a). There are also examples of double or two storey cists e.g. Crantit, St. Ola (Cursiter 1910; Petrie 1866a & 1870, Section 6.2.2). In Orkney’s acidic soil conditions unburnt bone frequently does not survive, resulting in cists lacking any human remains but which today are assumed to have contained inhumed remains that have decayed (e.g. Ballin Smith 2014, 110-14; Downes & May 2005b, 295-6). Historic records of the discovery of empty cists e.g. twelve in Northton, Birsay in 1866 (ONB 1880, OS1/23/1/173) or of cists containing only ‘brown fatty earth’ e.g. at the Knowe of Brenda, Birsay in 1860 (ibid, OS1/23/1/155) may represent such decayed inhumations but this is now impossible to verify; inhumation may consequently be underrepresented in the burial record.
The majority of cists (199 out of 297) have been found set on the natural ground surface and covered by a low barrow mound (e.g. Grant 1937); unobtrusive cists may have been placed into pits cut into the natural ground surface and probably were never covered by a barrow\textsuperscript{124} (e.g. Greig 1931; see Section 4.5.2; Figure 4.10). The barrow itself may be composed largely of earth and turves, with or without a kerb (e.g. Mousland: Downes 1994a), it may be a cairn of stone (e.g. Bu, Rapness: Barber et al 1996; Figures 6.3 & 6.4), and it may contain multiple burials such as primary and secondary cists (e.g. Ferndale, Rendall: Duffy 2005).

Barrows may be found singly or in groups\textsuperscript{125}, sometimes forming extensive barrow cemeteries e.g. Linga Fjold (Downes 2005, 251-86) or the Knowes of Quoyscottie, Birsay (Hedges 1977). Both of these sites were cremation cemeteries containing, in addition to cist burials, individual cremations placed in pits clustered around the barrows; references in older accounts to the recovery of large quantities of cramp\textsuperscript{126} in association with barrow cemeteries e.g. near Skae Frue, Sandwick (Thomas 1852, 107-10; Section 4.2.4) suggest that this was common. Inhumations may also be found under barrows (e.g. Corrie 1929; Neil 1981; Figure 6.2) but as yet no barrow cemeteries consisting entirely of inhumations have been excavated (although the majority of the 65 burials at the Links of Noltland are inhumations (Hazel Moore, pers. comm.; Moore & Wilson 2011a).

6.1.3 Referencing the past

At Varme Dale, Rendall, a thick deposit of charred cereal with an associated Early Neolithic radiocarbon date was sealed beneath a Bronze Age barrow, and it appeared that the substantial stone blocks utilised in the barrow kerb may have been taken from a nearby but unidentified Neolithic settlement (Richards, Downes et al 2016, 232). This sequence may be paralleled in the

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\textsuperscript{124} Following Downes (2005, 34) ‘unobtrusive cist’ is the accepted term for this type of cist in Orkney (e.g. Ballin Smith 2014).

\textsuperscript{125} Where barrows exist alone others of the group may have been destroyed (see Chapter 4).

\textsuperscript{126} Cremation pyre residue: see Section 3.4.2.
placing of a barrow over a levelled Neolithic house at the Knowes of Trotty:

This trait is almost certainly a desire by these communities to draw power and authority to themselves and their emergent ancestors by emphasising origins, situating their burial monuments upon the remains of their ‘founding-fathers’ (Downes et al 2016, 61).

There is a significant chronological gap between the two episodes of activity at Varme Dale: the Neolithic cereal deposit was associated with a date of c.3770 – 3620 cal BC (Richards, Downes et al 2016, 232), whilst the cremations recovered from the Bronze Age barrow have been dated to the seventeenth – thirteenth centuries cal BC (Downes 2003e). A substantial abandoned Neolithic settlement would probably have been visible as a mound even after the passage of 2,000 years, but how much significance might have been attached to its earlier status after such a hiatus is open to debate; it may rather represent the fortuitous reuse of a site with a convenient supply of accessible building stone.

The abandoned Neolithic settlement at Skara Brae (Section 7.3.3) also attracted burials in the late 3rd/early 2nd millennia cal BC: human bones found in the main passageway dated to c.2340 – 1915 cal BC (Petrie 1868a, 210; Thomas 2016, 93-4), whilst a crouched inhumation found in the sand deposits infilling House 1, about three feet (0.91m) above the hearth, dates to c.2024 – 1832 cal BC (Petrie 1868a, 210; Rick Schulting, pers. comm). The use of the passageway at Skara Brae for burial has echoes of the insertion of Early Bronze Age burials and cremations into the passageways at chambered tombs (e.g. Cuween, Firth: Sheridan 2005b; Section 6.2.1). Similarly, after the abandonment of the high-status settlement site at the Ness of Brodgar towards the end of the 3rd millennium cal BC (Card et al 2017; Section 7.3.4) Bronze Age cist burials were inserted into some of the backfilled structures (Marwick 1926). In addition to this interest in tombs and settlement sites, the henge at the Ring of Brodgar acted as a continuing focus into the Bronze Age.

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127 Although as discussed below (Section 6.3.1) it is equally possible that this earlier structure is a remodelled tomb not a house.
6.1.4 The Bronze Age funerary landscape surrounding the Ring of Brodgar

The henge at the Ring of Brodgar stands within a Bronze Age funerary landscape that demonstrates continued interest in the site most likely across the third millennium BC and beyond (Figure 6.5). Dating the construction and use of the Ring of Brodgar is problematic, with excavation limited to sections across the henge ditch (Downes, Richards et al 2013; Renfrew 1979, 39-43). Construction c.2600 – 2400 BC was suggested based on OSL dating (Downes, Richards et al 2013, 112-3) but the raw dates do not inspire confidence: two samples obtained from the base of the ditch produced dates of 3500 ± 800 BC and 3100 ± 600BC; other dates had similarly large error terms. The Stones of Stenness henge was probably constructed c.3020 – 2890 cal BC (Schulting et al 2010, 35-6). Henges elsewhere in Scotland have a long currency, and some Scottish henges were constructed in the late 3rd/early 2nd millennium cal BC (e.g. Broomend of Crichie, Aberdeenshire: Bradley & Clarke 2011, 19; North Mains henge, Perth and Kinross: Sheridan 2003a, 167). The henge at Pullyhour, Caithness contrastingly was constructed in the mid-2nd millennium BC and modified, with the addition of further banks and revetments, towards the end of the 2nd millennium BC (Bradley 2011, 122-6). Overall, then, there is no compelling reason to rule out construction, or at least modification, of the henge at Brodgar during the late 3rd/early 2nd millennium BC[128].

Very few of the mounds in the Brodgar landscape around the Ring have been excavated; those that have been were the work of James Farrer MP (Section 3.5.2). Plum-cake Knowe (Figure 6.5, no. 4) contained two cists with cinerary urns, one of steatite, together with cremated bones (Petrie 1856, 58-60). The excavation ended once it had attained a level about a metre above the surrounding ground surface, so, as Petrie noted, there may be a primary cist (and indeed further deposits) still to be found within this mound. The form of the steatite urn conforms to the type of Bronze Age urn found elsewhere in

[128] The chronology of the Ring of Brodgar is to be addressed by Bayliss et al (in press).
Orkney (RCAMS 1946 vol. II, no. 883, 305-6; see Section 6.3.4).

Farrer (1861 & 1862a, 18) also excavated the substantial mounds at Salt Knowe and Fresh Knowe (Figure 6.5, nos. 2 & 3); the former by sinking a central shaft and the latter with a trench across its northern end. Although these excavations penetrated to the subsoil beneath the mounds he found no funerary evidence in either case; both mounds were apparently entirely composed of a mixture of earth and stone (ibid). Petrie (1856, 59), who observed the excavation at Fresh Knowe, thought that it showed evidence of careful construction. That Salt Knowe is not a chambered tomb has been confirmed by ground penetrating radar (OCGU 2009). Rabbit damage and general erosion have also exposed a disturbed cist in the top of this mound; this feature was not noted by Farrer nor recorded by the Royal Commission (RCAMS 1946, vol. II, no. 884, 306), but was visible by 1966 (HY21SE14). Both Salt and Fresh Knowes remain enigmatic; their construction of stones and earth and the presence of a cist in the former are both typical features of Bronze Age barrow construction. There are a further ten probable Bronze Age barrows in the Brodgar landscape, nine of which form an extended cemetery to the south of the henge (Figure 6.5, nos. 6, 7 and probably 8); none of these has been excavated. Close to this barrow cemetery is the Comet Stone129, a large standing stone on a low mound accompanied by the broken stubs of two other stones (Figure 6.5, no. 5); this has no obvious parallels from other sites in Orkney and the nature of this monument remains obscure. Elsewhere however Bronze Age cremations have been found associated with single/paired standing stones (e.g. Carlinwell, Angus: Johnson 2012).

Around 800m to the north west of the Ring of Brodgar, beyond the prehistoric boundary of the Dyke of Sean (Section 8.6; Figure 8.14), lies the unexcavated Bronze Age settlement of Bookan Wasbister, covering an area of c.5ha (Section 4.2.4; Figure 4.3). From this settlement the Ring of Brodgar

 Origin obscure: Kummle is an Orkney dialect term for a prehistoric burial mound (from ON kuml, a grave mound/marker); e.g. the place-name Cumlaquoy, the cattle fold at the mound (Marwick 1952, 133). If the name is genuinely old, then the corruption of Kummle Stane to Comet Stone would support the monument being a burial mound; this remains a tentative interpretation.
appears silhouetted on the skyline, framed by Plum-cake Knowe on the east and Salt Knowe on the west (personal observation), a perhaps deliberate choice of location emphasising the continuing importance of Ring of Brodgar in the Bronze Age.

6.2 The transition from chambered tombs to cists

6.2.1 Introduction

The main phase of Neolithic burial activity at chambered tombs ends c.2900 – 2800 cal BC (e.g. Armit et al 2016; Hutchison et al 2015; Lawrence & Lee-Thorp 2012; Schulting et al 2010) but there is evidence that some of these monuments continued to act as foci for burial activity during the Chalcolithic/Early Bronze Age. At some tombs the chambers remained accessible, allowing for the sporadic insertion of artefacts together with further animal and human bone (Table 6.1 and Chart 6.3 below). It is difficult to say how widespread this practice may have been, since the majority of Neolithic tombs in Orkney have been cleared with only limited recording130 e.g. James Farrer’s work at Quoyness, Sanday (Davidson & Henshall 1989, 154-8, ORK44), and much of the bone, both animal and human, from the tombs is no longer extant so that further dating programmes are not possible. There are however clear cases of later use. The entrance passageway at Cuween, Firth (Charleson 1902), for example, was sealed by a final inhumation c.2150 – 1930 cal BC (Sheridan 2005b), implying that the chamber was accessible until this date; the upper chamber at least at Taversoe Tuick, Rousay (Grant 1939b) appears to have remained accessible until somewhat later in the second millennium BC (Chart 6.3; see Section 6.2.3).

130 Only eight of Orkney’s 89 chambered tombs have been investigated in the modern period, the majority of which had already been disturbed: Quanterness (Renfrew 1979); Point of Cott (Barber 1997a); Isbister (Hedges 1983a); Banks (Lee 2011b & c); Holm of Papa Westray N (Ritchie 2009); Bookan (Card 2005b); Pierowall Quarry (Sharples 1984) and Roeberry (Lee & Thomas 2012a).
Table 6.1 Neolithic chambered tombs with some evidence of Chalcolithic/Bronze Age funerary activity either within the chamber or around the tomb. See Appendix 1, Tables A1.1 and A1.14 for details of radiocarbon dates and Appendix 10 for tomb locations.

<table>
<thead>
<tr>
<th>NMRS no.</th>
<th>Site Name</th>
<th>Date cal BC 2σ</th>
<th>Evidence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>HY21SE5</td>
<td>Unstan, Stenness</td>
<td>Barbed and tanged arrowhead(^{331}) in passageway</td>
<td>Clouston 1885, 342</td>
<td></td>
</tr>
<tr>
<td>HY21SE41</td>
<td>Howe, Stromness</td>
<td>Beaker-possibly associated with tomb</td>
<td>Ballin Smith 1994, 24-5</td>
<td></td>
</tr>
<tr>
<td>HY31SW1</td>
<td>Maeshowe</td>
<td>Associated barrow cemetery, nine barrows (destroyed)</td>
<td>RCAMS 1946, vol. II, no. 887, 313-4</td>
<td></td>
</tr>
<tr>
<td>HY31SE1</td>
<td>Cuween Hill, Firth</td>
<td>2130 - 1930</td>
<td>Inhumation in passage</td>
<td>Sheridan 2005b</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2620 - 2345</td>
<td>Dog skulls in chamber</td>
<td>Sheridan 2005a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Secondary interments to west’; piece of steatite</td>
<td>Charleson 1902</td>
</tr>
<tr>
<td>HY33SE1</td>
<td>Midhowe, Rousay</td>
<td>Two inhumations, one in a cist (lost), 1.2m above chamber floor</td>
<td>Callander &amp; Grant 1934a</td>
<td></td>
</tr>
<tr>
<td>HY40NW17</td>
<td>Crantit, St Ola</td>
<td>1890-1600</td>
<td>Associated cists with cremations; Section 6.2.2</td>
<td>Ballin Smith 2014</td>
</tr>
<tr>
<td>HY42NW1</td>
<td>Knowe Of Yarso Rousay</td>
<td>Beaker, Food Vessel, barbed and tanged arrowhead. Context uncertain, possibly from chamber, or from tomb backfill</td>
<td>Callander &amp; Grant 1935, 334-5; Davidson &amp; Henshall 1989, 79</td>
<td></td>
</tr>
<tr>
<td>HY42NW2</td>
<td>Taversoe Tuick, Rousay</td>
<td>2130 - 1740</td>
<td>Cists and cremations: remodelled tomb; See Section 6.2.3</td>
<td>Sheridan 2003a</td>
</tr>
<tr>
<td>HY53NE18</td>
<td>Calf Of Eday Long</td>
<td>Beaker: uncertain context</td>
<td>Davidson &amp; Henshall 1989, 79</td>
<td></td>
</tr>
<tr>
<td>HY55SW2</td>
<td>Holm Of Papa Westray N</td>
<td>Beaker: external context close to outer kerb of cairn</td>
<td>Henshall 2009, 36; Ritchie 2009, 25</td>
<td></td>
</tr>
<tr>
<td>ND48NW10</td>
<td>The Nev, S. Ronaldsay</td>
<td>Cist with burnt bones inserted into top of tomb</td>
<td>RCAMS 1946, vol. II, no. 827, 287-8</td>
<td></td>
</tr>
<tr>
<td>ND48SE1</td>
<td>Isbister, S. Ronaldsay</td>
<td>2487 - 2292</td>
<td>Inhumation in chamber</td>
<td>Lawrence &amp; Lee-Thorp 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2581 - 2464</td>
<td>Inhumation in chamber</td>
<td>Armit et al 2016</td>
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<tr>
<td></td>
<td></td>
<td>2571 - 2348</td>
<td>Inhumation in side chamber three</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1620-1450</td>
<td>Inhumation in extramural cist</td>
<td>Lawrence &amp; Lee-Thorp 2012</td>
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<tr>
<td></td>
<td></td>
<td>2345 - 2007</td>
<td>Eagle bones in chamber</td>
<td>Sheridan 2005b</td>
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<td></td>
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<td></td>
<td>Jet and albertite objects probably c 2200-1800 BC</td>
<td>Sheridan &amp; Davies 2002, 815-16</td>
</tr>
<tr>
<td>ND38NW5</td>
<td>Roeberry, South Walls</td>
<td>Cist and cremations inserted into backfilled tomb</td>
<td>Lee &amp; Thomas 2012a</td>
<td></td>
</tr>
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</table>

\(^{331}\) Barbed-and-tanged arrowheads have Chalcolithic/Early Bronze Age funerary associations elsewhere in Britain (e.g. the Amesbury Archer: Harding 2011).
Chart 6.3 Radiocarbon dates for human burials and animal bone added to chambered tombs from c.2600 cal BC onwards, together with determinations for the burials at the Sand Fiold cist and the Howe Neolithic cist (See Table 6.1 above, Appendix 1, Tables A1.1 and A1.14 for details and references).
At Isbister, South Ronaldsay, three inhumations were added to the chamber in the twenty-sixth to twenty-third centuries cal BC, whilst sea-eagle bones were added c.2345 – 2007 cal BC (Armit et al 2016; Lawrence & Lee-Thorp 2012; Sheridan 2005b). Activity continued at Isbister with the insertion of a ‘megalithic cist’ containing three inhumations into the exterior wall of the tomb (Hedges & Haigh 1983, 302); one of these inhumations has been dated to the mid-2nd millennium BC (Lawrence & Lee-Thorp 2012). Whether this was a significant addition to the monument or simply the fortuitous use of an existing mound is open to debate. Meaningful discussion of the significance of the Chalcolithic/Early Bronze inhumations added to the monument at Isbister is hindered by a lack of contextual information regarding the assemblage of human bone, recovered during the tomb’s amateur excavation in the 1970s (Lawrence 2006, 49 & 56; 2012, 89-94).

Elsewhere in Orkney, the mounds that covered chambered cairns also attracted attention as places for later funerary deposits, but these were often poorly recorded. At Cuween for example there were ‘secondary interments previously brought to light at the west side of the cairn’ (Charleson 1902, 734), but no further details were published. The chamber of the stalled cairn at Roeberry, Cantick Head, South Walls appeared to have been deliberately backfilled with earth and rubble into which three probable Bronze Age cists were inserted, two containing cremation burials (Lee & Thomas 2012a). The site was subsequently remodelled with the insertion of large central cist containing an inhumation, possibly in the Iron Age132.

Maeshowe chambered tomb, contrastingly, acted as the focus for a Bronze Age barrow cemetery (RCAMS 1946, vol. II, 313-4, no. 887), which extended to nine barrows, since destroyed. There are also instances of sites where a Neolithic tomb has been reused and remodelled during the Bronze Age e.g. Taversoe Tuick, Rousay (Grant 1939b; Section 6.2.3); the recognition of these practices has been inhibited by the methods employed by early excavators.

132 Radiocarbon dates are not yet available and phasing remains provisional (Lee & Thomas 2012a, 27-7).
The transition from inhumation in Neolithic chambered tombs broadly towards individual inhumations or cremations in barrows, cists or cemeteries may be bridged by some recently excavated sites, which appear in structural terms to represent a transitional form between a chambered tomb and a conventional Bronze Age cist; these have been recognized at e.g. Sand Fiold, Sandwick (Dalland 1999) and Crantit, St. Ola (Ballin Smith 2014; Section 6.2.2).

6.2.2 Transitional rock-cut tombs/chambers and reusable cists

At Sand Fiold, Sandwick, an intricate cist, complete with entrance passageway and seemingly designed to be re-usable, was constructed inside a 2.2m deep rock-cut chamber (Dalland 1999). This cist lay on the shoulder of a low hill overlooking the Links of Skail, the site of a barrow cemetery to be discussed in Section 6.3.2 below. The cist contained both cremations and inhumations, and was used on several occasions: firstly c.2800 – 2500 cal BC for a foetal inhumation, c.2170 – 1880 BC for a cremation within a Food Vessel/Vase urn133, c.1990 – 1750 cal BC for an inhumation, with a final cremation inserted c. 1000 – 800 cal BC (ibid, 404-8; Chart 6.3). To enable this periodic reuse over many centuries, Dalland (ibid, 407) argued that the cist’s subsurface location must have been marked in some way at ground level. Possible structural parallels for the Sand Fiold arrangement come from a substantial rock-cut cist near Maeshowe, one end of which is described as having been stone-built with a ‘door’ (HY31SW26; Anon 1915). A further reusable cist has now been located in the Bronze Age cemetery at the Links of Noltland, Westray; it contained 15 burials thought to be successive (Moore & Wilson 2013).

Cranitit, St. Ola (Ballin Smith 2014) is the findspot of a rock-cut tomb containing four inhumations, together with two separate external cists, one on each of the west and the south sides of the rock-cut chamber. Cremations in the western external cist have been dated to the first quarter of the second

133 Placing the urn amongst the earliest of the dated Scottish examples (Sheridan 2003b, 205).
millennium BC, whilst the southern example contained unburnt human teeth suggesting a decayed inhumation; unfortunately however, dates could not be obtained for the inhumations from the main tomb (ibid, 29-30 & 136-7; Roberts & Lunt 2014). These inhumations and the rock-cut chamber in which they were found were thought most likely to be later Neolithic in date, possibly paralleled by the rock-cut Neolithic tomb at Banks, South Ronaldsay (Ballin Smith 2014, 128-9; Lee 2011b & c). Similarities between the design of the Crantit rock-cut chamber, with its four supporting pillars and walled lining, and Orcadian souterrains\textsuperscript{134} were also noted (Ballin Smith 2014, 128). The Crantit tomb is in an area where several cists and a probable barrow cemetery (since destroyed) have been recorded in the past (Cursiter 1910; Marwick 1924c; Petrie 1866a). Two of these cists were described as of an unusual two storey construction (Cursiter 1910; Petrie 1866a); an antler mattock recovered from Cursiter’s (1910) cist here has been radiocarbon dated to c.1780 – 1520 cal BC (Ballin Smith 2014, 137).

A significant number of cists in the same field as the Crantit tomb were destroyed in the 1920s. They were hit so often during ploughing that they posed a major hazard to the plough horses, and men were sent to probe for and destroy as many cists as possible (Anne Brundle, pers. comm.). Cursiter (1910, 215) earlier reported that the cist he excavated was found when ‘in the course of laying down turnips, one of the horse’s feet went down in a hole to the depth of his leg’. The south cist discovered at the 1998 Crantit excavation appears to have been a victim of the deliberate destruction episode of the 1920s: its lid was missing and the cist was full of topsoil (Ballin Smith 2014, 29).

It is however clear that the rock-cut Crantit tomb, though itself undated, is directly associated with a much larger Bronze Age cemetery. This may be an example of later burials focussing on a Neolithic tomb (as discussed in Section 6.2.1). Equally, the inhumations in the main rock-cut chamber at

\textsuperscript{134} The 2\textsuperscript{nd} millennium cal BC radiocarbon dates for the souterrain at Nessbreck (discussed in Section 7.11) were not available at the time of the publication.
Crantit remain undated and may be attributable to the Bronze Age.

A cist containing a Late Neolithic crouched inhumation at Howe, Harray (Downes 2003b; Downes & May 2005b, 297-8) was not rock-cut but utilised a natural cleft in the bedrock to form two sides of the cist. At nearby Geroin, 100m to the northwest, a cist containing a cremation dated to c.1890 – 1692 cal BC (Toolis 2004 & 2005b) may hint that this was another area of Neolithic funerary activity that acted as a focus for burial in the later period. The cists at Howe and Geroin were chance discoveries during ploughing and no further investigation of the surrounding area was carried out, so it is not possible to say definitely whether they were part of a wider cemetery.

6.2.3 Major remodelling of a Neolithic tomb: Taversoe Tuick

Taversoe Tuick, Rousay is a two storied Neolithic tomb that was first excavated by the landowner after its chance discovery in 1898, and then re-excavated in 1937 preparatory to its consolidation for public display (Grant 1939b; Reynolds 1985; Turner 1903). The lower chamber is partly rock-cut into the hillside and has its own entrance; the slab roof of the lower chamber partly supports the upper (Figure 6.6). The 1898 excavation found crouched burials and Unstan Ware Neolithic pottery in the lower chamber; the inhumations are now lost (ibid; Davidson & Henshall 1989, 163). The lower passageway is partially blocked by a large stone 0.30m high, which is bonded into the side walls forming a low threshold; between the external entrance to the lower passageway and this threshold stone were found at least two cremations under inverted urns; on the inner (chamber) side of this stone three further heaps of unburnt human bone were identified. Unfortunately all of these deposits are also now lost (Davidson & Henshall 1989, 161-63; Reynolds 1985, 122; Turner 1903, 77).

The upper chamber contained three cists set c.30cm above its floor on a layer of earth, each containing cremations, probably within clay urns (Reynolds 1985; Turner 1903). Portions of these cremations survive and have been dated to 2130 – 1740 cal BC (Sheridan 2003a; Appendix 1, Table A1.1). The
entrance passageway to the upper chamber was blocked at the time of its discovery; when this blocking was removed 35 stone disc beads and a pumice ‘pendant’ were found near the outer end of the passageway c.0.30m above the floor (Grant 1939b, plate LXVI). These disc beads find parallels in the Early Bronze Age (Section 6.3.2).

It is thus clear, despite the subsequent attrition of the record, that there was major Bronze Age activity at Taversoe Tuick. What appears to have been overlooked in Grant’s (1939b) excavation report is the full extent of the remodelling that is described there. Grant noted a spread of cairn material outside the walls of the upper chamber (Figure 6.6, no. 6) and that:

> A curious alley, clear of stones, and roughly bordered with boulders (not building slabs) leads though the stony area to the cairn’s wall (ibid, 158).

This ‘curious alley’ (Figure 6.6, no. 2) shows very clearly in the excavation photographs, as does the cairn material (ibid, plates LXIII & LXIV). The cairn material was subsequently ignored: Grant appears to have considered it as nothing more than a natural collapse of the tomb. It appears from the photographs and plans (ibid; Figure 6.6) however that major remodelling took place at Taversoe Tuick during the Early Bronze Age, including:

- Partial filling of the upper chamber during its use, or intentional backfilling later at the end of its primary use, with a layer of earth.
- Secondary construction of cists inside the upper chamber 2130 – 1740 cal BC.
- Blocking of upper passageway and deposition of the discs beads and pumice pendant.
- Destruction and levelling of the upper chamber sealing the cists.
- Remodelling of cairn material into a kerb (?) barrow.
- Insertion of cremations under inverted urns in the outer part of the lower passageway.
Taversoe Tuick thus underwent complete modification from Neolithic chambered tomb to Bronze Age burial place in the late 3rd/early 2nd millennium cal BC, and it appears likely that its upper chamber was still accessible until this date; and the lower chamber passage at least.

The threshold stone in the lower passageway, built as part of the original passageway construction, may have been part of a barrier to prevent e.g. animal ingress into the lower chamber during its primary use in the Neolithic\(^{135}\). The outer entrance to the lower passageway was subsequently covered by accumulated overburden but it is clear from the original description (Reynolds 1985; Turner 1903, 76-7) that the passageway itself had not been filled in; both the heaps of unburnt bone and the inverted cremation urns in the lower passageway were clearly visible when the tomb was first opened. The unburnt bone may have been a post-Neolithic addition to the tomb, as were the cremations; absolute dating has been rendered impossible by their loss. It appears then that the lower passageway, remaining accessible, was in effect functionally akin to a reusable cist during (probably) the Early Bronze Age.

**6.3 Artefacts from burial contexts**

A factor contributing to the perception of a generally impoverished Orcadian Bronze Age is the lack of burials accompanied by artefacts. Elsewhere in Britain, Chalcolithic and Early Bronze Age burials were commonly accompanied by at least a Beaker or an urn, but also sometimes items of equipment and personal adornment of copper and copper alloy, amber, jet and gold. The gold and other objects recovered in the nineteenth century from the excavation of the rich Wessex burials (Colt Hoare 1812) are well-known and have almost iconic status (e.g. Clarke et al 1985). Excavations of richly furnished burials (e.g. Fitzpatrick 2011; Needham & Woodward 2008; Needham et al 2006) and a recent major study of the grave goods from this

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\(^{135}\) There was no evidence for gnaw marks on the human bones at Isbister (Lawrence 2006) implying a barrier to prevent at least canine access to the tomb.
period (Woodward & Hunter 2015) reinforces the impression of wealth and status thus created. In Orkney very few grave goods have been recovered from Bronze Age contexts. Paradoxically however, among these few is one funerary context with goods of exceptional quality that show connections to the rich burials of Wessex: the Knowes of Trotty, Harray (Petrie 1860).

6.3.1 The Knowes of Trotty, Harray

At the Knowes of Trotty there are 16 known barrows placed in a double row and sited on drumlins, which have the effect of enhancing the appearance of the barrows themselves (Card & Downes 2002b, 4). A nineteenth-century excavation of a cist within the largest, Barrow 1, found cremated bone, together with four gold discs and 27 pieces of amber (Petrie 1860; Sheridan et al 2003, 177-78). Re-excavation of this cist (Figure 6.7) recovered further amber beads, an amber spacer plate and further fragments of gold and cremated bone (Card & Downes 2005; Card et al 2006). The radiocarbon dates associated with the cist attribute it to the late 3rd/early 2nd millennium BC. Dates from cremated human bone in a cist cemetery identified between the barrows show that it was in use from the nineteenth to the fourteenth centuries cal BC (Chart 6.1).

The cist from the largest barrow is of unusual design, with a pair of orthostats flanking the side panels in a manner reminiscent of Neolithic stalled tomb architecture (Figure 6.7). Neolithic settlement activity in the vicinity of the Knowes of Trotty barrows is indicated by the late 4th millennium cal BC house excavated 100m to the northeast, which appeared to be part of a larger settlement (Downes et al 2016), as well as by the presence of large quantities of flat slabs and midden material in the body of the cairn, believed to have been redeposited from an earlier settlement. The midden deposits were interpreted more narrowly as evidence that the cist had been built over a levelled Neolithic house (ibid, 60-2). An alternative interpretation might be that this cist was built into a remodelled Neolithic chambered tomb, broadly similar to Taversoe Tuick, considered above (Section 6.2.3).
The Knowes of Trotty gold discs were all originally slightly domed with a central hole, and had probably covered a low conical button or stud of perishable material (Eogan 1994, 21; Sheridan et al 2003, 178). Gold is rare in the British Isles at this period outside of Ireland, and the main concentration of this commodity is in the south of England, where it has been recovered largely from Wessex burial contexts (Eogan 1994, 24; Needham, Woodward et al 2015; Taylor 1980). The amount of gold recovered overall is very small, however, with only around 100g from all 17 rich Wessex graves (Needham 2015, 255); it is noteworthy therefore that the most complete of the Knowes of Trotty discs weighs c.1.78g (Sheridan et al 2003, 178). The complex geometric design on the discs is one of only a few examples with this level of detail on gold, and has similarities with that on objects from Bush Barrow, Upton Lovell and Clandon barrows in Wessex (Needham 2015, 259). Analysis of the Knowes of Trotty discs shows they were made from a high tin content gold, either from an unknown Scottish ore source, or produced in an experiment in alloying (Taylor 1983, 57). The discs themselves do not appear to have come from Wessex (Sheridan et al 2003, 179).

The amber at the Knowes of Trotty consists of components of a spacer plate necklace, together with flat prismatic V-bored objects, hooks and hook fragments thought to be dress ornaments which may have originally formed the fringe to a cape-like garment, itself possibly decorated with the gold buttons: a high status garment which may be compared with the gold cape from Mold, Flintshire (Sheridan et al 2003, 181 & 184). Subsequent re-excavation recovered further necklace components from the backfilled cist (Card et al 2006, 41). The spacer plate necklace was an heirloom, already old and worn when deposited, and almost certainly came from Wessex (Sheridan et al 2015, 381). This status as an heirloom is matched in the biographies of spacer plate necklaces from Wessex itself. Many such necklaces are composites, incorporating parts of older necklaces that have been remade over time (ibid, 387-8). Dates obtained on the cremated bone at the Knowes

136 See Appendix 2, Table A2.6 for details of all the amber pieces recovered during both excavations.
of Trotty (2130 – 1890 and 2030 – 1770 cal BC: Sheridan 2006 & 2007c) are comparable to those obtained for the Wessex 1 graves (Sheridan et al 2015, 387-8). The exceptional character of the Trotty amber is emphasized by the fact that only one other find of Bronze Age amber is known from Orkney: a single bead from a structure at Skaill, Deerness, that also yielded a socketed knife (Porter 1997, 109; Section 7.6.2). This richly-furnished burial from the Knowes of Trotty is thus exceptional within the Orcadian record in that not only is it among the richest Bronze Age burials in Northern Britain but also in indicating a link between Orkney and the rich graves of Wessex (Sheridan et al 2003, 181).

6.3.2 Links of Skaill, Sandwick

A similarly extensive, and probably rich, barrow cemetery once existed in the Links of Skaill, Sandwick (RCAMS 1946, vol. II, no. 718, 267-8). Aeolian erosion there has recurrently revealed cist burials since the late seventeenth century (Small 1883, 29; Section 3.2). Several barrows and cists were excavated in 1772 by Sir Joseph Banks and his party, in the company of the Rev. George Low (Low 1776 & 1879, intro; Lysaght 1972 & 1974; see also Sections 3.3.1 and 4.9). A plan made during Banks’ visit shows a series of mounds across an extensive area of the Links (Lysaght 1972, plate 38). As Banks noted in his diary:

*Immense abundance of tumuli commonly covered with stones on the whole face of the bray ashes or bones sometimes both in one coffin* (ibid, 288).

Banks opened at least one of these tumuli, probably two (ibid; Low 1776 & 1879, intro). Others were excavated around the same time by Robert Graham, Laird of Skaill:

*I found human bone lying in the widest end, in the other a great many burnt bones, among which was about 200 small black beads, of which I have hereby sent you some; and among these beads was a piece of bone which I take to have been ivory, but the colour much altered, & from a hole being in it we conclude to have been a locket* (Lysaght 1974, 228).
George Low was not present on this occasion but subsequently saw the beads and illustrated one (Figure 3.2); it appears to be a typical Bronze Age disc bead. He also, in a spirit of scientific enquiry, set some on fire:

I have seen several of the beads, they are black, and seem to be made of a sort of cannel coal, they burn well, emitting a strong white flame, and a white cinder remains (Low 1879, xxxvi-xxxvii).

There are around 30 finds of disc bead necklaces in Scotland. The dated examples are all attributable to the period c. 2200 – 1700 BC, and are mostly made of cannel coal or oil shale rather than jet, which are indistinguishable as materials without scientific analysis (Holden & Sheridan 2001; Hunter et al 1993; ScARF 2012a, 82). In Orkney a ‘jet’ belt ring and a V-bored button, now identified as albertite, came from a hoard likely to date to c.2200 – 1800 BC deposited outside Isbister chambered cairn (Davidson & Henshall 1989, 89; ScARF 2012a, 81-2; Sheridan & Davies 2002, 815-16). A single plate from a jet necklace, found during peat cutting in Tankerness, has been confirmed as jet by the NMS but is undated (Kirkness 1935; Anne Brundle, pers. comm.).

The ‘ivory locket’ found with the Skaill beads (Figure 6.8) is a type of flat, lozenge-shaped piece of antler or bone with comparanda from a number of Scottish sites e.g. Seafield West, Inverness (Cressey & Sheridan 2003, 67, illus 14, no 2). These items are consistently found in a burnt condition accompanying cremations, suggesting their interpretation as toggle fasteners for funerary garments; they date from the end of the third millennium BC to c.1600 BC (ibid; Sheridan 2007a, 175 & 177, fig 14.11). The Skaill toggle was noted as discoloured (Lysaght 1974, 228) suggesting that it had been on the pyre with the body. As it is almost identical to the Seafield West example, the

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137 Identification by burning is inconclusive: Thurnam (1871, 521-2) burnt a selection of jet and jet-like substances and recorded his results, however none of his descriptions matches Low’s description above.
Skaill ‘locket’ should be assigned to the same category\(^{138}\).

Unfortunately, Banks’ ‘immense abundance of tumuli’ almost certainly became casualties of agricultural improvement in the early nineteenth century by William Watt, the seventh Laird of Skaill (Section 4.9; Figure 4.27); no record of their fate survives.

6.3.3 Metalwork

Bronze Age metalwork is extremely rare in Orkney, with fifteen items known, of which only ten have a secure provenance; of the remaining five examples, only one definitely comes from Orkney\(^ {139}\) (Figure 6.9). None of the pieces are associated with radiocarbon dates. All of Orkney’s metalwork may have been imported as completed finished artefacts, since there is no conclusive evidence of metalworking\(^ {140}\). Two provenanced finds are from burial contexts, both from cists: a razor from Laughton’s Knowe, Holm (Piggott 1947) and a socketed knife from Little Crofty, Tankerness (Cursiter 1887, 341).

The 1916 Laughton’s Knowe discovery of a cist containing a cremation, upon which lay a Class 1 copper alloy razor in a wooden sheath, was not reported until 30 years later by which time the cremated bone had been lost; no other details are preserved (Piggott 1947; RCAMS 1946, vol. II, no. 368, 106). Elsewhere in Scotland this type of razor is found deposited with cremations in Cordoned Urns (Piggott 1947). In lowland Scotland Cordoned Urns date to the first half of the 2nd millennium BC, but their distribution does not appear to extend to the Highlands and Islands (Longworth 1984, 81-4; Sheridan 2003b).

\(^{138}\) The letter describing the find and illustrating the Skaill toggle has been published (Lysaght 1974, 228). The archaeological significance of the quoted letters was not discussed because the paper was written by a biologist who was primarily researching the voyages and works of Sir Joseph Banks. The ‘ivory locket’ does not appear to have been previously noted as a funerary garment toggle.

\(^{139}\) Full details of all Orkney metalwork is contained in the catalogue in Appendix 2.

\(^{140}\) See Appendix 2.
A Late Bronze Age Thorndon type socketed knife was a chance find associated with a cist at Little Crofty, Tankerness (Coles 1960, 87; Figure 6.10a); details are sketchy and the knife may have been either within or beneath the cist; no other details of the contents of the cist are recorded (Cursiter 1887, 341). Thorndon type socketed knives seem to originate in southern England (Coles 1960, 46) and are part of the Ewart Park metalworking phase; an example from Nore Hill, Surrey has an associated radiocarbon date of 1020 – 820 cal BC (Needham et al 1997, 64 & 72). There are very few from Scotland\(^{141}\), with a scatter up the east coast that may reflect the route taken from the south (Coles 1960, 46).

There are two other Thorndon type knives from Orkney; one from the Late Bronze Age phases of a settlement site at Skaill, Deerness (Porter 1997, 103; Section 7.6.2) and the other was found in a peat bog at Quoykea Moss along with a class II or bifid razor: Orkney’s only Bronze Age hoard (Callander 1922, 356-8; Figure 6.11). This type of razor is generally found in hoards: the largest concentration comes from the Thames Valley and Wessex in southern England (Coles 1964, 120, 148-9; Piggott 1946). The Late Bronze Age examples continue into the Ewart Park phase e.g. at Flag Fen (Coombs 2001, 265). Since the Quoykea Moss razor is associated with a Ewart Park phase Thorndon type socketed knife it is more likely to be a late example, although it may have been an heirloom piece.

Orkney has two Early Bronze Age daggers, a class of objects the majority of which generally are found in graves; in Scotland there is a marked cluster in the eastern central region (Baker et al 2003, 109-12 & 116-23; Henshall 1968). Orkney’s examples are however both from peat bogs: one from Flanders Moss, Rousay (Cursiter 1908; Figure 6.12), which is one of only 13 examples of its type in Britain, with a concentration in Scotland (Gerloff 1975, 58-63; Needham 2004, 226-31; Needham, Bray et al 2015, 24); the other, the Heathery Howes, Holm dagger (Cursiter 1887, 340; Figure 6.10b) is of a type

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\(^{141}\) There were only seven Thorndon types known from elsewhere in Scotland when surveyed by Coles (1960).
mostly found in rich burials in southern England and the Wessex area (Gerloff 1975, 70-3). The Flanders Moss dagger had been well-used before deposition: unlike the pristine examples found in graves, it was a ‘working tool with hammered surfaces and much-whetted edges’ (Henshall 1968, 177).

The remaining three securely provenanced pieces include the Middle Bronze Age Ditch Park Moss rapier (Cursiter 1887, 340; Figure 6.10c), found in a peat bog but now lost, which significantly extends the distribution of such rapiers northwards, since most finds come from southern Scotland (O’Connor & Cowie 1995, 345). The majority (over 85%) of rapiers from the British Isles have been found in wet contexts, particularly rivers; and as single finds rather than in hoards (Burgess & Gerloff 1981, 1 & 5).

The Middle Bronze Age Netherhouse spearhead and the Late Bronze Age Hobbister axe, both peat bog finds, are of types that are common elsewhere (Coles 1964, 108-9; Cowie & O’Connor 2006); the latter object, from an area where sub-peat dykes and probable barrows have been recorded (Section 8.4.1), is of a type whose closest parallels lie in Ireland (Cowie & O’Connor 2006). Another, if unusual, Late Bronze Age metal-related find is the Grotsetter yew-wood sword, found during peat-cutting lying horizontally with its edge upwards (Cowie & O’Connor 2007, 330-1; Stevenson 1958), suggestive of deliberate placement in the bog. The sword is a skeuomorph of a Late Bronze Age Ewart Park sword and has been radiocarbon dated to 953 – 798 cal BC (Sheridan et al 2002, 59); this determination is important in dating all Late Bronze Age Scottish metalwork (Sheridan 1999, 54). Yew is not native to Orkney, therefore either the wood or the completed sword must have been an import; perhaps an exotic prestigious display item before ending as a votive deposit (Sheridan et al 2002).

142 In Orkney there is one other unusual Bronze Age wooden object deposited in a bog, the ox-yoke or swingle-tree found during peat cutting at White Moss in Shapinsay, radiocarbon dated to 1516 – 1253 cal BC at 2σ (Anon 1866b, 398; Hedges et al 1995, 424; Sheridan 1999, 54).
6.3.4 Burials with vessels

The commonest artefactual finds in Orkney’s Bronze Age burials are urns. The Northern Isles have distinctive ceramic and steatite urns, neither of which (with the exception of the Food Vessel/Vase Urn from Sand Fiold, Sandwick: Dalland 1999; Section 6.2.2) generally relate to the pottery traditions of the Scottish mainland (Sheridan 2003b, 211-13 & 2007a, 171-3). Radiocarbon dates for the use of both ceramic and steatite urns in Orkney range from the later 3rd to the mid-2nd millennium BC (ibid). Both types are commonly found with cremations, but there are also examples where an inhumation is present in the same cist as the urned cremation (e.g. Dalland 1999).

Clay urns from older excavations were usually fragmentary and contemporary descriptions of them are minimal. The urn from Quandale Mound 3 which contained a cremation was 8.5 inches (21.6cm) in diameter by 11 inches (28cm) high and is described as of ‘flower-pot shape’ (Grant 1937, 76). A plain, coarse ceramic urn also survives from a ploughed-out cremation lacking a cist, at Blomuir, Holm (HY40SE20). Some of the individuals in the large reusable cist at the Links of Noltland, Westray, were buried with pots (Moore & Wilson 2013; Section 6.1.1), but no further details are available.

Over 30 Orkney examples of urns made from Shetland steatite are known (Sharman 2009, 39). Steatite urns vary in size, including small e.g. Clestrain, Stronsay, only c.10cm tall (Callander 1931b, 102-3; Figure 6.13) and medium examples e.g. Blows, Deerness c.21cm tall (Marwick 1929a & c). The most impressive is the massive composite urn from Linga Fiold, Sandwick, 63cm tall by 39.5cm by 34.5cm wide at the mouth (Sharman 2009, 44-5). This vessel was constructed by joining two halves using cord threaded through holes drilled for the purpose (ibid). Also at Linga Fiold, steatite tempered pots were made with clay from a Shetland source. It seems likely that these ceramic and steatite urns were imported into Orkney from Shetland as complete vessels (Sheridan 2003b, 213).
The majority of Bronze Age steatite vessels have been recovered from funerary contexts, but there are examples from settlement sites. Sherds of five vessels were recovered from Tofts Ness, Sanday, for example, one of which resembled the cremation urn from Blows, Deerness (Smith, A N 2007b, 285). There is also a small but important assemblage of steatite vessel fragments from the Bronze Age houses at the Links of Noltland, Westray (Forster 2011; Section 7.6.3).

6.3.5 Food Vessel/Beaker hybrid pots in burial contexts

Decorated pottery from Orcadian Bronze Age funerary contexts\textsuperscript{143} is limited to that from just three cists: Newhouse, Birsay (Marwick 1949), Redland, Stromness and Upper Bigging, Harray (Downes & May 2005b, 295-7). All three cists were chance finds and were otherwise empty, suggesting in each case that the pots had originally accompanied a since-decayed inhumation.

At Upper Bigging the pot (Figure 6.14) had a cord impressed motif and a decorated internal bevel (Downes & May 2005b, 295-7). Both this and the Redland pot are best classified as Food Vessel/Beaker hybrids since their shape, and in the case of Upper Bigging, internal decoration, are typical of Food Vessels, but the exterior decoration is Beaker-like (ibid).

The pot from Newhouse, Birsay (Marwick 1949, 239-40; Figure 6.15) was catalogued by Clarke (1970, vol. 2, no. 739, 369) as a Food Vessel and in form it bears closer resemblance to a Food Vessel than a Beaker. Again however, the external decoration is more reminiscent of some Beaker and Beaker-like Early Bronze Age pottery now known from the Northern Isles. Beaker sherds from midden deposits at the Links of Noltland for example are associated with a radiocarbon date of c.2265 – 1975 cal BC (Marshall et al 2016, 12 & 28). Other Early Bronze Age parallels for this basic incised design come from the Beaker pottery from the Braes of Ha’ Breck, Wyre, (Figure 6.16), dated to

\textsuperscript{143} Sherds of lozenge-decorated pottery from the cist at Lopness, Sanday are thought to be contamination from later deposits rather than associated with the inhumation (Innes 2016). A single possible Food Vessel rim sherd was recovered from a redeposited context at Roeberry, Cantick Head (Lee 2010; Section 6.2.1). No details are yet available from the Links of Noltland cemetery (Moore & Wilson 2011a; Section 6.1.2).
the late 3rd millennium BC (Sheridan 2013, 56-7; see Appendix 1, Table A1.14), and some of the pottery from Tofts Ness, Sanday (MacSween 2007, 263-82). Recently completed PhD research on Scottish Beaker pottery may shed some light on this issue, and in particular whether any of the Beaker/Beaker-like pottery from Orkney can properly be called Beaker, or whether it should instead be considered as part of a wider group of incised wares (Owain Mason, pers. comm.).

In Shetland, where there is a similar lack of Beaker pottery, Sheridan (2013, 59) has observed:

> All the evidence points towards the initial appearance of the new, alien, Beaker ceramic tradition, followed by the emergence of a regionally-specific trajectory for its development.

Sheridan (ibid, 56) concludes that the Shetland Beaker tradition has its roots in the Western Isles, whilst Orkney is on the edge of the Scottish mainland Beaker diaspora. The Ness of Gruting, Shetland, pottery however has a similar design and a similar late 3rd millennium BC date to the Beaker from the Braes of Ha’Breck, Wyre (ibid, 56-7), and links between Orkney and Shetland at this period are demonstrated by imports of Shetland steatite urns from the late 3rd millennium cal BC (Section 6.3.4); both island groups may have been participating in the same regional trajectory.

The three Food Vessel/Beaker hybrids from Orkney described above are undated. Elsewhere in Scotland Food Vessels are in use from c.2200 – 1520 cal BC (Sheridan 2004b, 249). It is unclear where the Orkney Beaker/Food Vessel hybrids fit within this pattern, but the similarities of the design of the Newhouse vessel (Figure 6.15) to the Beaker pottery from the Braes of Ha’Breck, Wyre (Figure 6.16), suggest a late 3rd millennium BC date is not unlikely.

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144 Owain Mason, University of Edinburgh: Dialogues, transitions and social preferences: reassessing the importance of Beaker pottery in Scotland.

145 Summarised in Appendix 7, Table A7.4.
6.3.6 The South Ronaldsay cup

A cup¹⁴⁶ ‘dug up from the foundation of an ancient ruin in Ronaldshay, Orkney’ (Anon 1860b, 485) is in the NMS. Anderson (1886, 48) cited the find location as South Ronaldsay, but provided no further information on the context (Figure 6.17). There is no evidence for a cremation associated with this cup but it is included for consideration here since elsewhere in the UK such cups are associated with cremations in urns, particularly Collared Urns (e.g. Longworth 1984, 50-56; Scott 1951, 79-82). Various forms of these cups, both decorated and plain, and with or without perforations or fenestrations, are known (Longworth 1984, 50-6; Gibson 2004, 270). Their function is a matter of debate, with suggestions for their use such as incense burners, ritual containers for strong alcoholic drink, or receptacles for carrying the flame to the cremation pyre (Gibson 2004, 277-9). They may even have been fired on the pyre itself (ibid 283-4). Scottish radiocarbon dates place these cups in the first half of the second millennium BC, and the South Ronaldsay example is of typical Scottish mainland style (Sheridan 2007a, 171 & 173-4). The South Ronaldsay cup is a strikingly decorative object – its quality being such that it was both part of the NMS Symbols of Power exhibition and illustrated in the catalogue (Clarke et al 1985, 298 & fig. 5.38). Its rarity in an Orcadian context strongly suggests that it too may be an exotic elite import.

6.3.7 Other artefacts with funerary associations

Apart from funerary vessels the commonest artefacts associated with burials in Orkney are stone implements, particularly coarse stone tools – although a miniature steatite axe found on the clay bedding around a cist containing a cremation within a barrow at Mousland, Stromness (Downes 1994a, 145) is paralleled by an ‘almost identical’ axe recovered from the ground surface surrounding a group of cists in the cemetery at the Knowes of Trotty (Downes 2005, 72). Petrie (1868b) illustrates and describes ‘rude stone implements’,

¹⁴⁶ Also known as accessory cups/vessels or pygmy cups, Gibson (2004, 270-71) suggests simply that the term ‘cup’ should be used.
which are in fact ard-points, found in burial contexts from various locations in Orkney. These were recovered from both outside the cist, but also from inside the cist accompanying the burial e.g. one from inside a cist in St Andrews, accompanying a cremation in a clay urn, another from inside a cist at Bookan, Sandwick (ibid; Anon 1885, 139) and one from a ‘grave’ at Whitehall, Stronsay alongside an inhumation and a fine stone battleaxe\(^{147}\) (Evans 1897, 206; Fenton 1988; Petrie 1868b). Petrie (1868b) also records a rubbing stone or pestle placed inside the cist at a barrow near Kirkwall, whilst three cists at the Ness of Brodgar, Stenness each contained an inhumation accompanied by a water-worn stone (Marwick 1926; Section 7.3.4; Figure 6.18).

Agricultural implements of stone such as ard-points and mattocks are also commonly found deposited on barrow kerbs e.g. at the Knowes of Quoyscottie, Birsay (Hedges 1977); Linga Fiold, Sandwick (Downes 2005, 190-6) and Loth Road, Sanday (Sharman 2007a); this placement seems to be deliberate. Downes (2005, 194) suggests these implements may have played a preparatory role in the funeral rites – in modifying the ground for barrow construction or in cutting turves for the cremation pyre – hence they were polluted and could not be removed from the locality; they may also indicate the importance of agricultural practices in Bronze Age ideology (Downes 2000b, 126; Downes & Thomas 2013, 77). This cannot be the explanation for the presence of the rubbing stone or water-worn stones within the cists described above, or for the presence of the miniature axes; the deliberate placement of these items does however confirm their significance, particularly so when the majority of Orcadian Bronze Age burials are unfurnished.

\(^{147}\) Another battleaxe (only recently recorded) was discovered during the destruction of three cists containing cremations at Cott, Stronsay in 1907, but its original position is unclear: (http://orkneystonetools.org.uk/themes/biographies/objectల/battle-axe-cott-stronsay); the other Orkney examples are unprovenanced chance finds (e.g. Fenton 1988; Roe 1966). Few radiocarbon dates are associated with Scottish battleaxes (none of which are from Orkney) but those available fall within the first half of the second millennium BC (Sheridan 2007a, 175 – 6).
6.4 Discussion

Burial practices clearly changed in Orkney over the course of the 3rd millennium BC, from the chambered tombs whose main phase of Neolithic use appears to have ended c.2800 cal BC (Section 6.2.1; Chart 6.3) to the cist burials, which became increasingly common from c.2200 cal BC onwards (Charts 6.1 and 6.2). The limitation of the archaeological record is apparent in any attempt to chart sequential practices during the transitional period from chambered tomb to cist, with very few radiocarbon dates available from burial contexts to bridge the intervening six centuries (Chart 6.3).

Based on the available radiocarbon dates for Chalcolithic/Early Bronze Age activity at Orkney’s Neolithic tombs and notwithstanding the limited nature of the archaeological record from the majority of chambered tomb excavations (Section 6.2.1), it is evident that the chambers and passageways at some Neolithic tombs were still accessible during the late 3rd/early 2nd millennia cal BC, accompanied by the continuing if sporadic deposition of both human and animal bone (Chart 6.3). What is not clear is the extent of this practice, due to the limitations of the available record (Section 6.1.1). At Isbister, South Ronaldsay, the currently available radiocarbon dates (Armit et al 2016; Lawrence & Lee-Thorp 2012; Chart 6.3) indicate a possible hiatus of around two to four hundred years between the end of the main Neolithic phase and possible Chalcolithic reuse of the tomb. Reuse after such a lengthy span might indicate some memory of earlier significance; it may indicate that later users of the tomb respected the earlier burials and added to the tomb rather than disturbing or clearing the contents. The remodelling apparent in the structural record at Taversoe Tuick (Section 6.2.3) contrastingly was deliberate, and perhaps more significant than simply the chance reuse of a convenient mound some centuries after its initial period of use. Rather than inserting later burials into an existing tomb, as was the case at Isbister, or into the entrance passageway, as at Cuween (Section 6.2.1; Chart 6.3), which seem to be activities respectful of Neolithic tradition, the remodelling at Taversoe Tuick is both dramatic and destructive of earlier arrangements.
Presumably any earlier burials or other deposits in the upper chamber were cleared to make way for the three cists identified; no earlier funerary remains were noted during the course of the excavation (Reynolds 1985; Turner 1903), and so their wholesale removal is likely. Contrastingly, the Neolithic burials in the lower chamber, along with their Unstan Ware pots, were undisturbed in the later period (ibid); the passageway into the lower chamber at Taversoe Tuick may however have served in effect as a reusable cist, akin to others newly constructed during this period as at the Links of Noltland (Section 6.1.2).

The use of a passageway at Skara Brae for burial in the late 3rd/early 2nd millennium cal BC (Section 6.1.3) may indicate that, as suggested by Downes et al (2016, 61) at other Neolithic settlement sites that saw Bronze Age funerary use, a desire to assume the power of the ancestors by emphasising origins. It could also be that the Skara Brae passageway was simply mistaken for the entrance passageway to a chambered tomb, and so was seen as an appropriate place to deposit further burials.

Rock-cut structures of varying type are another component of the record during this transitional period. The rock-cut cist at Sand Field appears to have been used from c.2800/2500 cal BC through to the early 1st millennium BC (Dalland 1999, 404-8; Chart 6.3) but at 700 – 900 year intervals, which might argue more in favour of the intermittent chance rediscovery of this site in an area which continued to attract funerary interest (e.g. the Links of Skaill: Section 6.3.2) rather than long term direct continuity of funerary practices here. There is another reusable cist now known from the Links of Noltland, which appears to have been used with some frequency probably during the 2nd millennium cal BC (Moore & Wilson 2013) although full details are not yet available; it seems to have been in use alongside a cemetery containing individual inhumations. The rock-cut tomb at Crantit (Ballinsmith 2014; Section 6.2.2) cannot be assigned definitively to period in regard to its original use but it continued to act as a focus for burial activity in the 2nd millennium cal BC and this arrangement may parallel the reusable cist/cemetery combination seen at the Links of Noltland. Alternatively it may
be an instance of a Neolithic tomb continuing to attract later satellite burials as was the case at other sites e.g. Cuween (Charleson 1902, 734; Section 6.2.1).

In a similar way, the monumental mound of Maeshowe chambered tomb attracted satellite barrows to its environs (Section 6.2.1) and the (probably) Neolithic henge at the Ring of Brodgar acted as a focus for Bronze Age funerary activity (Section 6.1.4), demonstrating perhaps a concern with origins and the continuing importance of the power and prestige of such major sites. Perhaps at such localities continued recourse to a key location was more important than the construction of richly furnished graves: the cremations in Plum-Cake Knowe near the Ring of Brodgar for example were accompanied by urns but nothing more (Section 6.1.3), although as Petrie 1856 (58-60) noted, it must be conceded that the primary burial here may not have been reached.

There is a marked contrast in the Orcadian Bronze Age burial record between the very few graves with exotic and unusual grave goods and the vast majority seemingly without artefacts, at least surviving inorganic ones. Apart from the burials with urns (Section 6.3.4), the various graves discussed above (Section 6.3) represent the entire corpus of furnished graves from Bronze Age Orkney. In contrast to the rarely-encountered exotica, the inclusion of seemingly mundane implements of stone, such as ard-points, water-worn stones and pestles, in burial contexts is obviously deliberate (Section 6.3.7). Whether their presence originally related to the preparation of the ground prior to the construction of the barrow, or acted as a symbol of fertility, growth and regeneration (e.g. Downes 2005, 194) or whether such items had particular significance for the deceased in life are issues open to question, but the deposition of such major stone items is a commonly occurring phenomenon and must have been significant.

At the other end of the spectrum, the gold and amber from the Knowes of

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148 Details are not yet available on the accompanying artefacts in the cemetery at the Links of Noltland (Moore & Wilson 2013).
Trotty bear comparison with that encountered in the rich Wessex graves. The amber spacer plate necklace is even likely to have come from Wessex and shares the same heirloom status as many of the comparable pieces encountered in that region. The presence of gold and amber at the Knowes of Trotty undoubtedly enhanced the status of the deceased, and shows that, despite Orkney’s perceived isolation, exotic artefacts nevertheless reached here and were incorporated into the funerary record. Since only the largest barrow at the Knowes of Trotty cemetery has been excavated, one can only speculate on the possible range of accompanying grave goods in the other fifteen barrows.

The jet-like disc bead necklace from the Links of Skaill is also an exotic item, since there is no source for jet or any jet-like material in Orkney; imported jet (from Whitby, Yorkshire) is known in Orkney although not in a burial context e.g. the peat bog find of a jet spacer plate in Tankerness (Section 6.3.2). Jet has the same electrostatic properties as amber and it is possible that objects crafted in such materials could have been ‘a source, or a symbol, of power and prestige’ (Shepherd 1985, 204). Jet spacer plate necklaces are now considered to be skeuomorphs of Irish gold lunulae, commissioned from the Whitby jet-workers, their patrons wishing ‘to appropriate a little of their ‘magic’ as symbolically charged objects’ (Sheridan & Davis 2002, 816). The single piece of jet spacer plate hints at the possibility that the Orcadian elite wished to use this likely heirloom to achieve the same ends.

The scarcity of metalwork, with only ten securely provenanced items spread throughout the whole of the Orcadian Bronze Age, inhibits meaningful conclusions. It is striking that the copper alloy razor from Laughton’s Knowe came from a context which displays the tradition of the correct form of deposition i.e. in a cist with a cremation. This raises the question of whether the razor was indeed an imported item in its own right or if it arrived in the north with its owner as a personal possession. This perspective may be extended to the amber and gold at the Knowes of Trotty. This contrasts with the deposition of the two Early Bronze Age daggers, from Flanders Moss, Rousay and Heathery Howes, Holm, in peat bogs rather than in graves as was
more usual elsewhere (Henshall 1968). Both of these daggers are rare exotic imports, the Heathery Howes dagger in particular being of a type found in the rich Wessex burials (Gerloff 1975, 70-73). Half of Orkney’s small assemblage of securely provenanced metalwork (Section 6.3.3) consists of prestige items (two daggers, a rapier and two razors); further links to southern England are suggested by the Quoykea Moss razor (Piggott 1946) and the Thorndon knives (Coles 1960, 46). In most areas of Bronze Age Britain, metal tools such as socketed axes, palstaves, chisels and gouges would have been of use in many day-to-day activities involving timber working and tree felling (e.g. Darrah 2004 & 2012; Goodburn 2004, 128-33; Van De Noort et al 2014, 302-3). In Orkney however, with its tradition of building in stone rather than wood it is harder to see an obvious practical function for such metal tools. Stone-working techniques, perfected during the Neolithic (Section 2.1.2; Figure 2.1), continued broadly unchanged throughout Orcadian prehistory: there is no evidence in Orkney of stone cut with metal tools until the 1st millennium AD (e.g. Figure 2.2). It seems likely that much Bronze Age metalwork had little local functionality in Orkney but existed as status items, perhaps more so than elsewhere.

The majority (seven out of ten provenanced pieces) of Orkney’s metalwork was deposited in bogs, as was the Grotsetter sword (Section 6.3.3); there is a concentration of find locations in the East Mainland (Figure 6.9) and a noticeable lack in the West Mainland. This bias may reflect the proportions of unimproved land at each location: 46% of the West Mainland is unimproved heath/peat bog compared to only 6.5% in the East Mainland (Table 4.3). It is possible that more votive deposits in watery locations await discovery: prime locations might include the West Mainland lochs of Stenness and Harray, either side of the Brodgar peninsula, a continuing focal point for both funerary and settlement activity in the Bronze Age (Section 6.1.4). Prehistoric deposition in a watery location usually only comes to light as that area is drained (e.g. Flag Fen: Pryor 2001, 52-73) or scraped for

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149 The West Mainland has a land mass approximately three times greater than the East Mainland (Table 4.3).
marl/soil (e.g. Duddingston Loch: Callander 1922): since the Lochs of Stenness and Harray reached their present levels in the 2nd millennium BC (Section 7.13.1) they have remained substantially undisturbed. It is also possible, given the importance of the sea in island communities (Section 2.3), that ritual deposits were made in the sea itself, a practice that appears to have had a wide currency in Bronze Age Britain (e.g. Needham et al 2013; 145-50).

Curiously, Orkney lacks classic Beaker pottery. Apart from the Food Vessel/Beaker hybrids (Section 6.3.5) there is nothing in Orkney to compare with the Beaker burials known throughout the remainder of Britain (e.g. Clarke 1970). The reasons for Orkney’s non-adoption of the ‘Beaker package’ (including early metalwork and fancy archery gear) remain elusive. Needham (2007, 42-3) conceptualised the expansion of Beaker culture as a reinforcing circle, where the key phase depended on the indigenous response to Beaker groups. If this response was interest in either exploitation or interaction, then Beaker culture was drawn onward and consolidated into a cycle of expansion. If, on the other hand, the reaction was one of disinterest or rejection, then there was little or no Beaker implantation. Needham (ibid) concludes that the fact that Beaker groups brought metalworking technology with them was one of the most influential factors in the Beaker spread into regions that had not encountered metal before. If Needham’s (2007, 42-3) reinforcing circle model is correct then it implies that the Orcadian community responded with disinterest to, if not outright rejection of, the approaches of the Beaker ‘incomers,’ but it is more likely that Beaker groups never reached Orkney directly. Although there is an example of an early Beaker burial at Achavanich, Caithness (Sheridan 2007b) there are few Beakers known to have been found in the north of Scotland (ibid; Clarke 1970, vol 2, 510-22; Suddaby & Sheridan 2006). It appears that Orkney rejected, if not the Beaker ‘incomers’, then the Beaker ideas including the new pottery styles, in much the same way as metalwork was not adopted at an early date here.

The steatite urns came from Shetland and required a dangerous voyage through difficult waters to acquire (Section 2.3.3). Steatite funerary urns are unique to Orkney and Shetland, and, as Sheridan (2007a, 172) noted:
It seems plausible that the regionally specific urn types seen in the Northern Isles reflect the desire to express a distinct identity/ies. The complexity, or sophistication, of the Orkney elite’s expression of identity is demonstrated in the contents of the prominent barrows close to the Ring of Brodgar. Here … the elite chose to bury their cremated dead in the large, prestigious steatite urns that are found only in the Northern Isles.

This suggests that, far from these steatite urns indicating isolation from mainland Scottish trends, the Orcadian Bronze Age elite made a deliberate choice to be buried in such vessels rather than in the clay urn forms common elsewhere. This may be part of a general rejection of outside influences in favour of a regional trajectory, with northern and insular connotations, which appears to have included closer ties with Shetland. This Shetland influence may also be seen in some of the domestic structures of the 2nd millennium BC, such as the double house (Section 7.8) and is possibly supported by some of the distinctive Beaker-like pottery seen in both Orkney and Shetland in the late 3rd millennium BC (Section 6.3.5).
Chapter 7 Settlement

7.1 The nature of Orcadian prehistoric settlement

‘The basic settlement unit is the house’ (Hunter 1971, 170). Settlement sites in prehistoric Orkney are recognised archaeologically by the presence of substantial permanent structures – ‘houses’ – constructed from Orkney’s easily accessible high-quality building stone (Section 2.1.2), typically surrounded by rich black midden deposits (e.g. Card et al 2016; Childe 1931a; Childe & Grant 1939 & 1947; Ritchie 1983a), and this has been the case since the discovery of Skara Brae in 1850, where:

... an immense "Kitchen Midden," apparently of great antiquity, was exposed to view. It ... consisted chiefly of ashes thickly studded with bones, shells, pieces of horns of the ox and deer, and fragments of charred wood (Petrie 1868a, 201).

Debates over Neolithic transhumance (e.g. Barrett 1994, 132-53; Pollard 1999; Thomas 1991, 25-8, 1996 & 1999, 7-23; Whittle 1996) and regional variation (e.g. Barclay 2001 & 2003; Cooney 1996 & 2003; Gibson 2003) have largely bypassed Orkney. Narratives of a mobile British Neolithic cite Orkney as the exception to the pattern elsewhere (e.g. Thomas 1999, 9-10). The transhumance debate is also relevant to the Bronze Age. Brück (1999a &

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150 I use 'settlement' in a restricted but generally recognised sense, referring to a house or houses together with any associated structures and infield area (e.g. Roberts 1996, 1-14). Use of the term 'house' has been questioned due to the baggage that comes with it (e.g. Brück & Goodman 1999), although it is a perfectly acceptable term due to the universal nature of the concepts expressed (e.g. Cooney 1999, 52-7). ‘House’ has not generally been a contentious term in Orkney (e.g. Downes et al 2016; Richards & Jones, R. (eds) 2016) and will be used here. Other terms such as 'dwelling' and 'farmstead' carry their own implications (e.g. Oliver 1987; Waterson 1990 & Weller 1982).

151 Although timber houses dating to the mid-4th millennium BC have been identified in Orkney, these were replaced in stone by the late 4th millennium BC (Farrell et al 2014; Gee et al 2016; Richards & Jones, A. M. 2016).

152 I follow the common usage of 'midden' in Orcadian archaeology (e.g. Card et al 2016; Dockrill & Bond 2009; Richards, Jones, R. et al 2016) as a general term for the on-site accumulation of refuse notwithstanding its potential complexities (e.g. Barber 2011; McOmish 1996; Needham & Spence 1996 & 1997; Shepherd 2016).
2000) proposed that in parts of Southern England\textsuperscript{153} Early Bronze Age settlement sites, defined by the presence of a house (indicated in the lowlands by holes for timber posts and other negative features) with evidence of domestic activities at the same location, did not exist. Instead there was residential mobility over a wider landscape, accounting for finds of domestic artefact scatters and hearth debris at a range of sites without associated permanent settlements (ibid). The appearance of roundhouses and field systems suggests that sedentary farming was well established in lowland Britain by the Middle Bronze Age (Barrett 1994, 132-53; Brück 1999b, 2000 & 2007; Ellison 1981; Thomas 1991, 28 & 1999, 7-11). Elsewhere in Britain, north of a line between Aberystwyth on the west coast and the Wash in the east, there is evidence from the Early Bronze Age onwards of settlement sites with roundhouses, with early 2\textsuperscript{nd} millennium cal BC Scottish examples including ring bank and earthfast timber post construction (Pope 2003 & 2015).

The geographical constraints of the Orkney archipelago impose severe limitations on settlement and subsistence patterns (Sections 2.1.4 & 2.1.5). There was little opportunity for either nomadic pastoralism or shifting cultivation. Upland areas\textsuperscript{154} in Orkney tend to be suitable only for low-intensity grazing (e.g. Farrell 2009, 295-8; Keatinge & Dickson 1979, 593). Access to the resources of the sea remains an important consideration in island communities (e.g. Evans & Vaughan 1983; Nicholson 2007a, b & c; Wheeler 1983) and this enabled the successful exploitation of otherwise marginal coastal locations, with a mixed economic base providing sustainability especially in times of scarce resources (Dockrill & Bond 2009, 44). Primary human needs for survival include fresh water, food and shelter: the most desirable living places provide convenient access to these, and this has inevitably led to continuity of use, which has caused in some instances the development of tell-like mounds e.g. in Sanday and North Ronaldsay

\textsuperscript{153} Comprising the Wessex region of Wiltshire, Dorset and Hampshire, together with the Thames Valley, Kent and Sussex.

\textsuperscript{154} Above 50m OD in Orkney (Berry 1985, 53 & 2000, 52; Section 2.1.4).
or linear arrangements of successive structures e.g. Swandro, Rousay (Dockrill et al 2013 & 2014). Permanent settlement in Orkney necessitates reuse of agricultural land and this requires intensive manuring to both create and maintain soils suitable for arable cultivation, preventing soil exhaustion (e.g. Guttman et al 2004 & 2006; Simpson, I. A. et al 2007; Section 8.2). The middens that accumulated contributed significantly to agricultural activity. In addition to providing valuable manure to create a fertilised infield, they were, from the Neolithic onwards, both directly cultivated and used to stabilise windblown sand deposits (e.g. ibid; Dockrill & Bond 2009; Simpson et al 2006). Midden has also had structural functions in Orkney, and was used as wall core material from the Neolithic (e.g. Dockrill 2007b; Hunter 2007a) into the Late Bronze/Early Iron Age (Dockrill 2007c). The extensive midden deposits and enriched soils associated with permanent settlements accentuated motives for site persistence and became an inherited resource for succeeding generations (Dockrill & Bond 2009; Hamlet 2014).

The utilitarian exploitation of midden as a vital component in maintaining the viability of permanent agricultural settlements contrasts with the picture presented elsewhere in Britain, where large-scale midden sites developing in the Late Bronze Age have been interpreted as communal feasting or gathering places, associated with specialised activities such as craft production, cattle rearing, ritual or mortuary practices (e.g. Brück 2007; Lawson 2000; McOmish 1996; Needham & Spence 1996 & 1997; Needham et al 1996). Parallels for such practices come from Orkney in the 3rd millennium BC with evidence for selective and structured deposition of cattle bone and articulated red deer skeletons in the vicinity of settlements sites (e.g. Bond 2007a; Card et al 2017; Clarke et al forthcoming; Mainland et al 2014; Marshall et al 2016; Moore & Wilson 2011a; Richards et al 2015). There appears to be little evidence for continuity of such structured deposition on a substantial scale beyond the late 3rd millennium BC, although Downes (2005, 200) sees the incorporation of human excrement into the fertilised infield at Tofts Ness, Sanday as significant, since it:
signals both the role of the person as an inseparable part of the continuous cycle of reproduction, and the inalienability of people and land.

More prosaically, the addition of human manure highlights a need to exploit every available resource in maintaining viability of the Bronze Age soils (Simpson, I. A. et al 2007, 248), although the two explanations are not mutually exclusive.

This pattern of permanent stone-built houses and associated evidence for sedentary agriculture (Section 7.3) remains a constant feature of Orcadian prehistoric settlement from the 4th millennium BC onwards. Social changes occur such as can be envisaged from the development of new designs of houses (Section 7.4); the appearance of burnt mounds (Chapter 9); the advent of enclosed settlements (Section 7.12) and changes in burial practice (discussed in Chapter 6) but these need to be set against the background of the practicalities of the continued successful exploitation of Orkney’s geographically circumscribed environment.

7.2 Limitations of the archaeological record

As discussed earlier (Chapter 1), Bronze Age Orkney suffers in comparison with more intensively researched periods, in particular the Orcadian Neolithic. There are 25 known (or probable) Neolithic settlement sites (Figure 7.1), a not dissimilar sum to the 28 known (or probable) Bronze Age settlement sites (Figure 7.2), although the known Bronze Age sites are more evenly distributed across the landscape. Disparity in favour of the Neolithic becomes apparent when comparing excavated Bronze Age settlement sites with their Neolithic counterparts: only five excavations of Bronze Age sites have been fully published (Table 7.1) compared with thirteen Neolithic sites (Table 7.2).

Unexcavated sites are classified to a particular period on the basis of either visible physical characteristics or from artefacts collected during field walking or recovered from exposed erosion faces etc. See section 4.7 for a discussion of the biases this may introduce.

See Appendix 12, Figures A12.1 – A12.6 for large-scale locations maps.
Table 7.1 Probable Bronze Age settlements\(^{537}\) in Orkney indicating excavation status or survey type. ‘Site number’ refers to the sites shown on Figure 7.2. Bronze Age house forms (e.g. oval, double) are discussed below in Sections 7.6 – 7.10.

N.B. ‘In post-excavation’ indicates that the site is not yet fully published, but interim reports and grey literature may be available.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Description</th>
<th>Site Status</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Point of Buckquoy, Birsay</td>
<td>Indeterminate (Section 4.7)</td>
<td>Excavation published</td>
<td>Morris 1989, 71-107</td>
</tr>
<tr>
<td>6</td>
<td>Crossiecrown, St. Ola</td>
<td>Multi-period (Section 7.5.4)</td>
<td>Excavation published</td>
<td>Card et al 2016</td>
</tr>
<tr>
<td>10</td>
<td>Site 5, Skaill, Deerness</td>
<td>Double House (Section 7.6.2)</td>
<td>Excavation published</td>
<td>Buteux 1997c</td>
</tr>
<tr>
<td>18</td>
<td>St Boniface, Papa Westray</td>
<td>Multi-period (Section 7.15)</td>
<td>Excavation published</td>
<td>Lowe 1998</td>
</tr>
<tr>
<td>23</td>
<td>Tofts Ness, Sanday</td>
<td>Multi-period (Sections 7.3.5 &amp; 7.9)</td>
<td>Excavation published</td>
<td>Dockrill, Bond et al 2007</td>
</tr>
<tr>
<td>2</td>
<td>Linna Breck, Birsay</td>
<td>Oval house (Section 7.8.2)</td>
<td>In post-excavation</td>
<td>Øvrevik 1985, 146-9</td>
</tr>
<tr>
<td>3</td>
<td>Nessbreck, Corrigall</td>
<td>Souterrain (Section 7.11)</td>
<td>In post-excavation</td>
<td>Lee in prep</td>
</tr>
<tr>
<td>11</td>
<td>Round Howe, St Andrews</td>
<td>Enclosed roundhouse? (Section 7.12.3)</td>
<td>In post-excavation</td>
<td>Murray 2003</td>
</tr>
<tr>
<td>14</td>
<td>Hesti Geo, South Walls</td>
<td>Double House (Section 5.3)</td>
<td>In post-excavation</td>
<td>Lee &amp; Thomas 2012a, 27-30</td>
</tr>
<tr>
<td>17</td>
<td>Links of Noltland, Westray</td>
<td>Multi-period (Sections 7.3.5 &amp; 7.6.3)</td>
<td>In post-excavation</td>
<td>Moore &amp; Wilson 2011a &amp; 2013</td>
</tr>
<tr>
<td>21</td>
<td>Berst Ness, Westray</td>
<td>Multi-period (Section 7.9)</td>
<td>In post-excavation</td>
<td>Moore &amp; Wilson 2008a &amp; 2009a</td>
</tr>
<tr>
<td>7</td>
<td>Brae of Smerquoy, St Ola</td>
<td>Multi-period (Section 7.3.5)</td>
<td>Partly published/Ongoing excavation</td>
<td>Gee et al 2016</td>
</tr>
<tr>
<td>24</td>
<td>Cata Sand, Sanday</td>
<td>Indeterminate (Section 5.5.3)</td>
<td>Ongoing excavation</td>
<td>Cummings et al 2016</td>
</tr>
<tr>
<td>5</td>
<td>Brae of Muckquoy, Redland</td>
<td>Multi-period (Section 7.12.4)</td>
<td>Fieldwalking/trial excavation/ geophysics</td>
<td>Richards, Downes et al 2016</td>
</tr>
<tr>
<td>8</td>
<td>Loch of Tankerness</td>
<td>Oval house (Section 7.8.2)</td>
<td>Field survey/surface finds retrieval</td>
<td>Lamb 1987, 25, no. 113</td>
</tr>
<tr>
<td>4</td>
<td>Bookan Wasbister, Stenness</td>
<td>Double House (Section 4.2.3)</td>
<td>Field survey, geophysics</td>
<td>Card 2003 &amp; 2005a, 61</td>
</tr>
<tr>
<td>9</td>
<td>Taing of Beeman, Tankerness</td>
<td>Double House</td>
<td>Field survey only</td>
<td>Lamb 1987, 24, no. 109;</td>
</tr>
<tr>
<td>12</td>
<td>Braebuster, Hoy</td>
<td>Double House (Section 7.12.2)</td>
<td>Field survey only</td>
<td>Lee 2012</td>
</tr>
</tbody>
</table>

\(^{537}\) Not including the prehistoric settlement sites in the relict landscapes of Eynhallow (Section 5.4) and Spurness (Section 5.5.4), which have been assumed to be probably Bronze Age for the purposes of the extrapolations in Section 5.7, as explained in Section 5.7, Footnote 107.
<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Description</th>
<th>Site Status</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Whaness Burn, Hoy</td>
<td>Enclosed settlement (Section 7.12.2)</td>
<td>Field survey only</td>
<td>Lamb 1989, 13, nos. 10-14 &amp; 1996</td>
</tr>
<tr>
<td>15</td>
<td>Cantick Head, S. Walls</td>
<td>Double House (Section 5.3)</td>
<td>Field survey only</td>
<td>Lamb 1989, 19, no.52</td>
</tr>
<tr>
<td>16</td>
<td>Rotten Loch, North Walls</td>
<td>Oval house</td>
<td>Field survey only</td>
<td>Lamb 1989, 14, no.17</td>
</tr>
<tr>
<td>19</td>
<td>Kraa-Tooies, Papa Westray</td>
<td>Oval house</td>
<td>Field survey only</td>
<td>Downes 1998c</td>
</tr>
<tr>
<td>20</td>
<td>Holm of Faray</td>
<td>Double House</td>
<td>Field survey only</td>
<td>Lamb 1984, 21, no. 86</td>
</tr>
<tr>
<td>22</td>
<td>Shelly Knowe, Sanday</td>
<td>Double House (Section 5.5.1)</td>
<td>Field survey, geophysics</td>
<td>Dockrill, Gater &amp; Simpson 2007</td>
</tr>
<tr>
<td>25</td>
<td>Linga Holm</td>
<td>Double House (Section 5.4)</td>
<td>Field survey only</td>
<td>Lamb 1984, 34, no.215</td>
</tr>
<tr>
<td>26</td>
<td>Linga Holm</td>
<td>Oval house (Section 5.4)</td>
<td>Field survey only</td>
<td>Lamb 1984, 34, no.212</td>
</tr>
<tr>
<td>27</td>
<td>Auskerry</td>
<td>Double House (Section 5.4)</td>
<td>Field survey only</td>
<td>Lamb 1984, 34, no.192</td>
</tr>
<tr>
<td>28</td>
<td>Peerie Hill, Sandwick</td>
<td>Roundhouse (Section 5.2)</td>
<td>Field survey, geophysics</td>
<td>Moore 2011 &amp; 2013</td>
</tr>
</tbody>
</table>
Relatively little attempt has been made to consider the different types of Bronze Age settlement, their inter-relationships and developmental history, consequently a number of issues remain to be resolved, and I seek to explore the following questions:

• Is there a dislocation in the settlement record at the Neolithic/Bronze Age transition as suggested by the apparent abandonment of sites such as Skara Brae (Childe 1931a) and Rinyo (Childe & Grant 1939 & 1947)?
• How securely can settlement sites be assigned to the Bronze Age in the absence of excavation (cf. the ‘Bronze Age double house’ type: Card 2005a, 61)?
• How does domestic architecture develop and change over time from the ‘typical’ late Neolithic house (e.g. Card et al 2016, 169) to the Iron Age roundhouse (e.g. Dockrill 2007c)?
• Is it possible to identify a ‘typical’ Bronze Age settlement in Orkney?
• Do settlement patterns change between the late 3rd millennium and early 1st millennium BC?
• Can a social hierarchy be identified between Orcadian Bronze Age settlements?

In examining these issues the limitations imposed by the available data set must be acknowledged. More than half of the sites in Table 7.1 identified as Bronze Age are so attributed on the basis of artefact scatters or morphological features identified during field survey which await confirmation by excavation (e.g. the ‘double house’: Section 7.7), whilst there is both poor preservation of structural remains and poor chronological resolution in the evidence from the majority of excavated sites. Four of the published excavated sites present particular problems: the Point of Buckquoy, Birsay (Morris 1989, 71-107) and St Boniface Church, Papa Westray (Lowe 1998; Section 7.15) were merely small-scale trial excavations and exposed only fragmentary structural remains; few structural remains survived from the Early Bronze Age occupation at Crossiecrown, St Ola (Card et al 2016; Section 7.5.4) and there were severe problems with the site records from
Skaill, Deerness (Buteux 1997c; Section 7.6.2). Similar problems with poor survival of structural remains exist at other sites such as Cata Sand, Sanday (Cummings et al 2016; Section 5.5.3), which also lacks close chronological resolution; whilst at the Brae of Smerquoy no structural remains survive from the radiocarbon dated Bronze Age occupation (Gee et al 2016; Section 7.3.5).

Tofts Ness, Sanday (Dockrill, Bond et al 2007; Sections 7.3.5 & 7.9) is the only fully published major excavation, which was accompanied by a programme of geophysical survey that investigated the wider landscape (Dockrill, Gater & Simpson 2007), together with innovative soil survey providing valuable insights into subsistence practices (e.g. Simpson 1998; Simpson, I. A. et al 2007; Section 8.2). Other important sites remain in their post-excavation phases, such as the Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3), where an integrated palaeo-landscape approach (e.g. Brend 2010a; Hamlet 2014; Simpson & Wilson 2011) of the kind pioneered at Tofts Ness (e.g. Dockrill & Bond 2009) has been employed, and the multi-period site at Berst Ness, Westray (Moore & Wilson 2008a & 2009a).

7.3 Continuity or change at the end of the Neolithic?

7.3.1 Introduction

A perception of a marked break in settlement at the Neolithic/Bronze Age transition has received broad acceptance – a view informed by Childe’s (1931a) influential work at Skara Brae and Rinyo, Rousay (Childe & Grant 1939 & 1947) – and the fragmentation of society at the end of the Neolithic has become the current paradigm (e.g. Richards, Downes et al 2016, 243-6). This significant change appears, at first sight, to be supported by the excavated evidence. Twenty-one of the twenty-six sites with evidence of Neolithic settlement\(^{158}\) (shown in Figure 7.1) have been excavated to varying

\(^{158}\) The Stonehall settlement complex comprises three excavated areas of individual structures within 50-100m of each other: Stonehall Farm, Stonehall Knoll and Stonehall Meadow (Richards, Brophy et al 2016) and has been counted as one settlement site; the dates
degrees. Only four of these sites have evidence for continuity of occupation into the Early Bronze Age, whilst recovery of Beaker pottery from four more sites indicates late 3rd/early 2nd millennium BC activity in the vicinity of a Neolithic settlement (shown in Table 7.2 below). Two further sites, Muckquoy (Richards, Downes et al 2016; Section 7.12.4) and Smerquoy (Gee et al 2016), appear to have been occupied in the 2nd millennium BC but it is unclear if this reflects continuity from the Neolithic settlement at the same locations. The majority of examined Neolithic settlement sites were however abandoned by c.2900 cal BC, well before the end of the Neolithic (Chart 7.1; Table 7.2 below). Only the Ness of Brodgar (Card et al 2017) and Pool, Sanday159 (Hunter et al 2007a) indicate abandonment during what would be considered the Chalcolithic in the rest of the British Isles, with Skara Brae, and possibly Stonehall Knoll, Firth having been abandoned at the Neolithic/Chalcolithic transition (Table 7.2).

It can be argued that, based on the excavated evidence (Chart 7.1; Table 7.2), this late 4th/early 3rd millennium cal BC discontinuity represented a greater fragmentation of society than has been suggested (e.g. Richards, Downes et al 2016, 243-6) at the end of the Neolithic. It is beyond the scope of this thesis to enter into a discussion of the possible reasons for this dislocation, but it is interesting to note that the main phase of burial activity at Neolithic chambered tombs also ends c.2900 – 2800 cal BC (e.g. Hutchison et al 2015; Lawrence & Lee-Thorp 2012; Schulting et al 2010; Section 6.2.1). Contrastingly, at least half of the Neolithic settlements that were demonstrably occupied c.2500 cal BC remained in occupation into the Early Bronze Age (Chart 7.2; Table 7.2). What this undoubtedly demonstrates, in the Orcadian context, is that rates of change and evolution in different types of evidence need not coincide.

159 Neolithic occupation at Pool, however, was not continuous, with an earlier hiatus lasting around 100 years in the 28th/27th centuries cal BC (MacSween et al 2015).
There are important limitations to the dataset currently available in terms of evaluating abandonment at the end of the Neolithic. Abandonment at the Neolithic/Chalcolithic-Early Bronze Age boundary is supported by radiocarbon dating at just four sites: Skara Brae, Pool, Stonehall Knoll and the Ness of Brodgar (Chart 7.1; Table 7.2). Of these, the Ness of Brodgar (Card et al 2017) is the subject of ongoing excavation, whilst Skara Brae is in the process of definitive publication (Clarke & Shepherd in prep). For some excavations the published narrative shows that the area examined was substantially less than the entire site. For example Childe & Grant’s (1939 & 1947) excavation at Rinyo exposed Neolithic structures extending to c.132m², with no evidence of a post-Neolithic component apart from sherds from one Beaker (Childe & Grant 1939, 26), but only 7% of the site has been examined (Mainland & Moore 2010) leaving a great deal of scope for undiscovered Bronze Age settlement, shifted slightly away from the excavated Neolithic structures (cf. the Links of Noltland: Moore & Wilson 2011a; Section 7.6.3). Furthermore, Rinyo was subject to early agricultural improvement (by 1882, Figure 4.19b), lying close to the 1750 hill-dyke, possibly just inside it (Figure 4.19a). Consequently removal of post-Neolithic structures and deposits may have occurred here (Sections 4.4.3 & 4.4), since on their discovery parts of the Neolithic structures were projecting through the turf (Childe & Grant 1939, 6).
Table 7.2 Neolithic settlement sites in Orkney and their excavation status showing radiocarbon dates for probable abandonment and sites with continuing activity in the Chalcolithic (Chalco.) c.2500/2450-2200 cal BC and Early Bronze Age (EBA) c. 2200 cal BC-1550 cal BC. Sites abandoned during the Neolithic/Chalcolithic transition are shown in bold. ‘Beaker’ indicates the presence of Beaker pottery. ‘Site No.’ refers to sites shown in Figure 7.1.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Chalco.</th>
<th>EBA</th>
<th>Beaker</th>
<th>Excavation Status</th>
<th>Abandoned by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Brae of Smerquoy, St Ola</td>
<td>Yes</td>
<td></td>
<td></td>
<td>Post-excavation</td>
<td>3360-3090 cal BC</td>
<td>Griffiths 2016; Gee et al 2016</td>
</tr>
<tr>
<td>9</td>
<td>Knowes of Trotty, Harray</td>
<td></td>
<td></td>
<td></td>
<td>Published</td>
<td>3360-3020 cal BC</td>
<td>Downes et al 2016; Griffiths 2016</td>
</tr>
<tr>
<td>12</td>
<td>Green, Eday</td>
<td></td>
<td></td>
<td></td>
<td>Post-excavation</td>
<td>3350-3020 cal BC</td>
<td>Griffiths 2016; Miles 2011 &amp; 2012</td>
</tr>
<tr>
<td>11</td>
<td>Braes of Ha’ Breck, Wyre</td>
<td>Yes (^{160})</td>
<td></td>
<td></td>
<td>Post-excavation</td>
<td>3340-2940 cal BC</td>
<td>Griffiths 2016; Thomas 2010 &amp; 2011</td>
</tr>
<tr>
<td>7</td>
<td>Wideford Hill, St Ola</td>
<td></td>
<td></td>
<td></td>
<td>Published</td>
<td>3340-2930 cal BC</td>
<td>Griffiths 2016; Richards &amp; Jones A M 2016</td>
</tr>
<tr>
<td>14</td>
<td>Knap of Howar, Papa Westray</td>
<td></td>
<td></td>
<td></td>
<td>Published</td>
<td>3330-2910 cal BC</td>
<td>Griffiths 2016; Ritchie 1983a</td>
</tr>
<tr>
<td>5</td>
<td>Barnhouse, Stenness</td>
<td>Yes (^{161})</td>
<td></td>
<td></td>
<td>Published</td>
<td>2890-2845 cal BC</td>
<td>Richards, Jones, A. M. et al 2016</td>
</tr>
<tr>
<td>6</td>
<td>Stonehall Meadow, Firth</td>
<td></td>
<td></td>
<td></td>
<td>Published</td>
<td>3360-2930 cal BC</td>
<td>Griffiths 2016; Richards, Brophy et al 2016</td>
</tr>
<tr>
<td>6</td>
<td>Stonehall Farm, Firth</td>
<td></td>
<td></td>
<td></td>
<td>Published</td>
<td>2890-2620 cal BC</td>
<td>Griffiths 2016; Richards, Brophy et al 2016</td>
</tr>
<tr>
<td>6</td>
<td>Stonehall Knoll, Firth</td>
<td></td>
<td></td>
<td></td>
<td>Published</td>
<td>2630-2460 cal BC</td>
<td>Griffiths 2016; Richards, Brophy et al 2016</td>
</tr>
<tr>
<td>1</td>
<td>Skara Brae, Sandwich</td>
<td></td>
<td></td>
<td></td>
<td>Partly published</td>
<td>2550-2420 cal BC</td>
<td>Childe 1931a; Thomas 2016, 93-4</td>
</tr>
<tr>
<td>17</td>
<td>Pool, Sanday</td>
<td></td>
<td></td>
<td></td>
<td>Published</td>
<td>2460-2280 cal BC</td>
<td>Hunter et al 2007a; MacSween et al 2015</td>
</tr>
<tr>
<td>4</td>
<td>Ness of Brodgar, Stenness</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Ongoing</td>
<td>2340-2200 cal BC</td>
<td>Card et al 2017</td>
</tr>
<tr>
<td>18</td>
<td>Tofts Ness, Sanday</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Published</td>
<td>Not abandoned</td>
<td>Dockrill, Bond et al 2007</td>
</tr>
</tbody>
</table>

\(^{160}\) The Beaker pottery is associated with radiocarbon dates in the late 3rd millennium cal BC (Sheridan 2013, 56-7; Figure 6.18), and comes from the upper fills of a stone quarry associated with the Early Neolithic settlement at the Braes of Ha’ Breck, which began to be backfilled in the mid-4th millennium cal BC (Lee & Thomas 2012b, 19; Thomas 2010). The Beaker may indicate the presence of Bronze Age settlement nearby.

\(^{161}\) Described as ‘one Beaker rim from an upper deposit beneath the topsoil’ (Richards, Jones A.M. et al 2016, 197). There was no other evidence of Chalcolithic/ Bronze activity at Barnhouse, but Early Bronze Age pottery was recovered from a pit 135m south east of Barnhouse, possibly associated with the removal of a standing stone (Challands, Edmonds et al 2005, 215).
Table 7.2 (continued).

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Chalco.</th>
<th>EBA</th>
<th>Beaker</th>
<th>Excavation Status</th>
<th>Abandoned by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Berst Ness, Westray</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Post-exavation</td>
<td>Not abandoned</td>
<td>Moore &amp; Wilson 2008a; H. Moore pers. comm.</td>
</tr>
<tr>
<td>20</td>
<td>Links of Noltland, Westray</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Post-exavation</td>
<td>Not abandoned</td>
<td>Moore &amp; Wilson 2011a</td>
</tr>
<tr>
<td>21</td>
<td>Crossiecrow, St Ola</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Published</td>
<td>Not abandoned</td>
<td>Card et al 2016</td>
</tr>
<tr>
<td>10</td>
<td>Rinyo, Rousay</td>
<td>Yes\textsuperscript{162}</td>
<td></td>
<td></td>
<td>Published</td>
<td>Not dated</td>
<td>Childe &amp; Grant 1939 &amp; 1947</td>
</tr>
<tr>
<td>13</td>
<td>Stove Bay, Sanday</td>
<td></td>
<td></td>
<td></td>
<td>Evaluation only</td>
<td>Not dated</td>
<td>Bond et al 1995</td>
</tr>
<tr>
<td>15</td>
<td>Howe, Stromness</td>
<td>Yes\textsuperscript{163}</td>
<td></td>
<td></td>
<td>Published</td>
<td>Not dated</td>
<td>Ballin Smith 1994</td>
</tr>
<tr>
<td>16</td>
<td>Dingieshowe, St Andrews</td>
<td></td>
<td></td>
<td></td>
<td>Antiquarian\textsuperscript{164}</td>
<td>Not dated</td>
<td>Petrie 1874, 88-9; Stevenson 1946</td>
</tr>
<tr>
<td>26</td>
<td>Scapa Road, Kirkwall</td>
<td></td>
<td></td>
<td></td>
<td>Evaluation only</td>
<td>Not dated\textsuperscript{165}</td>
<td>Aitken et al 2015; Strickland 2014</td>
</tr>
<tr>
<td>2</td>
<td>Garson, Stromness</td>
<td></td>
<td></td>
<td></td>
<td>Field walking only</td>
<td>N/A</td>
<td>Lynn &amp; Bell 1988b</td>
</tr>
<tr>
<td>3</td>
<td>Deepdale, Stromness</td>
<td></td>
<td></td>
<td></td>
<td>Field walking only</td>
<td>N/A</td>
<td>Richards 2005b</td>
</tr>
<tr>
<td>23</td>
<td>South Seatter 1, Stromness</td>
<td></td>
<td></td>
<td></td>
<td>Field walking only</td>
<td>N/A</td>
<td>Richards 2005b</td>
</tr>
<tr>
<td>24</td>
<td>South Seatter 2, Stromness</td>
<td></td>
<td></td>
<td></td>
<td>Field walking only</td>
<td>N/A</td>
<td>Richards 2005b</td>
</tr>
<tr>
<td>25</td>
<td>Saverock, St. Ola</td>
<td></td>
<td></td>
<td></td>
<td>Field walking only</td>
<td>N/A</td>
<td>Gee 2016b; Richards &amp; Jones, R. 2016, 15</td>
</tr>
</tbody>
</table>

\textsuperscript{162} See Section 7.3.2.

\textsuperscript{163} See Section 7.15

\textsuperscript{164} See Section 7.15.

\textsuperscript{165} Artefactual evidence here suggested both Neolithic and Iron Age occupation but there was no artefactual evidence to suggest a Bronze Age component and no radiocarbon dates were obtained.
Chart 7.1 Estimates of abandonment dates for all radiocarbon dated Neolithic settlement sites in Orkney that do not exhibit continuity into the Early Bronze Age.

For details and references see Table 7.2 below.

Sites with continuity from the Neolithic into the Bronze Age are discussed in Section 7.3.5.
7.3.2 Limited excavation: missing the obvious?

The end of Neolithic settlement at Pool, Sanday occurred c.2460 – 2280 cal BC, and there was then an extended hiatus until settlement resumed in the early 1st millennium AD (Hunter et al 2007b, 518; MacSween et al 2015). As with many sites in Orkney (Section 4.7), Pool was discovered through exposure of its archaeological remains by coastal erosion, and the original extent of the settlement to seaward is unknown. Furthermore, although its excavation covered the bulk of the eroding coastal settlement mound, ‘it included only a fraction of the extensive remains thought to lie to the NE … identified by geophysical survey’ (Hunter 2007c, 16 & illus. 2.4 & 2.5). There is thus ample scope at Pool for Bronze and Early Iron Age settlement phases to have been lost to coastal erosion or to be located within unexcavated portions of the site. The Iron Age settlement at Pool directly overlies the Neolithic occupation, and included a souterrain constructed reusing one of the Neolithic structures (Hunter 2007b, 79): does this provide circumstantial support for the suggestion that the site was not in fact abandoned but shifted?

At Stonehall there was a clear overlap in the occupation of all three sites (Griffiths 2016, 275-8; Richards, Brophy et al 2016, 124) indicating continuity from the late 4th to mid-3rd millennium cal BC, and there is scope for undetected shifts of occupation. Geophysical survey concentrated on areas where the landowner had reported plough-disturbed archaeological remains (Stonehall Farm and Meadow) or where an obvious mound was visible (Stonehall Knoll); and excavation proceeded accordingly (ibid; Richards, Jones, R. et al 2016, fig. 6.3). The excavated Neolithic houses lie at 50 – 65m OD, in the upland area (Section 2.1.4); envisaging a shift downhill in the late 3rd/early 2nd millennium BC would not be unreasonable. The nearest recorded prehistoric settlement is the broch at Nether Bigging (HY31SE80), which lies 800m to the northwest of Stonehall at around 12m OD, and may be indicative of an area of Bronze Age settlement (Section 7.15). There is circumstantial evidence for continued settlement in the general area during
the Bronze Age provided by late 3rd/early 2nd millennium BC radiocarbon date for an inhumation in the passageway at Cuween chambered tomb (Sheridan 2005b; Section 6.2.1), positioned above Stonehall, and postulated to have been built originally as an adjunct of the Neolithic settlement (Richards, Brophy et al 2016, 91-2).

7.3.3 Skara Brae: shifting settlement in a wider landscape?

The desertion of Skara Brae, memorably described by Childe (1931a, 40-1 & 63-4), was ascribed to deposition of windblown sand which, although present to a degree throughout the occupation, appears to have increased catastrophically c.2550 – 2420 cal BC166 (Clarke 1976a & b; Childe 1931a 63-4; Simpson et al 2006; Thomas 2016, 93-4). This dating reflects the samples available for assay, particularly limited since Clarke’s (1976a & b) excavation was confined to two small trenches (Figure 7.3). Childe (1931a, 61-4) however identified a ‘re-occupation period’ at Skara Brae, best observed in House 7, where there were four occupation levels interspersed with windblown sand, three to five foot six inches (0.91 – 1.68m) above the primary floor, associated with several ‘perfectly normal Skara Brae hearths’ (ibid) implying continued domestic activity at the site, perhaps after the conventional end-date suggested by the radiocarbon evidence167. Moreover, Early Bronze Age funerary activity at Skara Brae is demonstrated by radiocarbon dated human bones found in both the main passageway and in the sand infilling House 1 (Thomas 2016, 93-4; Petrie 1868a, 210; Rick Schulting, pers. comm; Section 6.1.3). There is further evidence of continuing activity nearby. Around 120m

166 From preliminary Bayesian modelling as part of the Times of their Lives (TOTL) project (http://totl.eu) of the 149 radiocarbon dates now available from Skara Brae, including new dates from Clarke’s excavation (Sheridan, Clarke et al 2012). The preliminary modelling results quoted by Thomas (2016, 93-4) came from pers. comms. by TOTL project members.

167 It has been suggested that House 8, the ‘Workshop’, at Skara Brae (Figure 7.3), is a separate Bronze Age house built alongside a ‘decaying settlement’ (Downes & Thomas 2013, 83, fig. 4.3; Richards, Downes et al 2016, 246 & fig. 9.30) based on its unusual shape and perceived similarities to Bronze Age double houses, and this is discussed further in Section 7.8.2. This suggestion is not substantiated by the published stratigraphical and artefactual evidence; rather House 8 appears to be an integral part of Childe’s ‘Skara Brae III’ period (e.g. Childe 1930, 160-1 & 172-3 & 1931a, 21-4, 49-4 & 94). A late Neolithic date for House 8 is supported by the current radiocarbon dates; further elucidation awaits final publication (Clarke & Shepherd in prep.).
west of Skara Brae lies a probably multi-period prehistoric settlement mound, with structural remains interspersed with windblown sand exposed in an erosion face and over c.850m² of deposits surviving on the landward side (Morris et al 1985). A deer butchery site located c.100m west of Skara Brae (Richards et al 2015) has an unclear relationship with this settlement mound but both articulated and disarticulated red deer bones were recovered, together with over 200 Skaill knives as well as structural deposits, dated to the late 3rd millennium BC (ibid). Further evidence of late 3rd millennium BC activity and ploughsoil formation came from trial trenches around 45m west of Skara Brae (Romaniuk et al 2016, 2).

The abandonment of the core settlement at Skara Brae might be interpreted as a direct response to increased aeolian erosion by a simple relocation slightly further inland. The Bay of Skaill remained a focus of activity (Section 4.9; Figure 4.26) beyond the western sites already mentioned: around 700m to the south east of Skara Brae lie a probable broch and several areas of prehistoric settlement revealed by geophysical survey (OCGU 2008; Ovenden et al 2009, 126, fig. 2); and the Knowe of Verron broch (HY21NW22; Moore & Wilson 2001a) is 900m north of Skara Brae. Some brochs elsewhere (e.g. St Boniface Church, Papa Westray: Lowe 1998; Section 7.15) are known to overlie Bronze Age settlement; continuing settlement in the Bay of Skaill area may be inferred from the extensive Bronze Age funerary activity at the Links of Skaill and on surrounding higher ground (Section 6.3.2; Figure 4.26). Later settlement (e.g. Graham-Campbell 1976 & 1984; Griffiths 2006, 2007 & 2008, James 1999, Irvine 2009) illustrates the continuing importance of this area as a geographically favourable location into the second millennium AD.

7.3.4 The Ness of Brodgar

The final site where abandonment demonstrably occurs towards the end of the 3rd millennium BC is Ness of Brodgar, Stenness situated on the Brodgar peninsula between the Stones of Stenness and the Ring of Brodgar (Card et al

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The site comprises numerous exceptionally large Neolithic structures with a rich artefactual assemblage, occupying an area of c.1.07 ha defined by enclosure walls, dating from the late 4th to the late 3rd millennium cal BC (ibid; Figure 7.4). The final decommissioning of the massive ‘ceremonial’ Structure 10, marked by the deposition of elements of around 400 head of cattle as the upper deposit in the infilling of the surrounding pathway, took place c.2340 – 2200 cal BC (in Model 1169) and the last dated activity, the deposition of articulated red deer skeletons170 overlying the cattle bone, occurred c.2295 – 2125 cal BC (Card et al 2017).

Structure 10 itself appears to have been abandoned sometime prior to this deposition, since the last use of its central hearth, marked by the placing of a cattle skull and a pecked stone, occurred c.2550 – 2460 cal BC, following which the interior was filled with midden and rubble and the walls robbed of stone (ibid; Mainland et al 2014, 869). It may however have been the last building in use on the site, since the other buildings appear to have been abandoned by c.2800/2600 cal BC171 and filled with midden (Card et al 2017), activities finding parallels with discontinuity at other Neolithic sites in the same period e.g. Barnhouse, Stenness (Richards, Jones, A. M. et al 2016; Table 7.2).

As Thomas (2016, 176 & 195) observed, the dates for the large-scale cattle deposit at the Ness of Brodgar would be considered Chalcolithic/Early Bronze Age elsewhere172. This deposit is associated with one sherd of incised

169 Two models for the currently available radiocarbon dates are presented with equal weight (Card et al 2017): in Model 2 the cattle deposition takes place c.2460 – 2270 cal BC, however in this model there is then a gap of c.115 – 420 years before the deposition of the articulated red deer skeletons on top of the cattle bone (one of which produced an actual radiocarbon date of c.2205 – 2025 cal BC). The depositional consistency of the entire faunal assemblage is more suggestive of a single depositional event or events over a short period (Mainland et al 2014, 875), which would suggest that Model 1 provides the more likely scenario.

170 Paralleled by the deposition of the red deer heap at the Links of Noltland c.2280 – 2130 cal BC (Clarke et al forthcoming; Marshall et al 2016, 26).

171 This infilling occured c.2600 cal BC in Model 1 and c.2800 cal BC in Model 2 (Card et al 2017).

172 It was noted (Card et al 2017) that the closest parallels come from the barrow at Gayhurst, Buckinghamshire, where the limb bones from 300 cattle were deposited c.2290 – 2100 BC.
Beaker or Beaker-like pottery (Card et al 2017, 40) and a barbed-and-tanged arrowhead\(^{173}\). There is also evidence for Bronze Age funerary activity at the Ness of Brodgar, with the removal in 1925 of four Bronze Age cists\(^{174}\), three containing inhumations (Marwick, J. G. 1926; Section 6.3.7). These were found alongside an incised stone (Figure 6.18) thought to have been disturbed from the area of Structure 8 (Thomas 2016, 134). This record hints at the intriguing possibility that the deposition of the cattle/red deer bone towards the end of the 3rd millennium cal BC (Card et al 2017) was related to Chalcolithic/Early Bronze Age funerary activity\(^{175}\) on the site of the abandoned Structure 10. It may be that evidence of a central burial associated with the cattle/red deer bone deposit has been lost: much is likely to have been destroyed without record here since the whole of the Brodgar peninsula is shown as enclosed land on Mackenzie’s (1750) chart\(^{176}\) which was under arable cultivation in the mid-nineteenth century (Thomas 1852, plate XII). The use of an abandoned Neolithic site for Early Bronze Age burials finds parallels with Skara Brae (Section 6.1.3).

Activity post-dating the major animal bone deposits at the Ness of Brodgar is ‘ephemeral’ but many of the earlier structures continued to be robbed of stone and were infilled with rubble and midden (Card et al 2017).

\(^{173}\) http://www.nessofbrodgar.co.uk/dig-diary-friday-july-21-2017/

\(^{174}\) There are two reports of the find. The first (Marwick, H. 1925b) is a very brief report on an incised stone from details furnished at second hand. This report describes the cists as ‘divided from each other by a single flag-stone’ which has led to the assumption (Card & Thomas 2011, 15; Thomas 2016, xv & 134) that they are not burial cists but rather part of the underlying Neolithic structures (although there are examples of double burial cists separated by a single flag e.g. Backakelday, Holm: Marwick 1928a). The second report (Marwick, J. G. 1926) is much more detailed, and is taken from a description of the finds by the farmer who initially found and removed the cists. This account describes four separate cists lying parallel to each other, three of which contained inhumations accompanied by water-worn stones (Figure 6.18).

\(^{175}\) Tentative further support for funerary activity in the area comes with the recovery (from a trench extension adjacent to Structure 10) of the base of a shallow-dished accessory cup of a rare type, other examples of which come from both Early Bronze Age barrows in the south of England and one of the Aubrey holes at Stonehenge (http://www.nessofbrodgar.co.uk/dig-diary-thursday-july-20-2017/).

\(^{176}\) Brodgar Farm is in existence by 1563 (Marwick 1952, 112) suggesting that the surrounding area would have been in cultivation at an early date.
Geophysical survey indicates that the area currently under excavation comprises less than 10% of the total site (Card et al 2017, 3; Towers et al 2017, 30); it may be suggested that this stone was removed for other construction purposes in the immediate vicinity, which might be indicative of continuing occupation nearby. Three ard points and a number of flaked stone bars\footnote{Neither ard points nor flaked stone bars have been found in Neolithic contexts in Orkney and their presence in large numbers in an assemblage is generally indicative of a Bronze Age date, although they remained in use in smaller numbers into the Early Iron Age (Clarke 2006, 124-6 & 2007).} found in the upper levels of the main excavation area (Anne Mitchell, pers. comm.) provide tenuous evidence of later cultivation of the accumulated Neolithic middens at the Ness of Brodgar as seen at other sites in the Northern Isles (e.g. Guttmann 2005; Guttmann et al 2004 & 2006). Coarse stone tools are however also found in Bronze Age funerary contexts (Section 6.3.7) so their presence here may be indicative of a larger (but no longer extant) cemetery associated with the four Bronze Age cists (Marwick, J. G. 1926) already recovered here.

7.3.5 Sites with continuity

A similarly limited data set is available (Chart 7.2 below) when considering continuity of occupation from the Neolithic into the Early Bronze Age and beyond, since of the four sites in Table 7.2 falling into this category, only Tofts Ness, Sanday (Dockrill, Bond et al 2007) and Crossiecrown, St Ola (Card et al 2016) are fully published. Whilst an interim report, some PhD research and popular articles are available for the Links of Noltland, Westray (e.g. Hamlet 2014; Moore & Wilson 2011a & 2013; Moore 2015a & b), the only published information available on Berst Ness, Westray is in the form of interim DES entries (e.g. Moore & Wilson 2006, 2007c & 2008a). Continuity cannot be conclusively demonstrated at the Brae of Muckquoy (Richards, Downes et al 2016, 247-53; Section 7.12.4): this site was dated only by artefacts retrieved during fieldwalking.

Similar problems exist at the badly plough damaged site at the Brae of Smerquoy, St Ola where a late 4\textsuperscript{th} millennium cal BC house was excavated on
the eastern edge of an area of enhanced geophysical responses (Gee et al 2016). The lower and upper occupation deposits around the central hearth inside the Neolithic house were associated with radiocarbon dates of c.3360 – 3090 cal BC and c.2200 – 1940 cal BC respectively; another early 2\textsuperscript{nd} millennium cal BC date came from a pit to the south of the this house (ibid, 79; Griffiths 2016, 262). There were no obvious post-Neolithic structural remains or artefacts recovered to account for the Early Bronze Age radiocarbon dates, and it appears likely that these determinations related to a robbed out/plough-destroyed Early Bronze Age structure. The large interval between these radiocarbon dates and the earlier series suggests discontinuity, although it is possible that structural remains may survive in the unexcavated part of the site. The Berst Ness promontory, Westray (Moore & Wilson 2008a & 2009a), an extensive prehistoric landscape comprising both funerary and settlement elements, may exhibit continuous occupation. Radiocarbon determinations from the buildings at Berst Ness currently range from c.3000BC to c.AD 800, but there are as yet no radiocarbon dates available for the intermediate phases, which are assumed to be Bronze Age on the basis of the finds assemblage that was recovered (Hazel Moore, pers. comm.).

Continuity of occupation occurred at Crossiecrown, St Ola, another badly disturbed site with limited excavation (Card et al 2016; see Section 7.5.3). Settlement, initially in the late 4\textsuperscript{th} millennium BC, continued into the early 2\textsuperscript{nd} millennium BC, although few structural remains from the later occupation survive (ibid). The two remaining sites, Tofts Ness (Dockrill, Bond et al 2007) and the Links of Noltland (Moore & Wilson 2011a) both exhibit continuity from the Neolithic until probably the 1\textsuperscript{st} millennium BC, but present contrasting features.
Chart 7.2 Orkney sites showing continuity of occupation from the Neolithic into the Bronze Age and beyond (dates later than the end of the 1st millennium BC not shown).

Solid lines indicate radiocarbon dates for occupation: these include dates obtained from midden and associated funerary (at the Links of Noltland) deposits, radiocarbon dates for Bronze Age structures are shown in Chart 7.4 below. Dashed lines are conjectural based on artefact assemblages.

The Brae of Smerquoy dates may not indicate continuity as discussed (Section 7.3.5).
Mound 11 at Tofts Ness, Sanday, one component of an extensive relict landscape (Dockrill, Bond et al 2007; Section 5.5.1) presents continuity in a localised area. Excavation focussed on two areas: the primary mound (Areas A, B, G and H shown on Figure 7.5), and a secondary area on the northern flank of the primary mound (Areas C – E and J on Figure 7.5). Radiocarbon dating\(^{178}\) presented problems because of the limited samples available but Bayesian modelling of the primary mound sequence showed continuous occupation from the late-4\(^{th}\) to the mid-2\(^{nd}\) millennium BC (Ambers 2007, 145; Dockrill 2007d, 381-2; Outram 2007; Table 7.3). The structural sequence began in the late 4\(^{th}\)/early 3\(^{rd}\) millennium BC with a sub-circular building with casement style walls (Structure 1), which was subsequently remodelled (Dockrill 2007b, 18-24), and conformed to the design seen elsewhere in Neolithic Orkney (Section 7.5.1). Little survived of the Early Bronze Age Structure 2, which was too badly preserved to classify to type, but it was possibly of cellular form, with an entrance to the south and a passage on the south west (Dockrill 2007b, 24-9).

<table>
<thead>
<tr>
<th>Phase Number</th>
<th>Phase starts</th>
<th>Phase ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>3350–2970 (3290–3150 at 68%)</td>
<td>3270–2910 (3120–2930 at 68%)</td>
</tr>
<tr>
<td>Phase 1.3</td>
<td>3110–2860 (3020–2890 at 68%)</td>
<td>2860–2600 (2810–2660 at 68%)</td>
</tr>
<tr>
<td>Phase 2</td>
<td>2820–2560 (2760–2600 at 68%)</td>
<td>2110–1690 (2010–1770 at 68%)</td>
</tr>
<tr>
<td>Phase 3</td>
<td>1880–1600 (1770–1640 at 68%)</td>
<td>1680–1440 (1630–1500 at 68%)</td>
</tr>
</tbody>
</table>

No radiocarbon dates were obtained for the Late Bronze Age Phases 4 and 5 (See Section 7.9) and only four dates from the Early Iron Age Phase 6 (both in the secondary excavation area on the northern flank of the primary mound), most of which fell in the ‘Iron Age plateau’ of the radiocarbon calibration curve (Ambers 2007; Dockrill 2007d). The gap between Phases 3 and 6 was bridged by two radiocarbon dates of c.1520 – 1310 cal BC and 900 – 790 cal

\(^{178}\) See Appendix 1, Table A1.13.
BC obtained from post-excavation sampling of midden-enhanced soils on the eastern flank of Mound 11 (Simpson, Dockrill, Bull et al 1998), and it was considered that, together with the excavated evidence, it could be demonstrated that settlement at Mound 11 was continuous from the late Neolithic to at least the end of the Bronze Age (Dockrill 2007d). Interestingly, continuity at this site occurs on a peninsula that is considered to have been marginal for settlement (Dockrill 2007a; Section 5.5.1). The artefact assemblage throughout all phases consisted primarily of tools with little evidence for items of personal adornment, and was suggestive of ‘a hardworking and fairly hard-pressed agricultural community’ (Smith 2007a, 259).

The Links of Noltland, Westray are thought to have been occupied continuously from the early 3rd to the early 1st millennium cal BC (Hazel Moore pers. comm.; Moore & Wilson 2011b). Initial excavation concentrated on a Skara Brae-like Neolithic settlement at Grobust (Clarke & Sharples 1985); ongoing excavation exposed another six Neolithic structures located c.170m south west of Grobust, together with at least twelve Bronze Age structures, an extensive Bronze Age cemetery and a burnt mound, over an area covering 4ha (Moore & Wilson 2011a & 2013; Figures 7.6 & 7.7; Section 7.6.3). Details are not yet available from the Bronze Age phases, but (in contrast to Tofts Ness) the Neolithic settlement seems to have been high-status with a rich artefactual assemblage (Goring 2011; Moore & Wilson 2011a). Close chronological resolution of all phases awaits results from the radiocarbon dating programme but the artefact assemblage for both settlement and burnt mound indicates a Bronze Age date, and the associated funerary activity ranges from the late 3rd to the early 1st millennium cal BC (Moore 2015a; Hazel Moore, pers. comm.; Moore & Wilson 2011a; Section 6.1.2).

Significantly, the Bronze Age houses at Links of Noltland do not directly overlie the areas of Neolithic settlement, but rather consist of a number of discrete areas located 35 – 200m to the south and east of the Neolithic structures (ibid; Figures 7.6 & 7.7). Aeolian erosion at the site appears to have
intensified in the Bronze Age (Hamlet 2014, 286-7, Moore & Wilson 2013), which would explain shifts in location: the Bronze Age houses are generally positioned further inland than the more exposed areas settled in the Neolithic (Figure 7.6). Midden deposits that had accumulated during the Neolithic phases remained important and were both directly cultivated during the Bronze Age and spread to stabilise windblown sand deposits (Hamlet 2014; 287-323 & 353-4; Hastie 2011; McKenna & Simpson 2011; Moore 2015b; Section 8.2).

7.3.6 Discussion

Dating evidence suggests, as noted above (Section 7.3.1), that the late 4th/early 3rd millennium BC exhibits a more significant dislocation in settlement than that evidenced at the end of the Neolithic c.2500/2450 cal BC. The sites still occupied in the mid-3rd millennium are evenly divided between those where occupation continued and those that were abandoned (Table 7.2; Charts 7.1 & 7.2). We must be wary of the limitations of the data set: there are few excavated sites and the majority lack close chronological resolution, although important sites are in their post-excavation phases (Section 7.3.5; Table 7.2). Equally important is an awareness of the small excavated sample at some sites: for example the 7% excavated at Rinyo (Section 7.3.1) or the large unexcavated site adjacent, and of comparable size, to the extensive excavated site at Pool, Sanday (Hunter 2007c, 16; Section 7.3.2). Successive relocation of settlement within the same area, seen at the Links of Noltland (Section 7.3.5), resembles that suggested for the Bay Of Skaill (Section 7.3.3) and provides support to the possibility that areas of later occupation in the vicinity of other Neolithic sites may lie undiscovered, and at sites where their investigation is limited to serendipitously identified structural foci (e.g. Stonehall: Section 7.3.2) without geophysical survey of the environs, small changes in settlement location may be missed. Suggesting ‘fragmentation’ of society at the end of the Orcadian Neolithic (e.g. Richards, Downes et al 2016, 246) does not necessarily address the possibly different causative factors for abandonment. I argue that a distinction should be made
between cases where environmental factors made continued settlement at the same location untenable (e.g. aeolian erosion at Skara Brae: Section 7.3.3) and deliberate abandonment, where there are no archaeologically demonstrable environmental reasons why activity should not have continued, when sociopolitical factors may reasonably be implied. The most striking example of this type of deliberate abandonment comes in the decommissioning of Structure 10 at Ness of Brodgar in the late 3rd millennium cal BC (Section 7.3.4), although even here much of the rest of the site had already been abandoned for at least several centuries (Card et al 2017). The Ness of Brodgar is not however a ‘normal’ settlement site:

_The exceptional architecture, the diversity of structures, and the evident size and spatial complexity of the Ness of Brodgar all emphasise its special character. Even the newly-discovered external midden mound may refer to themes of conspicuous consumption, status, and affluence (ibid, 7)._ 

Contrasting discontinuity at the high-status Ness of Brodgar with continuity at low-status Tofts Ness (Dockrill, Bond et al 2007; Section 7.3.5) or the more ‘normal’ Crossiecrown (Card et al 2016; Section 7.3.5) is not a like-for-like comparison. Such dislocation as did take place may have had a greater effect on the locales inhabited by the elites of society than on those at a lower level.

The fact that sites of lower status than that at the Ness of Brodgar are not obviously affected by end-of-Neolithic fragmentation perhaps challenges the implied Orkney-wide nature of such an event. Even envisaging a centralised authority at the monuments of the Brodgar peninsula, it is difficult to see why decommissioning the Ness of Brodgar would have a major effect on settlement elsewhere; the evidence for continuity at sites such as Tofts Ness, the Links of Noltland and probably Berst Ness suggest that it did not (Section 7.3.5). Neither can the deliberate decommissioning of the Ness of Brodgar be properly likened to the pragmatic abandonment of Skara Brae. Equally, there is scope for continued occupation beyond the excavated areas at several sites (Section 7.3.2).
Social changes did, however, occur: a snapshot of Orcadian structural forms (Section 7.5.1) and burial practices (Section 6.2) taken in the early third millennium BC would bear little resemblance to that of the early second millennium BC (although there is little apparent change in subsistence practices over this extensive period: Section 8.2). The available data set does not provide unequivocal evidence for widespread fragmentation at the end of the Neolithic; neither does it present a picture of uninterrupted stability. This may change with the publication of the Links of Noltland, where the Neolithic phases at least were high status (Section 7.3.5). Status differentiation in the Bronze Age was not necessarily absent; it may have been demonstrated by other means perhaps related to the increased attention to control of the landscape with physical boundaries, as perhaps seen at Whaness Burn (Section 7.12.2). There is also the possibility of high-status settlement sites as earlier unexcavated phases at some of Orkney’s brochs, discussed in Section 7.15.

7.4 Orcadian Bronze Age domestic buildings

This section examines the evidence for Bronze Age domestic buildings in Orkney, their forms, functions and origins. In doing so, I reinterpret the results from excavations and surveys to draw out both essential and distinctive features of the houses of this period. In particular, I posit a new model for double house origins incorporating environmental factors and maritime links.

House forms may vary but need to provide shelter (walls, roof), heat (hearth) and living space (internal area). The manner in which these purposes are accomplished is, in part, culturally determined and the details provide clues to different communities’ manner of living. Except at some Early Neolithic sites, Orcadian prehistoric house construction was primarily in dry-stone (Section 7.1), which will have required significant investment of effort and implies individual buildings may have had long durations. Few Orcadian sites dating from the late 3rd/early 2nd millennium BC onwards have been
excavated (Section 7.2; Table 7.1), consequently little is known about the post-Neolithic development of structural types. There are few radiocarbon dates available for the excavated structures on Bronze Age settlement sites, which, together with a general dearth of diagnostic artefacts, particularly impedes the meaningful discussion of changing settlement patterns over the period (Section 7.10). Further problems, as noted in Section 7.2, exist in the poor preservation of structural forms on many excavated sites, hindering typological discussion and adding to the difficulties of treating ‘the Bronze Age’ as anything other than a unitary period. In the Late Bronze Age the earliest true roundhouse in the Northern Isles appears at Tofts Ness, Sanday (Dockrill 2007c; Section 7.9), whilst limited evidence for Bronze Age oval houses comes from e.g. the Loch of Tankerness (Lamb 1987, 25, no. 113; Sections 7.8.1 & 7.8.2). The most distinctive structure of this period which is essentially restricted to the Northern Isles is the ‘double house’: paired sub-circular/oval buildings of unequal size with entrances facing each other across a paved area. There are two published examples: Skaill, Deerness (Buteux 1997c; Section 7.6.2, shown in Figure 7.8) and Sumburgh, Shetland (Downes & Lamb 2000a; Section 7.6.1; Figure 7.9); both these sites lack close chronological resolution. Further probable late 3rd/2nd millennium BC double houses are known from the Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3; Figures 7.10 and 7.11) and a number have been identified during field survey (Figure 7.2; Table 7.1).

It is not immediately obvious how the Orcadian double house developed from the preceding Neolithic house styles, but the form is also known from Shetland, where the development of the double house in the Middle/Late Bronze Age may speculatively be traced from Shetland-specific house forms of the late 3rd millennium BC, which do not have obvious Orcadian counterparts, and this hypothesis is discussed in Section 7.8 below. Although it has become axiomatic that the double house in the Northern Isles was

179 The term ‘paired house’ or paired structure’ was formerly used (e.g. Buteux 1997c; Lamb 1987, 24, no. 109) but ‘double house’ is now accepted terminology and will be used throughout.
Bronze Age (e.g. Card 2005a, 61; Downes & Thomas 2013, 82-3), this view has recently been challenged by the suggestion that they developed in the Neolithic (Richards, Downes et al 2016, 245-6; Section 7.5). If substantiated, this has implications for the possible chronology of the examples identified only from field survey (Table 7.1).

A critical review of the evidence for the putative Orcadian Neolithic progenitors of the double house, the chronological security of accepted Bronze Age examples, and a consideration of the development of the double house form are all essential. An explicit model for double house origins incorporating environmental factors and maritime links is suggested below. Other house forms of the Orcadian Bronze Age are also discussed there.

7.5 Neolithic double houses?

7.5.1 Introduction

Orcadian Neolithic houses are standardly of two distinct forms, broadly successive in time: the oblong, internally divided ‘Unstan type’ houses of the 4th millennium BC, exemplified by the Knap of Howar, Papa Westray (Ritchie 1983a; Figure 7.12); but also the Braes of Ha’Breck, Wyre (Lee & Thomas 2012b; Figure 7.13); the Knowes of Trotty, Harray (Downes et al 2016), Smerquoy, St Ola (Gee et al 2016; Section 7.3.5) and Stonehall Knoll, Firth (Richards, Brophy et al 2016; Figure 7.14). These designs are followed by the ‘typical’ late 4th/early 3rd millennium house styles ‘... comprising cruciform interior spaces formed by recessed areas in the inner wall faces’ (Card et al 2016, 169) with casement walls forming a sub-circular exterior as e.g. at Barnhouse (Richards 2005a; Figure 7.15), in the early phases at Skara Brae (Childe 1931a; Figure 7.3), and at Crossiecrown (Card et al 2016; Figure 7.16). The Orcadian sites proposed as Neolithic progenitors of the Bronze Age double house type (e.g. Card et al 2016, 169-71; Richards, Downes et al 2016, 245-6) all fail to convince from the available evidence, as is discussed below.
7.5.2 Possibility 1: Houses 1 and 6, Barnhouse, Stenness.

Richards, Downes et al (2016, 245-6) suggest that Houses 1 and 6 at Barnhouse may represent an early example of a double house dating to the late 4th/early 3rd millennia BC. In this proposed double house scenario, Houses 1 and 6 butted against each other with access between the two, but no obvious external access (ibid). Little trace remained of most of the wall circuit of House 1 (ibid, 107), so it is possible that an entrance to the ‘double house’ may have lain on the southern side of House 1. This juxtaposition is not the typical arrangement noted at Bronze Age examples of double houses, but may be paralleled by the two sequentially built and conjoined 4th millennium BC houses at Knap of Howar (Ritchie 1983a, Figure 7.12), or in the addition of House 5 to House 3 at Braes of Ha’Breck, Wyre (Lee & Thomas 2012b; Figure 7.13). The published site narrative (by the same authors who now advocate the new view) presents a number of more likely alternative interpretations regarding these two houses, including the demolition of House 6 prior to rebuilding of House 1 (Downes & Richards 2005, 107-12), such that the two buildings, far from forming a double house, may never have co-existed.

7.5.3 Possibility 2: Pool, Sanday.

The suggestion that Structures 8 and 9, in the early 3rd millennium BC phase at Pool, may also have been a double house (Richards, Downes et al 2016, 245) is not substantiated by the original excavation report (Hunter 2007a, 40-50). The two structures adjoined each other with Structure 9 built against the south-west casing wall of Structure 8 (ibid, 48-50). The relationship between them was confused but it is clear that they were two separate structures with no interconnecting access. Any resemblance to a double house is thus purely a coincidental by-product of their juxtaposition.

7.5.4 Possibility 3: Crossiecrown, St Ola.

The site at Crossiecrown (Card et al 2016) had suffered a high level of plough damage and disturbance, including historic stone quarrying for building purposes, with the structural remains surviving directly below the present-
day plough soil (e.g. ibid, 161; Anderson-Whymark et al 2016, 436-41; Jones 2016, 354). Two stone houses, the Red House (House 1) and the Grey House (House 2), were located on the edge of an extensive area of midden deposits identified by geophysical survey; radiocarbon dates obtained during the trial trenching of these middens spanned the period c.3270 – 2500 cal BC (Card et al 2016; Figure 7.16). Although the relationship of this Neolithic midden with the Red and Grey Houses is unclear, it was considered that (on the basis of the ‘cloverleaf’ shape of midden deposits on the geophysical survey, thought to have built up against house walls) the initial settlement at Crossiecrone in the late 4th millennium BC consisted of a cluster of four or five houses (ibid, 163-9; Griffiths 2016, 262). No structural remains of this putative early settlement were identified and it was suggested that the buildings of this phase were demolished and their materials recycled (ibid). Stylistically, both the Red and the Grey houses are typical examples of late 4th/early 3rd millennium BC structures (see Section 7.5.1 above), but they also faced each other across a paved area giving the impression of a double house (Card et al 2016, 169-71).

Considerable uncertainty exists, however, over the stratigraphic and chronological relationship between the two (ibid, 169-70 & 189-90). Inconsistencies between the photographic evidence and the published plans of the site (ibid, 188-9, figs. 7.36, 7.37, 7.38 & 7.40) suggest that the entrance identified by the authors into the Grey House may not have existed at the outset, but was rather a result of later disturbance and stone robbing, casting doubt on the ‘double house’ interpretation. There appear to be intrusive later structural elements in the area between the two houses, unrelated to either the Red or Grey Houses, and which may be connected with the Romano-British hair pin (Card & Downes 2000; Fraser Hunter, NMS, via Nick Card pers. comm.) discovered in the core of the north-west wall of the Red House, and implying unrecognised later occupation and disturbance. This find was omitted from the final published account (Card et al 2016) and so the question of how a Romano-British hair pin appeared in the wall core of a
building supposedly constructed in the 3rd millennium BC was not addressed in that report.

In light of such problems, it appears more likely that the Red and Grey Houses, rather than representing a Neolithic example of a double house, are more probably surviving structural elements from the larger four or five house Neolithic settlement postulated originally to have existed here. The site was still occupied during the first quarter of the second millennium BC, but little trace of this survived apart from a later hearth with an associated radiocarbon date of c.1980 – 1740 cal BC, unconnected to either the Red or Grey Houses (ibid, 190-3; Griffiths 2016, 262). Similarly, a small but important assemblage of Beaker pottery came from contexts dating to the late 3rd/early 2nd millennium BC, with Beaker and Grooved Ware apparently in use together in the later phases in the Red House, although caution is necessary as there was a high degree of mixing with earlier occupation levels in apparently well-stratified contexts (Card et al 2016, 193; Jones, A. M. 2016, 354; Richards, Downes et al 2016, 245). Although Crossiecrown cannot be considered a double house, it suggests that Neolithic house forms had a long currency in Orkney, with little change towards the end of the 3rd millennium BC from designs prevalent at the end of the 4th millennium BC. Settlement continued into the Early Bronze Age, and the presence of the much more recent Romano-British hair pin in a wall core suggests that the settlement at Crossiecrown may have had an even longer currency.

7.6 Excavated double houses in the Northern Isles: unambiguous examples

7.6.1 Sumburgh, Dunrossness, Shetland

The double house at Sumburgh (Figure 7.9) was excavated under less than ideal circumstances and site recording was limited (Downes et al 2000). The bulk of the artefact assemblage was undiagnostic but indicated occupation from the late 3rd/early 2nd until the early 1st millennium BC (Clarke 2000;
Further complications arose from evidence for the disturbance and contamination of deposits on site, with for example typically Norse artefacts found in Early Iron Age contexts (e.g. Sharman 2000, 66-7).

The earliest phase exhibited an ard-marked ploughsoil, over which a timber structure of indeterminate form was constructed (Downes & Lamb 2000b, 8-9). There are two radiocarbon dates available for this phase, from charred wood and rope respectively, but both with too wide a date range to be helpful: the first from a possible hearth within the timber building of c.2335 – 1692 cal BC, and the second associated with the probable demolition of the timber building of c.2488 – 1398 cal BC (Downes & Lamb 200b, 10). The association of cord-pressed Beaker pottery with the timber building does however suggest construction in the late 3rd/early 2nd millennium BC (Downes 2000a; Sharman 2000; Sheridan 2013, 49).

There appears to have been a hiatus between the Early Bronze Age timber phase and the later phases, indicated by the formation of an intervening ploughsoil (Downes & Lamb 2000b, 34), and it was not possible to date the commencement or duration of any of the subsequent phases, beyond assigning them broadly to the later Bronze Age or Early Iron Age on the basis of the artefact assemblage (ibid; Downes 2000b). Sometime in the later Bronze Age the stone-built 'North House' was constructed, which in its original form had a small annexe on its north east side (Downes & Lamb 2000b). The North House was remodelled and access to the annexe blocked; around the same time, the larger 'South House' was built, probably still in the later Bronze Age (ibid). The South House may have been a forecourt to the North House, with access provided to the latter only via an entrance through the southern wall of the South House (ibid, 15 & 25). Evidence for any such entrance is ephemeral, and it appears more likely that this was a paired house.

180 These dates have been recalibrated with increased errors (Ashmore 1998; Ashmore et al 2000): see Appendix 1, Table A1.16.

181 In Shetland Beaker introduction appears likely to have occurred somewhat later than in the rest of the UK at around the twenty-third century BC (Sheridan 2013).
unit with entrances facing each other across a paved area. The South House, with its large central hearth, appears to have been domestic, whilst the remodelled North House lacked a hearth and may have had an ancillary role (ibid; Downes 2000b, 117-19). Both North and South Houses were further remodelled within the Late Bronze Age, when, although their respective roles changed, the double house configuration was retained (Downes & Lamb 2000b, 34). In this later phase the South House appears to have been used for storage and animal housing; the North House had three hearths in separate alcoves and may have been a cooking/working area. The North House was abandoned in the Early Iron Age and used as a dumping ground before final site abandonment occurred (ibid).

7.6.2 Skaill, Deerness, Orkney

At Skaill, Deerness initial excavations on Norse structures were expanded on an ad hoc basis to include nearby sites where stonework had been noticed, resulting in the discovery of Site 5 (Buteux 1997c). This consisted, in its final phase, of a double house aligned roughly north-south (Figure 7.8). After the original excavator’s untimely death it was discovered that the site records were inadequate (Buteux 1997b). The upper level of an ard-marked ploughsoil identified in the nearby cliff-section was radiocarbon dated to c.1609 – 1232 cal BC (Limbrey 1997) and it appears that this ploughsoil extended across several locations at Skaill, notably beneath the Site 5 structures. The artefact assemblage could not be closely assigned to site phases, but was broadly indicative of a Middle/Late Bronze Age date for occupation with an Iron Age date determined for later midden deposits not associated with any structural remains182 (Buteux 1997d; Lloyd-Jones 1997). Overall, a Middle, but more probably Late, Bronze Age date for the structures at Site 5 was suggested (Buteux 1997b).

Closely dating the development of the double house at Skaill is not possible. The larger, northern unit (Structure 1), was however built first with an east-

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182 Two Iron Age radiocarbon dates were obtained from Site 5 but there was no record of their context (Buteux 2007c, 29).
facing entrance, before the southern unit (Structure 2) was constructed, at which point Structure 1 was remodelled with a new entrance facing that of Structure 2 across a paved corridor, creating the double house (Buteux 1997c; Figure 7.8) Neither unit had an obvious hearth, and it was considered possible that rather than a domestic function they may have formed a conjoined byre/barn (ibid, 30). The artefact assemblage (Buteux 1997b, 27 & 1997d; Lloyd-Jones 1997) was however consistent with a domestic function for at least one, or possibly both, of the buildings183. There are also two unusual (in an Orcadian domestic context) finds from Skaill, which do not appear to be consistent with a barn/byre interpretation: a discoid amber bead of Bronze Age type had an uncertain association with Structure 2 (Buteux 1997b, 25; Porter 1997, 109) and a Late Bronze Age Ewart Park phase Thorndon type socketed knife, probably dating to the very early 1st millennium BC (Section 6.3.3), came from late occupation/midden deposits infilling Structure 2 (Buteux 1997b, 27 & Porter 1997, 103; Appendix 2). The inadequate site record (Buteux 1997b) hinders interpretation but it seems reasonable to suggest that one or both of Structures 1 and 2 may have fulfilled a domestic function for at least part of their use, although this role may have changed over time, as was the case at Sumburgh (Section 7.6.1). Occupation at Site 5 appeared to end in the Late Bronze Age, but there appears to have been a Middle to Late Iron Age site nearby, identifiable from artefacts contained in associated midden deposits (ibid 28-9).

7.6.3 The Links of Noltland, Westray, Orkney

The Bronze Age settlement phases at the Links of Noltland are not yet closely dated. Associated funerary activity ranges from the late 3rd to the early 1st millennium cal BC, whilst occupation at the site commenced in the early 3rd millennium cal BC (Moore & Wilson 2011a; Hazel Moore, pers. comm.; Sections 6.1.2 & 7.3.5). There are at least twelve probable Bronze Age

183 The bulk of the artefact assemblage was not closely located; both houses were treated as a single unit during excavation and artefacts were simply recorded as coming from the 'main occupation phase' (Buteux 1997c, 24).
structures including four double houses (e.g. Figures 7.10 & 7.11), oriented north-south, with some evidence of sequential development (Moore & Wilson 2011a, 24-8 & 2013). There was a recognizable pattern in the recovered evidence. The larger, northern, elements fulfilled a domestic function, whilst the smaller southern buildings lacked hearths but had features interpreted as non-domestic: one had a clay-lined floor; another had a large stone-lined tank (ibid). The double houses are dispersed rather than nucleated, separated from each other by distances of c.80 – 150m (Figures 7.6 & 7.7). Close contact with Shetland is indicated by a large assemblage of domestic steatite vessels, comparable to those known from Bronze Age sites in Shetland, with no evidence of on-site steatite working indicating that complete vessels were imported (Forster 2011). The closest comparanda for some of these vessels were with those from Structure 3 at Bayanne, Yell, which was occupied c.1600 – 1120 cal BC (ibid; Moore & Wilson 2014b).

It is reasonable to assign the double houses at the Links of Noltland to the 2nd millennium BC, and they probably continued in use until the abandonment of the site in the early 1st millennium BC, and may also be associated with the late 3rd millennium cal BC funerary activity (Section 6.1.2), but closer chronological resolution is not yet possible.

7.7 Dating double houses: a summary

The suggestion that double houses originated in the early 3rd millennium BC (Richards, Downes et al 2016, 245-6) is not convincing. There is no unambiguous evidence from any of the sites discussed (Sections 7.5.2 – 7.5.4) to support a Neolithic date for any Orcadian double house form. Problems of interpretation have arisen at these sites because of stratigraphic disturbance on sites with long occupation histories but relatively shallow archaeological deposits. The resemblance of Structures 8 and 9 in the Neolithic phases at Pool Bay, Sanday to a double house is merely coincidental and may be

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184 The structures have been numbered individually so a paired double house has two structure numbers. There are thus twelve structures but only four double houses, with other structures adjacent.
discounted (Section 7.5.2). The assignation of double house status at Barnhouse (Section 7.5.1) and Crossiecrown (Section 7.5.3) rests on poorly defined excavation evidence, ephemeral at best, and on the balance of probabilities neither should be classed as a double house.

Neither the double house at Sumburgh, Shetland (Section 7.6.1) nor that at Skaill, Deerness (Section 7.6.2) is closely dated, but both are most likely to have been constructed in the second half of the 2nd millennium BC and were abandoned by the Late Bronze Age/Early Iron Age. The double houses at Links of Noltland (Section 7.6.3) may have been in use throughout the 2nd millennium BC until their abandonment in the early 1st millennium BC, with construction as early as the end of the 3rd millennium BC a possibility (provisionally, following Hazel Moore, pers. comm; Moore 2015b; Moore & Wilson 2011a). Anthropogenic soil formation associated with the unexcavated double house at Shelly Knowe, Tofts Ness, Sanday is radiocarbon dated to the first half of the second millennium cal BC (Dockrill, Gater & Simpson 2007; Section 5.5.1). Although admittedly based on a limited and in some senses problematic sample, all the evidence suggests that the double house in the Northern Isles is predominantly a Bronze Age type, which was demonstrably in use from at least the mid-2nd to the early 1st millennium BC, and that its origins possibly lay somewhat earlier.

7.8 Development of the double house in the Northern Isles

This section considers the development of the double house form in the Northern Isles. There appears to be little in the Orcadian architectural record stylistically to link the houses of the 4th/3rd millennia BC (Section 7.5.1) with the double houses of the 2nd millennium, suggesting that the double house form did not develop in Orkney, but was influenced by designs from elsewhere. If this is the case then alternatives must be examined, the most likely of which is influence from Shetland, where a tentative progression towards the double house from earlier house forms may be suggested.
7.8.1 The development of the double house in Shetland

In stark contrast to Orkney, ‘the Neolithic in Shetland remains largely a mystery’ (ScARF 2012c, 79), and follows its own trajectory, possibly deriving its Neolithisation from Western Scotland, rather than via Orkney and Caithness; it bears little similarity to the Orcadian Neolithic (Sheridan 2012b, 10-12). Shetland has far better survival of relict prehistoric landscapes than Orkney, which led to the identification of large numbers of ‘stone age’ houses (Calder 1950, 1956, 1961 & 1963). The majority of the excavated examples of these ‘stone age’ houses are now thought to be of Bronze Age date (Sheridan 2012b & 2013), and exhibit distinctive structural forms which are not double houses: the ‘oval house’ (e.g. House No. 1 near Gruting School: Calder 1956; shown in Figure 7.17); the ‘oval house with porch’ (e.g. the Stanydale House: Calder 1956; shown in Figure 7.18) and the ‘pincer-like courtyard’ house (e.g. the Benie Hoose: Calder 1961; shown in Figure 7.19).

The oval house design may evolve from the Stanydale ‘Temple’ (Calder 1950; Figure 7.20) (which may not itself be domestic e.g. Mahler 2013) whose concave façade mirrors that of the Shetland heel-shaped cairns, possibly belonging to the period c.2500 – 1800 BC; this dating is supported by the presence of Beaker pottery here (Sheridan 2012b, 26-7). A radiocarbon date of c.2200 – 1980 cal BC associated with the construction of House 1 at the Ness of Gruting (Sheridan 2012b, 17-18; Figure 7.21) shows that the oval house was current by at least the Early Bronze Age.

The Stanydale House (Calder 1956), an example of the oval house with porch (Figure 7.18), cannot be closely dated, although construction in the late 3rd/2nd millennium BC is likely (Table 7.4). The oval house with porch design at Stanydale House forms an elegant link between the simple oval house,

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185 Shetland’s economic focus has traditionally been the fishing industry, with a large proportion of rough grazing and less improved grassland and cultivated land than in Orkney (Fenton 1978, 1-10). This difference was noted in the nineteenth century: ‘The Shetlander is a fisherman who has a farm; the Orcadian a farmer who has a boat’ (Tudor 1883, 104).

186 The terms used here are essentially descriptive; there is no definitive terminology for Shetland houses: cf. Downes 2000b, 119-23.
such as House No. 1, Gruting School (Figure 7.17), and the pincer-like courtyard house present at the Benie Hoose and Yoxie (Calder 1961; Figures 7.19 & 7.23). These latter two houses were approximately 130m apart and had similar pottery types; occupation of the Benie Hoose is associated with a radiocarbon date of c.1740 – 1520 cal BC (Sheridan 2005b & 2012b, 27). The mid/late 2nd millennium BC double house at Sumburgh (Downes & Lamb 2000a; Section 7.6.1) then appears to take this design to its logical conclusion, with two separate units in close proximity (Figure 7.9).

Dating these four Shetland house types is problematic due to very limited excavation and concomitant lack of radiocarbon dates, with some dating relying on artefact assemblages to give a broad ‘Bronze Age’ attribution: the available information is summarised in Chart 7.3 and Table 7.4 below. It is possible to discern a morphological progression in Shetland house form to provide a provisional evolutionary model towards the Bronze Age double house in Shetland, progressing from oval houses, to oval houses with porches, then pincer-like courtyard houses, then finally double houses. It should be noted however that until further excavated and dated sites are available the sequence outlined in Table 7.4 is speculative; there is no compelling reason why the double house should represent the final stage in a linear progression. Since the poorly-dated double house at Sumburgh (Section 7.6.1) is the only excavated example in Shetland closer chronological resolution of the development of the double house is impossible; it might equally represent a variation on a theme, and develop alongside both the oval house with porch and pincer-like courtyard houses.
Chart 7.3 Chronology of Shetland houses, (including the Stanydale ‘Temple’ which may not be domestic). Solid lines indicate radiocarbon dates; dashed lines indicate conjectural dating based on artefact assemblages or associations. See text and Table 7.4 below for details.
Table 7.4. A provisional typology of Shetland houses dating from the 3rd to the 2nd millennium BC, in tentative chronological order.

<table>
<thead>
<tr>
<th>Site</th>
<th>House type</th>
<th>Radiocarbon dates/other dating evidence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stanydale Temple, Sandsting (Figure 7.20)</td>
<td>Concave façade, oval exterior, similar in shape to oval house but may not be domestic</td>
<td>Beaker pottery in upper fill of posthole, ard points &amp; flaked stone bars, suggesting late 3rd/early 2nd millennium BC activity, construction undated, possibly mid-late 3rd millennium BC?</td>
<td>Calder 1950; Clarke 2006, 119; Sheridan 2012b, 26-7 &amp; 2013, 50-3</td>
</tr>
<tr>
<td>Scord of Brouster, House 1</td>
<td>Oval house</td>
<td>Problematic radiocarbon dates cover most of 3rd millennium cal BC, probably constructed in the early 3rd millennium</td>
<td>Whittle et al 1986</td>
</tr>
<tr>
<td>House 1, Ness of Gruting (Figure 7.21)</td>
<td>Oval house</td>
<td>Beaker pottery; construction radiocarbon dated to c.2200 – 1980 cal BC at 2σ obtained from carbonised barley</td>
<td>Calder 1956; Sheridan 2012b, 17-18;</td>
</tr>
<tr>
<td>Wiltrow, Dunrossness (Figure 7.22)</td>
<td>Oval house</td>
<td>Incised pottery similar to the Ness of Gruting, many ard points &amp; flaked stone bars; possibly late 3rd/early 2nd millennium BC?</td>
<td>Curle 1936; Sheridan 2013, 61</td>
</tr>
<tr>
<td>Toug, Burra Isle</td>
<td>Oval house</td>
<td>Beaker pottery, ard points &amp; flaked stone bars, possibly late 3rd/early 2nd millennium BC.</td>
<td>Hedges 1986</td>
</tr>
<tr>
<td>House 1 near Gruting School (Figure 7.17)</td>
<td>Oval house</td>
<td>Many ard points and flaked stone bars, late 3rd/2nd millennium BC?</td>
<td>Calder 1956</td>
</tr>
<tr>
<td>Catpund</td>
<td>Oval house</td>
<td>Many ard points and flaked stone bars, late 3rd/2nd millennium BC?</td>
<td>Ballin Smith 2005</td>
</tr>
<tr>
<td>Stanydale House187 (Figure 7.18)</td>
<td>Oval house with porch</td>
<td>Beaker similar to the Ness of Gruting, many ard points &amp; flaked stone bars, late 3rd/2nd millennium BC?</td>
<td>Calder 1956; Sheridan 2013, 56.</td>
</tr>
</tbody>
</table>

187 Burnt animal bone from the Stanydale House and House 1 at the Ness of Gruting (from the same context as the carbonised barley, which acted as a control) were radiocarbon dated to investigate the ‘old fuel’ date offset from the use of peat as fuel (Schulting et al 2014). The Ness of Gruting samples indicated a significant offset of up 600 years cal BC, hence the uncontrolled date obtained from the Stanydale House (c.2574 – 2463 cal BC) is likely to be unreliable (ibid) and is not used as part of the model here.
<table>
<thead>
<tr>
<th>Site</th>
<th>House type</th>
<th>Radiocarbon dates/other dating evidence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Benie Hoose, Whalsay (Figure 7.19)</td>
<td>Pincer-like courtyard house</td>
<td>Pottery residue date indicates occupation c.1740 – 1520 cal BC at 2 σ</td>
<td>Calder 1961; Sheridan 2012b, 27</td>
</tr>
<tr>
<td>Yoxie, Whalsay (Figure 7.23)</td>
<td>Pincer-like courtyard house</td>
<td>Pottery resembles that at the Benie Hoose, possibly of similar 2nd millennium BC date?</td>
<td>Calder 1961; Sheridan 2013, 60</td>
</tr>
<tr>
<td>Bayanne, Yell, Str. 3</td>
<td>Shape unclear: largely destroyed.</td>
<td>Occupation at least between c.1600 – 1120 cal BC</td>
<td>Moore &amp; Wilson 2014b</td>
</tr>
<tr>
<td>Sumburgh (Figure 7.9)</td>
<td>Double house</td>
<td>Timber phases associated with Beaker pottery. Stone-built double house constructed Mid-Late Bronze Age. No radiocarbon dates for double house.</td>
<td>Downes &amp; Lamb 2000a</td>
</tr>
<tr>
<td>House III, Jarlshof, Sumburgh (Figure 7.24).</td>
<td>Some similarities to the oval house at Wiltrow (shown in Figure 7.22).</td>
<td>Occupation c.1150 – 800 BC based on the presence of moulds for LBA metalwork</td>
<td>Hamilton 1956</td>
</tr>
<tr>
<td>House IVa, Jarlshof, Sumburgh (Figure 7.24).</td>
<td>Some similarities to the oval house at Wiltrow (shown in Figure 7.22).</td>
<td>Occupation c.1150 – 800 based on the presence of moulds for LBA metalwork</td>
<td>Hamilton 1956</td>
</tr>
<tr>
<td>House V, Jarlshof, Sumburgh (Figure 7.24).</td>
<td>Some similarities to the ‘pincer-like courtyard house’ design.</td>
<td>No diagnostic artefacts</td>
<td>Hamilton 1956</td>
</tr>
</tbody>
</table>
There are no absolute dates for the Bronze Age phases at Jarlshof, Sumburgh (Figure 7.24) although Late Bronze Age metalworking was associated with the later phase of Houses III and IVa (Coles 1960, 89; Curle 1933, 112-25; Hamilton 1956). The Jarlshof houses have elements of several Shetland house designs e.g. Houses II and III are reminiscent of the oval house at Wiltrow (Curle 1936; Figure 7.22) whilst House V, which had no diagnostic finds, has similarities to the pincer-like courtyard house (e.g. the Benie Hoose and Yoxie, Figures 7.19 & 7.23). The Late Bronze Age phases at Jarlshof suggest that earlier house styles, which appear to have developed in the first half of the 2nd millennium BC, remained in use in the late 2nd/early 1st millennia BC. Childe (1938) excavated in the northeast corner of the site at Jarlshof and identified midden deposits and associated structural remains separated by sand-blow events; radiocarbon dates associated with these middens place their formation c.1880 – 1440 cal BC (Dockrill & Bond 2009; Figure 7.25). Although the relationship of these middens with excavated structures in the south of the site is unclear, they are comparable with the date associated with the Benie Hoose (Sheridan 2005b). The occupation sequence at Jarlshof clearly extends back into the Early Bronze Age, and hints at the possibility that a more extensive (earlier) Bronze Age settlement may underlie the later structures, which were left in situ for public display.

Interestingly, considering the possible Neolithisation of Shetland from the Western Isles (Sheridan 2012b, 10-12) it is possible to envisage further influences in the late 2nd millennium BC: the Late Bronze Age ‘terraced houses’ with their shared walls at Cladh Hallan, Uist, the only examples of this design discovered in the Hebrides (Parker Pearson et al 2004, 64-82; Figure 7.26) also exhibit similarities with some of the Shetland houses. Although described as a ‘terraced row’ (ibid, 66), the general layout is reminiscent of the Late Bronze Age phases at Jarlshof (Figure 7.24) and House 401 bears a strong resemblance to the pincer-like courtyard house types of Shetland e.g. the Benie Hoose (Figure 7.19), which may hint that Shetland was influencing house styles in both the Hebrides and Orkney.
7.8.2 The development of the double house in Orkney

It is clear that in comparison with Shetland, prehistoric house forms develop differently in Orkney, where the main Neolithic forms (Section 7.5.1) are well known. The Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3; Figures 7.6 & 7.7) is the only excavated site where double houses are directly associated physically with Neolithic settlement. The Neolithic structures\(^{188}\) present there (ibid) generally conform to 3rd millennium BC styles seen elsewhere in Orkney (discussed in Section 7.5.1) and do not provide obvious progenitors for double house development. It has however been suggested that the Grobust building\(^{189}\), with its two areas of activity linked by a corridor (Figure 7.27a & b), might be a double house precursor (Moore & Wilson 2013, 18). Grobust is poorly dated but may have been occupied during the second half of the 3rd millennium cal BC (Moore & Wilson 2011a, 38-9) and was probably abandoned by c.2265 – 1975 cal BC with the infilling of the northern house (Clarke et al forthcoming; Marshall et al 2016, 12 & 28; Figure 7.27b). Grobust may have been abandoned around the same time as double houses began to be constructed at this site, but confirmation of this awaits the full planned radiocarbon dating programme (see Section 7.6.3). Although the overall design was unusual, many of the individual elements of the Grobust building are paralleled at both Skara Brae and Rinyo (Clarke & Sharples 1985, 66-69), suggesting that it may be a variation on an existing theme, rather than a double house precursor.

Superficially House 8 at Skara Brae externally resembles the Shetland oval house with porch design (Downes 2005, 25-7; Owen & Lowe 1999, 284; Figure 7.3), but as Childe (1931a, 50) noted, internally House 8 ‘approximates to the usual flattened oval plan’. The houses at Skara Brae exhibit a variety of forms, such that if House 8 were joined to the central corridor it would perhaps be unremarkable (Figure 7.3). Its physical separation from the other buildings compounds its apparent architectural differences. Unlike the

\(^{188}\) Currently available radiocarbon dates for their occupation broadly cover the first half of the 3rd millennium cal BC (Moore & Wilson 2011a, 38-9; Appendix 1, Table A1.14).

\(^{189}\) Excavated in the 1970s (Clarke & Sharples 1985, 69-70) but not yet published.
Shetland examples (e.g. the Stanydale House, Calder 1956; Figure 7.18) where the porch is clearly an integral part of the initial design, the porch-like structure of House 8 is a later addition, not bonded into the walls (Childe 1931a, 21-4). The addition of the porch to House 8 may have no significance other than a belated realisation of the practicality that an isolated building with a large kiln (ibid, 51) necessitated a sheltered doorway in order to prevent strong up draughts adversely affecting operations. As Childe (1931a, 23) pragmatically observed, the porch sheltered the entrance to House 8 from gales, a significant factor on Orkney’s exposed Atlantic coast (Section 7.8.3).

There does not appear, on present evidence, any obvious local developmental progression from the houses of the Orcadian Neolithic including House 8 at Skara Brae to the double house.

Owen & Lowe (1999, 284) observed that the structure inside the burnt mound at Liddle, South Ronaldsay (Hedges 1975; Section 9.3.2; Figure 7.28) bears a resemblance to the Shetland oval houses. No dates for the construction or use of this structure are available, but it was abandoned by the end of 2nd millennium cal BC, so construction/occupation in the Middle Bronze Age is thought likely (ibid). Field surveys have identified possible Bronze Age houses at several other sites in Orkney (Figure 7.2; Table 7.1; nos. 8, 16, 19 & 26) on the basis that they are oval individual structures and hence, by analogy with the Shetland oval houses may also be Bronze Age. At the Loch of Tankerness an oval house revealed during a drought was associated with other structures, including a burnt mound, whilst adjacent surface collection of ard points provided some artefactual corroboration of a Bronze Age date (Lamb 1987, 25, no. 113). At other examples (Table 7.1, nos. 16, 19 & 26) there is no evidence either to confirm or deny a Bronze Age attribution. These possible examples of Orcadian oval houses may be Bronze Age, but without excavation their form and date cannot be established. Further examples of possible oval houses come from Linna Breck, Birsay (Hedges 1978) which is not fully published but was initially described as two sequential hut circles, one with an annexe, associated with a field system (ibid); a subsequent summary illustrated an oval structure which may have
been a byre together with a fragmentary possibly oval house (Øvrevik 1985, 146-9). This site is not closely dated and is only assigned to the Bronze Age on the basis of its artefact assemblage.

It may tentatively be suggested that the double house form in Orkney was a Shetland transplant into Orkney soil. There is limited artefactual evidence for contact between Orkney and Shetland in the Neolithic (e.g. Ritchie 1968, 130) i.e. prior to the development of the double house form, but this changes in the Early Bronze Age, when steatite vessels and funerary urns provide radiocarbon dated evidence of frequent contact from c.2200 – 1880 cal BC onwards (e.g. Forster 2011; Sheridan 2002b & 2012b, 25-6; Section 6.3.4). Further support comes from similarities between the Beaker from the Braes of Ha’ Breck, Wyre, and that from House 1 at the Ness of Gruting (both associated with late 3rd millennium cal BC radiocarbon dates) as well as the (undated) Beaker from the Stanydale house (Sheridan 2013, 56-8). Despite this evidence of contact between Orkney and Shetland from the late 3rd/early 2nd millennia cal BC examples of the oval house with porch (e.g. the Stanydale House: Calder 1956; Figure 7.18) and the pincer-like courtyard house (e.g. the Benie Hoose; Calder 1961; Figure 7.19) have yet to be identified in an Orcadian context.

It is not yet clear when the fully-formed double house appears for the first time in Orkney. The Bronze Age occupation phases at Links of Noltland lack close chronological resolution (Moore & Wilson 2011a; Section 7.6.3), but if double houses are present concurrently with the funerary activity c.2200 – 1960 cal BC (Section 6.1.2) they are considerably earlier than the only excavated Shetland example at Sumburgh (Downes & Lamb 2000a), which probably dates to the second half of the 2nd millennium BC (Section 7.6.1). The similarities of the steatite assemblage from the double houses at the Links of Noltland with that from Bayanne, Shetland, dating to c.1600 – 1120 cal BC (Forster 2011; Section 7.6.3) may conversely suggest a date more in keeping with the Sumburgh example. This issue is incapable of further resolution given the limited data set currently available.
7.8.3 Why a double house? Function and form

In the double houses at Sumburgh (Section 7.6.1), and the Links of Noltland (Section 7.6.3), one component appears to have fulfilled a specialist function (barn/byre, working area), whilst the other part was a domestic residence, and this is probably also true at Skaill (Section 7.6.2). In no case, however, is there evidence that both parts of the double house were definitely simply living space. This functional distinction also indicates some social force separating particular activities from the domestic sphere; variations between double houses may further hint at craft specialisations. The diffuse cluster of Bronze Age buildings at the Links of Noltland contrasts with the nucleation of Neolithic Orcadian settlements and may indicate a shift from a closely communal society to ‘family-centred’ units, each with its own infield area but retaining communal activities, possibly related to exploitation of particular environments or mutual protection.

As elsewhere, shelter appears to have been a motivating factor in the construction of houses in Orcadian prehistory. Pope (2003, 175-7) defined the ‘functional optimum’ for a house entrance (i.e. the orientation that provided the best compromise between shelter and light in the prevailing westerly winds of the British Isles), to be to the ESE and found that this corresponded well with the orientation of the majority of prehistoric roundhouses in her study\textsuperscript{190}. This functional optimum is shown superimposed on the Kirkwall windrose in Figure 7.29, together with the orientation of some of Shetland’s non-double house forms in Figure 7.30, whose general orientation is (also) in good agreement with Pope’s (2003, 175-7) findings.

Entrances in the Shetland houses shown in Figure 7.30 tend towards the east, sacrificing light for increased shelter\textsuperscript{191} perhaps because Shetland is even

\textsuperscript{190} For a compelling rebuttal of the cosmological arguments surrounding entrance orientation see Pope 2007.

\textsuperscript{191} An exception is the Stanydale ‘Temple’ (Calder 1950), where the entrance faces west, although this site is not necessarily domestic (e.g. Mahler 2013).
windier than Orkney (Section 2.1.4). The development in Shetland of the oval house with porch (e.g. no. 6 in Figure 7.30) would increase shelter but decrease available intramural light, perhaps suggesting that the pincer-like courtyard house (e.g. nos. 4 & 5 in Figure 7.30) might have developed to provide a sheltered area for activities requiring both shelter and good illumination.

Examples of the orientation of double houses in the Northern Isles are shown in Figure 7.31. Five of the nine examples (no. 4, 5, 6, 8 & 9 in Figure 7.31) broadly follow the ‘functional optimum’ position for the entrance of the northern house in each integral pairing, which also has the advantage of providing some shelter from westerly winds. The remaining four (nos. 1, 2, 3 & 7 in Figure 7.31) are oriented north – south, which would allow more light to enter the northern house and provide increased shelter from northerly winds, but this arrangement is less than ideal with winds from other directions, with the gap between the buildings funnelling the wind during westerly gales.

At the Links of Noltland the larger, northern buildings were probably domestic and the smaller, southern buildings non-domestic specialist structures (Moore & Wilson 2011a, 24-8); all of the double houses in Figure 7.31 (apart from that at Sumburgh: no. 3 in Figure 7.31) share the common factor that the larger house is oriented with its entrance away from the prevailing wind, perhaps corroborating the suggestion that the larger building of the pair was usually the domestic building. The exception comes from Sumburgh, Shetland but here the roles of the two buildings seemed to change, and in its Late Bronze Age phases the larger (and more exposed) south house was thought to be a byre (Downes & Lamb 2000b, 25-8). Perhaps convenience of access to the specialist building was more important than shelter for this building, although it might be noted in passing that good ventilation for cattle and in particular sheep housed indoors is vital if serious respiratory disorders are to be avoided (DEFRA 2003 & 2013); an entrance facing into the prevailing wind but partly sheltered by an opposing building would facilitate such ventilation.
The double house in which one component was used for livestock might be seen then as a practical arrangement in the Northern Isles incorporating shelter requirements, always important in a northern latitude with an exposed landscape and almost constant wind (Section 2.1.4); together with ease of access to a barn/byre/workshop area, and possibly aspects of good animal husbandry.

7.9 Roundhouses in Bronze Age Orkney

As discussed above (Section 7.8) the Northern Isles have their own distinct house styles in the 2\textsuperscript{nd} millennium BC. Unlike elsewhere in Britain, where roundhouses are common from the Early Bronze Age onwards, such buildings do not apparently have widespread currency in the Northern Isles until the Early Iron Age (Armit 2003, 33-44), when massive-walled circular buildings appear e.g. Quanterness (Renfrew 1979) or Pierowall (Sharples 1984). There are now three excavated sites with Bronze Age examples of roundhouses in Orkney but of these only Tofts Ness, Sanday (Dockrill, Bond et al 2007) is fully published; Round Howe, Tankerness (Murray 2003; see Section 7.12.3 below) was largely destroyed in the nineteenth century; whilst two further roundhouses excavated at the multi-period site at Berstness, Westray are currently only broadly attributed to the Bronze Age on the basis of the artefact assemblage pending the radiocarbon dating programme (Moore & Wilson 2007c & 2008a; Hazel Moore pers. comm.). A further roundhouse at Peerie Hill, Sandwick identified from field survey (Moore 2013, 150-5) may be tentatively attributed to the Bronze Age on the basis of its relationship with the development of peat in the area (Section 5.2).

At Mound 11, Tofts Ness, Sanday (Dockrill, Bond et al 2007), where the settlement sequence commences in the late 4\textsuperscript{th}/early 3\textsuperscript{rd} millennium cal BC (Section 7.3.5), Structure 4, in Area C (Figure 7.5) comprised a probable Late Bronze Age roundhouse (Dockrill 2007d, 382; Figure 7.32). This roundhouse had internal and external diameters of approximately 8.75m and 14m respectively and structurally comprised two concentric stone walls retaining a
probable turf core, with an overall width of at least 2.25m (Dockrill 2007c, 46 & 79). The 60m² internal area¹⁹² is comparable with Structure 6, the larger, probably domestic, element of the double house at the Links of Noltland (Figures 7.10 & 7.11). A small oval building (Area C, Structure 3; Figure 7.32) with a clay-luted stone tank set into a flagged floor, also relating to the Late Bronze Age phase, was identified c.4m to the south-east of the roundhouse, and interpreted as a specialised non-domestic building (Dockrill 2007c, 45-6). Parallels may be drawn between Structure 3 at Tofts Ness and the non-domestic southern components of the double houses at Links of Noltland (e.g. Structure 5 in Figure 7.10; Section 7.6.3).

No radiocarbon dates are associated with the Tofts Ness roundhouse (Structure 4), but the artefact assemblage was consistent with a Late Bronze Age date. A period of abandonment, destruction and sand-blow separates it from the subsequent construction of a much smaller Iron Age roundhouse (Structure 5: itself radiocarbon dated to c.770 – 410 cal BC), indicating the passage of time following the abandonment of Structure 4, and thus also supporting its Late Bronze Age attribution (Dockrill 2007c & 2007d, 382).

Although Tofts Ness has structural remains from several periods it is not a particularly helpful sequence to elucidate discussion of the development of house forms: its Early Bronze Age, possibly cellular, building (Structure 2: Dockrill 2007b, 24-9; Section 7.3.5) was poorly preserved, and there are no excavated structures linking this building with the Late Bronze Age roundhouse (Structure 4). The artefact assemblage indicates links between Shetland and Tofts Ness throughout the Bronze Age phases (MacSween 2007; Smith 2007b), but no double house was identified by excavation at Tofts Ness. There is however a double house identified by field and geophysical survey together with another roundhouse and a burnt mound located together at Shelly Knowe, around 264m to the east of Mound 11 (Dockrill, Gater & Simpson 2007; Section 5.5.1; Figures 5.8 & 5.9).

¹⁹² Calculated values A=πr² based on an internal diameter of 8.75m for Structure 4.
7.10 Summary of Orcadian Bronze Age house types and development

Establishing a developmental sequence for Bronze Age domestic structures is hindered by the limitations of the archaeological record (Section 7.2; Table 7.1). There are few radiocarbon dates associated with excavated structural forms at settlement sites, and a number of sites may be only tentatively identified to this period on the basis of broad artefact attributions or associations. The available radiocarbon dates together with conjectural dates in other cases are shown in Chart 7.4 below.

Some of the distinctive Shetland house forms such as the oval house with porch (e.g. the Stanydale House: Calder 1956; Figure 7.18); and the pincer-like courtyard houses (e.g. the Benie Hoose: Calder 1961; Figure 7.19) are not currently known in Orkney. Contrastingly the double house, which in Shetland appears to develop as a progression from earlier house forms (Section 7.8.1), may have been present in Orkney possibly throughout the 2nd millennium BC at the Links of Noltland (Section 7.6.3), and more clearly by the mid-late 2nd millennium BC at Skaill, Deerness (Section 7.6.2). The only other definite Bronze Age house type in Orkney is the Late Bronze Age roundhouse (Structure 4) at Tofts Ness (Section 7.9), but there are no complete plans of excavated structures to bridge the gap between the Early and Late Bronze Ages, apart from the Nessbreck souterrain, discussed below.
Chart 7.4 Chronology of Bronze Age domestic structures in Orkney together with the Nessbreck souterrain. Solid lines represent all the available radiocarbon dates for structural forms, dashed lines are conjectural based on artefactual assemblages or associations.

(See Appendix 1 for full details and references).
7.11 The Nessbreck Early Bronze Age Souterrain

There are around 40 known souterrains in Orkney, consisting of a stone wall lined underground chamber, which may be rock-cut, with a roof supported by stone pillars, accessed by a passageway and in some cases steps (e.g. Kirkness 1928a & b & 1930; Haigh 1983; Marwick 1927a & c; Simpson D. D. A. et al 2007b; Thomas 1852). They appear to have existed as part of above-ground settlements (e.g. Ballin Smith 1994, 31-5; Haigh 1983) although in Orkney, as elsewhere in Scotland, their function(s) is open to debate, ranging from agricultural storage to ritual and religious usage (e.g. Armit 1999; Barclay 1980; Martin Carruthers pers. comm.; Simpson, D. D. A. et al 2007b; Watkins 1980). Human remains have occasionally been found in souterrains, most notably at Rennibister, Firth which contained the disarticulated remains of around 18 individuals (Marwick 1927c). Souterrains have also been found inserted into remodelled chambered tombs e.g. at the Knowe of Rowiegar, Rousay (RCAMS 1946, vol. II, 218-20, no. 578) and Howe, Stromness (Ballin Smith 1994, 31-5).

Until recently the dated examples have been incontrovertibly Iron Age (ibid; Martin Carruthers, pers. comm.; Hedges 1987a, 25-9) and the assumption has been therefore that all souterrains in Orkney may be safely assigned to that period. Recent developments have however shown this not to be the case, with the chance discovery and rescue excavation of the souterrain at Nessbreck, Corrigall, found when a void appeared in a recently seeded field (Robertson 2007; Figure 7.33). Despite its chance discovery the chamber deposits were found to be undisturbed and three radiocarbon dates were obtained (all from charred barley), with two dates coming from the primary chamber floor deposits indicating use c.1900 – 1750 cal BC; whilst a secure date for the blocking of the entrance passageway indicated that the site was decommissioned c.1455 – 1395 cal BC (Lee in prep.). One of the last acts in the chamber was the placing of a structured deposit of water-worn stones,

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193 See Appendix 9 for site details and distribution maps.
194 See Appendix 1, Table A1.14.
topped by an ard point, on the chamber floor. Three further radiocarbon
dates in the range c.1940 – 1660 cal BC came from external pits and gullies
which could not be stratigraphically related to the use of the souterrain, but
activity at them was contemporary with the primary use of the chamber
(ibid). The souterrain was cut into the bedrock, and abrasion on the floor
together with the thinness of the floor deposits led to the suggestion that the
chamber had been periodically cleaned during use (ibid). Analysis of the floor
deposits supported the theory that they were in situ and had not been
redeposited from an external source at a later date (ibid). Partial collapse or
deliberate re-opening of the roof of the chamber however appears to have
taken place in the Iron Age, indicated by the coarse stone artefact and anvil
assemblage contained in the rubble re-blocking of the upper part of the
chamber (ibid).

Nessbreck is in an area of intense prehistoric activity with two brochs, four
barrow cemeteries and several individual barrows and cists within a 1km
radius of the site (Figure 7.33). Geophysical survey around the Nessbreck
souterrain suggests extensive anthropogenic activity, with some evidence that
the souterrain may have lain towards the fringes of an enclosed settlement
(ibid; Ovenden 2007; Figure 7.34). The secure Early Bronze Age radiocarbon
dates for the use of Nessbreck souterrain represents a potential paradigm
shift in our understanding of these sites. Although their functions remain
elusive it is clear that in Orkney at least they cannot automatically be
assigned to the Iron Age in the absence of absolute dating evidence.

7.12 Enclosed settlements

7.12.1 Introduction

Enclosed settlements (i.e. houses etc. with surrounding ditches, banks and/or
palisades) are not a site-type that is commonly associated with Orkney until
the appearance of brochs in the Iron Age, although the recent discovery of the
enclosed Neolithic complex at the Ness of Brodgar (Card et al 2017; Towers et
al 2015 & 2017) has challenged this assumption. There are also hints that
some of the promontory forts in the Northern Isles (Lamb 1980a) may have early origins (Section 7.13). Other than these types, there are only three known examples of enclosed settlements in Orkney that might date to the 2nd millennium BC; in each case there has been little or no excavation and the available dating evidence is tenuous.

7.12.2 Whaness Burn: an Orcadian fort?

At Whaness Burn, Hoy, a moorland fire burned off thick heather and the upper layer of the underlying peat in the Rackwick Valley revealing an extensive complex of sub-peat dykes, enclosures and settlement in the valley bottom, which displayed four distinct areas of activity\(^{195}\) (Lamb 1989, 7-8 & 13, nos. 10-15; Lamb 1996; Figures 7.35 & 7.36). There was no excavation and the area is once more obscured by heather. Environmental analysis undertaken on a mire 500m south of the main enclosure at Whaness Burn A demonstrates human activity in the area during the 2nd millennium BC (Farrell 2009; Farrell & Bunting 2008).

Three radiocarbon dates thought to be reliably sequenced in relation to the vegetation evidence were obtained from the Whaness Burn mire cores (Farrell 2009, 158-9 & 185-6; Table 7.5). The dates were widely separated and although various chronological models were tested it was found that none had any advantage over linear interpolation and extrapolation (ibid). A degree of uncertainty therefore exists in the dating of the human activity in the valley, which may in turn be associated with the settlement site at Whaness Burn, but in the absence of excavation this cannot be conclusively demonstrated.

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\(^{195}\) When recorded by the County Archaeologist Dr Raymond Lamb in 1984 the individual sites were designated Whaness Burn A – D but they were subsequently renamed by the RCAHMS. To avoid confusion I will follow Dr Lamb’s naming system in his published accounts (Lamb 1989, 7-8 & 13, nos. 10-15; Lamb 1996). Both sets of names are shown on Figure 7.36 along with their NMRS numbers.
Peat formation began c.3020 cal BC at which stage there was some woodland present, dominated by *Pinus sylvestris* (Scots pine) (Farrell 2009, 208-11). Pine decline occurred around 1720 cal BC, following which there is consistent evidence of nearby human activity c.1720 – 1170 cal BC (ibid, 212-14). During this period, large herbivores grazed the valley bottom, which was periodically burnt, probably to control heather and encourage new shoots; there is no evidence of cereal cultivation (ibid). Pastoral activity had declined by c.1170 cal BC, which may indicate abandonment of the settlement as represented by enclosures A – D, followed by increased surface wetness of the mire at c.1030 cal BC (ibid, 214). From c.800 cal BC onwards the area became increasingly wet and the valley bottom was abandoned, although there are indications that the valley sides were exploited for rough grazing (ibid).

The main focus of activity in the valley was Whaness Burn A (HY20SW15; Figure 7.37). The enclosure here has internal measurements of 90m x 70m, enclosing an area of c.0.5ha, enclosed by a 4m wide bank, still surviving up to 0.8m high. This bank has an external ditch, 4m wide, beyond which was originally another 3m wide bank that survives to 0.6m high (Lamb 1989, 13, no.10). Lamb (ibid) considered that the inner bank probably had a stone core, but recorded no evidence to support this\(^{196}\). Stone-cored banks are seen elsewhere in prehistoric Orkney, for example at the Dyke of Sean, Stenness (Section 8.6). The enclosure is traversed by a burn which meanders through an inturned southern entrance and exits through a gap in the banks to the

\(^{196}\)Lamb (1989, 8) compares the enclosure at Whaness Burn A with that at Fold of Setter in Eday (Section 8.4), where the 2m wide enclosure wall was stone-built. The enclosure at the Fold of Setter however lacked both the complexity and the settlement element recognized at Whaness Burn.
north (Figure 7.37). Inside the enclosure are the remains of several houses, including two that appear to be of typical double house form (Section 7.7), lending support to a possible 2nd millennium BC construction date, along with a number of other indeterminate mounds which may conceal structural remains, whilst a further similar mound was recorded outside the banks to the north east of the enclosure (ibid). Spread along the valley, the other three main recorded sites, Whaness Burn B (HY20SW4), C (HY20SW14: away from the stream course) and D (HY20SW16) are smaller enclosures together with possible houses (Lamb 1989; Figure 7.36). Traces of sub-peat dykes were found, suggesting that the whole valley up to the 60m contour on both sides of the stream was once in farming use: an area of around 150ha (ibid & Lamb 1996). The valley at Whaness has not been used for agriculture in the historic period; it is well outside the hill-dykes that defined the cultivated areas of Hoy in 1750 (Figure 4.15a). The 1st edition OS map shows the area as unimproved land, with a tumulus at the site of Whaness Burn B. Evidence of prehistoric subsistence farming here is limited to the environmental evidence discussed above. The former presence of large grazing herbivores is indicated by fungal ascospores, which are not species specific (Farrell 2009, 156-7 & 201), so it is not possible to define the type of animal husbandry. Analogy with similar marginal environments today suggests that sheep would be the most likely animal exploited, although some cattle breeds thrive on such rough grazing.

Absence of cereal cultivation from the valley during the Bronze Age was probably due to environmental limitations. There is still very little land suitable for arable in Hoy and where present this coincides (as is usual in Orkney) with the area of Upper Stromness Flags (USF) (Appendix 5, Figure A5.3). The extent of modern settlement and agriculture is restricted to low-lying coastal areas (Figure 7.38). The nearest surviving prehistoric settlement site to the Whaness Burn sites is the broch of Green Hill of Quoyness (HY20SW7; no. 3 on Figure 7.38), 1km to the north east, occupying the most favourable location nearby and possibly the main focus of prehistoric
settlement197 in the wider area (see Section 7.15). The double house and burnt mounds at Braebuster (Lee 2012; no. 2 on Figure 7.38) form another Bronze Age settlement focus 3.6km to the northwest. The inhabitants at Whaness Burn are unlikely to have survived solely on animal husbandry with no arable component in their diets98. It is possible to envisage a compensatory regime at Whaness Burn where steps were taken to maximise the production of dietary fats such as by dairying, extraction of bone grease etc. (e.g. Outram 2003, 2004 & 2005). It seems more likely however that the Bronze Age inhabitants of Whaness Burn were part of a wider mixed farming system, with their cereals imported from elsewhere in the general locality. The absence of geophysical survey or excavation and the lack of association between the radiocarbon dates from the environmental cores and the settlement activity at Whaness Burn inhibit secure interpretation. The presence of unexcavated double houses however, considered likely to date from the 2nd millennium BC (Section 7.7), is consistent with the environmental evidence of human activity in the valley c.1720 – 1170 cal BC (Table 7.5). The enclosures and further sub-peat dykes, together with the environmental evidence for grazing herbivores, suggest that activity at Whaness Burn focussed on large-scale livestock husbandry over a wide area. It is less certain that the main enclosure at Whaness Burn A fulfilled a primary livestock handling function. No internal sub-divisions were observed, which suggests either that any livestock within were simply folded rather than handled for management purposes, or that such internal divisions were ephemeral in nature e.g. wooden hurdles. In the absence of large predators there would be little reason to enclose livestock for overnight protection (unless the predator was human), and in the absence of cereal cultivation there would be no requirement to enclose an area of infield arable land against the ingress of animals. Animals might be enclosed for other

197 The nearest funerary monument is the Dwarfie Stane (HY20SW8; Figure 7.38, no. 7), thought to be a rock-cut Neolithic tomb, although the blocking stone was removed along with (presumably) the contents at an unknown date without record (Calder 1936; Davidson & Henshall 1989, 114-5).

198 Humans are unable to digest protein in the absence of fat or carbohydrate: a diet consisting entirely of lean meat leads to protein starvation; carbohydrates are more efficient than fats in enabling protein to be digested (Speth & Spielmann 1983).
reasons e.g. to collect dung or for particular purposes e.g. at lambing time or for slaughter.

The large enclosure at Whaness Burn A (Figure 7.37) is unique in an Orcadian context and, as Lamb (1996, 55) observed:

*Had the Whaness structure occurred on a summit in Western Scotland it might well have been called a fort.*

Its internal area is only around 0.5ha, rather small for a fort but not without precedent: over half of Britain’s hillforts enclose an area under 1.2ha (Harding 2012, 8-14) and the majority of Scottish hillforts have an internal area of 0.24 – 1.2ha (Hogg 1984, 36-46), however both the topographical location and low height of the banks (0.6m and 0.8m: Lamb 1989, 13, no.10) would warrant exclusion from the Hillfort Atlas199 (Ian Ralston, pers. comm.). Low banks might have been heightened by timber palisades: perhaps the pine decline in the valley c.1720 cal BC, which coincides with the commencement of human activity (Farrell 2009, 208-14), was caused by the felling of timber to construct such palisades?

The position on the valley floor at the eastern end of the Rackwick Valley is not obviously defensive but commands access between the valley and low-lying coastal land to the east. To the west, the Rackwick Valley culminates in Rackwick Bay, the only useful landing beach on the west side of the island (Figure 7.35). The Whaness Burn A enclosure may have been positioned to control the only convenient access to or from this landing. Such a substantial enclosure would require a larger population for defence than that suggested by the few house sites identified within the enclosure, which may imply a wider level of communal organisation, possibly requiring some local social/political hierarchy.

199 http://www.arch.ox.ac.uk/hillforts-atlas-survey.html
Rackwick was one of the few areas of Hoy settled in the historic period, being recorded as a township in the 1492 Rental of Orkney and shown on Mackenzie’s chart of 1750 (Thomson 1996, 72-3; Figure 4.15a). It continued to support a small crofting community well into the twentieth century, largely dependent on fishing but with some arable land and sheep husbandry (Fenton 1978, 451; Wenham 2003, 206-7). Shortage of land with agricultural potential elsewhere in Hoy (O’Dell 1939, 244) suggests that Rackwick was probably also a settlement focus in prehistory. A scenario may be envisaged where the enclosure at Whaness Burn A served as a place of refuge for both livestock and people in times of crisis, such as raiders landing at Rackwick Bay (Figure 7.35). The site at Whaness Burn A would have appeared imposing enough to discourage attack, and perhaps also to hinder further progress along the valley into the perhaps more densely populated areas with better agricultural land further east.

The preservation of the enclosed settlement at Whaness Burn is due to the unusual circumstance that a site suitable for settlement in the 2nd millennium BC has not continued in productive use into the historic period. The site itself is unlikely to have been unique, and its chance survival may suggest that further enclosed settlements of the period existed in Orkney during the later Bronze Age, as elsewhere in Britain, but have been destroyed by agricultural improvement. Further examples may yet survive under the extensive areas of blanket peat still extant in Orkney, particularly in the West Mainland200, where remains found during peat cutting (e.g. sub-peat dykes, Section 8.4) suggest prehistoric activity.

7.12.3 Round Howe: a defended roundhouse?

Round Howe, St Andrews201 (Card et al 2003; HY50NW8) is unique in Orkney in consisting (possibly) of a Middle Bronze Age roundhouse situated

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200 See Appendix 5, Figure A5.2.
201 This site’s primary name is Howe of Langskaill HY50NW8, however locally it is known by its alternative name Round Howe, the name which is used by the recent excavators. This site should not be confused with Howe of Langskaill HY51SW1 in St Andrews which is a burnt mound.
on a natural glacial mound which is in turn surrounded by a bank and ditch. The site is adjacent to another glacial mound known as Long Howe, which has a Bronze Age barrow at its eastern end (HY50NW51; Card et al 2005; Figure 7.39). To the east of Long Howe is the Iron Age metal working and ritual site of Mine Howe, radiocarbon dated from the late 1st millennium BC through the early 1st millennium AD (Nick Card, ORCA, pers. comm.; Card et al in prep; Harrison 2005).

In 1845 Round Howe was a substantial mound of truncated conical form, described as 16 feet (4.87m) high and 90 yards (82.3m) around the base (giving a diameter of 26m), surrounded by an ‘embankment’ 20 yards (17.3m) away (Smellie 1845, 179). Recorded around 1862 during unpublished excavation by James Farrer (Hedges 1987c, 79-80 & 134), Petrie’s sketches (Figures 7.40 & 7.41) show a mound c.14 feet (4.27m) high surmounted by structural remains to a height of two feet nine inches (0.8m), within a large pear-shaped banked enclosure measuring approximately 60m x 50m. These suggest either that a roundhouse stood on top of a natural mound or that the excavation revealed the top 0.8m of the walling of a broch surviving within the mound to a possible height of around 5m (Hedges 1987c, 79-80 & 134). Although Hedges (ibid) favoured the latter interpretation, Farrer employed a standard method of excavating broch sites: trench to find the walls and then empty the tower (e.g. East Broch of Burray: Petrie 1856). If Farrer had little understanding, Petrie was not troubled by the same problem; his plans of East Broch are accomplished and detailed. A more credible explanation is that there was not a broch at Round Howe, but a roundhouse on top of a natural mound, hence Farrer’s swift abandonment of the excavation.

Road construction through the mound in the late nineteenth century almost completely obliterated it; the only record of this event is in the ONB (1880, 202 Smellie’s (1845, 179) estimate of a height of 16 feet for the mound would be pre-excavation, whilst Petrie’s sketches (Figures 7.41 & 7.42) show the height recorded during excavation, with the overburden covering the stonework removed.

203 https://canmore.org.uk/site/9569/burray-east-broch-of-burray
OS1/23/23/81) entry, when Round Howe is described as a ‘hillock through which a road has lately been taken’ implying that the bulk of the mound was natural. It might be expected that something as substantial as the destruction of a broch would have been remarked upon more fully. The site was also damaged subsequently by a conifer plantation, which further confused an already mutilated location. Fortunately the 1960s OS revision took place before the plantation and preserves the only surviving record of the extent of the pre-forestry embankments (Figure 7.42).

Absence of a broch here was confirmed by excavation in 2002 (Card et al 2003). Prehistoric deposits, consisting of rubble and silty clay suggestive of rapid deposition, were located in one area (Trench Y: Figure 7.43) but had an uncertain relationship with activity elsewhere on the site, whilst the artefact assemblage included Iron Age pottery (Nick Card, pers. comm.; Murray 2003, 20 & 27).

Trench Z revealed that the central mound was glacial in origin, but had been encircled by a shallow ditch, the lower fills of which appeared to comprise quickly dumped rubble including stone tools and a stone trough (Murray 2003, 17-19; Figure 7.44). A radiocarbon date of 1380 – 1120 cal BC was obtained from carbonised barley from these lower fills, from a well-stratified and archaeologically secure context (Nick Card, pers. comm.; Table A1.1, Appendix 1). An outer bank, also observed in Trench W, overlay a peaty deposit and survived to 0.8m high and 7m wide. Peat continued to accumulate around the bank’s base after its construction, indicating a damp environment. The area between the outer bank and the glacial mound was archaeologically sterile (Murray 2003, 23-4).

Another bank, not part of the outer earthworks, was found to consist of redeposited boulder clay with tip lines of stones (ibid, 23; Trench X: Figure 7.43). This bank was not shown on Petrie’s plan (Figure 7.40), but it is however visible in much less mutilated form on the 1960s OS map (Figure 7.42). Since Farrer’s excavation was swiftly abandoned, it may be that Petrie did not record the whole site in detail. If Round Howe’s banks and ditches
were defensive, then it might be expected that the adjacent glacial mound of Long Howe would have been incorporated into the arrangement. Apart from the Bronze Age barrow at the eastern end of Long Howe, however, there are no other surface indications of ancient activity here (Figure 7.39).

Dating of activity at Round Howe to the Bronze Age rests solely on the radiocarbon date of 1380 – 1120 cal BC from the ditch encircling the glacial mound, which was probably associated with material derived from either the collapse or the demolition/remodelling of the putative roundhouse; and the Iron Age pottery recovered from Trench Y. It appears likely that Round Howe comprised a substantial Middle Bronze Age stone roundhouse on top of a glacial mound, surrounded by a shallow ditch. The whole was then encircled by an outer bank of redeposited boulder clay; at its eastern end, this rampart joined the shoulder of Long Howe. Other earthworks of uncertain date and function appear to have been present. The recent excavator commented on the banks as follows:

_The construction technique of the bank is ... reminiscent of the ‘dump rampart’ technique ... The wide, low profile seems to negate any practical function, simply not presenting a serious obstacle to either livestock or people - indeed the possibility of any serious defensive function is further reduced by the fact that it is actually overlooked by the S end of Long Howe_ (Murray 2003, 26).

This construction technique is also seen in Orkney at the promontory forts at the Ness of Onstan (Section 7.13.2) and Nether Bigging (Section 7.13.3). It may be seen too on a much larger scale at the Broch of Gurness, where the massive ramparts are stone-revetted dumps (Hedges 1987b, 62-3). The Round Howe banks were almost certainly higher when newly built, and may have been topped by some further barrier. Although the contour survey (Figure 7.43) shows Long Howe, at 22m OD, overlooking the site today, originally the top of Round Howe’s glacial mound would have been slightly higher than Long Howe, at around 23m OD\(^2\). A roundhouse on top would have been both prominently and also practically sited, since the surrounding

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\(^2\) This takes 19m OD from the contour survey (Figure 7.43) as the baseline and adds the height of the mound of c.4.27m estimated from Petrie’s sketches (Figure 7.41).
area is low-lying and appears to have been boggy when the site was occupied. The area enclosed by the banks at Round Howe is c.0.24ha (Figures 7.40 & 7.43), approximately 25% of which may have been taken up by the roundhouse-topped mound\textsuperscript{205}. This is towards the bottom end of the scale for a Scottish hillfort and half the size of Whaness Burn A (Section 7.12.2). An available area of c.0.18ha would probably be sufficient to enclose a community’s livestock in times of crisis\textsuperscript{206}. In normal times, the area within the banks could have provided a sheltered enclosed area for sheep sorting, shearing or slaughter: activities commonly undertaken in summer or early autumn, when the ground would have been dry.

The single radiocarbon date from Round Howe places it around a millennium before activity commenced at Mine Howe (Nick Card, ORCA, pers. comm.); Iron Age pottery from dump deposits in Round Howe Trench Y suggests some unclear connection between the two, whether continuity of settlement or merely later activity. Round Howe itself remains enigmatic; it can at least now be said that it is not a broch, and that the building which once crowned it may, tentatively, be assigned to the Middle Bronze Age.

7.12.4 Muckquoy: enclosed settlement?

The site at Muckquoy, Redland, survives as a low mound in a cultivated field; fieldwalking there retrieved an artefact assemblage indicative of occupation from at least the 4\textsuperscript{th} to 2\textsuperscript{nd} millennium BC (Richards, Downes et al 2016, 247-53). A fragment of bronze bangle dating to the Late Bronze Age/Early Iron Age was also recovered from the site (Richards & Jones, R. 2016, 14), although the possible significance of this has not been further explored. Geophysical survey indicated a substantial settlement focus covering an irregular area of c.0.6ha surrounded by a linear feature that appeared to cut

\textsuperscript{205} Scaled from Petrie’s plan (Figure 7.40) on which the size of the enclosure broadly agrees with that depicted by the modern contour plan (Figure 7.43).

\textsuperscript{206} When housed sheep require approximately 1.2m\textsuperscript{2} each and cattle around 2.5m\textsuperscript{2} each (https://www.agriculture.gov.ie/media/migration/farmingschemesandpayments/farmbuildings/farmbuildingspecifications/pdfversions/RecAnimalAreas.pdf accessed 14/12/16), 0.18ha could therefore physically accommodate 1,500 sheep or 720 cattle.
through earlier remains (Richards, Downes et al 2016, 247-53). Excavation found the boundary feature to consist of five concentric slots, each c.0.20 – 0.30m wide and 0.24 – 0.30m deep, with some evidence of small postholes; this was tentatively interpreted as the remains of multiple timber or wickerwork fencing encircling the site. It was considered on stratigraphic grounds that this act of enclosure probably took place in the early 2nd millennium BC (ibid), although this is rather speculative because the excavation area was limited and radiocarbon dating was not undertaken. Geophysical survey located another substantial (but unenclosed) settlement focus c.120m south west of Muckquoy, together with several smaller individual structures (ibid, 253, fig. 9.43), one a possible double house.

The enclosed area at Muckquoy is broadly comparable with that at Whaness Burn A, Hoy (Section 7.12.2), and double that at Round Howe (Section 7.12.3). It is not possible to draw inferences regarding the sequence of occupation represented at Muckquoy, although the bronze bangle hints that activity may continue into the late 2nd/early 1st millennium BC. Significant quantities of timber would have been required to enclose the site at Muckquoy, whenever this took place, perhaps an act of conspicuous consumption in Orkney’s timber-poor environment, particularly if the enclosure did occur in the 2nd millennium BC, a time which saw the establishment of an open heathland environment throughout Orkney with concomitant loss of tree cover (see Section 2.2.2).

7.13 Promontory forts

7.13.1 Introduction

Promontory forts occur throughout Britain and Ireland, with notable concentrations on the coastline. Few have been extensively excavated and there are fewer dated examples, most of which are Iron Age\textsuperscript{207}, but there is also evidence of earlier activity in some cases e.g. Trevelgue Head, Cornwall

\textsuperscript{207} See Appendix 6, Tables A6.3 – 6.8 and references therein for details.
(Nowakowski & Quennell 2011); Hengistbury Head, Dorset (Cunliffe 1987) and Dale Point, Pembrokeshire (Benson & Williams 1987). Lamb (1980a, 41-64) suggested that all the Northern Isles examples were Iron Age, based on similarities in design with that of Iron Age defended sites elsewhere in the British Isles, and conceptually imported rather than developing locally. Orcadian promontory forts have attracted little attention and limited excavation (e.g. Carter et al 1995; Hunter 1996b & 1997); there are no related radiocarbon dates, as summarised in Table 7.6 below. It is possible that these sites share previously unremarked relationships with the mid-late 2nd millennium BC settlement enclosures discussed above (Section 7.12).

Lamb (1980a) identified four distinct types of promontory fort:

1) A simple promontory fort where earthworks, comprising probable stone-revetted earthen banks and ditches, cut off a lochside or coastal promontory e.g. The Ness of Onston, Stenness, Orkney (Lamb 1980a, 52-3 & 78) or the Brough of Stoal, Yell, Shetland (ibid, 48, fig. 17).

2) As (1) above, but with the addition of a standalone stone blockhouse on the end of the promontory e.g. Ness of Burgi, Dunrossness, Shetland (ibid, 10-12; Mowbray 1936).

3) As (1) above, but with the addition of a broch on the end of the promontory e.g. Burland, Lerwick, Shetland (Carter et al 1995, 464-7; Lamb 1980a, 82-3).

4) A broch situated on a promontory that is cut off by substantial stone walled banks, foreworks and ditches e.g. Midhowe, Rousay, Orkney (Callander & Grant 1934b; Lamb 1980a, 19-21).

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208 Lamb (1980a) described the different site-types but did not number them; numbers have been allocated here for ease of reference.

209 Shetland’s blockhouses, also known as foreworks or gatehouses, can also be found as part of a broch but their role in broch development remains unclear e.g. Clickhimin, Lerwick (Hamilton 1968, 54-61; Simpson 1954, 21-6; MacKie 2002, 108-10).
<table>
<thead>
<tr>
<th>Site</th>
<th>Bank type (no dated examples)</th>
<th>Structures and dating</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type (1) Simple Promontory Fort</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nether Bigging, Stenness, Orkney</td>
<td>Stone revetted earthen dumps</td>
<td>Multi-period settlement?</td>
<td>Clouston 1926 &amp; 1929</td>
</tr>
<tr>
<td>Point Of Onston, Stenness, Orkney</td>
<td>Stone revetted earthen dumps</td>
<td>None</td>
<td>Lamb 1980a, 78</td>
</tr>
<tr>
<td><strong>Type (2) Blockhouse and banks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ness Of Burgi, Dunrossness, Shetland</td>
<td>Stone revetted earthen dumps</td>
<td>Blockhouse: Iron Age pottery</td>
<td>Carter et al 1995, 446-7; Mowbray 1936</td>
</tr>
<tr>
<td>Tonga, Scatness, Shetland</td>
<td>Earth/stone dump bank, rock-cut ditch</td>
<td>Blockhouse undated</td>
<td>Carter et al 1995, 430-45</td>
</tr>
<tr>
<td><strong>Type (3) Broch and banks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broch of Burland, Lerwick, Shetland</td>
<td>Stone revetted earthen dumps</td>
<td>Broch not excavated</td>
<td>Carter et al 1995, 464-7</td>
</tr>
</tbody>
</table>
Lamb (1980a, 65-70) concluded that both types (1) and (2) lacked credibility as defended sites but were constructed as status symbols, predating brochs, which he suggested were built in response to a greater need for defence. Lamb (ibid, 54-64) further suggested a chronological development from simple promontory forts through blockhouse forts to brochs. There is some support for this progression from Clickhimin, Lerwick, where a Late Bronze Age enclosed settlement (Hamilton 1968, 25-31) was followed by a blockhouse, which may have been the entrance to a pre-broch ringfort (ibid, 54-61; Simpson 1954, 21-6; MacKie 2002, 108-10).

The relationship of the earthworks to the brochs at the type (3) sites has not been investigated, although banks at the Broch of Burland showed several episodes of construction and replacement (Carter et al 1995, 464-7), which indicates some chronological complexity; relationships with the broch remain unclear. At the few excavated type (1) – (3) sites the earthworks are simple dump banks usually with stone revetments (Table 7.6 and references therein). Broch construction can now be dated to c.390 – 200 cal BC at Old Scatness, Shetland (Dockrill et al 2006). If Lamb’s (1980a, 65-70) linear progression is correct it suggests time-depth to the sequence, potentially indicating a Late Bronze Age origin for the type (1) sites. It may be noted that type (1) could be viewed as a form of land division exploiting natural promontory features i.e. an enclosure.

Orkney has no obvious type (2) or (3) sites, although there is some evidence that the brochs at Midhowe, Rousay (Callander & Grant 1934b) and Borwick, Sandwick (Watt 1882) had blockhouse-like structures (Hamilton 1968, 60; Lamb 1980a, 20). Only two Orcadian promontory forts have been excavated and these only partially: the Ness of Onstan (Lamb 1980a, 52-3), and Nether Bigging (Clouston 1926 & 1929), both on promontories in the Loch of Stenness. In the late 4th millennium BC the Loch of Stenness was a considerably smaller freshwater loch, with an extra c.100 – 200m of now-submerged land exposed with a rocky foreshore and extensive shallow wetlands (Wickham-Jones et al forthcoming). At this period therefore neither the Ness of Onston nor Nether Bigging was a promontory, and would not
become so until the inundation of the Loch of Stenness by rising sea levels c.2000 – 1500 BC (ibid; Bates et al forthcoming; Wickham-Jones et al 2008).

7.13.2 The Ness of Onston, Stenness

At the Ness of Onston (Figure 7.45) a double set of banks and ditches encloses an area of just under one hectare, just to the north of Unstan Neolithic tomb; the enclosure feature was noted but not investigated during the tomb’s excavation (Clouston 1885, 341). In 1928 the banks survived to a height of 3 feet (0.91m) and the total surviving width of the earthworks was around 46 feet (14m) (RCAMS 1946, vol. II, 298, no. 873); much has been destroyed since by cultivation (HY21SE22; personal observation). In the 1960s sections were cut across the banks. No finds were recovered and no records survive other than a sketch on the back of the OS index card, which shows an earthen bank with stone revetments (Lamb 1980a, 52-3 & 78). Geophysical survey confirmed that ditch construction was complex and may have included walling and revetments, although there appears to be little evidence of activity within the enclosed area (Bates, Bates et al 2012). Sonar survey found no structural or activity evidence below the modern water level around the promontory (ibid). Since the ditches were shallow and cut only into the subsoil however, it was noted that any underwater traces could have eroded away (ibid).

Dating the site is problematic. It does not have any obvious connection with Unstan chambered tomb, and there are no known examples of stone-revetted earthen banks from Neolithic contexts in Orkney. It appears more likely that the construction dates to a point after the site became a promontory c.2000 – 1500BC (Section 7.13.1). Lack of obvious settlement evidence makes occupation unlikely. A livestock handling function is a possibility but the double bank and ditch construction seems excessive in that context; the bivallation is more suggestive of a defensive function, perhaps as a place where livestock could be protected in times of crisis (cf. Whaness Burn, Section 7.12.2).
7.13.3 Nether Bigging, Stenness

The Nether Bigging promontory, Stenness today is usually flooded and in such a chaotic state that nothing further can be made out on the ground. Geophysical survey conducted in the 1990s was inconclusive, but allowed the suggestion that the site was a multi-period settlement, with remains from the prehistoric to the Norse period (Grieve 1999, 70-5).

The sole excavation was by J. Storer Clouston, to investigate the supposed site of a potential castle (kastali) allegedly founded by the Orkneyinga Saga character Hakon Klo (Clouston 1926 & 1929). The site had been badly damaged both by stone quarrying and by the construction of a First World War seaplane base. Clouston’s site plans and reports are somewhat confused (Figures 7.46 & 7.47). He appears to have excavated at the site twice: first (Clouston 1926) on the end of the Ness, and subsequently (Clouston 1929) in search of the outer defensive ditch and wall expected of a medieval castle. He described a ditch with a stone-revetted earthen rampart cutting off the neck of the promontory (Clouston 1929, 70-1). This is similar to the construction technique found at the Ness of Onston but the area enclosed is much smaller, around 0.12ha (Figure 7.46). At Nether Bigging however there were substantial remains on the point of the promontory. Clues on the date of the site can be drawn from Clouston’s (1926) report:

- The site today is flooded by both rising loch water levels in the winter and by spring tides in the summer; the floors of the structures would be underwater in winter (ibid, 283). This would have been the case since modern water levels in the Loch of Stenness were reached c.2000 – 1500 BC (Bates et al forthcoming; Wickham-Jones et al 2008 & forthcoming).

- A waterlogged prehistoric-type midden was discovered which extends far below the present loch level; the ‘curtain wall’ of the ‘castle’ was said to be cut deeply through this (Clouston 1926, 286). Clouston (ibid) speculated that the curved form of the ‘curtain wall’ was due to it following the line of
an earlier wall, such as that of a broch, but flooding prevented the excavation reaching the foundations to test this.

- The finds were non-diagnostic: hammer-stones, pottery fragments, antler and animal bone (ibid, 296).

It is clear that there is a prehistoric, probably multi-period settlement site on the promontory (Figure 7.47). Before c.2000 – 1500 BC (Section 7.12.1), however, this site was neither a promontory nor flooded, suggesting that settlement was established before this date, when the site was dry land, although the earthworks were presumably constructed after the formation of the promontory. Clouston’s dry stone ‘curtain wall’ then is likely to be prehistoric, with the midden built up against it (rather than a later wall cut through the midden, as in Clouston’s (1926, 286) interpretation). The earthworks may have been constructed for defensive purposes, possibly in response to pressure on prime settlement sites around the Loch of Stenness in the face of rising water levels. The single ditch and stone-revetted earthen bank as described by Clouston (1929, 70-1) are comparatively weak as a defensive structure. The area enclosed is a comparatively meagre 0.12ha (Figure 7.46) but this would have provided enough space to temporarily house a reasonable number of livestock[^210]. It is also possible both that the site was abandoned in the face of rising water levels and that the earthworks are unconnected to settlement at this location.

7.14 Discussion: enclosed settlements in Bronze Age Orkney

There is no clear evidence for enclosed settlements in Orkney (other than the Ness of Brodgar: Section 7.3.4) until possibly the early/mid-2nd millennium BC and even then evidence is rather tentative: Whaness Burn A, Hoy (Section 7.12.2) and, probably towards the end of the 2nd millennium BC, Round

[^210]: Around 1,000 sheep or 480 cattle (see Section 7.12.3, Footnote 206).
Howe, Tankerness (Section 7.12.3). The assignation of the enclosure at Muckquoy, Redland to the 2nd millennium BC (Richards, Downes et al 2016, 250; Section 7.11.4) is largely speculative, although this site was clearly a large multi-period settlement.

Elsewhere in Mainland Britain it is in the Middle/Late Bronze Age that enclosure is seen (e.g. Bradley & Ellison 1975; Brück 2007; Cowie & Shepherd 2003, 166-7; Haselgrove 2009; Needham & Ambers 1994), and in Ireland all the excavated examples of multivallate hillforts date to the late 2nd/early 1st millennium BC (Waddell 2010, 374-9; see Appendix 6, Table A6.2 & references therein). Whaness Burn A can only be loosely associated with the evidence of nearby human activity c.1720 – 1170 cal BC, although the presence of double houses inside the enclosure supports a 2nd millennium BC attribution, and the valley was abandoned due to peat growth at the end of the 2nd millennium BC (Section 7.12.2). The radiocarbon date of c.1380 – 1120 cal BC (obtained from the lower ditch deposits surrounding the natural mound at Round Howe: Section 7.12.3) appears to indicate that the enclosure was in existence comparatively early. If this date truly was associated with a roundhouse then it would be even earlier than the (unenclosed) Late Bronze Age example at Tofts Ness (Section 7.9).

It is unclear why these two sites should be enclosed when others were not: neither occupies a particularly good location for settlement which perhaps militates against the interpretation of their enclosure as indicative of high social status. Enclosure appears unrelated to structural type, since unenclosed examples of both roundhouses (e.g. Tofts Ness: Dockrill 2007c; Section 7.9) and double houses (e.g. Skaill, Deerness: Buteux 1997c; Section 7.6.2) are known from Orkney.

Orkney’s promontory forts remain enigmatic with a lack of excavation or dating evidence and it is not possible to confidently assign them to any specific period. Earthwork construction at both the Ness of Onston and

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211 Although it has been suggested that enclosure may not necessarily be a reliable indicator of a higher position in a settlement hierarchy (e.g. Brück 2007).
Nether Bigging probably post-dates the formation of the promontories as water levels rose after c.2000 – 1500BC (Section 7.13.1), but by how much is wholly uncertain. Whilst the initial phases at least of the multi-period settlement at Nether Bigging are earlier, possibly 3rd millennium BC (Section 7.13.3), as Lamb (1980a, preface) noted, without excavation the nature, chronology and function of these sites cannot be determined.

Although the evidence for enclosed settlement in the 2nd millennium BC is extremely limited, it seems likely that such sites existed in Orkney before the end of that millennium, which hints that Orkney was not isolated from the trend towards enclosure occurring elsewhere in Britain. Some sites that were enclosed in the Late Bronze Age may have developed into broch settlements, and this is discussed in Section 7.15 below.

7.15 Are there missing high-status settlements?

Notwithstanding Whaness Burn (Section 7.12.2) and Round Howe (Section 7.12.3), whose status in the absence of excavation cannot be confirmed, there are no obviously high-status settlement sites in the Orcadian Bronze Age (e.g. Øvrevik 1985, 131; Ritchie 1995, 95). This perception may be an artefact of limited excavation (Section 7.2; Table 7.1), for example the double house at Wasbister, Sandwick (Section 4.2.4) is associated with an extensive but unexcavated settlement site (Figure 4.3); its position overlooking the Ring of Brodgar which continued to act as a focus of funerary activity during the Bronze Age (Section 6.1.4) hints at its possible significance.

It is not until the late 1st millennium cal BC with the appearance of brochs\textsuperscript{212} that Orkney has around 135 known examples. Estimates of Orkney broch numbers vary: Petrie (1874, 93-4) was the first to attempt a survey and came up with 70; Cursiter (1923) added a further 24 sites; Hedges (1987c, 50-2) suggested 52 definite and 80 possible; MacKie (2002, ix-xi), who uses a very narrow definition, lists 36 definite and 109 possible; whilst the NMRS currently lists 32 definite and 118 possible brochs (Canmore search 17/12/15). It is impossible to reach a definitive figure, since the majority of these sites are unexcavated and some were only casually noted to be brochs during the course of their destruction e.g. Big Howe, Stenness (Cursiter 1923, 52; Section 3.6.2). See Appendix 11 for details and distribution maps.

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(Dockrill et al 2006), that social stratification is clearly exhibited architecturally. Despite considerable debate over their classification, function, origins and precise dating (e.g. Armit 2000 & 2005; Gilmour & Cook 1998; MacKie 1994, 2002 & 2005; Parker Pearson et al 1996; Parker Pearson & Sharples 1999; Sharples 2005; Romankiewicz 2009 & 2011), there is some consensus that they are high-status settlement sites.

Sharples (1984, 121-2) envisaged brochs as resulting from competition between local lineage groups based on the control of land and agricultural surpluses. Dockrill & Bond (2015b, 493-7) suggested that those responsible for the construction of the Old Scatness broch, Sumburgh, Shetland developed from a Late Bronze Age/Early Iron Age elite; their initial prominence stimulated by competition for resources such as land in the face of deteriorating climatic conditions. The stratification of Iron Age society thus comprised a hierarchy running from simple roundhouses in marginal areas such as Tofts Ness to high-status broch settlements (ibid). This raises the question of what had happened to these elites between the end of the Neolithic (cf. the Ness of Brodgar: Section 7.3.4) and the appearance of the brochs in the late 1st millennium BC.

There has been little research into earlier beginnings to settlement on broch sites. There is a lack of evidence from good quality excavations: the investigation of numerous brochs in the nineteenth century throughout the Highlands and Islands were partial endeavours potentially not reaching the initial foundation deposits within them (e.g. Anderson 1874 & 1901; Dryden 1874; Farrer 1857c; Maxwell 1874; Petrie 1874). Many twentieth-century excavations, aimed primarily at conserving sites for public display, halted once the apparent 'broch level' was reached e.g. Midhowe and Gurness, both in Orkney (Callander & Grant 1934b; Hedges 1987b; MacKie 2002, 233); earlier levels were typically only investigated at the periphery of sites, as at Clickhimin and Jarlshof in Shetland (Hamilton 1956 & 1968). At Old Scatness, Shetland, a tourism-oriented project design required that the bulk of the broch and Iron Age village were left in situ and pre-broch phases were largely unexcavated (Dockrill 2015, 31-6; Dockrill & Bond 2015a, 16).
absence of obvious high-status Bronze Age settlements one factor to consider is the ‘masking’ effect of substantial constructions such as brochs over earlier remains occupying the same site. Evidence of pre-broch settlement however comes from four Shetland sites: Old Scatness (Dockrill et al 2015); Jarlshof (Hamilton 1956; Section 7.8.1); Clickhimin (Hamilton 1968) and East Shore (Carter et al 1995).

At Jarlshof Late Bronze Age settlement phases were exposed in limited areas (Childe 1938; Hamilton 1956; Figure 7.24). The Bronze Age occupation was clearly more extensive: radiocarbon dates associated with substantial midden deposits indicated that activity spanned the whole of the 2nd millennium BC and probably began earlier (Dockrill & Bond 2009; Sheridan 2012b; Figure 7.25). At Old Scatness Late Bronze Age anthropogenic midden-enhanced soils, together with artefactual evidence of Neolithic activity, were identified but only excavated in a small area where no structural remains were identified (Dockrill 2015, 31-6; Simpson, Dockrill & Lancaster 1998). Evidence of Bronze Age occupation comes from the brochs of Clickhimin (Hamilton 1968, 25-33; MacKie 2002, 110) and the mid-2nd millennium cal BC middens at the broch at East Shore (Carter et al 1995).

It seems inevitable, perhaps ironic, that in Orkney the first person to find evidence of earlier settlement beneath a broch should have been James Farrer (Section 3.5.2), who, in typical fashion, dug under the foundations of the broch at Dingies Howe, St Andrews and recovered pottery, including several sherds of Grooved Ware (Hedges 1987c, 146; Stevenson 1946; RCAMS vol. II, no. 625, 242-3). Farrer’s excavation was never published and the remainder of the artefacts recovered were non-diagnostic in period terms (Anon 1892, 230; Stevenson 1946) so the nature and extent of earlier settlement is unclear. Pre-broch phases were identified outside the broch tower at Bu, Stromness, consisting of structural remains and coarse stone tools, primarily ard points and mattocks213, but these were not fully excavated (Hedges 1987a, 2-10 & 39). Circumstantial evidence of potential Late Bronze

213 Generally indicative of a Bronze Age date: Clarke 2006, 124-6.
Age activity comes from deep anthropogenic soils, the upper layers of which were dated to c.800 – 530 cal BC, located 50m east of a broch detected by geophysical survey at the Bay of Skaill, Sandwick (Cluett 2007, 102; OCGU 2008; Ovenden et al 2009). Similarly, deep midden-enhanced soils (as yet undated) have been detected around the brochs at the Cairns, South Ronaldsay (Carruthers 2012 & 2013; Desaille 2014; Saunders 2009) and those at Midhowe and North Howe in Rousay (Dockrill, Bond, Downes et al 2010; Moore 2013, 172-9).

The clearest example of extensive pre-broch settlement comes from St Boniface Church, Papa Westray, where an extensive mound, extending inland beneath the extant twelfth-century church, was cut though by coastal erosion enabling the full depth of deposits to be sampled (Lowe 1998). Much of the site had already been destroyed: only about a quarter of the broch tower remained (Figure 7.48) and the excavation consisted solely of rectifying the exposed erosion face. The coastal section showed a complex sequence of activity, with evidence of continuous settlement from the mid-late 2nd millennium BC onwards, including an Early Iron Age roundhouse, a broch and a late Iron Age/Pictish settlement, Norse occupation and a high-status ecclesiastical site214 (ibid, 114-24).

Although some brochs thus do overlie Bronze Age settlement, it is unclear how far this model can be applied to other sites: there are excavated brochs where this is apparently not the case e.g. Howe, Stromness, where two Early Neolithic houses were followed by a Maeshowe type tomb beneath the broch, but no evidence of Bronze Age settlement was recorded215 (Ballin Smith 1994, 25; Davidson & Henshall 1989, 52; Richards 1993, 72 & 89), although this might have been obliterated by the major levelling that occurred prior to the broch’s construction (Lynn 2004). At Scalloway, Shetland, although there was some probably Bronze Age funerary activity, no pre-broch settlement phases were identified (Sharples 1998).

214 See Table A1.12, Appendix 1 for radiocarbon dates and phasing at St Boniface Church.
215 Evidence of a Chalcolithic/Bronze Age presence was limited to the recovery of fragments of two Beakers outside the tomb entrance (Ballin Smith 1994, 25).
Work in Shetland has indicated that brochs occupy areas of high agricultural potential or are in prime locations with good access to other resources (Dockrill 2002; Fojut 1982 & 2005) – those settings most desirable for occupation. Reflecting these prime locations, at both Scatness and Jarlshof the settlements continued into the Late Iron Age and were then taken over by Viking incomers (Dockrill & Bond 2009, 45-6). No such locational analyses have been published on Orkney’s brochs, although a number of broch sites continued to act as foci for high-status ecclesiastical settlement sites: in a quarter of cases analysed by Lowe (1987, vol. 1, 287-313 & table 26, 387-8) brochs were definitely ecclesiastical foci, with the remainder falling into the probable/possible categories, as illustrated by St Boniface Church (Lowe 1998); similarly St Magnus’ Cathedral, Kirkwall (founded c.1137) is adjacent to a probable broch (Lamb & Robertson 2005, 186), suggesting these examples at least were in prime locations.

Detailed analysis of broch locations in relationship to agricultural potential in Orkney is beyond the scope of this thesis. Proxy evidence for the prime historic (pre-improvement) locations for settlement exists however in the township settlements enclosed by their hill-dykes, shown on Mackenzie’s 1750 charts (Section 4.2.2). It is instructive to compare the distribution of known brochs with the enclosed land within the hill-dykes on these charts, and it is striking that 124 (92%) of Orkney’s 135 brochs are on land under cultivation in 1750 (Table 7.7 below). This total is slightly skewed downward by the large number of brochs in Sanday, only 56% of which are associated with historic settlement, but rises to 97% if Sanday is excluded.

It can be tentatively suggested that the association of brochs with townships is not coincidental, and that the historic settlement foci grew from the prime settlement locations occupied by the brochs, and inferentially before their erection by Bronze Age settlement sites. Tofts Ness (Dockrill, Bond et al 2007; Section 7.3.5) was always marginal for settlement, and the Links of Noltland (Moore & Wilson 2011a; Section 7.6.3), became increasingly marginal in the 2nd millennium BC, yet both these sites were occupied throughout the Bronze Age. Considering Orkney’s geographical limitations,
environmental factors such as topography and shelter, access to light fertile soils, water and the sea play an important part in the selection of settlement locations (Chapter 2), and it would be counter-intuitive, even perverse, to suggest that the prime sites occupied by the brochs were entirely ignored in the Bronze Age yet marginal locations such as those just enumerated were settled.

<table>
<thead>
<tr>
<th>Island or Area</th>
<th>No. of Brochs</th>
<th>No. Inside</th>
<th>% Inside</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Mainland</td>
<td>61</td>
<td>59</td>
<td>97%</td>
<td>7.49</td>
</tr>
<tr>
<td>East Mainland</td>
<td>12</td>
<td>12</td>
<td>100%</td>
<td>7.50</td>
</tr>
<tr>
<td>Hoy</td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td>7.51</td>
</tr>
<tr>
<td>North &amp; South Walls</td>
<td>5</td>
<td>5</td>
<td>100%</td>
<td>7.51</td>
</tr>
<tr>
<td>Burray</td>
<td>5</td>
<td>4</td>
<td>80%</td>
<td>7.52</td>
</tr>
<tr>
<td>South Ronaldsay</td>
<td>4</td>
<td>4</td>
<td>100%</td>
<td>7.52</td>
</tr>
<tr>
<td>Westray</td>
<td>7</td>
<td>7</td>
<td>100%</td>
<td>7.53</td>
</tr>
<tr>
<td>Papa Westray</td>
<td>3</td>
<td>3</td>
<td>100%</td>
<td>7.53</td>
</tr>
<tr>
<td>Sanday</td>
<td>16</td>
<td>9</td>
<td>56%</td>
<td>7.54</td>
</tr>
<tr>
<td>North Ronaldsay</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>7.54</td>
</tr>
<tr>
<td>Shapinsay</td>
<td>5</td>
<td>5</td>
<td>100%</td>
<td>7.55</td>
</tr>
<tr>
<td>Gairsay</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>7.55</td>
</tr>
<tr>
<td>Stronsay</td>
<td>5</td>
<td>5</td>
<td>100%</td>
<td>7.56</td>
</tr>
<tr>
<td>Rousay</td>
<td>8</td>
<td>8</td>
<td>100%</td>
<td>7.57</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>135</td>
<td>124</td>
<td>92%</td>
<td></td>
</tr>
<tr>
<td><strong>Total Excluding Sanday</strong></td>
<td>119</td>
<td>115</td>
<td>97%</td>
<td></td>
</tr>
</tbody>
</table>
Iron Age society in the Northern Isles has been envisaged as stratified, or at least unequal, with a hierarchy visible architecturally from simple roundhouses in marginal areas to high-status brochs (Dockrill & Bond 2015b). A similar case for an ascending hierarchy might be illustrated for the Neolithic from marginal Tofts Ness (Dockrill, Bond et al 2007; Section 7.3.5) through the more favoured location of the Neolithic settlement at Pool, Sanday (Hunter et al 2007a; Section 7.3.2) to the exceptional Ness of Brodgar (Card et al 2017; Section 7.3.4). It is not unreasonable to suggest that a similar hierarchy in settlement locations also existed in the Bronze Age. It may reasonably be assumed that there were settlement sites (currently largely invisible) at some of the more favoured locations which continued in use thereafter. Many of these may have been destroyed, but there is a propensity for settlements in Orkney to persist in the same locations, exploiting the accumulated midden of previous generations as an ‘inherited resource’ (e.g. Dockrill & Bond 2009; Sections 7.1 & 8.2), and it may be hypothesised that putative high-status Bronze Age settlements existed – in some instances at least – where brochs were later established.

7.16 Conclusion

This analysis of domestic settlement identifies important factors in the social evolution of Bronze Age Orkney. There is some dislocation between the Neolithic and Bronze Age that may be environmentally related at some sites (Section 7.3), although there was an earlier social upheaval in the centuries after 3000BC (Chart 7.1). The evidence for the fragmentation of society at the end of the Neolithic (e.g. Richards, Downes et al 2016, 243-6) is equivocal, with broadly equal numbers of sites exhibiting continuity and discontinuity from the mid-3rd to early 2nd millennia BC (Charts 7.1 & 7.2). It is possible to state that the distinctive structural forms of the Orcadian Neolithic (Section 7.5.1) did not persist into the late 3rd/early 2nd millennium BC, however there is a notable lack of excavated and radiocarbon dated evidence on which to base any analysis of changes in structural forms and settlement patterns in Bronze Age Orkney (Chart 7.4).
We can see likely increases in influence from Shetland, possibly associated with trade (evidenced from the Early Bronze Age onwards by the presence of steatite funerary urns: Section 6.3.4) or migration, in the appearance of the double house (Section 7.8). Although poorly dated in both Orkney and Shetland (Chart 7.3) the available evidence supports a Bronze Age date for this distinctive structural form (Section 7.7), with some limited evidence that the type may have originated in Shetland (Section 7.8.2). There appears to have been separation of the domestic sphere from some other activities, as evidenced by the differing functions of the two separate units of the double house (Section 7.8.3); this separation of function may also be seen in other non-domestic structures, most notably the burnt mounds, discussed in Chapter 9.

On the available data, all the identified Orcadian Bronze Age structural forms (the oval house, the double house and the roundhouse) may have been in use concurrently by the second half of the second millennium BC (Chart 7.4). Double houses may appear in the Early Bronze Age (Section 7.7) and the roundhouses (on the basis of the example at Tofts Ness: Dockrill 2007c; Section 7.9) in the Late Bronze Age; the oval house type remains undated (Section 7.8.2; Chart 7.4).

One tentatively identified factor, based on evidence for enclosure at a few poorly dated and largely unexcavated sites, may have broad implications: a need for community enclosure or defence, or for control over resources. Such control over land and resources has been implicated in the origins of the brochs (e.g. Dockrill & Bond 2015b, 493-7; Sharples 1984, 121-2), which in both Orkney and Shetland appear to occupy the most favoured areas for settlement, which are unlikely to have been ignored in earlier periods (Section 7.15). The apparent lack of high-status Bronze Age settlement sites in Orkney may be partly accounted for by the masking effect of later unexcavated broch settlements. The Early Bronze Age attribution of the souterrain at Nessbreck, Corrigall, a form that was current in Orkney until at least the Middle Iron Age (Section 7.11), may lend further support to the concept of continuity of settlement at possibly the same locations.
The inherited resource of midden-enhanced soils associated with permanent settlement (Dockrill & Bond 2009) appears to be an important factor in the choice of settlement locations, and in addition to the commencement of settlement enclosure there may be a move towards enclosing the landscape more generally during the Bronze Age. These issues are discussed in Chapter 8.
Chapter 8 Managing the landscape

8.1 Introduction

Chapter 7 discussed the settlement patterns and structural forms of Bronze Age Orkney and noted that in archaeological terms settlement in Orkney is particularly associated with the accumulation of midden deposits and enhanced soils from permanent agricultural activity (Section 7.1). Since the arrival of the Neolithic ‘farming package’ in the early/mid-4th millennium BC this activity has consisted of animal husbandry (of cattle, sheep/goats, pigs) and the cultivation of barley\textsuperscript{216} (e.g. Bond 2007a, b, c & d; Dickson 1983; Nicholson & Davies 2007; Noddle 1983); the evidence for Bronze Age agricultural practices is discussed below (Section 8.2).

Animal husbandry alongside arable cultivation requires a mechanism for separating domestic and wild herbivores from growing crops. This may be achieved through physical barriers, close human supervision, tethering or seasonal transhumance. Seasonal movement of people and livestock to summer pastures, historically attested in Ireland and elsewhere in Scotland\textsuperscript{217} (e.g. Bil 1997; Costello 2016) was never practised in the Northern Isles (ScARF 2012d, 92-3). Hill-dykes were used in Orkney to separate animals on rough grazing from crops (Section 4.2.2); cattle and horses could be tethered on patches of land below the hill-dykes, whilst in the late nineteenth century the division of the commons but the lack of fences also saw the tethering of sheep and pigs (Fenton 1978, 244-5 & 431-4).

Landscape enclosure with extensive field systems is a feature of the 2nd millennium BC in many parts of Britain (e.g. Bradley & Richards 1978;...)

\textsuperscript{216} There is some evidence for the cultivation of einkorn wheat alongside barley in the Early Neolithic (Richards, Downes et al 2016, 230-2) but barley was the dominant cereal crop in Orkney from the Early Neolithic onwards; oats were not introduced until the Iron Age (Bond 2007d).

\textsuperscript{217} Pollard (1999, 80-2) suggested seasonal transhumance may have taken place in the British Neolithic and may not have involved the whole community, with some, possibly the old and the very young, remaining at a lowland settlement whilst younger members of the group moved with the animals to the uplands.
Fleming 1978 & 1983; Fyfe et al 1998; Yates 1999, 2001 & 2007), developing in some areas from pre-existing boundaries (e.g. Brück 2000; Johnston 2005). This enclosure appears to have occurred somewhat earlier in Ireland, with the Neolithic\textsuperscript{218} field system at Céide Fields, County Mayo (Caulfield 1978; Caulfield et al 1998; Guttmann-Bond et al 2016; Molloy & O’Connell 1995). Surviving examples of prehistoric enclosed landscapes in Scotland are largely in upland or island regions, comprising stone banks and boundaries associated with settlement, burial and clearance cairns dating from the 3\textsuperscript{rd} to the 1\textsuperscript{st} millennia BC e.g. An Sithean, Islay (Barber & Brown 1984); Drumturn Burn, North East Perthshire (NO15NE10; RCAHMS 1990, 46-9); Kilpatrick and Machrie North in Arran (Barber 1997b) and Lairg, Sutherland (McCullagh & Tipping 1998). In Arran land management practices changed at the end of the 3\textsuperscript{rd} millennium BC, when the regular rectangular field strips of the Neolithic were replaced by longer boundaries in the 2\textsuperscript{nd} millennium BC, which may have demarcated infield/outfield areas rather than individual fields (Barber 1997b, 45 & 144-9). Banks and ditches at Black Crofts, North Connell, Argyll, constructed in the mid-2\textsuperscript{nd} millennium BC, were suggested to have been the Bronze Age equivalent of head-dykes dividing cultivated land from the rough grazing (Barrett et al 1976; Carter & Dalland 2005). The 3.4ha area of settlement sites and enclosure walls at the Scord of Brouster, Shetland, previously thought to be Neolithic (Whittle et al 1986) are likely to be mainly Early Bronze Age or later (Sheridan 2012b, 20; ScARF 2012b, 64), as are other Shetland examples (e.g. Calder 1956; Turner 2012; Turner et al 2004).

8.2 Subsistence practices

The evidence of man’s exploitation of the landscape in Bronze Age Orkney is heavily skewed towards the investigation of the midden deposits and infield agricultural practices associated with settlement sites, particularly from

\textsuperscript{218} Although it has recently been argued (Whitefield 2017) that there is no chronological evidence to support a Neolithic date for the Céide Fields, and they may have been established in the later Bronze Age.
Mound 11, Tofts Ness, Sanday but also the Links of Noltland219 (e.g. Guttmann et al 2006; Hamlet 2014; Hastie 2011; McKenna & Simpson 2011; Simpson, I. A. et al 2007), both sites where there was continuity of occupation from at least the late 3rd to the early 1st millennium cal BC (Dockrill, Bond et al 2007; Moore & Wilson 2011a; Section 7.3.5). In the marginal environment of Tofts Ness, Sanday, the long-term viability of the site was linked to the mixed subsistence strategy adopted: intensive cultivation of six-row barley in a manured infield system, animal husbandry and exploitation of the natural resources of the sea and shore (Dockrill 2007d, 385-93; Figure 8.1).

The Neolithic middens at both Tofts Ness and the Links of Noltland remained an important resource during the Bronze Age phases when they were ploughed and directly cultivated, a practice also seen at sites in Shetland (Dockrill & Bond 2009; Guttmann 2005; Guttmann et al 2004 & 2006; Hamlet 2014, 287-323 & 353-4; Simpson, I. A. et al 2007). The infield areas around both sites were fertilised by the addition of midden and turf; animal manure was added at Noltland and human faecal material at Tofts Ness (where animal dung was most likely used as fuel220) (Hamlet 2014; 287-323 & 353-4; McKenna & Simpson 2011; Simpson, I. A. et al 2007). Such midden enhancement mitigated the worst effects of sand blow and nutrient depletion, enabling continued successful cultivation of the infield areas (ibid; Guttmann et al 2006). The high yields possible from intensive, almost garden-like, barley cultivation in the one to two hectares of anthropogenic infield soils at Tofts Ness were crucial to the site’s long term viability, and these anthropogenic soils thus became an inherited resource for the inhabitants (Dockrill 2007d; Dockrill & Bond 2009; Simpson 1998; Simpson, Dockrill,

219 The limitations of the archaeological record (Section 7.2) together with poor ecofactual preservation limits the information available from other Bronze Age sites in Orkney (e.g. Buteux 1997c; Card et al 2016; Lowe 1998; Morris 1989), which do not however contradict the results from Tofts Ness and the Links of Noltland.

220 Using cow dung for fuel was a practice that continued into the early twentieth century in Sanday, much to the amusement of the rest of Orkney: 'I have been in Egilsay, and I have been in Wyre, but I've never been in Sanday where the coos shit fire' (Fenton 1978, 206-9; Spence 1925, 81).
Bull et al 1998; Simpson, I. A. et al 2007). This strategy enabled continuity of settlement until increasing sand blow, possibly a single event, covered the infield area with over a metre of sand causing its final abandonment in the mid-1st millennium BC (Dockrill 2007c, 72). The settlement at the Links of Noltland appears to have been abandoned in the late 2nd/early 1st millennium BC for the same reason (Hazel Moore pers. comm.; Moore 2015b).

Animal husbandry during the Neolithic and Bronze Age phases at Tofts Ness primarily involved cattle and sheep, with small numbers of pigs (Nicholson & Davies 2007). Cattle were kept for non-intensive dairying and meat production, and sheep primarily for meat, with skins as a by product; however sheep became increasingly important through the Bronze Age (ibid; Serjeantson & Bond 2007). Significantly, the mammal bones from all phases at Tofts Ness were split and fractured to enable marrow extraction, suggesting the maximum utilisation of available resources (Nicholson & Davies 2007, 195).

Fishing was important in all periods at Tofts Ness, including deepwater fishing from boats, but the Bronze Age phases saw more small fish from the littoral zone than other periods (Nicholson 2007a). Sea mammal bones were few, probably because seals and whales were butchered on the beach with only the products brought to the settlement (Nicholson & Davies 2007, 194-5). Shellfish, predominantly limpets likely to have been used as fish bait, were present in large numbers throughout the Bronze Age phases at both Tofts Ness and the Links of Noltland, but not the Neolithic phases, suggesting that fishing increased in importance over time (Moore & Wilson 2013; Nicholson 2007b, 227-8).

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221 No information regarding animal husbandry, and little information regarding hunter/gatherer resources, is as yet available from the Bronze Age phases at the Links of Noltland, although the large Neolithic assemblage was reportedly much the same as from other Orkney sites, with a predominance of cattle and sheep, with some pig, red deer, marine mammal and fish bone (Fraser 2011).

222 The sheep at Tofts Ness are likely to have had little wool and be self-shedding like the Soay sheep of today (Nicholson & Davies 2007, 178; Ryder 45 – 9); sheepskin however is extremely warm and well suited to the harsh climate of the Northern Isles.
This may indicate that hunter-gathering became more important during the Bronze Age, perhaps in response to environmental factors, but possibly representing a wider cultural change. Stable isotope studies have shown that the Neolithic inhabitants of Orkney (in common with the rest of Neolithic Britain) adopted a largely terrestrial diet (e.g. Armit et al 2015; Cramp et al 2014; Lawrence 2012; Richards & Hedges 1999; Richards et al 2003; Schulting 1998 & 2004), whilst limited evidence from mid-2nd millennium cal BC Orkney indicates a mixed marine and terrestrial diet (Innes 2016; Lawrence 2012, 414-5 & 461-3), as in later prehistoric and early historic Orkney (e.g. Barrett, J. H. et al 2000; Barrett & Richards 2004; Richards et al 2006) and may imply a long-term change in society which began in the Bronze Age or a reversion to pragmatism from a peculiarity of the Neolithic.

Red deer were exploited as a minor food resource throughout the Neolithic and Bronze Age phases at Tofts Ness, indicating that there is likely to have been a stable breeding herd of red deer in Sanday at least (Nicholson & Davies 2007). This contrasts with the structured deposition of the red deer heap at the Links of Noltland c.2280 – 2130 cal BC (Clarke et al forthcoming; Marshall et al 2016, 26), where red deer seem to have been accorded special status, paralleled by a contemporary deposition of articulated deer skeletons or carcasses at the Ness of Brodgar c.2205 – 2025 cal BC (Card et al 2017; Mainland et al 2014; Section 7.3.4).

Both Tofts Ness and the Links of Noltland are in agriculturally marginal areas and each experienced similar problems during the course of the 2nd millennium BC in maintaining a viable settlement in the face of increasing aeolian erosion and deposition of sand (e.g. Hamlet 2014; 287-323; Simpson, I. A. et al 2007, 243-4). There are no detailed analyses from sites in more favourable locations available for comparison. The evidence from both Tofts Ness and the Links of Noltland shows communities working hard to survive in poor conditions, employing sophisticated coping strategies to maximise use of resources, including exploitation of the midden deposits that had accumulated during Neolithic settlement.
8.3 Enclosing the landscape

Marwick (1923a, 22) categorised three different types of Orcadian dyke:

1. Hill dykes or ‘feelie dykes’\(^{223}\): remnants of turf dykes built in historic times to separate grazing animals from the arable lands of the township (Section 4.2.2).

2. Pickie Dykes\(^{224}\): a type of dyke that ‘is thousands of years older’ and consisted of strips of stones buried under the soil or peat (Section 8.4).

3. Treb dykes\(^{225}\): a massive extant dyke from ‘some intermediate period’ which crossed a large area and was constructed of earth and clay noticeably ‘different in character from the surrounding soil’ (Section 8.5).

Faced with the twin problems of obliteration by agricultural improvement and obscuration by the growth of blanket peat, prehistoric land divisions in Orkney have generally attracted little attention. Problems of identification relate to lowland zone survival and to detection in the upland zone (defined here as land above 50m OD: Section 2.1.4). The majority of medieval and post-medieval land divisions shown on Mackenzie’s (1750) charts, some of which may have incorporated prehistoric land divisions (e.g. the treb dykes in North Ronaldsay: Section 8.5), were largely destroyed by agricultural improvements of the nineteenth century\(^{226}\); it is likely that the majority of older land divisions in the lowland zone will have been similarly obliterated at that date. Upland (and some lowland e.g. Whaness Burn, Hoy: Section

\(^{223}\) From the Scots *fail*-dyke, a turf dyke (Marwick 1952, 71).

\(^{224}\) A corruption of Pict’s dykes, used in the same sense as Pict’s Houses as a generic term for an antiquity (Section 3.5.3).

\(^{225}\) ‘Treb’ is a Sanday term, in other islands they are known as ‘gairst’ e.g. the Green Gairst in Rousay, from ON *garðstæði* dyke-steethe (Marwick 1923a, 22).

\(^{226}\) Traces of only 24 hill-dykes in Orkney survived long enough to be recorded on the 1st edition OS maps of 1882 and no further such dykes have since been recorded (Canmore search on 7/10/16 using the term ‘head dyke’ which equates to the Orcadian term hill-dyke).
7.12.2) areas in Orkney are today largely covered in blanket peat, which appears to have formed mostly after the mid-late 2nd millennium BC (Section 2.2.2): detection of prehistoric field boundaries is therefore idiosyncratic, largely reliant on exposure during peat cutting (Section 8.4).

No evidence for barriers separating the infield from the outfield were identified during the excavation at Mound 11, Tofts Ness, but the wider relict landscape includes several possible land boundaries (Section 5.5.1). At the Links of Noltland, a field system was identified by geophysics to the north of Area 5 (Moore & Wilson 2011a, 17 & 23; Figure 7.6). A trial trench located over one of the field boundaries (STP5 on Figure 7.6) revealed a 40m length of earthen bank, 1.2m wide and surviving to 0.45m high, which overlay Neolithic structures and was dated by the associated artefact assemblage to the Bronze Age (ibid; Hamlet 2014, 143-52 & 288-90). A further 5m x 1.5m test pit to the east of the main Neolithic structures in Area 5 (STP4 on Figure 7.6) located what appeared to be a substantial collapsed stone bank which overlay windblown sand, but the full extent of this was not established and no dating evidence was recovered from it (Hamlet 2014, 142-3). It is unclear if this bank is part of a prehistoric field system, or relates to historic activity in the area.

8.4 Sub-peat dykes and enclosures

Marwick’s (1923a, 22) ‘Pickie’ or sub-peat dykes have been recorded from a number of areas; they were first noted in Orkney by Thomas (1852, 122), near Hoxa, South Ronaldsay:

We were shown many rude dykes which had been exposed when cutting off the peat from the surface: they stretch over the island in

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227 There was extensive activity at the Links of Noltland relating to the kelp industry, which included numerous stone-lined kelp pits dug into the windblown sand overlying the excavated areas; on the approaches to the Links there are numerous ‘steethes’: broad dry stone dykes on which the kelp could be laid to dry (personal observation; see Thomson 1983).

228 See Appendix 3, Table A3.1 for details and references.
several directions. From the shape and appearance they still retain; and from the indubitable fact that they saw the light of later days only when the turf was removed, there can be no doubt that these rugged boundaries were built before the growth of peat in this island.

Petrie (1927, 28) recorded further examples in Eday in 1859, whilst others were later noted in Birsay (Spence 1915).

Two different designs of sub-peat dykes have been recorded. One method involved the construction of parallel lines of paired orthostats c.0.60 – 0.80m apart, with other orthostats set at right angles between them forming box-like sections; these were then topped with flat slabs, which supported further walling (Lamb 1984, 14, no. 14; Nayling 1983, 16-18). Examples of this type of construction come from a number of sites in Eday e.g. the Muckle Hill of Linkataing (ibid); Noup Hill and Den Trango (Lamb 1984, 14, nos. 42 & 43) and it appears to be widespread, with other examples noted from elsewhere in Orkney e.g. Helliar Holm, Shapinsay (Lamb 1987, 18, no. 68) and Cantick Head, South Walls (Lamb 1989, 19, no. 54). The same construction method was also recorded at Shurton Hill, Mainland, Shetland (Whittington 1978).

The second design consists of single lines of large boulders e.g. Noup Hill, Eday (Lamb 1984, 14, no. 41). These are associated with both sub-rectangular enclosures and other sub-peat dykes of exhibiting the box-like orthostatic construction technique (ibid, no. 42). The ‘Picky Dykes’ and enclosure (since destroyed) exposed by peat cutting near Overabist, Birsay were described as ‘ragged lines of grey stones’ (Spence 1915, 91-4) suggestive of the boulder construction method. A burnt mound\textsuperscript{229} was recorded close to the farmhouse at Overabist by the Royal Commission (RCAMS 1946, vol. II, 35, no. 106); Spence (1915, 90) records a further site, described only as a mostly destroyed ‘Pict’s work’, around 180m east of the farmhouse, associated with one of the enclosures. Similar examples of dykes composed of large earthfast stones infilled with smaller stones are found cutting off several headland areas of Fair Isle e.g. at Ullashield (Hunter 1996a, 44-9; Figure 8.2). Small cairns

\textsuperscript{229} No. 65 shown on Figure A7.1 in Appendix 7.
appear on these dykes at intervals, and excavation proved one at least to be a burial cairn although no dating evidence was recovered (ibid, 81-2).

A substantial stone-built enclosure partially survives at the Fold of Setter, Eday (Lamb 1984, 16, no. 57). When first described in 1859 the Fold of Setter was associated with sub-peat dykes in an area of other prehistoric activity:

_Beside a chambered tomb [Braeside: HY53NE10] ... there is a circle of about 240 feet [86m] in diameter formed by a stone dyke seven feet [2.13m] across at the base. The dyke is almost concealed by peat or moss, and running in various directions up hill or down dale, other stone dykes may be traced, covered in some places by moss to a great depth. One large standing stone [the Stone of Setter: HY53NE6] near the circle is entire, while remains of many others are still visible (Petrie 1927, 28)._ 

The dimensions and construction of the enclosing wall at the Fold of Setter was corroborated by Farrer (1857a, 179), who implied that the landowner verified this by (an otherwise unrecorded) excavation.

The enclosure at Vestra Fiold, Sandwick consisted of a single line of large orthostats (up to 1.2m long) within a low ridge of earth, enclosing an irregular area of around seven acres (c.2.84ha). When first recorded it showed traces of internal divisions and contained a small mound (Clouston 1845, 54; RCAMS 1946, Vol II, 269, no. 728; Thomas 1852, 117); both of which have since been destroyed, together with the southern half of the enclosure.

At Skirmie Clett, Wyre (Figure 8.3) a series of interlinked enclosures lie in an area that has never been covered by peat, adjacent to a burnt mound (Lamb 1982, 34, no. 163; RCAMS 1946, vol. II, 239-40, no. 620; Figures 8.4 & 8.5). These enclosures exhibited different construction methods: coursed stone walling, in some places faced with orthostats (Figure 8.6); orthostats erected face-to-face against each other (Figure 8.7); parallel lines of paired orthostats supporting coursed walling, as seen in some of the sub-peat dykes (Figures 8.6 & 8.8); and single lines of orthostats (ibid). The latter method is used to subdivide enclosure A from enclosure F (Figure 8.4), whilst the other methods appear to be mixed along the length of the same wall (e.g. Figure
8.7). There may be an entrance to the main enclosure on the northern side of enclosure F and presumably there were internal entrances between the other enclosures, but these could not be definitely identified (ibid) The burnt mound lies to the south of the enclosure, together with a freshwater spring (Figure 8.4).

8.4.1 Dating sub-peat dykes and enclosures

No direct dating evidence exists for any of Orkney’s sub-peat dykes: dating relies solely on circumstantial evidence. Environmental records from Orkney are poor and inadequately dated (Section 2.2.1). The inception of blanket peat growth in Orkney has not been modelled, although in some areas it commenced in the mid-late 2nd millennium BC (e.g. Keatinge & Dickson 1979; Section 2.2.2).

The complex of sub-peat dykes associated with the Whaness Burn A enclosed settlement (Lamb 1996; Section 7.12.2), is considered likely to be related to the environmental evidence of human activity in the valley c.1720 – 1170 cal BC (Farrell 2009, 212-14). At Hobbister, Orphir a Late Bronze Age socketed axe was found whilst turning cut peats, so that its precise origin within the peat is unknown (Cowie & O’Connor 2006; Section 6.3.3). Subsequent walkover survey identified four sections of sub-peat dyke and a possible sub-circular structure, located around 250m southeast of the axe’s findspot, although it was considered equally likely that this structure was not an archaeological feature but rather resulted from disturbance and upcast from nearby peat cuttings (Sharman & Hollinrake 2007, 11-12). Four probable Bronze Age barrows were located within 250 – 350m of the sub-peat dykes further supporting a Bronze Age presence in the area (ibid, 14-16). Environmental analyses in the vicinity of the axe find indicate human activity from the end of the 3rd millennium cal BC, when there is some indication of grazing and cereal cultivation, continuing through the Bronze Age (Farrell 2009, 295-9 & 2015). The Late Bronze Age environment in the area consisted of wetlands surrounded by areas exploited for agriculture and rough grazing, with arable agriculture nearby; wetter conditions developed with the spread
of heath c.1130 – 880 cal BC (ibid). It is likely therefore that the sub-peat dykes identified in this area (Sharman & Hollirake 2007) may be assigned to the Bronze Age, but closer chronological resolution is not currently possible.

The sub-peat dykes at the Muckle Hill of Linkataing, Eday (Nayling 1983, 16-18) may be associated with a nearby prehistoric settlement but could not be assigned to a specific period (Sharman 2007b; Sharman & Robertson 2007; Section 5.8.3). Spence’s (1915, 91–4) identification of sub-peat dykes on the Birsay peat hill lie within 1–2 km of environmental sampling sites where blanket peat formation commenced in the mid-late 2nd millennium cal BC, preceded by human activity in the area (Keatinge & Dickson 1979). The association of a burnt mound (Section 9.1.1) with both the Birsay sub-peat dykes and the enclosure at Skirmie Clett (RCAMS 1946, vol. II, 239-40, no. 620) may lend support to a Bronze Age attribution for these features. The Bronze Age double house at Hesti Geo, Cantick Head, South Walls (Lee & Thomas 2012a, 27-30; Section 5.3) appears to be associated with sub-peat dykes of orthostatic construction (Lamb 1989, 19, no. 54), indicating a probable Bronze Age date for these dykes.

The Vestra Fiold enclosure has been assumed to be of Bronze Age date (Richards, Brown et al 2013, 129, fig. 5.9) but there is no unequivocal evidence to support this and the nearest other prehistoric features to it are Neolithic: it lies within 50m of the presumed quarry for the Stones of Stenness\(^{230}\) and within 250m of a chambered tomb (Richards, Brown et al 2013; Richards, Downes et al 2013). A tenuous Bronze Age attribution for Vestra Fiold may be suggested by the orthostatic construction of the enclosure, which mirrors one of the construction techniques used at Skirmie Clett, Wyre.

The solid stone-walled construction seen at Fold of Setter, Eday (Lamb 1984, 16, no. 57) is unlike any of the other Orcadian enclosures or sub-peat dykes

\(^{230}\) Constructed c.3020 – 2890 cal BC (Schulting et al 2010, 35-6).
except possibly Whaness Burn A, where it was suggested that the inner bank may have been stone cored (Lamb 1989, 13, no. 10; Section 7.12.2). A Neolithic parallel exists however in the enclosure at the Ness of Brodgar (Towers et al 2015).

8.5 Treb dykes

Treb dykes are massive linear earthworks largely of earthen construction but noticeably different in their make-up from the surrounding soil, enabling the course of some ploughed out examples to be traced (Lamb 1983a, 176; Marwick 1923a, 22-3). Local belief in North Ronaldsay holds that one of the treb dykes there (the Muckle Gairsty) has a clay core, but this could not be verified and the bulk of it is earthen in composition (Lamb 1983a, 176); however the treb at Hillhead, Sanday was composed of earth and clay (Marwick 1923a, 22). The majority of treb dykes do not have obvious quarry ditches associated with them, although the example at Graverend, Kirbuster, Stronsay has traces of a ditch on its south east side (Lamb 1983a, 177 & 1984, 26, no. 133).

Marwick (1923a & b, 1924b, 1925a & 1927b) noted but unfortunately did not map treb dykes in Sanday, North Ronaldsay, Rousay, Papa Westray and Stronsay; many of these no longer survive and their original locations are now unknown (Lamb 1983a). No further work on treb dykes was undertaken until a number of new sites were recorded in the 1980s, the distribution of which is, with one possible exception, entirely confined to the North Isles (Appendix 3, Table A3.2 and references therein). It is unclear whether this is a genuine pattern or if it relates to a lack of identification elsewhere.

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231 J. M. Corrie's survey for the Inventory (RCAMS 1946) noted extant treb dykes but these were omitted in publication (Section 3.7.1); his notebook entries (photocopied in the Orkney SMR) are however brief and no more than a re-iteration of Marwick's (1923a & b, 1924b, 1925a & 1927b) published accounts.

232 Although a number Marwick's contemporaries were publishing similar surveys of other parts of Orkney (Section 3.7.2) none of them recorded treb dykes, whether through lack of interest (Lamb 1983a, 175) or genuine absence is not clear. The majority of the recorded treb
The best-preserved examples of treb dykes come from North Ronaldsay, where two – the Muckle Gairsty and Matches Dyke – divide the island into three unequal parts: North Yard, Linklet and South Yard (Marwick 1923b, 54-5); these feature on Mackenzie’s (1750) chart (Figure 8.9). The Muckle Gairsty is reminiscent of the feelie dyke in Fair Isle, which divides the island into two and may also be of prehistoric origin (see Section 9.5.3). The south western peninsula of Sanday has a central ridge reaching 60m OD, and the treb dykes here run perpendicularly from the shore and over the ridge (Lamb 1983a, 177). Similarly in Rousay the Green Gairsty runs straight up the slope from the cliff face at the shore to the 60m contour (ibid, 176-7; Marwick 1923a, 22 & 1924b, 16).

8.5.1 Dating treb dykes

No treb dykes have been excavated and no finds have been reported from their destruction where this has occurred, so dating is necessarily speculative. Apart from descriptive accounts (e.g. Marwick 1923a), the only published research remains a short paper by Dr Raymond Lamb (1983a), who suggested that treb dykes were attributable to the Bronze Age, a hypothesis which remains unchallenged (e.g. Downes & Thomas 2013, 80-2).

Lamb’s (1983a) assignation of a Bronze Age date to this series of banks was based on a sequence of deductions, all of which must be sustained for his conclusion to be valid:

- Treb dyke locations bear no resemblance to any historic land divisions or land-based taxation divisions in Orkney.
- Orkney’s historic land and taxation divisions are derived from Norse organisation.

_dykes come from surveys by Dr Raymond Lamb for the ASMS series, which did not extend to most of the Mainland (Section 3.8.1)._
Norse taxation districts (the urislands\textsuperscript{233}) were adapted from existing Pictish ecclesiastical land divisions, with each urisland possessing a Pictish chapel site.

Pictish chapel sites are associated with Iron Age settlements, particularly brochs\textsuperscript{234}.

The ecclesiastical administrative systems (i.e. the urislands) are therefore based on the existing Iron Age land divisions.

Orkney’s historic land divisions therefore reflect Iron Age land divisions.

Since treb dyke locations do not reflect Orkney’s historic land divisions they must be pre-Iron Age.

Further to these points, the treb dyke at West Thrave, Sanday, was cited as evidence of pre-Iron Age origins, as it ‘runs underneath’ the Braes of Gorn, a probable settlement mound similar to other (unspecified) sites in Sanday, which are ‘at least as old as the Iron Age’ (ibid, 177). The complex of mounds at the Braes of Gorn are however badly damaged by cultivation (Lamb 1980b, 17, no. 72; RCAMS 1946, vol. II, 41, no. 161) and neither their age nor any relationship with the treb dyke has been securely established.

The first two bullet points above are broadly correct: treb dykes do not reflect historic township divisions, as defined by the hill-dykes on Mackenzie’s (1750) charts, although as Lamb (1983a, 177-8) notes some were used as convenient ready-made boundaries e.g. in Papa Westray and North Ronaldsay\textsuperscript{235}. However, whilst Orkney’s historic land-based taxation system is probably largely Norse (e.g. Marwick 1952, 191-204), the earliest surviving Rental dates from 1492 and as Thomson (1996, vii-xxvi) notes care should be exercised in projecting this back into pre-twelfth-century Orkney.

\textsuperscript{233} An urisland relates taxation to the productivity of the land, one urisland = 18 pennylands of skat: see Marwick 1952, 191-204.

\textsuperscript{234} There is some evidence in support of this as discussed in Section 7.15.

\textsuperscript{235} Matches Dyke is a township division, but the Muckle Gairsty is not (Lamb 1983a, 177-8).
The remainder of the bullet points rehearsed above are much more problematic. The idea that urislands were part of a Pictish administrative system adopted by the Vikings has a long currency (e.g. Clouston 1917; Marwick 1952, 212; Thomas 1882); but others have argued convincingly (e.g. Andersen 1988; Gibbon 2007) that urislands were introduced in the thirteenth century as part of the establishment of the parish system in Orkney. The nature of the Pictish/Viking transition in Orkney is also open to debate (e.g. Crawford 1981; Lamb 1993; Ritchie 1977 & 1983b; Smith 2001) with scenarios ranging from peaceful coexistence to total annihilation of the Pictish population; not all such perspectives are consistent with the continuation of a land-based taxation system across this transition. The suggestion that Orkney’s historic land divisions had Iron Age origins (Lamb 1983a, 178-9) cannot be substantiated. Consequently the argument that since treb dykes do not reflect these historic land divisions they must be pre-Iron Age (ibid) also falls.

Lamb (1983a) argued that the treb dykes indicated a stable and long-lasting system of land division, which ended as a result of social upheaval and disruption, probably at the end of the Bronze Age. The appearance of the brochs (with supposedly different land organisation, continuing into the Early Historic period) was seen as a response to this disruption (ibid, 179).

Whilst it appears reasonable to assign pre-Viking/Norse origins to the treb dykes (given their lack of correlation with historic land divisions, which are probably broadly Norse), and it is possible that they were constructed sequentially through time, there is no compelling reason, however, why at least some of these treb dykes should not relate to Iron Age broch territories. There are few areas where the treb dykes are well enough preserved to investigate this correlation more fully, but the examples on the south western peninsula of Sanday seem to bear more than a chance correlation with known brochs (Figure 8.10), while the locations of the trebs in North Ronaldsay (Figure 8.11) and Papa Westray (Figure 8.12) hint at a similar relationship.

Moore (2013, 160-1 & 214-16) suggests that the 700m length of dyke at
Brough Burn\textsuperscript{236}, Sandwick (HY21NW68; Figure 8.13), which in scale (it survives to 10m wide and 1m high) resembles a treb dyke, is rather an Iron Age boundary associated with the Broch of Borwick 400m to the south. Moore reasons (ibid, 161) that treb dykes were Bronze Age and of earthen construction (following Lamb 1983a), whilst the Brough Burn dyke has eroding orthostats that suggest it contained some internal structure, and further that there is ‘a close visual relationship between broch and dyke’ i.e. the dyke is visible on the skyline from the broch. Surface erosion of the Brough Burn dyke has exposed its construction to be of stony clay subsoil rather than earth (personal observation), which, together with the presence of orthostats, differs from the previously recorded treb dykes\textsuperscript{237}. Orthostatic construction is seen however, as has been noted previously, in some of the sub-peat dykes and enclosures (Section 8.4), suggesting that this constructional technique may have been first used in the Bronze Age. If at least some treb dykes can be assigned to the Iron Age on the basis of their apparent relationship with broch territories (e.g. Figure 8.10), then the suggested association (Moore 2013, 160-1 & 214-16) of the Brough Burn dyke with the Broch of Borwick may be explained, whilst the differing constructional style may simply be a local variation.

8.6 The Dyke of Sean

A prehistoric boundary of different construction to either the orthostatic arrangements noted in sub-peat dykes or the earthen construction of the treb dykes appears in the linear stone-cored Dyke of Sean\textsuperscript{238} (HY21SE68), at the northern end of the Brodgar peninsula (Downes, Richards et al 2013, 92-4; Figure 8.14). The Dyke of Sean bears no relation to the historic township boundaries depicted in Mackenzie’s (1750) chart (Section 4.2.2) and although it reflects the Stenness – Sandwick parish boundary this is happenstance; it

\textsuperscript{236} Brough Burn was first identified by the RCAHMS from an aerial photograph, and is classified as a post-medieval head-dyke (i.e. hill-dyke) (HY21NW68); this is incorrect since it bears no relation to the hill-dyke in this area shown on Mackenzie (1750) (Figure 7.4.9).

\textsuperscript{237} Although the Muckle Gairisty may have a clay core (Lamb 1983a, 176).

\textsuperscript{238} Pronounced Dyke of See-an (Peter Leith, pers. comm.)
was already a visible marker in the landscape at the time that boundary was defined. The Dyke lies in an area of intense prehistoric activity (Figure 8.14), with the Ring of Brodgar and its associated Bronze Age funerary landscape (Section 6.1.4) to the southeast, whilst immediately to the northwest lie the Wasbister Bookan settlement complex (Section 4.2.4), a disc barrow (HY21SE3) and a burnt mound (HY21SE20).

The Dyke takes an uneven course across the narrow neck of land between the two lochs of Stenness and Harray, being set topographically along the lowest line rather than the shortest route; there is no obvious explanation on the ground for this choice. It survives to a maximum width of c.6m, with a stone core, which appears to be good-quality coursed walling (Figure 8.15). It has a clear, original entrance (personal observation; Figures 8.16 & 8.17) towards its western end.

It is tempting to see the Dyke of Sean as controlling access to the ritual landscape on the Ness of Brodgar (e.g. Downes, Richards et al 2013, 92-94). To modern eyes it does look like the Ring of Brodgar is on the inside of a space defined by that feature; whether this would be a view shared by the Dyke of Sean’s builders is open to debate. There is no compelling reason, however, why the Dyke of Sean could not be related to the Bronze Age activity in the area. Today parts of the Dyke runs though boggy areas with localised standing water; before the Loch of Stenness reached its present level c.2000 – 1500 cal BC (Bates et al forthcoming; Wickham-Jones et al 2008 & forthcoming), which presumably resulted in raised groundwater levels in the low-lying areas between the Lochs of Harray and Stenness, the area traversed by this broad bank would have been dry land. This may support a construction date for the Dyke of Sean prior to this raising of the water table, but this does not preclude a construction date in the Chalcolithic/Early Bronze Age.

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This is common in Orkney; the western end of the Birsay – Sandwick parish boundary starts at the coast and proceeds eastwards through a series of marker points, all of which are prehistoric mounds including the Knowe of Gairsty (HY22SW2) and the Knowes of Yonbell (HY22SW13).
8.7 Discussion

The mixed agriculture subsistence strategy identified in Orkney from the late 3rd to the early 1st millennium BC, though supplemented by the exploitation of natural resources (Section 8.2), required sophisticated coping mechanisms in some of the marginal environments occupied during the Bronze Age. Livestock, with sheep increasingly important (Nicholson & Davies 2007), probably necessitated the construction of barriers to separate infield and outfield areas. Suggestions that some of the sub-peat dykes and enclosures were Bronze Age in date rest on loose associations with environmental evidence and chance finds (Section 8.4.1). Orkney’s historic (pre-improvement) system of infield, hill-dykes and rough grazing (Section 4.2.2) would fit very well with the economic model proposed for Tofts Ness (Dockrill & Bond 2009; Figure 8.1), where access to a variety of resources was important. Evidence suggests animals grazed on the hills of the West Mainland at altitudes of c.90 – 120m OD prior to the growth of blanket peat from the mid-2nd millennium BC; and rough grazing in other areas of Orkney was exploited during the same period (Farrell 2009; Keatinge & Dickson 1979; Section 2.2.2). The enclosures with internal divisions at Vestra Fiold (RCAMS 1946, vol II, 269, no. 728) and Skirmie Clett (ibid, 239-40, no. 620) would appear eminently suitable to livestock handling and sorting. Both are undated, although Skirmie Clett exhibits a similar construction to the sub-peat dykes which are discussed above, and is associated with a burnt mound, lending some support to a Bronze Age attribution. The Fold of Setter, Eday (Lamb 1984, 16, no. 57), again possibly associated with nearby sub-peat dykes, could also have functioned as a livestock pen; its similarities to Whaness Burn A, Hoy (Lamb 1996; Section 7.12.2) may suggest an enclosed settlement whose internal features had been destroyed before the site was identified archaeologically.

It is obvious that treb dykes were land divisions of some importance. Surviving traces (e.g. the Muckle Gairsty: Lamb 1983a, 176 & 178; Figure 8.11) indicate that they must have originally been imposing, almost
monumental in scale: the eastern side of the Muckle Gairsty survives to 11m wide and up to 1.8m high (ibid). Although likely to be prehistoric in date, there is no unchallengeable evidence to assign them to period. They are totally different in both construction and scale to the stone-built sub-peat dykes and enclosures tentatively suggested to be of Bronze Age date because of their stratigraphic relationship to the accumulation of peat (Section 8.4.1). In the absence of secure chronological evidence, treb dykes cannot be assigned with certainty to the Bronze Age (contra Lamb 1983a). Whilst they may define territories based on access to the shore, their positioning relative to Iron Age monuments are suggestive of broch territories (Figure 8.10). This does not necessarily preclude a Late Bronze Age origin for some examples, since some at least of Orkney’s brochs can be postulated to have developed from earlier settlement foci (Section 7.15). The earthen construction of the treb dykes may reference the value placed on the inherited resource of anthropogenic soils (cf. Dockrill & Bond 2009), but may simply have been the quickest way of building these features.

The Dyke of Sean remains enigmatic; the coursed stone construction, size and position on the Brodgar peninsula invite comparison with the Neolithic enclosures demarcating the buildings at the Ness of Brodgar. It appears to be unrelated in type to either the sub-peat dykes or the treb dykes and may have functioned in relation to the nearby monuments and/or communities in a manner different from either of the other series of dykes.

8.8 Conclusion

On balance, there is every likelihood that the subdivision of the landscape by dykes was a feature of at least some Orcadian landscapes during the Bronze Age. On the grounds of their relationship to the development of ombrogenous peatland in the later stages of the Bronze Age, the underlying sub-peat dykes are the best currently-known candidates. Contrastingly, the treb dykes, many now ploughed out, may not be restricted within prehistory to a single period. On current evidence, Lamb’s (1983a) hypothesis, arguing back from the land
divisions of the Historic, via the Viking/Norse, periods, to the Iron Age, to suggest that they should date to the Bronze Age has been shown above to be open to challenge. Whilst it would be an advantage to be able to attribute the treb dykes to the Bronze Age, and some indeed may have been established then, there is a possibility that others served to delimit territories associated with brochs.
Chapter 9 Burnt mounds and their relationships with other Bronze Age sites

9.1 Introduction

Alongside the domestic and funerary architecture of Bronze Age Orkney there are burnt mounds, which appear to fulfil specialist functions albeit of uncertain nature (Section 9.2). Burnt mounds are ubiquitous throughout the Northern Isles (297 recorded from Orkney at 252 sites\textsuperscript{240} and 346 from Shetland), and are common features elsewhere in the British Isles: a rapid interrogation of the relevant online databases produced 1,863 results for Scotland as a whole, 1,564 results for England, 686 results for Wales, 7,821 results for Eire and 429 results for Northern Ireland\textsuperscript{241}.

When excavated, burnt mounds universally consist of blackish mounds of fire-cracked stone, generally oval or of a distinctive horseshoe/kidney shape, surrounding a tank or trough. They are usually situated either in a wet area or with access to water\textsuperscript{242} (e.g. Cressey & Strachan 2003; Ripper et al 2012; Russell-White 1990). Early excavators interpreted burnt mounds as cooking-places, with boiling troughs of water heated through the addition of hot stones (e.g. Cantrill & Jones 1906 & 1911); this became the accepted interpretation following O’Kelly’s (1954) work on the Irish fulacht fia\textsuperscript{243} (e.g. Cubbon 1965; Hodges 1955; James 1986). Alternative functions have since been advanced (Section 9.2). In the Northern Isles the tank is typically

\textsuperscript{240} See Appendix 8 for details and distribution maps.

\textsuperscript{241} See Note 5, Appendix 8 for details of the sources and search terms from which these figures were obtained.

\textsuperscript{242} In Shetland only 22 of the 346 burnt mounds studied by Doughton (2014, 113-14) were more than 500m from a freshwater source and in the majority of cases (312/346) this was fresh running water. No such analysis has been conducted in Orkney; it would be difficult to establish due to the highly improved nature of the Orcadian landscape, with extensive ditching, drainage and rerouting of watercourses (Chapter 4).

\textsuperscript{243} The Irish archaeological term for a burnt mound is fulacht(a) fiadh (singular), or the plural fulachta(i) fia.
constructed of stone slabs and the surrounding structures are also stone built and include complex features such as wells and corbelled cells (e.g. Hambly 2014; Hedges 1975; Moore 2015a & b; Figure 9.1). Their associated artefact assemblages (pottery, coarse stone tools and lithics) are broadly comparable to those found in other non-funerary Bronze Age sites (e.g. Ballin 2014; MacSween 1999 & 2014; McLaren & Hunter 2014).

This chapter reviews the current evidence for the dating, distribution, associations and functions of burnt mounds, critically reviewing the evidence from the Northern Isles to consider their place within the Bronze Age landscape of Orkney and potential utility for investigating past settlement.

9.1.1 Dating burnt mounds

Broadly speaking, the majority of radiocarbon dated burnt mounds in Britain are Bronze Age, dating from the late 3rd millennium to the early 1st millennium BC\(^{244}\). In Eire, whilst the bulk of radiocarbon dates fall into the same period, the range extends from the late 4th/early 3rd millennium BC to the 1st millennium AD\(^{245}\). Although \textit{fulacht fia} start to be used in Neolithic Ireland, the main period of their use is nonetheless Bronze Age (Hawkes 2014); some at least of the very early Irish dates have been interpreted as related to possible ritual depositions of burnt stone rather than ‘true’ \textit{fulacht fia} (e.g. Mossop & Mossop 2009). The radiocarbon dates from excavated burnt mounds in Orkney and Shetland range from the early 2nd millennium to the early 1st millennium cal BC, most falling in the 2nd millennium BC (Chart 9.1).

\(^{244}\) See Appendix 1, Tables A1.2, A1.4, A1.6, A1.10 & A1.11 & references therein.

\(^{245}\) See Appendix 1, Tables A1.8 & A1.9 & references therein.
Chart 9.1 Radiocarbon dates from excavated Orkney and Shetland burnt mound sites (see Appendix 1, Tables A1.2 and A1.4 for details and references).
Luminescence dating techniques have been applied to burnt mounds in the Northern Isles, mostly as part of a doctoral research project on eleven burnt mounds\(^{246}\), with samples obtained from test pits, burnt stone scatters and erosion faces (Anthony 2003). At Cruester, Shetland, the samples were taken as part of a wider excavation project, alongside a suite of radiocarbon dates (Ashmore 2014; Moore & Wilson 2014a). The luminescence dates are claimed to show burnt mound use from the late 5\(^{th}\) millennium to the early 1\(^{st}\) millennium BC in Orkney, and from the late 3\(^{rd}\) millennium to the early 1\(^{st}\) millennium BC in Shetland (Anthony 2003, 314-26). At Cruester, however, large statistical errors, taphonomic uncertainties and stratigraphic inversions of the luminescence dates meant that they were of little use in determining site sequence, which relied instead on the radiocarbon dates (Ashmore 2014).

For the majority of the TL-dated sites in Anthony’s (2003) study no radiocarbon dates were available as a control. This presents a major problem: where multiple luminescence dates were obtained from any particular site, the results varied widely, even within a single context, by over one to two thousand years, with very large individual errors (at 1 \(\sigma\)) (see Appendix 1, Tables A1.3 & A1.5). The quoted date ranges for individual burnt mounds were produced by disregarding some outlying luminescence dates\(^{247}\) to find a mean unit age. These were combined with the radiocarbon dates (where available) to construct box plots and probability density functions of both the combined Gaussian distributions and individual dates (Anthony 2003, 314-9). These calculations constitute a purely mathematical exercise of doubtful archaeological value. It would appear prudent to treat all the luminescence dates from Anthony’s (2003) research with caution. The suggestion that this research has been important for burnt mound studies in the Northern Isles

\(^{246}\) Some TL dates were obtained from Orkney burnt mounds in the 1970s when the technique was in its infancy (Huxtable 1975; Huxtable et al 1976) and these are unreliable: see Appendix 1, Table A1.3.

\(^{247}\) There appears to be no justification for this discard, other than that the discarded dates do not generally agree with the other dates quoted for the unit. It is essentially a subjective judgement with a tendency to reinforce expectations. This approach was also adopted with TL, OSL and PTTL dates obtained for a burnt mound at Lady Glassary Wood, Kilmartin, which individually covered four millennia (Anthony et al 2001; See Appendix 1, Table A1.16).
since ‘it has ... expanded their temporal range beyond the Bronze Age’ (ScARF 2012b, 53) is of dubious merit. The few radiocarbon dates for Orkney burnt mounds obtained by the same project were all late 3rd to mid-2nd millennium BC (Anthony 2003, 294 & 302; Appendix 1, Table A1.2), in line with other radiocarbon dates for burnt mounds in the Northern Isles (Chart 9.1), which place them securely in the Bronze Age. The case for burnt mounds being a feature of Early Neolithic (or indeed earlier) activities in Orkney thus remains to be made.

9.2 Function

Cases could be made for many uses of burnt mounds in Orkney as elsewhere. As Barber (1990b, 101) observed:

Boiling water\textsuperscript{248} has many uses, and while cooking may be the most common of them it is certainly not the only one. There is no reason not to assume that some burnt mounds were used for bathing, washing, saunas and sweathouses and a range of semi-industrial functions of which we have as yet little indication.

Irish literary sources, such as the seventeenth-century Foras Feasa ar Éirinn, with its detailed description of the mythical Fianna\textsuperscript{249} and their end-of-hunt cookery techniques (Dinneen 1908, 329), informed interpretation of fulachta fia as seasonal cooking places for roving bands of hunters or warriors (O’Kelly 1954). O’Kelly’s reconstruction experiment found that 100 gallons (454 litres) of water could be brought to the boil in 35 minutes by the addition of red-hot rocks, then kept boiling by the addition of an extra stone every few minutes; a leg of mutton was successfully cooked in this way (ibid, 117-23). This cookery technique, using a wooden trough, is recorded from the Hebrides in the eighteenth century (Jamieson 1822, vol 2, 172-3); whilst Scottish and Irish soldiers on campaign in the thirteenth and sixteenth centuries substituted a water filled cow’s hide lashed to supports for the

\textsuperscript{248} Although not all the burnt mound functions discussed here necessarily require the water to be boiling.

\textsuperscript{249} The hunting band of the great Irish heroic figure Fionn Mac Cumhail (Finn McCool).
trough, but heated the water in the same way (Ffrench 1899, 43; Macaulay 1913, 17; Monipenny 1603, 388). Ethnographic examples of cooking with hot rocks, whether in an earth oven or to heat a container of water, exist worldwide (e.g. Campling 1991; Mead 1971, 213; Pearce 1919; Rappaport 1984; Wandsnider 1997) and have been widely inferred in prehistory250 (e.g. Dering 1999; Ramseyer 1991; Saunders et al 2005; Sullivan et al 2001; Nakazawa et al 2009; Ramseyer 1991; Thoms 2009).

In a variation on the cooking hypothesis, Monk (2007) suggested that the fat that rises to the surface during cooking might be skimmed off and used as a secondary product for e.g. waterproofing. A similar method was employed to extract bone grease for use as a foodstuff by Native Americans (Binford 1978, 157-63; Leechman 1951).

Since nearly 8,000 Irish fulachta fia are now known (Section 9.1), the interpretation of all such examples as seasonal camps for roving wanderers seems unlikely. Recent work (e.g. Grogan 2005b, 138; Hawkes 2015) has suggested that fulachta fia were an important part of Bronze Age social life, with feasting among communal, possibly family, groups. A case has been made for an ‘Atlantic Bronze Age Feasting Complex’ based on the finds of Late Bronze Age flesh-hooks, cauldrons and spits from the British Isles and northwest Europe (Bowman & Needham 2007; Burgess & O’Connor 2004; Coles 1960; Gerloff 1986 & 2010; Needham & Bowman 2005). Burnt mound tanks ‘could be likened to large-scale preparation vessels’ (Moore & Wilson 2014a, 66) and could substitute for the cauldron in the preparation of a ritual feast. That the structures within which these tanks were set were confined spaces, coupled with the heat and steam generated by their use, does not seem particularly conducive to high status feasting activities, although consumption may have taken place in the open air, presumably only during

250 The Bronze Age burnt mounds of Sweden however do not seem related to the those found in Britain and Ireland in either form or function (Ó Néill 2009, 184-5); although they are associated with prehistoric settlement they consist of discrete mounds of burnt stone lacking internal structures or troughs, containing large numbers of artefacts, whilst many also contain human bones (e.g. Larsson 1990; Noge 2009).
clement weather. Such feasting activities may also have had ritual components. For example heated rocks play a significant part in the intensely complicated rituals of the people of Papua New Guinea (Rappaport 1984). Here the ritual slaughter and cooking of pigs involved oven stones heated in special fires, constructed of ritually significant woods, with the heated stones considered as partaking of the supernatural power of this fire (ibid, 127-8). Such ritual elements may not be archaeologically identifiable.

Barfield & Hodder (1987), based on the lack of a domestic artefactual and ecofactual assemblage at the burnt mound at Cob Lane, Birmingham, proposed instead that burnt mounds were sweathouses or saunas, and quoted widespread ethnographic examples in support of this theory. They also observed (ibid, 376) that the small size of the structures associated with burnt mounds would create a sauna-like atmosphere during cooking even if that was not the primary purpose. The structures associated with the burnt mound at Ceann nan Clachan, North Uist (Armit & Braby 2002), lacked the central tank and were small with a constricted entrance, and so did not appear to fulfil the same function as burnt mounds elsewhere; consequently they were interpreted as a sauna or sweat lodge where water was poured over heated stones to create steam.

Early Irish literature contains many references to hot baths and bathing, with water heated by dropping hot stones into the tub (Lucas 1965, 66-72 & 78). Some of the earliest references to bathing in this way come from the Táin Bó Cúailnge, which probably draws on oral histories from the fourth/fifth centuries AD and may possibly reach back earlier (Dunn 1914; Jackson 1964; O’Curry 1861, 29–51); whilst the Fianna, in addition to their cooking pit, had a bathing pit heated with hot stones (Dinneen 1908, 379). The Táin Bó Cúailnge and other Irish epics also describe ritual healing baths containing unusual ingredients, such as dismembered cattle, bones and all (e.g. Dunn 1914, 278-9; Lucas 1965, 67-8).

Experiments have shown that a burnt mound trough may also be used to heat the wort necessary for brewing beer (Quinn & Moore 2007). Heating the wort
by dropping hot stones into the mash tun is a European technique in use since at least the Middle Ages; a sticky malted residue adheres to the stones which are then added to the beer during fermentation producing a distinctive taste (Jackson 1993, 239; Siedl 2011). Metalworking activities have been suggested in relation to burnt mounds e.g. (Briggs 1976, 278; White 1977) but a survey of sites throughout the British Isles found no evidence in support of this (Thelin 2007). Other possible applications (utilising hot water or steam) include felting, fulling and dyeing of cloth (Jeffrey 1991). Coles (1979, 198-200) hardened replica Irish Bronze Age leather shields in hot water and suggested that burnt mound troughs would fit this function perfectly. Analyses at eight recently excavated Irish burnt mounds suggested links with both textile production (cleaning wool and dyeing fibres), and tanning hide or cleaning animal skins (Brown et al 2016). It was suggested in this work that the location of Irish burnt mounds – in the vicinity of, but not within, settlements – supported their use for industrial-type processes (ibid, 285).

9.3 Excavated burnt mounds in the Northern Isles

9.3.1 Introduction

Burnt mounds (under the generic heading of ‘Pict’s Houses’) were excavated in Orkney and Shetland in the mid-nineteenth century (e.g. Black 1856; Mitchell 1868; Petrie 1856, 61; Wood 1826), although they subsequently attracted little attention until the fieldwork of J. M. Corrie (RCAMS 1946; Section 3.7.1). Corrie recorded the destruction of burnt mounds at Hawill, St Andrews (ibid, vol. II, 245-6, no. 637) and Strathore, Shapinsay (ibid, 278, no. 789). Around the same time two burnt mounds in Rousay were partially excavated by Walter Grant (ibid, nos. 584 & 595, 225-6) but not published, although an illustration of this survives (Figure 3.8).

9.3.2 Excavations in Orkney

The first modern excavations of a burnt mound in Orkney were at Liddle,
South Ronaldsay\textsuperscript{251}, and Beaquoy, Birsay, in the 1970s (Hedges 1975). The oval building inside the burnt mound at Liddle contained a large stone tank and hearth, with an artefactual assemblage consisting of domestic pottery and stone tools (ibid; Figure 7.28). Importantly this was the first burnt mound in the Northern Isles to produce radiocarbon dates (Chart 9.1), showing its abandonment towards the end of the 2\textsuperscript{nd} millennium BC; no dates were obtained for the initial use of the burnt mound. At Beaquoy, Birsay little survived of the burnt mound’s structures although they were similar to Liddle, as were the finds. The radiocarbon dating of the latter site is unreliable\textsuperscript{252}, but the finds were thought to be Late Bronze Age in character (ibid).

Hedges (1975, 70-82) accepted that burnt mound tanks were used for cooking, but rejected the seasonal hunting camp theory, concluding that their structure, artefacts and distribution, this last coincident with the best agricultural land (see Section 9.7.1), supported the conclusion that burnt mounds were themselves the ‘missing’ permanent farming settlement sites of Bronze Age Orkney, and that by extrapolation this interpretation held good for Shetland too. This view however ignored the immediate location of the burnt mound at Liddle, the structures of which were cut into a layer of peat: the contemporary environs consisted of a sedge and reed-dominated swamp (Jones 1975; Tasker 1975), not a location typically conducive to a domestic dwelling. This interpretation has now been superseded, because Bronze Age domestic structures that are demonstrably not burnt mounds have been widely identified in the Northern Isles e.g. Sumburgh, Shetland (Downes & Lamb 2000a; Section 7.6.1); Skail, Deerness (Buteux 1997c; Section 7.6.2); the Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3) and Tofts Ness, Sanday (Dockrill 2007d; Section 7.9).

\textsuperscript{251} There are two burnt mounds at Liddle, designated Liddle I and II, but only Liddle I was excavated, the discussion here is of the excavated site at Liddle I.

\textsuperscript{252} These unreliable dates were obtained for a secondary structure, not the burnt mound itself: see Appendix 1, Table A1.2, Footnote 1.
Since Hedges’ (1975) work there have been two further burnt mound excavations in Orkney\textsuperscript{253}. At Meur, Sanday, excavation of a burnt mound badly damaged by coastal erosion revealed a stone tank and a well-preserved corbelled well accessed by a stone stairway, together with underlying structural deposits (Hambly 2014; Toolis 2005a & 2007a). These included earlier phases of burnt mound activity dated to the mid-2\textsuperscript{nd} millennium cal BC. Removal of the basal slab of the tank revealed a probably Late Neolithic well, sealed by a soil horizon dated to c.2472 – 2299 cal BC\textsuperscript{254}. The Neolithic deposits were not further excavated but do not appear to be associated with the burnt mound activity and it is not clear if the well itself existed in isolation; no further details are yet available.

At the Links of Noltland, Westray, an exceptionally well-preserved burnt mound, currently in post-exavcation, also had a 2.5m deep well accessed by a stone stairway, together with adjacent corbelled cells surviving with intact roofs; this mound was associated with Bronze Age settlement and funerary activity (Moore 2015a & b; Section 7.6.3; Figure 9.1). A ritual function was suggested for the burnt mound, perhaps related to its use as a sauna or sweat lodge, with access permitted only to a select few due to the restricted nature of the internal layout; other functions were also proposed, including communal feasting (ibid). The corbelled wells at both Meur and the Links of Noltland are reminiscent of underground structures known from Iron Age Orkney e.g. the ‘wells’ at the brochs of Gurness (Hedges 1987b, 35-6) and Midhowe (Callander & Grant 1934b, 454) or the probably ritual underground structure in the glacial mound at Mine Howe, Tankerness (Harrison 2005), although this need reflect nothing more than a simple engineering solution to the structural necessity of shoring the sides of the well against collapse.

\textsuperscript{253} Plus limited recording of two sites subject to coastal erosion and commercial archaeological evaluations (e.g. Dockrill et al 2009; Lehane 1990b; Mamwell 2006 & 2008).

\textsuperscript{254} http://scharp.co.uk/shoredig-projects/meur-burnt-mound/ accessed on 30/6/17.
9.3.3 Excavations in Shetland

The most comprehensive published excavations of burnt mound sites in the Northern Isles come from two sites in Shetland, at Tangwick, Northmavine and Cruester, Bressay, both of which have produced large artefact assemblages and reliable radiocarbon dates (Ashmore 2014; Moore & Wilson 1999b & 2014a; Chart 9.1). At Tangwick the finds included hammer stones, grinders and ard-points, together with the largest pottery assemblage so far from any Scottish burnt mound site: a maximum of 185 vessels (MacSween 1999; Moore & Wilson 1999b). Around 65% of the pottery showed spalling, which was interpreted as damage caused by immersion of the pots in the hot water of the tank, a theory supported by a lack of heavy exterior sooting (MacSween 1999, 218-9). The site was occupied during the second millennium BC (Chart 9.1), and the artefact assemblage, together with an absence of nearby settlement sites, led to the suggestion that it was a special cooking place, possibly for seasonal feasting activities (Moore & Wilson 1999b, 228-230). The same function was proposed for the burnt mound at Cruester, Bressay, Shetland, very similar in structure, finds and dating to Tangwick (Moore & Wilson 2014a), although at Cruester the pottery assemblage showed no spalling; here sooting on the vessels indicated they had been placed directly in fires (MacSween 2014). It was also suggested that communal feasting may have included bodily cleansing as part of rituals of transformation or purification whilst the ‘otherworldliness’ of the setting and remoteness from established settlements indicated liminality (Moore & Wilson 2014a, 65-7). Whether either of these sites was originally remote may be questioned: since they are both on the coast and actively eroding, any associated settlement might easily have been lost to the sea.

The alternative explanation, that the spalling resulted from post-depositional salt crystallisation caused by repeated marine inundation of the site, was considered unlikely as it was suggested that this would result in a more random pattern of damage (MacSween 1999, 218); but this is not necessarily the case. Two types of pottery were identified in the assemblage: serving and storage vessels (Moore & Wilson 1999b, 230) and it is not immediately apparent why either of these types would be immersed in the tank; similarly neither of these types would be expected to be placed in a fire, hence the lack of exterior sooting. The practical difficulties of keeping a pot full of any type of foodstuff upright in boiling water would seem to militate against this interpretation and suggest that marine inundation might be a more likely explanation.
9.4 Summary

It is clear that burnt mounds could have had many possible uses, from the sacred to the mundane, none of which are mutually exclusive. Domestic cookery seems the least likely in the Northern Isles, due to the large amounts of fuel required\(^{256}\): a significant consideration in a treeless environment (Section 2.2.2). Experimental reconstruction of a simple hearth has shown that it is easy to boil liquid in replica prehistoric pots\(^{257}\) set in the ashes or roast meat on adjacent stone slabs using a very small fire and only requiring small quantities of fuel (personal observation; Figure 9.2), which would appear a more rational cookery method.

The appearance of burnt mounds in the Early Bronze Age of the Northern Isles and their apparent abandonment by the early 1\(^{st}\) millennium cal BC (Section 9.1.1) suggest that their function related to a Bronze Age-specific aspect of domestic or ritual life, one that may have changed towards the end of the period. If some pragmatic technological rather than a ritual function is sought, then we must consider observable differences in subsistence practices or technological applications which might necessitate the use of burnt mounds. The main changes in subsistence from the Neolithic to the Bronze Age in Orkney are an increase in the importance of sheep versus cattle, and the increasing importance of marine resources (Section 8.2); technologically, we see the appearance of copper alloy objects. Bronze Age sheep had little wool (Nicholson & Davies 2007, 178; Ryder 45 – 9) and there is as yet no evidence for textile production\(^{258}\) in Bronze Age Orkney, but felting

\(^{256}\) O’Kelly’s (1954, 117-23) reconstruction experiment did not discuss the amount of fuel consumed. The Nunamiut Eskimo traditionally extracted bone grease using a 23 litre wooden container of water, boiled using hot stones; 29.6kg of heated stones were necessary to keep the bucket boiling for two hours, which required three backloads of firewood (the amount of bundled firewood that one adult could carry on their back) (Binford 1978, 157-63).

\(^{257}\) These were made for the Ness of Brodgar open day and so were in Neolithic style, but were made of Orkney clay and fired using prehistoric techniques (Mike Copper, pers. comm.).

\(^{258}\) The majority of identified Bronze Age textiles in the British Isles are produced from plant fibres such as nettle or more commonly flax (e.g. Cameron et al 2016; Symonds 2016) although there are some woollen examples known from the Late Bronze Age (Henshall 1950). The first evidence for flax in Orkney comes from the Middle Iron Age (e.g. Bell &
(requiring steam: Jeffrey 1991) or processing sheepskins remain possibilities. Evidence for weaving from Early Iron Age phases at Tofts Ness (Davies & Smith 2007, 331–4) suggests that sheep with fleeces had by then appeared and we might speculate that sheepskins lost importance in favour of woven goods, thereby contributing to the demise of the burnt mounds in the Northern Isles. Observations elsewhere (Thelin 2007) and the small volume of Bronze Age metal finds from Orkney (Section 6.3.3) suggest that metalworking was not a significant factor in the local economy and cannot be convincingly related to burnt mound use.

There is an archaeologically observable change in burial practices between the Neolithic and the Early Bronze Age (Chapter 6); similarly Iron Age mortuary practice in Atlantic Scotland takes many forms but is appreciably different from those of preceding periods (Tucker 2010, 343-8). The striking similarities between burnt mound troughs and the Bronze Age burial cists of the Northern Isles have largely escaped attention. It has been suggested (e.g. Downes 2005, 29-30; MacGregor 2008) that burnt mounds, although not involved in funerary rites, were also places of transformation, whether as cooking places or sweat lodges. There may have been metaphorical links between the activities at burnt mounds and changes in the state of the body (ibid). Doughton’s (2014) research sought to recontextualise burnt mounds as places of transformation involving both fragmentation and elemental substances. Obvious similarities between cist and trough were noted (ibid, 81), but transformative processes were emphasised. Burnt stones, having undergone processes similar to cremation, were envisaged as powerful substances in their own right (ibid, 222-40); burnt stones have also been found directly deposited in funerary contexts alongside cremated bone (Downes 1994a, 147 & 151; Hedges 1977, 131-3; Section 9.9). A more obvious association between burnt mounds and burial practices, which has been largely overlooked, is washing of the corpse as part of the funeral rites.

Dickson 1989; Dickson 1994) and woollen cloth survives from the early 1st millennium AD (Gabra-Sanders 2001).
Washing the corpse following death is well-documented worldwide (e.g. Habenstein & Lamers 1960 & references therein). Like other functions, this may not be identifiable directly in the archaeological record but relationships between distributions of burnt mounds and barrows that might relate to such potential functions are discussed below (Section 9.9).

9.5 Burnt mounds in the Bronze Age landscape

9.5.1 Introduction

Burnt mounds are almost ubiquitous in the Bronze Age of the Northern Isles (297 burnt mounds in Orkney at 252 sites; 346 in Shetland: Section 9.1). Compared to Bronze Age settlement sites (of which only 28 are presently recorded: Figure 7.2), burnt mounds survive well in Orkney’s improved landscape259 (Section 5.7); this survival may be useful in indicating prehistoric settlement patterns (e.g. Barber & Russell-White, 1990a; Hunter 1991 & 1996a; Hunter & Dockrill 1990). Hunter in particular (1991, 182-3 & 1996a, 61) has suggested that in Fair Isle burnt mounds survived disproportionately well because their fabric, comprised of small fractured stones, was of no use in construction260 and was hard to remove by hand, whilst the mounds themselves were too small to be a significant agricultural nuisance; this observation could reasonably be applied to improved landscapes elsewhere, although potential utilisation for road metalling might have been an issue261.

In Shetland many more possible Bronze Age houses have been recognised since Calder’s (1956, 1961 & 1963) surveys, which identified oval houses262 in

259 Extrapolations of the numbers of burnt mounds present in Orkney’s relict landscapes to the rest of Orkney (Section 5.7, Table 5.3) suggest a survival rate of between 35 – 43% for burnt mounds, compared to a survival rate of 2 – 3% for Bronze Age settlement sites.

260 Although burnt mounds in the Northern Isles do contain structural stone (e.g. Figure 9.1) this is buried under a mound of small heat-shattered stones and difficult to access.

261 The burnt mound at Liddle had been partially removed for this purpose before the internal structures were discovered and reported (Hedges 1975, 39).

262 Many, if not all, of these oval houses are likely to be Bronze Age (Sheridan 2013, 67; Section 7.7.1).
relict landscapes that also included burnt mounds, and some GIS analysis of the distribution of burnt mounds in relation to settlements sites and cairns has taken place (Canter 1998; Doughton 2014).

Canter’s (1998) study, limited to the 222 burnt mounds, 158 oval houses and 200 cairns\(^{263}\) of Mainland Shetland and adjacent small islands, concluded that burnt mounds were found in the same areas as oval houses and cairns, but he did not define his parameters more closely. A loose association of burnt mounds, prehistoric houses, burial cairns and field systems has been suggested for other areas of Shetland, but has not been subjected to detailed analysis e.g. Kebister, Tingwall (Owen & Lowe 1990 & 1999, 254-69) and South Nesting (Dockrill et al 1998). Doughton (2014, 119-20) considered 346 burnt mounds throughout Shetland\(^ {264}\), together with 432 possible Neolithic/Bronze Age settlement sites\(^ {265}\); and found that exactly half of the burnt mounds were within 1,500m of a settlement, but did not examine distances more closely. This GIS survey was based on sites previously recorded in the NMRS and Shetland SMR and detailed field survey was outside the scope of the project; whilst 40 burnt mound sites (88 mounds) were visited (ibid, 16-18; 102 & 126 & fig. 5.18), only the known settlement sites close to these mounds were included in field visits and there was no prospection for new sites. In Ireland, Ó Néill (2009, 198-9) noted examples in some areas (e.g. Lisheen, Co. Tipperary) of roundhouses radiocarbon dated to the mid 2nd millennium cal BC within 200 – 250m of groups of burnt mounds with consistent radiocarbon dates; there were however instances where areas of c.1km\(^2\) were stripped to the subsoil during road construction and burnt mounds were found without any house associations (e.g. Cherrywood, Co. Dublin). It was suggested that perhaps in these instances the burnt mounds were located within ‘comfortable walking distance’

\(^ {263}\) Canter (1998) uses ‘cairn’ as a general term and does not distinguish between possible types of prehistoric cairn e.g. clearance or burial.

\(^ {264}\) Including Fair Isle, which is administratively part of Shetland.

\(^ {265}\) Since many of Shetland’s Neolithic houses are now thought to be Bronze Age, and many Shetland examples have remodelling and continuity of occupation Doughton (2014, 104) did not attempt to distinguish between the settlements of the two periods.
(suggested to be c.2km, or a 30 minute walk) from a number of houses, implying that ‘their use had a social function beyond the immediate occupants of a house or settlement site’ (ibid).

Two small areas of Shetland, West Burra (Hedges 1984b) and Fair Isle (Hunter 1996a), have been the subject of more detailed surveys. Some comparative information is available from Mainland Scotland (e.g. Blood 1989; RCAHMS 1993 & 1994). Further consideration is provided in the following sections.

9.5.2 West Burra, Shetland

In West Burra, an island with an area of around 6km², field observation in the 1980s raised the number of known prehistoric house sites in the survey area from 5 to 24, with both oval, double and roundhouses associated with burnt mounds, field systems and burial mounds\(^{266}\) (Hedges 1984b, 41-3). Only one of these sites was excavated, at Tougs, West Burra, where an (undated) oval house was within 20m of a burnt mound dated to the late 3\(^{rd}\)/ mid-2\(^{nd}\) millennium BC (Hedges 1986, 12 & 27). Thirteen possible burial mounds were identified in the survey, of which eleven were within 600m of burnt mounds (Hedges 1984b, 49-50). Detailed spatial analysis is lacking in the published account\(^{267}\) but the survey results relating to house types/locations are summarised in Table 9.1.

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\(^{266}\) Hedges (1984b) uses the term ‘oval houses with annexes’ rather than ‘double house’ but the structures he describes are double houses, not houses with porches. The ‘roundhouses’ are assumed to be Iron Age (ibid, 51) but this report was written before the excavation of the Late Bronze Age example at Tofts Ness, Sanday (Dockrill 2007c). ‘Burial mounds’ is used as a generic term for possible funerary monuments.

\(^{267}\) The surveyor (Gordon Parry) was killed in an accident before he could complete his report and some of his records were subsequently lost; his surviving notes form the basis of the published account ‘but Parry’s typology anticipates conclusions which were never written down’ (Hedges 1984b, 41). Neither the full site catalogue nor detailed distribution maps were published; neither were distances from houses to burnt mounds explicitly discussed.
Table 9.1 Summary of the results of the West Burra survey, with house types and distances to nearest burnt mounds. N.B. distances scaled from the maps in Hedges 1984b, no distances given in published account.

<table>
<thead>
<tr>
<th>Site Name (refers to the general survey area rather than to an individual site)</th>
<th>House type and no. at each location (?) indicates possible house</th>
<th>Distance of houses to nearest burnt mound</th>
<th>No. of associated burnt mounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bight of the Sandy Geos</td>
<td>2 x double houses</td>
<td>50 - 100m</td>
<td>2</td>
</tr>
<tr>
<td>Bruna Ness</td>
<td>1 x oval house</td>
<td>100m</td>
<td>5</td>
</tr>
<tr>
<td>Tougs/Sunnybank</td>
<td>2 x oval houses</td>
<td>20m - 120m</td>
<td>2</td>
</tr>
<tr>
<td>Lu Ness</td>
<td>4 x oval houses</td>
<td>100m</td>
<td>3</td>
</tr>
<tr>
<td>Minn</td>
<td>4 x double houses</td>
<td>125m - 200m</td>
<td>1</td>
</tr>
<tr>
<td>Southerhouses</td>
<td>3(?) x oval houses</td>
<td>280 - 350m</td>
<td>1</td>
</tr>
<tr>
<td>Loch of Sandwich</td>
<td>2 x oval houses</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Craig</td>
<td>2 x oval houses</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Gardins</td>
<td>1 x oval house</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Meal</td>
<td>1 (?) x oval house</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Easter Dale</td>
<td>1 x ?roundhouse</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Atla Ness</td>
<td>1 x ?roundhouse</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total number of houses</strong></td>
<td><strong>24</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fourteen of the sixteen burnt mounds identified in the West Burra survey were associated with possible/definite Bronze Age houses (Table 9.1); although not all of the houses identified were associated with burnt mounds: at 8 of the 24 individual house sites (33%) no burnt mound was identified in the survey areas. At the majority of houses (13/24, or 54%) at least one burnt mound was located within 200m of each house; whilst at 16/24 houses (67%) at least one burnt mound was located within 350m.

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268 The two exceptions were Papil, where a burnt mound was within 150 – 200m of a line of three possible burial mounds; and Setter, where the burnt mound stood alone (Hedges 1984b, 43 & fig. 3).

269 The results of the surveys are presented as a set of insets superimposed on the map of Burra (ibid, fig. 1) and the areas discussed are a maximum of 500m x 750m; the published maps are very small with limited detail. The survey areas were referred to by name and the houses in each survey area were numbered i.e. House 1, House 2 etc.
9.5.3 Fair Isle

Fair Isle lies roughly halfway between Orkney and Shetland (Figure 1.1) and has a land area of c.8 km². The island is bisected by a drystone wall, which follows the line of an older feelie-dyke shown on Mackenzie’s (1750) chart. This dyke is substantial270, 8m wide and surviving to 2m high in places; it appears to have stone footings, with an upper composition of turf and earth, a combination suggestive of a prehistoric origin (Hunter 1996a, 41-3). The northern zone of Fair Isle is uninhabited and used for rough grazing, but the lower-lying, comparatively fertile southern zone is cultivated, and has been the focus of both modern and historical settlement (ibid, 137-8). Fair Isle lacks the easily quarried flagstones of Orkney (Mykura 1976, 66-9) so that building stone is at a premium, leading to the destruction and recycling of stone from monuments of all periods. Even in the uncultivated northern zone it was considered likely that there had been significant destruction of prehistoric structural remains in pursuit of building materials for sheep shelters and planticrues271 (ibid, 11-13, 73 & 212).

Distinct zones of archaeological survival were identified (Hunter 1996a, 211-12). North of the feelie-dyke there are burnt mounds, settlement sites, field systems and burial monuments, whereas south of the dyke the majority of known surviving sites are burnt mounds (Figure 9.3). In the sheltered dale known as the Ferny Cup (Figure 9.3, no. 1) a relict landscape of likely Bronze Age date covering 1.7ha survives, comprising two double houses, positioned within 50-70m of two burnt mounds, associated with field boundaries and lynchets which consisted of deep anthropogenic soils with evidence of intensive manuring, probably with seaweed (ibid, 49-52 & 69-73; Figure 9.4). The Ferny Cup also contained probable post-medieval features considered likely to have been constructed using stone quarried from pre-existing structures (ibid, 73).

270 The closest comparanda in Orkney are the treb dykes (Section 8.5).

271 Small walled enclosures commonly erected throughout the Northern Isles on small patches of otherwise uncultivated land, used for the cultivation of kail and cabbages (Fenton 1978, 100-5).
In Homisdale (Figure 9.3, no. 2), a possible double house lies within 150m of a burnt mound. Other sites in the area include a burial cairn, traces of field systems and stone settings and eight planticrues possibly deliberately sited in this area to take advantage of the readily available building stone provided by the (now destroyed) structural elements of the relict landscape (Hunter 1996a, 73-4 & 233-5). In Burrashield (Figure 9.3, no. 3), two burnt mounds survive alongside 20 small post-medieval rectangular foundations, together with traces of possible land divisions; there are no stone quarries in the vicinity and hence it was suggested that these post-medieval structures were constructed from stone derived from a destroyed prehistoric settlement focus (ibid, 74-6). This pattern was suggested for The Rippack (Figure 9.3, no. 4), an area of marginal land in the cultivated southern zone, where a burnt mound, cairns and traces of field boundaries implied that another prehistoric settlement focus once existed (Hunter 1996a, 76-7); appropriate structures are absent but two planticrues and possibly post-medieval structures may account for their loss (ibid & 73).

The Bronze Age relict landscape at the Ferny Cup (Figure 9.4), and probably the less well preserved example at Homisdale, suggests an association between burnt mounds, double houses and field boundaries which is very clear in sectors where monument survival is good. This is also hinted at by Burrashield, where a similar landscape may have been destroyed by quarrying in the post-medieval period (Hunter 1996a, 74-6).

9.5.4 Mainland Scotland

A pattern of burnt mounds within relict prehistoric landscapes can be seen in mainland Scotland. In Caithness and Sutherland the OS Archaeology Division discovered over 1,200 hut circles and field systems, closely associated272 with 146 burnt mounds (Blood 1989, 137-8). In Sutherland, largely unaffected by modern agriculture following the

272 The distance implied by ‘closely associated’ is not defined, but in the illustrated example of the relationship of burnt mounds and hut circles, the distances between the two are 75 – 90m (Blood 1989, fig.3).
eighteenth/nineteenth-century clearances, only five of the 121 burnt mounds were not associated with prehistoric settlements and field systems, suggesting a strong probability that they were contemporary features (ibid, 139-40). Detailed survey of the Strath of Kildonan, Sutherland supported this, with 38 recorded burnt mounds found to be associated with 48 hut circles and field systems; furthermore burnt mounds were generally not found except in association with hut circles (RCAHMS 1993); this was also the case at Kilearnan Hill, Sutherland (McIntyre 1998) and the East Rhins of Galloway (Russell-White 1990, 71). At Stoneyburn Farm, Crawford and Lintshie Gutter, both in the Clyde Valley, burnt mounds and platform settlements dating to the late 3rd/mid-2nd millennium BC formed part of an extensive prehistoric landscape that also included burial cairns; burnt mounds were positioned within 240 to 300m of the burial cairns, and within 400m of one of the settlements (Banks 1995 & 1999; Terry 1995; see Appendix 1, Table A1.7). In Glennesslin, Nithsdale, Dumfries and Galloway, 235 burnt mounds survived but only seven hut circles, five of which were within 100 – 150m of burnt mounds; however burnt mounds also occupied the same areas as the historic settlements represented by shielings (RCAHMS 1994). As suggested for Fair Isle (Hunter 1996a, 61; Section 9.5.3), many of these shielings may have been built using stone recycled from prehistoric buildings, leaving only burnt mounds to indicate former prehistoric settlement foci.

9.5.5 Summary

From the foregoing evidence, it is reasonable to conclude that settlement sites are one component of the relict landscapes surviving in the marginal northern zone of Fair Isle, and in some areas are closely associated (within 100m) with burnt mounds (e.g. Ferny Cup: Hunter 1996a, 49-52; Figure 9.4), which also survive in large numbers in the southern cultivated zone (Figure 9.3). It is thus reasonable to suppose that the southern zone was also the

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273 Detailed figures for distances are not published and the accompanying distribution maps are at too small a scale to enable these distances to be accurately assessed (RCAHMS 1993, figs. 4 & 8).
focus of prehistoric settlement and is unlikely to have been ignored in favour of the comparatively inhospitable northern area. The pattern of former associations between structural types is more complex in other areas of Shetland, although in the limited areas where relict landscapes have been examined in detail (e.g. West Burra: Hedges 1984b & 1986; Section 9.5.2) burnt mounds are again closely associated with Bronze Age settlements at distances of 20 – 350m (Table 9.1). While Doughton’s (2014, 119-20) observation that only 50% of all burnt mounds in Shetland were within 1,500m of a recorded prehistoric settlement site is presently correct, it is possible that detailed field survey would reveal further sites: as noted (Section 9.5.2) the West Burra survey (Hedges 1984b) saw almost a fivefold increase in the recorded number of prehistoric settlements in an area of 6km². In Mainland Scotland burnt mounds appear to survive in association with broadly contemporary settlement sites in relict landscapes (e.g. Blood 1989; RCAHMS 1993 & 1994) but these relationships have not been subject to detailed spatial analysis. In such circumstances, however, Hunter’s (1991, 182-3 & 1996a, 61) conclusion that burnt mounds can indicate areas of destroyed (or at best only partially-preserved) Bronze Age settlements is not unreasonable.

9.6 Interrelationships between burnt mounds and other Bronze Age sites in Orkney

9.6.1. Introduction

Burnt mounds, settlement sites and barrows survive in close proximity in Orkney’s relict landscapes e.g. Cantick Head, South Walls (Section 5.3) and Spur Ness, Sanday (Section 5.5.1). The question of how burnt mounds functioned together with settlements in Orkney over the course of the Bronze Age is particularly difficult to address because of the limited excavation and radiocarbon dating of both settlement sites and burnt mounds here (Sections

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²⁷⁴ Including Fair Isle.
The Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3) is the only settlement site where both a burnt mound and Bronze Age houses, in this case double houses, have been excavated although these elements are as yet imprecisely dated in this ongoing field project (Moore & Wilson 2011a; Hazel Moore pers. comm; Sections 7.3.5 & 7.6.3; Figures 7.6 & 7.7). Available radiocarbon determinations for individual houses and burnt mounds are few (Charts 7.4 & 9.1) but show that burnt mounds may be contemporary with all the currently identified Bronze Age house types in Orkney (Section 7.10).

9.6.2 Site catchment areas

To date, the limited research undertaken does not allow a clear association between burnt mounds and nearby settlement structures to be expressed in distance terms. In the few analyses of burnt mound distributions so far undertaken, the distances used as limits to indicate association between features vary: Doughton (2014, 119-20) used a 1.5km maximum radius (defined as 'local landscape space\(^{275}\)') to indicate association with a settlement, but 500m as the distance to indicate association with a source of freshwater (ibid, 113-4). Canter (1998) did not define his parameters closely. Ó Néill (2009, 198-9) suggested that 2km might still represent an association. Hedges (1977) used 1km (Section 9.9); others imply that distances of around 100 – 150m indicate a close association (e.g. Blood 1989; Hunter 1996a; Sections 9.5.3 & 9.5.4). Site catchment analysis broadly defines the exploitation territory for hunter-gatherer groups as two hours’ walk (c.10km) and for farming communities as around one hours’ walk (c.5km) from the site, with the distance traversed on foot depending on the terrain (Higgs & Vita-Finzi 1970 & 1972). Flannery (1976) defined three concentric rings around Mesoamerican villages as indicating areas exploited

\(^{275}\)Doughton (2014, 119-20) defined local landscape space as 1 – 1,500m following Rennell (2009, 108-10), because ‘at this scale people can be recognised’ whilst at distances beyond 1,500m ‘people are blurry and individuals cannot be identified’. In fact individuals cannot be identified beyond c.200m (USMC 2008; personal observation).
for agriculture (2.5km radius), small game and wild plants (5km radius) and large game, construction materials and exotica (15km radius).

When considering Orkney the landscape creates natural boundaries, especially the coast. A catchment radius of 1.5km (Doughton 2014, 119-20) gives an area of 7km², almost exactly the size of Papa Westray, and approximately seven times the area of Eynhallow (Figure 5.3) or Auskerry (Figure 5.4). A 5km radius (e.g. Higgs & Vita-Finzi 1970 & 1972) gives an area of 78 km², which is greater than most of Orkney’s islands (Table 4.3) and nearly as large as the entire East Mainland. For the purposes of this study, with targets at high density (e.g. the six burnt mounds in Papa Westray: Figure 9.20) large radii seem unlikely to be relevant.

9.6.3 Function and distance

The assignation of a specific distance which might indicate an association is complicated by uncertainty over the function of burnt mounds within Bronze Age society (Section 9.2). The time and/or distance any individual might be prepared to travel to reach the locale of a burnt mound might vary with its function, which, as Barber (1990b, 101) noted, may not be the same for each burnt mound; furthermore an individual burnt mound may have been multi-functional.

Possession of a ‘personal’ burnt mound might indicate higher social status, with those of lesser status sharing a communal building. Everyday domestic cookery suggests that a burnt mound would be adjacent to the house it served; festival cookery sites might be positioned centrally to a number of houses or settlement foci but perhaps in relation to some special figure or landscape feature. Other utilitarian purposes might result in the burnt mound being close to a house, unless it was a shared utility. Dangerous or

276 If distances over water are included these must allow for the dangerous currents around Orkney. For example the site catchment area for Eynhallow would theoretically include nearby islands (Figure 5.16); however the tidal races that form here are notoriously treacherous (e.g. Sutcliff 1975, 128) and it is unlikely that crossing them would be routine.
malodorous (e.g. preparing sheepskins) craft specialisations however might be sited further away. Rituals directly related to cremation or burial might imply proximity to funerary sites, or if related to the preparation of the corpse perhaps closer to settlements. ‘Saunas’ or bathing places might be utilitarian, ritualistic or religious; the latter might include a location adjacent to a priest/shaman’s house or might be shared amongst a group, and sited intermediately. It is therefore reasonable to conclude that distances from houses and burial sites to burnt mounds could vary and not necessarily in direct relationship to status.

9.6.4 Quantifiable data

Two excavated Orkney sites provide quantifiable data regarding distances between features and on their possible associations. At the Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3), a burnt mound is positioned around 300m from the associated cemetery, with double houses 150 – 320m to the southeast of the burnt mound (Figure 7.6). It appears to occupy a position peripheral to the settlement but this does not preclude further houses to the north having been lost to coastal erosion, which would alter this perception.

Neither of the burnt mounds in the relict landscape of Tofts Ness, Sanday (Section 5.5.1) has been excavated but the settlement at Mound 11 (Dockrill, Bond et al 2007; Sections 7.3.5 & 7.9) was occupied throughout the Bronze Age, and there are a number of other probable and definite prehistoric settlements nearby. A Bronze Age double house lies adjacent to the burnt mound at Shelly Knowe (Dockrill, Gater & Simpson 2007; Figure 5.9). The 'catchment areas' of the two burnt mounds overlap at a radius of 500m (Figure 9.5).

Although of necessity somewhat arbitrary, the distances used to consider the relationship of burnt mounds with other Bronze Age sites in the remainder of this chapter are up to 100m; 101 – 250m and 251 – 500m; or in terms of gentle walking time, just over a minute, up to three minutes and up to six
minutes respectively. The relict landscapes (discussed in Chapter 5) will first be examined before proceeding to assess the evidence from the rest of Orkney.

9.7 Burnt mounds in Orkney’s relict landscapes

Orkney’s relict landscapes include several areas where upstanding remains are well-preserved and burnt mounds, definite/probable Bronze Age settlements and Bronze Age funerary sites survive together (Table 5.2), alongside other prehistoric settlements sites, some of which may also be of Bronze Age date. The distances to the nearest burnt mound from each of these sites is shown in Table 9.2 and illustrated in the accompanying Figures (as indicated in Table 9.2).

The figures in Table 9.2 are based on very small samples, but it appears that there is considerable evidence in support of the premise that Bronze Age settlement sites are located in association with burnt mounds, although, with radii up to 500m, perhaps not especially closely. Considering the average of all the relict landscapes in Table 9.2 together, only 14% of definite/probable Bronze Age settlements are within 100m of a burnt mound but a further 43% are within 101 – 250m, however 86% of definite/probable Bronze Age settlements (6/7) are within 500m of a burnt mound. There is a poor correlation of burnt mounds with other prehistoric settlement sites at 100m (only 12%), but this is better at 101 – 250m (a further 35%), whilst a total of 76% (13/17) are within 500m of a burnt mound. The proportional relationship of burnt mounds with barrows in these relict landscapes is similar to that noted for Bronze Age settlement sites, with no barrows within 100m but 50% within 101 – 250m and a total of 80% (24/30) within 500m of a burnt mound.

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277 See Section 5.7, Footnote 107.
278 ‘Other prehistoric settlements’ indicates sites that cannot be assigned to period, and may therefore include further Bronze Age sites.
Either or both of Eynhallow’s two prehistoric settlements may be Bronze Age (Section 5.7, Footnote 107); in order to avoid bias it has been assumed that the site furthest from the burnt mound is the probable Bronze Age settlement.

Table 9.2 Numbers and percentages of each site type which are recorded within the indicated distance of a burnt mound in the relict landscapes discussed in Chapter 5. The 250m and 500m radius distances for each burnt mounds are shown in the accompanying figures. ‘Other prehistoric settlements’ may include further Bronze Age sites: it excludes sites that can be assigned to period e.g. brochs.

<table>
<thead>
<tr>
<th>Site name and Figure No.</th>
<th>Site type</th>
<th>0 – 100m</th>
<th>101 – 250m</th>
<th>251 – 500m</th>
<th>Total within 500m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tofts Ness, Sanday Figure 9.5</td>
<td>Definite/probable Bronze Age Settlements (2 sites)</td>
<td>1 (50%)</td>
<td>0</td>
<td>1 (50%)</td>
<td>2 (100%)</td>
</tr>
<tr>
<td></td>
<td>Barrows (none)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Other prehistoric settlements (4 sites)</td>
<td>1 (25%)</td>
<td>2 (50%)</td>
<td>1 (25%)</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Cantick Head, South Walls Figure 9.6</td>
<td>Definite/probable Bronze Age Settlements (2 sites)</td>
<td>0</td>
<td>1 (50%)</td>
<td>0</td>
<td>1 (50%)</td>
</tr>
<tr>
<td></td>
<td>Barrows (4 sites)</td>
<td>0</td>
<td>1 (25%)</td>
<td>1 (25%)</td>
<td>2 (50%)</td>
</tr>
<tr>
<td></td>
<td>Other prehistoric settlements (none)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Eynhallow Figure 9.7</td>
<td>Definite/probable Bronze Age Settlements (1 site)</td>
<td>0</td>
<td>1 (100%)</td>
<td>0</td>
<td>1 (100%)</td>
</tr>
<tr>
<td></td>
<td>Barrows (2 sites)</td>
<td>0</td>
<td>0</td>
<td>2 (100%)</td>
<td>2 (100%)</td>
</tr>
<tr>
<td></td>
<td>Other prehistoric settlements (1 site)</td>
<td>1 (100%)</td>
<td>0</td>
<td>0</td>
<td>1 (100%)</td>
</tr>
<tr>
<td>Auskerry Figure 9.8</td>
<td>Definite/probable Bronze Age Settlements (1 site)</td>
<td>0</td>
<td>0</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
</tr>
<tr>
<td></td>
<td>Barrows (none)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Other prehistoric settlements (10 sites)</td>
<td>0</td>
<td>2 (20%)</td>
<td>4 (40%)</td>
<td>6 (60%)</td>
</tr>
<tr>
<td>Spurness, Sanday Figure 9.9</td>
<td>Definite/probable Bronze Age Settlements (1)</td>
<td>0</td>
<td>1 (100%)</td>
<td>0</td>
<td>1 (100%)</td>
</tr>
<tr>
<td></td>
<td>Barrows (1 site)</td>
<td>0</td>
<td>0</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
</tr>
<tr>
<td></td>
<td>Other prehistoric settlements (2 sites)</td>
<td>0</td>
<td>2 (100%)</td>
<td>0</td>
<td>2 (100%)</td>
</tr>
<tr>
<td>Quandale, Rousay, Figure 9.10</td>
<td>Definite/probable Bronze Age Settlements (none)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Barrows (23 sites)</td>
<td>0</td>
<td>14 (61%)</td>
<td>5 (22%)</td>
<td>19 (83%)</td>
</tr>
<tr>
<td></td>
<td>Other prehistoric settlements (none)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

279 Either or both of Eynhallow’s two prehistoric settlements may be Bronze Age (Section 5.7, Footnote 107); in order to avoid bias it has been assumed that the site furthest from the burnt mound is the probable Bronze Age settlement.
Despite the fact that Orkney’s archaeological record is demonstrably a poor reflection of the likely original prehistoric site density (Sections 4.9 & 5.7), which is likely to impact on burnt mound relationships throughout Orkney, zones likely to demonstrate more complete survival of features none the less demonstrate an association between burnt mounds and barrows, and burnt mounds and Bronze Age settlement sites within a 500m radius.

9.7.1 Burnt mounds and prime land

As shown in Table 5.2, the survival of the relict landscapes exhibiting a correlation between burnt mounds and Bronze Age settlement site locations relates to their location in marginal areas or on the fringes of cultivated areas. Hedges’ (1975, 77-82) assertion that burnt mounds occupied the best agricultural land was based on two separate maps of Orkney, both at a scale of 1:800,000: one showing burnt mound locations (ibid, fig. 21) and the other showing Orkney’s improved land in 1939 (ibid, fig. 22). Both the small scale and lack of superimposition between burnt mound locations and improved land made comparison of the two somewhat challenging. A more reasonable indication of Orkney’s prime land may be inferred from the land within the hill-dykes on Mackenzie’s (1750) charts (Section 7.15). Table 9.3 below and accompanying Figures show the relationship of burnt mound sites to prime land as defined in this manner.
Table 9.3 demonstrates that 77% of all sites in Orkney with burnt mounds are located on the prime land thus defined. There are quite wide variations in the average numbers contained by the eighteenth-century dykes, and the Mainland, particularly the West Mainland, generally has a poorer correlation of burnt mounds with prime land than the other islands. Even if this outcome were due to the lack of a recent survey (Section 3.9), the undertaking of which

280 There are five small islands each with a single burnt mound where no hill-dyke is shown on Mackenzie (1750): Copinsay, Eynhallow, Egilsay, Auskerry and Papa Stronsay.
might theoretically increase the recorded numbers of burnt mounds on the prime land, this would not change the distribution of the 31 sites with burnt mounds located outside the prime land in the West Mainland (Table 9.3), and might also be expected to increase the numbers of burnt mounds recorded in marginal areas. It thus appears that Bronze Age settlement, implied by the presence of burnt mounds, was more widespread throughout Orkney than the historic settlement indicated by the 1750 townships, and this disparity seems particularly marked in the West Mainland. Similarly, when the positions of the 28 known Bronze Age settlements are considered (Table 9.4), only 39% overall are located on the prime land as indicated by the 1750 hill-dykes, with a minimum of 25% in the West Mainland.

<table>
<thead>
<tr>
<th>Island or Area</th>
<th>Shown on Figure No</th>
<th>Total no. of Bronze Age settlements</th>
<th>No. of Bronze Age settlements inside the hill-dyke in land under cultivation in 1750</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Mainland</td>
<td>9.11</td>
<td>8</td>
<td>2, 25%</td>
</tr>
<tr>
<td>East Mainland</td>
<td>9.12</td>
<td>4</td>
<td>2, 50%</td>
</tr>
<tr>
<td>Hoy &amp; Walls</td>
<td>9.13</td>
<td>5</td>
<td>4, 80%</td>
</tr>
<tr>
<td>Holm of Faray</td>
<td>9.14</td>
<td>1</td>
<td>0, 0</td>
</tr>
<tr>
<td>Sanday</td>
<td>9.15</td>
<td>3</td>
<td>0, 0</td>
</tr>
<tr>
<td>Westray</td>
<td>9.14</td>
<td>2</td>
<td>2, 100%</td>
</tr>
<tr>
<td>Papa Westray</td>
<td>9.14</td>
<td>2</td>
<td>1, 50%</td>
</tr>
<tr>
<td>Linga Holm</td>
<td>9.16</td>
<td>2</td>
<td>0, 0</td>
</tr>
<tr>
<td>Auskerry</td>
<td>9.16</td>
<td>1</td>
<td>0, 0</td>
</tr>
<tr>
<td><strong>Total/Average</strong></td>
<td></td>
<td><strong>28</strong></td>
<td><strong>11, 39%</strong></td>
</tr>
</tbody>
</table>

This pattern echoes results from areas such as Whaness Burn, Hoy (Section 7.12.2) as well as Peerie Hill (Section 5.2) and the majority of the relict landscapes (Table 5.2); all areas that were outside the hill-dykes in 1750 but

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281 For example three burnt mounds recorded by recent survey in unimproved heathland outside the 1750 hill-dykes at Netherbigging, Sandwick; see nos. 4, 241 and 242 in Appendix 8, Table A8.1 and Figure A8.1.
occupied during the Bronze Age. This pattern may support the hypothesis of population pressure forcing expansion into more marginal areas or, alternatively, some form of social control (see Section 5.9), as well as indicating the scale of losses of Bronze Age settlement evidence within the better land of Orkney.

9.8 Burnt mounds and Bronze Age settlements in Orkney

There have been no notable studies published regarding relationships of burnt mounds with Bronze Age settlement sites in Orkney since Hedges’ (1975) paper. As shown in Table 9.2 (above), there is some correlation between burnt mounds and definite/probable Bronze Age settlements sites in Orkney’s relict landscapes. Tables 9.5 and 9.6 (below) however show that when all known Bronze Age settlement sites are considered, this correlation is poor: only 36% of all Bronze Age settlement sites (10/28) and 32% of all individual Bronze Age houses282 (14/44) are within 500m of burnt mounds. Even excluding the 14 houses at Cata Sand (not yet known to be associated with any burnt mound but set in a currently-deflating landscape: Section 5.5.3) as a possible biasing factor, then only 47% of all Bronze Age houses (14/30) are within 500m of a burnt mound.

Double houses are the house type most likely to be associated with burnt mounds: 56% of known cases (9/16) have one within 500m (Table 9.5). Only five examples of oval houses are known, making comparison of numbers statistically suspect, but 60% are within 500m of a burnt mound. In comparison just 9% (2/23) of all other Bronze Age house types (excluding double houses) are within 500m of a burnt mound, or 22% (2/9) if those recently exposed by dune deflation at Cata Sand are also excluded.

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282 In Table 9.6 and the following discussion ‘settlement sites’ is used to indicate an area of settlement (as explained in Section 5.7, Footnote 107). ‘Bronze Age house’ refers to an individual recognisable house (that can definitely/probably be identified Bronze Age) e.g. the Links of Noltland (Section 7.6.3) with its minimum of four double houses is counted as one settlement site, but four houses.
Table 9.5 Numbers and percentages of each site type or house type which are within the indicated distance of a burnt mound in Orkney. (Details of Bronze Age settlements shown in Table 9.6 and accompanying Figures; details of other sites and distances in Appendix 13).

<table>
<thead>
<tr>
<th>Site or Bronze Age house type</th>
<th>Distance bands from each site or house type to nearest burnt mound, and percentage of each site within given distance band.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 - 100m</td>
</tr>
<tr>
<td>All Bronze Age settlements sites (28 sites)</td>
<td></td>
</tr>
<tr>
<td>3 (11%)</td>
<td>2 (7%)</td>
</tr>
<tr>
<td>Individual houses of all types (minimum 44)</td>
<td></td>
</tr>
<tr>
<td>3 (7%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>Individual houses of all types excluding 14 at Cata Sand (minimum 30)</td>
<td></td>
</tr>
<tr>
<td>3 (10%)</td>
<td>3 (10%)</td>
</tr>
<tr>
<td>Individual double houses (16 total)</td>
<td></td>
</tr>
<tr>
<td>2 (12%)</td>
<td>3 (19%)</td>
</tr>
<tr>
<td>Individual oval houses (5 total)</td>
<td></td>
</tr>
<tr>
<td>1 (20%)</td>
<td>0</td>
</tr>
<tr>
<td>Individual houses excluding double and oval houses (23 minimum)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Individual houses excluding double, oval and the 14 houses at Cata Sand (minimum 9)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Barrows (728 total)</td>
<td></td>
</tr>
<tr>
<td>8 (1%)</td>
<td>13 (2%)</td>
</tr>
<tr>
<td>Unobtrusive cists (Section 6.1.2) (98 total; excluding Noltland cemetery)</td>
<td></td>
</tr>
<tr>
<td>1 (1%)</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>All other prehistoric settlements (excluding known Bronze Age and Neolithic sites)</td>
<td></td>
</tr>
<tr>
<td>14 (N/A)</td>
<td>44 (N/A)</td>
</tr>
<tr>
<td>As above but excluding those sites in the relict landscapes in Table 9.2</td>
<td></td>
</tr>
<tr>
<td>13 (N/A)</td>
<td>35 (N/A)</td>
</tr>
<tr>
<td>As above but also excluding brochs</td>
<td></td>
</tr>
<tr>
<td>11 (N/A)</td>
<td>32 (N/A)</td>
</tr>
<tr>
<td>Brochs (135 total)</td>
<td></td>
</tr>
<tr>
<td>3 (2%)</td>
<td>12 (9%)</td>
</tr>
</tbody>
</table>
Table 9.6 Probable Bronze Age settlements and the house types at each, with the distance to the nearest burnt mound in ascending order. Site numbers are as shown on the accompanying Figures 9.17 – 9.22 Grey shaded sites are those in the relict landscapes discussed in Chapter 5.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Figure No.</th>
<th>Site Name</th>
<th>House type</th>
<th>Minimum No. of houses</th>
<th>Approximate distance to nearest Burnt mound</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>9.21</td>
<td>Shelly Knowe, Sanday</td>
<td>Double house</td>
<td>1</td>
<td>5m</td>
<td>Dockrill, Gater, Simpson et al 2007</td>
</tr>
<tr>
<td>8</td>
<td>9.18</td>
<td>Loch of Tankerness</td>
<td>Oval house</td>
<td>1</td>
<td>10m</td>
<td>Lamb 1987, 25, no. 113</td>
</tr>
<tr>
<td>4</td>
<td>9.17</td>
<td>Bookan Wasbister, Stenness</td>
<td>Double house</td>
<td>1</td>
<td>100m</td>
<td>Card 2003 &amp; 2005a, 61;</td>
</tr>
<tr>
<td>17</td>
<td>9.20</td>
<td>Links of Noltland, Westray</td>
<td>Double house</td>
<td>4</td>
<td>150, 170, 260, 320m</td>
<td>Moore &amp; Wilson 2011a &amp; 2013</td>
</tr>
<tr>
<td>14</td>
<td>9.19</td>
<td>Hesti Geo, Cantick Head</td>
<td>Double house</td>
<td>1</td>
<td>230m</td>
<td>Lee &amp; Thomas 2012a, 27-30</td>
</tr>
<tr>
<td>23</td>
<td>9.21</td>
<td>Tofts Ness, Sanday</td>
<td>Roundhouse + Indeterminate</td>
<td>2</td>
<td>300m</td>
<td>Dockrill, Bond et al 2007</td>
</tr>
<tr>
<td>12</td>
<td>9.19</td>
<td>Braebuster, Hoy</td>
<td>Double house</td>
<td>1</td>
<td>350m</td>
<td>Lee 2012</td>
</tr>
<tr>
<td>27</td>
<td></td>
<td>Auskerry</td>
<td>Double house</td>
<td>1</td>
<td>455m</td>
<td>Lamb 1984, 34, no.192</td>
</tr>
<tr>
<td>2</td>
<td>9.17</td>
<td>Linna Breck, Birsay</td>
<td>Oval house</td>
<td>1</td>
<td>500m</td>
<td>Øvrevik 1985, 146-9</td>
</tr>
<tr>
<td>16</td>
<td>9.19</td>
<td>Rotten Loch, South Walls</td>
<td>Oval house</td>
<td>1</td>
<td>500m</td>
<td>Lamb 1989, 14, no.17</td>
</tr>
<tr>
<td>18</td>
<td>9.20</td>
<td>St Boniface Church, Papa Westray</td>
<td>Indeterminate</td>
<td>1</td>
<td>600m</td>
<td>Lowe 1998</td>
</tr>
<tr>
<td>11</td>
<td>9.18</td>
<td>Round Howe, St Andrews</td>
<td>Roundhouse</td>
<td>1</td>
<td>700m</td>
<td>Murray 2003</td>
</tr>
<tr>
<td>28</td>
<td>9.17</td>
<td>Peerie Hill, Sandwick</td>
<td>Roundhouse</td>
<td>1</td>
<td>700m</td>
<td>Moore 2013, 150-5</td>
</tr>
<tr>
<td>15</td>
<td>9.19</td>
<td>Cantick Head, S. Walls</td>
<td>Double house</td>
<td>1</td>
<td>800m</td>
<td>Lamb 1989, 19, no. 52;</td>
</tr>
<tr>
<td>24</td>
<td>9.21</td>
<td>Cata Sand, Sanday</td>
<td>Indeterminate</td>
<td>14</td>
<td>1,000m</td>
<td>Cummings et al 2016</td>
</tr>
<tr>
<td>5</td>
<td>9.17</td>
<td>Brae of Muckquoy, Redland</td>
<td>Indeterminate</td>
<td>Unknown</td>
<td>1,000m</td>
<td>Richards, Downes et al 2016</td>
</tr>
<tr>
<td>Site No.</td>
<td>Figure No.</td>
<td>Site Name</td>
<td>House type</td>
<td>Minimum No. of houses</td>
<td>Approximate distance to nearest burnt mound</td>
<td>Reference</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>---------------------------------</td>
<td>------------</td>
<td>-----------------------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>9</td>
<td>9.18</td>
<td>Taing of Beeman, Tankerness</td>
<td>Double house</td>
<td>1</td>
<td>1,000m</td>
<td>Lamb 1987, 24, no. 109;</td>
</tr>
<tr>
<td>21</td>
<td>9.20</td>
<td>Berstness, Westray</td>
<td>Roundhouses</td>
<td>2</td>
<td>1,000m</td>
<td>Moore &amp; Wilson 2008a &amp; 2009a</td>
</tr>
<tr>
<td>6</td>
<td>9.17</td>
<td>Crossiecrown, St. Ola</td>
<td>Indeterminate</td>
<td>1</td>
<td>1,500m</td>
<td>Card et al 2016</td>
</tr>
<tr>
<td>7</td>
<td>9.17</td>
<td>Smerquoy, St Ola</td>
<td>Indeterminate</td>
<td>1</td>
<td>1,700m</td>
<td>Gee et al 2016</td>
</tr>
<tr>
<td>10</td>
<td>9.18</td>
<td>Site 5, Skaill, Deerness</td>
<td>Double house</td>
<td>1</td>
<td>2,000m</td>
<td>Buteux 1997c</td>
</tr>
<tr>
<td>19</td>
<td>9.20</td>
<td>Kraa-Tooies, Papa Westray</td>
<td>Oval house</td>
<td>1</td>
<td>2,200m</td>
<td>Downes 1998c</td>
</tr>
<tr>
<td>3</td>
<td>9.17</td>
<td>Nessbreck, Corrigall</td>
<td>N/A: souterrain</td>
<td>Unknown</td>
<td>3,200m</td>
<td>Lee in prep</td>
</tr>
<tr>
<td>13</td>
<td>9.19</td>
<td>Whaness Burn, Hoy</td>
<td>Double house</td>
<td>2</td>
<td>3,400m</td>
<td>Lamb 1989, 13, nos. 10 - 14</td>
</tr>
<tr>
<td>1</td>
<td>9.17</td>
<td>Point of Buckquoy, Birsay</td>
<td>Indeterminate</td>
<td>Unknown</td>
<td>4,800m</td>
<td>Morris 1989, 71-107</td>
</tr>
<tr>
<td>20</td>
<td>9.20</td>
<td>Holm of Faray</td>
<td>Double house</td>
<td>1</td>
<td>None in island</td>
<td>Lamb 1984, 21, no. 86</td>
</tr>
<tr>
<td>25</td>
<td>9.22</td>
<td>Linga Holm</td>
<td>Double house</td>
<td>1</td>
<td>None in island</td>
<td>Lamb 1984, 34, no. 215</td>
</tr>
<tr>
<td>26</td>
<td>9.22</td>
<td>Linga Holm</td>
<td>Oval house</td>
<td>1</td>
<td>None in island</td>
<td>Lamb 1984, 34, no. 212</td>
</tr>
</tbody>
</table>
If burnt mounds are unequivocally associated with Bronze Age settlements and are more likely to have survived than the other structural indications of settlement and use, then every Bronze Age settlement in Orkney might be expected to have a burnt mound nearby, but this is clearly not the case (Table 9.6). However in Orkney’s relict landscapes 86% of definite/probable Bronze Age settlement sites are within 500m of a burnt mound (Table 9.2). The surviving relict landscapes may not be representative of the former pattern of burnt mounds and other Bronze Age settlement evidence across Orkney as a whole, but there are no obvious reasons why this should be the case. A number of factors may provide explanations for the apparently ‘missing’ burnt mounds in the vicinity of the 64% (18/28) of Orkney’s recorded Bronze Age settlement sites:

- Lack of recent field survey: this affects around 50% of the land area of Orkney (Section 3.9).
- In surveyed areas, the difficulty of identifying undisturbed burnt mounds in improved grassland or rough heathland/heather: although the burnt stone and black matrix of a burnt mound is obvious if disturbed, if undisturbed they can be to distinguish (e.g. Figure 9.23).
- Limited excavation: excavation of a settlement site only, without associated research on its environs e.g. lack of geophysical or field survey around excavated sites.
- Destruction by coastal erosion: in cases of settlement sites located close to the shore or actively eroding, an associated burnt mound may already have been destroyed.
- Obscuration by landscape changes: for example around settlement sites partially revealed by dune deflation a burnt mound may remain concealed; burnt mounds may be obscured by peat coverage or other factors e.g. modern buildings, even forestry (e.g. Round Howe: Section 7.12.3).

Table 9.7 below presents a synopsis of possible explanations for the absence of a burnt mound at each of the settlement sites in Table 9.6 that lacked a
burnt mound within 500m of its main structure. This shows that theoretically the absence of burnt mounds at all the affected sites may be explained; furthermore that the majority of sites (15/18) have multiple factors that could influence the non-detection/survival of a burnt mound at their locations.

With the exception of Quandale283, all of the burnt mounds in the relict landscapes (Table 9.2) lie within 250m of either a probable Bronze Age settlement site or a prehistoric settlement site that has not been assigned to period. In the rest of Orkney there are a further 72 recorded unassigned prehistoric settlements within 500m of a burnt mound (Table 9.5). From this, it seems apparent that at least some of these 72 sites may have Bronze Age components.

283 No settlement sites survive in Quandale as discussed in Section 5.6.
Table 9.7 Factors other than a genuine absence which may influence the lack of a burnt mound in proximity to a Bronze Age Settlement, as listed above. An ‘X’ in the column indicates that the identified factor applies to that particular site.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>No recent/extensive survey</th>
<th>Undisturbed pasture/heath/peat</th>
<th>Limited excavation</th>
<th>Coastal erosion</th>
<th>Other obscuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>St Boniface, Papa Westray</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Round Howe, St Andrews</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Peerie Hill, Sandwich</td>
<td>X</td>
<td></td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Cantick Head, S. Walls</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cata Sand, Sanday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Brae of Muckquoy, Redland</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Taing of Beeman, Tankerness</td>
<td>X</td>
<td></td>
<td></td>
<td>N/A</td>
<td>X</td>
</tr>
<tr>
<td>Berstness, Westray</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crossiecrown, St. Ola</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Smerquoy, St Ola</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site 5, Skaill, Deerness</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Kraa-Tooies, Papa Westray</td>
<td>X</td>
<td></td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Nessbreck, Corrigall</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whaness Burn, Hoy</td>
<td>X</td>
<td></td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Point of Buckquoy, Birsay</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holm of Faray</td>
<td>X</td>
<td></td>
<td></td>
<td>N/A</td>
<td>X</td>
</tr>
<tr>
<td>Linga Holm</td>
<td>X</td>
<td></td>
<td></td>
<td>N/A</td>
<td>X</td>
</tr>
<tr>
<td>Linga Holm</td>
<td>X</td>
<td></td>
<td></td>
<td>N/A</td>
<td>X</td>
</tr>
</tbody>
</table>
9.9 Burnt mounds and funerary sites

The relationship between burnt mounds and barrows was examined by Melia Hedges (1977, 144), who accepted (following Hedges, J 1975, 77-82) the view that burnt mounds were themselves domestic houses, and suggested that there was a similarity ‘beyond the bounds of chance’ between the distribution of burnt mounds and that of barrow cemeteries, on the grounds that the latter were the burial places of the people who inhabited the former. Melia Hedges’ (1977, 141, fig.7) accompanying distribution map shows however that any association is manifestly weak. A more detailed survey of 14 of these barrow cemeteries with a view to supporting this assertion (Parry 1977) fails to convince: only three cemeteries had a burnt mound within 500m, in the other examples there was no burnt mound nearer than 1km. Closer scrutiny shows that only 46/728 of Orkney’s recorded barrows (6%) and 17/98 of unobtrusive cists (17%) are within 500m of a burnt mound (Table 9.5).

These relatively modest figures suggest that burnt mounds and barrows do not have a particularly close relationship. Parts of the West Mainland (Figure 9.17) and the East Mainland (Figure 9.18) exhibit areas with barrows where burnt mounds appear to be absent and vice versa.

Barrows and burnt mounds appear however to be closely related in Orkney’s relict landscapes with 80% of barrows (24/30) located within 500m of a burnt mound (Table 9.2); therefore there may be other factors involved, not least the likely widespread destruction of both types of sites. Both Barry (1805, 94-5) and Thomas (1852, 90) commented on the ubiquity of barrows in all locations throughout Orkney; the Orkney Barrows Project however found that the majority of recorded barrows were sited on hill slopes, ridges, false summits and terraces (Downes 2005, 55-6). This disparity in the barrow

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284 There are now 28 Bronze Age settlements known, of which 46% are within 500m of a funerary site; however 39% are over 1.2km away: see Appendix 13, Table A13.5.
285 Relying on a broad brush approach rather than detailed analysis: the distribution map in support of this conclusion shows Orkney at a scale of 1:484,000 (Hedges 1977, 141, fig.7).
286 At 60m, 200m and 500m (Parry 1977).
287 Excluding the Links of Noltland cemetery as a possible distorting factor.
distribution as reported over 150 years may indicate that the extrapolations from relict landscapes (Section 5.7; Table 5.3) of likely original numbers of such sites prior to later destruction and removal are not an exaggeration. Other factors may have biased the recording of barrows and burnt mounds in some areas, however, for example the antiquarian interest in opening barrows (Section 3.4.2), the failure of the Ordnance Survey in the nineteenth century to record burnt mounds (Section 3.6.1) or any combination of other factors, such as those influencing the record of Bronze Age sites in Burray (Section 4.8) and the poor survival/recording of barrows in the island of Eday as discussed above (Section 5.8).

There is thus only limited circumstantial evidence to suggest a possible direct association between burnt mounds and funerary sites. At Holland, St. Ola (Neil 1981) a group of mounds including both burnt mounds and barrows was disturbed by ploughing. Two cist burials, dated to the 2nd millennium BC (Chart 9.1) were excavated from one of the barrows; the primary cist was set into and sealed by a layer of burnt mound material, interpreted as having been redeposited from one of the nearby burnt mounds (ibid). This could be interpreted as a cist inserted into a pre-existing burnt mound; whether this was significant or simply a fortuitous reuse of a convenient mound is not clear; none of the other nearby mounds were excavated. Similarly, in a barrow at Mousland, Stromness, the basal deposit of cremated bone in the cist was overlain by pyre debris and capped by a closely packed layer of larger pieces of burnt stone, described as ‘chips of sandstone similar to those commonly forming burnt mounds’ (Downes 1994a, 147 & 151). The presence of ‘considerable quantities’ of burnt stone mixed with ash and cremated bone within the body of the one of the barrows at the Knowes of Quoyscottie was noted, and other barrows there also contained burnt stone (Hedges 1977, 131-3). The sources of the burnt stone at Mousland and the Knowes of Quoyscottie are unclear, although it may have been brought from burnt

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288 As the speculative figures for the original numbers of both burnt mounds and barrows show (Section 5.7; Table 5.3) recording/survival for barrows may be between 21% – 45% and for burnt mounds from 35% – 43% of original numbers.
mounds elsewhere. The nearest known burnt mounds at Mousland are 1.6km to the east, at Burn of Una (HY21SE36); and 0.8km south of Quoyscottie, at Beaquoy (HY32SW11). If, on the other hand, the stone was burnt as part of the cremation process it must have been deliberately added to the cremation pyre, then retrieved for use in the construction of the mounds. Alternatively the recovery of the burnt stone may indicate that the cremation pyre had been built on an area of bedrock, such that pieces of fractured rock were collected with the cremation pyre debris for deliberate inclusion. Either case might support the attribution of some ritual significance to burnt stone (cf. Doughton 2014, 222-40), but such inclusions of burnt stone within funerary sites have not been reported from other Orkney sites.

9.10 Conclusion

Burnt mounds are demonstrably predominantly of Bronze Age date in the Northern Isles (Section 9.1; Chart 9.1); but their functions, precise dates and significance remain obscure. All of the functions proposed for burnt mounds (Section 9.2) are plausible, and, as Barber (1990b, 101) has noted, there is no reason that all burnt mounds should have fulfilled the same function. The distribution patterns of burnt mounds and funerary sites present apparently contradictory evidence (Section 9.9): contra Hedges (1977, 144) burnt mounds are not widely recorded close to surviving Bronze Age funerary sites when the whole of Orkney is considered (Section 9.8; Table 9.5) but the reverse is none the less true within Orkney’s relict landscapes (Section 9.7; Table 9.2; e.g. Figure 9.10) or at sites such as the Links of Noltland (Figure 7.6). It is clear that factors relating to differential survival and recording may have influenced distribution patterns (Section 9.9). If burnt mounds fulfilled a funerary function such as enabling the preparation of the corpse for burial through its ritual cleansing, this could have been carried out either close to the deceased's residence, at a communal site, or close to the site of burial, thus allowing the burnt mound to have been situated in a variety of different locations. Alternative functions related to hide processing, bathing, brewing or cooking might each present different imperatives for the location of that
activity and none lends itself readily to identification archaeologically.

The persistence of burnt mounds throughout the Bronze Age suggests they played a significant and integral role in Bronze Age society, and, as noted by Ó Néill (2009, 201) ‘a large proportion of the contemporary population must have been reasonably familiar with the activities that took place there’. Chronological uncertainties hinder discussion of the role that burnt mounds played in relationship to settlement sites: on current evidence they may have functioned alongside all of Orkney’s identified Bronze Age houses types (Charts 7.4 & 9.1), although double houses are more likely than other houses to be associated with a burnt mound within 500m (Table 9.5).

Function is likely to have influenced location in terms of distances from settlement sites; some burnt mounds appear to be linked to single houses, whereas others suggest either communal roles or a function which required, whether for ritual or practical reasons, the burnt mounds to be situated at a greater distance from domestic structures. Neither the appearance of burnt mounds in the Early Bronze Age nor their apparent decline at the end of the Bronze Age can be definitely linked to any Bronze Age specific, archaeologically detectable, pragmatic function (Section 9.4) nor to specific environmental changes (Section 2.2). The most significant (archaeologically detectable) cultural differences during this period are changes in funerary practices (Section 6.2.2), and it is possible that burnt mounds fulfilled a ritual purpose relating to Bronze Age funerary rites – whether relating to the preparation of the corpse or even the ritual bathing of the mourners – which then declined with the changing rites of the Iron Age (Section 9.4). Limited support for this suggestion may come from the burnt stones included in some Bronze Age burial contexts (Section 9.9), which may have ritual significance (cf. Doughton 2014, 222-40).

In the relict landscapes of both Orkney (Section 9.7) and Shetland (e.g. West Burra: Hedges 1984b; Section 9.5.2; Fair Isle: Hunter 1996a; Section 9.5.3) a relationship between burnt mounds and definite/probable Bronze Age settlement sites may be identified, with burnt mounds typically sited within
250m – 500m of settlement sites. This association also appears likely to hold true in some parts at least of mainland Scotland (Section 9.5.4), perhaps indicating a broad commonality of locational preferences in which reasonable proximity or convenience of access was desirable.

Ratios of burnt mounds to individual houses vary in the relict landscapes of both Orkney (Table 5.3) and Shetland; from one burnt mound to one Bronze Age house (e.g. Shelly Knowe, Sanday: Dockrill, Gater & Simpson 2007); the Loch of Tankerness (Lamb 1987, 25, no. 113); the Ferny Cup, Fair Isle (Hunter 1996a, 49-52; Section 9.5.3) and several of the West Burra, Shetland sites (Hedges 1984b & 1986; Section 9.5.2; Table 9.1), to at least four houses associated with one burnt mound e.g. the Links of Noltland (Moore & Wilson 2011a; Section 7.6.3) and some of the other sites in West Burra (Hedges 1984b; Table 9.1). This variation may be linked to localised social factors, possibly suggesting that the possession of a personal/individual burnt mound might have been indicative of status.

Where recorded Bronze Age settlements are not obviously associated with any burnt mound (Section 9.8; Table 9.6), there are possible reasons for this absence which can be related to aberrations in their survival and/or in archaeological recording strategies (Table 9.7). A genuine absence of a burnt mound near a given broadly-contemporary settlement could be related to the status, ambitions or occupation of the houses’ inhabitants. Wholesale destruction of sites during the course of agricultural improvement (Chapter 4) is readily apparent from surviving distributional evidence, and the speculative extrapolations (Section 5.7) suggesting that only around 2 – 3% of Orkney’s original Bronze Age settlements survive are plausible. Burnt mounds survive located preferentially on areas of prime land (as indicated by the 1750 hill-dykes) (Section 9.7.1; Table 9.3 and associated Figures): those areas that have been historically settled recurrently and consequently subjected to the earliest and most intense agricultural improvement, with concomitant site destruction. The survivability of burnt mounds in an improved landscape (e.g. Barber & Russell-White, 1990a; Hunter 1991 & 1996a) is borne out by the contrast between the results from the selected
relict landscapes and those from the wider Orkney landscape (Sections 9.7 & 9.8). Even if the majority of currently recorded Bronze Age settlements in Orkney genuinely lacked a burnt mound (Section 9.8), it nevertheless remains possible that every burnt mound in Orkney indicates the unrecognised or former presence of a Bronze Age settlement site placed within no more than 500m of it (see Section 9.7).
Chapter 10 Conclusion

10.1 Introduction

This thesis set out to address the question of whether Orkney's Bronze Age was impoverished in terms of its field evidence and artefactual records relative to neighbouring areas; or had a poor archaeological record as a result of either relative neglect by archaeologists or particular attrition to the evidence through subsequent land use. In doing so it provides the first comprehensive synthesis of the Orcadian Bronze Age.

All forms of surviving archaeological evidence recognized to date have been reassessed, including excavated settlements, burnt mounds, burials, land boundaries and artefacts. A review of the formation processes of the archaeological record in Orkney has been undertaken, and a number of biases have been identified. I have conducted the first thorough investigation of the impact of post-medieval agricultural practices on the survival of Orkney's archaeological sites. In particular, areas of relict landscapes with good survival of Bronze Age features have been identified and examined for insights into projected original site densities, with the results then extrapolated to the whole of Orkney. The significance of burnt mounds and their relationships with other Bronze Age sites has been examined, and their potential as proxies for the location of destroyed Bronze Age settlements has been explored for the first time in an Orcadian context.

10.2 Results

The formation processes of the archaeological record in Orkney have been found to be subject to a set of reinforcing biases.

- Prior to the 1878 – 80 surveys for the 1st edition OS maps (Section 3.6) coherent records are more or less completely lacking for large areas of Orkney, a period that saw the commencement of intensive agricultural
improvement and concomitant destruction of archaeological sites (Section 4.3 & 4.4).

- Biases persist, relating to the idiosyncratic recording of archaeological monuments during the surveys for the 1st edition OS maps; the work of the RCAMS (1946) perpetuated gaps in coverage in some areas, simply because no sites had been recorded there by the Ordnance Survey (Section 3.7.1).

- While some areas have seen more recent survey, around 50% of Orkney has not been systematically archaeologically surveyed since the surveys for the Orkney Inventory (RCAMS 1946) in the 1920s – 30s (Section 3.8.1).

- Prior to the last decades of the twentieth century archaeological records were made on an ad hoc basis. The antiquarian preference for opening impressive mounds led to a disproportionate concentration on brochs and chambered tombs, whilst the majority of sites, including many that are likely to have been Bronze Age, were removed without record (e.g. Petrie 1866c, 216; Sections 3.9 & 4.4.6).

This research has demonstrated that, contrary to implicit assumption, although some archaeological sites in Orkney have survived in an excellent state of preservation not all archaeological sites have done so. It thus follows that:

- Current distribution is not an accurate reflection of past distribution and does not directly indicate the original density of such sites.

- As I have shown in Chapter 4, destruction of archaeological sites took place, largely unrecorded, on – in figurative terms – an industrial scale throughout Orkney.

- The scale and thoroughness of agricultural improvements from the early-mid nineteenth century onwards (e.g. Smith 1843, 18) and their effects on archaeological survival have not hitherto been properly appreciated or understood by the archaeological community (Section 4.4).
• Through failing to engage with the mechanisms of this destruction the archaeological community has also failed to appreciate its impact on the archaeological record.

• Antiquarian accounts (e.g. Barry 1805, 94-5; Davidson & Henshall 1989, 15; Petrie 1866c, 225; Thomas 1852, 90 & 122) and agricultural records (e.g. O’Dell 1939; Farrall 1874; Shirreff 1814) provide corroboration for both the pre-improvement ubiquity of archaeological monuments and the speed and scale of destruction broadly contemporary with those accounts (Sections 4.4 & 4.9).

• This research has further shown that there are areas where exceptionally catastrophic unrecorded destruction has taken place, influenced by locally specific factors e.g. in the islands of Burray (Section 4.8) and Eday (Section 5.8).

This highlights the dangers of considering modern site distribution to be an accurate reflection of prehistoric distribution. I would suggest that the word ‘distribution’ should never be employed in an archaeological context in Orkney (or indeed elsewhere) without the qualifying prefix ‘surviving’; or, perhaps more accurately (in the light of Chapter 3), as ‘recorded surviving’.

This research has also shown that despite the large scale destruction of sites during agricultural improvements there are small pockets of survival where Bronze Age relict landscapes may be examined for clues as to original site densities (Chapter 5). Survival here can be attributed to their marginal locations and lack of intensive exploitation by man in the post-medieval period.

Key characteristics of Orcadian relict landscapes include:

• The majority are located outside the prime settlement areas (defined by the townships enclosed by the hill-dykes depicted on Mackenzie’s (1750) charts: Table 5.2).

• All of these more marginal locations (e.g. the Tofts Ness peninsula: Section 5.5.1; Auskerry: Section 5.4) were densely occupied during the
Bronze Age, suggesting a concomitant high density of occupation in more amenable locations.

- Speculative extrapolations of original Bronze Age site densities across Orkney based on the numbers of sites identified within these relict landscapes (Table 5.3) support the findings of Chapter 4 regarding the scale of destruction. Only around 2 – 3% of Bronze Age settlement sites, perhaps 21 – 45% of barrows and 35 – 43% of burnt mounds are likely to have been recorded as a maximum: the large numbers of the latter two sites surviving in some of the relict landscapes (e.g. Quandale: Table 5.3, row 7) hints at much poorer survival elsewhere.

Burial-related evidence was examined and summarised in light of the change in burial rites over the course of the 3rd millennium BC; the limited artefactual assemblage was examined to discover any indications in the surviving burial record of social stratification and the implications.

Key characteristics of Bronze Age burials may be summarized as follows:

- Reusable cists may represent a transitional form (Section 6.2).
- Chambered tombs continued to attract sporadic attention in the Chalcolithic/Early Bronze Age (Section 6.2.1). This reuse may suggest that a memory of their earlier significance was preserved and that links with the past were important; conversely it may be a pragmatic appropriation of a convenient tomb, mound or location.
- At Taversoe Tuick, the destructive remodelling of the upper chamber in the Early Bronze Age contrasts with the apparently respectful use of the passageway to the undisturbed lower chamber as (in effect) a reusable cist (Section 6.2.3). This may imply some change in attitudes.

There was a rejection of interment in the types of funerary urn common in mainland Scotland in favour of steatite burial urns (Sheridan 2007a, 172; Section 6.3.4).
This hints at a regional trajectory emphasising links with Shetland in preference to other influences.

Indications exist in the surviving burial record of wealth or social stratification, if not necessarily of the presence of social or political hierarchies.

There is a marked contrast between the few burial sites with exotic grave goods indicative of prestige or high status, notably the gold and amber from the burial within Barrow 1 at the Knowes of Trotty (Sheridan et al 2003; Section 6.3.1) (which merits comparison with the rich burials of the Wessex region) and the majority of burials, which are unaccompanied.

There may be selectivity in the individuals interred in mounds or other prominent locations (e.g. the large mounds surrounding the Ring of Brodgar: Section 6.1.4), related to status differences.

There is a notable dearth of metalwork, with only ten pieces securely provenanced to Orkney spread throughout the whole of the Bronze Age (Section 6.3.3); the majority (seven out of ten) were votive deposits recovered from peat bogs.

This total includes several items that are rare elsewhere, notably the Heathery Howes dagger (Cursiter 1887, 340; Figure 6.9b), with its links to rich burials in the South of England/Wessex area (Gerloff 1975, 70-3). The high number of prestige items in Orkney’s small collection of metalwork (five out of ten provenanced pieces: Section 6.3.3) suggests that some sections of society participated in wider trends.

Explanations for this paucity/status dichotomy may lie in the lack of evidence for, or recovery of, votive deposits from watery locations both in and around Orkney. Such deposits may exist undiscovered, most obviously in the major lochs adjoining the Brodgar peninsula (a
Neolithic focus that remained important for Bronze Age funerary and settlement activity: Section 4.2.4 & 6.1.4), and in the sea.

- Limited utilitarian uses for metal woodworking tools in a largely treeless environment may have hindered the large-scale adoption of such technology.

The evidence in support of the current paradigm of the ‘fragmentation’ of society at the end of the Neolithic (e.g. Richards 1998, 531; Richards, Downes et al 2016, 243-6) is equivocal. Salient evidence includes:

- Based on the excavated evidence (Chart 7.1; Table 7.2) the most significant dislocation in the Orcadian Neolithic takes place in the late 4th/early 3rd millennium cal BC (Section 7.3.6), broadly synchronous with the end of the main phase of burial activity at Neolithic chambered tombs (Section 6.2.1), some centuries before the end of the Neolithic in the islands.
- Dislocation identified at some sites in the mid-late 3rd millennium BC may be environmentally related (e.g. aeolian erosion at Skara Brae: Section 7.3.3) and may thus not be directly pertinent to socio-political concerns.
- Broadly similar numbers of sites exhibit continuity as exhibit discontinuity over the late 3rd/early 2nd millennium cal BC, across the period for which fragmentation is claimed (Section 7.3.5; Chart 7.2).
- There is scope at some apparently abandoned Neolithic settlements for undetected shifts in occupation during the Early Bronze Age (e.g. the large unexcavated settlement focus at Pool, Sanday: Hunter 2007c, 16; Section 7.3.2), such that the apparent abandonment may be an artefact of the excavation strategy.
- Continuity at sites in marginal locations (e.g. Tofts Ness: Dockrill, Bond et al 2007) contrasts with apparent discontinuity at the high-status ceremonial complex at the Ness of Brodgar (Card et al 2017; Section 7.3.4), suggesting that all levels of society were not equally affected by such changes as did take place.
Meaningful discussion of the form and extent of Bronze Age settlement patterns and the development of domestic structures is inhibited by the paucity of published excavated settlement sites and concomitant lack of radiocarbon dates. This makes it difficult to refer to ‘the Bronze Age’ as anything other than a unitary period (Section 7.2).

As a result, at the present time:

- The identified Bronze Age house types – the double, oval and roundhouse – could all have co-existed (Chart 7.4).
- The double house is securely attributable to the Bronze Age (Section 7.7) but not closely dated in either Orkney or Shetland; it may be tentatively suggested that the adoption of this form in Orkney is a transplant of a Shetlandic structural form into Orkney soil (Section 7.8.1 & 7.8.2).
- There is evidence to support the introduction of roundhouses by the Late Bronze Age (Section 7.9); and possibly (albeit very tentatively) by the Middle Bronze Age at Round Howe, which may have been constructed prior to c.1380 – 1120 cal BC (Section 7.12.3).

There are hints that Orkney was not isolated from the trend towards enclosure occurring elsewhere in Britain during the Middle/Late Bronze Age (Section 7.14).

- Enclosed settlements may develop by the early/mid-2nd millennium BC.
- The large (possibly palisaded) enclosed settlement at Whaness Burn A, occupation of which is loosely associated with a radiocarbon date of c.1720 – 1170 cal BC (Section 7.12.2), suggests defence may have been a consideration by this period. Round Howe, Tankerness may represent a Middle Bronze Age example of defended roundhouse (Section 7.12.3).
- Promontory forts (Section 7.13) remain enigmatic and cannot be definitively assigned to period in the absence of excavation.
High-status settlement sites are conspicuous by their absence in the Orcadian Bronze Age.

- It may be suggested however that the prime settlement locations occupied by Orkney’s 135 Iron Age brochs (Section 7.15; Table 7.6) would not have been overlooked in the Bronze Age, especially given the contemporary occupation of a wide range of marginal landscapes, as evidenced by the relict landscapes discussed in Chapter 5. Limited excavation hinders detailed discussion here; Bronze Age occupation may be suggested at some sites and can be demonstrated at a restricted number of others (e.g. St Boniface Church: Lowe 1998).

- The securely dated Early Bronze Age souterrain at Nessbreck, Corrigall (Section 7.11), a form that continued into at least the Middle Iron Age (e.g. Hedges 1987a, 25-9), lends some support to the suggestion of continuity of settlement at some locations, and the use of some categories of site over more extended timespans than is usually envisaged.

The foundation of successful subsistence practices in Bronze Age Orkney was the anthropogenic creation of deep fertile soils, which enabled the viability of settlements from the 3rd to the 2nd millennium BC and beyond (Section 8.2).

- The considerable effort expended by the Bronze Age populations of areas such as Tofts Ness (Dockrill 2007b; Dockrill & Bond 2009) and the Links of Noltland (Hamlet 2014; McKenna & Simpson 2011) to ensure the successful continuation of agriculture in these marginal locations provides circumstantial support to the premise that Bronze Age settlement in Orkney had spread beyond the prime settlement areas. Similarly only 39% of all recorded Bronze Age settlement sites are located on the prime historically settled land inside the 1750 hill-dykes (Table 9.4).

- The most obvious explanation for this exploitation of marginal areas is population pressure, but the pattern of landscape use could have been caused by social organisation, with access to the prime settlement
areas subject to some form of control (Section 5.9). The development of Iron Age competitive elites in the Northern Isles (cf. Dockrill & Bond 2015b, 493-7; Sharples 1984, 121-2; Section 7.15) may therefore have had earlier origins.

Sub-peat dykes and enclosures (Section 8.4) provide circumstantial evidence that Bronze Age settlement was widespread, although chronological data is largely absent.

- Management of the landscape by its subdivision with recognized boundaries was therefore important.
- Treb dykes (Section 8.5), whilst almost certainly prehistoric, cannot, contra Lamb (1983a), be attributed to the Bronze Age on the available evidence and are reinterpreted here as probably largely Iron Age, perhaps associated with broch territories, although this does not necessarily preclude their earlier development in some instances (cf. Section 7.15).

Burnt mounds are demonstrably Bronze Age in the Northern Isles (contra Anthony 2003; Section 9.1.1). Key points to be drawn from the record of burnt mounds include:

- On the limited available chronological evidence, they may have functioned alongside all of Orkney’s identified Bronze Age house types (Section 7.10; Charts 7.4 & 9.1); although tentatively a closer link with double houses may be posited (Table 9.5).
- Their apparent persistence and ubiquity throughout the Bronze Age suggests they were an inextricable part of the pattern of site use that underpinned society.
- Their appearance and duration, corresponding with changing funerary practices at the beginning and end of the Bronze Age, may suggest they fulfilled a ritual or religious function, perhaps relating to the preparation of the corpse for burial or ritual bathing of the mourners, rather than a purely utilitarian one.
Burnt mounds may have fulfilled many other functions which need not have been mutually exclusive; the function of particular examples is likely to have influenced their location in terms of distances from settlement sites (Sections 9.2 & 9.6.3).

- Some burnt mounds appear to be linked to single houses.
- Others suggest either communal roles or a function that required, whether for ritual or practical reasons, the burnt mounds to be situated at a greater distance from domestic structures.

A relationship between the location of barrows and burnt mounds appears to exist in the relict landscapes of Orkney (Chapter 5).

- A total of 80% of barrows (24/30 examples) are located within 500m of a burnt mound in the relict landscapes (Section 9.7; Table 9.2).
- The incorporation of burnt stones into some burial contexts (e.g. Downes 1994a; Neil 1981; Section 9.9) provides limited circumstantial evidence of a direct association between burnt mounds and funeral rites.

In the wider Orkney landscape, however, this relationship between burnt mounds and funerary sites cannot be demonstrated.

- Only 6% of barrows overall are located within 500m of a burnt mound in the wider landscape (Section 9.9).
- This is likely to relate to issues of differential survival/recording of different classes of site, particularly in light of antiquarian reports which recount the ubiquity of barrows in all locations throughout Orkney (e.g. Barry 1805, 94-5; Thomas 1852, 90; Section 4.9).

Similarly, a relationship between Bronze Age settlement sites and burnt mounds exists in Orkney’s relict landscapes:
• The majority (86%) of identified definite/probable Bronze Age settlement sites in Orkney’s relict landscapes are located within 500m of a recorded burnt mound (Section 9.7; Table 9.2).

This relationship cannot be demonstrated elsewhere in Orkney:

• Overall 64% (18/28) of Orkney’s recorded Bronze Age settlement sites do not have a burnt mound within 500m of them (Section 9.8; Table 9.6).

• Explanations for this dichotomy were advanced under five headings (see Table 9.7) including e.g. differential survival, lack of survey and identification issues; it was found that at least one of these factors was applicable at all 18 of the settlement sites which lacked a burnt mound, and that at 15 of the 18 sites multiple factors may have influenced the lack of, or the failure (to date) to detect, a burnt mound within 500m.

It nonetheless remains possible that the presence of a burnt mound in Orkney can be used as a proxy to indicate the past presence of a Bronze Age settlement site within 500m. This is not unreasonable since, as noted above, speculative extrapolations (Section 5.7) suggesting that only around 2 – 3% of Orkney’s original Bronze Age settlements survive are plausible.

10.3 Areas for further research

It has become apparent during the course of the research conducted for this thesis that there is a limited data set on which to base analyses, and poor chronological resolution, especially relating to non-funerary aspects of the Orcadian Bronze Age. In improving both these circumstances, the ongoing excavation at the Links of Noltland, Westray (Moore & Wilson 2011a; Section 7.6.3) is exceptionally important and its publication may have the potential to elucidate a number of questions regarding the Neolithic/Chalcolithic/Bronze Age transition, the development and chronology of Bronze Age structural forms and the role(s) of burnt mounds within a settlement.
There are several areas where targeted survey supplemented by research excavation would be particularly beneficial. The enclosed settlement at Whaness Burn, Hoy (Section 7.12.2), should be a high priority for further research; not least to resolve the question of the possible appearance of enclosed and potentially defended settlement sites prior to the Orcadian Iron Age. A similar case could be made for the excavation of one of Orkney’s promontory forts, particularly perhaps Nether Bigging (Section 7.13.3). Lidar survey might also disclose whether such sites are more widespread than they appear.

Trebl dykes (Section 8.5) remain enigmatic. The surviving examples are increasingly reduced by agricultural activities. With the passage of time the opportunity for clarification of their chronology and function diminishes: their complete destruction without record threatens unless one of the better-preserved examples is selected for excavation, particularly aimed at recovering dating evidence from it. Aerial survey might help to disclose the locations and courses of the examples that have been lost unrecorded.

Sub-peat dykes have been identified in many areas of Orkney (Section 8.4) but not systematically recorded. A comprehensive survey and small-scale excavations aimed at recovering samples for radiocarbon dating and environmental reconstruction would elucidate their nature.

The well-preserved Dyke of Sean, Stenness (Section 8.6; Figure 8.14) lacks dating evidence that might place it in context in relation to the numerous sites of the Brodgar peninsula, including the Ring of Brodgar and its associated Bronze Age funerary landscape (6.1.4). In particular its relationship or otherwise with the nearby extensive (5ha) Wasbister Bronze Age settlement (Section 4.2.4) requires clarification by excavation.

The question of the ‘missing’ high-status settlement sites, particularly those that may be obscured by later structures such as brochs (Section 7.15), might be resolved by targeted recording and sampling of coastally eroding broch sites. Precisely this approach has been previously proposed as a cost-effective
response to the destruction of deeply-stratified extensive sites by coastal erosion by Lowe (1998, 209) following his work at St Boniface Church, Papa Westray but this has seen only very limited implementation (e.g. Dockrill et al 2010 & 2011).

10.4 Conclusion

This thesis has demonstrated that Orkney had significant Bronze Age settlement and associated activity but that comparatively few sites have been excavated and/or published. This, together with the monumentality of some Orcadian Neolithic and Iron Age remains, makes the Bronze Age sites appear trivial in comparison.

The luminosity of the Orcadian Neolithic (Barclay 2001) casts a long shadow from which the Bronze Age of the islands struggles to emerge. Arguably, this has led to an overemphasis on investigations of spectacular sites such as the Ness of Brodgar. There is no doubt that such deeply stratified remains can be highly informative but less well-understood periods and their interfaces also require greater research. Orkney possesses great resources for archaeological investigation but while research projects target ostentatious remains, the Bronze Age is destined to relative obscurity. As this thesis has shown, however, it was a period neither of unrelenting raininess nor incessant inactivity.
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