Excavations of a Bronze Age landscape and a post- Roman industrial settlement

1953 - 1961,

Gwithian, Cornwall

Assessment of key datasets (2005 - 2006)

VOLUME I

Historic Environment Service (Projects)

Cornwall County Council

A Report for English Heritage

(the ALSF scheme)

Excavations of a Bronze Age landscape and a post-Roman industrial settlement 1953 - 1961,

Gwithian, Cornwall

Assessment of key datasets (2005 - 2006)

Volume I

Jacqueline A Nowakowski BA, FSA, MIFA

With help and contributions from Polydora Baker, Alex Bayliss, C Bronk Ramsey, G Cook, Paul Davies, Glynis Edwards, Vanessa Fell, Catherine Freeman, Jennifer Foster, Raumes Gallois, Rowena Gale, Erika Guttmann, Derek Hamilton, Andy Hammon, Gareth Hatton, John Hines, Anna Lawson-Jones, Janice Light, Jackie McKinley, Peter Marshall, Stuart Needham, Henrietta Quinnell, Helen Roberts, David Earle Robinson, Ian Riddler, Joanna Sturgess, Vanessa Straker, Roger Taylor, Charles Thomas, Carl Thorpe and Sue Watts

March 2007

Report No: 2007R017

Historic Environment Service, Environment and Heritage,

Cornwall County Council

Kennall Building, Old County Hall, Station Road, Truro, Cornwall, TR1 3AY

tel (01872) 323603 fax (01872) 323811 E-mail hes@cornwall.gov.uk

www.cornwall.gov.uk

Acknowledgements

The Gwithian Archive Project has been funded by the ALSF scheme administered by English Heritage (EH). The project team at the Historic Environment Service (HES, Cornwall County Council) would like to thank the Aggregates team at English Heritage in particular Kath Buxton and Peter (Buzz) Busby, as well as Fachtna McAvoy, Ian Morrison and Vanessa Straker for their support and advice throughout all stages of the project. Mark Barrett gave practical advice on the OASIS database. Tim Evans at ADS has been extremely helpful with the transfer of the digital archive created during this project to AHDS Archaeology, at the University of York.

Many people have contributed to the results of this project. Professor Charles Thomas has played a key role in helping to develop the project together with Henrietta Quinnell. Other key members of the Gwithian archive team based at HES are Joanna Sturgess, Anna Lawson Jones and Carl Thorpe who have done excellent work on updating the primary record. John Smith, Neil Craze, Matt Mossip, James Gossip, Konstanze Rahn, Sean Taylor and Imogen Wood, all at HES, have played valuable supporting roles.

Many thanks are extended to all the specialists who have worked with commitment and enthusiasm on the Gwithian material: Dr Alex Bayliss (EH, radiocarbon dating), Dr Paul Davies (Bath Spa University, land snails), Rowena Gale (charcoal), Dr Erika Guttmann (University of Cardiff, geoarchaeology), Derek Hamilton (EH, radiocarbon dating), Dr Andy Hammon (EH, animal bones), Professor John Hines (University of Cardiff, post-Roman metalwork), Dr Janice Light (marine molluscs), Dr Peter Marshall (ARCUS, radiocarbon dating), Nicola Trzaska-Nartowski (worked bone objects), Stuart Needham (The British Museum, prehistoric clay moulds), Henrietta Quinnell (ceramics, stonework and petrology), Ian Riddler (worked bone objects), Dr Helen Roberts (University of Aberystwyth, OSL dating), Dr David Earle Robinson (EH, pollen), Vanessa Straker (EH, macroplant remains), Dr Roger Taylor (stonework and petrology), Dr Sue Watts (stonework). Anna Tyacke and Jane Marley at the Royal Cornwall Museum, Truro have both been extremely helpful in dealing with the material archive.

Dr Polydora Baker (EH, Faunal analyses), Dr Paul Bidwell (Tyne & Wear museums, Roman pottery), the late Glynis Edwards (EH, conservation), Vanessa Fell (EH, conservation) Dr Jennifer Foster (metalwork) and Catherine Freeman (medieval pottery), Dr Ramues Gallois (University of Exeter, geologist), Gareth Hatton (EH, metallurgical debris), Jackie McKinley (Wessex Archaeology, Bronze Age human and cremated bone), Dr Alison Roberts (Ashmolean Museum, Mesolithic lithics) all gave invaluable help during the initial project in 2003-4.

Within HES, the project has been greatly supported by the valuable advice, practical help and critical input of Peter Rose with additional support from Nicholas Johnson. The project has been managed by Jacky Nowakowski - a Senior Archaeologist within HES (projects).

The views and recommendations expressed in this report are those of the Historic Environment Service projects team and are presented in good faith on the basis of professional judgement and on information currently available.

Cover illustration

General View of the Gwithian study area showing Gwithian sand dunes, Godrevy Headland and Hanson Sand Quarry in 1987 (© Cornwall, County Council, Steve Hartgroves. F12/149).

Photographs and plans in this document © Gwithian Archive and Historic Environment Service

Contents

List of Figures

.

Abbreviations

ADS	Archaeology Data Service
ALSF	Aggregates Levy Sustainability Fund
AMS	Accelerator Mass Spectrometry measurement
BA	Bronze Age
EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
HES	Historic Environment Service, Cornwall County Council
MBA	Middle Bronze Age
NE	north-east
NW	north-west
OASIS	Online AccesS to the Index of archaeological investigationS
OS	Ordnance Survey
OSL	Optically Stimulated Luminescence Dating
PR	post-Roman
RB	Romano-British
RCM	Royal Cornwall Museum, Truro.
SE	south-east
SMR	Sites and Monuments Record
SW	south-west
SWARF	South West Archaeological Research Framework

1 Summary

Detailed assessments of the excavation archives of three key sites investigated at Gwithian in West Cornwall from 1953 to 1961 have demonstrated that the results are highly significant for regional and national research priorities. These results are particularly relevant to research for the 2nd Millennium BC and the 1st Millennium AD. This report summarises the results of post-excavation work on major Bronze Age and post-Roman datasets carried out during 2005-2006. Results of a minor investigation of a Roman period enclosure at Crane Godrevy are discussed. Detailed statements of potential and specific recommendations for future analysis are also presented. This volume is accompanied by a second volume, Volume II, which presents the individual assessment reports produced during work on key and other parts of the entire Gwithian archive carried out between 2003-2006.

2 Introduction

"Gwythian – 'a parish standing near St Ives Baye, much annoyde with the sea sande, which flyeth at lowe water with the winde out the choked haven into the Lande, swallowing up muche of the lande of the inhabitants, to their great impoverishment"

John Norden, *Topographical and Historical Description of Cornwall* 1584 (on describing the Hayle-Gwithian Towans area).

2.1 Project background

This report presents the results of assessment work on a number of datasets from the Gwithian Archive. This programme of work took place between February 2005 and December 2006 and was carried out by a team from the Historic Environment Service (HES, projects, Cornwall County Council).

The project represents the second major programme of post-excavation work which has now taken place on the archive and follows on from an initial appraisal of the entire archive which was carried out by HES in 2003-2004 (see Nowakowski 2004 and see below). The initial project identified significant datasets within the Gwithian archaeological archive which warranted further analysis. This recent programme of work in 2005-2006 has been guided by a project design produced in 2005 (Nowakowski 2005). Some changes to the programme were agreed with English Heritage in February 2006.

Work during this stage has included fieldwork and major preliminary post excavation analysis on the structure and stratigraphy of 3 key sites. It has also included assessments of a variety of artefacts and a pilot scientific dating programme.

2.1.1 A brief history of Archaeological work at Gwithian

A detailed history of the Gwithian project has been presented in earlier reports on this archive (see Nowakowski 2004; Nowakowski 2005). The following brief overview provides a general background.

For over twenty years, an area some 15 sq kilometres, at Gwithian in West Cornwall became the focus for a detailed landscape study which took place between the late 1940s and the 1960s (see Fig.1). At that time, over 70 sites dating from the Mesolithic through to the post medieval periods were identified and studied to various degrees of detail through field survey, field walking, and small and large scale excavations. This programme of research was directed by Professor Charles Thomas. Each site was uniquely coded and their locations were mapped (see Fig. 1). The archives (finds, original paperwork, field drawings and photographs and slides) which were produced during many years of fieldwork were boxed, ordered and, until recently, curated at the Truro home of the principal owner and excavation director of the project, Professor Charles Thomas. The archive has now been placed in the Royal Cornwall Museum, Truro, Cornwall. Results of some aspects of this archaeological study were published during and after fieldwork (see below) and a summary account was published in 1958. This summary, *Gwithian -Ten Years Work (1949-1958*), has remained the main guide to the archaeology of the area (Thomas 1958). It does however represent an interim commentary which was written at a time when fieldwork was in progress and fresh discoveries were to emerge to replace past ideas. A new summary account has now been prepared and this will be published in a future volume of *Cornish Archaeology* (Nowakowski, Quinnell, Sturgess, Thomas and Thorpe forthcoming).

The stunning coastal landscape of Gwithian produced some remarkable archaeological discoveries. This was principally due to the undeveloped character of the study area as well as the excellent preservation of the archaeological layers which were protected by

layers of wind-blown sand. The special alkaline qualities of the sand ensured the survival of a rich range of organic materials (with the general exception of pollen) and the survival of former land surfaces dating from the prehistoric and post-Roman periods.

The first major excavation took place from 1953 to 1958 when the Gwithian team excavated a series of "sites" which revealed a well-preserved industrial "settlement", dated by pottery from the 5th to the 8th centuries AD (sites coded GMI, GMA, GMB, GME and GMIV). During the mid 1950s and right up to the early 1960s, a much larger excavation took place on a series of related sites (GMIX, GMX, GMXV and cuttings GMXI, GMXIV and GMXX etc.) when the remains of a well-preserved Bronze Age landscape was investigated (see Figs. 8 and 9). The third set-piece excavation took place at Crane Godrevy. This started in the mid 1950s and was concluded in 1969 (Thomas 1969). At Crane Godrevy the main focus of excavation was on the investigation of a medieval farmstead, although the remains of earlier occupation within an enclosure ditch (dated by pottery to the Romano-British period) were also found. In addition some limited evidence (for sunken "structural" features) of probable post-Roman date (dated by a small ceramic assemblage) was also found. Related to the emergent results of these major seasons of fieldwork, though not the focus of systematic excavations, was the discovery of a series of linked sites at Sandy Lane (coded SL, HP, OLS and WE) located on the outskirts of present day Gwithian churchtown (see Fig. 1). A rich assemblage of (surface-collected) finds have since been found in this area since the 1950s archaeological campaign.

The archaeological campaign at Gwithian produced results of regional and national significance shedding new light on little-studied aspects of prehistoric and post-Roman settlement. During and after the fieldwork, emerging results were published quickly and frequently in a series of interim statements (e.g. Thomas 1958; Thomas 1969; Fowler and Thomas 1962; Megaw, Thomas and Wailes 1961; Megaw 1976).

The full results of these investigations have not, however, been widely disseminated through publication, and the present project has been developed in order to make the archive accessible and to present the results of this important archaeological project to the wider public. Academic and popular publication of the full results of the Gwithian archaeological story is a key desirable aim.

2.1.2 Summary of work carried out on the archive during 2003-2004

As stated above the archaeological study of the Gwithian area was wide-ranging in scale and detail and by 1956, still relatively early on in the field campaign, the potential for a full landscape study was beginning to be realised. Linked sequences between the various sites were being explored, and emergent results could be drawn together into an overall chronological narrative (Thomas 1958). Alongside the discovery of a significant post-Roman site, and a major Bronze Age landscape (see above), other excavations at the Roman site of Porth Godrevy (site GT) between 1956 and 1958 (Fowler 1962), and the later investigations at the medieval manor of Crane Godrevy (site CG) from 1956, and which finished in 1969 (Thomas 1969) began to fill up chronological gaps. Even earlier data was found and over 20 sites producing significant quantities of Mesolithic lithics and stone tools were documented and again investigated to varying degrees. The Gwithian archive is therefore large and comprises data related to sites which date from the Mesolithic to the post medieval periods.

The main objective of initial work on the archive, which took place in 2003-2004, was to conduct an audit of all the data relating to **all the sites** recorded during fieldwork at Gwithian from 1949 to 1969. A second major objective was to rapidly appraise the significance of individual classes of data within the archive. A summary of work

achieved in 2003-2004 is presented in section 2.3.1. On completion of this preliminary programme, a number of individual assessment reports were all brought together into one document: *Archaeology Beneath the Towans Excavations at Gwithian, Cornwall 1949-1969* by J A Nowakowski 2004. This report also provides summarises **of all the work** which took place during fieldwork and lists and quantifies all datasets relating to the 79 sites of different periods. Two catalogues which provide inventories of all the paperwork were also produced (Sturgess 2004a and Sturgess 2004b). These three documents are intended to make the archive accessible for future researchers and are now part of a working archive. All the individual assessment reports produced during this exercise have been brought together and are presented in Section 3 of Volume II.

2.1.3 The selection of the key datasets and focus for work in 2005-2006

On completion of the first stage of work on the Gwithian archive, the core project team met in September 2004 to agree on the selection of the key datasets for further study. The project was again successful in gaining the support of the ALSF scheme and a programme of much more detailed work on the archive was designed and this began in February 2005 (Nowakowski 2005). The principal criteria was to focus on material from clearly stratified sequences which could be scientifically dated and whose analysis and study would contribute to research aims of regional and national importance.

The following datasets were selected:

- Bronze Age sites (GMIX, GMX and GMXV and related sites) date range 2000 to c 900 BC.
- Roman and post-Roman phases centred on the ditched enclosure discovered at Crane Godrevy (site CG) date range 1st to 5th centuries AD.
- Post-Roman sites (GMI, GMA, GMB, GME and GMIV) date range 5th to 8th centuries AD.
- Bronze Age, Iron Age, Roman and post-Roman middens at Sandy Lane sites (SL, WE, OLS and HP) date range 2nd millennium BC and 1st millennium AD.

The largest excavation archives are the Bronze Age and post-Roman sites. Analysis of datasets on minor interventions (the enclosure ditch) at Crane Godrevy and (middens) at the Sandy Lane sites (see above), were also recommended as these contribute to a broader picture of land use for the later prehistoric, Roman and post-Roman periods in the study area.

2.2 Overall aim

The main objective of this stage of the project has been to carry out detailed studies of selected datasets in order to assess the quality and highlight the significance of the information in the archives.

This stage has involved revisiting previous post-excavation work and updating site documentation and records in order to make them accessible for future research. Detailed factual statements on the structural and stratigraphic stories of the Bronze Age landscape, the Roman enclosure ditch and the post-Roman settlement were produced (see section 4 below). These provide information on two major episodes of land use at Gwithian: that is, settlement during the 2nd millennium BC (the Cornish Early and Middle Bronze Age) and during the post-Roman period (1st millennium AD).

During this process a number of archive documents have been produced and these documents present updated working interpretations on the results of the excavations (Sturgess and Lawson-Jones 2006a, 2006b and 2006c). These reports have collated all the data relating to these major investigations.

2.2.1 Specific aims

The specific aims for the 2005 - 2006 project have been:

- The consolidation of survey data both past and present through a total station survey of the study area (Fig 2)
- The reconstruction of structure and stratigraphy for Bronze Age sites, post-Roman sites and for the Roman enclosure at Crane Godrevy.
- To update the finds records with an Access database for the Bronze Age and post-Roman sites.
- A pilot scientific (AMS) dating programme on a selected number of samples from the Bronze Age and the post-Roman excavations (see Volume II, Section 4).
- A small-scale field exercise to recover new palaeo-environmental samples and assess the potential of the samples to add further information to the existing Bronze Age archive (Figs 23-25).
- A programme of OSL dating to test the technique in the sands at Gwithian (Fig 22 and Volume II, Section 4, 31).
- To carry out outstanding finds assessments (not undertaken in 2003-2004): prehistoric, Roman and post-Roman pottery (Sandy Lane sites) (see Volume II, Section 1, 2), prehistoric and post-Roman worked bone objects (Bronze Age and post-Roman sites) (Volume II, Section 1, 3 and 5), post-Roman metalwork (objects) Volume II, Section 1, 6), prehistoric and post-Roman clay mould fragments (Volume II, Section 1, 4); additional finds groups excavated during fieldwork in 2005 (see Volume II, Section 2, 14, 15 and 16).
- The production of two summary articles presenting the results of the work on the archive to date. One is an account of the Bronze Age story (published as a popular account in *British Archaeology* in the summer 2006; Nowakowski 2006) and the other presents an overall summary account of the archaeological study of Gwithian. This will be published in *Cornish Archaeology* (Nowakowski, Quinnell, Sturgess, Thomas and Thorpe forthcoming). A summary account of the results of the post-Roman site will appear in a forthcoming issue of *Current Archaeology*.
- A summary of the results of this programme of work in an assessment report (this document).
- To identify areas where further assessments are required (this document).
- To set out a series of principal and specific recommendations for further analysis and publication (this document).

2.3 Methods

2.3.1 Audit and rapid appraisal of the entire Gwithian archive 2003-2004

For a period of 12 months during 2003-2004, the entire Gwithian archive was audited and rapidly appraised (see above). Work comprised the following:

- All the original site documentation (field books, notes, finds registers, field drawings) were listed, numbered and catalogued and re-boxed into archive standard boxes (see Sturgess 2004a, Sturgess 2004b).
- A security (hard) copy of the entire site documentation was created and deposited in the Royal Cornwall Museum, Truro, Cornwall.

- A selection of images in the large (5,000-plus) photographic archive were scanned as digital images (jpegs) and stored onto CDs.
- From September through to December 2003 rapid assessments of the quality and stratigraphic integrity (where appropriate) of the data in the Gwithian archives took place. This exercise was preceded by the collation of all known data for each site brought together in the form of an overall site summary record accompanied by an inventory (see above and Sturgess 2004a and 2004b). Data compiled during the finds audit was brought together as part of this process (see below). These summary records form the entry point towards an accessible archive and are the most up-to-date records of all the Gwithian sites. They now replace any earlier records such as those held in the Cornwall and Isles of Scilly Historic Environment Record (formerly the SMR). Recommendations for further work on the individual site archives were also made (Nowakowski 2004).
- On completion of the collation exercise (see above) the quality of each site archive was assessed in terms of its potential for further analysis and significance to national and regional research agendas. Recommendations for further work on the individual site archives were made (Nowakowski 2004).
- The locations of all sites found during the Gwithian project were recorded and maps showing sites of different periods were created using GIS (see figs 3 to 12 in Nowakowski 2004).
- A comprehensive audit of all the finds was conducted. This involved listing all the finds by site, re-bagging and re-boxing the finds into archive standard boxes by finds category. Alongside this, finds registers for each site were created which state exact quantities of different classes of finds (Nowakowski 2004). 148 boxes of finds were transferred to the Royal Cornwall Museum, Truro.
- Digitial images of a selection of finds were created as jpegs and stored onto CDs.
- The condition of metalwork and other fragile finds was rapidly assessed and recommendations for conservation were made (Volume II, Section 3, 28).
- Rapid assessments of a wide variety of finds took place (see Volume II, Section 3). Given the tight timeframe available for the work which took place in 2003-2004, the focus was on the larger collections of stratified groups of artefacts. A series of recommendations highlighting the significance of different classes and periods of material were presented in individual assessment reports (see Volume II, Section 3 and summarised in Nowakowski 2004, 5.2 and 5.3). While an overall summary of the main features of the Mesolithic archive was presented (see Nowakowski 2004, 6.1), no detailed assessments of the material were conducted during this time. Recommendations for future work on the Mesolithic archive were however presented (see Nowakowski 2004, 6.1.4). A summary of the broad character and national and regional significance of the Mesolithic material at Gwithian is presented in a forthcoming article on the Gwithian project (Nowakowski, Quinnell, Sturgess, Thomas and Thorpe forthcoming).

2.3.2 Work on the Gwithian archive during 2005-2006

Work on the Gwithian archive during 2005-2006 has comprised desk-based assessments, survey and fieldwork, a pilot scientific dating study and a series of finds assessments.

2.3.3 Desk-based assessment

A major task has been the reconstruction of structure and stratigraphy conducted as a desk-based exercise for the Bronze Age, post-Roman excavations as well as the excavation of the Roman enclosure ditch at Crane Godrevy. All data related to the major excavations have been brought together and assessed. Updated site narratives have been produced alongside phase plans and stratigraphic matrices. These are presented in a number of working archive reports (see Sturgess and Lawson-Jones 2006a; Sturgess and Lawson-Jones 2006b; Sturgess and Lawson-Jones 2006c). This major task has involved the creation of context-based site descriptions which link finds to contexts in order to maximise more recent (modern) approaches to post-excavation analysis.

Alongside this finds records have been updated on an Access database for the Bronze Age and post-Roman sites.

This significant foundation work on the archive has permitted a critical evaluation of the quality and integrity of the data. In summary this was generally found to be high and previous appraisals on the significance of the information were reinforced (*cf* Nowakowski 1989 and Nowakowski 2004).

2.3.4 Fieldwork

At the start of this recent programme of work, the sites were surveyed by total station. Many of the trenches for the major sites had been left open and an updated digital survey of all trenches was created as an overlay to the OS landline (Fig. 2). No overall accurate plan combining the locations of all excavated areas previously existed.

In April 2005, Joanna Sturgess and Anna Lawson-Jones revisited several open trenches at Crane Godrevy. A key section, which had been cut through the enclosure ditch (section A-B, see Sturgess and Lawson-Jones 2006a, 3.14) was cut back and redrawn. During this process a small number of finds was recovered from ditch fills.

In June 2005 a small-scale excavation took place within the heart of the Bronze Age site coded site GMXVII. During this exercise new palaeo-environmental samples for analysis and for OSL dating were recovered (see Figs 24 and 25). These included bulk samples for macroplant remains and animal remains alongside targeted samples for geoarchaeology, pollen, land snails and volcanic tephra. Full results on this exercise are presented in a separate report: *Gwithian, Cornwall. Report on Palaeoenvironmental sampling fieldwork June 2005* by Nowakowski, Sturgess and Lawson-Jones 2006. No tephra samples were detected.

2.3.5 Scientific dating study (AMS dates)

A pilot scientific dating (AMS dates) programme on a selected number of samples (principally ceramics with residues) from the Bronze Age excavation and the post-Roman excavations took place in 2005. This was carried out by the scientific dating team at English Heritage and the results will be formally published in a forthcoming summary article (but see also Volume II, Section 4).

A pilot study using the OSL dating technique on samples recovered in June 2005 was also undertaken and these results have been combined with the above and will be published in *Cornish Archaeology* in the near future (but see also Volume II, Section 4).

2.3.6 Additional finds assessments

A small number of finds assessments were conducted. These were not assessed during the initial project in 2003-2004 but were identified as key datasets in September 2004 (Nowakowski 2005) and they are all from the Bronze Age and post-Roman excavations. They are listed as follows:

- Bronze Age worked bone objects
- Post-Roman worked bone objects
- Prehistoric, Roman and post-Roman pottery from Sandy Lane “sites”
- Post-Roman metalwork objects
- Prehistoric and post-Roman clay moulds
- Bronze Age coprolite

The results of these assessments are presented in Volume II, Section 1.

3 Background

3.1 Location and overall setting

The parish of Gwithian lies on the north coast of West Cornwall dominated by major sand dunes (Fig. 8). The area has been a focus for a variety of human activities since the Mesolithic period (Thomas 1958). The archaeological work at Gwithian during the 1950s and 1960s recorded major phases of human settlement and activity within this coastal setting. The shell components of the Gwithian sands favoured the preservation of a remarkable array of artefacts, and in particular animal and human bone, within clear stratified deposits linked to major phases of human settlement and land use. At Gwithian, evidence for prehistoric cultivation with the surviving imprints of ard marks and spade marks within fields (see Figs 12 and 13), alongside structures and burials dating to the 2nd millennium BC, provides a unique story for national Bronze Age research. Equally rich and significant narratives are available in the archaeological evidence recorded and dated to the Roman and post -Roman periods.

A key feature of the study of human settlement throughout the ages at Gwithian is its coastal location. The sea at Gwithian was clearly a major resource throughout phases of human activities and the wide range of materials utilised by the various communities at Gwithian reflects a close relationship to the sea. From the Mesolithic period right through to the post-Roman period the beaches and shores were demonstrably the source of many aspects of surviving material culture as beach pebbles were modified into tools. In the Roman period briquetage reveals episodes of salt production and during the post-Roman period, the raised beach concretions permitted small-scale iron working. The presence of such imports, as gabbroic clays from the Lizard and fine non-local wares underpin the importance of maritime trade from the Bronze Age through to the early medieval period. It is possible that the gabbroic clays derived from the Lizard (some 20 km to the south-east) may have reached Gwithian by boat during the 2nd millennium BC. One of the archaeological discoveries made at the medieval site of Crane Godrevy is late medieval graffiti scratched onto a slate. This represents two sailing ships moored within, presumed, local marshes.

It is clear that this present landscape has dramatically changed over time and, while the sand dunes at Gwithian have ultimately acted as a protective shield to the rich archaeological resource beneath them, a more recent history of commercial sand extraction has threatened the preservation of primary archaeological deposits. The work carried out by the archaeological project from the late 1940s onwards documented and demonstrated the spatial extent of this resource (see below).

3.2 Spatial impact of sand extraction on the archaeology of Gwithian

Commercial sand extraction at Gwithian has largely centred on the beach (at Hanson Quarry, see front cover photograph) and at the mouth of the Red River, particularly on its southern side. Less extensive sand extraction has taken place on the north of the

river at Gwithian site GU (see Fig 1). The Red River valley was the bed of a former estuarine tidal creek. Almost along its entire length (13 km) the river has been the scene of mineral extraction, water management (canalisation by the Tehidy estate c. 1850s) and mineral processing in the recent past (see Sharpe 1990). Over the centuries these changes have altered the course and shape of the river at the Gwithian end. Estuarine deposits have been recorded under sand blown deposits at depths of 4 metres although these depths are likely to vary (Wessex Archaeology 2002). The former course of the river at Gwithian has not been comprehensively mapped by palaeo-environmental methods, although historically it may have curved across the present beach permitting navigable conditions at high water until the medieval period at least. Archaeological deposits of all periods have been recorded on both sides of the river – north and south. In 1741 a Bronze Age funerary urn was found in a stone cist exposed in a cliff section half a mile to south-west of present Gwithian village. It was buried under approximately 3 ft of sand (Borlase 1872, 170-171). Along the southern part of Gwithian beach, just north-west of Gwithian churchtown, archaeological recording at sites called Sandy Lane (SL), Hockins Pit (HP), Old Land Surface (OLS) and Wheal Emily (WE), all yielded quantities of finds – flint, stonework, pottery, metalwork, bones, shell – from former land surfaces and related midden deposits, all of which lay beneath sand (see Fig 1 for locations). These finds span the same wide range of dates as those found from other major stratified sequences recorded on the north side of the river, that is from the Bronze Age through to the post-Roman (and later) periods. In addition to finds of Bronze Age date from these sites, a particularly important and large assemblage of early medieval pottery dating from the 10th to 13th centuries AD was found at Sandy Lane (Volume II, Section 3, 24). This exceptional material is of regional significance for research into the early medieval period as the remains demonstrate the presence of a pre-Norman settlement which is likely to have been the direct successor of an earlier post-Roman site (the excavated sites GMI and GMA etc) located on the north side of the river. The pre-Norman and Domesday manorial centre of *Conarditone* (in 1086, Padel 1988, 71), later *Conarton* (c 1155, Padel *ibid)*, *Conerton*, and *Connerton* was the place-name for Gwithian prior to the medieval period. The origin of the word *Conar*, is obscure and it has been suggested that it may not have had a Cornish origin but have been an Irish import perhaps deriving from Primitive Irish *conar* denoting point of entry or roadway (C Thomas, pers. com). If so then the early use of the tidal inlet can be set alongside the discovery at site GMI of imported Mediterranean pottery, Class E Ware, exotic metal objects and the likely spread of innovative new ideas such as grass-marking on pottery (see below). Objects and ideas during the post-Roman period may have therefore arrived at Gwithian via maritime trade and contact.

Place-name analysis alongside the archaeological evidence serves to highlight the topographical and land use changes in the local landscape. These may demonstrate how more extensive past human settlement was spread across the area than is apparent today. The results of the Gwithian project have emphasised the real potential of the buried archaeological resource within coastal landscapes and should aid future long-term conservation and management of similar locations (see Nowakowski, Quinnell, Sturgess, Thomas and Thorpe, forthcoming).

4 Updating Structure and Stratigraphy – the major Excavations

4.1 Overall introduction and presentation of the results

This section of the report presents summary accounts of the results of the work on the reconstruction of structure and stratigraphy for the Bronze Age, post-Roman sites and for the Roman period enclosure ditch excavated at Crane Godrevy. These are based on more detailed reports prepared by Sturgess and Lawson-Jones (2006a; 2006b; 2006c).

Section 5 presents the overall statement of potential for key aspects of the Gwithian archive alongside principal and specific recommendations for future analysis.

4.1.1 General comment

The excavations were undertaken at a time when the general concept of single context-recording had not been invented. All context numbers have been allocated during this current programme of work. The concept and application of the term "layer" recorded during the excavations was sometimes tentative and recent work on the archive has shown that on occasion, adjustments were required. During the assessment it has been found that a small proportion of finds could not be clearly assigned to definite contexts and their stratigraphic positions in trench sequence are likely to remain unresolved. Recent work on the stratigraphy has also shown that plans published in previous accounts (eg Thomas 1958) have simplified complex events and those revised and represented at this stage (principally as phase plans) will differ (see Figs 4 to 7 and Fig 18).

4.2 Bronze Age Excavations

The full detail of the archaeological story is presented in a working archive report by Sturgess and Lawson-Jones 2006b. The following account summarises the principal results of the excavations.

4.2.1 Introduction

Archaeological investigations of a tract of a Bronze Age farming landscape became a set-piece excavation during the Gwithian campaign (Fig 9). Excavations started in 1955 with the investigation of a mound (GMV) which was initially interpreted as a Bronze Age barrow (Thomas 1958). This site was later shown to be within the area of a Bronze Age field system where well-preserved remains of linear and criss-cross plough marks (traces of ard cultivation) were found (see Fig 12). Investigations on a number of major linked "sites": GMIX, GMX and GMXV and other smaller sites, continued until 1961. An area approximately 100 sq metres was excavated providing a major overview of the development through time of a complex (multi-phased) landscape dating to the 2nd millennium BC.

4.2.2 The overall character of the site

The principal character of the story of Bronze Age Gwithian is one of settlement and farming in a coastal landscape setting. At Gwithian, the remains of wooden and stone-built structures were found alongside terraces, fields and enclosures, together with episodes of human burial (cremations, whole and partial inhumations) and large middens. A great number of trenches (cuttings) were investigated throughout the 10 year campaign of fieldwork, and although many were recorded as separate "sites", together they present an overall linked narrative incorporating time-depth which spans the best part of 1,000 years.

4.2.3 Overall stratigraphy

The overall stratigraphic sequence across many of the Bronze Age "sites" was contained within banded horizons coded from 1 to 9 and which during excavation were classified as "layers" within the Bronze Age archive (see Fig 10). Within and linking these occupation horizons across numerous trenches (cuttings, see Fig 3) and throughout the main sites (GMIX, GMX and GMXV) were many episodes and events. These major "layers" can now be regarded as **major phases** and the sequence of individual events which made up the "layers" has now been identified and overall phase plans have been drawn up (see Figs 4 to 7). A number of sub-phases have now been identified within each major phase (see below). In order to access the data within the archive, the current exercise has resulted in replacing the term "layer" with "phase" (see below),

In revisiting the structural detail of each phase, the Bronze Age sequence at Gwithian can now be discussed as a chronological narrative which presents varied, but linked, stories (Sturgess and Lawson-Jones 2006b). This opportunity has also enabled earlier broad interpretations to be enhanced and refined.

Evidence for the main phases of landscape history dating to the 2nd millennium BC is presented below.

4.2.4 Summary of major phases within the Bronze Age Gwithian sequence

Note: Radiocarbon dates given below are those obtained during the 2005 scientific dating programme.

1. **EARLY BRONZE AGE *c 1800 cal BC.* Phase 1** Occupation - Settlement and fields ("layer 7" and "layer 8") – *At least 2 sub-phases.*
2. **Phase 2** Sand Horizon ("layer 6") – *1 phase*.
3. **MIDDLE BRONZE AGE *c 1500 – 1200 cal BC* Phase 3** Occupation – Fields, settlement and cremation burials ("layer 5") – *At least 2 sub-phases*.
4. **MIDDLE BRONZE AGE Phase 4**. ?Fields ("layer 4") and a sand horizon – *1 phase*.
5. **MIDDLE/LATE BRONZE AGE *c 1300 – 900 cal BC* Phase 5** Settlement and fields ("layer 3") – *At least 4 sub-phases*.
6. **Post Bronze Age settlement Phase 6** Sand blow ("Layer 2"). – *1 or more phases*.

7 **Phase 7** Turf and topsoil ("Layer 1") – *1 phase*.

4.2.5 Overall site preservation

The excavations revealed exceptional site preservation with the former Bronze Age landscapes buried intact beneath layers of wind-blown sand. The special alkaline qualities of the Gwithian sands permitted the survival of many artefacts, favouring the excellent preservation of all organic materials (except pollen). Animal bone in excellent condition survived particularly well. Also, due to the overall character of activities which took place on site during the Bronze Age, a great deal of the evidence was found to be undisturbed and *in situ*.

In a wider context the excellent preservation of the wider buried archaeological resource, as demonstrated by the Gwithian project, reveals real hidden archaeological potential and should inform long-term future management of similar coastal locations.

Small-scale commercial sand extraction ventures have taken place during Gwithian's recent past (see above).

4.3 Principal Results

4.3.1 PHASE 1 EARLY BRONZE AGE c 1800 cal BC

Phase 1 Occupation – Settlement and fields in "layers 8" and "7"

The earliest excavated evidence relates to a major phase of settlement and land use found in "layers 7 and 8". Settlement activity was recorded in "layer 8" only (Fig. 7)

As a major archaeological horizon, "layer 8" was only **fully investigated** at site **GM/XV**. It would appear however that this "layer" was far more widespread throughout the area excavated in the 1950s and 1960s than previously recognised, although elsewhere, "layer 8" was *only revealed in part*, during smaller keyhole trenches in the areas under investigation (eg GM/X Cutting 5 and GMXVII in 2005). In June 2005, plough marks were recorded for the first time in "layer 8" at site GMXVII (610) (see below). Therefore the true spatial extent and survival of this horizon, a major occupation land surface, still remains unknown.

The major features of settlement during this early period are a circular wooden building (1642) which stood alongside probable enclosures and or fields, some of which were under arable cultivation (see Figs 7 and 15).

Ceramics associated with this phase were either generally small and abraded or large and fresh. These included large, fresh sherds displaying Trevisker motifs: cord-impressed, comb-stamping, and incised decoration which were found within and around structure 1642 (see below). Some Beaker material (one Beaker sherd was found in layer 8 (610) in 2005, see Volume II, Section 2, 15 and Nowakowski *et al* 2006, section 4.12) has also been identified but much of this was sparse, scattered across Phase 1 contexts and generally heavily abraded.

A wooden post-built structure 1642

The complete floor plan of a circular wooden residential building 1642 was uncovered in **GM/XV** (Fig. 15). Details of the architecture and construction of the building are available and a ground plan exists. This was likely to have been a dwelling house. The building stood within a staked (probable rectangular) enclosure and had been erected on an artificial terrace levelled into the hill slope. An artificial bank defined the front of the terrace. The rear of the building had been partly dug into the prevailing slope. Containing the back of the building was a low bank of redeposited "layer 8" material which formed an artificial boundary. It is clear that a certain amount of ground preparation work took place prior to the construction of the building and the enclosure.

The building was entirely made of wood with possible evidence for earth-clad walls. Its circuit comprised wooden posts which had been deeply set into two purposely dug gullies to form a continuous probable wattle and clay-clad wooden wall. Set within this circuit was an extended porch which faced south-east.

The building contained at least 2 open hearths, one on top of the other. Both were centrally placed and set into depressions in a "rough" floor area. No other major internal features were found apart from a large depression with a small gully or channel (in the north-west) and a sunken area (in the south-west). A cluster of stakeholes was found in the northern floor area and may have marked out wooden fixtures. There is evidence for some minor structural modification during its use-life although an earlier interpretation of two major phases requires some review (Megaw 1976). Some formal division of interior space also seems evident in the patterning of features and finds. A density of stone tools was also found in this building on the western side.

Caches of finds have also been identified within the building. These appear to be "exotic" or perhaps specially chosen items, which were deposited and/or curated and buried, in particular locations. In particular, a perforated dog whelk, broken quern fragments, a copper alloy awl, flints and the bases of pots together with worked pieces of bone were all found together in the south-western structural (slate-lined) gully at the front of the building. It is possible that these events immediately preceded the demise of the building which, on abandonment, appears to have been left to ruin. There were no definite signs of systematic destruction (see below).

If the recent radiocarbon date, OxA-14568 1890 – 1610 cal BC (see 4.3.2), and the archaeomagnetic date which centred on 1700 cal bc, the latter taken on the upper surface of the central hearth by Aitken in 1960 (Sturgess and Lawson-Jones 2006b), is supported by subsequent determinations, Structure 1642 will be the first Early Bronze Age house located in Cornwall and the associated Trevisker assemblage the earliest known from domestic contexts.

"Layer 7", although *not detected* on site GM/XV, was found downslope (eg GM/X cutting 5 and GMXVII) and may have been associated with this initial phase of settlement. At the level of **"layer 8"** (the same level upon which building 1642 and its enclosure stood), the possible remains of linear plough marks were detected around the building at GM/XV. It is possible that *these existed prior to the construction of the building* although these were not fully recorded at the time. This level may have incorporated a potentially distinct layer 7 on site GMXV, but if it did, this was not recognised at the time of excavation. Further evidence of similar plough marks were seen when a small area of the earlier "layer 8" was exposed during work in 2005 at site GMXVII (see Nowakowski *et al* 2006).

Layer 7 was identified as a *cultivation horizon* during fieldwork in 2005 at site GMXVII which was located downslope from GM/XV (see Fig 7). A few seeds of barley (*Hordeum* sp.) and other unidentified cereal remains have been identified from this horizon (see Volume II, Section 2, 9 and Nowakowski *et al.*, 2006, 4.6). This would suggest that the building at GM/XV was sited within a broader farmed landscape setting and was associated with fields. Recent assessment of the land snails detected in "layers 7" and "8" at site GM/XVII, suggests that the broader environment was open country. The occurrence of land snails throughout the lower horizon is generally rare, although the species *Pupilla muscorum* appears for the first time towards the upper parts of "layer 7" (see Volume II, Section 2, 8 and Nowakowski *et al.* 2006, 4.5). Of interest are fragments of marine species present in "layer 8" and upper part of "layer 7". This may be evidence for the deliberate application of organic-rich matter, such as seaweed or even general midden waste, to otherwise comparatively poor soils in order to increase fertility, aerate the soil, and to improve drainage so that arable cultivation may be successfully pursued (see below section 5.3).

Some consideration must also be given to other potentially local resources which are likely to have been selectively exploited during this phase. Given the amount of wood that was used in the creation of the building and its related enclosure, this would also suggest that some managed woodland was located close by. Small fragments of wood charcoal, oak, hazel, hawthorn, gorse and broom have been identified from samples recovered from these two horizons at site GMXVII in 2005 (see Volume II, Section 2, 11 and Nowakowski *et al.* 2006, 4.8). Bracken (fern) spores were found in "layer 8" at site GMXV and the imprint of bracken leaves were noted on some pot sherds (Sturgess and Lawson-Jones 2006b). Recent assessment of pollen samples from "layers 7" and "8" show some pollen survival, but this is very sparse and much degraded. Identifiable grains from open habitat species (grass, dock and plantain) from "layer 8" have been identified. Two large grass pollen grains were also counted but species identification is impossible due to their poor preservation (see Volume II, Section 2, 10 and Nowakowski *et al.* 2006, 4.7).

Given this new data we are able to suggest that the building 1642 at GM/XV lay within a landscape which was formally organised into terraces, enclosures and fields. This raises the distinct possibility that close to the site, other, as yet undetected contemporary buildings existed within the wider local landscape.

4.3.2 Dating the layer 8/7 horizons – Phase 1

In 2005 three scientific (AMS) dates were obtained from these horizons. All are from carbonised residues on sherds and they are shown calibrated to 95% confidence. All dates have been calibrated using OxCal v3.10 (Bronk - Ramsey 2005).

"LAYER 8"

OxA-14568	GMXV 25A (1507)	3430 ± 50 BP	1890 - 1610 cal BC
OxA-14490	GMXV 25B (1507)	2961 ± 36 BP	1310 - 1040 cal BC

"LAYER 7"

OxA-14488	GMXV 22	3245 ± 40 BP	1620 - 1430 cal BC

Comment

While these dates indicate a Bronze Age horizon, there are some problems. The two dates which come from (1507) are from the house 1642 (floor) level in GMXV. Both are from dated residues on sherds of two different vessels. OxA-14568 (25A) would seem to confirm an Early Bronze Age date for the structure. (Note there was also an archaeomagnetic date from the main (late) hearth, obtained in 1960, which centred on 1700 BC, see Sturgess and Lawson-Jones 2006b). However the result for OxA-14490 (25B) also from the house floor, is much later and it is possible that the sherd is intrusive and derived from an upper overlying layer (that is "layer 5" or "3").

The sherd from "layer 7" (GMXV 22) has also produced a later date than expected (from cutting 3 in GMXV). This probably relates to activities associated with an upper horizon that is, "layer 5" since there was much intermixing of plough soils in this area. This sherd did not come from a secure context and its association with "layer 7" has to be considered doubtful. Evidence of "layer 5" activities – that is Phase 3 – was found at site GMXV (see below).

- Further dates are needed to confirm an early date for this phase.

4.3.3 Phase 2 Sand Horizon – "layer 6"

Phase 2 is marked by "Layer 6" which has been interpreted as a major episode of sand blow which sealed the earlier (cultivated) horizon. No "structural" features have been identified for this phase. Where exposed, layer 6 was very clean, *although it was not found everywhere* in the excavated trenches and was principally located to the east of the main N-S field wall (see Phase 3 below).

Sparse wood charcoal was found from this horizon (606) when re-exposed at site GMXVII in June 2005 (see Volume II, Section 2, 11 and Nowakowski *et al.* 2006, 4.8). These few fragments have been identified as bramble and/or briar. One unidentified charred plant fragment was found (606) (see Volume II, Section 2, 9 and Nowakowski *et al.* 2006, 4.6). Land snails were found in this horizon in samples recovered from site GMXVII in June 2005. Low-density open-country species were identified with *Pupilla muscorum* represented in the lower end of layer 6 at its interface with underlying layer 7 (see Volume II, Section 2, 8 and Nowakowski *et al.* 2006, 4.5). No animal bone was identified. Plough marks were noted at the top of layer 6 during fieldwork in June 2005 (Nowakowski *et al.* 2006, 4.1).

4.3.4 Dating "layer 6"

An OSL age (Aber-101/GWT-6) was obtained from this horizon (606) during work at site GMXVII in June 2005. An age 3360 ± 160 years ago (before 2005), 1355 ± 160 BC, was obtained (see Volume II, Section 4 and Appendix in Nowakowski *et al.* 2006).

4.3.5 MIDDLE BRONZE AGE Phase 3 c 1500 – 1200 cal BC

Fields, settlement and cremation burials in "layer 5"

During Phase 3, the **"layer 5"** horizon was principally characterised by fields and a prolonged episode of arable cultivation (but see below). Two major north-south (down-slope aligned) earthen boundaries were established and both became permanent landscape fixtures as they were maintained and later refurbished as stone hedges in subsequent phases (see Fig. 6, and below, Phase 5). These field boundaries were clearly **major landscape features** which appear to have been laid out at an early stage during Phase 3 or even possibly earlier (during Phase 1?). The fact that these boundaries continued to be maintained and were in use well beyond this phase strongly suggests that they were significant landscape fixtures (see below). Across this general land surface there are strong indications that the character of activities on the western side of the site differed to those recorded to the east of the major (N-S) boundary. Some formal organisation of the way different zones of the field system were being farmed is apparent. On the eastern side of the boundary, ploughing was continuous and intense, whilst on the western side, there appear to be times when ploughing did not take place. The archaeological consequence of this was a more intact stratigraphic sequence (see Fig. 5 and Phase 4 below).

The entire area within and outside these major boundaries was ploughed. Up to 120 sq metres of plough marks – approximately covering 1.5 hectares – was recorded during the excavations. These distinctive and remarkably well-preserved criss-cross parallel lines formed lattice patterns (see Figs 5, 6 and 12). All presumably had been created by a stone ard scored into the plough soils (the broken tip of one was found *in situ*), and their multi-layered patterns suggests an intensively ploughed zone. Ard marks were recorded on top and at the base of this major horizon and each set of parallel furrows is likely to represent single ploughing episodes. All this evidence suggests continuous and intensive episodes of arable (cereal) cultivation. To the east of the main N-S field wall, evidence for ploughing was more intensive with the result for a greater intermixing of the main "layers 3, 4, 5, 6 and 7".

Assessment of the samples taken for geoarchaeological analysis from "layer 5" detected at least 2 layers ((607), (605a) and (605b)) within this horizon, and ard marks were detected at both the top and base of this horizon at site GMXVII in June 2005 to the west of the main N-S field wall (see Volume II, Section 2, 1 and Nowakowski *et al.* 2006, 4.4). Seeds of emmer wheat (*Triticum* cf *dicoccum*) and field madder (*Sherardia arvensis*) have been identified in the samples (605) (see Volume II, Section 2, 9 and Nowakowski *et al.* 2006, 4.6). Charcoal fragments of wood species oak, gorse and/or broom, have been identified from recent samples (605) (see Volume II, Section 2, 11 and Gale in Nowakowski *et al* 2006, 4.8).

The greatest number of land snails (obtained during fieldwork in 2005) has been identified in this major horizon. This evidence indicates **open fieldscapes**. The species *Pupilla muscorum* and *Cochlicella acuta* appear in abundance during this horizon (particularly in the upper half) and could denote some major change in the local landscape (see Volume II, Section 2, 1 and Nowakowski *et al*. 2006, 4.5). A change *perhaps* brought about by a major intensive and renewed phase of arable farming. Fifty eight fragments of animal bone were recovered (hand collected) and processed from samples (605) excavated from this horizon in June 2005. Species identified include sheep/goat, mouse, rodent and 1 fish bone (see Volume II, Section 2, 12 and Nowakowski *et al*. 2006, 4.9).

It is possible that areas of the field system were farmed in different ways within major cycles of arable cultivation. The possibility that some fields were routinely "rested" or laid to fallow may be considered.

The traces of associated terraces and ard marks were also found on "terraces" at the northern end of GMXV during this phase. Here in cutting 24, only the upper part of "layer 5" was exposed.

Within the area and to one side of the main field boundary lay a **"ring ditch"** (558/557/1020) (see Fig. 6). This was a section of a curvilinear gully: its full extent was not uncovered. It did not contain finds and its function remains unclear. A spread of burnt material (cremated bone and ash) was found in its upper fill adjacent to human cremation pits (see below).

On site GMX a line of **four cremation pits** (584) (588) (205) and (207) was found adjacent to, and within the shadow of, the main eastern boundary (200) (Fig. 6). Their exact position within the sequence is however unclear as they could belong to Phase 3 or Phase 5. Their linear arrangement does however indicate that they had been placed in positions which respected the main N-S boundary, perhaps right on the edge of the cultivated areas. Therefore it seems likely that the cremation pits had been dug at the time that the earlier (bank) boundary was in place. They were equally spaced from one another and each contained the cremated remains of at least one human adult together with small quantities of animal bone and marine shell (see Volume II, Section 3, 26). Other ashy (more amorphous) deposits were also found along this side of the major boundary (but see below). A spill or partial stone collapse of the upper stone (later) boundary (200) covered at least one of the cremation pits (205). Some of the pits were sealed with white quartz pebbles and slates. Later during Phase 5, dumps of ash and charcoal continued to be deposited alongside this wall (see below).

The presence of formal human burial within this farmed setting is of interest. It may demonstrate the expression of attachment to a particular tract of land which may have been owned and farmed by the families of the dead. Remains of the human dead also appear at a later phase (see below).

Evidence for **a stone (and wooden post) building 1503** related to this major phase has now been identified in the archive located in the northern cuttings of site GMXV. Its remains (in a ruinous state) comprised collapsed stone rubble which spread over the area where the earlier building 1642 (see Phase 1 above, compare Figs 6 and 7) at GM/XV had once stood. Some postholes and a possible hearth relate to this later building although no clear house plan exists. The pottery in this area is dominated by Trevisker pots decorated with cord-impressed motifs.

4.3.6 Dating the "layer 5" horizon – Phase 3

Two scientific (AMS) dates are now available from this horizon. Both samples came from the northern cuttings at GMXV and were associated with the probable building 1503 rather than the plough soils. Both are from carbonised residues on pot sherds. They are shown calibrated to 95% confidence. All dates have been calibrated using OxCal v3.10 (Bronk - Ramsey 2005).

OxA-14489	GMXV 20 (1512)	3039 ± 37 BP	1410 - 1130 cal BC
SUERC-6167	GMXV 19 (1504)	3180 ± 35 BP	1520 - 1400 cal BC

Comment

The two samples OxA-14489 and SUERC-6167 are from site GMXV. The results from sherds from **GMXV** are close in date and may confirm some "layer 5" activity away

from the main fieldscape and linked to the ruined building which had been built upon the remains of the earlier structure (see above).

Note: GMXV 20 (1512) is from cutting 19 "layer 5d" and is not equivalent to "layer 5" downslope in GMX and GMIX.

GMXV 19 (1504) is from the northern cuttings from "layer 5b" and is not equivalent to "layer 5" downslope in GMX and GMIX.

4.3.7 MIDDLE BRONZE AGE Phase 4

Possible Fields in "layer 4" (Fig 5)

The horizon known as **"layer 4"** , that is Phase 4, has previously been interpreted as sand inundation across the entire site, which sealed all traces of underlying settlement remains (Thomas 1958). No structural remains have been identified within this phase other than the field boundaries which had been established earlier in Phase 3 (see above).Yet during fieldwork, "Layer 4" was only clearly identified to the west of the main N-S field wall.

Assessment of land snails from fieldwork at site GMXVII in June 2005 indicated a change from an **earlier open fieldscape** ("layer 5") to a **woody scrub local environment** ("layer 4") before reverting **back to open fieldscapes** ("layer 3") (see below) (Volume II, Section 2, 8 and Nowakowski *et al.* 2006, 4.5). The greatest diversity of land snail species belongs to this phase. From evidence found to the west of one of the main (eastern) field boundaries, it is likely that the area became scrubby, *perhaps more as a result of neglect, rather than wholesale abandonment.* Twenty eight fragments of animal bone were recovered from hand collected and processed samples (602) recovered from this horizon at site GMXVII in June 2005. Species indentified include sheep/goat, rat/water vole, passerine (songbird) and other birds (Volume II, Section 2, 12 and Nowakowski *et al.* 2006, 4.9). Pollen had not survived in sufficient quantities in this horizon or indeed in any of the horizons sampled in 2005 (Volume II, Section 2, 10 and Nowakowski *et al.* 2006, 4.7). One seed of *Triticum* cf *dicoccum* (*cf* emmer wheat) has been identified from this horizon during recent work in 2005 at site GMXVII (Volume II, Section 2, 9 and Nowakowski *et al*. 2006, 4.6).

The results of the geoarchaeological assessment of samples taken from this horizon in 2005 are of great interest. They suggest that *some attempt to stabilise this horizon* had taken place with the addition of (organic) midden material. This would strongly suggest that this horizon was *not totally unaffected by human activities/processes* and any clear wholesale abandonment, particularly in the area to the west of the main N-S field wall, as previously suggested, is now in question. Sand-filled ard marks were noted at the bottom of this horizon at site GMXVII in June 2005 (see Fig. 25). This suggests that initial sand blows were ploughed. The land snail evidence also suggests that some material was being "dumped" during this stage and if so, this may account for such a wide variety of land species which were noted as present (Volume II, Section 2, 8 and Nowakowski *et al.* 2006, 4.5). In the upper part of "layer 4", marine (mollusca) species have been noted – some of which may have been ploughed in from subsequent "layer 3" deposits. The land snail evidence may also suggest that this part of the site may have been allowed to become overgrown with scrub, whilst efforts were concentrated on cultivating the fields to the east of the main N-S field wall.

In the original record this horizon was termed "Layer 4" when it was described as a wholly "wind-blown sand" (see Thomas 1958) which was interpreted as a major phase of abandonment of the area (see Megaw, Thomas and Wailes, 1961). But it was only clearly definable to the west of the main north-south field wall (see above). It is clear that previous interpretations regarding the formation of "layer 4" require reconsideration. For this may be evidence for the development and creation of an

artificial soil, perhaps a plaggen soil, which had been created by systematically bulking up with manure and compost to boost otherwise thin and poor (perhaps depleted) soils. If analysis of the geoarchaeological samples taken in 2005 provide evidence of such horticultural processes then this could suggest that some attempts were made to cultivate the wind-blown sand. These may have later been abandoned in favour of cultivating the land to the east of the main N-S field wall where the stratigraphy revealed a closer intermixing of the major "layers" (see above Phase 3). In summary these preliminary observations do not support previous interpretations of total abandonment after Phase 3, but rather continuing efforts to live and farm in an environment which may have presented challenges.

While evidence now points to the Phase 4 horizon as being cultivated, identification of the land snail species sampled during the fieldwork in 2005 shows that only the fields to the west of the main north-south wall may have been neglected, when shade-loving species were abundant and open country species were generally rare or absent (see Volume II, Section 2, 8 and Nowakowski *et al.* 2006, 4.5). This evidence was also noted in the western part of the field system by Geoffery Lewis when land snail samples were taken and analysed during the original excavation (Sturgess and Lawson-Jones 2006b). So the new land snail evidence suggests that during Phase 4, the field to the west of the main north-south wall may have become overgrown either with scrub or woodland (see above). On present evidence, similar evidence for neglect does not appear in the fields to the east although this could be tested by further targeted fieldwork (see above and section 5.4.19 below). Here, on current understanding, the evidence may suggest more intensive ploughing episodes which continued throughout Phases 3, 4 and 5. This appeared to have been represented by a single thick plough-soil, which amalgamated all three horizons.

- A future opportunity to conduct another small-scale exercise to recover more palaeoenvironmental samples for analysis (similar to that carried out in 2005) in a targeted area to the east of the main N-S wall, is highly recommended in order to test current working interpretations on the ways different zones of the landscape were farmed (see section 5.4.19).

4.3.8 Dating "layer 4"

An OSL age (Aber-101/GWT-4) was obtained from this horizon (602a) during recent work at site GMXVII in June 2005. An age 3650 ± 160 years ago (before 2005), 1645 ± 160 BC was obtained (see Volume II, Section 4 and Appendix in Nowakowski *et al* 2006). The OSL results may suggest that any sand deposition in the immediate area could have been a fairly rapid process although the geoarchaeology (and the land snail evidence) also suggests attempts to stabilise the horizon (see above).

4.3.9 MIDDLE/LATE BRONZE AGE Phase 5 c 1300-900 cal BC

Settlement and fields in "layer 3".

During Phase 5, the horizon known as **"Layer 3"** presents a complex archaeological story. It is characterised by freestanding buildings, enclosures, fields, middens and the deposition of selected human remains (both within and outside buildings) (Figs 4 and 5). Evidence for this phase is confined to sites GMX/IX. At least 4 minor phases took place (that is 5a to 5d, see Nowakowski, Quinnell, Sturgess, Thomas and Thorpe forthcoming).

There is clear archaeological evidence for **major re-landscaping works** taking place at an early stage during this phase, particularly in the area of the west of the main N-S field wall (see Fig. 4).

The story of horizon “layer 3” appears to begin with ground clearance, possibly represented by the imprints of spade-marks (Fig. 13). This resulted in the appearance of irregular hollows across the main sites to the west of the main N-S field wall, and found in particular at sites GMX, GMIX and GMXI. This disturbance appears to have been largely concentrated in the area *where there had previously been fields* under cultivation – that is during Phase 3 (“layer 5” horizon) and, at some stage, during Phase 4, “layer 4” (see above). The N-S aligned boundaries (established during Phase 3) were maintained and remade with the addition of stone walls/hedges. Dumps of ash and charcoal have been identified, mostly against the west facing side of the main field boundary.

At least 6 structures (presumably once roofed buildings) have been identified for this major phase. All lay to the west of the main N-S field wall. Whether they were all contemporary still remains to be resolved. Some of these were identified previously and were given codes, others have been identified during this recent exercise.

GMX“House 1” – Structure 724/725 (Fig 11)

House 1 (724/725) was a wooden post-built circular structure located in an area where there had previously been fields. It had a probable SE facing entrance and contained a pebble-lined circular open hearth. A ground plan exists and a house “floor” has been identified. House 1 underwent at least 3 phases during its use-life (Fig 11).

In its first or second phase, House 1 contained two wooden bowls - both were set into a floor surface but sealed beneath a later floor. One bowl contained unfired clay and granite chips. Next to each bowl were pairs of human (baby) long bones as if specially selected and laid out alongside groups of stone tools. The complete remains of a baby skeleton was found under the floor in the north-west. Other interior features, in the form of pits and a circular open hearth pit have been identified. A clear association with human bone appears to be a marked feature of this structure.

During phase 2, the original floor surface seems to have been removed. Clay was used to seal the wooden bowls and associated finds, and a new “earth” floor was laid with a pebble-lined circular open hearth placed upon the earlier one. One matrix of a broken stone axe mould lay by this hearth and this fragment is part of another matrix which was found in House 4 (see (730) below).

At the end of its use-life, House 1 was burnt down. Following this, a banked earthen sub-rectangular enclosure (with some stone, but not stone-lined and approximately 10m by 5m in size) was constructed upon the destruction debris of the ruined building. The function of this later feature is unclear.

Finally the area in which House 1 once stood was buried under midden spreads (see below).

GMX “House 4”- (730)

Lying to the east and next to House 1 was “House 4” (730) (Fig 4). This would therefore appear to have been an immediate (contemporary) neighbour. House 4 was a wooden and probable “circular” post-built structure but its overall ground plan is less clear and the position of its entranceway is hard to determine because overlying deposits were not fully excavated (see below). A central pebble-lined hearth lay within the building and a fragment of the same stone mould found in House 1 (724/725) was found close to the hearth. This fitted with the fragment of the same object found in House 1 (see above). A high density of worked (animal) bone items including pins was

found associated with this building which could suggest a particular (craft-centred) function.

One phase of activity has been identified though no apparent destruction layer was found (unlike House 1, see above). However, like House 1, on its demise, 730 was also sealed by a sub-ovoid banked enclosure which was subsequently overlaid by midden(s). The banked enclosure was never removed to reveal the entire ground plan of the post-built structure. The fragment of a bronze pin was found from a later layer (469) within the area of the house. This object was published by Mike Rowlands in 1976 (no: 3, 67) but today is missing.

GMIX "Granary" building (1023)

An unusual small sub-circular building (1023) was found and this has been interpreted as a "granary" building (Fig 4). This was defined by large (occasionally stone-lined) post sockets. No floor or hearths were found within this structure. However, given that no clear internal surfaces were detected, the possibility that, if roofed, this may originally have had a raised wooden floor, must be considered (this would not be without parallel in Cornwall, see the Bronze Age structure found at Penhale Round, Nowakowski 1998). The presence of a building with a likely sole storage function is an indication of the varied character and make-up of settlements of this period when non-residential buildings were in use alongside dwelling houses (see Nowakowski 1991 and forthcoming). Its discovery is therefore significant.

Around the edges of the building, caches of pottery were found which may be associated. Like House 1 (724/725), structure 1023 also stood in an area where there had once been fields, as immediately to its south, plough marks were found at the base of "layer 3". The imprints of probable later episodes of ploughing sweep by the outer edges of the building respecting it.

GMIX "House 5" (1079) and (1085) – two buildings on the same location

In the area to the south of House 1, there were two buildings (1079) and (1085) which had been built on the same spot. The earliest was a circular wooden post-ring building (1085) and the later, a sub-circular stone walled (faced) building (1079). No complete plan exists for the earliest structure although a "floor surface" was found and some evidence for the internal divisions of space was recorded. Early activities here were later sealed beneath a clay floor; similar behaviour was recorded in House 1 (see above). From an internal layer (1048) the upper part of a decorated bronze pin was found and this was published by Mike Rowlands in 1976 (no: 1, 67, see Fig. 4.8a) although today is missing. Two semi-complete articulated animal skeletons – one sheep/goat and 1 dog – were found associated with House (1079).

A small clay "oven" (1043) was built against the inner face of the probable rear stone wall. Its function is unclear although it resembles a Cornish cloame oven. This feature was associated with the later (stone-built) phase (see Fig. 14). A slate-lined and clay covered "domed" oven/kiln was found against the rear wall in one of the Middle Bronze Age houses excavated at Trethellan Farm, Newquay (see House 142/3022, Nowakowski 1991). Built into the stone wall of the SE quadrant of (1079) was a cup marked stone with the decoration visible from inside the building. This may have been placed near the entrance.

On its demise small middens of mainly sea shell were dumped inside the building. This was followed by more extensive episodes of dumping.

It should be noted that the later stone-walled building is of unusual build when considered alongside the other structures identified as part of the Phase 5 settlement at Gwithian. The “clay oven” is also an unusual feature.

GMIX Structure (1134) cutting 11

Another probable freestanding wooden post-built structure has been identified. This was located immediately east of “House 5”, to the south of Houses 1 and 4, and west of the “granary” (1134 on Fig 4).

The ground plan of this structure is incomplete. This however appears to be circular and of post and stake build, similar to all the other wooden structures, but with no dug (structural) gullies or eaves drips. It was approximately 6m in diameter. No clear lateral floor layers were identified, although two “basins”, one of clay, and the other of wood, were found sunk into a “floor surface” below “floor” deposits. One of these was completely filled with pink quartz fragments. Substantial fragments of “crushed” (almost complete) vessels were found inside. A series of open hearths (at least 3 and one was pebble-lined) was found in the centre. One, (1088), has produced a radiocarbon date (see below). The latest hearth, although later damaged, was pebble-lined.

Spade marks were found in this part of the site although their relationship to the building is unclear. No distinctive “destruction” episode has been identified for this building. A notable large amount of stone “tumble” was found overlying this area. This material presumably came from elsewhere on site and was probably associated with the later “stone-building” phase. The marked absence of a sealing midden indicative of closure is of interest when compared to the other buildings associated with this major phase.

GMX – GMIX Unroofed and related working areas

Located very close to the buildings (to the south and west and in the central “open” area) was a space which may have acted as a “town-place” (Fig 4). The term town-place has a specific meaning in the West Country and is dialect for a farm-yard space which is shared between a number of related households (see Hawke in Pool 1977). Localised dumps of waste from craft-related activities were found in this area, for example a density of antler and horn-working debris. A large stone kerbed mound (222) (up to 11 feet diameter (3.35m)) was recorded in this area. This produced pottery and worked stone together with a charred possible human long bone (see Volume II, Section 3, 22). Middens were also found in this area. Some stone rubble (perhaps collapse and remains of the stone walls of building 1134, see above) was also noted in the upper layers within this area. At some late stage the area appears to have been sealed (perhaps buried from view) by stone rubble spreads. It is possible that some of the stone spreads were from other demolished or destroyed structures or enclosures.

A post/stake built narrow (2ft/0.61m) “wall” or fence-line (double alignment) lay to the west of this stony area and was aligned towards House 1.

4.3.10 Agricultural activities during Phase 5

Episodes of arable cultivation have been identified for the “layer 3” horizon and the imprints of ard marks and individual spade marks are associated with this phase (see Figs 4 and 5). Ard marks were found at the base of this horizon during work at site GMXVII in June 2005. The geoarchaeological assessment has interpreted this horizon as a plough soil (see Volume II, Section 2, 7). The spade marks may be related to episodes of ground preparation and perhaps the removal of scrubby vegetation which

could have flourished if there were short periods of neglect during the latter periods of Phase 4 (see above). Additionally, such ground works could also be related to boundary and hedge maintenance. Clear areas of actual ploughing are less well defined than that seen in the earlier "layer 5" horizon. It does however seem as though arable cultivation (by ard) was taking place right throughout this major phase of settlement and that, throughout this period, the earlier established N-S boundaries, continued as fixed landscape features.

The largest number of wood (charcoal) fragments were identified from samples recovered in June 2005 at site GMXVII for this major horizon ((600) and (601)). A diverse range of species have been identified and these include hawthorn, gorse and broom, hazel and birch. These are all small fragments but indicate exploitation of a wide range of habitats (see Volume II, Section 2, 11). Pollen had not survived in sufficient quantities for identification and analysis in this horizon (see Volume II, Section 2, 10).

Charred plant remains of *Triticum* cf *dicoccum* (cf. emmer wheat), cereal sp. and other unidentified plants were identified from samples (600) and (601) recovered during fieldwork in June 2005 from site GMXVII (see Volume II, Section 2 , 9).

Two hundred and eight animal bone fragments were found in samples (600) and (601) during fieldwork in June 2005 from site GMXVII. Cattle, roe deer and pig, alongside sheep/goat have been identified and this material is a further addition to the large assemblage of faunal remains excavated in the 1950-60s (see Volume II, Section 2, 12). A coprolite (probably from a dog) was found from a midden deposit associated with this phase and this contained many bone fragments: fragments of skull, teeth, jaw and leg bones of a foetal/neonatal sheep/goat and the feet remains of an adult sheep/goat (Hammon and Robinson, pers. comm.)

Assessment of recent land snail evidence for "layer 3" indicates a highly diverse range of species including some shade-loving species but with a dominance of the open-country species in the upper layers of this horizon (601) (see Volume II, Section 2, 8).

4.3.11 Overall character of settlement during Phase 5

Phase 5 presents a complex and varied picture of Bronze Age settlement at Gwithian (see Fig. 4). In the area where there had earlier been fields, five wooden circular buildings, the likely remains of a "farmstead" (comprising perhaps several related "households"), were found clustered around a "town-place". Three of the buildings, each with distinctive circular pebble-lined open hearths, were probably dwelling houses and the others, including one possible "granary" (with a likely raised floor), were probably used for a range of activities, such as storage, and perhaps even workshops for the making of pots, bone objects, leather and metalworking. Small-scale craft activities appeared to be carried out in different areas. There is an interesting variety of structures within this phase, some contained clay-lined features (basins) which appear to be a characteristic trait as well as the pebble-lined hearths (see above and Fig. 11). On the demise of the post-built "farmstead", stone-built structures were erected, represented by the two banked enclosures which overlay houses 1 and 4, and the probable stone walled building 1079 which overlay 1085.

The evidence strongly suggests that different sectors of the larger field system appeared to be actively farmed in different ways. Arable cultivation continued all around a town-place, but this was augmented by stock farming.

At Gwithian the inclusion of the human dead into a "domestic" setting may demonstrate the continuing expression of attachment to a particular place: an attachment which had manifested itself in earlier phases (see above).

Oysters, a whale bone and many marine molluscs (eg, mussel, limpet and whelk etc) show that, in addition to arable and stock farming, fishing and harvesting the nearby rocky shorelines was likely to have been an increasingly important part of daily life. The variety of resources is striking and collectively they paint a picture of a vibrant resourceful small community with fully developed farming and husbandry strategies.

The largest and most diverse artefact assemblage including ceramics, a huge variety of worked stone and animal bone artefacts and worked marine shells came from within buildings and spreads around the town-place during this phase of settlement. Alongside food processing implements such as saddle querns and stone mullers, many of the bone and stone tools were likely to have been used in wood, textile and leather-working activities. A few small clay mould fragments indicate small-scale metalworking. Notched and waisted pebble tools, interpreted as line-winders and net sinkers, suggest both off-shore hand-lining and deep sea fishing. A large ceramic assemblage exists which comprises a variety of mainly decorated Trevisker vessels (cf ApSimon and Greenfield 1972).

Preliminary assessment suggests that incised decorated pottery is dominant throughout this late phase at Gwithian, whilst vessels with cord-impressed motifs were typical of the earlier phase 3 settlement (see Volume II, Section 3, 17). Samples of unfired clay, spalled and refired sherds and poorly made (lumpy) pots, strongly indicate that people were making their own pots. This is the first direct evidence for a ceramic cottage industry within Bronze Age Cornwall. The potting clays are varied, with only c 5% local clays identified, but the main fabrics are of gabbro clays which would have derived from some 20 kilometres away (on the Lizard) and therefore were likely to have been collected and transported as raw materials to Gwithian. The existence of "local" trading networks are thus clear, but worked and unfinished pieces of probable Kimmeridge shale from Dorset and fragments of an axe mould of chlorite schist (perhaps sourced in south Devon or the Lizard), reveal that the Gwithian community was casting a much wider net.

Towards the end of the settlement's life, some of the buildings were destroyed and their ruins sealed by bone and artefact-rich dumps and spreads of settlement rubbish. Where these middens came from remains unknown although it highlights the likely possibility that this particular farmstead was one of several similar settlements scattered within extensive similar terraced field systems along the Red River valley. The poorly preserved remains of likely earlier and contemporary sites have been found at Sandy Lane (a site less than ½ mile away closer to the present day coastline) and today lying on the outskirts of Gwithian village, although the pottery from Sandy Lane is much more similar to material associated with Phase 3 rather than Phase 5 at the main excavated sites.

4.3.12 Dating "layer 3" Phase 5

There are currently seven (AMS) dates obtained from six samples from this horizon. All are from carbonised residues on sherds.

SUERC-6162	GMX27 (433)	2835 ± 35 BP	1120 - 900 cal BC
OxA-14525	GMX27B (433)	2946 ± 29 BP	1270 -1040 cal BC
OxA-14527	GMX16 (576)	2878 ± 29 BP	1190 - 940 cal BC
OxA-14589	GMX17 (546)	2944 ± 33 BP	1270 -1020 cal BC
OxA-14590	GMIX30 (1088)	2836 ± 32 BP	1120 - 900 cal BC
SUERC-6161	GMX26 (433)	3430 ± 35 BP	1880 -1630 cal BC

SUERC-6163	GMX28 (343)	2980 ± 35 BP	1380 -1110 cal BC

Note: SUERC-6162 and OxA-14525 are dates taken from the **same sherd** (site GMX27 (433)). The remainder are from carbonised residues dated from individual vessels.

Comment

In general five of the six dates are good for dating this horizon "layer 3". The overall date range for "layer 3" is 1380 - 900 cal BC, which confidently situates the date of events occurring within phase 5 to the latter part of the Middle Bronze Age extending into the earlier Later Bronze Age. This is largely what has been expected although now that Plain Wares of LBA date have been identified in Cornwall, this does raise the question of whether two ceramic traditions may have existed alongside each other in the South-West (Henrietta Quinnell, pers. com). Date SUERC-6161 comes from a sherd with unusual decoration, with no immediate parallels: there appears no reason why the date should not be accurate for the sherd, but the sherd must be regarded as intrusive within the midden deposit in which it was found

- The result for sample OXA-14590 comes from the central hearth (1088) of posthole structure (1134).
- The result for sample SUERC-6163 comes from the fill of gully (343) to the south of structure (724/725).
- SUERC-6162, OxA-14525, SUERC-6161 all come from (433) which is a general layer 3 context.
- OxA-14527, GMX 16 (576) is from general layer 3. OxA-14589 GMX 17 (546) is also from a general layer 3 in cutting 27.

4.3.13 Phase 6 Post Bronze Age settlement "Layer 2".

The next major phase, Phase 6, is represented by "Layer 2" which had previously been interpreted as a major blown sand episode (Thomas 1958). This interpretation still stands although within the SW corner of cutting 1 and NW corner of cutting 4, a few isolated finds of ironwork found associated with a stony spread (part of structure (40)) represents probable post-Roman or later activity. This was never further investigated.

4.3.14 Phase 7 "Layer 1" Turf and topsoil

Turf and topsoil covered the final sand blown deposit "layer 2" and the area became grassed over and remained undisturbed during Phase 7.

4.4 The post-Roman Excavation

4.4.1 Introduction

The post-Roman "settlement" at Gwithian was excavated in a series of linked "sites" over a number of seasons and began in 1953 with the excavation of GMI (Figs 16 and 17). GMI was the main area of excavation and revealed deep intact archaeological structures and deposits (excavated yearly from 1953 to 1958, but with no work in 1957). Related sites GMA (excavated in 1955 and 1956), GMB and GME (both excavated in 1955) and GMIV (excavated from 1954 to 1956) all provided additional information relating to the main phases of activity recorded at GMI.

4.4.2 Overall Phases linking the post-Roman "sites"

The principal character of the main events of post-Roman Gwithian are set out below. Evidence for some, but not all of these phases, was recorded at more than one site.

Top	**Main event**	**PHASE - Present at sites**
Phase 8	Turf mound	GMI, GMA, GMB, GME, GMIV.
Phase 7a & 7b	Sand dune formation and pits	GMI, GMA, GMB
Phase 6a & 6b	Stablisation horizon	GMI, GMA, GMB
Phase 5	Wind-blown sand	GMI, GMA, GMB
Phase 4a, 4b & 4c	Abandonment of structures	**LAYER A and A/B and middens**:GMI, GMA, and **an horizon in** GME
Phase 3	Workshop structures and industry	**LAYER A/B, B and B/C:** GMI, GMA, GMB, **an horizon in** GME and GMIV
Phase 2	Early industry	**LAYER B/C, C AND D** GMI, GMB, structures and **an horizon in** GME and GMIV?
Phase 1	Sand dunes	GMI, GMA, GMB, GME, GMIV.
Base		

4.4.3 The overall character of the post-Roman sites

The post-Roman "industrial settlement" discovered at Gwithian comprised a series of small linked structures surrounded by industrial features – principally found at sites GMI, GMA and GMIV (at the latter, only industrial features were found) (see Figs. 18, 19 and 20). Associated with these structural features was "settlement" debris (middens) found at sites GMI, GMA, GMB, GME and GMIV.

This major post-Roman phase (that is Phases 3 and 4) falls within the 5th to 8th centuries AD (dated by recently available AMS dates, see below). The site is characterised by craft-based industries - such as iron working, leather working, bone working, and perhaps wood working and fishing, and may best be described as a "workshop centre". The structures are unlikely to have been residential "houses" but rather may have been "shelters" and "workshops" perhaps used seasonally.

On present evidence it is unknown where any potentially related “residential site” is located within the nearby landscape (but see Crane Godrevy and Sandy Lane sites below).

Before this “site” was established, there is some structural evidence for an earlier phase apparently characterised by small-scale industrial activities and possible (roofed?) hollowed areas (at GMI). The extent however of an earlier phase (that is, Phase 2) was not fully investigated during the excavations. Clear confirmation of the main character and date of this phase needs to be fully verified by further analysis and scientific dating (see below).

On the abandonment of the buildings, the visible ruins were sealed beneath distinct shell-rich middens (at sites GMI, GMA and GME – during Phase 4). The area was gradually blanketed by sand. The site, which was a distinct mounded spur, lay untouched for centuries and the buried archaeology survived undisturbed (with the exception of a few (late) pits only recorded in GMB – during Phase 7, see Fig. 8).

4.4.4 Overall site preservation

The preservation of the post-Roman site was outstanding. The industrial site was established on top of sand dune accumulation and after abandonment was sealed by later accumulations which eventually buried and protected the entire site. The special alkaline qualities of the Gwithian sand has preserved many classes of artefact – particularly bone which rarely survives on Cornish sites and the animal bone from Gwithian is in exceptional condition.

4.4.5 Overall stratigraphy

During the excavations, three major occupation horizons were identified and coded “Layers A, B and C”. (A fourth layer, “Layer D” , was only once recorded at GMI in 1953 but this was later discounted when shown to be part of Layer C). These major horizons were subsequently distinguished from each other by ceramic styles (Thomas 1958 and Nowakowski, Quinnell, Sturgess, Thomas and Thorpe forthcoming). This rather broad-brush system of recording layers was applied across all the excavated areas even when not all the horizons were present. Not all trenches were excavated to the same depth.

This sequential coded layer-system served as an overall chronological framework which was applied to subsequent work on these related sites.

As recording techniques developed throughout the course of the fieldwork in the 1950s, uncertainties in distinguishing the major (occupation or activity) horizons frequently occurred, this resulted in some confusion in the site documentation. Recent work on the archive has attempted to clarify blurred distinctions documented in the record although it is still the case that there are some localised areas of the excavated areas where the stratigraphy remains unclear.

Two major phases of activity (Phases 3 and 4) was identified with slighter evidence for an earlier phase (Phase 2) (see below).

4.4.6 Updating the stratigraphic narrative and time-depth

Recent work on structural and stratigraphic reconstruction has permitted a review of the site narrative that was presented at the end of the fieldwork in *Gwithian Ten Years' Work* by Charles Thomas in 1958. The overall story presented at that time is now updated into a phased narrative which is linked to specific contexts listing all major and minor events (see Sturgess and Lawson-Jones 2006c).

Of all the areas investigated, GMI, (being the largest area excavated) was the only site where the full time-depth in the stratigraphic sequence was recorded and where all the

coded layers (see above) were identified. Scientific dating to determine the chronology for the start and end of this sequence is recommended for future work.

On presently available scientific (AMS) dates (see below), the time-depth documented in the stratigraphic sequence recorded on site GMI suggests a shorter timeframe of perhaps no more than 400 years (5th to 8th centuries AD) than previously proposed (when the date span of 400 - c. 1000 AD was suggested, see Thomas 1958, 23).

4.5 Principal results

The full detail of the archaeological story is presented in a working archive report by Sturgess and Lawson-Jones 2006c. This report represents current interpretations based on recent work. The following account summarises the principal results of each of the major sites.

4.5.1 GMI – Overall Summary

GMI was the largest area excavated on the post-Roman site. Excavated between 1953 and 1958, it was 20 sq metres in extent. The excavation proceeded through a number of (different size) cuttings which were gradually extended into a larger open area (see Fig. 17). A test pit dug in 1953 revealed deep intact stratigraphy.

Excavation of GMI was a major recording challenge as stratigraphy varied across the site.

GMI revealed complex stratigraphy. The main events of the major phases are as follows:

Phase	**Main event**	**Archaeological horizon**
Phase 8	Turf mound	Turf (modern)
Phase 7	Sand dune formation	Blown sand up to 3ft deep (post medieval in date).
Phase 6a & 6b	Stablisation horizon	Two thin turf lines (medieval& post-medieval in date).
Phase 5	Wind blown sand	
Phase 4	Abandonment of complex	**LAYERS A and B** post-Roman occupation and abandonment
Phase 3	"Workshops" & industry	**LAYERS A, B and C** post-Roman occupation deposits, structures, pits, and industrial features.
Phase 2	Early industry & ?workshops	**LAYERS B, C AND D** Early industrial activities - pits and industrial features
Phase 1	Sand dune landscape	Wind blown sand horizons and turf lines - in places excavated to 7ft deep.

4.5.2 GMI Principal Results – Structures and phasing

Phase 1 Sand dune landscape

Phase 1 was principally a barren sand dune horizon which was not fully excavated but extant across whole area of GMI and exceeded at least 2.1m (7ft) deep. No investigation of layers beneath the sand dune took place.

4.5.3 Phase 2 Early industry & settlement?

This early phase was marked by a series of large pits and industrial features with the suggestion of a possible contemporary roofed structure (2243) (although this structure may belong to Phase 3, see below).

Structure (2243)

The slight remains of a structure lay at the base of House 3 (Phase 3, see below) within a sunken hollow. It is possible that structure (2243) pre-dates the activity associated with House 3, although this is not entirely clear as a full plan was not revealed. An iron pin (GM/M/114) was the only find recovered from structure (2243).

Finds from (later) House 3 (see below) should be closely studied to determine whether there is any distinct evidence of earlier activity pre-dating the main phases of occupation horizons in related House 2.

Other features associated with this phase are: **furnace (2326)** with postholes (2261), (2282), a potentially **early pit/ditch (2217)**, a **posthole (2215),** a **flue (2300)** and **pit (2301).**

Some features contained dateable material. Furnace (2326) contains wood charcoal suitable for scientific dating, and pit (2217) contains diagnostic pottery (Sturgess and Lawson-Jones 2006c).

4.5.4 Phase 3 Settlement and industry

GMI SOUTHERN AREA

Houses 2, 3, 4 and structure (2244) formed a complex of small related sub-rectangular structures. In total, four were found and all were built within turf and stone-lined (inner revetted walls) hollows.

House 2 (2241)

House 2 was a small, sub-square, single-celled structure built of stone and wood with a central stone-lined hearth (2255) (Figs 18 and 20). It had been built within a purpose-dug hollow cut into clean wind blown sand: construction cut (2246). It was a small "building" measuring no more than 8ft (2.44m) in diameter (after on-site reconstruction) and contained a hearth which was lined by 4 broken fragments of (clearly reused) rotary querns. A stone-lined and capped pit (2313) was found in the SW part of House 2 and possible remnants of intact floor surface survived (2260). House 2 is likely to be contemporary with House 3 (see below). On its demise, it was filled in with stone rubble (post-occupation) (2238).

House 2 produced a number of potentially dateable deposits. Pit (2313) contained wood charcoal and pottery, floor (2260) contained pottery and ironwork (GM/M21 and GM/M/22), and rubble infill (2238) contained diagnostic pottery, metalwork (GM/M/9 and GM/M/20) (Sturgess and Lawson-Jones 2006c).

Note: A sealed deposit (2238) associated with the abandonment of the structure contained datable material: pottery. Residue on Sherd 924 (SUERC - 6160) from the internal rubble collapse of 'House 2' has been dated to cal AD 650-780 (see appendix 11).

House 3 (2242)

House 3 was a small sub-rectangular single-celled structure which adjoined House 2. It too was constructed of stone, turf and wood (see above and Figs 18, 19 and 20). This was also a small structure with a probable internal floor space of 1.83m (6ft) E-W by 2.44m (8ft) N-S. This "building" once uncovered, was then reconstructed following

excavation (see below). Possible remnant traces of upper floor (2264) as well as traces of a lower floor surface survived (2298). Evidence for some rebuild (at least 2 phases) and two hearths – an upper (open) (2263) and lower (stone-lined) hearth (2281) belonging to the two phases were found. The structure was set into a deeper hollow than House 2 (construction cut (2247)).

House 3 was reconstructed prior to the completion of excavation. The reconstruction (shown on the majority of existing photos and drawn plans) was inaccurate and showed a much larger building than originally existed with the consequence that the new area defined as 'House 3', actually encompassed 'House 3' and the eastern extents of House 4 and structure **(2244)**.

The original area of House 3 was later filled in by a shell midden (2258) after abandonment. House 3 was contemporary with (2244) and (2245) (see below).

There are a number of sealed deposits (linked to the construction and use of the structure) which contain dateable material. Ironwork (GM/M/32, GM/M/73) and diagnostic pottery were found from floor (2264), charcoal (sample 7) was found from hearth (2281), ironwork (GM/M/24, GM/M/25, GM/M/27) and diagnostic pottery were found from infill (2258) (Sturgess and Lawson-Jones 2006c).

House 4 (2245)

The partial remains of a sub-rectangular stone-built structure erected in a sand dug hollow (2249) were found although its true size is unknown (see Fig 18). This was similar in build to the other structures found at this level and house 4 was contemporary with house 3 (and probably adjoining). A single hearth pit (2323) is likely to be associated. This building was abandoned in two phases, first infilled with collapsed stone rubble and then finally sealed by a shell midden (2285) during Phase 4 (see below).

A number of sealed deposits associated with episodes of construction, use and abandonment of the structure have potentially dateable material (Sturgess and Lawson-Jones 2006c). Hearth (2323) contained grass-marked pottery, activity/occupation spread (2265) contained pottery and metalwork (GM/M/84 and GM/M/119). During the removal of stone rubble infill (2322) a complete bar-lug pot with a grass-marked base was found. Animal bones were found in the house wall (2284).

Structure (2244)

Structure (2244) was another small cell-like building which contained a hearth (2281) (see Fig 18). It too was associated with House 3. It was built into purpose dug hollow (2248) and formed a cell which opened into the west side of House 3 (and is therefore likely to be contemporary (see above)). It was filled in and concealed by a shell midden (2285) during Phase 4 (see below). This structure was only partially excavated.

Note: There is no datable material associated with this structure.

GMI NORTHERN AREA

House 1

House 1 was found in the northern zone of GMI and was of an altogether different style to those structures excavated in the south (see Fig 18). This was a "sub-rectangular" open-sided, roofed, stone and post-built structure which sported an internal wall which divided the interior space into two cells (possibly of two phases). These "cells" faced an

"open" area and appeared to look over the buildings in the south (see Fig. 18). Constructed during Phase 3 (that is Layer B and possibly within a hollow), it may represent the latest building at GMI. On its abandonment it was burnt down. Associated industrial features include charcoal-filled trenches.

FEATURES IMMEDIATELY NORTH OF HOUSE 3

Stratigraphic evidence suggests some minor phasing within this overall phase of activity with continued industrial activities: Flue with pit (2336) and pit (2337) both cut into the edge of the construction cut on the northern side of house 3. Neither feature contained dateable material.

4.5.5 Features across GMI and in the central part of the site between north and south

In the central area of the excavation was a large number of industrial features which may either belong to Phase 2 or 3. Some contain dateable material (that is diagnostic pottery and/or young wood (charcoal)):

- **Pit (2240) -** large oval pit *(contains datable material: pottery).*
- **Pit (2266)** containing large quantities of crushed shells and charcoal. *(Contains datable young wood – hazel – sample 2).*
- **Pit (2274) with a flue** - an industrial pit recorded as containing charcoal *(contains no datable material- sample 6).*
- **Pit (2289)** - large pit covered by shell and contained charcoal *(No datable material available).*
- **Pit (2291)** - shallow pit/hearth containing charcoal *(No datable material available).*
- **Pit (2269)** - *(No datable material available).*
- **Pit (2338)** - *(No datable material available).*
- **Hearth (2235)** - pit/hearth containing charcoal *(No datable material available).*
- **Pit (2226) with a flue** - an industrial pit containing charcoal *(Contains datable wood charcoal hazel and oak).*
- **Pit (2321)** – charcoal-filled pit *(No datable material availble).*

4.5.6 Phase 4 - Abandonment

In the northern half of GMI only, there were a series of deposits (Layer A) which were associated with the possible use and then abandonment of House 1. These deposits did not appear in the southern part of the excavation. Three minor phases have been identified: Phases 4a, 4b and 4c.

The visible abandoned ruins in the south were finally sealed with (dumped) shell-rich layers as were many of the pits. These shell-rich dumps also filled pits and industrial features in the central and northern parts of the site and as a result, the area was made level. Overlying the shell-rich deposits (Phase 4b) in the south-west corner of the site and also seen in GMA, was a thin layer of soil which had been called 'Layer A' in GMA (Phase 4a) but which does not equate with 'Layer A' in the northern half of GMI (Phase 4c).

The abandoned deposits associated with each the main structures are follows:

- **House 3 (2242)** Later filled in by shell midden.
- **House 4 (2245)** Infilled with shell midden (2285).
- **Structure (2244)** Infilled with shell midden (2285).

Another feature associated with Phase 4b/4c was:

- **Pit (2320)** – contained charcoal and filled in with shells. Also contained a large amount of animal bone *(contains dateable material: pottery).*

General comment

A review of the stratigraphy shows that the shell deposits all clearly post-dated the abandonment of the structures. Their singular make-up (shell) may suggest these middens were deposited in a short space of time, perhaps part of a series of linked events (possibly during a single episode). It seems highly likely that the structures were visible as abandoned unroofed ruins when the middens were dumped. During further analysis these middens should be grouped by phase and investigated to determine whether they all contain a similarly dated range of material (or even conjoining fragments of the same artefacts). Also to consider is the question of where this material came from. On current evidence it can not be assumed that all this material was directly related to activities within the structures. The possibility that this came from elsewhere (close by) should be considered during analysis.

4.5.7 Across GMI and in the central part of the site between north and south

In the central area of the excavation were some industrial features which may either belong to Phase 3 or 4. Some contain dateable material (that is diagnostic pottery and/or young wood (charcoal).

- **Linear charcoal feature (2308)** - *No datable material.*
- **Charcoal-filled trench (2293)** - *No datable material.*
- **Hearth (2229)** - *contains datable wood charcoal: hazel.*
- **Charcoal and shell-filled trench (2275)** - *No datable material.*
- **Pit (2290)** contained shell and blackened sand - *No datable material.*

4.5.8 Phase 5 Wind-blown sand and Phases 6, 7 and 8

A band of wind-blown sand sealed all post-Roman deposits during Phase 5. Two thin turf ("tram") lines (2223) (Phases 6a and 6b) (containing both medieval and post-medieval pottery) formed above wind-blown sand across whole area of GMI. These were separated by a thin layer of clean wind-blown sand. These turf lines are also recorded in GMA and possibly GMB. **A pit [2288]** cut this layer but did not contain finds. Several episodes of sand accumulation during the post-medieval period formed a thick dune horizon (during Phase 7) which eventually became a grass mound (Phase 8).

4.5.9 Site GMA - Overall Summary

GMA comprised five cuttings (Figs 17 and 18). Three were amalgamated, one stood alone and one (GMA-β), was ultimately linked to the south-west corner of GMI. GMA was the second largest excavation: 8 square metres in extent was investigated between 1955 and 1956.

The overall record for the excavation is poor. There are few plans, no measured section drawings and a very limited number of photographs.

Stratigraphic and structural data comprised data from Phase 4 (abandonment) and Phase 3 (settlement, see below).

4.5.10 GMA Principal Results – Structures and phasing

Phase 1a and 1b sand dune landscape

The excavation located but did not go down into layers of "clean" and sterile sands in GMA. Some were more extensively revealed (in some cuttings) than others. The following deposits were found: **(2127), (2138), (2139)** and (**2144)** in GMA.

4.5.11 Phase 2 – No structures

No secure structures can be identified for the lowest layers excavated in cuttings related to GMA. This is equated to horizon "LAYER B/C".

4.5.12 Phase 3 Settlement

The partial ground plans of least 6 structures were excavated: all were small sunken buildings (Fig. 18). These all appeared within the same broad horizon and are likely to have been contemporary with each other and with the structures relating to Phase 3 found in GMI (see above). However, unlike the structures in GMI, the structures in GMA were only partially excavated and much of the "layer B" horizon was never fully excavated.

General layer B (2109)

A general **context number (2190)** has been assigned to layer B and includes finds from the whole range of associated features and deposits at this level.

Structure 2124

Only the south-west corner of a presumed sub-rectangular stone walled sunken structure was excavated. There are no details of its overall size, shape or extent. It was defined by a stone wall (2143) which was set within a construction trench [2112]. A charcoal-rich spread (2135) was found at the base of the structure and this may have represented an (internal) perhaps earlier floor. On abandonment the building was left to ruin. A localised deposit of clean (dumped?) sand (2111) sealed the ruined building whose stone sides had caved in. This sand was subsequently sealed (along with adjacent structure 2142) by shell deposit (2122).

- All finds for **2124** (with the exception of two sherds in 1955 finds bag 4) will be contained within 'general layer B' **(2109)** finds for GMA-N (1955 and 1956). Potential for dating the pottery needs to be carried out. Slightly different recording in the metalwork register has allowed the metalwork found in 1955 to be assigned to structure **2124.**

Cell-like structure 2142

Structure 2142 was a small cell-like building adjacent to and associated with building 2124. Only a small part was excavated so its overall character, size and shape are unknown although it is possible that it formed a southern annexe to structure 2124 (Fig.18). (This was similar to the cell (2244) which adjoined house 3 in GMI - see above). Structure 2142 was defined by arc of stones (2110) (2.44m (8ft) long) which formed a 0.61m (2ft) wide wall. On abandonment this wall was left in a partially collapsed state. Five stakeholes (2147) were found associated with this building. A surviving remnant of a possible clay floor (2125) was recorded. There are no further details.

No finds from these specific contexts were separated from 'general layer B' finds.

- A piece of metalwork came from walling **(2110)** and a sample of the clay from **(2125)** was collected.

Structure 2140

Only a small part of the northern end of this building was excavated in GMA-α (Fig. 18). Structure 2140 was built within a hollow and associated with stone deposits: (2113) and (2149). Stones (2113) may represent later collapse while deeper stones (2149) appeared to be *in situ,* and formed a north-east to south-west alignment. These deeper stones may have represented the partial remains of a stone revetment, like some of the better preserved structures found in GMI (see above). A group of three stakeholes [2150] were also found. The remains of a distinct, compacted occupation surface (2132) was found and observed during the excavation to contain a 'notable' quantity of 'polished' slate fragments. No significant quantities of slate appear to have been retained within either (2109) or (2132).

- **Floor surface (2132)** produced a variety of finds, some (but not all) of which were separated from the 'general layer B' **(2109)** finds for cutting GMA-α.
- Finds from **(2132)** include pottery, bones and teeth, stone, shell and two wood charcoal sample (gorse and broom) suitable for dating.

Structure 2137

Only a small part of structure 2137 was excavated in GMA-β (Fig. 18). This structure was positioned within a purpose dug rectangular hollow (2136). It was aligned north-east to south-west and may have had an entrance in the south. Internally *in situ* stones (2117) defined an area of at least 1.52m (5ft) by 2.44m (8ft), centred around a hearth (2116). Associated stones to the south suggest that the original inner edge of hollow (2136) may have been revetted. These stones and the hollow were never fully excavated. An occupation surface/deposit (2134) was recorded around the hearth and main stone arrangement (2116)/(2117). On abandonment the hearth was sealed by shell deposit (2119), and the structure was left to ruin.

- **Occupation surface/deposit (2134)** produced a variety of finds, some (but not all) of which were separated from the 'general layer B' **(2109)** finds for cutting GMA-β. Known finds from **(2134)** include slag, shell, pottery (including a reconstructed pot currently on display at the RCM, Truro), worked and un-worked bone, teeth, shell and a piece of charcoal (associated with circular hearth **(2116)**). *Contains datable material.*

Probable Structure (2128)

The upper edge of a dug hollow was found in the eastern side of GMA–N/S and GMA-S (Fig. 18). This was a sheer-sided cut which may have been the outer eastern edge of a probable sunken structure. The southern edge of this cut was probably defined by the spread of layer B to the south and west. Structure (2128) appeared to have had a north-east to south-west alignment and was potentially up to 2.44m (8 ft) wide. An arc of three stakeholes (2148) to the north-west of [2128] may be associated. There are no further details.

- Context **(2128)** produced a range of slate pieces and some gaming pieces.

Probable Structure (2123)

Only the eastern edge of a cut hollow (2141) for a probable structure (2123) was found in the north-west corner of trench GMA-β. No full plan is available although it was aligned north-east to south-west and was at least 2.1m (7ft) in extent. Some "irregular" pits / postholes (2146) were associated but none were fully excavated and recorded.

- **The occupation deposit** associated with hollow cut [2141] produced bones and teeth, pottery, slag and utilised stone. Need to assess whether any diagnostic material available.

Pits (2133)

Located on west edge of GMA-N/S, were pits (2133) which were noted but were not fully excavated or recorded. *No datable material.*

Shells (2145)

A sea shell-rich dump (2145) was recorded at a depth in excess of 1.52m (5 ft). This lay beneath a later shell deposit (2114), and appeared to be low down in the layer B horizon. On the eastern edge of (2145) was a linear (N-S aligned) feature (2115). This was not however fully recorded. It may have been an industrial feature.

- Associated finds from **(2145)** include bones and teeth, a slate pot lid, slag, a stamped sherd and a charcoal sample.

4.5.13 Phase 4b Settlement abandonment

Three of the visible abandoned ruins were finally sealed with (dumped) shell-rich layers (Phase 4b) rendering the site level. A very similar sequence of events was recorded at GMI during this phase.

Overlying the shell-rich deposits (Phase 4b) (unlike much of GMI), a thin layer of soil (Phase 4a) was recorded as 'layer A' (2118) in GMA-S and GMA-α. Finds from this deposit were not kept separate from other (earlier) layer A deposits.

- **Shell midden (2122)** sealed structures **2124** and **2142.** *No datable material.*
- **Shell deposit (2119)** sealed structure **2137.** *No datable material.*
- **Shell midden (2114)** in layer A or A/B was located in the northern part of GMA-α. It possibly formed the infill of a phase 3 sunken hollow. No further details. *No datable material.*
- **Widespread layer (2118).** *No datable material.*

General extensive layers were formed or built up during this phase, including contexts **(2118)** (layer A) and **(2126)** (Layer A/B). *NOTE: General layer B **(2109)** must be included within Phase 4 because of some confusion between layers and features during excavation and recording.*

4.5.14 Phase 5 Wind-blown Sand and Phases 6, 7 and 8

Note: There are no drawn sections for GMA cuttings and the notebooks do not describe the stratigraphy in detail. As a result no context numbers have been issued for sand underlying the stabilisation 'tramline' horizons, although it was clear that some sand was present (rendering the tramlines visible to the excavators). A pair of parallel turf 'tramlines' **(2108)** was recorded across the GMA cuttings. These are the same as those recorded in GMI and medieval pottery is linked to the lower one in GMA-α. This ground was consolidated during Phase 7 when the sand dune formed (2107) and the area became a grass mound (Phase 8).

4.5.15 GMB - Overall Summary

GMB comprised one cutting, excavated in 1955, which measured 3m (N-S) by 2m (E-W) (Fig 18).

The overall record for the excavation is poor and there are no measured trench plans although trench sections were recorded and there are useful photographs of the sections that have been drawn.

Midden and soil deposits related to Phase 3 were found during this excavation. Some ephemeral evidence (burnt charcoal spreads) of earlier Phase 2 activity was found but this was poorly documented, clearly not structural and not dateable (see below).

4.5.16 GMB Principal Results – Structures and phasing

Phase 1 Sand dune landscape

A thick blown sand deposit **(2029)** with animal disturbance in the central area was found. This was only partially excavated and was recorded as sterile. It is likely to be the result of more than one sand blow as the lower part of (2029) was clean but the upper part (see phase 2 below) contained a charcoal deposit (see (2039), below).

4.5.17 Phase 2 Early activities?

Upper part of sand blow **(2029)** - see above – with evidence for animal burrowing. Remnant *in situ* burning activity/charcoal deposit **(2039)** was recorded in the upper southern part of (2029).

- *No secure dateable material available.*

4.5.18 Phase 3 "Settlement" related activities

The main evidence for activities associated with phase 3 at site GMB are likely former land surface and/or occupation horizons with remains of possible settlement debris and activities. Some deposits were interspersed with episodes of sand blow.

Localised deposits included: clean sand **(2027)** and a likely (sandy) midden **(2028)**. These appear to be broadly contemporary with a stone alignment **(2041)** and a possibly earlier, open hearth **(2040).** The hearth was largely shapeless but partially stone-lined. Its function is unclear and it was sealed by sand (2047). *No datable material.*

Other localised (perhaps remnant) deposits of sand, shell and soil included: **(2030), (2031), (2032)** and **(2033)**. Only **(2031)** contained separable finds which comprised pottery, slag, stone and animal teeth. *The pottery may include some diagnostic sherds.* Some stablisation may have occurred in this localised sequence evidenced by a sandy turf-line **(2034)**. Beneath turfline **(2034)** were earlier (minor and major) episodes of blown sand e.g. **(2035)** and **(2036)***. No datable material.*

(2037) appears to have been an extensive, lower "occupation" and/or "activity horizon within phase 3. *No datable material.*

4.5.19 Phase 4 Abandonment deposits?

A shell-rich midden deposit **(2026)** may represent evidence for abandonment at this site during Phase 4 although this was not as substantial as similar deposits recorded at sites GMA and GMI (see above).

4.5.20 Phase 5 Minor sand blow and Phases 6, 7 and 8

Following abandonment the area was sealed by a minor sand blow **(2025)** (Phase 5). At least 3 old turf-lines (2024) (interspersed with layers of blown sand) representing stabilisation episodes (Phase 6), formed. A series of pits ((2021), (2022) and (2023)) were dug into the grass mound once the sand dune had stabilised (during Phases 7 and 8). These are likely to be post-medieval in date though there were no associated finds.

4.5.21 GME N and S Overall Summary

GME comprised two cuttings: GME N and S (Fig. 17). GME-N was 27 sq metres in extent. GME-S was originally planned to be the same size as GME-N, but the full extent and depth of this excavation area was not recorded. Both cuttings were

excavated in 1955 following a trial trench (GMVIII), which was opened in 1954 but not recorded.

The overall record for the excavation is poor and there are no measured trench plans. One main section was drawn in GME-N.

There were no major structural remains recorded in this trench. Occupation and/or activity spreads within a hollow associated to Phase 3 was recorded and a substantial midden together with the remains of open fires which belonged to phase 4. Some potentially early Phase 2 evidence was noted although this was not fully excavated.

4.5.22 GME N and S Principal Results – Structures and phasing

Phase 1 Sand dune landscape

Dense clean sand **(2011)** was found across the site underlying "occupation" related activity. This was partially excavated. The upper (undifferentiated?) part contained *in situ* burning.

4.5.23 Phase 2 Early activities?

A thick sand layer **(2011)** contained burnt sand and a charcoal spread **(2013)** which indicated activities which were potentially related to Phase 2. This layer was not fully excavated but was found across the base of the entire cutting. There were no finds from this layer.

4.5.24 Phase 3 occupation horizons/spreads in a hollow

Two horizons: sand (2004) over dark sand and/or "occupation" (2006) were found across the entire cutting. Both contained ashy spreads and/or fills: (2005) and (2006) respectively.

Dark sand and/or "occupation" **(2006)** contained much bone, but none of the material can be isolated from the 'bone box' material. Additionally it contained (but not clearly separated from lower layer **(2009)**) pottery and stone (inc. gaming counters?, whetstones and a lap stone etc.). Some of this pottery maybe diagnostic*.* Ashy spreads **(2005)** and **(2008)** *were associated but contained no datable material.* All the above are likely to be remnant "occupation" and/or activity spreads rather than blown sand deposits.

Another major (and lower) horizon found across the cutting was a 'reddish' layer **(2009)**. This may have been an *in situ* occupation surface and/or spread. It produced many finds (including animal bones). (2009) lay within (the primary fill) of a shallow hollow. No secure floor surfaces were apparent although there were a number of "ashy" filled possible stake and/or postholes (eg **(2012), (2014), (2015)** and **(2016)** all of which cut into the base of the hollow and were sealed by **(2009)**).

4.5.25 Phase 4 shell-rich middens and occupation spreads?

Phase 4 is marked by a very substantial **midden deposit (2002).** The midden was not excavated in phase, although it clearly did contain many layers which could suggest that it formed gradually through time. The upper part contained a large quantity of shell (none of which was kept). The lower part contained more mixed material: pot, metalwork and animal bone, more closely identified as occupation and/or settlement rubbish. Finds from upper and lower (2002) were not separated, but do include diagnostic pottery and metalwork (GM/M/52, 53 and 54). The photographs show that the midden lay within a sunken feature or hollow, but this was not recorded in section.

A charcoal spread – the remains of an **open fire (2003)** - was recorded within the lower part of the midden sequence. Another related or perhaps later **open fire (2007)**

was also recorded in the northern part of the trench. No datable material exists for either context.

General comment

Given the shell content of the upper parts of this midden (similar to those individual shell deposits found dumped into structures on GMI and GMA), it could be suggested that this midden feature (2002) started to form during Phase 3 (that is LAYER B horizon) and continued to focus as a main dump during Phase 4 (that is LAYER A). Separation of these two major phases is not possible as only a small area was excavated.

4.5.26 Phases 5, 6, 7, 8 and 9

There was no evidence for Phases 5, 6 and 7 in this trench. By Phase 8 the area was a grass mound. The latest event recorded here was a partially excavated (undated) slump (2000) which was probably a previous trial trench (that is site GMVIII) (Phase 9) (see Sturgess and Lawson-Jones 2006c).

4.5.27 Site GMIV - Overall Summary

GMIV comprised cutting GMIV, GMIV-A and smaller (unrecorded) satellite trenches GMIV-B and GMIV-C (Fig. 16). The total area excavated was approximately 67 sq metres. GMIV was excavated in 1954, 1955 and 1956.

There are a series of section drawings which show a very complex stratigraphy and one particularly useful overall trench plan for GMIV-A, which was drawn up in the final season in 1956. No site documentation was kept for satellite trenches GMIV-B and GMIV-C, although finds were collected.

The site comprised a complex series of layers and midden spreads as well as partially excavated linear features related to industrial activities. Stratigraphy principally comprised: sandy deposits cut by industrial activities. These are likely to be associated with Phases 2 and/or 3.

4.5.28 Principal Results – Structures and phasing

Phase 1

A clean blown sand layer **(2077)** was recorded across the area of the trench. This was only partly excavated and contained no datable material.

4.5.29 Phase 2 and/or 3 industrial pits & spreads

A series of (probable) contemporary linear (burnt) features associated with industrial processes and located on the eastern side of the (seasonal) pond below the main mound were excavated (see Fig. 16). They cut through a number of different sand deposits, including **(2095), (2087)** and **(2075)**. These “industrial” pits comprising **SW Pit complex (2053), NW pit (2060), Central pit (2063)**, and **NE pit (2067)** were probably associated with related industrial activities on the main GMA and GMI sites during Phases 2 (and 3). Pit (2053) produced grass-marked pot, slag and charcoal suitable for dating (1956 finds bag 30). Pit (2060) produced grass-marked pot and slag, pit (2063) contained bone shell and charcoal which may be suitable for dating (1956, bag 33) and pit (2067) contained pot, iron slag with a solid layer of charcoal lining its base, which may be suitable for dating. Overall very little slag was recorded from these features so there is no direct evidence that they may have been furnaces although these features may have been associated with industrial processes such as the production of charcoal as fuel for metalworking. These provisional interpretations need

to be reviewed. Potential related (possibly slightly later) minor events included **pit (2058)** and **hearth (2064)**.

4.5.30 Phases 4, 5, 6 and 7

There was no clear evidence for similar abandonment activities as those recorded on sites GMI and GMA during phase 4 on GMIV. Mixed fills were however recorded in some of the pits listed above and these may have resulted from rapid and deliberate infilling (with midden-like material eg. **(2065)** and **(2068)**). A varied mix of sand and soil (including lenses of blown sand) was found above and around the tops of these pits interspersed by shallow cuts **(2081)** and **(2085)/(2086)** which were filled with similar material. *Note: Some of these deposits may relate to surface activities associated with the industrial pits of an earlier phase.*

A substantial but only partially excavated **pit [2069]** was found in the SE. It was filled with midden material **(2070)** and was a late feature (phase 6 or 7). Finds included bone, teeth and pottery. A thin turfline **(2082)** represented a stabilisation horizon (Phase 7).

4.5.31 Phase 8

The low turf mound that became site GMIV sealed a small number of late pits: **[2090], [2091], [2097]** and **[2103]**. These features all appear to be later than the other recorded cuts and deposits shown in section. None produced finds.

General comment

In 1958 Charles Thomas wrote that a new midden formed at GMIV and this related to later activities (ie. layer A- that is phase 4) on GMI and GMA (Thomas 1958). However if this interpretation is correct then it is of interest in that it differs from the character of shell-rich deposits excavated elsewhere. Here the layers appeared to be more fills and spreads of material. If this is the case and we are seeing the regular staged dumping of spreads of "occupation" material over an area where some abandonment and/or stabilisation had earlier occurred, then theoretically this could be confirmed by the close examination of groups of the pottery from upper and lower layers and verified by a tight scientific dating programme.

The linear burnt features recorded at GMIV quite closely resemble in plan some of those found on GMI within phase 3. Further specialist advice is required for a more solid interpretation of these features. This is recommended as part of future analysis.

4.5.32 Results of Scientific dating study 2005

In 2005 a pilot scientific dating study took place with 6 samples which were submitted for AMS dating and which produced successful results (see Volume II, Section 4). All the dates came from residues found on a selection of distinctive sherds and samples taken from two of the main proposed occupation horizons recorded at GMI (see above). The results are presented below and represent the first scientifically dated samples from the excavation.

Site GMI

"LAYER C"

OxA - 14529	GMI/9	1534 ± 29 BP	Cal AD 420 - 600
SUERC - 6158	GMI/6	1455 ± 35 BP	Cal AD 540 - 660
OxA - 14528	GMI/1	1460 ± 27 BP	Cal AD 550 - 650

"**LAYER B"**

*OxA -14526	GMI/7	1448 ± 28 BP	Cal AD 560 - 660
*SUERC - 6159	GMI/7B	1525 ± 35 BP	Cal AD 420 - 610
SUERC - 6160	GMI/13	1310 ± 35 BP	Cal AD 650 - 780

** same sherd dated.*

Comment

In general the dates seem reliable and to be in good agreement with the proposed stratigraphic sequence although there is some overlap. However all the dated samples come from general spreads with the exception of GMI/13 which was from the sealed rubble collapse of House (2241). Further dates are required from specific events within the major site.

The scientific dating team report:

"Replicate measurements on sherd GMI 7 (OxA-14526; 1448 ±28 BP and SUERC-6159; 1525 ±35 BP) from phase 3 are statistically consistent (T'=3.0; v=1; T'(5%)=3.8; Ward and Wilson, 1978) and allow a weighted mean to be calculated before calibration (GMI 7; 1478 ±22BP)" (Vol. II, Section 4.1).

The dates are also in good agreement with the ceramic forms. Six samples from 5 different vessels were dated.

OxA-14529	GMI/9	base sherd Bag 25	Context (2210)
SUERC - 6158	GMI/6	body sherd Bag 65	Context (2210)
OxA-14528	GMI/1	Gwithian style base sherd Bag 241	Context (2210)
OxA-14526	*GMI/7	body sherd Bag 6	Context (2208)
SUERC - 6159	*GMI/7B	body sherd Bag 6	Context (2208)
SUERC - 6160	GMI/13	grass-marked base Sherd 924	Context (2238) House 2 [2241]

** same sherd dated.*

On present knowledge, the dates reveal a main phase of activity at GMI which falls within the 5th to 8th centuries AD. Abandonment of the site was likely to have taken place in the late 7th/8th centuries AD, and the evidence for abandonment could suggest fairly systematic closure. Clear start and end dates for this sequence are required.

4.6 Crane Godrevy

4.6.1 Introduction

Excavations at Crane Godrevy took place over several seasons. Trial cuttings were made in 1952 and 1953, but the major excavations took place between 1956 to 1958, with a final season in 1969 (Thomas 1969) (Figs. 2 and 21).

The main focus of the work at Crane Godrevy was on the excavation of the ruins of a medieval and later homestead but, in 1956, a ditch was discovered. It therefore appeared that the small collection of medieval buildings lay within an enclosure, or a "round", of much earlier date (Thomas 1958, 17, fig. 13). Investigation of the history of the ditch at Crane Godrevy became a major part of the overall excavation strategy throughout the years of fieldwork and the focus of present work. The results of work on

the medieval structures investigated at Crane Godrevy merit future full publication (Nowakowski, 2004, section 9.7).

4.6.2 Overall significance and principal results of the investigation of the enclosure ditch at Crane Godrevy

The discovery of a previously unknown enclosed site at Crane Godrevy was significant for the potential understanding of settlement and land use during the 1st millennium AD at Gwithian.

On present evidence, the general character of the broader Roman period landscape at Gwithian appears to have been varied. Broadly contemporary with the round (less than a ¼ mile towards the coast) was the site of a small native Roman "farmstead" at Porth Godrevy. This site was excavated from 1956 to 1958 and found to be relatively well-preserved and dated by pottery to the c. 2nd and 3rd centuries AD (Fowler 1962). A recent reassessment of the finds has suggested that the site had more of an industrial character than previously considered (see Volume II, Section 3, 17.17). Pottery of similar and later Roman date was recovered from the ditched enclosure investigated at Crane Godrevy. The absence of later Iron Age South Western decorated ware from Crane Godrevy has been noted (see Volume II, Section 3, 17.13).

Pottery dating to the post-Roman period was also found during the excavations (see Volume II, Section 3, 17.13). This material, albeit a small assemblage, was associated with "sunken features" which were found within the area of the enclosure and overlay the (infilled) enclosure ditch (see below).

These discoveries suggest some link between activities at Crane Godrevy and the main post-Roman site centred at sites GMI and GMA down slope (see Sturgess and Lawson-Jones 2006c and above). The ceramics also provide a link with the Sandy Lane sites (see Volume II, Section 3, 17.10).

4.6.3 The exploration of the enclosure and extent of the investigations

The course of the ditch defining the enclosure was not detectable on surface. The main aim of excavations was to trace its overall plan and shape (an accompanying upstanding bank had not survived) through a series of trench cuttings. Only limited evidence for contemporary interior buildings had survived (in the form of one or two isolated postholes: Thomas 1969, 85 and fig 32).

On the completion of all fieldwork at Crane Godrevy, a plan of the proposed shape and size of the enclosure was drawn up and published in 1969 (Thomas 1969, fig. 32). An updated plan of the enclosure has now been proposed (see Sturgess and Lawson - Jones 2006a and see Fig. 21).

4.6.4 Overall aim of the assessment

The present exercise has focussed on an assessment of the results of the investigations of the enclosure ditch. The principal aim has been to identify those cuttings which revealed the most intact stratigraphic sequences which could repay further analysis and scientific dating (Sturgess and Lawson -Jones 2006a).

The results of this exercise, together with recommendations for further work, are presented in an archive document (Sturgess and Lawson-Jones 2006a). Recommendations are summarised in section 5.7.

4.6.5 The results of the assessment

4.6.5.1 Extent of investigations and quality of evidence

The enclosure ditch was investigated in a series of approximately 20 or so cuttings (see Fig. 21). Not all the cuttings were fully excavated. In a number of cases, cuttings

were just stripped of turf and topsoil and the presence (or absence) of a ditch was noted. These are listed as follows.

1958 excavations

Cutting AP - only top of ditch edge was revealed.

Cutting AO - only top of ditch edge was revealed.

Cutting AM - possible edge of ditch revealed

Cutting M,- extension E - only top of ditch edge was revealed.

Cutting AA – both top edges of ditch revealed

Cutting AK – only one side of the ditch was revealed.

1969 excavations

Cutting 2 (1969) - only top of ditch edge was revealed.

Cutting 3 (1969) - only top of ditch edge was revealed.

The excavation record varies and for some cuttings there are no drawn sections.

These are:

1958 excavations

Cutting AQ

Cutting M – Extension E

Cutting Y

The value of the data from these cuttings must be considered limited.

Full ditch profiles were excavated and recorded in the following cuttings. These cuttings provide the most useful datasets.

1956-57 excavations

Cuttings V, Vb – major ditch section [115].

1956 excavations

Cutting I and Ia – long stretch of major ditch section [91] was excavated.

1957 excavations

Cutting M – large ditch section [63]. Partial survival of a later (medieval and post-medieval?) stone-faced [64] outer bank.

Cutting L – a major ditch section [10] fully excavated.

Cutting O – a major ditch section [22] fully excavated.

1958 excavations

Cutting AQ – a major ditch section [42].

Cutting Y – major ditch section across enclosure ditch [49] only partially excavated although no section drawings exist.

1958 and 1969 excavations

Cutting AB and cutting I – major section through enclosure ditch [106] fully excavated and re-visited and re-recorded in 2005 (see below).

4.6.6 Overall character and history of the enclosure ditch

The ditch was a deeply dug rock-cut feature. It was generally V-shaped in profile with a blunted (ankle-breaker) base and varied in width (up to 3.66m (12 ft) wide). In places it was up to 2.13m (6-7ft) deep (from the top of the natural). Ditch fills were sealed and intact.

No definite evidence for any accompanying internal or external banks was found.

All fully excavated ditch sections revealed series of dumped (re-deposited)fills and all finds were RB in date (see below). The evidence suggests that the ditch and its infill was wholly Romano-British in date.

There was no evidence for *major sand blows* in any ditch fills.

4.6.7 Overall plan of enclosure

In 1969 Thomas suggested that the shape of the enclosure at Crane Godrevy was triangular and that the position of the original entrance remained unknown (Thomas 1969, 85). This observation was based on the findings of two small cuttings (4 and 5, see below); both partially excavated in 1969. These trenches were never backfilled and during a field revisit in 2005, a wall rather than a ditch was observed in trench 4. (Trench 5 could not be located).

It is possible that the enclosure was sub-rectangular rather than triangular in plan although its true extent and shape remains unknown without further field investigation.

4.6.8 Differences in ditch character and width

In the cuttings investigated in the NW corner of the enclosure (cuttings I, Ia, V, Va, Vb, V extension, IV, VIa and IV extension) where sections were cut across the enclosure ditch, work on the archive has shown that there were notable differences in width and depth. Such differences are hard to fully explain although it is possible that these could indicate some remodelling of the ditch through a possible *original* entranceway. However definite evidence for this remains inconclusive.

4.6.9 Additional evidence for post-Roman activities

Cutting U extension (east) was excavated in 1969. In this cutting the ditch section was not fully excavated although the ditch was shown to have been backfilled. This infilling episode has been dated elsewhere (by finds in the upper ditch fills) to the RB period. Following this a stone-revetted structure set in a hollow (probably sub-rectangular in plan) was constructed on and over the area of the now filled in ditch. Some layers interpreted as possible floor surfaces were found and the fill sealing them produced pottery. The majority of the ceramics were fresh and included both grass-marked sherds and Sandy Lane style pottery.

In 1969 Thomas interpreted the evidence for later activities found in cutting U as part of a remodelling event involving the creation of an entranceway which dated to the Medieval period (post 1200) (Thomas 1969, 85-86, and E on plan fig. 32). This interpretation requires reconsideration since the “sunken feature” and associated pottery found within this cutting share similar characteristics to the cell-like structures (all set within hollows) recorded on the major phase of activity on the post-Roman site

at GM/I down slope (see sites GMI and GMA above). Slight evidence for other structures of a likely similar build was identified within the enclosure and these were also associated with grass-marked pottery.

4.6.10 Accompanying datasets – finds from ditch fills

Some cuttings produced finds from ditch fills which included pottery, metalwork, stonework, charcoal, molluscs and animal bone.

Some of the material is diagnostic (pottery and metalwork).

Finds in the ditch fills were all RB in date.

The following classes of artefacts were excavated from the ditch fills and they were rapidly assessed in 2003-2004 (see Volume II, Section 3, 17.13 and Nowakowski 2004, section 6.12.1).

Full analysis of all the listed classes is recommended:

- (RB) Romano-British pottery
- Roman and medieval stonework – wide variety of objects including worked pebbles, whetstones, hammerstones, querns, lapstones, bakestone, slate with graffiti
- Copper alloy objects – including a rare late 4th or 5th century AD buckle
- Iron objects
- Animal bone from Romano-British and early medieval contexts
- Worked bone
- Marine molluscs, crustacean and land snails
- Charcoal – wood species include: gorse, broom, oak, ash and pine.

4.6.11 Field Revisit in 2005

Many of the excavation trenches at Crane Godrevy were never fully backfilled. Three areas were revisited in the spring of 2005. The aim was to clean up and fully record an important section which had not previously been drawn as well as to examine for potential dateable deposits (Nowakowski 2005). This was section AB (see below and Fig 22).

Excavated in 1969, **cuttings 4 and 5** were revisited in 2005 and the remains of wall footings were found in cutting 4 *but no evidence for a ditch was found.* **Cutting 5** was completely overgrown and inaccessible. Both cuttings had been placed in locations to test the course of the ditch and to determine the enclosure's overall shape (see Thomas 1969 and above).

Ditch section (AB) was first excavated in 1958 and then widened in 1969. It was an exceptionally deep section and when revisited in the spring of 2005 was considered to be the most informative. In the original 1969 excavation, RB pottery, slate, pebbles, a bronze buckle, spindle whorls and large quantities of animal bone were found.

It was cleaned up and the section was drawn in 2005 (see fig 9 in Sturgess and Lawson-Jones 2006a). During this exercise a small number of finds were recovered (Thorpe in Sturgess and Lawson-Jones *ibid*).

The ditch was well-dug with deep steeply sloping sides. It was filled with a series of dumped layers which included midden (shell-rich) material. In 2005 a small number of

finds (and ecofacts) which included moderate quantities of animal bone, 1 charcoal sample, 1 sherd of pottery and 3 items of worked stone were found.

4.6.12 Targeted datasets - Cuttings with potential for analysis

A number of cuttings have been identified which provide key datasets which would benefit from further analysis. These are listed below.

Excavations in 1956 - 57

Cuttings V, Vb – major ditch section [115]. Sample from upper ditch fill [112] intact. Location of possible original entrance to the enclosure found here.

Excavations in 1956

Cutting I and Ia – long stretch of major ditch section [91] was excavated. Midden waste [85] with RB pottery sealed the top of the main ditch. Intact ditch sequence although no finds in the lower ditch fills. A probable smaller (recut) ditch [92]. No finds.

Excavations in 1957

Cutting M – large ditch section [63] with intact base fill [62] containing IA/RB pottery. Partial survival of later (medieval) stone faced [64] outer bank. Finds in ditch fill [62].

Cutting L – a large ditch section [10] fully excavated. Intact ditch fills but no finds.

Cutting O – a major ditch section [22] fully excavated. Intact ditch fills with finds (see [21]).

Excavations in 1958

Cutting AQ – large ditch section [42] has finds in upper fills: [28], [29].

Cutting Y – major ditch section across enclosure ditch [49] only partially excavated (although no section drawings exist). Finds in ditch fills (see [47] and [48]).

Excavations in 1958 and 1969

Cutting AB and cutting I – major section through enclosure ditch [106] fully excavated and re-visited and re-recorded in 2005. Finds in ditch fills (see [94], [95], [96], [97], [98], [100]). Very slight evidence for early recut – ditch [103] (see Fig. 22).

Cutting U – probable post-Roman structure overlying the backfilled ditch. Finds associated with the structure and its abandonment.

5 Statement of Potential and Overall Recommendations

5.1 The Gwithian Project – An Overall statement of potential and general research themes and objectives

The Gwithian archive project fulfils the Historic Environment's objective to increase knowledge and understanding of the Historic Environment and to promote that knowledge to as broad a community as possible. These aims have been identified in the Cornwall Heritage and Culture Strategy 2001 and the Cornwall Culture Strategy 2005-2006.

Full analyses of datasets within the Gwithian Bronze Age and post-Roman archives have the potential to make significant contributions to many areas of archaeological research. These are both regional and national research priorities. National research priorities have been set out in a number of English Heritage documents: the *Research Agenda* produced by the English Heritage Archaeology Research Division (draft 1997), *Exploring Our Past: Implementation Plan* (1998 and revised version January 2003) (EoP98) and the more recent English Heritage Research Agenda (2005).

National research programmes (NRP) identified by EoP98 and relevant to key datasets in the Gwithian archive are as follows:

Programme 3 Synthetic projects

NRP 3.1 artefact and material; reviews

NRP 3.2 archaeology review

NRP 3.3 thematic syntheses

Programme 9 Research projects

NRP 9.5 Anglo-Saxon England c 570-720AD: the chronological basis

Programme 17 methodological and Technical Development

NRP 17.3 refining archaeological chronologies through scientific dating.

Academic Research aims identified in the English Heritage Research Agenda 1997 which further analysis of the Gwithian key datasets will contribute are:

- Promotion and dissemination of appropriate archaeological information: **A3**
- Settlement study – rural settlement: **T3**
- Landscape study – regional chronologies: **L3** and test extant models based on historic landscape assessment: **L4**
- Processes of change: **PC3** settlements and field landscapes c 2000 – 300 BC
- Management of the known resource: **MR4** – specifically updating existing knowledge.

Regional research priorities have been set out in the Silver Jubilee volume of the county journal, *Cornish Archaeology*, published in 1986, as well as in the recently produced South West Archaeological Research Framework (see Webster,

www.somerset.gov.uk/somerset/cultureheritage/heritage/SWARF.) The key regional priorities are listed as follows:

RRP1: With its well-preserved archaeological sequences, Gwithian has the potential to contribute to advances in chronological narratives for the 2nd millennium BC and the post-Roman period.

RRP2: The Bronze Age archive provides new information on the character of settlement during the 2nd millennium BC.

RRP3: The post-Roman archive has a contribution to make to the study of the potentially varied character of post-Roman settlement in the south west and, in particular, coastal settlement.

RRP4: Study of new architectural forms for both the 2nd millennium BC and the post-Roman period.

RRP5: Advances in artefact studies – providing new information on ceramics, form fabric, manufacture and exchange networks for the 2nd millennium BC and 1st millennium AD.

RRP6: Advances in artefact studies – technology and small-scale craft and industry for the post-Roman period.

RRP7: Advances in the study of local economies, local environment and land-use for the 2nd millennium BC and 1st millennium AD.

RRP8: Advances in the study of site formation processes, issues of cultural practice, abandonment, discard and refuse behaviour for the 2nd millennium BC (cf Woodward and Hill 2002; Nowakowski 2001).

RRP9: Advances in artefact studies – technology and small-scale craft and industry for the 2nd millennium BC.

Generic themes identified in the recent English Heritage Research Agenda 2005 relevant to this project are as follows:

- *Theme A1* What's out there? Defining, characterising and analysing the Historic Environment.
- *Theme A2* Spotting the gaps: analysing poorly understood landscapes, areas and monuments.
- *Theme D2* Measuring the threat; Studying the reasons for risk and devising responses.

Gwithian lies in a coastal parish dominated by sand dunes and the full study of the data within the archive will provide new information about the potential wealth of the archaeological resource in a sand duned landscape. Such knowledge will promote the protection and long-term management of similar landscape settings.

A six mile stretch of the cliff and towans currently managed by the National Trust is a Site of Special Scientific Interest and forms part of the Heritage Coast. The area is also an Area of Outstanding Natural Beauty. Godrevy headland and a large block of Godrevy Towans are scheduled. These are those areas where a major campaign of archaeological survey and excavations were carried out throughout the 1950s and early 1960s (see Fig 26).

Part of the study area is now a nature reserve owned by the Cornwall County Council and purchased in 2004 by funds from the Aggregates Levy Sustainability Fund. The

English Heritage ALSF scheme is intended to reduce the impact of aggregates extraction on the historic environment. Objective 2 of the scheme supports work where there is a significant strategic gain and where "the analysis and dissemination of important data from past work undertaken in response to aggregate extraction", will contribute to a greater understanding of soft aggregate (generally scarce in the South West) and the implications of developments which may impact on the archaeological resource. The aggregate at Gwithian is sand which has been commercially exploited in the area since World War Two. These quarrying operations have now ceased but have been responsible for impacting on large areas of buried archaeology around the Sandy Lane sites (e.g. Sandy Lane, Hockin's Pit and Old Land Surface see above). The excellent potential of the archaeological resource in a landscape such as this has been demonstrated by the Gwithian project and such knowledge should inform the long-term future management of the Gwithian area as well as other significant dune landscapes in the South West. In summary the Gwithian archive may provide a mechanism aiding the direction of future management of the soft aggregate resource for the industry.

The future of safe-guarding and protecting the archaeological richness of this coastal setting has to be based on a sound understanding of what we already know and how this may be presented and communicated to a wider audience and community. While the case for further fieldwork in the future can be presented (see Nowakowski, Quinnell, Sturgess, Thomas and Thorpe forthcoming) the full analysis of the majority of the data summarised above remains outstanding. The case for full publication of what we already know is presented in this document (see below). Gwithian has been identified by the SWARF as one of the key backlog excavations whose full publication is desirable as the data is of national significance (see item 1.8 www.somerset.gov.uk/somerset/cultureheritage/heritage/SWARF.).

5.2 Bronze Age Gwithian – Overall statement of potential and recommendations for future analyses

The rich variety of structural data and the broad wealth of material culture found associated with the well-preserved Bronze Age landscape at Gwithian remains exceptional despite recent advances into research on settlement dating to the 2nd millennium BC in the south west (see for example Nowakowski 2001). There is much at Gwithian which is unique for this period and slightly anomalous in the light of our current understanding about the potentially varied character of settlement for the period. For example, the range of wooden and stone structures excavated at Gwithian does not conform to the otherwise contemporary and "typical" round wooden houses sunk within hollows found elsewhere in lowland contexts (see for example Trethellan Farm, Newquay, Nowakowski 1991, and Trevisker, St Eval, ApSimon and Greenfield 1972). The Gwithian excavations also uncovered rare insights into prehistoric land use with graphic evidence for ard cultivation, developed horticultural and animal husbandry practices, all of which took place within a formally organised farmed landscape. The presence of human burial within this domesticated setting adds another dimension to the creation and meaning of place within the wider Bronze Age world (*cf.* Brück and Goodman 1999). The new evidence for the manufacture of pots, worked shale, animal bone and stonework reveals developed technologies which link the communities at Gwithian to a broader Bronze Age world.

This recent assessment has re-confirmed that the results of the excavation of the Bronze Age sites are significant and warrant further analysis leading to full publication (Nowakowski 1989; Nowakowski 2004). In general the excavation documentation has been shown to vary across the sites but there is a great deal of good quality primary data in the archive, both structural and artefactual, all of which should be fully analysed and published. Phase plans alongside detailed plans of structures can be published and the potential to conduct contextual analysis is high. There is great potential for

examining the spatial extent of activities and the ways buildings and defined spaces were being used, particularly for settlement during Phases 1 and 3 (see below).

Material suitable for further scientific dating has also been identified in the archive.

There are a number of significant artefact groups which require full analysis and publication: pottery, clay moulds, lithics, shale, worked bone objects, animal bone, copper alloy objects, human bone (cremated and inhumed), stonework, marine molluscs and charcoal, geoarchaeological samples and land snails.

5.2.1 Key features of the Bronze Age settlement

The major traits of settlement at Gwithian during the 2nd millennium BC can be summarised as follows.

- A long site history spanning 1000 years from Early Bronze Age to later Bronze Age. *(Evidence for Mesolithic and Neolithic activities was also found within the general area although these were not major sites).*
- Developed agricultural and farming practices: animal husbandry, manuring and horticultural practice, relationship between settlement, fields and enclosures.
- Craft technologies: bone and antler-working, pottery manufacture, shale working, stone and flint-working, leather-working and metal-working. This site offers an exciting opportunity to explore the scale and status of these activities alongside subsistence strategies. There are datasets here which are unique for the region and for this period.
- Fishing, economic and cultural relationship to the sea.
- Development of vernacular architecture: form and function through time and the evolution of the "household". These results offer the opportunity of a comparison of contemporary "house" types across the region.
- Deepening significance of place through time – attachment to place and potential for land ownership
- Home and the dead – cultural practices, ritual routine and structured deposition. The place of the dead within the "home" setting.

5.2.2 Specific national and regional research themes

The combined key regional and national research areas applicable to the Bronze Age story at Gwithian have been identified as follows:

- Advances in regional chronologies – scientific dating (**NRP 17.3**, **L3**, **RRP1**).
- Advances in regional chronologies – understanding coastal landscapes and landscape history and opportunities for wider presentation (**NRP 3.3**, **A3**, **A2**, **RRP1)**.
- Landscape case study and future management of the known resource – specifically updating existing knowledge (**NRP3.2**, **L3, MR4**, **A2, D2**)
- New information on the character of settlement and land use during the 2nd millennium BC (**PC3** and **RRP2**)
- Study of new architectural building forms – specifically for the 2nd millennium BC (**PC3** and **RRP2**)

- Advances in artefact studies – providing new information on ceramics – form, fabric, manufacture and exchange networks (**NRP 3.1** and **3.3, RRP5**)
- Advances in artefact studies – technology and small-scale craft and industry for the 2nd millennium BC (**NRP 3.2, NRP3.3, NRP A3, T3, RRP5 and RRP9**)
- Advances in the study of local economies, local environment and land-use and animal husbandry regimes, marine resource exploitation and woodland (**NRP – T3, RRP7**)
- Contextual research into site formation processes and issues of cultural practice, abandonment, discard and refuse behaviour (**NRP3.1**, **RRP8**).
- Relationship of people to land through time – specially the 2nd millennium BC. Exploring issues of land ownership and the significance of place (**PC3** and **RRP7**).

The data is of regional and national significance which should be published in a single monograph.

5.3 General recommendation for future work

Further analysis is required to confirm and verify some of the sub-phases identified within the main phases of settlement. The first step in such a programme of analysis needs to be a further scientific dating programme (see below). It is also recognised that more work on the ceramic assemblage where finds have now been linked to individual context may help aid uncertainties in phasing minor events. Results from this will feed back into fine tuning minor phases where the stratigraphy is less clear (see below).

Future post excavation analysis is recommended to proceed in the following sequence:

1. Select further material for AMS dates and submit for dating.
2. Obtain dates – discussion and review and revise phasing as appropriate.
3. Conduct pottery analyses.
4. Further work on some aspects of the stratigraphy is recommended once the ceramics analyses have been carried out. This is to clarify certain areas where the exact stratigraphic relationships between structures and contexts have been shown to be unclear (see Sturgess and Lawson-Jones 2006b).

   The fullest stratigraphic sequence is present on the western side of the main excavations, that is sites GMIX and GMX which lie to the west side of the main N-S field wall. It is recommended that in order to fine tune the overall site phasing, the main focus on the stratigraphy within this part of the site will present the fullest picture.

   It is recommended that detailed work on the stratigraphy at site GMXV is conducted as a separate exercise to determine how this links to the broader picture presented by sites GMIX and GMX (see above).
5. Present revised phasing within major framework.
6. Produce a detailed outline and structure for publication.
7. Prepare stratigraphic text for publication.
8. Analyses of all related datasets.
9. Production of overall text for publication and selection of material for illustration.
10. Publish all the data in a single monograph.

5.3.1 Re-ordering the finds archive

Finds bags are now linked to context numbers on the finds database. Lists of various categories and classes of finds will be made available to the finds specialists who are likely to re-order the material in boxes during analysis as they become linked to site phasing. At some stage this will involve updating the existing archive inventories.

5.3.2 Scientific Dating programmes

5.3.2.1 AMS dating programme

The success of the pilot dating study conducted during this project has shown that an AMS dating programme has high potential to contribute further scientific dates to conduct Bayesian modelling of the Bronze Age sequence (see Volume II, Section 4). This will contribute to research aims: **NRP17.3**, **L3**, and **RRP1**.

5.3.2.2 Optically Stimulated Luminescence programme (OSL)

The pilot study for Optically Stimulated Luminescence has also been successful and the potential for further extensive OSL sampling in future programmes of fieldwork has been demonstrated (see Volume II, Section 4).

5.3.2.3 Results Phase 1 Settlement

Further scientific dates are required for the Phase 1 settlement. Dates for the construction and use-life of structure 1642 at GMXV are recommended. A check should be made to see whether there are datable ceramic sherds linked to features associated with this structure. If not, then multiple (2-3), charcoal samples (of young twiggy wood) from the hearth features should be considered for dating.

Note: there are no available associated charcoal samples from individual postholes or samples of articulated bone.

Phase 3 Settlement

Further radiocarbon dates are required to spot date the events associated with settlement during Phase 3. Dates from sites GMIX and GMX are required. It is noted that there may be a difficulty in identifying *clear sealed primary events or cut features* which are confidently associated with this horizon (“layer 5”) at sites GMX and GMIX and re-examination of diagnostic material associated with specific contexts is recommended.

Further dates are required for building 1503 identified as part of Phase 3 found on site GMXV.

The four cremation pits which are associated with the Phase 3 settlement may provide sufficient material for dating. Multiple samples would be ideal.

Phase 5 Settlement

More dates for this major phase are required. Targeting specific events associated with the minor phases (Phases 5a to 5d) for scientific dating is recommended in order to confirm and fine tune the events which make up this major phase. Features from sites GMIX and GMX should be targeted. Dates to model the activities throughout this phase are required in order to carry out Bayesian modelling. Further residues on sherds from sealed events should be targeted in addition to multiple (charcoal) samples from hearths, postholes and perhaps, human bone should be targeted.

5.4 Specific recommendations on key datasets

5.4.1 Ceramics

A rapid assessment of the ceramics from the Bronze Age sites took place in 2003 (see Volume II, Section 3, 17 and Appendix 2 in Nowakowski 2004). The following summary presents key results. The entire collection is of national significance and full study is recommended. It has the potential to contribute to a number of research aims: **NRP3.1, 3.2, 3.3, A3, T3** and **RRP5**.

- Early Neolithic pottery has been identified from sites **GM/X, GM/XV** and **GM/IX** from "layers 8, 3, 2/5". These represent a small abraded collection of material from mixed layers and all are likely to be residual. In addition a small collection of abraded Beaker material was identified from a number of extensively spread locations across the Bronze Age sites. It is apparent that there is no conclusive evidence that the round structure (1642) found at **GM/XV** is of Beaker date as previously interpreted (Megaw 1976). New radiocarbon dates suggest rather than this structure may be of Early Bronze Age date (see above).

- The largest collection of prehistoric ceramics consists of *c*. 3000 sherds of Trevisker styles dating through the 2nd millennium BC. This entire ceramic assemblage has considerable potential for further study (see below).

- Detailed analysis of this material will contribute to the following research themes: ceramic craft technologies, the development of cultural tradition/s, vessel form and function and exchange networks (through sourcing and supply of raw materials).

- The rapid assessment of the fabrics represented in the largest Middle Bronze Age assemblage undertaken in 2003 (principally layers 3 and 5, that is settlement during Phases 5 and 3 respectively) presents a complex picture (see Volume II, Section 3, 17 and Appendix 2 in Nowakowski 2004). Gabbro fabrics dominate although granitic fabrics are also present. The scope for a comprehensive fabric study is considerable and this work will form a key part of future analysis.

- Ceramics appeared in a variety of archaeological contexts: structures, pits as well as middens. Some evidence for intentional deposition has been noted within main structures from the main settlement phases – that is Phases 1 and 5 (see below). The potential for contextual analysis and the identification of zoned activities (formally organised space/s) is high (see below).

- A key MBA ceramic assemblage derives from structural features related to Phase 5 ("layer 3") at sites **GM/X** and **GM/IX.** This collection is principally made-up of straight-walled vessels with incised decoration. The absence of cord-impressed wares (typical of phase 3 features ("layer 5") is striking. This assemblage is of singular significance as it is well-preserved, fresh, with frequent large (unabraded) sherds which opportunitiesfor recording conjoins. Complete vessel forms can be published. Fabrics are principally of gabbro clays, spalled and refired sherds and the general "lumpy" appearance of the majority of the material strongly suggests on-site firing of pots. An unfired gabbro clay sample has also been identified. All this represents convincing on-site data for the manufacture of pots during the Phase 5 settlement and would represent the first evidence for pottery manufacture on a site dating to the 2nd millennium BC in the south-west. This collection is unique and the new evidence is offers for the study of ceramics dating to this period is considerable

- The ceramic assemblage from Phase 3 is equally distinctive and forms a contrasted picture to that from the later Phase 5 settlement (see above). Those groups from sites **GM/IX, GMX** and **GM/XV** are generally better-made, comprise both incised and cord-impressed decorated vessels whose forms are more "typical" of the Trevisker/Trethellan Farm repertoire (ApSimon and Greenfield 1972; Nowakowski 1991). Current knowledge suggests that this material is more laterally spread across the sites suggesting deposition perhaps over long periods of time and some may have been intentionally deposited (*cf* Nowakowski 2001).

- During the 2004 rapid assessment of the ceramics from this phase grain impressions were noted on some sherds (see Volume II, Section 3, 17 and Appendix 2 in Nowakowski 2004).These cereal impressions require identification.

- As the current pilot dating study has shown, the potential for dating residues on selected ceramics from sites **GM/X, GM/IX** and **GM/XV** with success is high. Key samples from primary events linked to each of the major phases need to be targeted and considered for further scientific dating (see above), although the number of appropriate sherds is limited.

5.4.2 Prehistoric Baked Clay from all Bronze Age sites

Some baked clay material was rapidly assessed in 2003 (see Volume II, Section 3, 18 and Appendix 2 in Nowakowski 2004) and the clay moulds have recently been assessed in 2006 (see Volume II, Section 1, 4 and below). Full analysis of this material has the potential to contribute to research aims: **NRP3.2, A3** and **RRP5**.

- Some baked fragments appear to be broken bits of larger objects – possibly loomweights or even "kiln furniture" perhaps used in the processes of ceramic production. This appears to be unique supporting evidence for the manufacture of ceramics (see above) and further study is recommended.

5.4.3 Lithics from all Bronze Age sites

A rapid assessment of the lithics from the Bronze Age sites took place in 2003 (see Volume II, Section 3, 23 and Appendix 8 in Nowakowski 2004). The following summary presents key results. Full study of the lithics will contribute to research aims **NRP 3.2, NRP3.3, A3, T3** and **RRP5**.

- The lithic assemblages are generally small although distinct tool types may be correlated with specific major phases. Bladelet production may have taken place in earlier phases of activity (that is Phase 1 "layers 7" and "8"). The majority of the assemblage is however characterised by knives and poor quality (re-worked) scrapers (that is Phases 5 and 3, "layers 3" and "5" respectively). Their general study will contribute to an overall picture of local resource exploitation. The detailed spatial mapping and distribution of flint recorded during the excavation will permit contextual analysis.

- The general absence of classic flint tools in the form of distinctive scrapers and knives and awls has been observed although it is also worth noting that this small repertoire of flint tools appears to be contemporary and in use alongside a wide variety of worked bone and stone implements. These may all have been used in related activities such as leather and wood working. Their full integrated study is recommended.

5.4.4 Shale from all Bronze Age sites

A rapid assessment of the shale objects from the Bronze Age sites took place in 2003 (see Volume II, Section 3, 20 and Appendix 5 in Nowakowski 2004). The following summary presents key results. Full study of the shale will contribute to research aims **NRP 3.2, NRP3.3, A3, T3** and **RRP5**.

- Seven fragments of shale objects has been identified from sites **GM/X** and **GM/IX** (see Volume II, Section 20, table 20.1).The on-site manufacture of shale objects (some locally sourced material and some from southern Britain, see below) appears to be part of the wide range of small-scale craft production which took place during the Phase 5 settlement.
- The presence of probable Kimmeridge shale at Gwithian beyond Brean Down far up the Bristol Channel (Foster 1990) is unparalleled for sites of this period in the South-West so the collection is unique and its full study is recommended.

5.4.5 Worked stone objects

A rapid assessment of the worked stone from the Bronze Age sites took place in 2003 (see Volume II, Section 3, 19 and Appendix 4 in Nowakowski 2004). The following summary presents key results. Full study of the stonework will contribute to research aims **NRP 3.2, NRP3.3, A3, T3** and **RRP9**.

- A large variety of tool types have been identified from sites GMXV, GM/IX and GM/X: the largest groups are from the phase 5 settlement (see Volume II, Section 19, tables 19.1, 19.2 and 19.3). A wide range of on-site craft and/or industrial activities are suggested by the variety of tool-types: such as farming (plough shares), cereal processing (querns and mullers), fishing (net sinkers and possible line-winders), pottery production (notched slates), and metalworking (stone mould). Full study is recommended.

5.4.6 Wooden bowls

Two wooden bowls were found below the floor surface of House 1 (724/725) and one wooden bowl was found in structure (1134) during the phase 5 settlement. These unfortunately did not survive although they were recorded and photographed (see Plate 16 in Nowakowski, Quinnell, Sturgess, Thomas and Thorpe forthcoming).

- These rarely-surviving objects reveal wood-working skills and some comment on where they were found, their apparent association with human bone (particularly in houses 1 and 4, see above) and their distinctive contents (unfired clays and quartz chips see House 1134) is recommended, together with photographs.

5.4.7 Animal bone

A rapid assessment of animal bone from the Bronze Age sites took place in 2003 (see Volume II, Section 3, 22 and Appendix 7 in Nowakowski 2004). The following summary presents key results. Full study of the animal bone will contribute to research aims **NRP 3.3, A3, PC3** and **RRP7**.

- A wide variety of animal species has been identified in the archive. These include cattle, sheep/goat, pig, roe and red deer and dog. Some fish and a single whale bone has been identified.
- This is a unique large collection of animal bone for this period for the South-West (where survival of Bronze Age faunal remains is generally poor). The assemblage offers the potential to provide significant data on animal husbandry

regimes and the use and exploitation of animal resources in small-scale craft activities such as bone-working (see below).

- It was noted that animal bones from the BA sites were on the whole in poor condition. Some discussion on the condition of this material will be useful for interpretation and site formation activities and the study of the craft technologies carried out (see 5.3.1.8 below).
- Two (1 sheep/goat and 1 dog) semi-complete articulated skeletons were found at site GMIX (house 1079) and as these are partly articulated animal bone found in a secure context these may potentially provide suitable scientific dating material.
- Full study is recommended.

5.4.8 Worked animal bone and antler objects and waste

Assessment of the worked bone objects took place in 2006 (see Volume II, Section 1, 3). The key results are summarised below. Full study of the worked animal bone will contribute to research aims **NRP 3.1, PC3** and **RRP9**.

- The collection is unique in terms of quantity (51 items), variety and date. Few sites nationally have produced such a rich and well-preserved collection of worked bone for this period. Alongside finished items, there were 2 incomplete items and bone and antler waste. Dominated by pointed bone implements, it also includes bladed tools, gouges (perhaps used as spearheads for hunting and fishing) and personal items such as a bead and fragments of combs. Several notched animal rib bones – perhaps used for decorating pottery or weaving – are unique within the region.

- Most of the worked animal bone is from the Phase 5 settlement with only two items linked to the house (1642) in Phase 1, and three items linked to ruinous spreads which belong to the Phase 3 settlement.

- There is a notable amount of antler waste products together with boar tusks and horn cores, which provide direct evidence for animal bone working. This appeared in a localised concentration in the area to the north of house 5 and structure 1134 during the Phase 5 settlement. Spatial analysis of this material alongside waste is likely to identify zoned working areas (see below 5.5.1).

- Full study is recommended.

5.4.9 Copper alloy objects

A few copper alloy objects were found on the Bronze Age sites. Objects made of copper alloy are generally rare for this period in the region. The earliest object is from the Phase 1 settlement and is a copper alloy awl found within the gully (1542) of the house (1642) on site GMXV (bag 85). The remaining objects are all (with one exception) from Phase 5 settlement features and comprise personal items such as a spatula (site GMXV, bag 205, (1501) Phase 3), three pins (2 of which are missing) from sites GMIX and GMX. In 1988, a fragment of a “rapier” blade was found during the excavation of a small trench by John Evans (Nowakowski and Sharpe, pers.com). This was recovered from (“layer 3”) the Phase 5 settlement.

Other copper alloy fragments which suggest detritus and metalworking activities were found and all were related to the Phase 5 settlement. A cylindrical rivet was found from structure 1134, on site GMIX (bag no 169).

- The three bronze pins were published by Mike Rowlands in 1976 (Rowlands *ibid*, figs 4.8 a and b). One was found associated with structure (1079) and the other structure (471). The context of the third is unknown. Some review of the published items alongside the others is timely in the light of currently available dates and some discussion of their significance on site is recommended.

- Full study of all objects is recommended and any potential for metallurgical analysis should be considered as this will contribute to research aims **NRP 3.1, PC3** and **RRP9**.

5.4.10 Clay casting moulds and stone mould

Four fragments of clay casting moulds from GM/X (together with the stone mould from GM/X) suggest small-scale evidence for metalworking during the Phase 5 settlement. Fragments of the same stone mould were found respectively in House 1 (175) GMX and House 4 (471) GMX also part of the Phase 5 settlement.

- The parts of two separate matrices from the same stone mould (block) have been published by Burgess (1976) and Needham (1981) but would benefit from re-examination in the light of current knowledge. Burgess suggested that the mould belongs to the Pennard phase of the Middle Bronze Age while Needham has proposed a rather later date, at the start of the Stogursey tradition of the Late Bronze Age. The question of date and affinities needs resolution and analysis of metallurgical traces could be helpful: the presence of lead would support a later dating.
- Full study of the moulds is recommended and will contribute to research aims: **NRP 3.1, PC3** and **RRP9**.

5.4.11 Human bone – cremated and inhumation

The majority of cremated and inhumed human bone deposits (9 individual contexts) was assessed during the work in 2003 (see Volume II, Section 3 , 26 and Appendix 11 in Nowakowski 2004) although at least 6 additional examples of human bone were identified during this present exercise. These have been identified from the site documentation and comprise at least 4 inhumed (baby) bone deposits, 1 human tooth and 1 deposit of human cremated (?long) bone. All these need to be checked to determine whether they are human. A charred fragment of a possible human long bone was found associated with mound (222). All are from activities linked to the phase 5 settlement and there appears to be an interesting and perhaps significant association between (baby) inhumed bone (partial inhumations) and house 1 (that is structure (724/725)). This contrasts with the separate burials of individual adult cremations documented for Phases 3 and/or 5.

- The discovery of cremated human bone alongside inhumed human bone is of significance for this period. The juxtaposition of funerary and secular activities within a “domestic” context is not without precedence for the later Bronze Age (*cf*. Brück 1995) yet still remains unusual in the South West. Only one other association of this nature has been found in the county to date - part of an inhumed adult skeleton was found within a MBA house under the hearth at Trethellan Farm, Newquay (Nowakowski 1991, 203 – 204).

  Full study of the nature of these deposits and their relationship to space within the Phase 5 settlement is recommended. This material has the potential to contribute to research aims: **NRP3.1, PC3, RRP2** and **RRP8**.

5.4.12 Charcoal from all Bronze Age sites

A wide variety of tree and shrub species has been identified from all of the major phases throughout the Bronze Age sequence from Phase 1 through to Phase 5 settlement. These samples were assessed during 2003 (see Volume II, Section 3, 25 and Appendix 10 in Nowakowski 2004). Additional samples were collected and assessed during fieldwork at site GMXVII in 2005 (see Volume II, Section 2, 11 and Nowakowski *et al*. 2006, 4.8).

- Oak, alder, blackthorn and hawthorn have been identified from 6 samples from the Phase 5 settlement at site GMIX. Three of these are suitable for scientific dating.
- Thirty two samples from settlement activities during Phases 1, 3, 5, 6 were recovered from GMX and were associated with occupation and cremation activities. Oak, alder, blackthorn, hawthorn, holly, elder, hazel, gorse and/or broom, willow and/or poplar and birch have all been identified. 24 samples are suitable for scientific dating.
- A single sample of oak wood was found associated with Phase 1 settlement at site GMXV and this is suitable for scientific dating.
- Wood species including hawthorn, gorse and broom, hazel, birch and bramble were recovered from 8 contexts associated with settlement during Phases 1, 2, 3, 4, 5 from site GMXVII in 2005. All are suitable for scientific dating.
- No further identifications are required although selection of targeted samples for scientific dating can be made.
- The charcoal is significant in having been derived from a localised stratified sequence and its full analysis has the potential to offer statements on changing land-use throughout the 2nd millennium BC at Gwithian.
- Full analysis is recommended to discuss the full range of taxa identified, examine the economic use and exploitation of woodland resources in a coastal setting as well as offer some comment of the effects of alkaline sand on local topography on woodland composition. This will contribute to research aims: **PC3** and **RRP7**.

5.4.13 Coprolites

Three fragments of a coprolite (from a dog or dog-like creature) from Cutting 21 GMX bag 501 were assessed in 2006 by David Earle Robinson and Andy Hatton (e-mail dated 16/02/06). This was found south of the cremation context (273), part of phase 5 settlement. Analysis of one of these showed that no pollen survived but a surprising quantity of identifiable animal bone was found. These included fragments of a foetal/neonatal sheep/goat as well as one fragment of an adult sheep/goat (e-mail dated 16/02/06).

- No further analysis is recommended although the above results should be part of a published account of activities on the Phase 5 settlement.

5.4.14 Marine molluscs/gastropods

Large groups of well-preserved marine molluscs and gastropods were excavated from all of the main Bronze Age sites and selectively recovered from all phases of settlement. These samples were assessed during 2003 (see Volume II, Section 3, 30 and Appendix 15 in Nowakowski 2004). Additional samples were collected and

assessed during fieldwork at site GMXVII in 2005 (see Volume II, Section, 2, 13 and Nowakowski *et al.* 2006, 4.10).

- The largest assemblage came from site GMX. The range of species included Limpet, dog whelk, common whelk, mussels and cockles. Crab claws and fragments of cuttlefish have also been listed. Full study of the assemblage offers an opportunity to consider marine exploitation beyond just an economic resource (see below).

- A particular feature of the Bronze Age sites is the high number of worked shells, many are perforated as if to make decorative items and some display signs of being worked. As a whole the collection is unusual and presents high potential for further analysis contributing to research aims **NRP3.3, A3** and **RRP7.**

5.4.15 Land snails

Land snails were selectively hand collected during the main seasons of excavations during the 1950s and 1960s and samples taken from individual "layers" on the Bronze Age sites were collected and studied by Geoffrey Lewis in the early 1960s (Sturgess and Lawson-Jones 2006b). These original samples may only be of general value and Lewis principally interpreted changes through the snail column in broad general climatic terms (see Sturgess and Lawson-Jones 2006b, 4.3.4). though this echoes more recent work by Davies (see below). Some post graduate work on primary data collected from the site in the 1970s by Penny Spencer adds to this corpus of material (Spencer 1975) in addition to unpublished work by John Evans. Spencer's analysis largely supported Geoffrey Lewis' broader work. A new and more comprehensive snail column obtained from site GMXVII in June 2005 and assessed by Paul Davies has shown preservation to be excellent throughout the stratified sequence which spans activities from Phase 1 through to Phase 5 (see Volume II, Section 2, 8, Nowakowski *et al* 2006, 4.5 and this volume Fig. 25).

- Full analysis of the land snail samples from site GMXVII is recommended. Assessment has shown that excellent results here have the potential to be fully integrated into a detailed narrative which documents changing phases of land use spanning the best part of 1,000 years.

- Analysis and publication of this material combined with the results of the full analysis of the geoarchaeological and charcoal samples from site GMXVII is highly recommended (see below). All these samples were taken from an intact stratigraphic sequence which has now been scientifically dated (see Volume 11, Section 4 and Nowakowski, Sturgess and Lawson-Jones 2006). This intact sequence provides vivid detail of changing land use and environment for the 2nd millennium BC and has the potential to contribute to research aims: **NRP3.3, A3** and **RR7**.

5.4.16 Macroplant remains

During the 1960s the research value of routine bulk sampling for plant remains was only beginning to be realised and so while some samples were collected during fieldwork at Gwithian, this was pragmatic and random rather than systematic (Nowakowski *et al* 2005). New baulk samples were taken from all of the major layers excavated during fieldwork at site GMXVII in June 2005 (see Volume II, Section 2, 9 and Nowakowski *et al.* 2006, 4.6). A few barley and other undentified cereal remains were identified from "layer 7" (Phase 1 settlement) and represent the first direct macrofossil evidence for arable cultivation at this early date at Gwithian. With the discovery of exceptionally preserved plough (ard) marks, it is apparent that arable

cultivation was very much a key feature of all major phases at Gwithian throughout the Bronze Age.

- Grain impressions were noted on some sherds of Bronze Age pottery (e.g. (1094) from structure 1134 at GMIX, bag 171). These should be identified.
- The samples recovered in 2005 represent a snapshot rather than a full picture and all identifiable plant macrofossils have been identified as far as possible. No further analysis is recommended but the results from this exercise should be discussed alongside other palaeo-environmental and artefactual data and published as part of a fully integrated account of the history of land-use at Gwithian during this period and contribute to research aims: **PC3, RRP2** and **RRP7**.

5.4.17 Pollen

Work by Geoffrey Lewis in the 1960s on the potential of pollen at Gwithian revealed that pollen had largely not been preserved within the Bronze Age stratigraphy. Fern spores identified by Lewis in "layer 8", at that time, indicated a generally wetter horizon (Sturgess and Lawson-Jones 2006b). In June 2005 a new pollen column was obtained from site GMXVII (see Volume II, Section 2, 10 and Nowakowski *et al.* 2006, 4.7and this volume Fig. 25).

Recent results have confirmed Lewis's earlier work. At GMXVII, pollen was found to survive in the very lowest horizons – Phase 1 settlement – but it was very sparse and degraded and can offer only a broad comment on local environmental conditions in conjunction with other better preserved palaeo-environmental samples (e.g. land snails, see above).

- No further work is recommended, although results of the assessment can be presented as a summary in the final publication.

5.4.18 Farming practices – geoarchaeology

In June 2005 soil samples were taken from the stratified sequence revealed at site GMXVII (see Figs. 24 and 25). These geochemical samples, taken both for geochemistry and soil magnetism, represent the first comprehensive series of such data from each of the major horizons on the Bronze Age site. Assessment to date has demonstrated their excellent potential to understand the changing character of land use throughout the dated sequence to contribute to research on farming and horticulture practices as well as aid interpretation of site formation processes during the Bronze Age. The data offers the potential to study the make-up of the major ploughsoil horizons to determine whether they were proper soils or whether they were stablisation horizons bulked up through the processes of composting and manuring (*cf.* Guttmann *et al.* 2005). Micromorphological studies of this type have been identified in the recent SWARF research agenda (see item 1.6 www.somerset.gov.uk/somerset/cultureheritage/heritage/SWARF) where coastal sites such as Gwithian have been highlighted as having the potential to inform on land use strategies and farming regimes in prehistory. This will improve our understanding of the environmental aspects of farming and contribute to research aims: **NRP 3.3, A3, A2, D2, RRP2** and **RRP7**.

Dr Erika Guttmann writes: The proposed geoarchaeological analysis at Gwithian has the potential to address wider research issues which are relevant to all parts of Britain. Manuring practices in prehistory are not well understood, but they are an important indicator for the intensity of arable production, which in turn is an important indicator for population pressure and for trade opportunities. The use of shell sand in Ireland, for instance, increased exponentially with the population explosion of the late 18th century (Conry and Mitchell 1971), and the plaggen manuring system in the Netherlands

appears to have risen and fallen with the expansion and contraction of the grain market (Mücher *et al.* 1990). Manuring practices thus have social and economic implications which are vital to our understanding of the past.

The use of animal manures does not appear to have been widespread in Britain until the Iron Age (Guttmann *et al.* 2005.), but it is becoming increasingly apparent that different regions developed at different paces, and this model is based upon the limited evidence which is currently available. The research at Gwithian will provide new information about prehistoric farming practices in Cornwall, which will contribute to the model for the development of prehistoric agriculture in Britain.

The site at Gwithian is of great importance because it is one of the few sites in the UK to retain evidence for the possible use of seaweed fertiliser in prehistory (Fowler 1983, 157). There is also evidence for ard and spade marks (*ibid.* 150 & 157), as well as buried soils with domestic waste and communuted shells, which may be linked with fertilisation with seaweed or shell sand. The analysis of the soils on this site will aim to identify the use of domestic waste, seaweed, shell sand and animal manures as potential fertilisers in past agricultural regimes.

An additional, but perhaps longer term aim is to detect when the historical practices of fertilising with shell sand and seaweed actually began.

A more detailed understanding of the make-up of "layer 6" (Phase 2) is required to aid interpretation on land use. Analysis of the soil samples taken from this layer in 2005 is recommended (see Volume II, Section 2, 7 and Nowakowski *et al.* 2006, 4.4).

A more detailed understanding of the make-up of "layer 4" (phase 4) is also required. Analysis of the soil samples taken from this layer in 2005 is recommended (see Volume II, Section 2,7 and Nowakowski *et al.* 2006, 4.4).

- Full analysis and publication of these samples is recommended.

5.4.19 Site GMXVII – full analysis and publication

The small-scale field exercise conducted in June 2005 at site GMXVII was successful. Its main aim was to obtain palaeo-environmental samples for the study of land use and the changing local environment from an area of the site where the full stratigraphic Bronze Age sequence was intact and could be scientifically dated (Nowakowski 2005; Nowakowski *et al*. 2006). This sequence remains unique for the region and its research value is therefore high (see Figs. 23 and 25). The key datasets obtained during this exercise were geoarchaeological samples, land snails, charcoal, macroplant remains (see above). The OSL dating programme provided scientific dates which were in agreement with AMS dates (see Volume II, Section 4 and Appendix in Nowakowski *et al*. 2006).

- Full analysis of all these datasets relating to this field exercise is highly recommended. At present current interpretations on the changing landscape at this site rests on the results of the assessments of geoarchaeological and land snail samples taken from this section (see above). These samples need full study and their results published and presented as a case study of land use and settlement in a coastal setting during the 2nd millennium BC. Analysis and publication is highly desirable as a contribution to the research of human settlement in coastal zones which may traditionally have been perceived as economically peripheral or marginal. This data from Gwithian has the potential to highlight the importance of the buried archaeological resources of similar coastal settings and to aid mitigation and future management of similar vulnerable landscapes. These objectives aims will contribute to research aims: **A2, D2** and **MR4**.

5.5 Contextual themes for research

As stated above, the excellent preservation of primary data as revealed during the Bronze Age excavations offers the opportunity to conduct analysis giving insights into site formation processes and on-site behaviour. These studies will contribute to research aims: **PC3, RRP2** and **RRP8**. Analyses of on-site formation processes can be a particularly exciting and increasingly fruitful area of research contributing to the study of cultural practice, routine and ritual behaviour (*cf* Woodward and Hill 2002).

The following summary highlights particular research themes which the Gwithian Bronze Age data have the potential to address.

5.5.1 Zoned activities

The exceptional preservation of many of the Bronze Age structures found at Gwithian present opportunities for their detailed study: architecture, function and life-history.

One of the striking features of major settlement at Gwithian for the 2nd millennium BC, especially during Phase 5, is the way the use of space and buildings appears a formal arrangement within the local landscape. Specific activities (food preparation, craft activities) appear to have taken place within different places in roofed buildings as well as open but defined spaces. The single Early Bronze Age building (structure (1642) site GMXV) associated with Phase 1 may equally have had a specific use. Detailed analysis of finds within particular zoned areas of the settlement are likely to reveal an unusually detailed picture of the way buildings and spaces were differentially used and offer some comment and, perhaps contrast, on the potential changing characters of earlier and later Bronze Age settlement.

Site GMXV - Roofed buildings

- Analysis of the spatial distribution of the finds within **building 1642** GMXV (Phase 1) is recommended.
- An overall assessment of all the finds clearly associated with "**structure" 1503** now identified as a potential structure associated with the phase 3 settlement, is recommended. This area was also characterised by a succession of dumped middens which may suggest that when the building fell into ruin, the area was given over to sporadic episodes of rubbish discard. If finds within these middens are shown to be wholly related to this phase, then this would suggest that other structures belonging to this major phase of settlement must have stood nearby within the general locality as this rubbish is likely to have come from close by on site. In addition, it will be important to look carefully at the condition of the artefacts related to this major phase and determine whether there are any significant differences in the quality and condition of the material in different parts of the site.

Sites GMIX and GMX - Roofed buildings

- Analysis of the spatial distribution of the finds within **building 1134** GMIX (Phase 5) is recommended.
- Analysis of the spatial distribution of the finds within **building 1023** GMIX (Phase 5) is recommended.
- Analysis of the spatial distribution of the finds within **buildings 1085 and 1079** GMIX (Phase 5) is recommended.

- Analysis of the spatial distribution of the finds within **building 724/725** GMX (Phase 5) is recommended.
- Analysis of the spatial distribution of finds within **building 730** GMX "House 4" (Phase 5) is recommended. A high density of worked (animal) bone objects (pins) was found associated with this building which could suggest a particular (craft-centred) function.

Sites GMIX and GMIX - Unroofed and related working areas

- Localised concentrations of debris from craft production and related activities were found in the heart of the Phase 5 settlement and analysis of the spatial distribution of finds is recommended to identify potential "working" areas.

5.5.2 Cultural practice, ritual routine and structured deposition

Significant groups of finds, many of which appear to have been deliberately curated, appeared to be associated with particular structures during the main phases of Bronze Age settlement at Gwithian. These insights into ritual routine may offer a commentary on cultural practices for this period as a whole.

Site GMXV

- Analysis of caches of finds within building 1642 at GMXV (Phase 1) is recommended as is a study of the way the building was abandoned (see below).

Sites GMIX and GMX

- Analysis of caches of pottery associated with granary building (1023) (phase 5) is recommended.
- During phase 5, House 1 and structure (1134) (both on GMX) contained wooden bowls. These appeared to have a special association with (curated) human bone. This evidence highlights the cultural significance of a close association between specific types of material culture and a detailed examination of these associations is likely to provide some comment on ritual routine and practice.

5.5.3 House life histories and abandonment

There is clear evidence for structural rebuild and minor building modifications within many of the Bronze Age structures excavated at Gwithian. Such evidence underlines complex house lives and highlights the dynamics of change within living places and space. Equally as recent studies have shown settlement abandonment may have been a routine cultural and even "ritual" practice for the later 2nd millennium BC (*cf* Nowakowski 2001).

Site GMIX and GMX

- During phase 5 House 1 (724/725) provides a complex life history which can be analysed and compared with other buildings during this phase of settlement. Evidence for structural rebuilding potentially reveals a changing use-life.
- This is also the case of house 5 (1079) on GMIX which showed evidence for a formal interior arrangement of space and a complex use-life history.

- Houses 1 (724/725) and (1134) were burnt down on final abandonment, this is in contrast to the treatment of house 4 (730) which is also part of the settlement during Phase 5.

Site GMXV

- Analysis of the distinctive way structure 1642 at GMXV (Phase 1) was abandoned is recommended (*cf.* Nowakowski 2001).
- All the finds associated with "structure" 1503 need to be fully assessed for a clear identification of this building in Phase 3.

5.5.4 The cultural significance of middens

One of the characteristic features throughout the Bronze Age settled landscape is the presence of middens - some substantial and extensive, others amorphous and others discrete. Extensive middens finally concealed the structural remains of the latest phase 5 settlement in a systematic fashion which could suggest distinct cultural practice/s. Where the debris within these latest deposits came from remains unknown although its presence highlights the probability that debris and midden material may have come from another contemporary settlement close by. Closer study of the contextual relationship of these midden spreads to settlement (house histories and abandonment, see above) may offer insights into cultural dynamics and provide further evidence of routine practices.

5.5.5 Home, hearth and death

There is a clear and striking association with the domain of the living and that of the dead within the Bronze Age landscape at Gwithian. Evidence of the juxtaposition of the human dead (individual cremations) in phases 3 and 5 (whole and partially inhumed bone) reveals a potentially complex relationship between people and land. Attachment to particular tracts of land and particular places are themes which may be explored.

Site GMX

- There is potential to explore the relationship between "home" and death with the discovery of human remains which appear during the early use of House 1 (724/725) in the Phase 5 settlement. The presence of human bone in "domestic" structures dating to the late 2nd Millennium BC has been recognised as a distinctive cultural trait (*cf* Brück 1995) which has also been documented in the South-West (*cf* The Bronze Age settlement at Trethellan Farm, Newquay, Nowakowski 1991).
- The presence of cremated deposits possibly within the earlier phase of a farming landscape (that is during Phase 3 and/or Phase 5) and buried pointedly next to a main field boundary, may be a further demonstration of how the dead may be used as a resource to stake claim and demonstrate attachment to land (Nowakowski in press).

5.5.6 Terraces and field systems

The graphic evidence for ard cultivation found at Gwithian continues to remain without parallel in the lowlands of the south-west as indeed does the evidence for field boundaries, enclosures and terraces which were found directly associated with contemporary buildings. Some formal organisation of the way certain zones of the wider field system during Phase 3 and indeed, later, in Phase 5 seems apparent.

- A full discussion of the results of the investigation of the field system is recommended integrating other related datasets to present a full picture of the changing history of land use at Gwithian during the Bronze Age.

5.6 Post-Roman Gwithian – Overall statement of potential and recommendations for future analyses

The post-Roman settlement excavated at Gwithian remains without parallel in the south-west. It has all the hallmarks of a specialised place characterised by industrial and craft-related activities. Structurally one major phase of activity centred on likely "workshop" spaces, (Phases 3 and 4) has been clearly identified. Full analysis of this data will be a significant contribution towards post-Roman research in South-West Britain and beyond. Relevant national and regional research aims have been set out in section 5.1.

The South West Archaeological Research Framework (SWARF) has also identified several research priorities for the Early Medieval period in the South West and the aim of developing an understanding and identification of Early medieval technologies (see item 1.14 for period specific research, www.somerset.gov.uk/somerset/cultureheritage/heritage/SWARF) is particularly relevant for Gwithian.

The location of a linked "residential" settlement remains unknown although it is likely to have been within the wider locality. The large midden deposits found at the Sandy Lane sites, on the edges of the present Gwithian churchtown (see Fig. 1), are likely to be an indication of related settlement within the wider landscape.

This recent assessment has demonstrated that the results of the excavation of sites GMI, GMA, GMB, GME and GMIV are significant and warrant further analysis. An overall plan for the main phase of activity can be published alongside detailed accounts of the main structures. The results should be published as a monograph. The results of this work should also be presented in an account which draws in related evidence found at Crane Godrevy and Sandy Lane and situates the site in a wider landscape setting.

Material suitable for scientific dating is extant in the archive.

There are a number of significant artefact groups which require full analysis and publication: pottery, metalwork, worked bone, animal bone, metallurgical debris, stonework, marine molluscs and charcoal.

5.6.1 Key features of the post-Roman site

- Specialised site – a "workshop centre".
- Probable seasonal activities related to availability of raw materials and demand.
- Craft technologies: principal industries appear to be metal-working with perhaps bone-working and leather-working.
- Also possibly charcoal burning (perhaps related to fuel production).
- Evidence for reuse and recycling of older artefacts such as imported wares for spindle whorls.
- The variety and quantity of animal bone may suggest activities centred on animal processing for hides, bone, horn, meat.
- Slight evidence for salt - making.

5.6.2 Principal research aims and themes

The key combined regional and national research themes applicable to the post-Roman story at Gwithian have been identified as follows:

- Advances in regional chronologies – scientific dating (**NRP 17.3**, **L3**, **RRP1**).
- Advances in regional chronologies – understanding coastal landscapes and landscape history and opportunities for wider presentation (**NRP3.3, A3, A2** and **RRP1)**
- Landscape case study and future management of the known resource – specifically updating existing knowledge (**NRP3.2, L3, MR4, A2** and **D2**).
- New information on the character of settlement during the 1st Millennium AD (**NRP9.5, A3, T3 and RRP3** and **RRP6**).
- Study of Roman and post-Roman settlement and different architectural forms related to function (**NRP9.5, A3, T3** and **RRP4**).
- Advances in artefact studies – providing new information on ceramics – form, fabric, manufacture and exchange networks (**NRP3.1,** and **3.3, RRP5**).
- Advances in artefact studies – technology and small-scale craft and industry for the 1st Millennium AD (**NRP3.1**, and **3.3, RRP6**).
- Advances in the study of local economies, local environment and land-use and animal husbandry regimes, marine resource exploitation and woodland (**NRP 3.2, NRPA3, T3** and **RRP7**).

5.7 General recommendation for future work

5.7.1 General recommendation

Further analysis is required to verify the proposed site phasing. The first step in a programme of analysis will be a scientific dating programme (see below). It is recommended that future post excavation analysis proceeds in the following sequence:

1. Select material for AMS dates and submit for dating
2. Obtain dates – discussion, review and revise phasing as appropriate
3. Conduct pottery analysis
4. Present revised phasing (as appropriate)
5. Write up a full stratigraphic summary for publication.
6. Analyses of related datasets.
7. Produce a detailed outline and structure for publication.
8. Production of text for publication and selection of material for illustration.
9. Publication of full results of analysis in a single monograph.

5.7.2 Re-ordering the finds archive

Finds bags are now linked to context numbers on the finds database. Lists of various categories and classes of finds will be made available to the finds specialists who are likely to re-order the material in boxes during analysis as they become linked to site phasing. At some stage this will involve updating the existing archive inventories.

5.7.3 Future dating programme

The success of the pilot dating study has demonstrated the excellent preservation of data at this site with high potential for further scientific dating and analysis as many deposits are intact and undisturbed. The start date and the end dates for activities on the main sites GMI and GMA need to be confirmed for on current information the major phase of activity spans no more than 4 centuries (see above).

It is recommended that further samples from key primary and sealed contexts be submitted for additional scientific dating. Key contexts for dating have been identified in Sturgess and Lawson-Jones 2006c.

The aims of a dating exercise will be to:

- Date the overall site history.
- Date specific ceramic types.

The results of this dating programme will contribute to research aims: **NRP17.3, L3 and RRP1** as well as **RRP5.**

5.7.4 Dating the overall site history

Confirmation of Phase 2

It is important to gain clearer confirmation of the date of the earliest phase of activities at the post-Roman site. It is therefore important to independently date the earliest phase (Phase 2) scientifically in order to determine whether the industrial activities are of a sufficiently different period to the main phases (that is Phases 3 and 4). The apparent overall ceramic distinctiveness of Phases 2 and 3 is key here and clear scientific dates for finds associated with Phase 2, will have implications for the regional and national significance of the finds.

Confirmation of phases 3 and 4

The structural evidence also suggests that activities on the main site are relatively short-lived and so there is a good case for dating charcoal in order to date specific events linked to the major structural features during Phases 3 and 4. Potentially some 36 samples are available for dating and many of these are from hearths. These would be useful to date in order to conduct Bayesian modelling (see Sturgess and Lawson-Jones 2006c).

It is recommended that any identifiable charcoal associated with fuel ash from well-sealed “industrial features” be considered for scientific dating.

5.7.5 Dating the ceramics

Bar-lug pottery

At present, stratigraphic evidence suggests that Bar-lug pottery is occurring at a surprisingly early date at Gwithian. It is therefore important that this style of pottery is scientifically dated. If internal residues can not be identified from specific samples then external residues should be considered for AMS dating.

- Any bar-lug material that has residue is potentially of interest (even if not context-linked). This material has been excavated from well-preserved cultural horizons.

5.7.5.1 Dating grass-marked pottery

Further dates for grass-marked pottery from different vessel types (linked to Phases 3 and 4) are recommended.

- Ceramic specialists need to revisit the collection with a view to identifying suitable material for scientific dating.

5.7.5.2 Dating Sandy Lane styles

It is recommended that material from the main Sandy Lane site and Crane Godrevy is looked at with a view to identifying specific styles which may be scientifically dated by residues.

- Ceramic specialists need to revisit the collection with a view to identifying suitable material for scientific dating.

5.7.5.3 Dating Gwithian style ceramics

It is recommended that Gwithian Style ceramics from Hockins Pit be considered for scientific dating.

- Ceramic specialists need to revisit the collection with a view to identifying suitable material for scientific dating.

5.8 Specific recommendations for post-Roman sites

5.8.1 Ceramics

With an apparent broad chronological depth, the ceramic assemblage is the largest for this period in the south-west and is clearly a key dataset. Chronological ceramic issues need addressing. Further work should clearly identify the chronological horizon of the Gwithian Style ware and confirm the nature of grass-marked styles as cohesive. This will greatly aid chronological sequencing in Cornwall and by doing so will be a key contribution to unlocking some aspects of post-Roman Cornwall. The material requires full analysis and publication. Its importance is underlined by its discovery within a localised intact sequence, a sequence which can be scientifically dated (see above and Volume II, Section 4). Full study and scientific dating are of the greatest importance and analysis will make a considerable contribution to research aims: **NRP3.1, 33** and **RRP5**. It should be noted that this material was only rapidly assessed in 2004 and further reassessment work on the ceramics (which are now clearly linked to contexts), should be the first step towards analysis.

The principal chronological problems involve relating the two phases of imported wares, A & B, and then E, to the local sequence: this local sequence runs to Gwithian Style and then grass-marked ware which may or may not be contemporary with bar-Lug ware. Gwithian is the only site to date in the south-west which has the potential to cover this range. A full contextual report, supported by the dating programme as described, should go some way to sorting out these problems.

- Further work is required to demonstrate that Gwithian style is an early ceramic type linked to the earliest phase of activity (Phase 2). On present knowledge there appears to be an intermixing of ceramic styles. Imported wares appear at the start of the site sequence with Gwithian styles.
- Date the appearance of “E” ware at the site (see below)
- Any grain, seed and grass impressions on pottery should be identified.
- It will be important to assess ceramic groups for potential differences between the four linked phases relating to the structural histories of the buildings found on GMI (that is during Phases 3 and 4). Their overall histories comprise: construction, use, primary abandonment and final (infill) demise.

- The discovery of unfired gabbro on site may suggest some pottery manufacture. During analysis sherds should be examined for signs of manufacture: spalling, wasters, re-fired material etc.

5.8.2 Evidence for iron-working

Direct evidence for iron-working was found with the discovery of metallurgical debris and a significant number small furnace type features. This appears to be a key activity during the post-Roman period and its study will contribute to research aims: **NRP9.5, A3, T3** and **RRP6.** The metallurgical debris was rapidly assessed in 2003-4 and iron-working and smelting processes noted. Run, tap and ash slags together with fragments of hearth bases have been identified (see Volume II, Section 3, 29 and Appendix 14 in Nowakowski 2004).

- During this present exercise it has been noted that not all slag as listed was assessed in 2003 and so additional samples from sites GMA, GMB, GME and GMIV need to be taken in account in any analyses.
- All finds assemblages should be studied with the aim of identifying the scale of industrial processes within the site generally and within individual structures and in defined areas and phases.
- Study of any potential differences between features classified as related to industrial activities across the different sites are recommended. For example features found at GMIV may be related to industry but may differ from the functions of similar structural features found at GMI. There appears to be the potential to identify different but related industrial activity zones across the sites.

5.8.3 Ironwork and other metalwork objects – investigative and contextual study

The ironwork object assemblage is of great regional and national significance. It is a rare sizeable collection for a site of this period and its analysis and publication will contribute to research aims: **NRP3.1**, **3.3** and **RRP6**. Tools, personal equipment and unfinished items have been identified (see Volume II, Section 1, 6). Smaller quantities of copper alloy objects and one tin object were also found. One unusual discovery was the cheek-piece of a horse's bridle.

- The on-site manufacture of iron objects has been raised as a possibility. The nearby coastal exposures of iron-manganese concretions could have been exploited for small-scale ironworking. Comparison of local iron, slag and some iron objects by laser spectroscopy for trace elements may shed light on whether local iron ores were exploited.
- Notable concentrations of metalwork objects (and waste) were recorded on GMI principally around House 1 (structure 2206/2207). A study of the distribution of this material in relation to the structure may have the potential to highlight specific activity zones on the main site.
- Full study of the assemblage is recommended including investigative work on potentially preserved organic materials (see Vol II, Section 1.6, table 6.1).
- The slag and fuel ash should be examined to see if any charcoal suitable for scientific dating is present.

5.8.4 Faunal assemblage and animal bone-working

The faunal assemblage was rapidly assessed in 2003-2004 when its regional and national significance was highlighted (see Volume II, Section 3, 22 and Appendix 7 in Nowakowski 2004).

- GMI produced the largest number of animal bones which included cattle, sheep/goat, (a notable quantity of horn), pig and red deer amongst others
- The material is a very large collection in excellent condition. Given the general scarcity of well-preserved animal bone assemblages from stratified sequences in the South West, full study of this key dataset is recommended. Its full study will contribute to research aims: **NRP3.2**, **BRPA3**, **T3** and **RRP7**. The apparently short-lived nature of activities during Phases 3 and 4 means that the varied composition of the collection is likely to be a true representation of the range of species farmed, hunted and exploited for meat, bone and leather at Gwithian during the post-Roman period.
- The assessment has highlighted the potential evidence for animal-bone working. The faunal assemblage should be closely analysed with a view to providing more specific information here.

5.8.5 Worked animal bone objects and waste

Assessment of the worked bone objects took place in 2006 (see Volume II, Section 1, 5). The key results are summarised below.

- A small but varied collection of worked bone objects was found which included personal objects (dress accessories and combs) as well as a number of tools: particularly weaving implements. This variety of objects are all recognisable types for the post-Roman period.
- There is good potential to investigate the selection of specific materials for the manufacture of particular objects within this assemblage.
- A few ironwork objects display traces of mineralised preserved organic materials which require further confirmation, although the presence of horn on a number of knife-tangs has been noted. This could suggest that bone-working took place on site alongside metalworking although this requires further supporting data. The discovery of two small iron saws, perhaps used in bone-working, is of interest.
- There is potential for examining the spatial distribution of this material to identify potential working areas.
- Full study of the objects is recommended and contribute to research aims: **NRP3.1, 3.3** and **RRP6**.

5.8.6 Clay moulds

Seven fragments of clay moulds - perhaps used for metalworking - have been identified in the post-Roman archive. Listed as follows:

GM/I bag 64 1955 = context (2255) hearth in house (2241) layer B horizon

GM/I bag 64 1955 = context (2255) hearth in house (2241) layer B horizon

GM/I bag 72 1955 = context (2287) general unassigned context to all horizons

GM/I bag 74 1955 = context (2287) general unassigned context to all horizons

GM bag 669 1954 = context (2225) general layer A or B

GM bag 1456 1954 = context (2208) layer B

GM/I bag 168 1955 = context (2276) layer B

- To date only a rapid assessment of these has taken place with the confirmation that these are all probably refractory pieces. Full analysis and study is recommended as part of the study of industrial processes on the site and will contribute to research aims: **NRP3.1**, **3.3** and **RRP6**.
- Of interest is the localised distribution of these objects recorded on site GMI. This could be an indication of a specific activity zone. *Note*: no clay moulds have been identified from site GMIV.

5.8.7 Human bone

During the initial assessment of the animal bone, at least two human bones were identified (see Volume II, Section 3, 22 and Appendix 7 in Nowakowski 2004).

- These bones need to be looked at in relation to context and, if confirmed as human, the presence of human bone on the site needs to be considered as there were no formal burials on the site. It is possible that there is more human bone in the archive which has not yet been identified. Another human long bone was identified by Ian Riddler in 2006.

5.8.8 Stonework

The large and distinctive stonework collection assessed in 2003-4 (see Volume II, Section 3, 19 and Appendix 4 in Nowakowski 2004) reveals a variety of objects linked to craft and industry with a lesser emphasis on cereal processing equipment. Half fractured rotary querns were found reused as hearth lining and as building stone in some of the structures on GMI.

- The variety of the modified stonework is striking and their full study will contribute to a full picture of the potential range of craft and industry during the post-Roman period (research aims: **NRP3.1**, **3.3** and **RRP6**.)

5.8.9 Fishing and evidence for salt-making

Some bone and stone objects may relate to fishing activities although this requires further clarification. A unique copper alloy harpoon found at site GMIV (GM/M/90) may have been used in fishing. This was sadly stolen from the site museum during the excavations although a photograph exists (Sturgess and Lawson-Jones 2006c, fig. 74). Fish bones, scales and sea urchins have recently been identified in the archive documentation but these have not been quantified or assessed.

The presence of possible briquetage on the post-Roman site does suggest salt-making. Fragments of briquetage have now also been recognised on the early Roman "farmstead" at Porth Godrevy (site GT, Fowler 1962; see Volume II, Section 3, 17.17 and Appendix 1 in Nowakowski 2004).

- Fish bones, scales and sea urchins need to be identified by species.
- Positive identification of briquetage from GMI is required.
- Both types of evidence suggest a close connection with the sea and the and its relationship to the character of settlement during the 1st millennium AD requires further study contributing to research aims: **NRP3.3, A3** and **RRP3**.

5.8.10 Marine molluscs

Assessed in 2003-4, quantities of marine molluscs vary across the post-Roman sites with the largest group recovered from site GMI. It is clear however that field collection was not systematic and so what has survived is a partial proportion of the entire

material present on site (see Volume II, Section 3, 30 and Appendix 15 in Nowakowski 2004).

- The post-Roman assemblage is dominated by shoreline species such as limpet, common mussel, dog whelk, cockle and oyster.
- The general paucity of food waste needs some explanation as the selected species would appear to indicate some exploitation of the marine environment beyond purely economic and food-gathering activities.
- Full study of the material is recommended as the evidence shows a close connection with the sea and its relationship to the character of settlement during the 1st millennium AD requires further study contributing to research aims: **NRP3.3, A3, RRP3** and **RRP6**.

5.8.11 Charcoal

Forty seven charcoal samples from sites GMI and GME were assessed during work in 2003. A wide range of wood species was identified (see Volume II, Section 3, 25 and Appendix 8 in Nowakowski 2004). The results are summarised below:

- Taxa included oak, hazel, blackthorn, gorse and/or broom, elder, heather and alder.
- A closed group comprising a wide range of mixed charcoal was in particular identified from a stone-lined flue feature located in layer C (phase 2).
- Charcoal has also been listed from sites GMA, GMB and GMIV. Species identification and analysis alongside material from GMI and GME is recommended.
- No further identifications other than a selection of targeted samples for scientific dating are required. To date there are 36 potential charcoal samples suitable for radiocarbon dating.
- Full analysis is recommended to discuss the full range of taxa identified, examine the economic use and exploitation of woodland resources in a coastal setting as well as some commentary of the effects of alkaline sand on local topography on woodland composition (research aims: **NRP3.2, NRPA3, T3** and **RRP7).**

5.8.12 Soil samples

There may be a number of potentially useful soil samples which were collected from sites GMI, GMA and GME. These varied in make-up (clay, soil and charcoal mix) and quantity. Many from GMI (one from GMA) are from hearth features. None of these were assessed in 2003 as their contextual significance at that time was unknown. If processed and examined their analysis may help aid interpretation of particular features.

- Further assessment of a number of targeted samples: 16 from GMI, 1 from GMA and 5 from GME N and S are recommended. This may aid interpretation of specific industrial features and therefore contribute to analysis and research aims: **NRP3.1**, **3.3** and **RRP6**.
- It may be worth scanning the samples with a magnet to detect hammerscale (for possible smithing activities).

5.9 Outstanding finds assessments

There are a small group of artefacts which were not assessed in 2003-2004 as they were listed in the initial audit and only registered during the current programme. Their contextual significance was also unknown. These have now been identified and require study.

- 2 pieces of glass from GMI
- Coprolites from GMI
- PR clay moulds from GMI (see above)

5.10 Contextual themes for research

Structures within the "workshop centre" were excellently preserved displaying intact walls and hearths *in situ*. As with the Bronze Age site (see above), the potential to conduct contextual analysis appears high. Three main research themes are apparent: activity areas, building history and the processes of site abandonment.

5.10.1 Zoned activities

Analysis of finds within particular zoned areas of the main site during Phases 3 and 4 may reveal whether certain zones within this small site were used in different ways.

- There does appear to be a significant concentration of metalwork objects within the area of House 1.
- Study of the animal bone waste may potentially indicate specific working zones.
- On present knowledge, distinct activity zones may have been located on different parts of the landscape and the apparent differences between sites GMI and GMIV requires further investigation.

5.10.2 Structure histories and abandonment

The stratigraphy shows that shell rich deposits post-dated the abandonment of the structures. Their apparent homogeneous make-up could suggest they were deposited in a short space of time (possibly in a single episode). The structures along the southern side of the dune at GMI and GMA were therefore likely to have been visible as (unroofed) ruins into which the middens had been dumped. Each of the middens should be studied to see if they all contain a range of similarly dated material. Some discussion on the practice of depositing middens on ruins for this period is recommended.

5.10.3 Links with Crane Godrevy and Sandy Lane sites

The post-Roman pottery from Crane Godrevy, GMXX, GMXXI and GMXXII requires analysis to clarify the links with the major phase at the main post-Roman sites (sites GMI, GMA, GMB and GMIV). Any grain, seed and grass impressions on pottery should be analysed.

5.11 Crane Godrevy - Recommendations for future analyses

The ditched enclosure discovered at Crane Godrevy is significant for insights into the history of settlement during the 1st millennium AD at Gwithian and has direct relevance to linking the stories at the principal sites.

5.11.1 Principal recommendations

There is material in the archive which warrants further analysis and full publication.

A number of key datasets should be studied carefully in order to date the history of the enclosure.

An account of the Roman and post-Roman phases at Crane Godrevy, and the midden deposits at Sandy Lane (see below) should be presented and discussed alongside the results of the main excavated post-Roman site at GMI etc. As part of this exercise the Roman site at Porth Godrevy should also be reappraised and re-presented as part of a short Roman chapter in a future publication. It would also be worth looking again at the small collection of material from minor site GH as during the rapid appraisal in 2003, some early ceramics were noted (see Volume II, Section 3, 17.14, Appendix 1 in Nowakowski 2004).

5.11.2 Specific recommendations

5.11.2.1 Plan and extent of the enclosure

A revised plan of the enclosure has been suggested (see Sturgess and Lawson-Jones 2006a, Fig 2 and this volume Fig 21) although on the basis of present data, its true extent and size remains unknown without further fieldwork.

- A geophysical survey is recommended so that the extent and size of the enclosure may be determined.

5.11.3 Potential for dating the history of the enclosure ditch

There are no available samples for scientifically dating the construction of the ditch None of the material examined in 2004 has residues (Quinnell, pers. comm..).

Analysis of a single sherd of pottery found at the base of cutting M may help date the early life history of the enclosure although the small Roman assemblage should be fully analysed to ensure maximum understanding of phasing.

The following cuttings have produced finds from upper ditch fills whose analysis may date the demise and infill of the enclosure ditch:

- *Cutting V, Va, Vb and V ext*: charcoal from top fill of ditch (112), bag 67
- *Cutting I and Ia* pottery from shell layer (85), bag 14, nos. 11 and 13
- *Cutting Y* Pottery (47) upper ditch fill. Finds bag: 292
- *A-B ditch and I* Upper ditch fills (94) and (95) bags: 4, 5,6,10, 11,12.

5.11.4 Character and date of any post-Roman activity

There is very slight evidence for a “sunken feature” recorded in cutting U and an associated small ceramic assemblage which links Crane Godrevy to sites GM/I etc downslope.

- This material needs to be closely studied to determine any potential chronological overlap between the sites.

5.12 Sandy Lane sites

5.12.1 Overall Significance of Sandy Lane sites

Surface collections of Bronze Age, Roman, post-Roman and early medieval ceramics have been recovered from a number of distinct “sites” (coded: SL, OLS, HP and WE) under the collective name “Sandy Lane” since the 1950s (Thomas 1964). Sandy Lane lies on the outskirts of the present Gwithian churchtown (Fig 1). Here decades of

commercial sand extraction have exposed the vulnerability and accelerated the erosion of clearly buried archaeological deposits and former land surfaces. All have produced considerable numbers of finds.

None of the finds have been systematically recovered by context or excavated stratigraphically yet the material comprises significant assemblages of Bronze Age, Iron Age, Roman, post-Roman and early medieval ceramics which have a direct relevance to the excavated Bronze Age and post-Roman settlements situated less than ½ mile away.

5.12.2 Results of the assessment

The ceramics from this loosely associated series of sites was assessed in May 2006 (see Volume II, Section 1, 15) and the results have confirmed the significance of this material. The key results are summarised below.

A potential Bronze Age settlement

- A substantial quantity of Middle Bronze Age ceramics dominated by cord-impressed decoration has been identified. The fabric, decoration and vessel styles are similar to the material found associated with the "layer 5" – Phase 3 settlement – at the main excavated sites GMIX and GMX.
- The quantity of material is sufficient to suggest a series of Bronze Age settlements on the south side of the Red River. Settlements which were likely to have been contemporary with that excavated at sites GMXV, GMX and GMIX.

Previously unknown early Iron Age activities at Gwithian

- One of the major discoveries of this exercise has been the identification of a small, but nonetheless significant, collection of Iron Age ceramics from site OLS. This fills in a gap in our knowledge as, to date, no definite Iron Age site has been identified within the Gwithian study area (with the exception of minor site GH, see Thomas 1964, 43 and Nowakowski 2004).
- The majority of the material may have a potentially early date c. 8th century BC. Two sherds of Middle Iron Age date have also been identified.

Roman activities

- A small scatter of Roman pottery dated to around the 2nd to 3rd centuries AD gives a further indication as to the general spread of Roman activity within the Gwithian area. These may be usefully compared with other Roman material from the small "homestead" at Porth Godrevy (site GT, Fowler 1962) and the enclosure at Crane Godrevy. Other artefacts (surface finds) such as metalwork of Roman date have been found in recent times from these sites. Most of this material, detected by metal detectorists, is presently unavailable for study (Charles Thomas, pers. comm.).

Post-Roman ceramics

- The final contribution from this group of sites is a collection of post-Roman style ceramics (that is the Gwithian Style) first distinguished within the earliest phase of activity (phases 2 and 3) at the main excavated GMI site situated less than ½ mile away. This represents firm evidence for the existence of other contemporary sites within the broader landscape of Gwithian.

5.12.3 Principal Recommendation

- Full study of the Bronze Age, Roman, Iron Age and post-Roman ceramics from the Sandy Lane sites is recommended. This will include petrological examination.

6 Gwithian Looking to the Future

This document has set out to summarise the results of a major post-excavation project and to present the potential and significance of the main datasets for future analyses, research and publication.

As shown, the Bronze Age and post-Roman chapters of the Gwithian story have potential to contribute to many research themes for the 2nd millennium BC and 1st millennium AD in South-West Britain and beyond. Ideally the results of each major excavation should be fully analysed and published as individual monographs.

The fieldwork carried out at the Bronze Age site GMXVII in 2005 has also produced excellent results. These could be considered for publication in a stand alone report which presents a unique case study in documenting changing land use spanning a 1,000 year sequence for the 2nd millennium BC within the coastal zone. With the general exception of Brean Down in Somerset (Bell 1990) and Stackpole Warren in south-west Wales (Benson *et al*. 1990) intact sequences still remain relatively rare for South-West Britain.

The work at Gwithian has also the potential to contribute to a sounder foundation of the archaeological potential of coastal landscapes. This permits discussion of the roles of coastal landscapes and how they might fit into our bigger pictures of the Bronze Age and post-Roman landscapes within the region as a whole. Clearly such landscapes were not peripheral or socially marginal. In a sea-bound region like Cornwall, the role of the sea was fundamental to the successes of Bronze Age and post-Roman communities. It met a variety of needs and must have impacted upon the evolution of coastal settlement. Contact (presumably coastal) with distant places through the exchange of raw materials is characteristic of the Phase 5 Bronze Age settlement and the role of maritime contact is apparent in the range of artefacts found at the post-Roman site at Gwithian. It is clear that on present evidence any perception of the coastal sandy belt being economically and socially marginal does not seem relevant.

The next step towards presenting the results of this exercise would be the commissioning and production of a project design for full analysis and publication. This would set out a detailed programme of post-excavation work comprising a scientific dating programme, the presentation of detailed stratigraphic narratives, finds analyses, illustrations together with a full history of the archaeological project at Gwithian.

7 Bibliography

ApSimon, A M, & Greenfield, E, 1972. The Excavation of the Bronze Age and Iron Age settlement at Trevisker Round, St Eval, Cornwall, *Proc Prehist Soc,* **38**, 302-381

Bell, M, 1990. *Brean Down Excavations 1983-1987*, English Heritage, Archaeological Report **15**

Benson, D G, Evans, J G, Williams, G H, Darvill, T & David, A, 1990. Excavations at Stackpole Warren, Dyfed, *Proc Prehist Soc*, **56**, 179-245

Borlase, W C, 1872. *Naenia Cornubiae*, London & Truro.

Bronk-Ramsey, C, 2005. *OxCal*. 3.10 edition. Research Laboratory for Archaeology, University of Oxford, Oxford.

Brück, J, 1995. A Place for the dead: the role of human remains in late Bronze Age Britain, *Proc Prehist Soc*, Vol **61**, 245-278

Brück, J, 1999. What's in a Settlement? Domestic Practice and Residential Mobility in early Bronze Age southern England, in J. Brück and M. Goodman, *Making Places in the Prehistoric World: Themes in Settlement Archaeology,* London, 52-75

Brück, J, & Goodman, M, 1999. *Making Places in the Prehistoric World – themes in Settlement Archaeology*, University of Cambridge Press

Burgess, C, 1976. The Gwithian mould and the forerunners of South Welsh

axes, Appendix II in Megaw 1976, 69 -75

Butcher, S A, 1978. Excavations at Nornour, Isles of Scilly, 1969-73: the Pre-Roman Settlement, *Cornish Archaeol,* **17**, 29-112

Conry, M J, &
Mitchell, G F, 1971. The age of plaggen soils, in DH, Yaalon (ed.), *Paleopedology: Origin, Nature and Dating of paleosols*. Jerusalem: Intl. Soc. Soil Sci. and Israel Universities Press, 129-136

Dudley, D, 1956. An excavation of Bodrifty, Mulfra, near Penzance, *Archaeol J,* **113**, 1-32

Foster, J, 1990. Other Bronze Age artefacts in Bell, M, *Brean Down Excavations 1983-1987*, English Heritage, 158-175

Fowler, P J, 1962. A Native Homestead of the Roman Period at Porth Godrevy, Gwithian, *Cornish Archaeol,* **1**, 17- 60

Fowler, P J,
& Thomas, AC, 1962. Arable Fields of the Pre-Norman Period at Gwithian, *Cornish Archaeol,* **1**, 61- 84

Fowler, PJ, 1983. *The Farming of Prehistoric Britain*. Cambridge University Press.

Guttmann, E B,
Simpson, I A,
& Davidson, D A, 2005. Manuring practices in antiquity: a review of the evidence, in M, Brickely and D, Smith, (eds), *Fertile Ground: Papers in Honour of Susan Limbrey*, Oxbow Books.

Hawke, K, 1977. Memories of James and Honour Stevens, in Pool, P A S., (ed) *A Cornish Farmer's Diary. Selections from the Diary of James Stevens of Zennor and Sancreed (1847-1918).* Headland Printers, Penzance, 28-31.

Megaw, J V S,

Thomas, A C, & Wailes, B, 1961. The Bronze Age Settlement at Gwithian, Cornwall, *Proc West Cornwall Field Club*, **2** (5), 200-215

Megaw, J V S, 1976. Gwithian, Cornwall: some notes on the evidence for Neolithic and Bronze Age Settlement, in C Burgess & R Miket, (eds) *Settlement and Economy in the Third and Second Millennia B.C.*, BAR Brit Series **33**, 51-79

Mücher, H J, Slotboom, R T, & ten Veen, W J, 1990. Palynology and micromorphology of a man-made soil. A reconstruction of the agricultural history since late-medieval times of The Posteles in The Netherlands. *Catena* **17**, 55-67

Murphy, C P, 1986. *Thin Section Preparation of Soils and Sediments*. Berhamstead: Academic Publishers.

Needham, S P, 1981. *The Bulford-Helsbury Manufacturing Tradition: the Production of Stogursey Socketed Axes in the Later Bronze Age in Southern Britain.* London: British Museum Occasional Paper 13. (72pp).

Norden, J, 1584 *Topographical and Historical Description of Cornwall*

Nowakowski, J A, 1989. *Gwithian. Life in Lowland Cornwall during the Bronze Age,* An assessment of the Bronze Age Excavations 1954-1961, CAU report to EH, Truro.

Nowakowski, J A, 1991. Trethellan Farm, Newquay: the excavation of a lowland Bronze Age settlement and Iron Age cemetery, *Cornish Archaeol,* **30**, 5- 242

Nowakowski, J A, 1998. *A30 Project, Cornwall – Archaeological Investigations Along the route of the Indian Queens Bypass 1992-1994 Assessment and Updated Project Design*, Cornwall Archaeological Unit, Truro. A Report to English Heritage and the Highways Agency. Truro, Cornwall.

Nowakowski, J A, 2001. Leaving home in the Cornish Bronze Age: insights into planned abandonment processes, in J Brück, (ed), *Bronze Age Landscapes Tradition and Transformation*, Oxbow Books, 139 - 148.

Nowakowski, J A, 2004. *Archaeology Beneath the Towans, Excavations at Gwithian, Cornwall, 1949-1969, Cornwall*. Updated Project Design for Assessment, analysis and publication, An HES report to English Heritage.

Nowakowski, J A, 2005. *Archaeology Beneath the Towans, Excavations at Gwithian 1949-1969, Cornwall.* Project Design for Assessment of Key Datasets, An HES report to English Heritage.

Nowakowski, J A, 2006. Life and Death in a Cornish Valley, *British Archaeology* July/August

Nowakowski, J A, Sturgess, J, & Lawson-Jones, A, 2006. *Gwithian, Cornwall Report on Palaeo-environmental sampling fieldwork June 2005* Scheduled Monument Cornwall 771. An HES report (projects), Truro, Cornwall Report no: 2006R042

Nowakowski, J A, in press *Living in the Sands – Bronze Age Gwithian, Cornwall, Revisited* in Land and People; papers in honour of John G Evans, Prehistoric Society Research Papers

Nowakowski, J A, Quinnell, H, Sturgess, H, Thomas, C & Thorpe, C, forthcoming Return to Gwithian: Shifting the Sands of Time, *Cornish Archaeology*

Padel, O J, 1988. *Cornish Place-Names*, Alison Hodge, Cornwall

Parker Pearson, M, 1990. The production and distribution of Bronze Age pottery in south-west Britain, *Cornish Archaeol,* **29**, 5-32

Pool, P A S, (ed), 1977. *A Cornish Farmer's Diary by James Stevens*, Penzance.

Rowlands, M J, 1976. The Bronze Pin fragments from Gwithian, Layer 3, in Megaw, J, Gwithian, Cornwall: Some notes on the evidence for Neolithic and Bronze Age Settlement, in C Burgess, and R Miket, (eds), *Settlement and Economy in the Third and Second Millennia BC*, Brit. Arch. Rep, *Brit. Ser*. **33**, appendix I, 67-68

Sharpe, A, 1990. *The Red River Trail. An Archaeological Assessment*, CAU report no: 1990R001 Truro, Cornwall.

Spencer, P, 1975. Habitat change in coastal sand dune areas: the molluscan evidence, in JG, Evans, S Limbrey and H Cleeve, (eds), *The Effects of man on the landscape: the Highland Zone.* CBA Research report **11**: London, 96-103

Sturgess, J, 2004a. *The Gwithian Project – Summaries and Evaluations of Enumerated Sites* September 2004 An HES (projects), Truro, Cornwall. Report no: 2004R069

Sturgess, J, 2004b. *The Gwithian Project 1949 – 2004 Paper Archive Inventory* November 2004 An HES (projects report), Truro, Cornwall. Report no: 2004R070

Sturgess, J, & Lawson-Jones, A, 2006a. *Crane Godrevy, Revisited. Archaeological excavation of enclosure ditch between 1956 and 1969 in Cornwall*. An HES report (projects) no

2006R066, Truro. Cornwall.

Sturgess, J, & Lawson-Jones, A, 2006b. *Bronze Age Gwithian, Revisited. Archaeological Excavations between 1956 and 1961 in Cornwall* An HES report (projects), Truro, Cornwall. Report no: 2006R067, Vols I & II.

Sturgess, J, & Lawson-Jones, A, 2006c. P*ost- Roman Gwithian, Revisited. Archaeological Excavations between 1953 and 1958 in Cornwall* An HES report (projects), Truro, Cornwall. Report no: 2006R072, Vols I and II.

Thomas, A C, 1958. *Gwithian: Ten Years' Work (1949-1958)*, West Cornwall Field Club

Thomas, A C, 1964. Minor Sites in the Gwithian area (Iron Age to recent times), *Cornish Archaeol,* **3**, 37-62

Thomas, A C, 1969. Excavations at Crane Godrevy, Gwithian, 1969 Interim Report, *Cornish Archaeol,* **8**, 84-88

Thomas, A C, 2003. *Gwithian: Sites 'South of the River' – their significance*. Typescript lodged with archive.

Thomas, A C, 2005. *Post-400, Pre-1200, Native Pottery & Mediterranean and Gaulish Imported Wares in Cornwall and Scilly.* Background Paper No 3

Webster, C J, (ed) in preparation A Research Agenda for Archaeology in South West England www.somerset.gov.uk/somerset/cultureheritage/heritage/SWARF

Wessex Archaeology 2002. *Gwithian Sand Pit, Hayle, Cornwall Archaeological Baseline Survey*. Auger Survey Results and Archaeological Significance. Report 52079.1

Woodward, A, & Hill, J D, 2002. *Prehistoric Britain - The Ceramic Basis*, Prehistoric Ceramics Research Group, Occasional paper **3**, Oxbow monograph