

ARCHAEOLOGICAL RESOURCE ASSESSMENT OF THE AGGREGATE PRODUCING AREAS OF SOUTH GLOUCESTERSHIRE

For

ENGLISH HERITAGE

CA PROJECT: 2845

CA REPORT: 10024

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**COTSWOLD
ARCHAEOLOGY**



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GLOSSARY

AAR	Amino Acid Racemization
ACA	Aggregate Character Area
ADS	Archaeology Data Service
ARCUS	Archaeological Research & Consultancy at the University of Sheffield
BCMA	Bristol Channel Marine Aggregates Resources and Constraints Research Project
BGS	British Geological Survey
EH	English Heritage
HER	Historic Environment Record
HLC	Avon Historic Landscape Characterisation
MPA	Minerals Planning Authority
NMP	National Mapping Programme
NMRAD	National Monuments Record Archaeological Database
OSL	Optically Stimulated Luminescence
PAS	Portable Antiquities Scheme
PRN	Preferred Reference Number
SGMRG	South Gloucestershire Mines Research Group
SGHER	South Gloucestershire Historic Environment Record
SWARF	South West Archaeological Research Framework
UD	Unitary District of South Gloucestershire

EXECUTIVE SUMMARY

An Archaeological Resource Assessment of the Aggregates Producing Areas of South Gloucestershire was undertaken by Cotswold Archaeology in 2009 and 2010. The project was funded by English Heritage, through the Aggregates Levy Sustainability Fund (ALSF). It is one of a number of similar projects summarising the aggregate resource of counties, including Wiltshire and Swindon, Gloucestershire, Somerset and Warwickshire.

The project mapped the potential aggregate producing areas of the county. The resource comprises: Carboniferous Limestones and Quartzitic Sandstone forming the Carboniferous Limestone Supergroup, which outcrops in the Unitary District (UD) at the northern edge of the Bristol Coalfield; River Terrace deposits; Alluvial deposits potentially masking River Terrace deposits; and sand deposits of the River Severn. The potential aggregates resource of the UD was divided into two Aggregate Character Areas (ACAs): the Land Based ACA, comprising the Carboniferous Limestone Supergroup along with River Terrace and Alluvial deposits; and the Severn ACA, comprising the area south of the First Severn Crossing, below Low Mean Tide.

The archaeological resource of these areas was assessed by reference to Historic Environment Record data. This information was supplemented with data provided by the National Monuments Record Archaeological Database, the Portable Antiquities Scheme, previous resource assessments, and published archaeological sources. This information was used to produce a Resource Assessment, summarising the known resource by period, as well as a Research Framework and Agenda, highlighting potential areas of future research. This work demonstrated a lower density of archaeological sites within the ACAs than within the UD as a whole and further research is needed to identify whether this reflects a true low-density resource or results from a bias in investigation, particularly with reference to the prehistoric periods. While a good general understanding of Roman activity in the UD has been established, further targeted research would be beneficial. A greater quantity of information is available for the later periods, with the exception of Early Medieval, which is typically underrepresented in the archaeological record across the country. The volume of recorded sites increases for the medieval, post-medieval and modern periods, although a number of specific research topics would benefit from synthesis of existing data.

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The report was produced by Cotswold Archaeology (CA). The Project Executive was Neil Holbrook, CA Chief Executive. The project was managed by Gail Stoten, CA Principal Consultancy Manager. The project was researched by Rosemary Blackwell, CA Research Officer, and the report produced by Rosemary Blackwell and Gail Stoten. Illustrations were prepared by Peter Moore, CA Senior Illustrator.

1. INTRODUCTION

- 1.1 This project is an archaeological resource assessment of the aggregate mineral producing areas of the Unitary District of South Gloucestershire, funded via the Aggregates Levy Sustainability Fund. It is one of a number of similar projects summarising the aggregate resources of counties, such as Swindon and Wiltshire, Warwickshire and Gloucestershire.
- 1.2 The project design for this project (CA 2009a) was developed during discussions with Buzz Busby, National Terrestrial Aggregates Advisor, English Heritage; David Haigh, South Gloucestershire Acting Manager Natural and Built Environment Team; Paul Driscoll, South Gloucestershire HER Assistant; and Mark Davies, South Gloucestershire Head of Minerals Planning. It was approved by English Heritage in March 2009.

Background

South Gloucestershire

- 1.3 South Gloucestershire is situated between Bristol to the south, Wiltshire to the east, and Gloucestershire to the north. The Unitary District (UD) of South Gloucestershire came into existence in 1996, when the county of Avon was abolished, although it was also in existence between 1950 and 1983. Historically, it was within the county of Gloucestershire. The Severn Estuary flows along the western edge of the UD, and the boundary between South Gloucestershire and Monmouthshire lies within the estuary. The onshore area of the UD covers approximately 497km², and the offshore and intertidal zone is approximately 40km² in area, giving a total area of approximately 537km² (Fig. 1).
- 1.4 The UD can be broadly divided into three areas along topographical/geological grounds: the Severn Estuary and the low-lying coastal plain located to the west of the Severn Escarpment; the central zone of the Bristol Coalfields and Carboniferous Limestone outcrops; and the higher ground at the east of the UD where the Cotswold Escarpment rises to the southern Cotswolds (Fig. 2). The western and central areas of the UD are within the Vale of Berkley (part of the Severn Vale), which is the area north of Bristol and south of Gloucester, between the Severn and the Cotswolds.

Current Settlement Patterns

- 1.5 Settlements in the south-western area of the UD comprise the northern and eastern suburbs of Bristol, namely Patchway, Filton, Stoke Gifford, Bradley Stoke, Mangotsfield and Kingswood (Fig. 1). The northern limit of the Bristol suburbs is broadly defined by the M4 and M5 Motorways. North of the M4 Motorway the main settlements comprise Yate (which merges with Chipping Sodbury) in the central area of the UD, and Thornbury in the north-western area. Other urban settlements (ONS 2001) comprise: Severn Beach, Redwick and Pilning in the coastal zone; Almondsbury, Olveston, Tockington and Alveston, along or just below the Severn Escarpment; Winterbourne, Frampton Cotterell, Iron Acton, Engine Common, Rangeworthy and Tytherington, located between Yate and the Severn Escarpment; Leyhill Prison, Charfield, Wickwar and Hawkesbury Upton at the north-eastern edge of the UD; and Pucklechurch, Wick, Bitton and Marshfield, in the south-eastern area of the UD (Fig. 1). Smaller villages and farmsteads are located across the UD. Industry is focused in the Bristol Suburbs and in the south-western area of the UD.

where industrial development along the coast of the Severn Estuary running north from Avonmouth has extended into South Gloucestershire.

Roads

- 1.6 Sections of five motorways cross South Gloucestershire: the M4, M5, M32, M48 and M49 (Fig. 1). The M4 runs east/west through the UD, crossing the Severn Estuary at the New Severn Bridge. The M5 runs north-east/south-west, intersecting with the M4 at the Almondsbury Interchange, north of Bristol. The M32 runs south-west from Junction 19 of the M4 towards Bristol City Centre. The M48 branches north-west from M4 Junction 21 and crosses the Severn Estuary at the Old Severn Bridge.
- 1.7 The main A-roads comprise: the A403 which runs south-west/north-east along the edge of the Severn Estuary, south of the M4; the A38 which runs north and then north-east from Bristol, broadly corresponding to the line of the Severn Escarpment for much of its length; the A4174 which forms the Bristol ring road; the A432 which runs from Mangotsfield, via Yate, to Old Sodbury, where it joins the A46; the A46 which runs north-south immediately east of the Cotswold Escarpment in the eastern area of the UD; and the A420 which runs east from Bristol, through Mangotsfield in the south-eastern area.

Rail

- 1.8 The London Paddington/Cardiff line runs east/west through the UD passing under the Severn Estuary via a tunnel between Redwick and Sudbrook (Gwent). The line branches north towards Gloucester at Yate, and south to Bristol Temple Meads at Bristol Parkway (within South Gloucestershire).

Rivers

- 1.9 The Bristol Avon rises in the eastern part of the UD at Badminton, takes a circuitous route through Wiltshire, and Bath and North-East Somerset, before skirting along the southern edge of South Gloucestershire, south of Kingswood, and finally running through Bristol to the Severn Estuary. The central area of the UD, which mainly falls within a basin formed by the Carboniferous Limestone, is within the Watershed of the Bristol Avon. The River Frome rises near Chipping Sodbury and runs west and south via Yate and Frampton Cotterell to join the Avon at Bristol. At the northern edge of the UD the Little Avon flows north-west to join the Severn.

Minerals Planning Context

- 1.10 South Gloucestershire Council is the Minerals Planning Authority (MPA) for the Unitary District of South Gloucestershire. The South Gloucestershire Minerals and Waste Local Plan was adopted in May 2002. Policy 31 states that between 1997 and 2026 provision will be made for the extraction of up to 118 million tonnes of crushed rock. This is 60% of the landbank for crushed rock identified in the former county of Avon.
- 1.11 The South Gloucestershire Minerals and Waste Local Plan has an end date of 2011, when it will be replaced by a number of Development Plan Documents. This Aggregates Resource Assessment will be able to inform the formulation of new policy.

Archaeological context

- 1.12 The South Gloucestershire Historic Environment Record (HER), curated by South Gloucestershire Council, contains considerable information on archaeological sites,

monuments, buildings and historic landscapes within the UD. The resource includes GIS data on the above resources, as well as an extensive library of grey literature covering developer-funded archaeological works.

- 1.13 Whilst the HER includes cultural heritage information for aggregate producing areas of South Gloucestershire, it was recognised that there was a need for a project providing a critical analysis of the recorded archaeological resource in these areas in order to provide baseline information to inform the management of the historic environment.

Aggregates Levy Sustainability Fund

- 1.14 This is a project funded via Theme 1.1 (Quarries) of the English Heritage Aggregates Levy Sustainability Fund (ALSF) funding priorities, that seeks to identify and characterise the historic environment in key existing or potential areas of terrestrial extraction. It will inform future decision making within minerals planning on the preservation, management and investigation of archaeological sites, monuments, built heritage and historic landscapes affected by aggregate extraction.
- 1.15 The proposed Aggregates Resource Assessment will contribute to a growing number of such resources funded through the ALSF, including those for Wiltshire and Swindon; Gloucestershire; Somerset; Bath and North East Somerset; Warwickshire; and Worcestershire.

SHAPE Sub-Programmes

- 1.16 In 2008 English Heritage published *SHAPE, a Strategic Framework for Historic Environment Activities and Programmes in English Heritage* as guidance for external grant applicants.
- 1.17 The project contributes to two SHAPE Sub-Programmes. Firstly Sub-Programme 11172.110: Supporting Research Frameworks: National, regional, local, diachronic and thematic frameworks (Annex 1). This project places the archaeological resource within the context of the Regional Research Framework, *The Archaeology of South-West England* (Webster 2007), and also local frameworks including *Twenty Five Years of Archaeology in Gloucestershire: A Review of New Discoveries and New Thinking in Gloucestershire, South Gloucestershire and Bristol 1979-2004* (Holbrook and Jurica 2006), both of which have been supported by English Heritage. A research agenda for the aggregate producing areas of South Gloucestershire has been produced, which seeks to develop agenda items within the Regional Research Framework.
- 1.18 The project also contributes to Sub Programme 32142.210: Heritage at Risk: Identifying threats (other than climate change) and developing responses (Annex 1). This will be achieved as the project has identified areas of potential future mineral extraction, where extraction might threaten cultural heritage resources. It also provides baseline data, a research agenda and a review of previous methodologies, in order to facilitate informed responses by the mineral planning authority and their advisors, both by planning for future extraction, and through the formulation of effective evaluation and mitigation strategies for proposed extraction works.

Interfaces

- 1.19 As well as the interfaces with *The Archaeology of South-West England* (Webster 2007), and *Twenty Five Years of Archaeology in Gloucestershire: A Review of New*

Discoveries and New Thinking in Gloucestershire, South Gloucestershire and Bristol 1979-2004 (Holbrook and Jurica 2006), mentioned above in paragraph 1.17, the project will also contribute to future South Gloucestershire Mineral Development Planning Documents; Environmental Statements and Desk-Based Assessments produced as part of the development control process.

2. AIMS AND OBJECTIVES

Project Aim

- 2.1 To characterise the archaeological resource in aggregate producing areas of South Gloucestershire and to formulate a research agenda in order to aid the archaeological management and mitigation of future extraction proposals.

Project Objectives

- 2.2
- Objective 1: Define all past, present and potential areas of aggregate production in South Gloucestershire;
 - Objective 2: Assess the current state of knowledge about the archaeological resource within the study area and produce a resource assessment;
 - Objective 3: To identify gaps in current knowledge and produce an archaeological research agenda for the study area;
 - Objective 4: Review and assess the methodologies and policies adopted in the archaeological evaluation and mitigation of planning applications for mineral extraction;
 - Objective 5: To identify where previous archaeological investigations related to aggregate extraction have not yet been adequately published;
 - Objective 6: Identify outstanding ROMPs (Review of Old Minerals Permissions) within the study area and assess the likely archaeological effects of continuing or starting extraction at these sites; and
 - Objective 7: To increase public, industry and other stakeholders' awareness and understanding of the historic environment within the study area.

3. METHODOLOGY

- 3.1 The project methodology was based upon that given in the Project Design (CA 2009a), formulated during discussions with Buzz Busby, the English Heritage National Terrestrial Aggregates Advisor. This methodology is described below, together with explanations of any minor deviations from the anticipated methodology.

Project partners

- 3.2 During the course of the project, discussions relating to the archaeological resource were held with The South Gloucestershire Historic Environment Team: David Haigh, South Gloucestershire Manager Natural and Built Environment Team, David Evans, South Gloucestershire HER Officer, and Paul Driscoll, South Gloucestershire HER Assistant. They provided HER records and data for monument densities as well as general guidance relating to the archaeological resource of South Gloucestershire.
- 3.3 Information and guidance was also supplied by Mark Davies, South Gloucestershire Head of Minerals Planning. Discussions were also held with Simon Ford, South Gloucestershire Senior Planning Officer Minerals and Waste, who provided site-

specific documents and information relating to areas of past, current and future aggregate extraction.

Defining and Characterising the Aggregates Resource – Objective 1

- 3.4 The aggregate producing resource was defined and characterised by identifying previously exploited geologies, and mapping their extent.

Geological mapping

- 3.5 Digital geological mapping at 1:50,000 scale was purchased from the British Geological Survey (BGS). This comprised DiGMapGB-50 Bedrock Geology and Superficial Deposits corresponding to BGS 1:50,000 series England and Wales sheets 250 (Chepstow), 252 (Malmesbury), 264 (Bristol) and 265 (Bath). Where available, data on Artificial Ground, Mass Movement and Linear Features was also provided. The digital data was viewed using GIS software (ArcMap 9.3.1). Additional information, including recorded sections, was obtained from the BGS published paper mapping.
- 3.6 The 1:50,000 BGS mapping does not map the geology below low mean tide. Mapping at 1:250,000 scale was available for this area (DiGSBS-250 and DiGROCK-250) and was purchased along with the 1:50,000 data. However, the small scale of this resource meant that it was not suitable for minerals resource mapping for this assessment. The sedimentary deposits of the Severn Estuary have previously been assessed by the Bristol Channel Marine Aggregates Resources and Constraints Research Project (BCMA) (Posford Duvivier Environment and ABP Research and Consultancy 2000). Information from this document and the Welsh Assembly Governments Interim Marine Aggregates Dredging Policy (WAG 2004) was used to define the potential aggregate producing deposits within the Gloucestershire area of the Severn Estuary.

Past, current and future extraction

- 3.7 It was originally anticipated that information on all aggregate minerals extraction planning permissions since 1947 would be available from the MPA. However, it transpired that the design of the MPA archives did not allow for the production of all of the information, although some data was available. Additional information was obtained from the BGS minerals resource summary (BGS 2006). This discusses and maps the minerals resource of the historic county of Gloucestershire and details areas of minerals planning permissions/workings.
- 3.8 The MPA was able to provide information on current aggregate extraction sites and areas of valid old mineral permissions, and some information on areas of past exploitation that have now ceased to be active was available. Likely future extraction sites were identified as the designated Preferred Areas detailed in the South Gloucestershire Minerals and Waste Local Plan.

Mapping the aggregates resource

- 3.9 Following the identification of past, current and future aggregate extraction sites, these areas were cross referenced against the BGS 1:50,000 geological mapping to identify geological areas with potential for future extraction. These identified geologies were extracted from the BGS GIS data table to form the basis of the study area. A number of areas of permissions/workings, focused on the Carboniferous Limestone aggregate resource, extended beyond its mapped extent on the BGS 1:50,000 mapping. No single masking deposit associated with the Carboniferous

Limestone resource was identified and therefore the assessment area was extended to include these extraction areas alone. Carboniferous Limestone deposits outcropping the in the Severn Estuary were excluded from the study area. In order to allow for the siting of works associated with aggregate extraction, a buffer of 100m around each area of geology with the potential for extraction and the additional identified areas of permission/workings was included. Urban areas, as defined by the Office of National Statistics, were excluded from the study area. Environmental constraints, such as AONBs, ancient woodland and SSSIs were not excluded.

- 3.10 The potential aggregate producing area of the Severn was based upon the Bristol Channel Marine Aggregates Resources and Constraints Research Project (BCMA) (Posford Duvivier Environment and ABP Research and Consultancy 2000) and the Welsh Assembly Governments Interim Marine Aggregates Dredging Policy (WAG 2004). The study area comprised the area below mean tide. Outcropping bedrock was excluded.

Defining the Archaeological Resource – Objective 3

- 3.11 The archaeological resource of the assessment area was defined using information derived from the South Gloucestershire HER and a number of supplementary sources. The main sources of information comprised:

South Gloucestershire HER

- Database of known archaeological sites, findspots and previous archaeological works;
- Historic Landscape Characterisation data;
- Summary of archaeological periods; and
- Development control site reports.

National Monuments Record

- Database of archaeological monuments and events (including marine information).

Portable Antiquities Scheme

- Database of findspots.

Previous resource assessments

- *The Archaeology of South West England: South West Archaeological Research Framework, Resource Assessment and Agenda* (Webster 2007);
- *The Severn Estuary Rapid Coastal Zone Assessment* (Crowther and Dickson 2008);
- *Severn Estuary: Assessment of sources for appraisal of the impact of maritime aggregate extraction* (MoLAS 2007); and
- *The Archaeology Report appended to the Bristol Channel Marine Aggregates: Resources and Constraints Research Project* (WA 2000, Appendix 08 in Posford Duvivier Environment and ABP Research and Consultancy 2000).

Published archaeological sources

- Including *Twenty-Five Years of Archaeology in Gloucestershire: A review of New Discoveries in Gloucestershire, South Gloucestershire and Bristol 1979-2004* (Holbrook and Juřica 2006) and *The Archaeology of Avon* (Aston and Iles 1987).
- A full list of reference is given in Section 9: *References*

- 3.12 As part of the baseline enhancement a list of archaeological investigations undertaken within the study area was produced using the HER data, and this was cross referenced with the records for past and current extraction areas.
- 3.13 The archaeological resource is discussed by period. Periods discussed were Palaeolithic, Mesolithic, Neolithic, Bronze Age, Iron Age, Roman, Early Medieval, Medieval, Post-medieval and Modern (see Appendix D).

Monument Densities – Objective 3

- 3.14 Monument density was calculated using HER data. The HER define monuments with reference to the English Heritage thesauri. Data for the study area was provided by the HER as an Excel data table with periods attributes attached. The design of the SGHER database means an individual record (defined by a PRN: Preferred Reference Number) may be assigned multiple periods. Records with more than one period, e.g. Iron Age and Roman, were counted twice. However, repetition of sub-periods, e.g. where a site is recorded as both Early Iron Age and Iron Age, were excluded. Data on the number of monuments within the UD as a whole were provided by SGHER. Discussions with the Historic Environment Record Officer (David Evans) ensured that the numbers used to calculate monument density were compatible. To calculate monument density the number of records per period were divided by the area in km². Checking the accuracy of the periods assigned to each record was beyond the scope of this study and no attempt was made to exclude records from the dataset for the purposes of calculating monument density where they were suspected of being assigned to the wrong period. The periods used in this study area detailed in Appendix D.
- 3.15 The calculated monument densities were compared to data presented in the *Monuments At Risk Survey* carried out by Bournemouth University to see how current levels of recorded monuments for each chronological period compare to figures that might be expected for such an area of the country. The data was also compared with figures produced in SWARF (South West Archaeological Research Framework; Webster 2007).
- 3.16 It was originally anticipated that Historic Landscape Characterisation data (HLC) might be used to elucidate why clusters or 'blank areas' occur within the baseline data. Whilst the HLC data was used to enhance the baseline information, but did not lend itself to integration with the Monument Density analysis.

Research Agenda and Strategy – Objective 3

- 3.17 During production of the Research Agenda reference was made to the Regional Research Framework, *The Archaeology of South West England: South West Archaeological Research Framework* (SWARF; Webster 2007), and local frameworks including *Twenty-Five Years of Archaeology in Gloucestershire: A Review of New Discoveries and New Thinking in Gloucestershire, South Gloucestershire and Bristol 1979-2004* (Holbrook and Juřica 2006), both of which have been supported by English Heritage. It has also been informed by information provided by SGHER (SGNBET 2010), previous aggregate resource assessments, including those for the Severn Estuary (MoLAS 2007), Gloucestershire (GCC 2008), Warwickshire (WCC 2007) and Worcestershire (WCC and CA 2007), as well as a range of archaeological publications, referenced in the Resource Assessment.
- 3.18 Example strategies were produced for some of the research priorities identified, in order to provide further detail of how they might be achieved.

Mitigation, Methodological and Strategy Review – Objective 4

- 3.19 The archaeological baseline data was used to compile a list of all archaeological investigations undertaken in response to aggregate extraction, or proposed aggregate extraction. This information was used to assess the way in which the archaeological resource has been investigated and managed in the past, and the way in which it is currently managed. The effectiveness of the historic and current approaches were assessed with reference to a case study. This case study was used to inform recommendations on how the archaeological resource, threatened by aggregate extraction, should be assessed and managed in future.

Previous Aggregate Investigation – Objective 5

- 3.20 The compiled list of archaeological investigations (see above) relating to aggregate extraction was used to identify investigations for which sufficient publication has not taken place. For each investigation a record was entered into a task-specific database. Antiquarian works, recorded by the HER, associated with quarries for which the product is not known (i.e. which are likely to have produced building stone rather than aggregate) were not added to the database.
- 3.21 The database was originally developed by ARCUS on behalf of English Heritage but during the course of this project stewardship was transferred to Wessex Archaeology. A project-specific version of the database was supplied by Wessex Archaeology and the database fields are detailed in Appendix A. The database auto-generates unique numbers for each record, allowing easy migration back into the main dataset. It was originally anticipated that details provided by ARCUS would be used to define whether dissemination was complete. However, updated guidance provided by Wessex Archaeology identified different criteria, which have been implemented for this project. The criteria for judging whether dissemination is complete are as follows:
- Projects with *local* significance should have a grey literature report available in a local SMR/HER if results were negative or negligible, and a brief local journal note in addition, if small-scale archaeological evidence was recovered.
 - Projects with *regional* significance should have a full treatment in a local/county journal.
 - Projects with *national* significance should have full publication in a national journal, or full monograph publication.
- 3.22 The terms *local*, *regional*, and *national* significance are qualified as follows:
- Local: Negative or limited archaeological evidence, meriting a grey literature report of a brief note in a local journal.
 - Regional: Significant archaeological evidence, meriting a longer report in a local journal.
 - National: An major archaeological site, meriting full publication in a national journal or in monograph form.

In cases where an organisation has carried out a number of interventions over time within a single quarry, the assessment of importance has been made on the evidence in total, rather than on a single season's work.

Outreach – Objective 7

- 3.23 Following the review of the first draft, a seminar was held to disseminate the preliminary project results and encourage comment. A broad range of stakeholders were invited including local amateurs, local professional archaeologists and unit

representatives, academics with specialist interest, English Heritage representatives including the regional science advisor, the South Gloucestershire Planning Archaeologists, local councillors, minerals planners and industry representatives. Copies of the draft report were issued to English Heritage, South Gloucestershire Natural and Built Environment Team and the Minerals Planning Authority before the seminar.

- 3.24 The seminar comprised a talk on the project background and methodology by the Project Manager followed by a talk on the results by the Project Officer. These were followed by associated talks on the project in relation to the Historic Environment Record, by Paul Driscoll (South Gloucestershire HER Assistant) and on the history of stone quarrying in the UD, by David Hardwick of the South Gloucestershire Mines Research Group. Copies of the draft report were issued to seminar attendees and comments were integrated into the final report.

Data Archiving

- 3.25 All digital information generated by the project has been deposited with the South Gloucestershire HER, and unique data is being considered for migration into the HER (see below). The project specific database has been transferred to Wessex Archaeology, for migration into the main database. A copy of the report and the associated database will be deposited with the ADS.

HER Data Enhancement

- 3.26 Large scale enhancement of the HER records for the aggregate areas of South Gloucestershire did not form part of this project. Nevertheless amendments/enhancements for a small number of HER records have been identified. The amended data has been passed to the South Gloucestershire HER for incorporation within the record.

4. DESCRIPTION OF AGGREGATES RESOURCE

The Mineral and Aggregates Resource in South Gloucestershire

Geology

- 4.1 A brief description of the overall geological sequence of the UD is detailed below, followed by summary of the potential mineral resource. A simplified chronology for outcropping geology in the Bristol-Gloucester region from the Carboniferous Period onwards is presented in Table 4.1 below.

Table 4.1. Simplified geological subdivisions for the Carboniferous to present (after BGS 1992, Table 1). Units which are currently exploited as an aggregate resource in South Gloucestershire are highlighted in bold.

Period	Lithostratigraphical units	Age (years BP)
Quaternary	Alluvium, peat, terrace deposits, head deposits, cave deposits, glacial deposits.	c. 2 million
Cretaceous	Chalk	130 million
	Upper Greensand	
	Gault	
Jurassic	Oxford Clay and Kellaways Beds	205 million
	Great Oolite Group	

	Inferior Oolite Group	
	Upper Lias	
	Middle Lias	
	Lower Lias	
Triassic	Penarth Group	250 million
	Mercia Mudstone Group	
	Sherwood Sandstone Group	
?Permian	Unnamed sandstones	290 million
Carboniferous	Coal Measures	365 million
	Quartzitic Sandstone Group	
	Carboniferous Limestone	

Carboniferous

- 4.2 The Carboniferous Limestone lithostratigraphical unit outcrops at the northern edge of the Bristol Coalfield (BGS 1992, 28). In addition to outcrops at Aust and Olveston, in the western area of the UD, it forms the Severn Escarpment to the east of the Severn Estuary, which runs south-west/north-east across the county from Over to Tortworth, before turning south-east towards Chipping Sodbury. South of Chipping Sodbury it is overlain by later deposits, although there are small outcrops at Codrington and Wick. Quartzitic Sandstones (Cromhall Sandstone Formation) overlie the Carboniferous Limestone, and the two units form the Carboniferous Limestone Supergroup (BGS digital mapping). The Carboniferous Limestone Supergroup forms an upside-down 'U' in plan, south of which surface solid geology comprises the Later Carboniferous Bristol Coal Measures. These coal measures comprise coal veins interbedded with sandstone deposits, including Pennant Sandstone.
- 4.3 Carboniferous Limestone deposits are a particularly hard rock, and this combined with its solubility leads to the formation of caves and swallets (also known as sink holes or swallow holes) (BGS 1992, 7). Elsewhere in the region geological features were the focus of prehistoric activity and potentially preserve such deposits *in situ*. Cave sites are well known from the Mendips but the geological situation in South-Gloucestershire is slightly different, due to the presence of the Cromhall Sandstone layer, which may have inhibited cave formation (Clarke and Levitan 1987, 129). However, cave sites are known from the Carboniferous Limestone along the Severn Escarpment (ibid, 131) to the north of Almondsbury (Clifton Down Limestone Formation) and south of Alveston (Clifton Down Limestone Formation and overlying Penarth Group Triassic Mudstone). Carboniferous Limestones generally produce poor soil and are more likely to be pasture than arable (Aston and Iles 1987, 7), with correspondingly low potential for cropmark recognition.

Permian and Triassic

- 4.4 Permian and Triassic (Permo-Triassic) deposits may occur at great thickness, the maximum recorded depth is to the north of the UD, in the Worcester area, where 2.5km thick deposits have been recorded (BGS 1992, 75). In South-Gloucestershire the most extensive of these deposits comprise those within the Mercia Mudstone Group, which extends across the coastal plain in the western area of the UD and parts of the Bristol Coal Field.

Jurassic and Cretaceous

- 4.5 Jurassic deposits were laid down following marine transgression and the establishment of open-sea conditions (BGS 1992, 88). Lower Jurassic Lias deposits outcrop at the edge of the Cotswold Escarpment, at the eastern edge of the study area, and also to the north of Patchway. In the eastern part of the UD the Lias group

is overlain by Middle Jurassic Oolite Group deposits (Inferior and Great Oolite), and together they form the southern Cotswolds, within the UD. Jurassic Limestones produce good quality soils and cropmark visibility is often high (Powlesland 2009, 5). Upper Jurassic and Cretaceous deposits are not mapped as outcropping in South Gloucestershire.

Quaternary

- 4.6 During the Quaternary 'drift' or 'superficial' geological units including peat, alluvium, river terrace gravels and head were deposited. The Quaternary is divided into the Pleistocene and Holocene epochs, further sub-divided into British Quaternary stages as laid out in Table 4.2 below (BGS 1992, 153). The climate fluctuated between warmer temperate conditions and cooler glacial conditions, identified by Oxygen Isotope Stages (OIS) (Table 4.2). During the most recent glaciation in the Devensian stage, ice-limits did not reach South-Gloucestershire, although this area would have experienced periglacial conditions (Allen 2007). The formation of the land-based River Terrace Deposits and the Severn Estuary are summarised below.

Table 4.2 Chronology for the Quaternary (after Hosfield 2007, table 2.1; and BGS 1992, Table 8)

Epoch	British Quaternary Stage	OIS	Climate	Commencement (Years BP)	Archaeological Period
Holocene	Flandrian	1	Mainly Warm	10,000	Mesolithic to Modern
Pleistocene	Devensian	2	Mainly Cold	24,000	Upper Palaeolithic
		3		59,000	
		4		71,000	Middle Palaeolithic
		5a-d		117,000	
	Ipswichian	5e	Warm	128,000	Lower Palaeolithic
	Wolstonian	6	Cold	186,000	
		7	Warm	245,000	
		8	Cold	303,000	
		9	Warm	339,000	
		10	Cold	362,000	
	Hoxnian	11	Warm	423,000	
	Anglian	12	Cold	478,000	
	Cromerian	13	Warm	524,000	
Pre-Cromerian stages			Alternating cold and warm		

River Terrace Deposits

- 4.7 River terrace deposits in the region formed in the Devensian and Flandrian stages of the Quaternary (BGS 1992, 154) and represent the surfaces of former river floodplains. The highest terraces are the oldest and the descending sequence was formed as the river cut down into the valley, resulting in a sequence of 'steps' (Wymer 1999, 22). Terrace deposits are numbered upwards according to their height with First River Terrace deposits being the lowest and youngest in the sequence (BGS 1992, 158).
- 4.8 First River Terrace deposits associated with the Bristol Avon and its watershed, including the Frome, are mapped in the central and southern parts of the study area. Small areas of Second Terrace deposits are mapped adjacent to the Bristol Avon, at the southern edge of the UD. First Terrace deposits associated with the Little Avon,

a tributary of the Severn, are mapped at the northern edge of the UD. No Third Terrace deposits are recorded in South Gloucestershire.

- 4.9 There is potential for palaeoliths (stone tools of Palaeolithic date) to be associated with river terrace deposits as these are most commonly found in secondary contexts within deposits underlying river terrace gravels (Wymer 1999, 21).

The Severn Estuary

- 4.10 The Severn Estuary lies along the western edge of the UD. During the Pleistocene, prior to the Ipswichian stage, sea levels were lower and the Severn Estuary comprised a network of streams (Allen 2000, 15). A marine transgression during the Ipswichian was followed by a regression in the Devensian. Ipswichian deposits include shelly-sands and gravels and Devensian deposits include tills, fluvio-glacial sands and gravels and head.
- 4.11 Rising sea levels during the Holocene deposited a sequence of estuarine silts and intertidal-terrestrial peats, referred to as the Wentlooge Formation at the margins of the Severn Estuary, forming the Severn Estuary Levels (ibid, 13; Rippon 1997). The early stage of the marine transgression at the beginning of the Holocene appears to have been too rapid to deposit thick sediments, or these deposits have not survived, and the earliest recorded peat deposits date from after c. 7000 to 9000 bp (Allen 2000, 19). The basal deposits were overlain by the thick silts of the lower Wentlooge formation, deposited during a major marine transgression (ibid).
- 4.12 The middle Wentlooge formation comprises a complex sequence of terrestrial peat and marine alluvial deposits which developed across the Severn Estuary Levels c. 5600-3000 bp (3600-1000bc) (Rippon 1997, 42-3). This sequence of intercalated marine and terrestrial sediments may reflect a sequence of marine transgression (silts) and regression (peats), or alternatively peat deposits formed when salt marshes accumulated to a sufficient height to dry out, before being flooded by rising sea levels (ibid, 39). Peat may also have formed as localised deposits behind beach barriers or sand dunes (ibid, 39). The last period of widespread peat formation seems to have been towards the end of the Bronze Age.
- 4.13 The Upper Wentlooge Formation formed under marine conditions which appear to have extended over virtually the whole of the Severn Estuary Levels (Rippon 1997, 43-4). This last major marine transgression seems to have begun in the late second to early first millennium BC, reaching its greatest extent by around 500 BC.
- 4.14 Evidence for systematic embanking of the Severn Estuary Levels in the Roman Period has been identified in recent years, although the theory has not found universal agreement (Rippon 1997, 44; Gardiner et al 2002, 31-2; Holbrook 2006, 117) and exploitation of the levels may have been feasible due to a pause in sea level rise at the same time (Rippon 1997, 44). There was a subsequent transgression in the early medieval period, seen to be represented by the failure of sea-walls or natural coastal barriers before the reconstruction of sea-walls in the medieval period, thought to have been completed by the 12th century (Rippon 1997, 44).
- 4.15 The sediment environments of the Severn Estuary itself were defined by the Bristol Channel Marine Aggregates Resources and Constraints Research Project (BCMA) (Posford Duvivier Environment and ABP Research and Consultancy 2000). Within South Gloucestershire the Severn falls into three 'Sediment Environment' Areas: the Upper Severn Estuary, the Crossings, and the Lower Severn Estuary, referred to as

SE2, SE3 and SE4 respectively (WAG 2004; BCMA). SE2 is defined by in-filled channels of fine sand and mobile inter-tidal banks (ibid), SE3 by deposits of fine sand with rock cores at Dun Sands (South Gloucestershire and Monmouthshire) and Charston Sands (Monmouthshire), and SE4 by large, well sorted deposits of fine sands (WAG 2004; BCMA). Only a small area of SE4 lies within South Gloucestershire (Fig. 6), and the closest large deposit of fine sand is the Bedwin Sands, within Monmouthshire, just outside the South Gloucestershire boundary.

Potential Minerals Resource

Carboniferous

- 4.16 Carboniferous Limestones are utilised as a roadstone and construction aggregate (SGMWLP 2002, 12). Quartzitic Sandstone, the Cromhall Sandstone Formation, produces high strength aggregate which is resistant to polishing and therefore is particularly valuable as a road stone (BGS 2006, 7). Carboniferous Limestones and Sandstones may also be used as a building stone.
- 4.17 Coal from the Bristol Coalfield has historically been exploited at outcrops and through open cast mining. The mudstones and fireclays of the coal measures have been extracted to produce bricks (BGS 2006, 12).

Permian and Triassic

- 4.18 Celestite, a source of strontium, occurs in and below the Triassic Mercia Mudstones. Strontium compounds have a range of applications including in the manufacture of televisions and certain prescription drugs.

Jurassic and Cretaceous

- 4.19 Jurassic Limestones of the Inferior Oolite group can be used as building stone or a low quality aggregate. Those of the Great Oolite group can be used as aggregate, building stone or for agricultural purposes (lime) (BGS 2006, 8).

Quaternary

- 4.20 Superficial deposits of sand and gravel may be exploited as an aggregate resource. River terrace deposits are a particularly valuable resource as they are generally clay-poor (BGS 2006, 3). Alluvial deposits may mask gravel deposits.
- 4.21 The commercial resource of the Severn Estuary comprises banks of well-sorted sands which may be recovered by dredging (WA 2002, 1). These sands comprise residual material rather than *in situ* deposits (ibid). The commercial value of the fine sands of the Upper Severn Estuary is not proven (SE2), but deposits comprising SE3 and SE4 potentially have commercial value.

Past, Current and Future Aggregates Extraction

- 4.22 The aggregate resource comprises two main potential sources: crushed rock aggregates and superficial deposits of sand and gravel. The latter occurs both as a land-based resource and offshore, on the bed of the Severn. In 2006 South Gloucestershire produced 3.63 million tons of aggregates, exclusively from crushed rock (SWRAWP 2008). Identified extraction areas are detailed on Figs. 3 and 4.

Crushed Rock Aggregates

Current Extraction

- 4.23 The Minerals Planning Authority provided information on the four aggregate quarries currently operating in South Gloucestershire (Figs. 3 and 4). Carboniferous Limestone is currently quarried for aggregate at Tytherington, Wickwar, Chipping Sodbury and Wick.

Past Extraction/Expired Permissions

- 4.24 In addition to quarrying at the four active aggregate quarries (see *Current Aggregate Extraction* above), the MPA identified previous Carboniferous Limestone extraction at the currently inactive Cromhall Limestone Quarry. A number of additional quarries/permissions focused on the Carboniferous resource were identified by the BGS (2006; detailed in Appendix B; Figs. 3 and 4). Several of these areas extend beyond the mapped extent of this resource, but no single masking deposit was identified. Overlying deposits include the Mercia Mudstone Group which is widespread across the county. It was not possible to ascertain whether these quarries have ever produced aggregates but this data was incorporated into the dataset. Quartzitic Sandstone has previously been worked at Cromhall Quartzite Quarry.
- 4.25 A search of the HER identified a large number of historic quarries on the Carboniferous Limestone resource. However, as the identification of these quarries was reactive, i.e. based on the presence of the BGS mapped resource, and information on them is extremely limited they have not been added to the table of known quarries.

Future Extraction

- 4.26 Likely future extraction sites are the designated Preferred Areas detailed in the South Gloucestershire Minerals and Waste Local Plan (MPA; Figs. 3 and 4). The MPA also identified a number of existing Mineral Permissions, associated with Tytherington, Chipping Sodbury and Cromhall Limestone quarries.

The Aggregates Resource

- 4.27 Carboniferous Limestones are currently exploited as a crushed rock aggregate resource in South Gloucestershire. Quartzitic Sandstone (Cromhall Sandstone) has previously been exploited in the UD. Together these resources make up the Carboniferous Limestone Supergroup (Fig. 5). In South Gloucestershire, these deposits outcrop at the northern edge of the Bristol Coalfield (see also Carboniferous above). While Jurassic limestone, which forms the Cotswold Plateau in the eastern part of the UD, is a potential aggregate resource it is not currently exploited in South Gloucestershire, and future extraction is not currently proposed or identified (MPA). Therefore, this very extensive resource was excluded from the assessment.

Superficial Deposits: Land Based

Current Extraction

- 4.28 There is no recorded current extraction of superficial sand and gravel deposits in South Gloucestershire (BGS 2006, 3; SWRAWP 2006; MPA). Alluvial deposits may overlie gravel deposits similar in composition to river terrace gravels (BGS 2006, 5).

Past Extraction

- 4.29 A search of the HER identified Historic working of a gravel deposit in the early 20th-century is recorded by the HER, immediately north of the Bristol Avon in the southern part of the UD (SGHER 1239).

Future Extraction

- 4.30 River Terrace deposits in South Gloucestershire are not as extensive as in other parts of the country and there are no proposals or identifications for future extraction (MPA). However, given the identified high value of this resource it has been included in this assessment.

The Aggregates Resource

- 4.31 Potential land-based sources of sands and gravels comprise river-terrace deposits and sub-alluvial gravel deposits (BGS 2006, 3) associated with the Bristol Avon system (including the Frome) and the Little Avon (Fig. 5).

Superficial Deposits: The Severn*Current Extraction*

- 4.32 No records of current extraction were identified.

Past Extraction

- 4.33 Dunn Sands, which is located on the South Gloucestershire Monmouthshire border, was worked in the later 20th-century/early 21st-century (Mike Johnson, Gloucester Harbour Trustees, pers. comm.; Fig. 3), although the site is currently inactive. Historic permissions to dredge were identified on the Monmouthshire side of Dunn Sands (Monmouthshire County Council). Investigations were made into the possibility that dredging extended into the South-Gloucestershire side (MoLAS 2007, Fig. 6), but no documents were located. No dredging is recorded upstream of the Dunn Sands where the shallow water depth and sand quality limits commercial interest (WAG 2004, 77).

Future Extraction

- 4.34 No plans to dredge sand deposits within South Gloucestershire have been identified. However, given the potential for the exploitation of this resource it has been included in the assessment.
- 4.35 The Severn Estuary within South Gloucestershire is a potential source of superficial sand and gravel.

Aggregate Character Areas

- 4.36 The UD has been divided into two Aggregate Character Areas: land based deposits comprising the Carboniferous Limestone Supergroup along with River Terrace and Alluvial deposits; and the Severn Estuary (Fig. 6).

Land Based ACA

- 4.37 The Land Based Aggregate Character Area (ACA) comprises the Carboniferous Limestone Supergroup and River Terrace deposits (including potentially masking Alluvial deposits) as mapped by the BGS 1:50,000 digital mapping. Potential resources underlying narrow deposits of alluvium, considered to be obviously financially unviable, have been excluded from this assessment. However, alluvial

deposits adjacent to river terrace deposits have been included as part of the river terrace deposit study area, as well as larger areas of riverine alluvium. The exclusion/inclusion of areas of alluvium was guided by the BGS minerals resource information (BGS 2006).

- 4.38 Mapped Carboniferous Limestone, River Terrace deposits and applicable Alluvial deposits were extracted from the BGS digital data and formed the basis of the Land Based ACA. A buffer of 100m around the mapped extent of these deposits was included, to allow for associated works. An additional 100m buffer around areas of permissions/workings focused on the Carboniferous Limestone resource but extending beyond its mapped surface area was also included. Outcrops of Carboniferous Limestone in the Severn Estuary, including Aust Rock which supports part of the first Severn crossing were excluded from the assessment area.
- 4.39 Urban areas as defined by the Office of National Statistics (ONS 2001) were excluded from the land-based study area. Where the exclusion of urban areas created small isolated areas of 'buffer' which did not contain an identified aggregates resource, these were also excluded.
- 4.40 The Land Based ACA, based on the mapped geological resource with relevant buffers and exclusions as detailed above, is depicted on Fig. 6.

The Severn ACA

- 4.41 The Severn Aggregate Character Area comprises the areas corresponding to SE3 and SE4 (WAG 2004; BCMA), i.e. the area south of the Old Severn Crossing. The area below low mean tide was included in the assessment. The Severn ACA is depicted on Fig. 6.

5. DESCRIPTION OF ARCHAEOLOGICAL RESOURCE

Introduction

- 5.1 The following section comprises a description of the archaeological resource of the Aggregate Character Areas, divided into three main sections: an overview of previous archaeological work; analysis of monument densities; and a discussion of archaeological resource by period. Information is based upon the SGHER data, supplemented using the sources detailed in *Methodology* above. This assessment is not intended to be a review of the county as a whole, although the resource outside the Aggregate Character Areas is referenced where appropriate.

Previous Archaeological Work

Introduction

- 5.2 Historically, research across the county has not been evenly distributed, with the western and eastern areas, comprising the Severn Levels and the southern Cotswolds respectively, receiving a greater degree of focus than the central zone. Early work tended to be monument-centric, focusing on visible historic elements in the landscape. Wider reaching studies include Crawford's survey of long barrows in the 1920s, which covered the Cotswolds and surrounding areas (Darvill 2004, 9), and O'Neil and Grinsell's survey of Gloucestershire Barrows (O'Neil and Grinsell, 1960). Work focusing only on the Cotswolds included the Royal Commission's survey of Iron Age and Roman monuments in the Cotswolds (RCHME 1976) and Saville's survey of monuments in the Avon and Gloucestershire Cotswolds (Saville

1980). The Cotswolds were also the focus of specialist flights for the purposes of the detection of monuments and sites through aerial photography in the 1980s (Powlesland 2009, 40).

- 5.3 Severn Estuary Levels Research Committee (SELRC), founded in 1985, co-ordinates research into the archaeology of the estuary and, since 1990, has produced an annual report, the series of which is a key source for the archaeology of the area. Early projects included work in response to the construction of the New Severn Crossing. While the area of the Severn Levels within South Gloucestershire has received relatively little research in comparison with other areas of the estuary, work has still recorded important sites, such as the *in situ* prehistoric deposits at Oldbury Flats.
- 5.4 The establishment of developer-funded archaeology following the adoption of PPG16 in 1990 resulted in archaeological field work over a wider, and arguably less subjective, area. Pioneering work included that undertaken along the line of the M5 Motorway in 1969-70 (Fowler 1974, 1977). The M4 Motorway also crosses the UD, although the published summary looks at the investigations on the line of the Motorway running east from the Cotswolds (Fowler 1979; Fowler and Walters 1981). More recently, work has been associated with the expansion of the suburbs of Bristol, at Bradley Stoke and Emersons Green (Holbrook 2006, 2). Sites investigated through large-scale, developer funded work have proved key in our continuing understanding of the region (Webster 2007, 272); although such projects are noticeably lacking from the Land Based Aggregate Character Area (see below).

Reviews

- 5.5 South Gloucestershire as a single entity has not been subject to detailed formally published review. This is in part a reflection of the small size of the unitary authority, and the lack of funding schemes for specifically focused research. It is however, included in wider summaries including *The Archaeology of Avon* (Aston and Iles 1987) and more recently in *Twenty-Five Years of Archaeology in Gloucestershire: A review of New Discoveries in Gloucestershire, South Gloucestershire and Bristol 1979-2004* (Holbrook and Juřica 2006). It is also covered by the *South West Archaeological Research Framework* (SWARF; Webster 2007). It may be argued that, in archaeological terms, it is not necessarily appropriate to consider South Gloucestershire as a defined separate entity and that the broader summaries and wider local/regional geographical research focus are suitable. That said, the lack of focused study with regards to the Aggregate Character Areas is a noticeable deficit in the Resource Assessment (see below).

Land Based ACA

- 5.6 Pre-1990 archaeological works recorded in the Land Based ACA include excavations of Roman settlement, including villas, and at the sites of prehistoric burial mounds. This includes a small quantity of finds and sites identified by antiquarians during quarrying, but this work was not systematic. Isolated finds or artefact scatters have been recorded across the study area during unsystematic fieldwalking or collected by metal detectorists and earthworks noted during field observations are also recorded by the SGHER. Work in the county was also undertaken by local groups, including the Bristol Archaeological Research Group (BARG), the Committee for Rescue Archaeology in Avon, Gloucestershire and Somerset (CRAAGS), The Western Archaeological Trust (WAT), and the University of Bristol Speleological Society. The quantity of work undertaken increased from the 1990s onwards and recorded works predominantly comprise developer funded schemes in response to proposed and consented development. This includes

archaeological works associated with aggregate extraction summarised in Management of the Archaeological Resource below. More recent studies include Powlesland's *The Later Prehistoric Landscape of the Bristol Avon Region*, which reviewed cropmarks and earthworks within the watershed of the Bristol Avon, of likely Neolithic to Roman date. Research included a study of oblique aerial photographs, with some reference to vertical, within the watershed of the Bristol Avon (Powlesland 2009). South Gloucestershire is also included within Moore's *Iron Age Societies in the Severn-Cotswolds* (Moore 2006). Previous archaeological works within the Land Based ACA, recorded on the SGHER or NMRAD are summarised in Appendix C.

Severn ACA

- 5.7 In addition to work undertaken by SELRC (see above), surveys of the archaeological resource in the Severn Estuary include Wessex Archaeology's summary of the known archaeological resource of the Bristol Channel (WA 2000), produced as an appendix to the Bristol Channel Marine Aggregates, Resources and Constraints Research Project (Posford Duvivier 2000); MoLAS' Severn Estuary: Assessment of Sources for Appraisal of the Impact of Maritime Aggregate Extraction (MoLAS 2007), which summarised the known archaeological resource of an area bounded by the High Mean Tide on the Welsh side of the estuary, and the Low Mean Tide on the English side, combined with a brief summary of extraction areas and consideration of research aims; and The Severn Estuary Rapid Coastal Zone Assessment Survey Phase 1 (desk-based study), National Mapping Programme (Crowther and Dickinson 2008) which identified, recorded and updated existing records for archaeological sites visible on aerial photographs on the English side of the Estuary, encompassing the intertidal zone and one kilometre inland. The first part of Phase 2 (pilot fieldwork) of The Severn Estuary Rapid Coastal Zone Assessment Survey was undertaken in 2009 and work is ongoing.

Monument Density

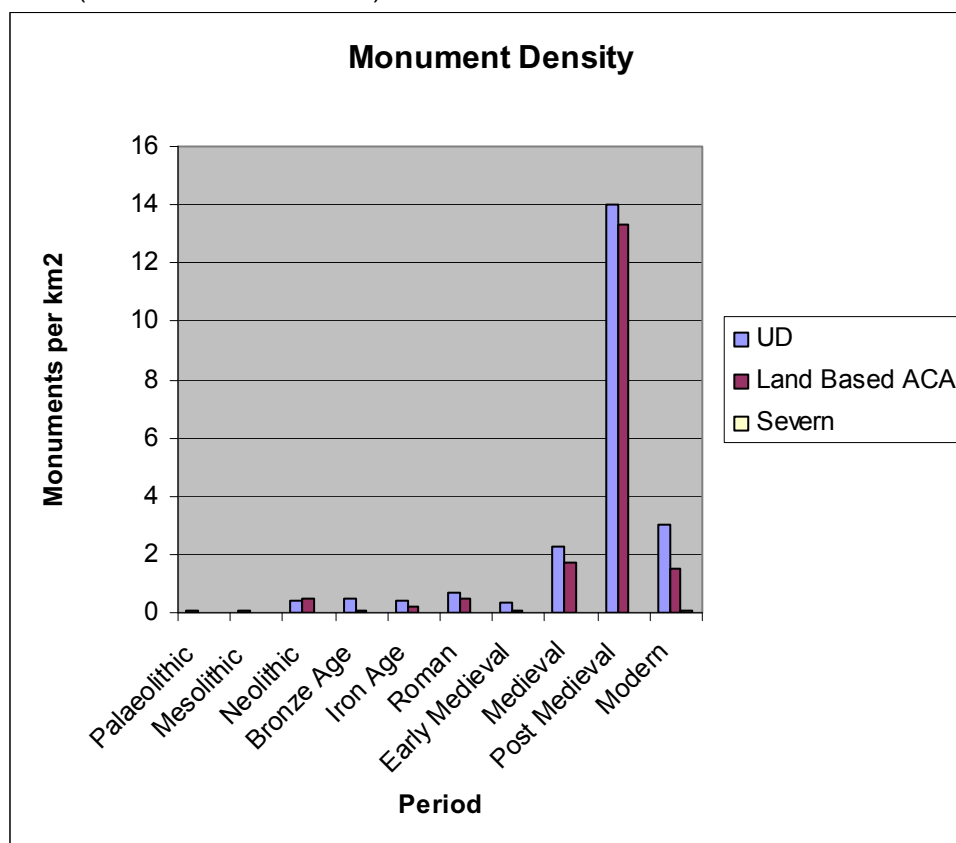
Calculating Monument Density

- 5.8 Data for the Aggregate Character Areas was provided by the HER as an Excel data table with period attributes attached. This data was transferred to GIS (ArcView) using provided x and y co-ordinates. Because of the need to maintain statistical integrity when comparing monument figures for the aggregate character areas with the UD as a whole no attempt was made to filter the data to exclude 'non-monument' sites such as records derived from documentary sources. The figures are therefore more truly a reflection of the number of records rather than the number of monuments.
- 5.9 The SGHER define monuments with reference to the English Heritage thesauri. The SGHER assigns dates to all recorded monuments. A search of the provided data by period gave the earliest possible date for any entry. For example, a cropmark recorded by the SGHER as dating to -4000 BC to 1900AD (Neolithic to post-medieval) was identified as Neolithic. Consideration of this has been factored in to the discussion of Monument Densities (see the period discussions below). Where a site fell into more than one sub-period category multiple records were produced, e.g. a Neolithic site might have separate Neolithic, Early Neolithic and Late Neolithic records. Therefore only the broad period categories, Palaeolithic, Mesolithic etc., were used to query the data for monument density figures. To calculate monument density the number of records per period were divided by the area in km².

Table 5.1 Monument Density for HER sites in South Gloucestershire (UD) and the Aggregate Character Areas (Land Based and Severn)

Period	South Gloucestershire (537 km ²)		Land Based (61km ²)		The Severn (7km ²)	
	Number of Records	Density (km ²)	Number of Records	Density (km ²)	Number of Records	Density (km ²)
Palaeolithic	33	0.06	2	0.03	0	0.00
Mesolithic	27	0.05	2	0.03	0	0.00
Neolithic	216	0.40	30	0.49	0	0.00
Bronze Age	240	0.45	6	0.10	0	0.00
Iron Age	237	0.44	13	0.21	0	0.00
Roman	388	0.72	28	0.46	0	0.00
Early Medieval	175	0.33	6	0.10	0	0.00
Medieval	1202	2.24	105	1.69	0	0.00
Post-medieval	7623	14.00	823	13.49	2	0.29
Modern	1627	3.03	93	1.52	2	0.29
Total (by PRN)	10572	19.69	1101	18.05	4	0.57

Graph 4.1 Monument Densities for South Gloucestershire (UD) and the Aggregate Character Areas (Land Based and Severn)



5.10 The monument density figures show a general rise in the number of recorded sites from the early prehistoric to the Roman period. There is an expected drop in records for the Early Medieval period (a period which is typically poorly represented/recognised in the archaeological resource), before numbers rise again

for the medieval period. The large number of post-medieval records is a product not only of the higher visibility of this period, but also due to the inclusion of features identified on the historic cartographic sources (including the Ordnance Survey mapping in this period) and the large number of Listed and Locally Listed buildings (SGHER). Such features are by definition widespread and common across the county. The fall in the number of Modern records is only in relation to the post-medieval period, i.e. there is a rise compared to the medieval period.

- 5.11 Generally the Land Based ACA has a lower monument density than the UD as a whole. This is most likely a reflection of the lower level of work undertaken in this area when compared to the Severn Estuary Levels and the Cotswolds (see *Previous Archaeological Work* above) and also a result of the exclusion of urban areas. The low number of records for the Severn ACA reflects its maritime nature. Further discussion of monument density by period and ACA is included in the period summaries below.

Comparison of Monument Densities: MARS

- 5.12 MARS (Monument at Risk Survey) provides data on the density of archaeological records and the density of archaeological monuments (Darvill and Fulton 1998). MARS density of archaeological monuments differs from density of archaeological records in that “unsuitable” records have been filtered out i.e. monuments with an unknown location, stray finds, single burials, place-name/historic source evidence, post-1700 building in domestic use and post-1900 buildings. Filtering the dataset for the entirety of South Gloucestershire was beyond the scope of this project (see above). Therefore it is more relevant to compare the monument density results for this project with the record density produced by MARS. The mean density of archaeological records for England is given as 5.04 records per km² (monument density calculated at 2.25 per km²; Darvill and Fulton 1998, 67, 88) (Table 5.2).
- 5.13 MARS does not provide a calculation of record densities for South Gloucestershire, but instead uses the old county of Avon (comprising South Gloucestershire, Bristol, Bath and North-East Somerset and North Somerset). In 1995 the density of archaeological records for Avon was calculated at 3–3.99 per km² (monument density is calculated at 2–2.99 per km²) (Table 5.2). MARS does not provide figures for monuments by period for Avon, although it does produce maps showing generalised densities for the Prehistoric/Roman/Early Medieval and medieval/post-medieval periods (Darvill and Fulton 1998, Figs 5.15 to 5.18).
- 5.14 At 19.69 per km², the monument density for South Gloucestershire is considerably higher than either the MARS mean density of records for England (5.04 per km²) or for Avon (3-3.99 per km²). This is thought to reflect the large number of (predominantly post-medieval) records added to the HER since the MARS survey, including data based on the Avon Historic Landscape Survey and cartographic sources, including the First Edition Ordnance Survey map.

Table 5.2 Comparison of MARS/SGHER record density

Area	Records per km ²
MARS England	5.04 (records)
MARS Avon	3-3.99 (records)
SGHER	19.69

Comparing Monument Density with SWARF

- 5.15 Given the time lapse and the variability of the parameters of the datasets between the MARS data and this project (see above) it is useful to also compare the data with that produced in SWARF (South West Archaeological Research Framework; Webster 2007). This produced a discussion of record densities across the south-west based upon the data held by the HERs (namely Bath and North-East Somerset, Bristol, Cornwall (including the Isles of Scilly), Devon, Dorset (including Bournemouth and Poole), Gloucestershire, North Somerset, Plymouth, Somerset, South Gloucestershire, Torbay and Wiltshire (including Swindon)) and indicated some interesting variations in the data. In 2004 South Gloucestershire had 18.69 records per km², fourth highest of the 12 HERs analysed (excluding the urban HERs of Exeter and Gloucester), well above the average density of 4.61 (Webster 2007, 17). In fact, South Gloucestershire was lower only than the urban HERs of Plymouth, Bristol and Torbay (Table 5.3). Analysis of the record density by period revealed that those counties which had a low monument density overall has a correspondingly low number of post-medieval records (Webster 2007, Figure 1.11). In other words the high monument density for South Gloucestershire appears to be, in part at least, a reflection of the high number of post-medieval records.

Table 5.3 Comparison of record densities (after Webster 2007, Table 1.11)

HER	Records per km ²
Plymouth	25.52
Bristol	21.80
Torbay	21.09
South Gloucestershire	18.69
North Somerset	17.75
Gloucestershire	13.36
Devon	8.63
Cornwall	8.42
Bath and North East Somerset	4.91
Somerset	4.13
Dorset	4.02
Wiltshire	1.31

- 5.16 The record density calculated in 2009, 19.68 per km², is marginally higher than the 18.69 per km² calculated in 2004 (Webster 2007, 17). An increase is to be expected as new sites are continually being added to the HER.

Designated Sites

- 5.17 The Land Based ACA makes up 11% of the total area of South Gloucestershire (61 km² of 537 km²). The number of designated sites within the UD and the Land Based ACA are shown in Table 5.4 below. The Land Based ACA contains 27% of the UD's Scheduled Monuments, reflecting the high number of hillforts within this area (see Iron Age below). It contains 9% of the UD's Listed buildings, a slightly lower percentage than might be expected for the relative area, most likely reflecting the exclusion of urban areas. It contains one of the ten Registered Parks and Gardens within the UD. One Registered Battlefield is recorded in South Gloucestershire, but this does not extend into the Land Based ACA. No World Heritage sites are recorded within South Gloucestershire. Designated sites within the Land Based ACA are detailed on Fig. 7.

Table 5.4 Designated Sites within the Land Based ACA

Designation	South Gloucestershire	Land Based ACA	Land Based ACA (% of total)
Scheduled Monuments	37	10	27%
Listed buildings (all grades)	2058	185	9%
Grade I Listed buildings	45	4	9%
Grade II* Listed buildings	118	-	0%
Grade II Listed buildings	1876	172	9%
Registered Parks and Gardens (all grades)	10	1	10%
Grade I Registered Park	1	0	0%
Grade II* Registered Park	4	1	25%
Grade II Registered Park	5	0	0%
Registered Battlefields	1	0	0%
World Heritage Sites	0	-	-

- 5.18 No designated sites are recorded within the Severn ACA. Its northern extent is bounded by the First Severn Crossing (Grade I Listed building).

Palaeolithic (900,000-10,000 BP)

Introduction and chronology

- 5.19 The Palaeolithic is traditionally studied in conjunction with Quaternary Science and falls within the Pleistocene epoch of the Quaternary period. In Britain it spans approximately 690,000 years, commencing with the earliest known human habitation, previously held to be c. 500,000 BP (Before Present) but now revised to c. 900,000 BP following recent work at Pakefield on the Suffolk coast (Parfitt et al 2005), and ending with the Palaeolithic/Mesolithic transition c. 10,000BP, which broadly corresponds with the beginning of the Holocene (Hosfield 2007, 24).
- 5.20 The Palaeolithic period is divided into the Lower, Middle and Upper Palaeolithic, on the basis of distinctive lithic assemblages and hominin species: the Lower Palaeolithic spans c. 900,000-250,000 BC and includes species such as *Homo erectus* and *Homo heidelbergensis*; the Middle Palaeolithic spans c. 250/200,000-40,000 BC and is defined by the presence of Neanderthals (*Homo neanderthalensis*); the Upper Palaeolithic is defined by *Homo sapiens*, i.e. anatomically modern humans (SGHER). The Upper Palaeolithic is further subdivided into the Early Upper Palaeolithic and the Late Upper Palaeolithic, before and after the Last Glacial Maximum c. 18,000 BP (Hosfield 2007, 44). The Palaeolithic is commonly referenced to Oxygen Isotope Stages (OIS). These stages reflect fluctuation between cool and warm temperatures, defined through the study of cores from the ocean bed (Wymer 1999, 2). Human habitation in Britain was not continual through the Palaeolithic, but was intermittent, influenced by the changing climatic conditions. A simplified chronology of the Palaeolithic with reference to OIS is presented in table 5.5, although note that this has been based on the traditional start date of c. 500,000 BP.

Table 5.5 Chronology for the Lower, Middle and Upper Palaeolithic (after Wymer 1999, table 2; Barton 1997, Figs. 15, 35-37; and Hosfield 2007, table 2.1.)

OIS	Years BP	British Quaternary Stage	Climate	Archaeological Period
2	24,000-13,000	Devensian	Mainly cold	Upper Palaeolithic
3	59,000-24,000			Middle Palaeolithic
4	71,000-59,000			
5a-d	117,000-71,000			
5e	128,000-117,000	Ipswichian	Warm	
6	186,000-128,000	Wolstonian	Cold	
7	245,000-186,000		Warm	
8	303,000-245,000		Cold	
9	339,000-303,000		Warm	
10	362,000-339,000		Cold	
11	423,000-362,000	Hoxnian	Warm	
12	478,000-423,000	Anglian	Cold	
13	524,000-478,000	Cromerian	Warm	

- 5.21 Evidence of Palaeolithic activity is generally split into two types, open sites and cave sites. Palaeoliths associated with open sites occur as residual finds, but also potentially in deposits underlying River Terraces (Wymer 1999, 21). Cave sites potentially preserve *in situ* Palaeolithic deposits, and may be occupation sites or serve as the focus of other activity. Evidence generally comprises faunal remains (including hominin) or stone tools, often worked from flint but also other stone such as chert or quartzite (Webster 2007, 280). Flint does not occur naturally in South Gloucestershire and therefore any flint artefacts are imported (SGHER). Palaeolithic sites recorded within the Land Based ACA are detailed on Fig. 8.

Monument density

- 5.22 The number of Palaeolithic sites recorded in South Gloucestershire is unsurprisingly low, as such finds are relatively rare throughout the British Isles. Two sites are recorded in the Land Based ACA, resulting in a monument density of 0.03 per km². At first glance this appears to be low when compared to a figure of 33 total sites (0.06 per km²) for the UD as a whole. However, in the course of this study it has become clear that because of the set up of the HER database a number of records which show up as Palaeolithic are in fact palaeoenvironmental, such as palaeochannels etc., which have been given a broad possible date range. The two sites with the Land Based ACA are cave sites, only one of which has recorded Palaeolithic lithic material. The cave sites are located on the line of the Severn Escarpment between Almondsbury and Alveston. It is beyond the scope of this study to re-assess the recorded Palaeolithic sites outside the ACAs. No Palaeolithic sites are recorded within the Severn ACA.

The Land Based ACA

Lower/Middle Palaeolithic

- 5.23 The Lower and Middle Palaeolithic periods in Britain are predominantly represented by residual lithic material associated with drift deposits, primarily River Terrace gravels (Hosfield 2007, 39; Darvill 2006, 14). Wymer highlighted that Palaeoliths are most commonly located in deposits underlying River Terraces rather than within the terrace deposits proper (Wymer 1999, 21).
- 5.24 While no Lower/Middle Palaeolithic material is currently recorded in South Gloucestershire, immediately to the south of the UD, a concentrated distribution of

Lower/Middle Palaeolithic material is known from River Terrace Gravels and Head deposits along the Bristol Avon valley (Wymer 1999, Map 57; Hosfield 2007, 39). The distribution to the north of the UD is more limited, although a few finds are known from Gloucestershire (TERPS 2008; Hosfield 2007, 42). The lack of finds from South Gloucestershire may reflect a lack of research rather than a true absence of habitation or suitable deposits. It is also worth noting that this material is commonly identified during gravel extraction (Darvill 2006, 14; Hosfield 2007, 42), a resource not presently exploited in South Gloucestershire, although included within the Land Based ACA.

Upper Palaeolithic

- 5.25 The Upper Palaeolithic archaeology of the South West Region is dominated by cave sites. Although open-air findspots are also known, cave sites may be seen as of particular importance as they potentially preserve occupation sites and combine lithic and faunal assemblages (Hosfield 2007, 47). A limited number of Upper Palaeolithic finds from open sites are known from South Gloucestershire (SGHER) but none are recorded within the Land Based ACA. Cave sites in the region are best documented in the Mendip Hills (which largely comprise Carboniferous Limestone) in Somerset (Hosfield 2007, 46-7) but also occur in the Carboniferous Limestones of the Land Based ACA. Known sites are recorded along the Severn Escarpment, generally in the form of swallow holes (an opening or cavity through which a stream or natural watercourse once ran underground (SGHER) and fissures.
- 5.26 One cave site with Palaeolithic material is recorded within the Land Based ACA. The Alveston Bone Fissure is a remnant cave system located to the north of Almondsbury (SGHER 1461; Clifton Down Limestone Formation, BGS digital mapping). Three pieces of flint, including an Upper Palaeolithic worked flake, were recovered from a disturbed context during excavation in the 1960s (Taylor 1973). Where this Upper Palaeolithic context survived *in situ* no finds were recorded. Earlier Pleistocene deposits, comprising up to 25% animal bone, were also recorded although no associated human activity was identified (Taylor 1973; animal bones recorded at the same site in the 1930s: Davy 1933; Gilbert 1961, 64; SGHER 14875). These bone-rich deposits appear to have resulted from animals falling into the fissure, and potentially also from remains washed into it (ibid, 146).
- 5.27 Cave sites are also recorded in the Land Based ACA to the south of Alveston. The Alveston Bone Cave (SGHER 14034) is located in an area of Penarth Group Triassic Mudstone, adjacent to and overlying Clifton Down Limestone Formation (part of the Carboniferous Limestone Supergroup). Iron Age/Roman remains have been recorded from the Alveston Bone Cave (see *Iron Age* and *Roman* below; SGHER 14034), although there is conceivably potential for Palaeolithic material to be present below the excavated layers. To the north-east of the Alveston Bone Cave is a second site at Forty Acre Lane (NMRAD 1344069; Clifton Down Limestone Formation). Human remains were recovered from this site, but the bones were undated. A medieval date was postulated by the speleological excavators due to the presence of a (possible) fallow deer bone. However, fallow deer bone was also identified in Palaeolithic-date deposits at Alveston Bone Fissure (Taylor 1973, 147). Swallow holes are recorded in the vicinity, at the Junction of the Clifton Down Limestone and the Penarth Group Triassic Mudstone (Clark and Levitan 1987, 129). No Palaeolithic material is currently recorded from these sites in the vicinity of Alveston but the presence of cave sites indicates the potential for such deposits in the area.

The Severn ACA

- 5.28 Studies of the Quaternary Landscape indicates that sea level in the Lower and initial part of the Middle Palaeolithic was lower than at present and that the Severn Estuary, rather than being the large water body present at the current time, comprised a network of streams (Allen 2000, 15). Sea level rose after the Ipswichian interglacial before regressing again in the Devensian (see Table 5.5 above). Commercially exploited deposits within the UD (e.g. Dun Sands) comprise transported, well-sorted sands which may include residual Palaeolithic artefacts or palaeoenvironmental material, but *in situ* Palaeolithic deposits are less likely (WA 2002, 1).

Conclusions

- 5.29 Cave sites with deposits of Palaeolithic date are known from the carboniferous limestones of the Severn Escarpment between Almondsbury and Alveston. There is potential for Palaeolithic deposits within other known cave sites in the vicinity of Alveston, and for currently unidentified sites. Such sites hold potential for both palaeoenvironmental material and evidence of human activity.
- 5.30 No Palaeolithic sites associated with River Terrace deposits have currently been identified in the Land Based ACA. However, material is known from similar deposits associated with the Bristol Avon, to the south of South Gloucestershire.
- 5.31 There is potential for residual Palaeolithic material within the Severn ACA. The potential for *in situ* deposits is not currently proven.

Significance and probability of discovery

- 5.32 Cave sites are potentially highly significant. However, the probability of discover of a cave site with *in situ* human activity is low, even within appropriate geologies. Any *in situ* material, including any associated with River Terrace deposits, is likely to be highly significant, although again the potential for this material is low. The recovery of unstratified material is more likely, relatively speaking, but this would be of a lower significance.

Mesolithic (10,000-6000BP / 8000-4000 BC)

Introduction and chronology

- 5.33 The Mesolithic spans the period from the end of the last Ice Age c. 10,000 BP, the beginning of the Holocene epoch of the Quaternary period, to the Neolithic c. 6000 BP (4000 BC). The warming climate and resulting sea level rises changed the landscape, and it is from this period onwards that peat and silt deposits developed along the Severn Estuary (Darvill 2006, 16). The changing climate resulted in the introduction of new types of flora and fauna, and sea level change resulted in Britain becoming an island, separate from the continent. The coastal resource is considered to have been particularly important in this period (Hosfield 2007, 49; Bell 2007) and river systems also appear to have been a focus of activity. Mesolithic populations are normally seen as nomadic with limited impact on the environment around them, although it is now generally accepted that activity may have included aspects of landscape modification (e.g. the management of reed beds on the margins of the Severn Estuary; Bell 2007).
- 5.34 The period is commonly divided into the Early Mesolithic and the Late Mesolithic on the basis of tool types: 'broad blade assemblages' with obliquely blunted points in

the Early Mesolithic and 'narrow blade assemblages' such as scalene triangles in the Late Mesolithic (Saville 1984, 69; Hosfield 2007, 49).

- 5.35 Evidence of Mesolithic activity occurs primarily in the form of flint scatters, both unstratified in the ploughsoil and stratified within preserved soil horizons, but is also known from cave sites and occasionally larger seasonally occupied sites (SGHER). Unstratified worked flint may be recovered during surface collection (Hosfield 2007, 49), although the difficulty of identifying microliths in the plough soil is self evident. Material is often found in conjunction with Neolithic or Bronze Age finds indicating a continuity of land use (Hosfield 2007, 56) but also highlighting issues involved in separating by period undiagnostic artefacts within an unstratified assemblage. Mesolithic sites recorded within the Land Based ACA are detailed on Fig. 9.

Monument density

- 5.36 South Gloucestershire has a low-level of recorded Mesolithic sites, 0.05 per km². The density within the Land Based ACA is slightly lower, 0.03 per km². This paucity of material may reflect a lack of survey in this area, but the tendency for the Carboniferous Limestones to have poor soil and therefore to be under pastoral rather than arable agriculture (Dawson 1987, 7) may also be a contributory factor. No Mesolithic material is currently recorded from the Severn ACA, although *in situ* and unstratified Mesolithic material has been recorded at Oldbury Flats on the eastern edge of the Estuary.

The Land Based ACA

- 5.37 Evidence of Mesolithic activity in South Gloucestershire is mainly focused in the western area of the county (SGHER), within the early Holocene deposits of the Wentlooge Formation (see below). In the central and eastern areas evidence comprises isolated finds but also more extensive flint scatters representing lithic production sites. Three lithic production sites are recorded from the south-eastern area of the UD (SGHER). The most extensive of these is Tog Hill, where a large spread of Mesolithic flint was recorded in the 1950s/60s (Sykes and Whittle 1965).
- 5.38 No extensive spreads of Mesolithic material are recorded within the Land Based ACA but Mesolithic material is recorded from three locations on the Carboniferous Limestones. From west to east these comprise: a scatter of an unspecified number of flints recovered in the late 1970s from Sheepcombe Break, near Olveston (SGHER4887); a Mesolithic blade collected to the west of Tytherington during works on the M5 Motorway (Fowler and Bennett 1974, 128; SGHER 14610, recorded as Neolithic); and a single flint scraper recovered near Wickwar (SGHER 2889). With the exception of the Mesolithic blade (SGHER 14610) no diagnostic Mesolithic tool types are mentioned in the sources and it may be worth re-assessing the categorisation of this resource. By the same rationale it may also be useful to re-examine other flint collections which may contain currently unidentified Mesolithic material.
- 5.39 River Terraces are often cited as attractive locations for early settlement and may have been a focus of Mesolithic activity. However, no Mesolithic material is recorded from the River Terrace deposits, or associated alluvial deposits, in the Land Based ACA. This may partly be a reflection of the small size of this study area, a lack of field survey and the lack of historical exploitation of this resource. Darvill has highlighted the potential for changes in river patterns in the Mesolithic to seal *in situ* deposits, although none are recorded in the study area at present (Darvill 2006, 16).

The Severn ACA

- 5.40 No Mesolithic material is recorded within the Severn ACA. Evidence of *in situ* Mesolithic activity, associated with the burning of reed beds encroaching on salt marshes (Brown and Allen 2007, 109; Bell 2007), has been recorded to the north-east of this ACA at Oldbury Flats where coastal erosion has exposed preserved prehistoric land surfaces. Unstratified Mesolithic flint has also been recovered from the site at Oldbury Flats to the north-east (Allen 1990a, 173; Allen 1998, 104; not on SGHER). Mesolithic deposits are also known from the far side of the estuary, such as the sites at Goldcliff (Bell 2007, Bell et al 2003), to the south-west of the UD. There is potential for eroded, residual Mesolithic material to be present within sand deposits in the ACA. Conceivably, early wreck sites may be present within this material.

Conclusions

- 5.41 The level of known Mesolithic material within the Land Based ACA is low. Further research is required to identified whether this is a genuine low level resource or a result of research bias.
- 5.42 No Mesolithic material is recorded from the Severn ACA but *in situ* deposits are recorded from the Holocene deposits along the edges of the estuary. There is potential for residual Mesolithic material and conceivably early wreck sites within deposits in the Severn ACA.

Significance and probability of discovery

- 5.43 Any *in situ* Mesolithic deposits are likely to be highly significant, although the probability of discovery within the ACAs is low. The potential for residual material is higher, but the significance of such material is notably lower.

Neolithic (4000-2200 BC)

Introduction and chronology

- 5.44 The Mesolithic/Neolithic transition c. 4000 BC traditionally was considered to mark the move from a hunter-gatherer system to a farming-based lifestyle. However, it is now generally accepted that Mesolithic activity included aspects of landscape modification, such as evidence of Mesolithic-period reed burning in the Severn Estuary (Bell 2007), and that permanent settlement/sedentism was not necessarily common in the Neolithic period (Pollard 2007, 70). The period is commonly discussed with reference to two phases, Earlier and Later Neolithic, divided at c. 3000BC, and this chronology is used in this assessment, although a tripartite division of Early (c. 5000-3300 BC), Middle (c. 3300-2900 BC) and Late (c. 2900-2200 BC) is also found in the literature (Whittle 1999, 59-60). The Later Neolithic/Early Bronze Age is spanned by the 'Beaker' tradition, currently considered to cover the period c. 2600 to 1800 BC.
- 5.45 As with the Mesolithic, activity is often identified from unstratified scatters of surface material in the ploughsoil. Technological changes include the introduction of pottery, although this is generally identified in excavation as survival in the ploughsoil is rare. The visibility of the period is greatly increased however by the introduction of monuments such as long barrows, henges and standing stones, often forming part of a wider 'monumental landscape'. Neolithic sites recorded within the Land Based ACA are detailed on Fig. 10.

Monument Density

- 5.46 This period sees a spike in monument density both across the UD (0.40 per km²) and within the Land Based ACA, (0.49 per km²), and is the only period where the monument density is greater for the Land Based ACA than the UD as a whole. The high level of Neolithic sites is partially a reflection of the common allocation of undated cropmarks/earthworks to this period (as their earliest possible date), heavily skewing the monument density. The higher density of Neolithic monuments within the Land Based ACA when compared to the UD may, counter-intuitively, be a reflection of the lower levels of research in this geographical area – potentially Neolithic sites have been identified but have not been more securely dated by further work. No Neolithic material is currently recorded within the Severn ACA.

The Land Based ACA

Monuments and burial

- 5.47 Earlier Neolithic monuments include rotunda graves, long barrows, causewayed enclosures and cursus monuments (see also *Settlement and material culture* below). Later Neolithic monuments include henges and subsequently standing stones. These monuments are discussed below.
- 5.48 Rotunda graves are generally only identified stratigraphically in excavation (Darvill 2006, 20) and have been identified, sealed by long barrows in the Cotswolds Region (Grinsell 1990, 9), although are not currently known in South Gloucestershire.
- 5.49 Long barrows are perhaps the most distinctive of the Earlier Neolithic monuments. These are large trapezoidal burial mounds of earth/stone, constructed over a stone or timber chamber(s), accessed by a passage way. The long barrows of the Cotswold-Severn region generally occur singularly and in relatively isolated locations (Darvill 2004, 85). The distribution of long barrows in the area is focused on the higher ground of the Cotswolds to the north-east of the UD, although a few are known from the southern Cotswolds in the eastern part of the UD (O'Neil and Grinsell, 1960, Map 1). A possible long barrow has been reported in the Land Based ACA, to the west of Wickwar (SGHER 3061), although this interpretation of the site has not been confirmed by detailed archaeological investigation.
- 5.50 Causewayed enclosures typically comprise a circular or sub-circular area defined by a circuit, or circuits, of discontinuous ditches (Oswald et al 2001, 1). As a monument type they represent the earliest recorded enclosure of open space in the UK. Their function remains enigmatic, may have varied between sites, and individual sites may have served more than one purpose. They have variously been interpreted as centres for feasting, exchange or manufacture and as settlement (other potential settlement sites are considered below), funerary and defensive sites. Current interpretations lean towards their function as seasonal sites, perhaps serving as a focus for a mobile population (Oswald et al 2001, 123-132). No causewayed enclosures are known in South Gloucestershire, although several are known in Gloucestershire.
- 5.51 Cursus monuments are large banked linear enclosures, ranging from hundreds of meters to kilometres in length. A possible cursus monument has been identified on aerial photographs at Dodington, in the eastern part of the UD (SGHER), outside the Land Based ACA, although this interpretation has not been confirmed by intrusive work.

- 5.52 No henges are recorded in South Gloucestershire, although they are known from Gloucestershire to the north (SGHER). Standing stones are recorded at two locations within the Land Based ACA: Alwith's stone to the south-west of Alveston, which was reportedly one of a number of standing stones formerly present in this location but the only survival by the 1950s (SGHER 3958, 14028). A second standing stone is present north of Cromhall Quarry (SGHER 2131).
- 5.53 Burial in round barrows began to occur in the Later Neolithic, at the same time as the introduction of Beaker pottery, but is thought to have reached its peak in the Early Bronze Age. This period is commonly known as the Beaker Period, and spans the Late Neolithic and Early Bronze Age. Precise dating of these features is commonly poor and 'undated' round barrows are discussed in the Bronze Age section below.

Settlement and material culture

- 5.54 Evidence of Neolithic settlement is often insubstantial and this may well reflect a relatively mobile population (Pollard 2007, 70). The coastal plain and river valleys appear to have been important areas for early settlement (Pollard 2007, 70, after Field 2004), and Neolithic activity is recorded at the margins of the Severn (see below). Some interpretations consider that causewayed enclosures (see *Monuments* above), or at least some causewayed enclosures, may have served as settlement sites (not recorded within the UD). When encountered in excavation, Neolithic occupation features often include pits, hearths, and post-holes, although not representing clear building forms (Pollard 2007, 70).
- 5.55 Evidence of Neolithic settlement was identified in the UD during archaeological works in advance of the Avon Ring Road, adjacent to the River Avon (SGHER). No Neolithic settlement sites including cut features are recorded in the Land Based ACA where securely dated Neolithic sites are confined to single find-spots or small assemblages of unstratified material. Flint assemblages can be difficult to date precisely, particularly when unstratified, and assemblages may span multiple periods. Perhaps the most distinctive Neolithic artefacts are polished stone axes, which occur across the British Isles, often as isolated finds. The source material for these axes is not found in South Gloucestershire, and was imported, either in its raw form or as completed axes (Darvill 1987, 25).
- 5.56 A small concentration of securely dated Neolithic finds has been recorded in the Land Based ACA near Tytherington, mainly from areas of Carboniferous Limestones, comprising: worked flint (SGHER 1498/14610, 1492); an axehead or chisel (Roe 1985, 222; SGHER 4923); and a macehead (Roe 1985, 222; SGHER2771). Other finds from the Land Based ACA include a perforated axe hammer recorded near Cromhall (SGHER 2313), a stone axe from Yate Court (group unknown; SGHER 2063), and an axe from a garden at Falfield (SGHER 1590). Findspots of flint scrapers (SGHER 12868 and 11122) and an arrowhead (SGHER 4530) are recorded in the western part of the Land Based ACA, although these are potentially of later prehistoric date. Worked Neolithic flint was discovered in the subsoil while working a gravel pit in the southern part of the study area in the 1920s (the only identified example of gravel working in South Gloucestershire; SGHER 1239).
- 5.57 Pottery, such as the early round-based wares and subsequently Peterborough Ware and Grooved Ware, is rarely found as surface material and is not currently recorded within the Land Based ACA. The end of the Neolithic saw the introduction of Beaker

style pottery, imported metal objects and subsequently indigenous manufacture (see *Bronze Age* below).

- 5.58 As in the Palaeolithic and Mesolithic, important cave sites for the Neolithic are known from the South West and associated activity may include burials, artefact deposition and occupation (Pollard 2007, 67). No Neolithic cave deposits have been identified within the Land Based ACA (SGHER 14034).

The Severn ACA

- 5.59 The continued rise in sea levels in this period inundated the former Neolithic land surfaces and wetland deposits at the margins of the estuary. Subsequently, due to continuing rises in sea levels, tide action and the north-eastward movement of the estuary as a whole (Allen 2001, 13) has eroded these deposits, dislodging large quantities of Neolithic artefacts but exposing *in situ* land surfaces and worked flint at two known locations in South Gloucestershire: Oldbury Flats and Hills Flats, to the north-east of the Severn ACA (Brown and Allen 2007; Allen 1990a, 1997, 1998). This material indicated the exploitation of the Severn wetland environment in the Neolithic period, including for stock grazing (Brown and Allen 2007, 105, Allen 1990a, 171). There may be potential for residual Neolithic material and conceivably wreck sites to be present within sandbanks within the Severn ACA.

Conclusions

- 5.60 Only a relatively limited number of Neolithic monuments are recorded within the Land Based ACA. These comprise standing stones as well as a putative long barrow and a putative cursus monument. Evidence of Neolithic activity has also been identified in the form of surface finds of worked flint, including polished stone axes.
- 5.61 No Neolithic material is recorded from the Severn ACA. However, *in situ* Neolithic deposits are known from the margins of the estuary and there is potential for residual material and conceivable wreck sites within deposits in the Severn ACA.

Significance and probability of discovery

- 5.62 Neolithic monuments are of high significance, although the probability of the identification of any currently unrecorded monuments within any particular area is low. Other Neolithic *in situ* deposits, including any associated with cave sites, are also likely to be highly significant. However, the probability of discovery is again low. The potential for residual or surface material is higher, but the significance of this material would be lower.

Bronze Age (2500-700 BC)

Introduction and chronology

- 5.63 While the Neolithic is traditionally associated with a transition to farming, it is in the Bronze Age that a sedentary lifestyle and more intense land management appears to have developed. The Beaker Period spans the Late Neolithic and Early Bronze Age (c. 2600 to 1800 BC), while the Bronze Age proper is commonly divided into three sections: the Early Bronze Age (2500-1500 BC); the Middle Bronze Age (1500-1000 BC); and the Late Bronze Age (1000-700 BC) (Pollard 2007, 66-67; Fitzpatrick 2007).

- 5.64 The first evidence of ploughing is associated with the Beaker period. However, it is not until the Middle Bronze Age that clear evidence of a more sedentary lifestyle emerges with the development of small enclosed settlements and associated field systems (Saville 1984, 121; Fitzpatrick 2007, 107). While excavation may reveal evidence of these settlements and agricultural systems, as with the earlier prehistoric periods, large amounts of evidence continues to be gleaned from stray finds and scatters of surface material. The adoption of metal objects became widespread in the Bronze Age, and hoards are a key find type (Fitzpatrick 2007, 115). Bronze Age sites recorded within the Land Based ACA are detailed on Fig. 11.

Monument Density

- 5.65 The monument density across the UD as a whole is slightly lower for the Bronze Age than the Neolithic, 0.40 per km² compared to 0.45 per km². For the reasons discussed in *Neolithic Monument Density*, above, surrounding the categorisation of records, this may more usefully be viewed in terms of a general increase from the earlier prehistoric periods. The monument density within the Land Based ACA is significantly lower than the UD, 0.10 per km² compared to 0.40 per km². Again, this may be attributed to a historical lack of research in this area when compared to the far western and eastern parts of the UD, although the possibility that this area truly saw less Bronze Age activity than elsewhere in the UD should not be ruled out. Further research may go some way to resolving this issue.

The Land Based ACA

Round barrows and other funerary monuments

- 5.66 The construction of round barrows is thought to have begun in the Late Neolithic, associated with the introduction of Beaker pottery and the development of single burial practices. However, due to the lack of secure dating evidence for known sites, for the purposes of this assessment they have been considered in this section. So-called 'Beaker burials' predominantly occur in round barrows, although flat graves are also known. While many round barrows survive as extant earthworks, they are also often identified from cropmarks visible on aerial photographs (Pollard 2007, 69). Within barrows, there is a broad development from inhumation to cremation, although the two practices do occur in conjunction and regional variations are likely (Pollard 2007, 91). Cremation burials, often in urns, rather than inhumations appear to have become more frequent from the Middle Bronze Age, including large cremation cemeteries without barrows (Fitzpatrick 2007, 114). Burials with grave goods are rare in the Late Bronze Age, when compared to the earlier phases, limiting the development of a robust chronology (Fitzpatrick 2007, 115). No non-barrow Bronze Age burials are recorded within the Land Based ACA.
- 5.67 Known barrow sites are relatively rare in South Gloucestershire, compared with the Gloucestershire Cotswolds to the north and the Mendip Hills to the south (Grinsell 1970, 16; Fitzpatrick 2007, Fig. 3.2). Known barrow sites in South Gloucestershire are most common on the eastern area of the UD, particularly the south-east, with a small concentration in the western part, in the vicinity of Thornbury (Fitzpatrick 2007, Fig. 3.2; SGHER). One round barrow is recorded within the Land Based ACA, on an area of Black Rock Limestone to the west of Alveston (Scheduled Monument SG45; SGHER 1463). Antiquarian investigation in the late 19th century recorded a cremation deposit in the centre of the barrow (O'Neil and Grinsell 1960, 126). To the north of Alveston excavation of an earthwork identified on aerial photographs proved to be inconclusive, although the possibility that the feature was a barrow was not ruled out (SGHER 6444). Information on round barrows in South Gloucestershire is mainly drawn from non-intrusive survey or antiquarian sources, so there is a need

for rigorous modern excavation to enhance our understanding of these monuments (SGHER).

- 5.68 Further study of aerial photographs may reveal additional barrow sites, although Saville highlighted the problems of designating all ring ditches as barrows when they have not been proven by intrusive work (Saville 1984, 134). Cropmark sites may prove to be another type of archaeological feature, such as round houses, or indeed to be of non-archaeological origin. This was the case with a putative ring ditch site identified on aerial photographs at Cromhall Quartzite quarry (SGHER 12757/12754): intrusive archaeological evaluation did not identify any below-ground archaeological remains (AAU 1997). Saville also noted that in areas with thin soils overlying hard rock, as is typical of the Carboniferous Limestone area that makes up most of the Land Based ACA, barrows often do not have an associated ditch encircling them (ibid, 135) making them difficult to identify on aerial photographs.

Settlement and agriculture

- 5.69 The introduction of ploughing appears to coincide with the Beaker pottery (Pollard 2007, 68). Although Beaker period field systems, defined by linear boundaries, are recorded elsewhere in the South West region they have not been identified in South Gloucestershire (Powlesland 2009, 121). From the Middle Bronze Age onwards there appears to have been the development of small settlements comprising roundhouses with associated field systems (Saville 1984, 121; Fitzpatrick 2007, 107). No securely dated Bronze Age field systems are recorded in South Gloucestershire, although prehistoric field systems potentially of Bronze Age origin are recorded in the south-eastern area of the UD (SGHER). In the Late Bronze Age settlements appear to have been mainly unenclosed and correspondingly harder to identify (Fitzpatrick 2007, 115). Evidence of Bronze Age activity in the Land Based ACA is confined to round barrows (see above) and unstratified artefacts, discussed below.

Finds

- 5.70 As with the Neolithic, evidence of Bronze Age activity is commonly identified through flint scatters occurring in the ploughsoil or stray finds. The identification of this material as Bronze Age relies upon the presence of diagnostic artefact types. Recorded Bronze Age flint within the Land Based ACA is confined to clearly diagnostic types: Bronze Age flint arrowheads are recorded from near Cattybrook (SGHER 3280) and Cromhall (SGHER 2774, 2770) and a Bronze Age axe head was recorded during blasting at Chipping Sodbury Quarry in the early-20th century (SGHER 2090).

*Hoard*s

- 5.71 Hoards of metal objects (two or more) are a key feature of the Late Bronze Age (Fitzpatrick 2007, 115), occurring buried in the ground, deposited in watercourses, or less commonly in caves (SGHER). No hoards are currently recorded in South Gloucestershire (SGHER; PAS), a deficit which may represent a lack of recording rather than lack of discovery (SGHER).

The Severn ACA

- 5.72 Through the Bronze Age, Holocene deposits comprising a sequence of estuarine silts and intertidal-terrestrial peats (the Wentlooge Formation) continued to form at the margins of the Severn Estuary (outside the ACA). As in the earlier prehistoric periods, the coastal resource is considered to have been important and it is likely that the estuary continued to be a focus of activity. Bronze Age boats have been

uncovered beyond the ACA at Caldicot and Goldcliff (Parry 1992, Bell 1992), demonstrating how the Severn was used for transport (Green 1995, 97). Unstratified flint of Bronze Age date has been recorded at Oldbury Flats (Allen 1998, 110) and Hills Flats (Allen 1997, 270), to the north-east of the Severn ACA and there may be some potential for unstratified Bronze Age material and possibly wreck sites to be present within sandbanks within the Severn ACA.

Conclusions

- 5.73 Evidence of Bronze Age activity within the Land Based ACA comprises a round barrow in the vicinity of Alveston and unstratified finds.
- 5.74 There may be potential for unstratified Bronze Age material within deposits in the Severn ACA.

Significance and probability of discovery

- 5.75 The significance of Bronze Age round barrows is potentially medium to high, although the likelihood of the discovery of new sites within any particular area is relatively low. Any *in situ* Bronze Age deposits, particularly any associated with settlement activity, are likely to be of medium to high significance, although the potential for discovery is relatively low. The identification of residual or surface material is more likely, although such material would be of lower significance.

Iron Age (700 BC-43AD)

Introduction and chronology

- 5.76 For simplicity the period is defined within this study to date from c. 700 BC to 43 AD. The period is traditionally divided into the Early, Middle and Late Iron Age, defined by pottery types, and this chronology is used here. However, a two-fold division of Earlier and Later Iron Age on either side of 400 BC has gained popularity, partly by virtue of the difficulty of identifying an Early/Middle Iron Age transition (Fitzpatrick 2007, 118; Moore 2006, 40).
- 5.77 The most distinctive and visible Iron Age site type is the hillfort. While there is emerging evidence for their establishment in the Late Bronze Age (Haselgrove 1999, 15), the main period of construction was the Iron Age, with both domestic and defensive uses identified at different sites. The Later Iron Age saw the introduction of coins and new pottery forms as well as the establishment of larger regional settlement groupings (Powlesland 2009, 122). By the Late Iron Age South Gloucestershire was within the tribal area of the Dobunni. Cross-channel trade, evident through the introduction of Roman material culture, appears to have occurred in the later Bronze Age and Earlier Iron Age, but gains far greater visibility in the archaeological record in the Later Iron Age (Fitzpatrick 2007, 127). Prehistoric routeways, such as the Jurassic Way which runs along the edge of the southern Cotswolds in South Gloucestershire (Margary 1973, 143), are likely to have been established by the Iron Age, although they may also have existed in earlier periods. Although the adoption of iron objects and metallurgy is a defining characteristic of the period, such artefacts are not common until the Later Iron Age (Fitzpatrick 2007, 131). While flint tools are less common than the earlier prehistoric periods they remain current through the Iron Age. Iron Age sites recorded within the Land Based ACA are detailed on Fig. 12.

Monument density

- 5.78 The monument density for the UD is comparable with the Bronze Age, being 0.44 for the former and 0.45 for the latter. As mentioned above, the monument density within the Land Based ACA is particularly low for the Bronze Age, 0.10, and therefore there is an unsurprising rise in the Iron Age to 0.21. However, this shows that the Iron Age monument density within the Land Based ACA is still only half that of the UD. The reasons behind this disparity are unclear. The number of hillforts (see below) clearly indicates Iron Age period activity in the study area, and it may be that the disparity reflects a lack of research into other types of site.

The Land Based ACA

Hillforts

- 5.79 Evidence of Iron Age activity in South Gloucestershire is dominated by the hillforts. By virtue of their size and often prominent location, extant hillforts are commonly well-recognised features of the landscape and were frequently documented in the antiquarian sources (e.g. Witts 1883; Burrow 1919). Hillforts have been shown to be settlement sites or defensive retreats, or both. The SGHER records fifteen hillforts, or potential hillforts, within the UD.
- 5.80 Seven hillfort sites are recorded in the Land Based ACA. These comprise: The Castle, Tytherington (SGHER 1499, 17104; Scheduled Monument SG77); Bloody Acre Camp, Cromhall (SGHER 1582; Scheduled Monument SG67); Elberton Camp, Elberton (SGHER 1455; Scheduled Monument SG52); Abbey Camp, Alveston (Scheduled Monument 12007); Sodbury Camp, Chipping Sodbury (putative; SGHER 2101); Knoll Park, Almondsbury (NMRAD 198659); and Wick Rocks (SGHER 1003). Three of the seven hillforts have been impacted by quarrying: the south-eastern part of The Castle was quarried away in the late 19th/early 20th century; Wick Rocks has been impacted by historic quarrying; the location of the putative site at Sodbury (recorded on Isaac's county map of 1777 but not recorded on later cartographic sources or identified in the field in the 1960s (SGHER)) has been quarried. The hillfort at Knoll Park was destroyed by the construction of a housing estate (SGHER). The high concentration of hillforts may be a reflection of the topography of the Carboniferous Limestones of the Land Based ACA. The high number of hillforts within the Land Based ACA is countered by a lack of other sites, perhaps a result of a lack of research.
- 5.81 Some have argued for a general chronological progression from the simpler univallate hillforts (i.e. having a single bank and ditch) in the Early Iron Age, to multivallate types in the Middle Iron Age (Powlesland 2009, 121), although not all are in favour of this theory (Moore 2006, 158). It has also been noted that the hillforts in the Bristol Avon Region tend to be smaller and less complex than those in adjacent Wiltshire (Powlesland 2009, 35). Six of the hillforts in the Land Based ACA are univallate, only one, Bloody Acre Camp, is multivallate. The abandonment of hillforts in the Late Iron Age, while attested elsewhere, is not clear in the Bristol Avon region (Powlesland 2009, 122).

Other settlement and agriculture

- 5.82 While hillforts are the most visible of the Iron Age sites, intrusive archaeological work and aerial photographic survey continues to reveal smaller enclosed and unenclosed settlements in the region, although securely dating such sites without intrusive works is problematic (Moore 2006, 44). The emerging picture is one of a mixed farming landscape with scattered settlement (Fitzpatrick 2007, 121). Settlement included open and enclosed farmsteads, the latter a feature of the Later

Iron Age (Fitzpatrick 2007, 121), and seasonally-occupied sites. Small rectangular enclosures are typical of the enclosed settlement form, perhaps the size to contain a single household, with associated field systems and trackways beyond (Fitzpatrick 2007, 121). Domestic buildings were typically roundhouses. Grain storage pits, querns and the environmental evidence associated with settlement sites show the exploitation of emmer, barley and spelt wheat, while the faunal assemblage holds evidence of the husbandry of cattle, sheep and pig (Fitzpatrick 2007, 131).

- 5.83 Outside of the hillforts (see above), no settlement sites are recorded within the Land Based ACA. A possible Iron Age/Romano-British field system has been identified on aerial photographs within the Land Based ACA (NMRAD 201577). Field systems can be difficult to date and many previously thought to be Iron Age have been shown to be Romano-British through excavation (Fitzpatrick 2007, 129).
- 5.84 More enigmatic Iron Age sites are the so-called banjo enclosures. The function of these sites is unclear but interpretation as stock enclosures has gained popularity (Fitzpatrick 2007, 121). One such site is recorded to the south-west of Alveston, within the Land Based ACA (SGHER 1469; Scheduled Monument SG179). Elsewhere in the region, banjo enclosures are known to form groups with other sites including other enclosures and linear features (Moore 2006, 143). No such associated sites are recorded in the vicinity of the banjo enclosure within the Land Based ACA.

Burial and ritual

- 5.85 A range of Iron Age mortuary practices has been identified including excarnation, inhumation and cremation (Fitzpatrick 2007, 133). A tradition of Late Iron Age crouched inhumation burial has been recorded in the Cotswold/Severn region (Holbrook 2007, 163; Moore 2006, 111). A cemetery comprising twelve extended inhumations, disturbed during quarrying at Tytherington Hill in 1910, has been tentatively assigned an Iron Age date, at earliest, by the SGHER (1503). However, this is rather speculative and the site could equally be later (see *Roman* and *Early Medieval* below).
- 5.86 The cave at Alveston (Alveston Bone Cave/Fishmongers Swallet) identified by speleologists in the late 20th century and excavated in 2001 contained the remains of several humans along with a number of dogs, and also cow and horse bones (Time Team 2001; SGHER 14034). Radiocarbon dating suggests that the bones are late Iron Age (or possibly early Roman). Although no ritual artefacts/grave goods were recovered comparisons have been made with ritual shafts known from the South East of England. Analysis of the bones indicated that the bodies were deposited whole. The skull of one of the females displayed fatal fractures and a split human femur may possibly be indicative of cannibalism. It has been suggested that the burial of social outcasts without grave goods and the practice of cannibalism in a context of disrespect for the dead is consistent with a ritual interpretation for the site. The relatively large number of dogs lead to comparisons with evidence of dog cults known from Romano-British contexts on the western side of the Severn estuary at Lydney and Caerwent (see also *Roman* below) (Time Team 2001). A line of post-holes, one of which contained Iron Age pottery, was identified leading towards the swallet entrance and may have been associated with deposition of bodies at the site, perhaps indicating posts defining a trackway (Time Team 2001; SGHER 14036). Human remains have also been identified at a second cave site to the north-east of the Alveston Bone Cave, Forty Acre Lane (NMRAD 1344069), but have not been dated.

Finds

- 5.87 Findspots of Iron Age brooches are recorded within the Land Based ACA (SGHER 2089; NMRAD 205174; three PAS findspots). These include a La Tène brooch (SGHER 2089), found at Chipping Sodbury quarry in the 1920s.
- 5.88 The circulation of coinage in South Gloucestershire first occurred in the Late Iron Age, associated with the Dobunni tribal area. No Dobunnian coins are recorded within the Land Based ACA.

The Severn ACA

- 5.89 The deposits of the Upper Wentlooge Formation indicate that a marine transgression created marine conditions across the Severn Estuary Levels through the Iron Age (Rippon 1997, 43-4). This last major marine transgression seems to have begun in the late second to early first millennium BC, reaching its greatest extent by around 500 BC. Localised higher areas of land may have been present within this saltmarsh environment; a buried soil horizon of probable Iron Age date was recorded during works at the Seabank Power Station in the southern part of the UD (BaRAS1996b). Iron Age settlement has been recorded further inland at Hallen and Northwick (Gardner et al 2002). The Severn would have been an important food source and Iron Age fish traps have been identified on the Welsh side of the estuary (Crowther and Dickson 2008, 125). As with earlier periods, there may be some potential for unstratified Iron Age material, and possibly wreck sites, within the sandbanks within the Severn ACA.

Conclusions

- 5.90 Several Iron Age hillforts are recorded within the Land Based ACA. Evidence for Iron Age activity elsewhere in the ACA is more limited, although a possible field system and a Banjo enclosure are recorded. Iron Age deposits, including human remains, have been recorded from a cave site near Alveston.
- 5.91 There may be potential for unstratified Iron Age material and possibly wreck sites within the deposits in the Severn ACA.

Significance and probability of discovery

- 5.92 Iron Age hillforts are highly significant, but the potential for the discovery of currently unknown sites is low. Any other *in situ* deposits, such as those associated with cave sites or settlement and burials, may be of medium to high significance, although the potential for discovery in any particular area is again low. The probability of discovery of residual material or isolated finds is higher, although the significance of such material is likely to be low.

Roman (43-410 AD)

Introduction and Chronology

- 5.93 This assessment uses the traditional chronology, which dates the Roman period from AD 43 to 410. While this is recognised as a simplification, it is a useful tool for discussion. Imported Roman artefacts indicate interaction with the Romanised world prior to AD 43. Conversely, Roman influence did not automatically become universal, there was frequent continuity with the Iron Age in material culture and practices post AD 43. The end of the Roman period is likewise rather less well-defined than the AD 410 date might imply. The point of transition, as well as the question of the degree of continuity between the Roman and Early Medieval periods, versus system collapse, is topic of much debate (see *Early Medieval* below).

- 5.94 South Gloucestershire was not a focus of major Roman settlement, containing neither *colonia* or *civitas capitals*, although the small town/market centre of *Traiectus* is thought to have been located in the vicinity of Bitton/Keynsham (Holbrook 2007, 156) and a roadside settlement has been identified at Hall End. The UD is crossed by roads linking major settlements beyond its limits including Bath (*Aquae Sulis*), Sea Mills (*Abonae*) and Gloucester (*Glevum*), and part of the Fosse Way linking Bath (*Aquae Sulis*) and Cirencester (*Corinium Dobunnorum*) crosses its far south-eastern edge. In the late Roman period South Gloucestershire was part of the province of *Britannia Prima* (SGHER).
- 5.95 The proliferation of pottery and other distinctive material culture, substantial stone buildings and large-scale infrastructure projects makes Roman sites more visible than those of the earlier periods. The potential for below ground remains is commonly hinted by artefact scatters in the ploughsoil. The presence of high status buildings such as villas may initially be attested by fragments of distinctive material in the ploughsoil, such as *tesserae*. Such buildings were often substantial stone structures with well preserved below-ground elements surviving. The lines of Roman roads are often preserved in the course of modern routes, or within the lines of hedgerows. Elsewhere the *aggers* may survive as earthworks and in such cases metalling may survive below ground. Morphologically distinctive cropmarks, such as those resulting from the below-ground remains of Roman stone buildings, can lead to confident identification of otherwise unknown Roman sites, in so far as any such site which lacks intrusive work can be dated. Discoveries such as the roadside settlement at Hall End, Wickwar (Scheduled Monument SG36042), demonstrate the potential for further, as yet unknown sites to be identified. Roman sites recorded within the Land Based ACA are detailed on Fig. 13.

Monument density

- 5.96 Given the visibility of Roman material the monument density for this period is unsurprisingly higher than the individual prehistoric periods (except for the Neolithic, figures for which are skewed by the attribution of many undated sites to this period, see *Neolithic* above). However, monument density within the Land Based ACA is significantly lower than the UD as a whole at 0.46 monuments per km², as opposed to 0.72 per km². This may in part be a reflection of early research focus on the Cotswolds in the eastern area of the county, although additional work would be required to begin to assess whether this demonstrates a real paucity of research, or if this is a true reflection of the pattern of activity. No Roman sites are recorded within the Severn ACA, a reflection of the marine nature of this area in the Roman period and the difficulty in recovering finds.

The Land Based ACA

Communications

- 5.97 South Gloucestershire is crossed by three main Roman roads, linking Roman settlements at Bath (*Aquae Sulis*), Sea Mills (*Abonae*) and Gloucester (*Glevum*), to the south-east, south-west, and north of the UD respectively and stretches of all three of these routes cross the Land Based ACA. In addition, part of the Fosse Way between Bath and Cirencester (*Corinium Dobunnorum*) crosses the south-eastern part of the UD (Margary 1973, road 5c), beyond the Land Based ACA. While a relatively clear picture of the overall network has been developed, on a micro-level the precise course is not always certain. The Bath/Sea Mills road crossed the southern part of the UD north of the River Avon, in the vicinity of the possible Roman settlement at Bitton/Keynsham (Margary 1973, road 54; NMRAD 1166116). The Sea

Mills to Gloucester road ran south-west/north-east through the western part of the county (Margary 1973, 140, road 541; SGHER 1462). The southern part of this route is not clear, although it probably ran along the B4055 and Cribbs Causeway (A4018) at the southern edge of the UD and from here through Over and along the approximate course of the A38 from Almondsbury, running along the Severn Escarpment. The Berkley-Biton road (referred to by Margary as the Berkley-Iron Acton (Engine Common) road) (Margary 1973, 141, road 541a; SGHER 1353) branched south from the Sea Mills/Gloucester road north of the UD to enter South Gloucestershire at Charfield, before running south to Engine Common, east of Iron Acton. The road, and an associated roadside settlement, was identified in recent excavation at Hall End (Young 2003, 87). From Iron Acton the road runs south to Bitton (not recorded by Margary but demonstrated in excavation at Shortwood (AAU 1994), and possibly in evaluation at Oldland Common (CA 2009b)).

- 5.98 Other more minor routes include the road running north from the Mendip Hills (Compton Martin) thought to join the Bath-Sea Mills road at Willsbridge, west of Bitton and within the Land Based ACA, although the precise route is not known (Margary 1973, 140, road 540; NMRAD 1325732). Margary also drew attention to a less-discussed Roman road from Bath to Chavenage Green. This enters the southern part of the UD just south of Freezing Hill, before turning north-east to run along the edge of the Cotswold Escarpment (the line of the putative prehistoric routeway, the Jurassic Way, see *Iron Age* above) towards Chavenage Green (Margary 1973, 144, road 542) (outside the Land Based ACA).
- 5.99 The presence of a Roman road leading from the Berkley/Bitton road (Margary road 541a) to a crossing of the Severn at Redwick has been suggested, although this remains putative (NMRAD 1009265). If present, stretches of this road would have crossed the Land Based ACA, east of Rangeworthy and north of Almondsbury.

Military

- 5.100 The lack of evidence for military activity in the area has led to the conclusion that the territory of the Dobunni, which covered the area of South Gloucestershire, had a pro-Roman leader and therefore was not intensively garrisoned (Holbrook 2006b, 97). There is little evidence for military activity in the South West in general after the 1st century AD (Holbrook 2007, 164). However, it has been suggested that a curved ditch identified at the site of the Roman settlement at Hall End, partially within the Land Based ACA, may represent the corner of the defensive ditch of a Roman fort (EH Scheduling Description, SG36042), pre-dating the 2nd to 4th-century settlement. No further military sites have been recorded within the ACAs.

Urban Settlement

- 5.101 No *colonia* or *civitas* capitals are located in South Gloucestershire. The small town/market centre of *Traiectus* may have been located in the vicinity of Bitton/Keynsham (Holbrook 2007, 156), although the precise site is yet to be identified. The discovery of a substantial Roman roadside settlement in the later-20th century at Hall End, Scheduled as Wickwar Roman small town, partially within the Land Based ACA (associated with Alluvium/River Terrace Deposits), demonstrates the potential for new sites yet to be recognised. The term 'small town' has come under some criticism, and there is a need to clarify its definition and application in the archaeological literature (Holbrook 2007, 157). At Hall End, which lies partially within the Land Based ACA, surface collection, geophysical survey and archaeological evaluation identified a settlement covering an area of approximately 16ha including a variety of stone-built structures and evidence of iron-working (Scheduled Monument SG36042; SGHER 2056, 11102; Young 2003, 287; Holbrook

2006b, 99-100). The settlement is thought to have been occupied between the 2nd and 4th centuries.

Villas

- 5.102 The term villa, rather than farmstead, is used to describe rural buildings, generally rectangular stone-built structures, with distinctively high status Roman architectural features such as mosaics and hypocausts (Holbrook 2006b, 101). Typical villa sites comprise a main house with associated bath complexes, agricultural buildings and field systems. Mosaics are a distinctive feature, and identification of *tesserae* may be used to infer the likely presence of a villa site, although such an interpretation is obviously putative until excavation.
- 5.103 A number of villas are recorded in South Gloucestershire, including recently excavated sites at Horton and Hawkesbury (SGHER). Four villas/probable villa sites are recorded in the Land Based ACA, distributed in a line to the east of the Sea Mills/Gloucester road (Margary road 541). These include the 'L' shaped villa at Tapwell Bridge, Cromhall, which was excavated in 1855 (Scheduled Monument, SG178; SGHER 1505; SGHER 1505). Excavated features included a hypocaust and mosaic pavement (Conder 1909). An outbuilding associated with the villa has been interpreted as a granary (Bird 1987, 63). The remaining three villa sites are inferred, two from antiquarian reports of mosaics (Stidcott Farm, SGHER 11024; and East of Bloody Acre Camp, SGHER 1587), and a third from finds of *tesserae* and other Roman material (Mill Farm, SGHER 17136). The distribution of these sites, near but not directly adjacent to a road, is typically interpreted as arising from the need to quickly distribute produce from the villa to urban centres (Bird 1987, 63). Geophysical survey at Court Farm, Winterbourne, identified a rectangular anomaly suggestive of a Roman villa, although this has not been proven by intrusive works and the feature may equally be of later date (SGHER 17457; Martin et al 2004).

Farmsteads

- 5.104 While villas are perhaps the most easily identifiable Roman-period settlement form they represent only a small percentage of rural settlement across the country (Holbrook 2006b, 101). Therefore, farmsteads, i.e. rural settlement sites which lack villa buildings (as characterised above), were by far the most prevalent site type. Such a site, a small enclosed Romano-British settlement, was excavated at Cattybrook in the 1970s (Bennett 1980; SGHER 1091), within the Land Based ACA. To the north-east of this site, north of Alveston and within the Land Based ACA, excavation in the early 1990s recorded evidence of Romano-British occupation including beam slots and pottery (Rawes 1993, 232). Other examples within the Land Based ACA include a building recorded at, or near, the historic quarry site at Grandmothers Rock (SGHER 1985); a building platform with associated surface scatter of Roman pottery was recorded c. 1km to the south-west of the settlement at Hall End (SGHER 2061); and possibly a building recorded in the late 19th century in the vicinity of Alveston (NMRAD 634274). Additional potential settlement sites within the Land Based ACA are indicated by pottery scatters (SGHER 5315, 1474, 1465) and cropmarks (SGHER 7418) but without excavation the presence and nature of associated below-ground remains is unproven. The identification of Roman pottery and tiles from an uncertain location adjacent to a disused stone quarry near Chipping Sodbury (potentially within the Land Based ACA) in the early 20th century may also suggest activity in this area (NMRAD 205180).

Field systems

- 5.105 The villa or farmstead buildings should be seen in the context of the wider rural landscape, including field-systems, tracks and associated buildings. While field-systems may obviously be identified through excavation, elements may also be fossilised within the present agricultural landscape, or appear as cropmarks, such as the site to the west of Yate (NMRAD 201577). Identifying field-systems from cropmarks can be problematic, although excavation has confirmed previously putative interpretations at a number of sites in the South West region, outside the UD (Fitzpatrick 2007, 129).

Hillforts

- 5.106 The re-use of Iron Age hillforts in the Roman period is well documented in the archaeological literature. Evidence of such activity in the Land Based ACA is recorded at Abbey Camp (NMRAD 201445). Roman material, including coins and pottery, has also been recovered in the vicinity of Bloody Acre camp (Guise 1868, 21). The nature of Roman re-use of hillforts is not always certain, and is likely to have varied from site to site. Some interpretations have suggested re-use of hillforts as defensive sites, particularly in light of the limited evidence for military activity in South Gloucestershire (SGHER; see above). In some cases hillforts appear to have served as the focus of religious activity, with Roman temple sites known within their boundaries (see below). In other cases, Roman material found at hillforts may simply have resulted from casual visits to prominent landscape features.

Industry

- 5.107 Evidence of Roman iron-working has been identified at the roadside settlement at Hall End, Wickwar (Scheduled Monument SG36042; SGHER 2056). Iron-making settlements identified have also been identified in the southern area of the UD around Mangotsfield (Holbrook 2007, 158) (outside the ACA).

Religion

- 5.108 South Gloucestershire was in a relatively peripheral location in the Roman world and it is likely that native religion and Roman religion existed in parallel, or in a combined form as has been demonstrated at Bath (Bird 1987, 69). The extent of Christianity from the 4th century onwards in the area is unclear, although it is likely to have existed in conjunction with other practices. Temple sites are relatively common in the South West region (Holbrook 2007, 162), although the class is still rare overall. They are often found in hilltop locations (Bird 1987, 69). Two unsubstantiated references to temple sites are recorded within the Land Based ACA. The first comprises a reference in a local history publication to a temple at Stidcott Farm (SGHER 11024). The second putative temple site is recorded, at or in the vicinity of Bloody Acre Camp, where excavation in the 1960s recorded Roman pottery (SGHER 1587, 18580, 18579). Both are considered to be highly putative.

Burial

- 5.109 Late Iron Age inhumation burial traditions continued into the Early Roman period in the Cotswold/Severn region (Holbrook 2007, 163). The HER records only one securely dated Roman burial within the Land Based ACA, although others, associated with settlement sites, may be present. This comprises a coffin at Wick, uncovered in the 1950s, which contained a female skeleton and Roman pottery (SGHER 1448). A second coffin at the site was destroyed before it could be recorded. Two other coffins recorded in the Land Based ACA are potentially of Roman date (SGHER 5727 and SGHER 2411). Undated human remains disturbed

during quarrying at Old Down Hill, Tockington in the 1850s are recorded as potentially of Roman date (SGHER 10723, 16283, 10724), although an Early Medieval date is considered likely (see below).

- 5.110 Radiocarbon dating of human bones recovered from the Alveston bone cave suggested a Late Iron Age or Roman date for deposition (see Iron Age above; Time Team 2001). However, Roman pottery recovered from the site was heavily abraded and appears to have been washed in from plough soil, rather than deposited with the bodies. The bones of a number of dogs were found in the cave and parallels were drawn with evidence of dog cults recorded on the western side of the Severn Estuary from Roman sites at Lydney and Caerwent (Time Team 2001).

Finds

- 5.111 Evidence of Roman activity often comes in the form of stray finds of coins (SGHER 2414, 11025), pottery (SGHER 1496) or other typically Roman artefacts (SGHER 1586), or unstratified material recorded during intrusive archaeological works (SGHER 17625; NMRAD 201665). Such isolated finds hint at Roman activity but have limited potential for further interpretation. However, concentrations of such finds may indicate foci of Roman activity, and the potential for associated below-ground remains in the vicinity to be present (SGHER 5315, 1474, 1465). To the east of Alveston a high density of PAS finds including coins, brooches and Samian pottery is present. The source of this material is unclear but their quantity and concentration suggests either the presence of a cemetery or a settlement. Roman finds, but no features, were recorded during a watching brief on a water pipe trench in the vicinity (NMRAD 654862).

The Severn ACA

- 5.112 The main crossing point of the Severn in the region is likely to have been south of the UD at Sea Mills (*Abonae*), although alternative crossings points in South Gloucestershire at Redwick (NMRAD 1009265) and Aust (Bird 1987) may also have been operational. Both Redwick and Aust lie immediately east of the Severn ACA. The Severn would also been used as a supply route (Allen 2003, 101, Green 1995), including for the transport of ore and finished products of the iron making industry based on the Levels at this time (Allen 2008). Although there is no suggestion of a port within the UD (Crowther and Dickson 2008, 146) wreck sites may be present.
- 5.113 Some proponents have argued for systematic embanking of the Severn Estuary Levels in the Roman period, although not all are in favour of this theory (Rippon 1997, 44; Gardiner et al 2002, 31-2; Holbrook 2006, 117). Alternative interpretations for an increased availability of farmland on the Levels include a pause in sea level rise, or the formation of natural barriers. Evidence of Roman activity in the intertidal zone is limited but further inland (outside the ACAs) includes evidence of probable settlement activity probably exploiting nearby saltmarsh at Easter Compton (Carter et al 2003, 75, Masser et al 2005). It is likely that the Severn remained an important resource and future investigations may reveal new sites (Crowther and Dickson 2008, 125).

Conclusions

- 5.114 The Land Based ACA is crossed by roads linking Bath, Sea Mill and Gloucester. Roadside settlement has been identified at Hall End and four villa sites are known distributed to the east of the Sea Mills-Gloucester Roman road. Some evidence of smaller farmsteads has also been identified and other sites include burials and stray finds.

- 5.115 Potential crossing points of the estuary have been identified immediately east of the Severn ACA at Aust and Redwick.

Significance and probability of discovery

- 5.116 Any *in situ* features associated with large or high-status Roman settlement may be of medium to high significance, although the probability of discovery in any particular area is relatively low. The probability of discovery of associated infrastructure, agricultural features, small-scale low-status settlement or finds is higher, although their significance is likely to be lower.

Early Medieval (410-1066 AD)

Introduction and Chronology

- 5.117 The Early Medieval period in South Gloucestershire comprises two main parts: Post-Roman/Late Antique, referring to the period prior to Anglo-Saxon annexation, and Saxon. The precise point of transition is debatable (discussed further below) although the former may broadly be assigned to the 5th and 6th centuries, the latter the 7th to mid-11th centuries. The Saxon period may be divided into Middle Saxon (mid-7th to mid-9th centuries) and Late Saxon (mid 9th to mid 11th-century).
- 5.118 Our understanding of the period has long been framed around the chronology extracted from documentary sources, although acknowledging factors of impartiality and time lag (Webster 2007b, 169). These include *Gildas's* 6th-century *De Excidio et Conquestu Britanniae* (the Ruin and Conquest of Britain), *Bede's* 8th-century *Historia Ecclesiastica Gentis Anglorum* (Ecclesiastical History of the English People), and the 9th-century Anglo-Saxon Chronicles (Ecclestone *et al* 2003, 34-35). There has been much discussion on the locations of borders and date of annexation of areas of the South West, and the debate continues. The Battle of Deorham in 577 AD (recorded in the Anglo-Saxon Chronicles, possibly at Dyrham within the UD; SGHER) is generally cited as the point at which the area came under West Saxon Control. However, the case has also been made for the continuation of a British territory, including South Gloucestershire, until the late 7th century (Eagles 2003). By 679 AD Gloucester, and probably South Gloucestershire, is recorded as part of the kingdom of the Hwicce (VCH 1988, 1-4). The Hwicce were most likely originally a British tribal group but were subsequently controlled by Mercia (Reynolds 2006, 148). In the Late Saxon period the UD fell under the control of Wessex (Heighway 1984, 236). Unlike adjacent areas, the Severn Valley, including South Gloucestershire, does not appear to have been the target of focused Viking raids (Heighway 1984, 236).
- 5.119 The archaeological record for the Early Medieval period has long been characterised by its paucity. This is, at least in part, a reflection of the lack of distinctive material culture for the Post-Roman period. The scantiness of diagnostic artefacts means that British sites are difficult to identify and there is a reliance of scientific dating (Webster 2007b, 168). While the situation shows some (rather slow) signs of improvement there are still many gaps in our understanding. For example, while Post-Roman cemeteries are relatively well known in the South West, and have been positively identified for the first time in South Gloucestershire in the 21st century, the associated settlements have proved elusive (Holbrook 2006c, 88-89). Archaeological evidence for the Middle Saxon period is likewise limited (Reynolds 2006, 151). Early Medieval sites recorded within the Land Based ACA are detailed on Fig. 14.

Monument density

- 5.120 Given the difficulty of identifying Early Medieval sites, monument density is unsurprisingly low at 0.33 per km² for the UD. Given the relatively small number of new sites coming to light it may be argued that this is a true deficit rather than a reflection of research aims, although it may also be hinged on our previous inability to distinguish Early Medieval from Roman. The density is notably lower for the Land Based ACA than the UD as a whole, being only 0.10 per km². Recorded sites within the Land Based ACA comprise those deduced from documentary sources and findspots, rather than findspots and features identified in intrusive investigation. No Early Medieval sites are recorded within the Severn ACA.

The Land Based ACA

Settlement and landscape

- 5.121 No major urban centres are known within South Gloucestershire, but the question of continuity is still of relevance when considering concepts of socio-political organisation. It is tied in with the issues of system collapse versus continuity that is so integral to consideration of any element of this period. While some have argued strongly for continuity in urban life, the accumulating weight of evidence leans towards a hiatus in truly urban settlement in the Early Medieval period although documentary reference to the capture of Gloucester, Cirencester and Bath at the Battle of Dyrham (577) indicates that these places existed as power centres of some form into the 6th century (Reynolds 2006, 138).
- 5.122 The re-occupation of hillforts at this time is well recorded in other parts of the South West, at sites such as Cadbury Congresbury and Cadbury Castle in Somerset and Crickley Hill in Gloucestershire. No evidence for Early Medieval activity/settlement is currently recorded at the Iron Age hillforts within the Land Based ACA.
- 5.123 While the use of some villa sites did certainly cease at the end of the Roman period, there is also evidence for the continued use/re-use of villa sites into the Late Post-Roman period (Rahtz 1987, 73). The extent of continuation may have been limited and the idea of continuity from the Roman villa estate, through the Early Medieval period, to medieval parish has been disputed (Heighway 1984, 227-228 (for); Reynolds 2006, 134 (against)). The Parishes of Pucklechurch (partially within the Land Based ACA) and Filton (outside the Land Based ACA) are reputedly based on Roman estates (SGHER). No re-use of villa sites has been identified so far within the Land Based ACA, although it is worth also noting that no modern excavation of a villa site is recorded in this area. The reportedly highly destructive excavation of Cromhall villa in the 1850s (Conder 1909) may have removed any potential evidence of Early Medieval activity at this site, although there may be some potential for the identification of such activity away from the main villa building or at the other possible villa sites in the area.
- 5.124 There was probably some continuity of the smaller lower-status rural sites from the Roman period through the Early Medieval period. In other parts of the South West there is demonstrated settlement continuity from Bronze Age to Early Medieval, with the round house settlement form continuing through these periods (Webster 2007b, 175; Aston 1987, 101). No Post-Roman settlement sites are currently recorded within the Land Based ACA.
- 5.125 The Sunken Featured Building (SFB) is a distinctive Anglo-Saxon form. Mostly dating from the 5th to late 7th-century, although also known from Middle and Late Saxon sites (Tipper 2004), the lack of certain sites within the UD is not surprising,

due to the 'British' nature of this area for much of the Early Medieval period. A possible example was recorded at Woockcock Hill during work on the Pucklechurch-Seabank pipeline (SGHER) and known sites are recorded in Gloucestershire, to the north of the UD, at Bourton-on-the-Water and Lechlade (Reynolds 2006, 151). The other distinctive Saxon building form, the timber hall, is likewise missing from the Land Based ACA.

- 5.126 It is thought that a pattern of dispersed farms and hamlets developed before the establishment of nucleated villages (Aston 1989, 123). Some of these settlements are likely to have had their origin in the Roman period or earlier (ibid). The Late Saxon period perhaps saw the first village nucleation (Webster 2007b, 169) and the development of Gloucestershire (including South Gloucestershire) as a county (Reynolds 2006, 149). Towns emerged to control trade, seemingly a re-establishment rather than continuation.
- 5.127 Like the Roman period, the main settlement foci in the area were outside the UD, at Bath and Bristol to the south-east and south, and Gloucester to the north, although smaller settlements developed within the UD. Thornbury, in the north-western part of the UD (outside the Land Based ACA), had a market by the time of the Domesday survey (Costen 1987, 86). At Wickwar, Saxon settlement is thought to have been located at the northern edge of the later settlement, around the church (SGHER 9177; SGC 1999), within the Land Based ACA. A royal hunting lodge is believed to have been located at Pucklechurch in the 10th century, outside the Land Based ACA (Costen 1987, 83; SGHER).
- 5.128 It is likely that major parts of the Roman road network continued in use through the Early Medieval period, including the roads from Sea Mills to Gloucester and Sea Mills to Bath, although the focus had shifted slightly east from Sea Mills, to the minster at Westbury-on-Trym (Costen 1987). The Fosse Way, at the south-eastern edge of the county remained important, and a road was present along the line of the edge of the Cotswolds, the course of the modern A46 (also suggested by Margary as a possible Roman road; Margary 1973, 144, road 543; see also *Roman* above), probably a saltway transporting salt from Worcestershire (Costen 1987, 88).
- 5.129 Documentary sources and place name evidence have been used to generate a picture of settlement, landuse and control in the Late Saxon period. Large areas of land were royal or monastic estates (Costen 1987, 83). The documentary sources indicate that much of South Gloucestershire, including the Land Based ACA, was covered by the forest of Kingswood, which extended from the Little Avon in the north of the County, to the Avon in the south, and from the Severn to the Cotswold Escarpment (Costen 1987, 91). Place names including the elements "field" and "leah" indicate that the area was not continual forest but was dotted with settlement and cultivation (ibid, 92). Within the Land Based ACA, the settlement at Brinsham Farm may be *Brynes hamme* documented in a charter of AD 990 (Smith 1964, 44; SGHER 9093) and Vattingstone Lane has been suggested as a Saxon meeting place (SGHER 13083, on the basis of place-name and charter evidence). The Domesday survey, produced 1085-6, is used to 'look back' to the situation at the end of the Early Medieval period. Mill sites mentioned in Domesday are recorded at Charfield (SGHER 4999) and at Tortworth (SGHER 5561). Parish boundaries may preserve the lines of Early Medieval estates (Costen 1987, 91) and a mill leat at Swinford has been suggested as of Early Medieval origin by virtue of its relationship with the parish boundary (SGHER 9108).

Religion

- 5.130 The continuity of Christianity in the South West from the Roman period, or alternatively its re-introduction from either Wales, Ireland or Gaul, or by the Anglo-Saxons is a matter of much debate (Webster 2007, 185; Heighway 1984, 232; Holbrook 2006c, 92). It is generally agreed however that the Hwicce had Christian rulers by the late 7th century (Heighway 1984, 232).
- 5.131 There is evidence for the continuation of Romano-British temple sites in Somerset (Pagan's Hill) (Rahtz 1987, 74), but not currently in South Gloucestershire. Two highly putative Roman temple sites have been identified within the Land Based ACA (SGHER 11024 and 1587; see Roman above) but as the existence of these sites is uncertain any hypothesis of their continuation into the Early Medieval period is rather speculative.
- 5.132 Associated with the Anglo-Saxon annexation, minsters were established in the late 7th/early 8th centuries (Hall 2003, 53). There is a putative site at Bitton (Costen 1987, 88) in the south-eastern part of the UD, and an early church may have been located at Iron Acton (Iles 1987, 132). The SGHER records a hermitage site within the Land Based ACA, which may conceivably be of Early Medieval origin (SGHER 15045; see also *Medieval* below).

Burial

- 5.133 Post-Roman cemeteries are relatively well known in the South West. They typically comprise east/west aligned graves with few or no grave goods, such as the cemetery of 51 individuals without grave goods recorded at Filton in 2005 (Cullen et al. 2006). Within the Land Based ACA, the twelve inhumations without identified grave goods recorded at Tytherington during quarrying in 1910 (SGHER 1503) are aligned in two rows with heads pointing to the west and may well be of Post-Roman date (Holbrook 2006c, 89; see also *Iron Age* and *Roman* above). Post-Roman cemeteries are often located near Romano-British villas or temples, or prehistoric earthworks, and their possible association with the borders which later become parish boundaries has also been noted (Holbrook 2006c, 89-90).
- 5.134 No Anglo-Saxon cemeteries are recorded within the UD. Secondary burials in barrows are also a documented feature of the Early Medieval period, although again not currently recorded in South Gloucestershire (Reynolds 2006, Fig. 4). From the 8th century onwards burials in churchyards appears to have become the norm (Webster 2007, 188).

Trade and Material culture

- 5.135 As in the prehistoric and Roman periods, sites may be identified through the recognition of diagnostic artefacts on the surface of the ploughsoil during fieldwalking but also more commonly through metal detector finds. The Post-Roman period is defined by a virtually complete lack of pottery in the archaeological record. Chaff-tempered ware (current from the 5th to 10th centuries; Reynolds 2006, 138) is found in limited quantities in the Gloucestershire/Wiltshire region, generally recorded in excavation and rarely through fieldwalking (Webster 2007b, 178). Imported wares from the Mediterranean are known in the South West in the 5th and 6th centuries but the distribution is mainly confined to coastal or high status sites (Webster 2007b, 182). Current evidence suggests that this trade did not extend into South Gloucestershire, despite the area not apparently being under Anglo-Saxon control in this early period (ibid). Reynolds (2006, 140) argued that control of the estuary to the south-west may have prevented trade to Gloucestershire. In the 6th and 7th

centuries there is evidence for imports from western France (D-Ware and E-Ware pottery types and glass), although none is currently recorded in the Land Based ACA. Evidence for British/Anglo-Saxon interaction prior to annexation is limited. A small quantity of Anglo-Saxon material is known from hillforts (Cadbury Congresbury (Somerset), Cadbury Castle (Somerset), Dinas Powys (South Glamorgan)).

- 5.136 Isolated finds of strap ends of 8th- to 10th-century date (PAS) have been recorded from three locations in the Land Based ACA (SGHER 15087; PAS 208808, 237639, 245444). Such isolated and relatively ubiquitous finds make a small contribution to our understanding of the area, although they do add to the general picture.

The Severn ACA

- 5.137 The failure of Roman sea-walls or natural coastal barriers appears to have caused a marine transgression in the Early Medieval period, and resulted in the re-establishment of salt marsh conditions (Rippon 1997, 44). However, the Severn would have continued to be exploited for food. Fish traps, considered to be of medieval/post-medieval date are well known in the intertidal zone. Dendrochronological dating may identify fish traps of Early Medieval date, as at Stert Flats, Somerset, where a weir was dated to AD 932 (Groves et al. 2004).
- 5.138 While other parts of the South West, further down the estuary, appear to have engaged in trade with the Mediterranean in the Early Medieval period, this does not appear to have extended as far as the UD or to Gloucester to the north (Reynolds 2006, 140) (see above). Although not recorded, it is possible that the potential crossing points of the estuary, at Aust and Redwick, were in use in this period and there may be potential for wrecks of local traffic to be present.

Conclusions

- 5.139 No Post-Roman settlement is currently recorded within the Land Based ACA, although a possible cemetery is known at Tytherington. A pattern of nucleated villages is thought to have been established in the Late Saxon period, and Saxon settlement is recorded within the ACA at Wickwar.
- 5.140 The Severn was most likely exploited for food at this time, as well as having been an important local transport link. Possible crossing points of the estuary have been identified to the east of the Severn ACA at Aust and Redwick.

Significance and probability of discovery

- 5.141 Any *in situ* evidence of Post-Roman settlement is likely to be of medium to high significance, although the probability of discovery of such material in any given area is low. Features associated with a Post-Roman cemetery would also be of potential medium to high significance, although the probability of discovery is also low. Any dateable Post-Roman features may be of medium to high significance depending on type, although again the potential for discovery is low. The probability of discovery of features associated with Late Saxon activity and isolated finds is higher, although the significance of such remains would be lower.

Medieval (1066-1539 AD)

Introduction and Chronology

- 5.142 The medieval period dates from the Norman Conquest in 1066 to the dissolution of the Monasteries which took place around 1539. It is further sub-divided into the high medieval period (11th to mid-14th centuries) and the late medieval period (mid-14th

to mid-16th centuries) (Dalwood 2007, 123). The former represents a period of growth, with the latter representing apparent decline in the mid-14th century, corresponding with the outbreak of the Black Death.

- 5.143 As in the earlier periods, the main urban settlements in the area are focused outside the UD, to the south at Bristol, and Gloucester and Cirencester to the north. The entire UD, with the exception of the southern Cotswolds, was part of the Royal Forest of Kingswood in this period (Iles 1987, 117). The designation does not imply the whole area was forested, although large areas of woodland would have existed (ibid). At the end of the Early Medieval period the area was dotted with small settlements (see above). There was further establishment and growth of settlement in early part of the medieval period (12th to 14th centuries), although with decline in the 14th century (Bowden 2006, 172). While some have argued for landscape continuity from the Roman villa estate to medieval parish, the theory has not found universal acceptance (Reynolds 2006, 150), and there appears to have been large-scale landscape reorganisation at this time, with the establishment of open field systems. Along the Severn Estuary, the sea-walls or natural coastal barriers of the Roman period, which appear to have failed in the Early Medieval period, were reconstructed (Rippon 1997, 44), allowing the expansion of agriculture along the Levels.
- 5.144 The period is represented by a range of sources, including extant buildings, earthworks and landscape features as well as the below-ground archaeological resource, which includes a clear chronological pottery sequence (Rippon and Croft 2007, 193). The documentary sources continue to be useful (and present in greater numbers than the preceding period) as is place-name evidence. Multi-disciplinary studies of the period have produced a broader understanding. All medieval sites recorded within the Land Based ACA on the SGHER are detailed on Fig. 15. As this is an extensive resource, selected sites discussed in the text below are depicted on Fig. 16.

Monument Density

- 5.145 The increased visibility of medieval sites means that there is a large increase in monument density for the medieval period, 2.24 per km² for the UD as a whole. This is somewhat lower for the Land Based ACA at 1.72 per km². The exclusion of urban areas is the most likely explanation for this disparity. No medieval sites are recorded within the Severn ACA.

The Land Based ACA

Towns

- 5.146 As mentioned above, no major urban centres were located within the UD, but a number of towns did develop. The foundation of new towns, such as Chipping Sodbury (which abuts the Land Based ACA) is a feature of the early centuries of the medieval period (Leech 1975, 6). In other places towns were located next to existing earlier settlements, such as Wickwar (ibid). These high medieval towns tend to have a planned layout, while late medieval towns commonly display a more organic growth pattern (ibid, 6-7). The development of towns did not necessarily involve an instant transition to non-farming based pursuits, as the surrounding field patterns at Wickwar indicate that the inhabitants remained involved in agriculture (ibid, 7).

Castles

- 5.147 No Castles are recorded within South Gloucestershire. Sites at Yate Court, Thornbury and Olveston may sometimes be referred to as castles, but are more truly

fortified manor houses (Iles 1987, Fig. 10.1). Of these three, Yate Court is within the Land Based ACA and is discussed below.

Manors, Manor Houses and associated features

- 5.148 Evidence for manor sites comes from a range of sources including documentary references to manors and specific manor houses, extant buildings and earthworks, and also below-ground remains. The manor was the primary land unit in the medieval period (Rippon and Croft 2007, 206). These land holdings were commonly focused on a manor house, which might have a moat and other associated features such as deer parks, rabbit warrens (pillow mounds; see also *Post-medieval* below), dovecotes, fishponds, and perhaps a church. Within the Land Based ACA such sites are best represented at Yate Court and Court Farm (Winterbourne Manor), discussed below. The edge of the Land Based ACA abuts the Scheduled Area of Acton Court (SG186) medieval manor, but does not cross into the Scheduled Area.
- 5.149 Yate Court is the site of a 13th-century fortified manor house (SGHER 11788) which was occupied and then substantially destroyed by parliamentary forces in the Civil War (see *Post-medieval* below; TBGAS 1898). The manor was located within an oval moat. The great hall, the main part of which dates to the 16th century but which possibly incorporates parts of the earlier 13th-century building, survives in a ruinous state (SGHER 11788; Grade II Listed), as does the gatehouse (SGHER 14581). Extant buildings include the 16th-century Yate Court Farmhouse (again, possibly incorporating earlier elements; EH 34891; Grade II Listed) and a 16th-century barn (EH 34893; Grade II Listed). A deer park (SGHER 3374) is referenced in an early 14th-century source, and a 1548 survey recorded (in addition to the manor house and park) an associated mill, dovehouse and rabbit warren (SGHER). No extant remains of these latter sites are recorded, although a possible medieval fishpond is located the north of the manor (SGHER 5795).
- 5.150 Another manorial complex is recorded at Court Farm, the site of the medieval manor house of Winterbourne (SGHER 17044). The manor house was destroyed by fire in the late 19th century but a 16th-century tithe barn (SGHER 6451; Grade II* Listed), a late medieval dovecote (SGHER 2784; Grade II Listed) and a medieval garden terrace (SGHER 3956; Grade II Listed) survive. An archaeological watching brief in 2008 recorded a possible medieval wall (SGHER 18621), and geophysical survey has identified a ditch of possible medieval date (SGHER 17665). The Church of St Michael is located immediately north of the manor house site (SGHER 1524, 14566; Grade I Listed). The church has 12th-century elements, although it is mainly 13th and 14th-century, and was extended and restored in the 19th century. Archaeological trial trench evaluation in the churchyard identified a possibly medieval inhumation (SGHER 14688). Medieval fishponds are located c. 200m west of the manor house site (SGHER 3305).
- 5.151 In other locations within the Land Based ACA there is documentary evidence for a manor but the precise site of any manor house is not certain, such as at Wickwar (SGHER 5551, 9669, 7895, 14086), Brinsham Manor (SGHER 2086), Bury Manor (SGHER 5522), and Brokenborough Manor (SGHER 5376). However, the possible site of the manor may often be suggested, for example Brinsham Farmhouse (post-medieval) may have been constructed on the site of the medieval manor house (SGHER 2086).
- 5.152 Evidence of deer parks is often confined to documentary evidence, from either medieval sources (SGHER 3339, 3354, 3374) or suggested by 'Park' field names (SGHER 3345) on later maps/documents. Less commonly, elements of the park

pale may survive, as with Marlwood Park, north of Alveston (SGHER 3366). It is likely that many deer parks were established following the disafforestation of Kingswood Forest in 1228 (Iles 1987, 119).

- 5.153 Fishponds may be recognised as earthworks (SGHER 18991, 3302, 1490) but are also often identified on the cartographic sources either depicted as ponds (SGHER 6109, 6174, 12801, 3340) or inferred through field names (SGHER 6104, 6107). Medieval rabbit warrens often survive as earthworks (pillow mounds) although in the Land Based ACA the only recorded sites are inferred from field name evidence (SGHER 5570, 6173). These comprise references to the field names *conygere* and *congyre*, derived from the term *coniger*, meaning rabbit warren (Field 1972, 52).

Churches and other religious buildings

- 5.154 While largely complete and unaltered medieval churches are rare, it is common to find elements of 12th, 13th and 14th-century buildings preserved within structures that have been much altered, extended and/or renovated in later periods. The five medieval churches recorded within the Land Based ACA (SGHER 1456, 12379, 2128, 1589) are Listed Buildings and are unlikely to be directly threatened by aggregate extraction. Chapels within the land based ACA are recorded in the documentary sources (SGHER 1466, 2739, 9090), but their precise locations are uncertain. No monastic sites are currently identified in South Gloucestershire (Iles 1987, Fig. 10.1), although a potential site is located at Hill Court, outside the Land Based ACA, and research may identify additional sites (SGHER). A hermitage is referenced in the documentary sources, near Cromhall (SGHER 15045).

Villages, hamlets and farmsteads

- 5.155 It is likely that much of the rural settlement pattern was established before the medieval period (Aston 1989, 123). However, planned villages are a feature of the high medieval period, especially from the 10th to 12th centuries. Including sites such as Iron Acton (outside the Land Based ACA). Others formed from multiple centres, such as Almondsbury or Oldbury-upon-Severn (also outside the Land Based ACA), or developed a dispersed pattern with separate farms, cottages, church and manor house, as at Winterbourne (Iles 1987, 99).
- 5.156 The deserted or shrunken village is a characteristic monument of the medieval period, often interpreted as a result of population decrease following the Black Death, but now more widely regarded as a result of multiple factors such as land re-organisation (Whyte 1999, 265). The term is often applied to farmsteads and hamlets as well as villages (Bowden 2006, 170). Sites are identified by references in the documentary sources (SGHER 4038, 9092), from place name evidence (SGHER 9055, 9089), and/or through landscape survey often of earthworks visible on aerial photographs or on the ground (SGHER 1511, 1578, 3063, 3064, 19039, 1471, 2745). Deserted settlements are often attributed to the medieval period without secure dating although post-medieval examples are also known (see *Post-medieval* below).
- 5.157 In addition to deserted/shrunken settlement (see below), fifteen settlements of medieval origin, or likely medieval origin, are recorded within the Land Based ACA, many identified in the Avon Historic Landscape Survey. This should not be taken as a completely comprehensive list, but demonstrates the widespread nature of this resource. Settlements were identified through the documentary and cartographic sources, and through analysis of their morphology. Certain suffixes such as 'end' may imply a medieval origin, such as Talbot End, West End and Hall End within the Land Based ACA.

- 5.158 In addition to manor houses, a small number of domestic medieval buildings survive within the Land Based ACA, although as with churches (see above), these may have been extensively altered in later periods. It may be that a number of buildings ostensibly of post-medieval or modern date do in fact contain medieval elements, or were constructed on the site of medieval buildings (see also *Post-medieval* below). Medieval buildings are also recorded in intrusive archaeological works. High medieval buildings, such as a 12th to 13th-century building recorded in the vicinity of Marlwood Farm (NMRAD 926056), identified in archaeological works are of particular interest as extant remains are uncommon. In fact, Hall's extensive survey of rural buildings in the area concluded that the lack of pre 1400 structures/structural elements indicated a period of rebuilding in the 15th century (Hall 1983, 99).

Field systems and land use

- 5.159 In the medieval period the Land Based ACA was within the Royal Forest of Kingswood (Iles 1987, 117). This does not imply that the entire area was forested, but does suggest that large areas of woodland would have existed (ibid). Horwood Forest, east of Wickwar, is most likely a surviving element of this woodland (outside the Land Based ACA). Scattered blocks of 'ancient' woodland (pre 1800) are present across the Land Based ACA, Vineyards Break and Priests Wood being two of the larger areas (Avon Historic Landscape Characterisation; henceforth HLC). Small areas of land which display characteristics of fields created by clearing woodland are scattered across the Land Based ACA (HLC).
- 5.160 Perhaps the best known and most distinctive elements of the medieval landscape are blocks of reverse 'S' shaped ridge and furrow earthworks, a product of medieval farming practices. While the field systems established in the Roman period (or earlier) probably continued through the Early Medieval period (Iles 1987, 109) a reorganisation of the landscape in the medieval period established an open field system. This system comprised large fields which were divided into furlongs and then further subdivided into strips, with strips allotted to individual farmers (Iles 1987, 112). Ridge and furrow earthworks are generally held to represent arable farming, although there is evidence that they may also be produced through improving pasture. Indeed, the division between arable and pastoral may not have been totally clear cut in the medieval period, with sheep feeding on crop stubble and improving poor agricultural land (ibid). Where ridge and furrow earthworks have been removed by later ploughing, tell-tale patterns, e.g. reverse 'S' shaped boundaries or 'dog legs', may be fossilised in extant field boundaries (Taylor 1975, 122) or be visible as cropmarks (SGHER 12756). Ridge and furrow is not as extensive across South Gloucestershire as in other parts of the country, although it does survive particularly well in the Levels, and blocks are recorded within the Land Based ACA (SGHER 17548, 5500). Aerial photograph study may identify further blocks and ploughed out earthworks may be identified in intrusive works, as at Court Farm, Cromhall (SGHER 13232).
- 5.161 There was piecemeal enclosure of the open field system in the medieval period before large scale parliamentary enclosure in the later post-medieval period (see also *Post-medieval* below). Much of the Land Based ACA is covered by land that displays characteristics of late medieval (or possibly post-medieval) piecemeal enclosure (HLC). Other elements of the medieval agricultural landscape include records of common land (grazing), lynchets (SGHER 1453, 1467) and hollow ways. Terraces, possibly representing a medieval vineyard, are recorded at Vineyards Break (SGHER 1484).

Industry

- 5.162 Rural industry in the medieval period was dependant upon markets. Within South Gloucestershire, a market is recorded in the Domesday survey at Thornbury, in the early 13th century at Chipping Sodbury and in the late-13th century at Wickwar (Hall 1983, 1).
- 5.163 Within the Land Based ACA, medieval mill sites provide evidence of industry. Medieval mill sites are often identified by their inclusion in the Domesday survey, such as Charfield (SGHER 4999) and Tortworth (SGHER 5561), or other documentary sources (Old Down Farm (windmill); SGHER 12679). It is common to find a sequence of mills at one site, and it is often assumed that a post-medieval/modern mill is in the same location as a medieval mill only known through documentary sources. In the 11th century and much of the 12th century mills were used to grind corn, but from the late 12th century fulling mills, such as Hanham Mill (NMRAD 201434) which processed wool, began to develop (Tann 1965, 53).
- 5.164 Iron is known to have been mined at Iron Acton in the medieval period, and a spread of iron ore and slag near Avening Green, within the Land Based ACA may indicate medieval metalworking in this area (SGHER 10597), although the material may be of later date. Coal was exploited in the South Gloucestershire area in the medieval period (Bone and Dawson 2007, 235), although no associated sites are recorded in the Land Based ACA. Small-scale stone quarrying for buildings and field boundaries undoubtedly took place in the medieval period (Rippon and Croft 2007, 206), although recorded sites are known from later cartographic sources (see *Post-medieval* and *Modern* below).

Findspots

- 5.165 As for the earlier periods, activity has been identified from artefact scatters (SGHER 1454, 1497, 3279, 12657) and a small number of PAS findspots. The process of manuring fields in the medieval period often spread artefacts across a wide area and low densities of finds may be of this origin.

The Severn ACA

- 5.166 Sea defences were established along the Severn Estuary in the medieval period and are thought to have been completed by the 12th century (Rippon 1997, 44). This opened up large areas for agriculture, and also created a clear land/coastal divide, although the Levels still had some vulnerability, and flood defences could be breached, most notably in the Great Flood of January 1607 (Crowther and Dickson 2008, 174). As in earlier periods, the Severn Estuary was an important food resource. A fishery is mentioned on the Severn (within the UD) in documentary sources, although the precise location is not known (SGHER 3329). Some of the fish traps identified along the Estuary on aerial photographs (in the intertidal zone, outside the Severn ACA) are likely to be of medieval date. The Severn also remained an important trade route (Allen 2003) and wreck sites may also be present.

Conclusions

- 5.167 Evidence for medieval activity in the Land Based ACA includes manorial sites, with associated features including manor houses, moats, deer parks, fishponds, rabbit warrens and dovecotes. Deserted and shrunken settlements are also known, and a large number of extant settlements existed in the medieval period. Churches often have medieval elements, and a small number of other structures with medieval components are also known. Medieval landscape features include ridge and furrow

earthworks, lynchets and holloways. Mill sites and some evidence for iron working are also recorded.

- 5.168 Fishing in the Severn Estuary is recorded in the documentary sources and evidence of this as well as wreck sites may be present.

Significance and probability of discovery

- 5.169 The probability of discovery of medieval finds and features is high. The significance of such remains is variable and, although most sites are unlikely to be of high significance, they may have associations with other sites or documentary references that enhance their importance. Any newly recognised medieval elements of extant structures are likely to be of high significance.

Post-medieval (1540-1900 AD)

Introduction and Chronology

- 5.170 For the purposes of this assessment post-medieval is defined as the period following the dissolution of the monasteries, completed by 1540, through to 1900. These three and a half centuries encompass major changes in agriculture, industry and transport, as well as the so-called 'Little Ice Age' of c.1590-1850 and the Civil War (Bone and Dawson 2007, 211). Population growth triggered increased exploitation of natural resources, intensification of farming practices and increasing urbanisation (Bone and Dawson 2007, 214; Crosseley 1990, 7). The Industrial Revolution had its origins in the early part of the post-medieval period, but a start date in the middle of the 18th-century is generally cited (Clark 1999, 280), with a second rapid phase of development from around 1830 (Whyte 1999, 264). In this assessment sites which pre-date 1750 are generally referred to as early post-medieval, and post-1750 are referred to as late post-medieval.
- 5.171 Historically, the post-medieval period was somewhat neglected by archaeologists, but received increased attention from the later-20th century onwards. Post-medieval studies benefit from an interdisciplinary approach, combining documentary and cartographic sources, with landscape studies and the archaeological record. The vast majority of recorded standing buildings (although this is obviously only a small proportion of upstanding buildings) date to the post-medieval period, including many domestic, industrial and ecclesiastical structures. Landscape archaeology has received increasing prominence in recent years, not least through programmes of historic landscape characterisation. Many post-medieval elements are preserved in the landscape, including agricultural patterns, such as the regular fields resulting from parliamentary enclosure; the designed landscapes of formal parks and gardens; and features of the industrial landscape. Information can be gained from numerous documentary sources, although information is often patchy, as well as a wide range of cartographic sources including estate, enclosure and tithe maps, and detailed coverage by the Ordnance Survey in the later 19th century. The discussion below focuses on the resource of the ACAs. All post-medieval sites recorded within the Land Based ACA on the SGHER are detailed on Fig. 17. As this is an extensive resource, selected sites discussed in the text below are depicted on Figs. 18 (Great Houses, Parks and Gardens) and 19 (Industrial).

Monument density

- 5.172 The monument density for the UD spikes sharply for the post-medieval period to its highest level, 14.00 monuments per km². This reflects the higher visibility of this period, including not only extant buildings but also features depicted on the historic cartographic sources. Density within the Land Based ACA is correspondingly high at

13.49 per km². This slightly lower figure for the Land Based ACA is most likely a result of the exclusion of urban areas from the dataset. For the first time monuments (two industrial sites) are recorded within the Severn ACA, giving a monument density of 0.29 per km².

The Land Based ACA

Elite residences and parks

- 5.173 The dissolution of the monasteries resulted in a restructuring of land ownership and re-distribution of wealth. This was a driving force behind the 'building boom' of the early-16th century, when a large number of Great Houses were built or extensively remodelled, in conspicuous displays of wealth (Newman 2001, 45). Where above ground evidence of earlier structures has been removed it may be revealed by archaeological excavation, as at Acton Court, South Gloucestershire (outside the area of this assessment, although the Scheduled area abuts the Land Based ACA). The main buildings of Yate Court, which is of 13th-century origin, date to the 16th century (SGHER 11788; within the Land Based ACA). The early post-medieval Brinsham Farmhouse may be located on the site of the medieval manor of Brinsham, but this is unproven (SGHER 2086). Later alterations to 16th-century elite houses depended on the fortunes of their owners and whether they had the money and inclination to keep up with the latest fashions.
- 5.174 Although many medieval elite residences had associated parks, these were predominantly of a functional nature, used for game. In the post-medieval period there was a move to primarily aesthetic grounds incorporating formal gardens, ornamental parkland and designed views. This was the period of the landscape architects, the most renowned being Capability Brown, who often undertook large-scale remodelling of the landscape. Eleven formal post-medieval parks or gardens are recorded across the Land Based ACA. Like the elite houses, subsequent improvements to parks and gardens were subject to the fortunes of the owners. Tortworth Court Park, of medieval origin, but formally laid out in the 17th-century, was 'improved' in the 19th century (Grade II* Listed; EH).

Landscape reorganisation and rural settlement

- 5.175 Population growth and increasing urbanisation through the post-medieval period was a driving force behind agricultural reform. This included reorganisation of the landscape through Enclosure, the restructuring of the open fields and common land of the medieval period and the transfer of consolidated areas of the former system from common use to single ownership. Early enclosure was piecemeal, but was followed by the larger-scale Parliamentary Enclosures of the later-18th and early-19th centuries (Newman 2001, 109). Much of the Land Based ACA is covered by land that displays characteristics of late medieval/post-medieval piecemeal enclosure (HLC; see also *Medieval* above). Field patterns consistent with Parliamentary enclosure are scattered across South Gloucestershire, including within the northern part of the Land Based ACA, particularly to the north-west of Yate and west of Alveston. Within the landscape new features such as walls, stiles and boundary markers were established.
- 5.176 Settlements within the Land Based ACA are rural by default (urban areas having been excluded from the assessment). Settlement patterns were well established across the UD by the post-medieval period, including numerous villages, scattered farms and other dwellings. Many of these sites had their origins in the medieval period, although new sites were also constructed, including farms associated with newly enclosed landholdings (see above) and settlements linked to industrialisation

(see below). Within villages, or associated with manor sites, parish churches tend to have their origins in the medieval period or earlier, although they were often remodelled/restored in the post-medieval period. Religious buildings constructed in the post-medieval period include Non-conformist and Methodist chapels, associated with new Christian movements. Buildings within the Land Based ACA also include peripheral urban structures such as orphanages, workhouses and schools. A more unusual site is the bath house at Field Grove Farm, potentially a spa (SGHER 12496, 18193).

- 5.177 Numerous building types are associated with farms and agricultural practices. As well as the main farmhouse and farmyard buildings, field barns were located across holdings (39 barns recorded within the Land Based ACA). The use of lime as an agricultural soil improver was widespread and lime kilns are common throughout the region (Bone and Dawson 2007, 219). The SGHER record 31 lime kilns within the Land Based ACA, mainly distributed on the Carboniferous Limestone, although three are mapped on the alluvial/River Terrace deposits adjacent to the Avon Navigation. The use and construction of artificial rabbit warrens, known as pillow mounds, established in the medieval period, continued into the post-medieval period (Rahtz 1965, 17).
- 5.178 The process of enclosure caused the desertion of some settlements as farms moved to larger consolidated holdings (Stoten 2007, 139). One such example within the Land Based ACA is at Abbotside Farm, west of Cromhall (SGHER 5516). The settlement, which most likely originated in the medieval period, is depicted on a map of 1760, when it comprised 21 dwellings (NMRAD). The area was subject to Enclosure by Act in 1841 and was subsequently abandoned (NMRAD). Other sites, recorded as medieval deserted settlements (see *Medieval* above), might also prove to be post-medieval on formal investigation.

Industry

- 5.179 A variety of industries were active in South Gloucestershire in the post-medieval period including dairy, cloth, and mineral based industries. Dairy farming and cheese production was a major industry in the area in the 16th to 18th centuries (Hall 1983, 3). Although the main centre of the cloth industry in the region was to the north around the Stroud Valley in Gloucestershire, there was some extension into South Gloucestershire, including activity at Thornbury, Wickwar and Tytherington (Hall 1983, 3, 99).
- 5.180 Both windmills and watermills are recorded within the Land Based ACA: windmills (or sites of windmills), are recorded along the Severn escarpment; the watermills are by definition located adjacent to water courses and generally associated with the part of the ACA based on alluvial deposits. The materials processed by the mills are not always recorded by HER, although a detailed search of the documentary and cartographic evidence may prove elucidating. Many mills would have ground corn, but in the post-medieval period paper and wool industries developed, as well as sites processing imported materials (e.g. logwoods for dyes), and metals (Cossons 1967, 12). Sites often processed more than one material over their history, as at Swineford Mill on the Bristol Avon, within the Land Based ACA. Documented uses include tucking (wool processing, also known as fulling), cutting timber/timber dye manufacture, copper rolling, and flocking (shredding cloth) (SGHER 1257). Recorded features associated with water mills include mill ponds, mill races, weirs and leats.

- 5.181 Increasing industrialisation created higher demands for coal. The Bristol Coal Measures, which extend across the central area of the UD, were exploited through the post-medieval period. There are 17th-century documentary references to coal mining in the parishes of Winterbourne, Iron Acton, Frampton Cotterell and Westerleigh (Hall 1983, 3). New settlements, such as Engine Common (outside the Land Based ACA), were developed to house workers. Within the Land Based ACA sites include Nibley Colliery and Parkfield North Colliery. Recorded associated features include shafts, pits and spoil heaps which are clustered at these sites, but present as isolated examples elsewhere too. These sites were often linked to the railway network, to facilitate movement of goods (see below).
- 5.182 Coal was not the only natural resource mined in the area, iron mining was also important (Hall 1983, 99). Within the Land Based ACA, Golden Valley Ochre Works (SGHER 5553), north of Wick, was established as an Iron Works but subsequently developed as an Ochre Works. The associated ochre mine is located to the north of the works (SGHER 3559). Lead mining is recorded in the mid-18th century within the Land Based ACA, north of Alveston (SGHER 1416; Taylor 1973, 135). Clay extraction was also common in the area, mainly focused outside the Land Based ACA, although Cattybrook Brickworks extends into the assessment area. As well as brick, other clay products were manufactured in the UD, including clay pipes (SGHER 16350).
- 5.183 Small-scale stone quarrying has taken place across the UD. Most rural buildings of the period were constructed from rubble, quarried from a nearby pit (Hall 1983, 3). This is likely to be the origin of the majority of the 121 quarries recorded within the Land Based ACA. The vast majority of these are known from their inclusion on the First Edition Ordnance Survey mapping, although a small number were identified in field survey. These include the pre-cursors to the large aggregate quarries which form the focus of this assessment: small quarries are depicted at Wickwar, Chipping Sodbury, Wick and Cromhall (limestone) on the First Edition Ordnance Survey map. One gravel pit (recorded on the First Edition Ordnance Survey Map) is recorded within the Land Based ACA (SGHER 14846).

Transport

- 5.184 The vast majority of early post-medieval roads, like their medieval precursors, were unsurfaced, and increasing traffic and lack of maintenance led to the development of the turnpike system in the late-17th century (Newman 2001, 169). The turnpike roads were managed by Trusts who extracted tolls from the road users through a system of tollgates and tollhouses, as well as erecting regular milestones and maintaining the road surface. The establishment of the canal and railway network in the late post-medieval period (see below) led to the declining use of the turnpike roads and they reverted to public ownership. As well as information from the documentary and cartographic sources, associated built structures such as bridges, toll houses, tollboards, gates, milestones and mounting blocks (Cossons 1965), can indicate where a road was formerly part of the turnpike system. For example, on the modern B4058 a toll gate (SGHER 2835) and milestone (SGHER 11696) are recorded south of Cromhall. Such features are recorded across the Land Based ACA.
- 5.185 Increasing demands on goods, including coal, instigated improvements to river navigations and the construction of canals. In the early-18th century work was completed that made the Bristol Avon navigable from beyond its tidal limit at Hanham (east Bristol) as far as Bath (Bone and Dawson 2007, 226). Work included straightening bends and bypassing weirs, as can be seen at Sydenham Mead in the

southern part of the Land Based ACA (SGHER 1416). Here coal mined within the UD was transferred, via The Dramway (see below), to boats at Londonderry Wharf (SGHER 17990) and Avon wharf (SGHER 4505).

- 5.186 The early pre-locomotive railways (also known as wagonways or tramways) were developed to facilitate the transport of coal (Morris 1999), needed in ever increasing quantities due to the expansion of other industries. One example of a pre-locomotive railway, a horse-drawn tramway, known as the Dramway, carried coal from pits on the Bristol Coal Measures in South Gloucestershire to the Bristol Avon (Bone and Dawson 2007, 277; NMRAD; SGHER 5931-2). Constructed c. 1830, it joins the Avon Navigation within the Land Based ACA, at Avon Wharf (SGHER 18334). A section excavated across the dramway near Willsbridge in 1999, within the Land Based ACA, recorded an embankment 4m deep and 8m wide (SGHER 13011; AAU 1999).
- 5.187 The true railways developed in the early 19th century with the introduction of effective steam locomotives (Whyte 1999, 275). The railway network expanded rapidly in the 1840s (Morris 1999), in places incorporating earlier features. Lines which crossed the Land Based ACA included the Bristol and Gloucester Railway, the Mangotsfield-Bath Railway, and the Thornbury and Yate Railway. Part of The Dramway was incorporated into the Bristol and Gloucester Railway, which opened in 1844, although the southern part of the line survives partially extant, adjacent to the later Mangotsfield-Bath line (opened 1869, closed 1966). The railways transported both passengers and freight, and this dual purpose is reflected in their layout, such as the branch (now dismantled) from the Bristol and Gloucester Railway to the site of Nibley Colliery. The Thornbury and Yate line, which joins the Bristol and Gloucester Railway at Yate, opened 1872, it was closed to passengers in 1967 and partially dismantled, although remained between Tytherington and Yate, presumably for the transport of material from Tytherington Quarry.
- 5.188 Outside the Land Based ACA, the South Wales Union Railway (later amalgamated into the Great Western Railway), which ran north from Bristol, through South Gloucestershire, to a ferry point on the Severn at Redwick, opened in 1863. Construction of the Severn Tunnel began in 1873, and it opened in 1886, and the railway line was diverted (Cossons 1967, 27). Railway development continued through the late post-medieval period: the Bristol-South Wales direct line (which does not cross into central Bristol) runs from Wootton Bassett (Wiltshire), via Badminton (South Gloucestershire) and across the Land Based ACA to the Severn Tunnel. This was proposed in 1896 and completed by 1903. As well as the railway lines themselves (extant and dismantled), recorded associated features are present along their route such as turntables, tunnels, aqueducts and bridges, as well as linking with industrial sites. There may also be potential for associated construction camps adjacent to the railways, although they are not currently recorded within the Land Based ACA.

Warfare

- 5.189 There is limited direct evidence of the Civil War (1641-51) within the Land Based ACA, although Yate Court was apparently occupied and then substantially destroyed by parliamentary forces (TBGAS 1898). Some instability continued into the later 17th century, evident in the Monmouth rebellion of 1685, following the accession of James II. The Battle of Keynsham Bridge, between the Duke of Monmouth and Royalist forces, took place within the Land Based ACA (alluvial/gravel) adjacent to the River Avon, before the rebels subsequent defeat at the Battle of Sedgemoor (Somerset) (SGHER).

The Severn ACA

- 5.190 The Severn was an important artery in the post-medieval period, but trade was focused to the south of the UD at Bristol. A number of wrecks, both of ships and smaller vessels, are recorded within the UD, although not within the Severn ACA.
- 5.191 Narrower points in the estuary were used as ferry crossings, such as Old Passage, Aust, at the north-eastern edge of the Severn ACA. Four piers, all labelled old pier, are depicted here on the First Edition Ordnance Survey map. Three are short, only extending into the intertidal zone, but the longest juts out beyond the low mean tide mark (SGHER 14669), into the Severn ACA, and ferries crossed from here to Beachley Point. A second crossing point was New Passage, Redwick, at the south-eastern edge of the Severn ACA. Before the construction of the Severn Tunnel, rail passengers travelling from the area to South Wales transferred to a ferry at New Passage, via a pier which jutted out into the Severn ACA (SGHER 5062). The ferry crossed to the station at Black Rock, on the far side of the estuary. Following the construction of the Severn Tunnel (1873-85), the railway line was diverted.
- 5.192 The coast remained an important source of food, as it had in earlier periods, and numerous fish traps/fish weirs have been identified in the intertidal zone along the Severn (outside the ACA) on aerial photographs. These are the most archaeologically visible form of fishing, other methods such as net and boat fishing being more difficult to identify (Crowther and Dickson 2008, 79). The documentary sources help to fill in the gap: the use of stop net boats in the inner Severn estuary are recorded in a 17th-century source. Increasing exploitation in the post-medieval period, especially of salmon, led to a number of Fisheries Acts in the 1860s, in an attempt stabilise dwindling stocks (Crowther and Dickson 2008, 69).

Conclusions

- 5.193 The post-medieval period saw rebuilding or remodelling of elite houses and associated parks as well as agricultural reform through parliamentary enclosure. Standing buildings are common, including domestic structures, but also industrial sites such as mills, limekilns and quarries. Other commonly-recorded features include elements of the turnpike road system and railways.
- 5.194 No wrecks are currently recorded within the Severn ACA, although they are known from elsewhere within the UD. Piers associated with crossing points at Aust and Redwick extended into the Severn ACA.

Significance and probability of discovery

- 5.195 Post-medieval features are common and the probability of discovery is high. Previously unrecorded post-medieval features are frequently of lower significance, but may have greater importance if related to historical events such as the Civil War or are part of larger complexes such as parks or industrial developments.

Modern (1900-Present)

Introduction and Chronology

- 5.196 For the purpose of this assessment the modern period comprises 1900 to the present day. It encompasses a period of major population increase and technological development. The first half of the 20th century is dominated by the First World War of 1914-18 and the Second World War of 1939-45, with associated agricultural, technological and social changes. Population growth caused rapid and continuing settlement expansion with increased urbanisation. The growing

importance of the car through the 20th century influenced transport infrastructure, and lead to the construction of the motorway network. This, and the development of the commercial aviation industry, resulted in an increased number of people routinely travelling over wider distances. From the later 20th-century, the digital revolution, including the development of the internet and mobile phones, has resulted in major lifestyle changes across the population and increasing globalisation.

- 5.197 The archaeological resource for the 20th century is mainly limited by research focus and interest rather than presence. Recorded resources include standing buildings, and extant landscapes, as well as the cartographic evidence, the extensive aerial photographic record (which also provides information on earlier periods), documentary sources and first-hand testimony. The below-ground resource is not normally considered to be a priority, and where modern features are recorded they are generally secondary, not the focus of any archaeological works. Some sites are certainly of interest, such as defensive military features associated with WWII, although in these cases information from the below-ground resource is likely to be secondary to extant structures. For the modern period, the below-ground archaeological resource tends to supplement other sources of information, rather than forming the focus of discussion. Modern developments often provide the opportunity to investigate the archaeological record. Modern sites recorded within the Land Based ACA on the SGHER are detailed on Fig. 20.

Monument density

- 5.198 Compared to the post-medieval period, the monument density for the modern period dips sharply to 3.30 per km² for the UD. However, with the exception of the post-medieval period, this is higher than all previous periods. The drop reflects the lower number of modern sites considered to be of cultural heritage interest due to their recent origin. However, the relatively high number of records when compared to the medieval and earlier periods is thought to reflect two factors. Firstly, the high visibility of modern sites, which include standing buildings and features depicted on the cartographic sources. Secondly, the set up of the SGHER database means that archaeological investigations are assigned to the modern period, with additional records for any finds/features.
- 5.199 Monument density within the Land Based ACA is slightly lower than the UD as a whole, at 1.52 per km². This most likely reflects a lower number of archaeological investigations and the exclusion of urban areas. Thirty-seven of the modern sites within the Land Based ACA are archaeological works, resulting in a revised monument density of 0.92 per km². This revised figure is still high when compared to all periods except medieval and post-medieval. Two sites are recorded within the Severn ACA, giving a monument density of 0.29 per km².

Land Based ACA

Agriculture

- 5.200 Agricultural development continues to alter the pattern of the landscape. In a process which began in the 19th century and continued through the modern period, changes in agricultural technology resulted in the removal of field boundaries to produce larger fields. Small areas of post-medieval/modern fields adjusted from medieval fields are mapped across the Land Based ACA (HLC). During WWI much pasture was ploughed up and converted to arable use to increase productivity (Bone and Dawson 2007, 254). Many larger estates were broken up in the post-war years resulting in smaller land holdings due to tax issues.

Mineral exploitation

- 5.201 The hard rock mineral resource of the UD includes Jurassic and Carboniferous Limestones. Early exploitation includes extraction for building stone but in the later 20th century the large aggregate quarries, which are the main focus of this assessment, developed. By design, the main mineral resource of the Land Based ACA is Carboniferous Limestone. Nineteen quarries, first depicted on the Second Edition Ordnance Survey map, are recorded within the Land Based ACA, mainly focused on this resource (although SGHER 18808 is mapped on alluvial deposits overlying sandstone). These include the precursor to the active quarry at Tytherington. Later quarry sites, such as Cromhall Quartzite quarry which was established in the later 20th century, are not recorded on the HER. Limestone quarries often have associated limekilns/limeworks. Limekilns are recorded at Wick and Tytherington quarries (SGHER 3561, 18815), and a limeworks is recorded at Itchington (SGHER 13016).
- 5.202 Other minerals worked in South Gloucestershire in the modern period include gravel, clay, coal and celestite. One reference to gravel working was identified in this assessment, included in notes relating to the find of Neolithic flint in the southern part of the Land Based ACA, north of the Avon, in the earlier 20th century. There was exploitation of the Bristol Coalfields through the earlier 20th century, with some deep mining up to the 1960s (BGS 2006, 11). However structural complexity and thin seams means that the deposits are generally now uneconomical (ibid). Celestite, a source of strontium, was worked in South Gloucestershire in the 20th century, most recently at Yate, where production ceased in the early 1990s (BGS 2006, 12). Along with other applications, strontium was used in the manufacture of televisions. In the 1960s production apparently accounted for “*the bulk of the world’s output*” (Grinsell and Payne 1965). Clay from Cattybrook claypit (which partially extends into the Land Based ACA) and the Shortwood claypit is currently used at the Cattybrook brickworks.

Settlement and Industrial Estates

- 5.203 Population growth through the modern period has resulted in major settlement development. This has included expansion of the Bristol suburbs and satellite towns. Examples include: Yate, formerly a village, which was developed as a town in the 1960s; Stoke Gifford, which developed from a small village to a large suburb in the 1980s; and Bradley Stoke, established in the 1980s. Industry moved from the inner-city to peripheral areas resulting in the formation of large industrial estates (Bone and Dawson 2007, 222-3). This includes development at Avonmouth, which comprises associated industrial sites extending north along the bank of the Severn, into South Gloucestershire. The aerospace industry developed at Filton, following the founding of the British and Colonial Aeroplane Industry in 1910 (Bone and Dawson 2007, 229). A small number of extant modern buildings are recorded on the HER within the Land Based ACA, mainly by reference to their inclusion on the Second Edition Ordnance Survey mapping.

Transport Infrastructure

- 5.204 The railways, which had been established in the post-medieval period, continued to be important through the modern period. The Bristol-South Wales direct line, which runs through the Land Based ACA to the Severn Tunnel, was completed in 1903. The railway system continued to develop in the early 20th century, but by this time it was beginning to see competition from the road network. The railways were nationalised following WWII and Beeching’s subsequent report on the *Reshaping of*

British Railways in the early 1960s led to the closure of many lines and stations (Morris 1999, 32-33).

- 5.205 The motorway network was developed in Britain in the later 20th century. The Land Based ACA is crossed north-west/south-east by the M4, constructed in the 1960s, and south-west/north-east by the M5, constructed between 1969 and 1970 (SGHER 17098). The two motorways intersect at the Almondsbury interchange (outside the Land Based ACA).

War

- 5.206 The modern period encompasses World War I (1914-1918), World War II (1939-1945) and the Cold War (1945-1991). Military sites were often low impact and temporary, such as many airfields without surfaced runways, leaving little trace in the archaeological record. Documentary evidence may be vague or lacking entirely, but the aerial photographic record has proved to be an invaluable source of information for sites such as temporary camps.
- 5.207 The South West was not under perceived threat of invasion in WWI (Bone and Dawson 2007, 211) and WWI sites are not widely recorded in the area. No associated sites are recorded within the Land Based ACA.
- 5.208 During WWII coastal defences, the 'coastal crust' (see *The Severn ACA* below), and linear defensive 'stop lines' were established to resist invasion. The closest stop line, Stop Line Green, which formed a large curve to defend Bristol from attack from the south-east, did not extend into South Gloucestershire. Later in the War, the defensive strategy changed from linear defence to the defence of key areas. Bristol, including its northern suburb of Filton, within the UD, was heavily bombed during WWII.
- 5.209 A Royal Observer Corps. Monitoring Post is recorded within the Land Based ACA, to the south of Thornbury (SGHER 1414207). Also within the Land Based ACA, Eastwood Park was used as a civil defence training area (SGHER 17845): a civil anti-gas school was established in 1936 and converted into an air raid precautions school in WWII. Following the War, this site was remodelled as a village as if damaged by a nuclear explosion and used until 1968 (SGHER 17845).

The Severn ACA

War

- 5.210 No WWI sites are recorded immediately adjacent to the Severn within South Gloucestershire. The so-called 'coastal crust' defences established in WWII were designed to protect against an invading force (Crowther and Dickson 2008, 247). The railway system, docks, factories and oil depots at Bristol and Avonmouth made them an enemy target and therefore the surrounding area and adjacent beaches were prioritised for defence (Crowther and Dickson 2008, 249, 270). Recorded features were mainly focused to the south of the UD, but a heavy anti-aircraft battery is recorded at Pilning (SGHER 4399) and a searchlight battery is recorded at Aust (NMRAD 1463826), both to the east of the Severn ACA. Bomb craters are visible in the vicinity on aerial photographs, most likely related to a bombing raid (NMRAD 1463826), although a bombing range is recorded to the north and they could be associated with training (see below).
- 5.211 There is evidence of pilot training in the area during WWII. At Aust, a bombing range including a target indicator (comprising a large arrow) (SGHER 6721), is visible on

historic aerial photographs (Crowther and Dickson 2008, 262). Crash sites of two Spitfires (NMRAD 1322543, 1322243), one of which crashed during training, the second while flying low over water, and one British Torpedo Bomber (NMRAD 1327702), which crashed during a test flight, are recorded within the Severn. All three sites are mapped at the same co-ordinates at Oldbury Sands, to the north of the Severn ACA. A Cold War telecommunications site identified on aerial photographs is recorded within the UD, to the south of Severn Beach (Crowther and Dickson 2008, 276).

Transport Infrastructure

- 5.212 In the modern period ferry crossings of the Severn Estuary were superseded, first by the Severn Tunnel rail link in 1903 and then the First Severn Bridge at Aust. This bridge, which bounds the northern edge of the Severn ACA, opened in 1966 (SGHER 9779; Grade I Listed). In 1996 the Second Severn Crossing was opened at Redwick. Modern wreck sites are recorded in the wider vicinity (Crowther and Dickson 2008, 22).

Industry

- 5.213 Dredging is recorded at Dunn sands on the South Gloucestershire/Monmouthshire border in the 20th century. There is some indication that this may have extended into the Severn ACA, although further evidence of this was not identified (see *Past Extraction* above).
- 5.214 The Aust Severn Powerline Crossing extends across the Severn ACA.

Other sites

- 5.215 The Severn continued to be exploited for fish through the modern period. There is evidence of fishweirs in use into the mid-20th century in the intertidal zone, east of the Severn ACA (NMRAD 1463855), and fish weirs in the Middle Severn Estuary (Allen 2004). Modern sites recorded within the Severn ACA comprise quays at Goblin Ledge, at the edge of the Severn ACA, on the Second Edition Ordnance Survey map (SGHER 18849, 1116).

Conclusions

- 5.216 Modern sites are naturally extensive and the nature of the resource is generally limited by research focus rather than presence. In general, there is less focus on the below-ground archaeological resource. Sites of particular interest include WWI and WWII features. Only one WWII site is currently recorded within the Land Based ACA. Other sites of potential interest include those associated with earlier 20th century industry and the early motor transport system.
- 5.217 There is evidence of pilot training over the Severn Estuary during WWII and features to the east of the Severn ACA formed part of the coastal crust defences.

Significance and probability of discovery

- 5.218 The probability of discovery of modern features is very high. Modern features are often of low or negligible significance, but those associated with wartime defence may be of greater importance.

Summary of the Archaeological Resource

- 5.219 A summary of the archaeological resource identified by period is detailed in Table 5.6 below.

Table 5.6 Summary of the archaeological resource

Period	Conclusions	Significance and probability of discovery
Palaeolithic	<p>Cave sites with deposits of Palaeolithic date are known from the carboniferous limestones of the Severn Escarpment between Almondsbury and Alveston. There is potential for Palaeolithic deposits within other known cave sites in the vicinity of Alveston, and for currently unidentified sites. Such sites hold potential for both palaeoenvironmental material and evidence of human activity.</p> <p>No Palaeolithic sites associated with River Terrace deposits have currently been identified in the Land Based ACA. However, material is known from similar deposits associated with the Bristol Avon, to the south of South Gloucestershire.</p> <p>There is potential for residual Palaeolithic material within the Severn ACA. The potential for <i>in situ</i> deposits is not currently proven.</p>	<p>Cave sites are potentially highly significant. However, the probability of discover of a cave site with <i>in situ</i> human activity is low, even within appropriate geologies. Any <i>in situ</i> material, including any associated with River Terrace deposits, is likely to be highly significant, although again the potential for this material is low. The recovery of unstratified material is more likely, relatively speaking, but this would be of a lower significance.</p>
Mesolithic	<p>The level of known Mesolithic material within the Land Based ACA is low. Further research is required to identified whether this is a genuine low level resource or a result of research bias.</p> <p>No Mesolithic material is recorded from the Severn ACA but <i>in situ</i> deposits are recorded from the Holocene deposits along the edges of the estuary. There is potential for residual Mesolithic material and conceivably early wreck sites within deposits in the Severn ACA.</p>	<p>Any <i>in situ</i> Mesolithic deposits are likely to be highly significant, although the probability of discovery within the ACAs is low. The potential for residual material is higher, but the significance of such material is notably lower.</p>
Neolithic	<p>Only a relatively limited number of Neolithic monuments are recorded within the Land Based ACA. These comprise standing stones as well as a putative longs barrow and a putative cursus monument. Evidence of Neolithic activity has also been identified in the form of surface finds of worked flint, including polished stone axes.</p> <p>No Neolithic material is recorded from the Severn ACA. However, <i>in situ</i> Neolithic deposits are known from the margins of the estuary and there is potential for residual material and conceivable wreck sites within deposits in the Severn ACA.</p>	<p>Neolithic monuments are of high significance, although the probability of the identification of any currently unrecorded monuments within any particular area is low. Other Neolithic <i>in situ</i> deposits, including any associated with cave sites, are also likely to be highly significant. However, the probability of discovery is again low. The potential for residual or surface material is higher, but the significance of this material would be lower.</p>

Bronze Age	<p>Evidence of Bronze Age activity within the Land Based ACA comprises a round barrow in the vicinity of Alveston and unstratified finds.</p> <p>There may be potential for unstratified Bronze Age material within deposits in the Severn ACA.</p>	<p>The significance of Bronze Age round barrows is potentially medium to high, although the likelihood of the discovery of new sites within any particular area is relatively low. Any <i>in situ</i> Bronze Age deposits, particularly any associated with settlement activity, are likely to be of medium to high significance, although the potential for discovery is relatively low. The identification of residual or surface material is more likely, although such material would be of lower significance</p>
Iron Age	<p>Several Iron Age hillforts are recorded within the Land Based ACA. Evidence for Iron Age activity elsewhere in the ACA is more limited, although a possible field system and a Banjo enclosure are recorded. Iron Age deposits, including human remains, have been recorded from a cave site near Alveston.</p> <p>There may be potential for unstratified Iron Age material and possibly wreck sites within the deposits in the Severn ACA.</p>	<p>Iron Age hillforts are highly significant, but the potential for the discovery of currently unknown sites is low. Any other <i>in situ</i> deposits, such as those associated with cave sites or settlement and burials, may be of medium to high significance, although the potential for discovery in any particular area is again low. The probability of discovery of residual material or isolated finds is higher, although the significance of such material is likely to be low.</p>
Roman	<p>The Land Based ACA is crossed by roads linking Bath, Sea Mill and Gloucester. Roadside settlement has been identified at Hall End and four villa sites are known distributed to the east of the Sea Mills-Gloucester Roman road. Some evidence of smaller farmsteads has also been identified and other sites include burials and stray finds.</p> <p>Potential crossing points of the estuary have been identified immediately east of the Severn ACA at Aust and Redwick.</p>	<p>Any <i>in situ</i> features associated with large or high-status Roman settlement may be of medium to high significance, although the probability of discovery in any particular area is relatively low. The probability of discovery of associated infrastructure, agricultural features, small-scale low-status settlement or finds is higher, although their significance is likely to be lower.</p>

Early Medieval	<p>No Post-Roman settlement is currently recorded within the Land Based ACA, although a possible cemetery is known at Tytherington. A pattern of nucleated villages is thought to have been established in the Late Saxon period, and Saxon settlement is recorded within the ACA at Wickwar.</p> <p>The Severn was most likely exploited for food at this time, as well as having been an important local transport link. Possible crossing points of the estuary have been identified to the east of the Severn ACA at Aust and Redwick.</p>	<p>Any <i>in situ</i> evidence of Post-Roman settlement is likely to be of medium to high significance, although the probability of discovery of such material in any given area is low. Features associated with a Post-Roman cemetery would also be of potential medium to high significance, although the probability of discovery is also low. Any dateable Post-Roman features may be of medium to high significance depending on type, although again the potential for discovery is low. The probability of discovery of features associated with Late Saxon activity and isolated finds is higher, although the significance of such remains would be lower.</p>
Medieval	<p>Evidence for medieval activity in the Land Based ACA includes manorial sites, with associated features including manor houses, moats, deer parks, fishponds, rabbit warrens and dovecotes. Deserted and shrunken settlements are also known, and a large number of extant settlements existed in the medieval period. Churches often have medieval elements, and a small number of other structures with medieval components are also known. Medieval landscape features include ridge and furrow earthworks, lynchetts and holloways. Mill sites and some evidence for iron working are also recorded.</p> <p>Fishing in the Severn Estuary is recorded in the documentary sources and evidence of this as well as wreck sites may be present.</p>	<p>The probability of discovery of medieval finds and features is high. The significance of such remains is variable and, although most sites are unlikely to be of high significance, they may have associations with other sites or documentary references that enhance their importance. Any newly recognised medieval elements of extant structures are likely to be of high significance.</p>
Post-medieval	<p>The post-medieval period saw rebuilding or remodelling of elite houses and associated parks as well as agricultural reform through parliamentary enclosure. Standing buildings are common, including domestic structures, but also industrial sites such as mills, limekilns and quarries. Other commonly-recorded features include elements of the turnpike road system and railways.</p> <p>No wrecks are currently recorded within the Severn ACA, although they are known from elsewhere within the UD. Piers associated with crossing points at Aust and Redwick extended into the Severn ACA.</p>	<p>Post-medieval features are common and the probability of discovery is high. Previously unrecorded post-medieval features are frequently of lower significance, but may have greater importance if related to historical events such as the Civil War or are part of larger complexes such as parks or industrial developments.</p>

Modern	<p>Modern sites are naturally extensive and the nature of the resource is generally limited by research focus rather than presence. In general, there is less focus on the below-ground archaeological resource. Sites of particular interest include WWI and WWII features. Only one WWII site is currently recorded within the Land Based ACA. Other sites of potential interest include those associated with earlier 20th century industry and the early motor transport system.</p> <p>There is evidence of pilot training over the Severn Estuary during WWII and features to the east of the Severn ACA formed part of the coastal crust defences.</p>	<p>The probability of discovery of modern features is very high. Modern features are often of low or negligible significance, but those associated with wartime defence may be of greater importance.</p>
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6. MANAGEMENT OF THE ARCHAEOLOGICAL RESOURCE

Mitigation, Methodological and Strategy Review

- 6.1 The following section reviews the way in which the archaeological resource is currently investigated and managed within the Land Based Aggregate Character Area with reference to the four aggregates quarries with associated archaeological works recorded within the study area. Current approaches are evaluated, and recommendations and suggestions for future approaches proposed.

Previous Aggregate Investigation

- 6.2 Previous formal archaeological investigations associated with aggregate mineral extraction are recorded for four quarries in the assessment area. These comprise archaeological investigations at the Carboniferous Limestone quarries at Tytherington, Wickwar and Wick and the Quartzite quarry at Cromhall. No previous formal archaeological works associated with Cromhall Limestone or Chipping Sodbury quarries were identified, although antiquarian finds were recorded at the latter in the early-20th century. Previous archaeological works relating to mineral extraction are detailed by quarry in Table 6.1, and discussed below.

Table 6.1 Summary of archaeological works relating to aggregate extraction

Quarry	Archaeological Works	Results	SGHER ref.	Main Source	Aggregates database ref.
Cromhall Quartzite Quarry	1980 geophysical survey and trial trenching	Recorded the site of a known Roman villa	-	AML 1980 Ellis 1987	SG10/1 SG10/2
	1997 desk-based assessment	Noted the former presence of post-medieval buildings within the quarry extension area and the proximity of a known Roman villa.	11099	AAU 1997	SG10/3
	1997 geophysical survey	Identified a number of features of potential archaeological origin, including a putative ring ditch.	11099	AAU 1997 TBGAS 1998	SG10/4
	1998 evaluation	Did not record any archaeological features and demonstrated that features identified in the geophysical survey were of geological, or other non-archaeological origin. Recorded finds comprised a single sherd of later prehistoric pottery and unstratified post-medieval pottery.	11862	AAU 1998	SG10/5
	2008 cultural heritage assessment	Concluded that there was a low potential for currently unrecorded below-ground remains. Identified the potential for below-ground remains of buildings depicted on the historic cartographic sources.	18672	CA 2008b	SG10/6
Tytherington Quarry	1991 observation following topsoil stripping	Recorded features comprised an undated gully (potentially prehistoric) and several 'brown silt filled features'.	6418 17156	SGHER	SG10/7
	2006 watching-brief	No significant archaeological features/deposits were recorded. Remains of a cottage recorded on the modern cartographic sources were uncovered and several features considered to be of natural origin. Finds comprised post-medieval/modern pot, modern glass and a single unstratified prehistoric worked flint, possibly a scraper.	18012	AAU 2007 TBGAS 2007	SG10/8
Wick Quarry	1996 desk-based assessment, Gatherham Farm Extension	Identified some potential for currently unrecorded below-ground remains, specifically post-medieval/modern industrial features.	15906 10841	BaRAS 1996	SG10/9

	2001 watching brief, Gatherham Farm Extension	Negative results.	15906 10841	SGHER	SG10/10
Wickwar Quarry	2004 archaeological assessment	Identified some potential for currently unrecorded below-ground archaeological remains.	18227	Bullen Consultants 2004	SG10/11
	2005 desk-based assessment update	as 2004	18227	CA 2005	SG10/11
	2005 geophysical survey	Linear, curvilinear and discrete geophysical anomalies were recorded which were thought to reflect below-ground archaeological features or which may have been of geological origin.	18227	AS 2005	SG10/12
	2006 evaluation	No significant archaeological features. One feature, with no finds but likely to be of modern origin, was recorded. Only modern finds were recorded. Anomalies identified in the geophysical survey were shown to be of geological origin. Concluded that the site has a very low archaeological potential.	18227	CA 2006	SG10/13
	2008 cultural heritage summary	Concluded that the proposed quarry extension will have no impact upon known archaeological remains and the potential for currently unknown below-ground remains within the site is considered to be very low. No visual impacts of greater than slight significance were identified.	18227	CA 2008a	SG10/14
	2008 updated archaeological impact statement	No further archaeological works proposed and this has been agreed with South Gloucestershire Natural and Built Environment Team.	-	CA 2008c	SG10/15

Discussion of previous archaeological works associated with aggregate extraction

- 6.3 The following provides a discussion of the archaeological works associated with aggregate extraction, as defined in Table 6.1, above.

Tytherington Quarry

- 6.4 Works at Tytherington Quarry originated in the late 19th/early 20th century (depicted on the Second Edition Ordnance Survey map of 1902). Prior to 2006 the quarry comprised three parcels of land separated by Tytherington Road and the line of the dismantled Thornbury and Yate Railway, and bounded to the south by Itchington Road. One archaeological work is recorded for these areas of the quarry. This comprised a site visit following topsoil stripping in 1991, although it was noted that *“most of the scraped area had too much topsoil left to detect archaeological features”* (SGHER). The only recorded features comprised an undated gully and *“a number of brown silt filled features”*. No report was produced for this work.
- 6.5 The quarry was extended to the south-west in 2006. An archaeological watching-brief was maintained during topsoil stripping and subsoil removal and the results disseminated in a grey literature report (AAU 2007). Recorded features comprised the below-ground remains of a cottage recorded on the modern cartographic sources and several linear features considered to be of natural origin. Finds comprised post-medieval/modern pot, modern glass and a single unstratified prehistoric worked flint, possibly a scraper. It is anticipated that the 2006 extension will have added 15 years of working to the site (Local Plan, 83).

Wick Quarry

- 6.6 A small quarry is depicted at Wick on the First Edition Ordnance Survey map of 1889. Quarrying expanded through the 20th century and this quarry is in the final phases of works (Simon Ford, pers. comm.). Archaeological works are first recorded in 1996, in response to a proposed extension to the north-western area of the quarry. This identified some potential for unrecorded below-ground remains, specifically post-medieval/modern industrial features due to the presence of other such sites in the vicinity. A watching brief in 2001 did not record any archaeological features and no report was produced.

Wickwar Quarry

- 6.7 A small quarry is depicted at Wickwar on the First Edition Ordnance Survey map of 1889. No archaeological works are recorded prior to 2004 by which point the quarry comprised two areas located to the west and east of the B4059, north of Wickwar. It is anticipated that there are 15 years worth of reserves in the current workings east of the B4509 (Local Plan, 84).
- 6.8 Archaeological works were instigated in 2004 in response to proposals to extend the quarry to the north. This northern area is identified as a Preferred Area for Limestone Extraction in the Local Plan. Works comprised a desk-based assessment in 2004, updated in 2005, which identified some potential for currently unrecorded below-ground remains. Detailed magnetometry survey in 2005 recorded a number of linear, curvilinear and discrete anomalies, identified as either of archaeological or geological nature. Archaeological trial-trench evaluation in 2006 did not record any significant archaeological features, and anomalies identified in the geophysical survey were shown to be of geological origin. David Evans (Historic Environment Records Officer South Gloucestershire) has indicated that he will not require further archaeological works.

Cromhall Quartzite Quarry

- 6.9 Works at Cromhall were established in the later 20th century. Archaeological works comprising geophysical survey (detailed magnetometry and resistivity) and trial trenching was undertaken in the 1980s at the site of a known Roman villa. Permission for this area was subsequently revoked. In response to a proposed southerly extension to the quarry in the 1990s archaeological works were undertaken comprising a desk-based assessment, geophysical survey and trial-trench evaluation. A number of anomalies were recorded during the geophysical survey, but these were shown to be of geological or other non-archaeological origin by trial trench evaluation. No significant archaeological remains were recorded. A cultural heritage assessment was undertaken on a proposed southerly extension to the quarry in 2008. Low potential for currently unrecorded archaeological remains was identified.

Summary of previous archaeological works associated with aggregate extraction

- 6.10 With the exception of a 1980s geophysical survey investigating the known site of a Roman villa, no archaeological works associated with aggregate extraction, or proposed extraction, are recorded prior to 1991. The work in 1991 was limited, comprising a site visit which noted that “*most of the scraped area had too much topsoil left to detect archaeological features*”, and no report was produced. However, from the later 1990s onwards a rigorous system of archaeological investigation was implemented, typically comprising a programme of desk-based assessment, geophysical survey and trial-trench evaluation, where potential was present. This was undertaken at Cromhall Quartzite quarry between 1997 and 1998 and at Wickwar between 2004 and 2006. One exception is the Gatherham Farm extension at Wick, where desk-based assessment in 1996 was followed by a watching-brief in 2001. The latter did not identify archaeological features and no report was produced. Recent work at Tytherington Quarry was addressed by a watching-brief only, although with a HER search incorporated into the work (2006).

Status of Dissemination

- 6.11 The works detailed in Table 6.1 have been added to the project-specific Aggregates database supplied by Wessex Archaeology. This generated fourteen records, project numbers SG10/1-SG10/14. These records will be migrated into the main database, currently curated by Wessex Archaeology (main contact Richard O'Neill, Senior Project Manager, r.oneill@wessexarch.co.uk, Wessex Archaeology Ltd, Sheffield Office, Unit R6, Riverside Block, Sheaf Bank Business Park, Prospect Road, Sheffield, S2 3EN).
- 6.12 With the exception of two works, 1991 observations at Tytherington Quarry and a 2001 watching brief at Wick Quarry, it was concluded that all archaeological works had appropriate dissemination (as defined in *Methodology* above). The 1991 observations at Tytherington Quarry refer to a site visit by Avon County Council following topsoil stripping. Given the nature of the work, and the length of time since it elapsed, it seems unlikely that it would be possible to produce a report. Enquiries were made to SGHER regarding the 2001 watching brief. They were able to confirm that a watching brief had been undertaken on the main road, but postponed indefinitely for the remainder of the site. The SGHER is investigating why no report was produced for the site (David Evans, pers. comm.). Both works recorded negative results and both are recorded on the SGHER. The lack of a grey literature report, while not ideal, is not seen to be an issue requiring further attention.

Previous impact of aggregate mineral extraction on the archaeological resource

- 6.13 As part of this project, a brief consideration has been made of the impact of previous aggregate extraction on the archaeological resource. In a number of cases it has not been possible to identify the products of known, previously exploited quarries, as detailed in Appendix B (see also *Past, Current and Future Extraction* above) beyond the mapped minerals resource. That is, it is not possible to say whether these quarries produced building stone or aggregates. The impact on the archaeological resource with reference to known quarries is considered here, but it should be noted that not all of these necessarily produced aggregates.
- 6.14 The destruction of certain major sites or finds of obvious interest were recorded by Antiquarians. These include the inhumation cemetery disturbed during quarrying at Tytherington Hill in 1910 and the Bronze Age axe head and Iron Age La Tène Brooch recorded at Chipping Sodbury quarry in the 1920s. However, recording was often limited, unsystematic and incomplete. The loss to the archaeological record is demonstrated by the impact on hillforts: both Wick Rocks and the Castle hillforts were impacted by quarrying the late 19th/early 20th century, and a putative hillfort site at Chipping Sodbury, recorded on a map of 1777, was quarried away, apparently without intrusive investigation or record. There is large potential for associated, less obvious features, and less visible sites to have likewise been destroyed.
- 6.15 Quarrying is also likely to have destroyed evidence of earlier phases of historic quarrying, and associated features such as limekilns, the significance of which was not recognised at the time. Some of these features are recorded on the historic cartographic sources. The impact upon unrecorded archaeological features is uncertain. In many cases the potential archaeological resource appears to have been destroyed without any record.
- 6.16 Cromhall Roman Villa (Scheduled Monument), in an area proposed for quarrying in the 1980s, is a relatively early example of the preservation *in situ* of an important archaeological site.
- 6.17 Of the quarries which have had archaeological investigations, these works are associated with the most recent phases of works. For earlier phases the potential archaeological resource has been lost without record.

Investigation/ Mitigation

- 6.18 Archaeological advice on minerals projects is given by the South Gloucestershire Natural and Built Environment Team. Applications for extraction which require Environmental Impact Assessment (EIA) go through the standard screening and scoping process. Where EIA is not required case officers advise on a case by case basis, previously in line with PPGs 15 and 16 and now PPS5, Planning for the Historic Environment. Guidance also follows *Mineral Extraction and Archaeology: A Practice Guide* produced by the Minerals and Historic Environment Forum (MHEF 2008) and in *Mineral Extraction and the Historic Environment* produced by English Heritage (EH 2008b). Required work commonly comprises a desk-based assessment where archaeological potential is suggested from consultation of the HER. If this suggests assets may be present but their precise nature is uncertain, further investigation (e.g. fieldwalking or trial trenching) may take place prior to determination of an application, or conditions for further recording applied to any

permission granted. In cases above mitigation measures have comprised preservation *in situ* and watching briefs.

- 6.19 An example of a recent project to go through the EIA process is Wickwar (see above). Work at Wickwar followed a standard progression from desk-based assessment to geophysical survey and trial trench evaluation. This standard approach is an effective way of assessing the archaeological resource of a site, where archaeological potential is indicated by each preceding stage of survey.
- 6.20 An investigation method which has proved rigorous and cost effective elsewhere is the use of detailed magnetometry transects in geophysical survey of large sites. This may be suitable for the future investigation of large areas of proposed mineral extraction in South Gloucestershire. EH guidance on *Geophysical Survey in Field Evaluation* defines large areas as those over 20ha (EH 2008a, 18). In such cases it may be appropriate to undertake survey of transects giving at least 50% area coverage, with additional survey to 'fill in the gaps' at any identified areas of potential. This method benefits from being rapid, cost effective and giving good coverage of the site.
- 6.21 For areas of archaeological potential located on the floodplain, use for specialised geophysical survey techniques, such as caesium vapour magnetometry, ground penetrating radar and electromagnetic conductivity should also be considered, as traditional techniques, such as standard gradiometry, may be of reduced effectiveness where deep overlying alluvial deposits are present.

7. RESEARCH FRAMEWORK AND AGENDA

- 7.1 The following framework and agenda highlight gaps in knowledge and potential areas of future work identified through the Resource Assessment. These are based upon the identified Aggregate Character Areas, although a number of key issues naturally have wider application. Reference has been made to the Regional Research Framework, *The Archaeology of South West England: South West Archaeological Research Framework* (SWARF; Webster 2007). The SWARF objectives are not listed again here but those which are of most relevance to the South Gloucestershire and the Aggregate Character Areas are referenced.

Period-Based Research Agenda

- 7.2 The Resource Assessment was somewhat limited by the often sparse nature of the recorded archaeological resource within the ACAs, particularly with reference to the prehistoric periods (see below). This is in part a reflection of a lack of research focus, and there has been a noticeable dearth of large-scale excavations of complex sites. Naturally such work is dependant both on the identification of such sites and the inclination/finance schemes of funding bodies to undertake excavation. While it is recognised that opportunities for such work within the ACA may be limited it is clear that research is needed both to expand our understanding and to ascertain whether gaps in the record represent a true lack of activity or if they reflect the focus of archaeological work and research elsewhere.

Palaeolithic

- 7.3 Currently evidence of Palaeolithic activity in South Gloucestershire is relatively limited, and there is a noticeable dearth of Lower/Middle Palaeolithic material. While this is in part a reflection of the nature of the recorded archaeological resource for

this period, it also reflects historic research aims and perhaps, less directly, the pattern of mineral extraction. Any research into the Palaeolithic in the county should be actively promoted.

1. Establish whether the lack of evidence for Lower/Middle Palaeolithic activity in South Gloucestershire is a true deficit or a bias in the archaeological record (see SWARF Research Aim 3a). This is likely to be achieved through targeted research into the potential of River Terraces and the correct identification of chance discoveries.
2. In the event of identification of a suitable site, excavate a stratified Palaeolithic site and implement absolute dating techniques such as Optically Stimulated Luminescence (OSL) and Amino Acid Racemization (AAR) to inform the chronological framework (after SWARF Research Aim 1c). Techniques could be applied to stratified Pleistocene deposits, including cave sites and River Terrace deposits.
3. Identify the origin of known Palaeolithic flint artefacts recorded on the SGHER and currently in available collections. As flint does not occur naturally in South Gloucestershire all flint artefacts are imported (SGNBET 2010). Identification of their provenance and precise dating could provide information on population movement.
4. Improve our understanding of Pleistocene vertebrate fauna, with particular reference to dating the extinction of key species (SWARF Research Aim 24). This information could feed into the refinement of the chronological framework. For example re-dating of existing Late Pleistocene faunal assemblages from cave sites, where available, using current radiocarbon techniques, may inform our dataset with regards to extinction of key species (SWARF Research Aim 16c). If suitable material is available, scientific dating of faunal remains from Forty Acre Lane may add to the dataset.
5. Assess the potential for Palaeolithic material within River Terrace deposits in South Gloucestershire. For example through a programme of predictive mapping and the use of techniques such as Optically Stimulated Luminescence (OSL) to date Pleistocene deposits (SWARF Research Aim 1e and 16a; WCC and CA 2007, 160).
6. In the event of sand and gravel extraction, re-assess mitigation strategies in the light of assertions that the Palaeolithic resource was not well served by PPG16 (Jackson 2007, 53; SWARF Research Aim 1c). River Terrace deposits hold inherent potential for Palaeolithic material. Work undertaken in response to PPG16 has not generated the expected amount of Palaeolithic material across the country. It has been concluded that the methodology is insufficient and needs to be revised (ibid).

Mesolithic

- 7.4 Evidence for Mesolithic activity in South Gloucestershire is mainly recorded in the western part of the UD (SGNBET 2010). Evidence from the aggregate areas is particularly sparse and further investigation and research is needed to counteract this deficit, or identify the ACAs as genuinely low-density resource areas.

7. Improve our understanding of Mesolithic landscapes (SWARF Research Aims 2 and 25) through environmental analysis. The Wentlooge Formation has been relatively well studied but an inland pollen sequence should be established if possible. Cores taken from waterlogged sediments which preserve organic remains, such as peat or alluvial deposits, can provide information on past vegetation. Initial research would include assessing the potential for the survival of such deposits within the Aggregate Character Areas.
8. Assess evidence for Mesolithic activity in areas of River Terrace deposits. Evidence of Mesolithic activity is notably absent from areas of River Terrace deposits within the Land Based ACA. Active prospecting, such as fieldwalking, might identify new sites, although diagnostic flint types may be difficult to identify in the ploughsoil due to their size.
9. Integrate the study of inland and coastal sites to enhance our understanding of Mesolithic activity as a whole. There is often a tendency to study different types of site in isolation when, given the presence of a mobile population, different sites may have been used by the same groups. As both zones are present in South Gloucestershire, consideration of sites there may offer an opportunity for such study.
10. Identify evidence for Mesolithic temporary settlement within the Land Based Aggregate Character Area. This is reliant on the identification of features in excavation or artefact concentrations.
11. Re-assess known prehistoric flint assemblages for currently unrecognised Mesolithic elements, with the aim of expanding our dataset. These may be hidden in assemblages currently dated to the Neolithic or Bronze Age.

Neolithic

- 7.5 While unstratified Neolithic material is recorded within the Aggregate Character Areas, the lack of excavated features is particularly noticeable. Any opportunity for intrusive archaeological work investigating an identified or potential Neolithic site should be encouraged.
12. Improve our understanding of Neolithic settlements and landscapes (SWARF Research Aim 28). Should suitable Neolithic sites be uncovered in an aggregate extraction area they should be considered in their wider landscape context, rather than as isolated entities.
 13. If suitable opportunities occur, refine the absolute chronology for Neolithic/Bronze Age sites through systematic radio-carbon dating (Pollard 2007, 67). Suitable Neolithic/Bronze Age material, e.g. bone or charcoal, identified in intrusive works should be sampled and analysed wherever possible.
 14. In the event of the recovery of suitable material, refine the pottery chronology for the Neolithic. Where suitable residues survive, use radiocarbon dating to produce absolute dates.
 15. Identify evidence for Neolithic settlement/sedentism. This is dependant upon identifying a Neolithic site in intrusive works in an aggregate character area.

Where appropriate, scatters of Neolithic material in the ploughsoil should be subject to further works to test the potential of these to represent settlement remains surviving below this layer as cut features.

16. Investigate/research the putative long barrow west of Wickwar. This site is the only identified possible long barrow within the Land Based ACA. Further investigation is needed to identify whether a Neolithic monument is indeed present. Work could potentially include a detailed topographic survey to map the form of any earthwork present or resistivity/ground penetrating radar geophysical survey.
17. Re-assess known prehistoric flint assemblages for currently unrecognised Neolithic elements.

Bronze Age

7.6 Lack of specific research means that the Bronze Age in South Gloucestershire is less well understood than other areas of the South West such as Wiltshire or Devon (SGNBET 2010). Within the ACAs, evidence is dominated by round barrows and surface material with a noticeable lack of structural settlement evidence.

18. Investigate whether the lack of recorded round barrows in the central area of the UD is a true deficit or a bias in the archaeological record (see SWARF Research Aim 3; SGNBET 2010).
19. The chronological progression of different forms of round barrow, if present, requires further investigation. In the event of a suitable opportunity arising, it would be useful to excavate a round barrow/suspected round barrow site to rigorous modern archaeological standards. Although round barrow sites are well known in South Gloucestershire, evidence is often based on antiquarian investigation (SGNBET 2010). While the decision to undertake intrusive investigation, rather than preserving a site *in situ*, is not always appropriate, such steps may be necessary to enhance our dataset. In such a situation consideration should be given to the use of radiocarbon dating in order to develop an absolute chronology for round barrow types (Saville 1984, 134).
20. Identify evidence for Bronze Age field systems (SGNBET 2010) and identify whether evidence of Bronze Age plough agriculture, known in Wessex, extended into South Gloucestershire (after SWARF Research Aim 3i). This might be achieved in the first instance by further consultation of aerial photographs or analysis of LIDAR data. However, while morphological analysis of field patterns/cropmarks/earthworks can identify potential sites secure dating requires intrusive works.
21. Re-assess known prehistoric flint assemblages for currently unrecognised Bronze Age elements.
22. Investigate whether the low Bronze Age monument density for the Land Based ACA is a true deficit or a bias in the archaeological record (see SWARF Research Aim 3).

Iron Age

7.7 The Iron Age in the Land Based ACA is represented by a high number of hillforts but there is a lack of evidence for other sites. The number of hillforts clearly indicates a

high level of Iron Age activity and therefore it appears that this deficit is a reflection of research bias towards these highly visible monuments.

23. Improve our understanding of hillforts in their wider landscape setting (GCC 2008, 56), with particular reference to the hillforts within the Land Based ACA. There has been a tendency to consider these highly visible monuments in isolation and more work is needed to improve our understanding of the landscape as a whole.
24. Investigate the research potential of those hillforts damaged/destroyed by quarrying, i.e. the Castle, Wick Rock and Sodbury.
25. Research the reason for a paucity of non-hillfort Iron Age sites within the Land Based ACA, specifically evidence for other settlement types.
26. Identify un-enclosed later prehistoric/Iron Age settlement sites (e.g. cave sites and open settlements) within the Land Based ACA, which are generally known through excavation rather than cropmark survey (Powlesland 2009, 123).
27. Investigate evidence for the abandonment of hillforts in region in the Late Iron Age (Powlesland 2009, 122).
28. Widen our understanding of Iron Age material culture, with particular reference to items other than pottery (SWARF Research Aim 14). Research into certain types of Iron Age material culture has been relatively neglected.
29. Re-assess known prehistoric flint assemblages for currently unrecognised Iron Age elements.

Roman

7.8 When compared with earlier periods, Roman period activity is relatively well documented within the ACAs. However, this does not mean that this period would not benefit from further targeted research.

30. Investigate currently uncertain elements of the Roman road network within the Land Based ACA. While much of the major Roman road network is fairly well understood there are certain gaps in our understanding.

Strategy: Investigating the Roman road network

The resource

The Archaeological Resource assessment has identified a number of major Roman roads crossing South Gloucestershire. These include roads crossing the Land Based ACA linking major settlements beyond the limits of the UD including Bath (*Aquae Sulis*), Sea Mills (*Abonae*) and Gloucester (*Glevum*).

Previous work within the UD has demonstrated the potential for Roman roads to be positively identified in archaeological works. The putative extension of the Berkley-Iron Acton (Engine Common) Roman Road (Margary road 541a) was identified in the later 20th century. It has been postulated that this route extended beyond Iron Acton to Bitton, but it was not until excavation at Shortwood in the 1990s (AAU 1994) that the route was positively identified. A probable separate length of the route was identified at Oldland Common in 2009 (CA 2009b).

Nature of potential remains

In some cases modern roads preserve the line of Roman roads, or their course may survive as a track or field boundary. Elsewhere the aggers may survive as earthworks, visible during fieldsurvey. Below-ground remains may include road metalling, and potentially flanking ditches.

How they might be detected

Where extant remains survive, they may be identified by field survey along predicted routes. Where no above ground remains are present, but the route of a Roman road is suspected, geophysical survey, in the first instance, might identify potential below ground remains. However, it can be difficult to detect Roman roads using the commonly applied technique of detailed magnetometry. Magnetometry is most effective at identifying cut features, such as ditches. Hence, where a road is flanked by ditches these may be identified by detailed magnetometry. Resistivity is more effective at identifying structural elements or stone deposits, and may be a more suitable technique for identifying road metalling. However, the cost and length of time involved prohibits its use over large areas.

Trial trenching along seemingly blank areas along the line of a putative route should identify any below-ground remains, and could confirm the nature and investigate the date of below-ground remains associated with extant features, or features identified in geophysical survey.

Application in aggregate extraction

In the event of an area of proposed aggregate extraction crossing the line of a known or putative Roman road it would be appropriate to implement a staged strategy for investigations. In the first instance a site visit to assess the area for any extant remains/visible earthworks. This might be followed by detailed magnetometry survey, and if deemed appropriate, targeted resistivity survey. The results of these surveys could be used to inform intrusive archaeological investigation, which might identify road metalling, flanking ditches and associated dating material. In the event that the line of a Roman road is positively identified this information would feed back into our understanding of Roman South Gloucestershire. Where the route of a Roman road is known there is potential to identify associated roadside settlement. Roads may also preserve buried land surfaces, which can provide well-dated palaeoenvironmental material.

31. Identify the extent of Roman military activity in South Gloucestershire.
32. Investigate evidence for the presence/absence of a Roman port at Oldbury on Severn.
33. Investigate evidence for the continuity of Roman villa estate boundaries through to later periods (SWARF Research Aim 31a), within the Land Based ACA and South Gloucestershire as a whole.
34. Investigate evidence for and the nature of Roman re-use of hillforts within the Land Based ACA. While Roman material is commonly found at hillforts the nature of the associated activity is often uncertain.
35. Assess evidence for Roman mineral acquisition and processing within the Land Based ACA in order to widen our understanding this topic (after SWARF Research Aim 38).
36. Assess the survival of below-ground remains at Cromhall Roman Villa.
37. Investigate the origins of the concentration of Roman findspots near Alveston.

Early Medieval

7.9 The Early Medieval period is consistently underrepresented in the archaeological record across the country. Therefore any new sites are likely to be of particular interest and have the potential to significantly influence our understanding of the period. Specific areas of study include:

38. Implement the routine use of scientific dating on features potentially of Early Medieval date (see also SWARF Research Aim 16j).

Strategy: Identifying Early Medieval sites in excavation*The Resource*

The recorded Early Medieval archaeological resource, particularly for the post-Roman period (5th-7th centuries), is notably small. This has led to the conclusion that the evidence is not being positively identified in archaeological works, particularly excavation.

Nature of potential remains

This strategy focuses on the below-ground archaeological resource, particularly cut features such as pits and enclosure ditches. It may be possible to identify Early Medieval settlements, especially Post-Roman, which are notable in their absence from the archaeological record. The technique is also applicable to skeletal remains, and as such may be used to date cemeteries.

How they might be detected

The general lack of diagnostic material culture appears to be a major factor preventing the identification of Early Medieval sites. A complicating factor can be the presence of residual material, which leads to the assumption that Early Medieval features are of prehistoric or Roman date. Therefore the implementation of scientific dating, namely radiocarbon dating, of suitable deposits (e.g. bone or charred material), is the most promising route to identifying Early Medieval sites (see SWARF research aim 16j; Dalwood 2007, 122).

The potential for features attributed to the later phases of Roman sites to actually be of Early Medieval date has been demonstrated at sites such as Fosse Lane, Shepton Mallet (Leach and Evans 2001, after Webster 2007b, 168). At Peasdown, Bath and North East Somerset, an enclosure ditch containing residual Roman pottery was shown to be Early Medieval through radiocarbon dating (Alexander forthcoming). Scientific dating of a site near Ilchester identified pits within a causewayed enclosure, which might otherwise have been interpreted as prehistoric, as of Post-Roman date. The identification of only a small number of new sites would significantly increase the dataset.

Application in aggregate extraction

This strategy is likely to be applicable in the context of excavation, in particular, where complex sites demonstrate potential for Early Medieval elements, e.g. the upper phases of a Roman site, or undated settlement evidence which might otherwise be assumed to be of prehistoric date. Where possible, and the nature of the evidence is such that it warrants the approach, the use of scientific dating should be considered.

39. Identify villages/rural settlement with Early Medieval origin (See SWARF Research Aim 33) within the Land Based ACA. Many known medieval settlements are likely to have existed in the Early Medieval period. Such sites might be identified through the study of settlement form combined with documentary research and landscape studies.

40. Where Early Medieval burials are recorded within the Land Based ACA, consider the potential to identify population movement through isotope analysis of teeth enamel, which can give the place of origin of an individual (see also SWARF Research Aim 51a). Oxygen and strontium isotope analysis can be used to identify migration (Webster 2007, 276; see e.g. Evans et al 2006, Eckardt et al 2009).
41. Where the opportunity arises, investigate evidence for Early Medieval settlements at known archaeological sites of other dates within the Land Based ACA, e.g. hillforts and villa sites.
42. Use a multi-disciplinary approach, e.g. documentary research, landscape studies and archaeological investigation, to identify Early Medieval political units, with reference to any continuity from Roman villa estate to medieval parish (Webster 2007b, 181).
43. If the possibility arises, investigate and date the potential Early Medieval mill leat at Swinford.
44. Use dendrochronology to identify Early Medieval fish traps in the Severn ACA (after SWARF Research Aim 44).
45. If possible, use radiocarbon dating to ascertain if the currently undated cemetery recorded at Tytherington is Early Medieval.

Medieval

- 7.10 The medieval period benefits from a wide ranging archaeological resource, although there is scope for additional focused investigation. There are also a number of areas that would benefit from the synthesis of existing data.
46. Research the origins of the parish, manor, township and hundred (after SWARF Research Aim 31c) in South Gloucestershire through documentary research and considering excavated evidence in this context.
 47. Develop tree-ring chronologies for the region and use these chronologies in the analysis of built structures (Rippon and Croft 2007, 200; See also SWARF Research Aim 16k-l).
 48. Investigate centres of medieval pottery manufacture (Bowden 2006, 167-9).
 49. Investigate evidence for medieval quarrying/mining. This is obviously of particular relevance to aggregate producing areas. Smaller areas of less commercially viable resources may be useful in this as modern workings may have obliterated earlier evidence in some locations.
 50. Investigate evidence for monastic sites in South Gloucestershire, for example thorough documentary research (SGNBET 2010).
 51. Investigate the location of manor sites recorded in the documentary sources, for which the location of any manor house is uncertain, e.g. Brokenborough Manor.
 52. Research the manorial complex at Winterbourne, including synthesis of existing data.

53. Investigate deserted settlement sites through archaeological excavation where opportunities are present and ascertain if they are of medieval or later date. Consider reasons for abandonment within the framework of documentary sources.

Strategy: Dating deserted settlements

The Resource

Deserted/shrunken settlements are a relatively well recorded resource. However, the dating of such sites can be problematic. There is often a tendency to date all deserted/shrunken settlements as medieval without studying all the available evidence. Desertion of settlements was not a single event but occurred over a long period of time, and was caused by a variety of factors. The study of deserted settlements enhances our understanding of population change and settlement patterns.

Nature of potential remains

Extant remains commonly comprise earthworks, visible in the field and on aerial photographs. Below-ground remains may include boundary ditches, possibly structural remains of walls, building platforms, post-holes, rubbish pits, pottery and other material culture.

How they might be detected

Many deserted/shrunken settlements are already recorded on the Historic Environment Record. LIDAR, aerial photograph analysis and field survey may have the potential to reveal additional sites. Cartographic evidence, particularly a process of map regression for a specific area, may also identify additional sites.

Study of the cartographic and documentary sources for known sites may identify the date of desertion. This is particularly likely to identify where desertion/shrinkage occurred in the post-medieval period, as detailed cartographic records are more frequently available for this period. Otherwise dating is most likely to be achieved through the recovery of dateable remains during excavation.

Application in aggregate extraction

A deserted settlement in an area of aggregate extraction should be evaluated/excavated as appropriate. Recovered evidence should be considered in the context of desk-based/documentary research.

Post-medieval

- 7.11 The HER holds an extensive dataset for the post-medieval period, particularly with regards to features recorded on the historic Ordnance Survey mapping. Review and synthesis of this data, should be seen as a priority. There is potential for further desk-based research and field investigation to provide valuable additional information. This period has benefited from research by local groups, such as the South Gloucestershire Mines Research Group (SGMRG).

54. Study the pattern of early enclosure and parliamentary enclosure in South Gloucestershire using available cartographic sources and the visible landscape.
55. Analyse known deserted settlements in the Land Based ACA to identify those of post-medieval date (see *Medieval* above). This may be achieved through excavation and documentary research.
56. Undertake a study of post-medieval vernacular architecture (SWARF Research Aims 8 and 15c) in South Gloucestershire post-1720. Hall (1983) undertook a detailed study of rural buildings, including building surveys, in the area, up to 1720. Similar research could be undertaken for buildings dated 1720 to 1900.
57. Widen our understanding of mineral acquisition and processing, with particular reference to mining remains and quarrying (SWARF Research Aim 38a, b, h and m).
58. Research the development of the pottery industry 1550-1750 (SWARF Research Aim 45).
59. Investigate trade with Bristol in the post-medieval period, and the relationship between South Gloucestershire and this urban area.
60. Undertake documentary research into the products of specific mill sites. The SGHER records a number of mill sites within the Land Based ACA for which the product is not known. Building survey (for extant structures) combined with study of available cartographic and documentary sources could produce detailed histories for certain sites.

Modern

- 7.12 Modern sites are well documented by the HER. A number of key themes are shared with the post-medieval period, and are repeated again here.
61. Investigate evidence for WWI and WWII features away from the coastal zone. A study of historic aerial photographs could identify currently unrecorded features.
 62. Investigate 20th-century landscape restructuring with reference to technological advances. For example, the loss of field boundaries following the introduction of new farm machinery and the break up of estates.
 63. Research the history of the celestite industry and the contributions it has made to industry, including medicine and television manufacture.
 64. Research surviving elements of the early motor transport system (SWARF Research Aim 48a) through aerial photographic survey and field survey.

Research Strategy

- 7.13 In addition to the period-specific research goals, detailed above, a number of wider areas for potential research have been identified. This includes possible desk-based

research and field survey in the following areas, strategies for which are detailed below:

65. Re-appraisal of the Historic Landscape Characterisation data.
66. Expand the NMP to cover all of South Gloucestershire.
67. LIDAR analysis.
68. Re-assessment of existing lithic assemblages.
69. Re-assess earthworks/cropmarks given a broad Neolithic onwards date by the HER.
70. Systematic programmes of fieldwalking.
71. Opportunities to further assess the Severn ACA

Historic Landscape Characterisation

- 7.14 Historic Landscape Characterisation was undertaken for South Gloucestershire in the 1990s, when it was part of the county of Avon. While this is an extremely useful resource it may potentially prove beneficial to review the Historic Landscape Characterisation data in light of subsequent refinements to the technique. A re-assessment of the data could consider integrating information from pre-Ordnance Survey historic mapping, e.g. Tithe Maps and Estate Maps.

The National Mapping Programme

- 7.15 The Resource Assessment has highlighted the potential to extend the coverage of the National Mapping Programme (NMP) to encompass the entire UD. Only the coastal zone of South Gloucestershire has been covered by the National Mapping Programme (NMP; RCZA, Crowther and Dickson 2008). There is a need to extend the systematic analysis of vertical aerial photographs to cover the remainder of the UD. This expansion of NMP coverage may elucidate later prehistoric settlement patterns, e.g. if the dominance of the Cotswold Plateau is a reflection of research aims or whether this area was truly more attractive to early settlement.

LIDAR

- 7.16 The Environment Agency holds LIDAR (Light Detection and Ranging) data for most of South Gloucestershire, with the exception of the eastern area of the UD. All of the Land Based ACA is covered, with the exception of a small area south-west of Almondsbury. Coverage is mainly at 1m resolution, although parts of the western and northern areas of the UD are at 2m resolution. Aerial LIDAR is a technique which uses a laser to produce topographic survey by measuring the distance between a survey aircraft and the ground at regular intervals (Environment Agency (Geomatics Group) 2010). The data has particular archaeological applications, not least that it is possible to 'filter out' vegetation to reveal, for example, earthworks within areas of forest. LIDAR may also be able to identify subtle features, not visible on aerial photographs (WCC 2007, 143). LIDAR survey could usefully be used in conjunction with aerial photographic sources to further assess the archaeological resource of the Land Based ACA.

Re-assess existing lithic assemblages

- 7.17 The Resource Assessment identified a number of cases where re-assessment of lithic assemblages with particular reference to dating might prove beneficial. Particularly when other evidence is lacking, an unstratified lithic resource can be a useful source of information. In the absence of identifying stratified archaeological sites, with corresponding potential for securely dated lithic assemblages, reassessment of the existing artefacts may be one way to expand our understanding of the prehistoric within the Land Based ACA. New approaches to the investigation of lithic assemblages should be encouraged (SWARF Research Aim 5c).

Re-assess the earthworks/cropmarks given a broad Neolithic onwards date by the HER

- 7.18 The Resource Assessment identified a number of earthworks/cropmarks which were returned by the HER as Neolithic, by which have not been securely dated through archaeological investigation. Further study of individual sites could be combined with any additional information from extended NMP/LIDAR analysis.

Systematic fieldwalking

- 7.19 A programme of high level but systematic fieldwalking within the Land Based ACA might go some way to ascertaining whether certain gaps in our knowledge (see *Period-Based Research Agenda* above) are the result of a lack of research focus. Specifically it may help to recognise new Mesolithic and Bronze Age sites, which are underrepresented in the ACAs, and may potentially identify evidence for Iron Age activity outside hillforts.

Opportunities to assess the Severn ACA

- 7.20 Any opportunities to further assess the archaeological potential of the Severn ACA (such as through assessment of proposals for dredging) should be taken. Such assessment may include detailed desk-based research and marine geophysical survey.

Strategy: Fieldwalking*The Resource*

The Resource Assessment has identified a low density of prehistoric finds and sites within the Land-Based ACA. The low density of this resource may be due to a lack of research focus in this area.

Nature of potential remains

Remains of previously unrecorded prehistoric sites may be visible as scatters of flint or other artefacts on the surface of the ploughsoil in arable fields. These may be present through the disturbance of flint scatters deposited on previous land surfaces, or through the truncation by ploughing of cut features containing artefacts. Hence, scatters of artefacts can represent the location of previously unrecorded archaeological sites, including potentially those where truncated cut features still survive.

How they might be detected

These artefactual scatters might be detected through systematic fieldwalking. This can be undertaken in a variety of ways. Intensive surveys include recording and recovering all finds on narrowly-spaced transects (typically 20m), and timed collection within grids (e.g. 10mx10m, for 10 minutes). Less intensive survey can include collection on more widely-spaced transects (e.g. 50m). Schemes of fieldwalking have potential for community involvement, such as the participation of local archaeological societies.

Application in aggregate extraction

If a community project involving fieldwalking were established, this information would be very valuable in terms of highlighting where potential extraction may impact upon possible archaeological sites.

8. CONCLUSIONS

- 8.1 In South Gloucestershire aggregates are currently exclusively produced from crushed rock. The crushed rock aggregates resource comprises Carboniferous Limestones and Quartzitic Sandstone forming the Carboniferous Limestone Supergroup, which outcrops in the UD at the northern edge of the Bristol Coalfield. Five active aggregates quarries exploiting this resource currently operate in South Gloucestershire. River Terrace deposits, and Alluvial deposits which may mask similar deposits, were assessed as well as sand deposits of the River Severn, are also a potential future source of aggregates in the UD.
- 8.2 The potential aggregates resource of the UD can be divided into two Aggregate Character Areas (ACAs). These are the Land Based ACA, comprising the Carboniferous Limestone Supergroup along with River Terrace and Alluvial deposits and the Severn ACA, comprising the area south of the First Severn Crossing, below Low Mean Tide.
- 8.3 Monument density of recorded archaeological sites within the Land Based ACA is lower than the UD as a whole. This may partially result from the exclusion of urban areas. However, the Archaeological Resource Assessment has identified a relatively low level of archaeological research within the Land Based ACA. In a number of areas research is needed to identify whether the lack of sites is a true reflection of the resource, or a result of bias in investigation.
- 8.4 Assessment of the archaeological resource for the prehistoric period was limited by the low number of recorded sites. With the exception of Early Medieval sites, which are typically underrepresented in the archaeological record, a greater quantity of information is available for the later periods. The Roman activity in the UD is relatively well understood, although certain areas would benefit from targeted research. The medieval, post-medieval and modern periods are well recorded, although a number of topics would benefit from synthesis of existing data. A number of period-specific research aims, focused on addressing these issues are detailed in the Resource Framework and Agenda. More general areas of potential future research include the extension of the National Mapping Programme (which currently only encompasses the coastal area) to cover the whole of the UD and analysis of LIDAR data.
- 8.5 Historic quarrying within the Land Based ACA is known to have impacted upon highly visible archaeological sites, including hillforts, but the impact on the less visible archaeological resource is unknown. This potential resource has been lost without record. The case of Cromhall Roman villa Scheduled Monument, located in an area proposed for quarrying in the 1980s, is a relatively early example of the preservation *in situ* of an important archaeological site. Following the adoption PPG16 a rigorous system of archaeological investigation has been implemented for aggregate extraction sites.
- 8.6 Of the fourteen previously completed archaeological works associated with aggregate extraction, only two are considered to be without adequate dissemination. Both of these works, comprising a negative observation and negative watching brief, are recorded on the South Gloucestershire HER.
- 8.7 This assessment has completed the objectives detailed in section 1.3.

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APPENDIX A: AGGREGATES DATABASE FIELDS

1. National ID
1. Project ID
3. Name of project
4. Region
5. County
6. Valley system
7. Name(s) of quarry(ies)
8. Aggregate deposit type
9. Grid reference easting (world co-ordinates)
10. Grid reference northing (world co-ordinates)
11. HER/SMR location
12. HER/SMR number
13. Scheduled Monument number
14. Listed building, battlefield or garden numbers
15. Funding body
16. Archaeological organisation undertaking the work
17. Year or year range of intervention
18. Period 1-4
19. Size of project
20. Nature of fieldwork (primary)
21. Site code Fieldwork (secondary)
22. Nature of fieldwork (secondary)
23. Site code Fieldwork (secondary)
24. Fieldwork required by regulatory conditions
- 25-40. Archaeological period
- 25a-40a. Site type class
41. Nature of discoveries
42. Current project status
43. Most recent project stage
44. Archive location known/unknown
45. Archive details
46. Published references
47. Significance of data retrieved from project
48. Dissemination complete
49. Suggested level of dissemination
- 50-59. Proposed further work
60. Associated projects

**APPENDIX B: QUARRIES EXPLOITING THE CARBONIFEROUS LIMESTONE RESOURCE
(ALPHABETICAL ORDER)**

Quarry	Status	Description
Alveston (1)	Historic	Historic quarry, now within Alveston urban area.
Alveston (2)	Historic	Historic quarry, now within Alveston urban area.
Bury Hill	Historic	An area of historic works/permission to the south of Bury Lane, south of the active Wick Quarry. Mapped by the BGS as an area of historic quarrying/permission. No records of quarrying or extant permissions were identified (MPA). No quarry was identified on the historic Ordnance Survey maps. Therefore the area is thought to represent a historic permission. The area mapped by the BGS extends beyond the mapped Carboniferous Limestone resource.
Castle	Historic	Historic quarry at Tytherington.
Chipping Sodbury	Active	The quarry comprises five main sub-areas, and an area of preferred future extraction:
		Barnhill Worked out, although there are small, apparently unworked areas, at its north-western, western and southern extent.
		Southfields Worked, plant processing facilities are currently located in this part of the quarry.
		Hampstead Farm Current working area. An area of existing permissions is located to the east of the current working area.
		West Brinsham Unworked area of existing permissions
		East Brinsham Unworked area of existing permissions
		Preferred area A preferred area for future extraction, defined in the minerals plan, is located immediately east of East Brinsham
Codrington (recorded by the BGS as Court Farm)	Historic	A worked quarry (partially restored).
Cromhall Limestone	Non-operational	The quarry comprises the worked area, eight adjacent associated areas of existing permissions (labelled Cromhall 1-8 for the purposes of this assessment), and a ninth area of permissions to the south-west at Priests wood.
		Main Quarry Worked area, north of the B4058. Activities are currently suspended.
		Cromhall 1 and 2 A block of permission, now divided into two by the existing quarry.
		Cromhall 3 and 4 Small areas of permission, south of the main quarry, north and south of the B4058 respectively.
		Cromhall 5 Area of permission north of Bibstone.
		Cromhall 6 Area of permission north-west of Bibstone. Mainly within Tortwork Grade II* Registered Park. Includes part of Leyhill prison.
		Cromhall 7 Small area of permission west of Bibstone, includes a historic quarry.
		Cromhall 8 Area of permission west of Bibstone, at Wicks Hill.
		Priest Wood Area of permission at Priest Wood.

Quarry	Status	Description
Cromhall Quartzite	Active	The quarry comprises an active/worked area and area of revoked permission:
		Main Quarry The current working area is within the southern part of the mapped area. Previously worked areas to the northern part of the quarry have been restored.
		West of the Main Quarry Permission to work this area has been revoked (location of Cromhall Roman Villa).
Gatherham	Historic	An area of historic works/permission forming an extension to the Wick quarry complex.
Green Hill	Historic	Historic quarry, now within Alveston urban area.
Haywood Farm	Historic	Mapped by the BGS as an area of historic quarrying/permission. No records of quarrying or extant permissions were identified (MPA). No quarry was identified on the historic Ordnance Survey maps. Therefore the area is thought to represent a historic permission.
Itchington Plant	Historic	Mapped by the BGS as an area of historic quarrying/permission. No records of quarrying or extant permissions were identified (MPA). No quarry was identified on the historic Ordnance Survey maps. Therefore the area is thought to represent a historic permission. The area mapped by the BGS extends beyond the mapped Carboniferous Limestone resource.
Little Strode	Historic	Historic quarry, now within Alveston urban area.
Oxwick Farm	Historic	Mapped by the BGS as an area of historic quarrying/permission. No historic permissions, identified in the now superseded Minerals Working in Avon Local Plan (MPA). The area mapped by the BGS extends beyond the mapped Carboniferous Limestone resource.
Tytherington	Active	The quarry comprises four main areas:
		Northface Worked. Small, apparently unworked strip at northern edge.
		Grovesend Worked. Small, apparently unworked area at the western edge.
		Woodleaze Worked. Small, apparently unworked area at the eastern edge.
		South of Itchington Road/ Local plan preferred area. The MPA identified an existing permission south of Itchington Road. The quarry was extended to cover the area of existing permissions and part of the preferred area in 2006 (subject to an archaeological watching brief; AAU 2007).
Wick	Active	The main quarry is currently in the final stages of works. Previously worked areas within the eastern part of the quarry have been restored
Wick Rocks	Historic	Located adjacent to the active Wick quarry. A second area of historic quarrying has been incorporated into the main active site.
Wickwar	Active	The main quarry comprises two areas, to the west and east of the B4059, and an area of preferred future extraction.
		West of the B4059 Small apparently unworked areas are located at the western and northern edges.
		East of the B4059 Worked
		Preferred area A preferred area for future extraction is located immediately north of the existing quarry, east of the B4059. Now approved for extraction (MPA).

APPENDIX C: GAZETTEER OF RECORDED ARCHAEOLOGICAL WORKS WITHIN THE LAND BASED ACA

Year	Type	Name	Results/ finds	Period	HER ref. NMR ref.
1855	Antiquarian excavation	Cromhall Roman Villa	Villa	Roman	1505 634278
1857-1869	Antiquarian find during quarrying	Old Down Hill, Tockington, Olveston	Human remains	Undated	10723 10724 16283
1865	Excavation (i.e. labourers with picks)	Vineyard Hill	Finds	Roman	634312
1868	Antiquarian find	East of Bloody Acre Camp, Tortworth Park, Cromhall	Mosaic	Roman	1587
1879	Antiquarian excavation	Olveston	Building	Roman	634274
1890	Antiquarian excavation	Round Barrow, Vattingstone Lane, Alveston Down, Olveston	Burial	Bronze Age	1463 634273
1910	Antiquarian observation during quarrying	Tytherington Hill, Tytherington	Cemetery	Undated	1503
c. 1925	Antiquarian finds	Harriss Woods, Tortworth Park, Cromhall	Bronze finds	Roman	1586
1919/27	Antiquarian finds	Limeridge Quarry, Chipping Sodbury Quarry	Axehead and brooch	Bronze Age Iron Age	2089 2090
c. 1929	Antiquarian find during gravel working	Holm Mead Lane, Bitton	Flint	Neolithic	1239
1938	Antiquarian excavation	Olveston	Farmhouse	Medieval	634275
1960-63	Excavation	Swallow Hole/ Alveston Bone Fissure	Animal bones	Palaeolithic	1461 14875
1966	Excavation	Bloody Acre Camp, Tortworth Park, Cromhall	Roman pottery – site records lost.	Roman	18580

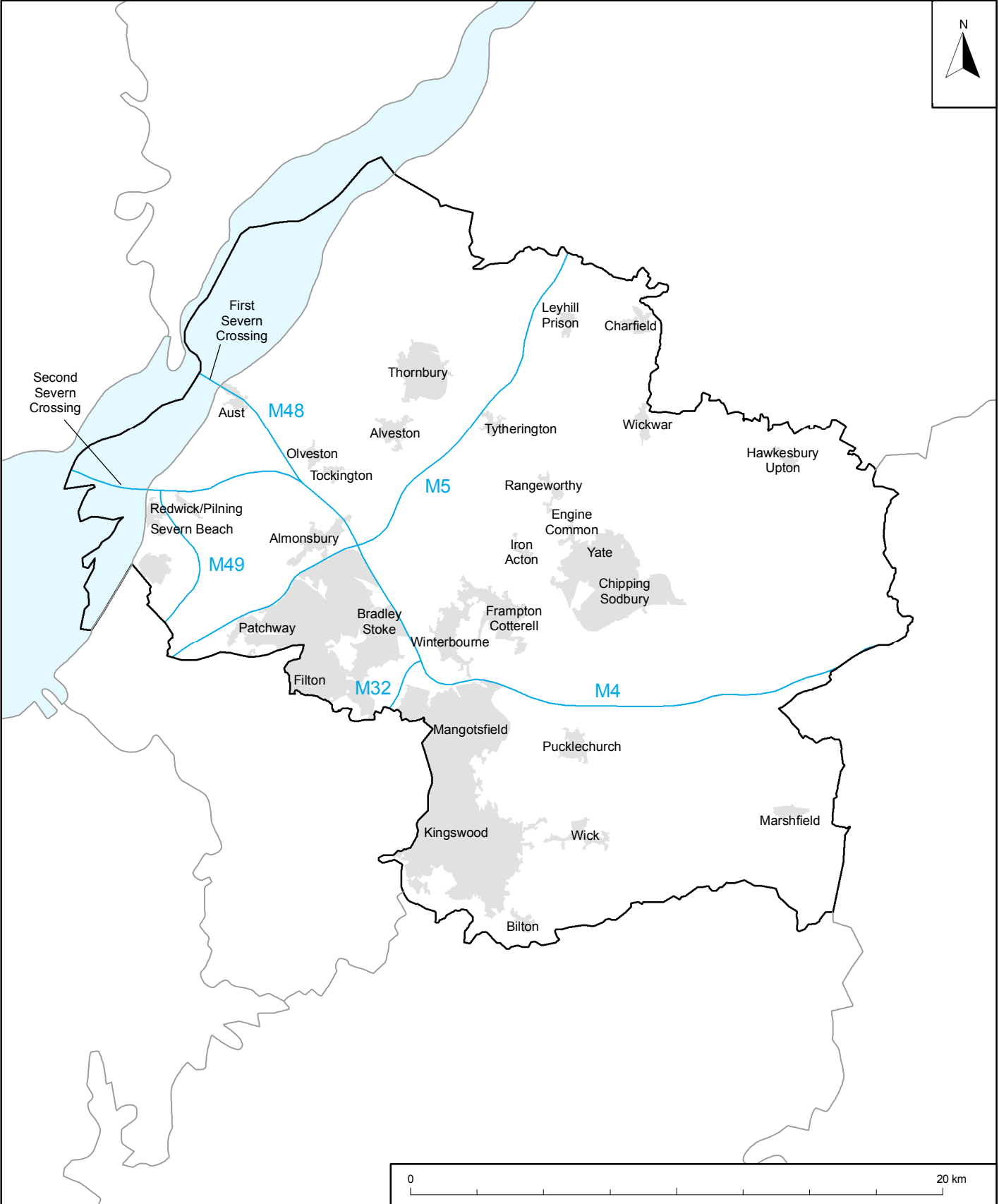
1969-70	Archaeological works	M5 Motorway			
		Site 42	Pottery scatter	Medieval Post-medieval	1497
		Site 43	Pottery scatter	Roman	1496
		Site 44	Flint scatter	Neolithic	14610 1498
		Mill lane, Falfield, Tortworth	Deserted settlement	Medieval	1578
1970s	Urban implication survey	Wickwar	-	-	<i>912180</i>
1973-4	Excavation	Cattybrook, Almondsbury	Roman settlement	Roman	1091 14608 634109 634110
c. 1977-82	Watching brief	Abbey Camp, Grovesend, Thornbury	-	-	12804 654862
1980	Geophysical survey, trial excavation/watching brief	Cromhall Roman Villa	Villa	Roman	15085 654865 654866 654867
1983	Rescue excavation	Hall End Lane, Wickwar	Roman settlement	Roman	11102
1989	Archaeological assessment	Science Park, Emmersons Green	-	-	17916
1990-1	Watching brief on geotechnical test-pits and later mineral extraction (Celestite)	Hall End Farm, Hall End Lane, Wickwar	Features	Prehistoric Post- medieval	7368 1049403
1990	Trial trench evaluation	Marlwood Farm	Buildings, finds	Roman Medieval	<i>926056</i>
1991	Watching brief	Tytherington Quarry	Gully and 'silt filled features'	Undated	17156
c. 1992	Watching brief	Church Car Park, Church Lane, Wickwar	No records	-	11047
1993	Historic landscape assessment	Old Down Farm, Elberton, Aust	-	-	11004
1996	Desk-based assessment	Heneage Farm, Falfield	-	-	11008 1237194
1996, 2001	Desk-based assessment and watching brief	Gatherham Farm Extension, Wick Quarry	-	-	10841 15906 1237192
1997	Programme of archaeological works	Seabank Pucklechurch Pipeline	Three sites within the Land Based ACA: quarry pit; pond; rubble spread.	Prehistoric Medieval Post- medieval Modern	12727 12729 12733

1997-8	Desk-based assessment, geophysical survey and trial trenching	Cromhall Quarry	-	-	11099 1181034 11099 12754 12757 1141872 11168 1141891
1998	Historic Landscape Characterisation	Avon Historic Landscape Survey	-	-	13522
1998	Extensive Urban Survey	Wickwar	-	-	1340155
1999	Excavation	Keynsham Road, Willsbridge	Dramway	Modern	13011 1300878
1999	Watching brief	St Andrews School, Cromhall	Ridge and furrow	Medieval	13232 1339019
2000-1	Desk-based assessment, building recording and watching-brief	Land at Yate Court, Limekiln Road	Buildings	Medieval Post-medieval	13965 14553 1314943 1365845 1365846
2000	Excavation	Swallow Hole/Alveston Bone Cave, Gloucester Road, Alveston	Faunal remains, including human. Residual Roman pottery.	Iron Age/Roman	14033 14034 14035 14036 1338346
2000	Building recording	Grove Farm, Benson Way, Watley	-	-	18306
2002	Evaluation and watching brief	St Michael Church, Church Lane, Winterbourne	Inhumation	Medieval	14688 1363267 1365847
2002	Watching brief	Sewer Pipeline, Upper Tockington Road, Tockington	Pottery scatter, linear cut.	Roman Undated	17625
2002	Building recording	Court Farm Barn, Church Lane, Winterbourne	-	-	16488
2002-4	Excavation	Land at Hall End Farm	Settlement	Roman	1402080
2004-8	Desk-based assessment, geophysical survey, trial-trench evaluation, cultural heritage assessment	Wickwar Quarry	-	-	18227 1491880
2004	Geophysical survey	Winterbourne Barn, Church Lane, Winterbourne	Possible villa	Undated	17457 1489600

2005	Geophysical survey and earthwork survey	Avon Wharf, Keynsham Road, Bitton	Railway features	Modern	18333 18337
2005	Watching brief	The Old Rectory, Cromhall	Structure	Modern	<i>1457200</i>
2006	Watching brief	Tytherington Quarry	Single prehistoric worked flint, post-medieval structure.	Prehistoric Post-medieval	18013 <i>1457581</i>
2007	Watching brief	New Pumping Station, Willsbridge	-	-	<i>1459853</i>
2007	Desk-based assessment	Barnhill Quarry, Chipping Sodbury	-	-	18243
2008	Watching brief	Court Farm Barn, Church Lane, Winterbourne	Wall	Medieval	18613 18621
2008	Desk-based assessment	Granary Barn, Hillhouse Farmhouse, Wickwar	-	-	18609
2008	Desk-based assessment	Cromhall Quartzite Quarry	-	-	18672
2009	Building recording	Court Barn, Winterbourne	-	-	18725

APPENDIX D: SGHER PERIOD

Broad Period (CA)	SGHER Period Abbreviation	SGHER Period	From	To
Prehistoric	EPR	Early Prehistoric	-500000	-4001
	PR	Prehistoric	-500000	42
	LAT	Late Prehistoric	-4000	42
Palaeolithic	PA	Palaeolithic	-500000	-10001
	LPA	Lower Palaeolithic	-500000	-150001
	MPA	Middle Palaeolithic	-150000	-40001
	UPA	Upper Palaeolithic	-40000	-10001
Mesolithic	ME	Mesolithic	-10000	-4001
	EME	Early Mesolithic	-10000	-7001
	LME	Late Mesolithic	-7000	-4001
Neolithic	NE	Neolithic	-4000	-2351
	ENE	Early Neolithic	-400	-3001
	MNE	Middle Neolithic	-3500	-2701
	LNE	Late Neolithic	-3000	-2351
Bronze Age	BA	Bronze Age	-2350	-701
	EBA	Early Bronze Age	-2350	-1501
	MBA	Middle Bronze Age	-1600	-1001
	LBA	Late Bronze Age	-1000	-701
Iron Age	IA	Iron Age	-700	42
	EIA	Early Iron Age	-700	-401
	MIA	Middle Iron Age	-400	-101
	LIA	Late Iron Age	-100	42
Roman	RO	Roman	43	409
Historic	PRO	Post-Roman	410	1900
Early Medieval	EEM	Early Post-Roman	411	679
	SA	Saxon	680	1065
	EM	Early Medieval/Dark Ages	410	1065
Medieval	MD	Medieval	1066	1539
Post-medieval	PM	Post-medieval	1540	1900
Modern	MO	Modern	1901	2050



— Motorway
■ Urban areas

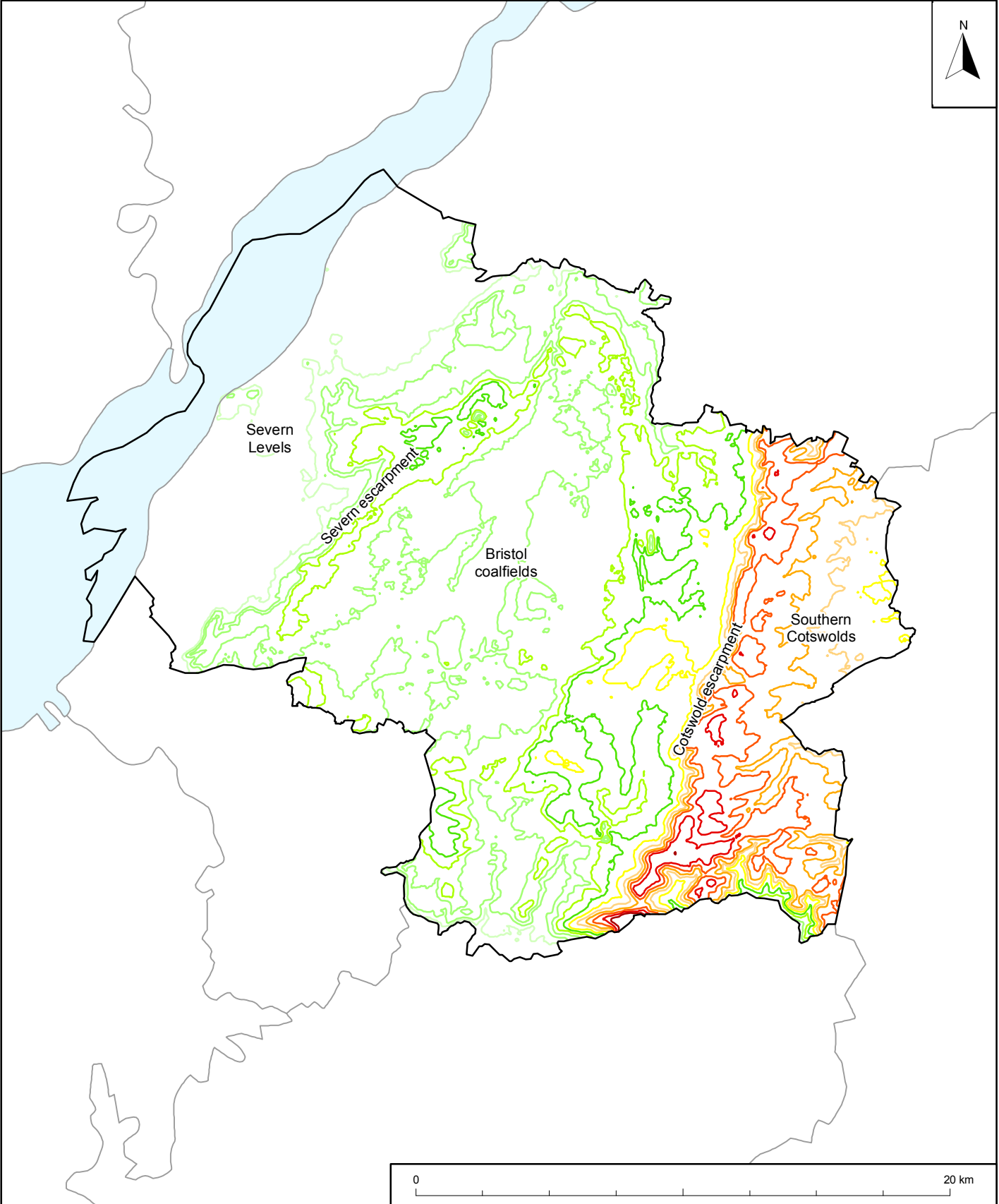


COTSWOLD ARCHAEOLOGY

PROJECT TITLE
**South Gloucestershire
Aggregates Assessment**


FIGURE TITLE
Project area

DRAWN BY	SCALE	PROJECT NO.	FIGURE NO.
PJM	1:200,000@A3	2845	1



Contour heights - metres AOD

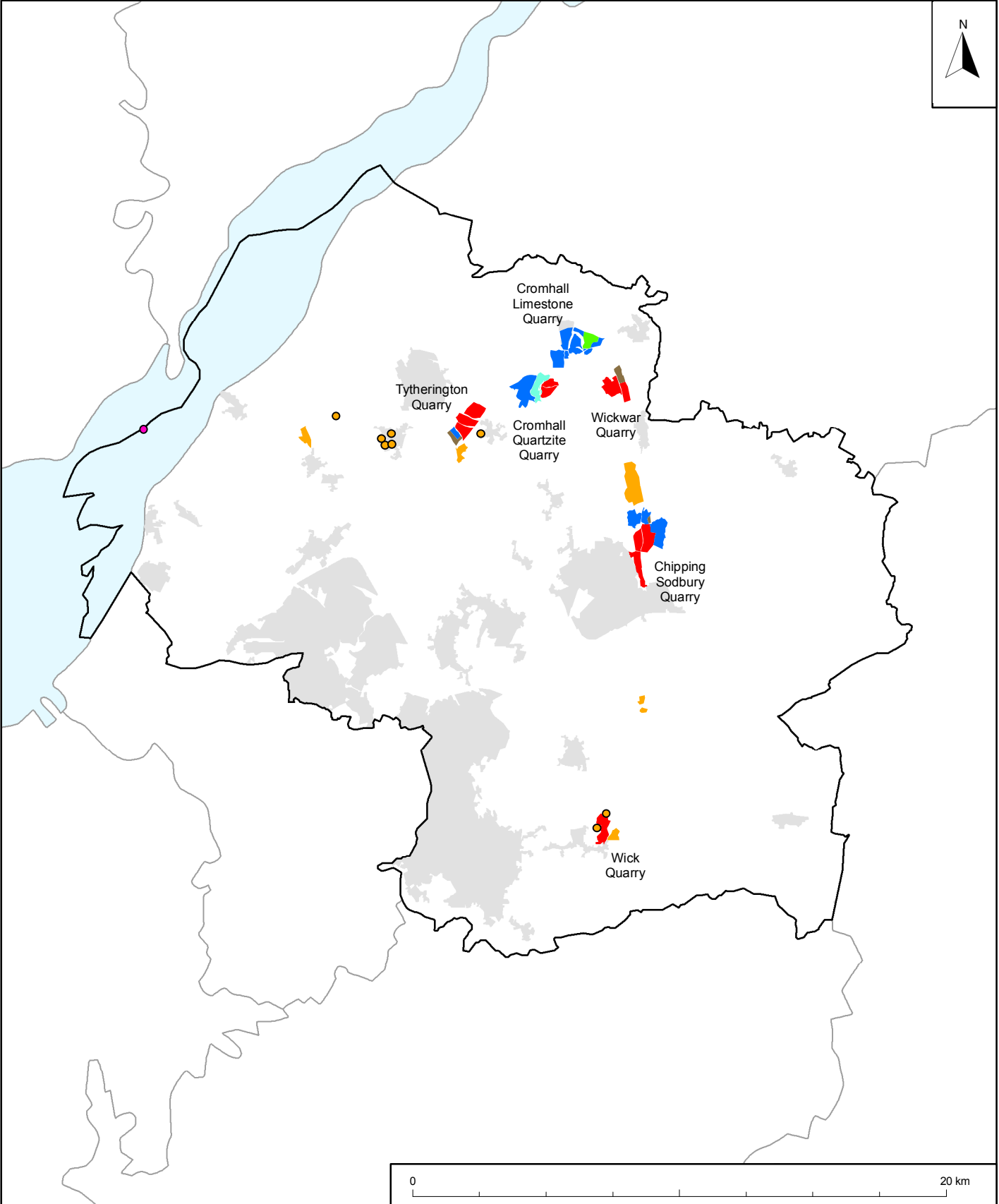
20	100	180
40	120	200
60	140	220
80	160	

**COTSWOLD ARCHAEOLOGY**


PROJECT TITLE
South Gloucestershire
Aggregates Assessment

FIGURE TITLE
Topography

DRAWN BY	SCALE	PROJECT NO.	FIGURE NO.
PJM	1:200,000@A3	2845	2



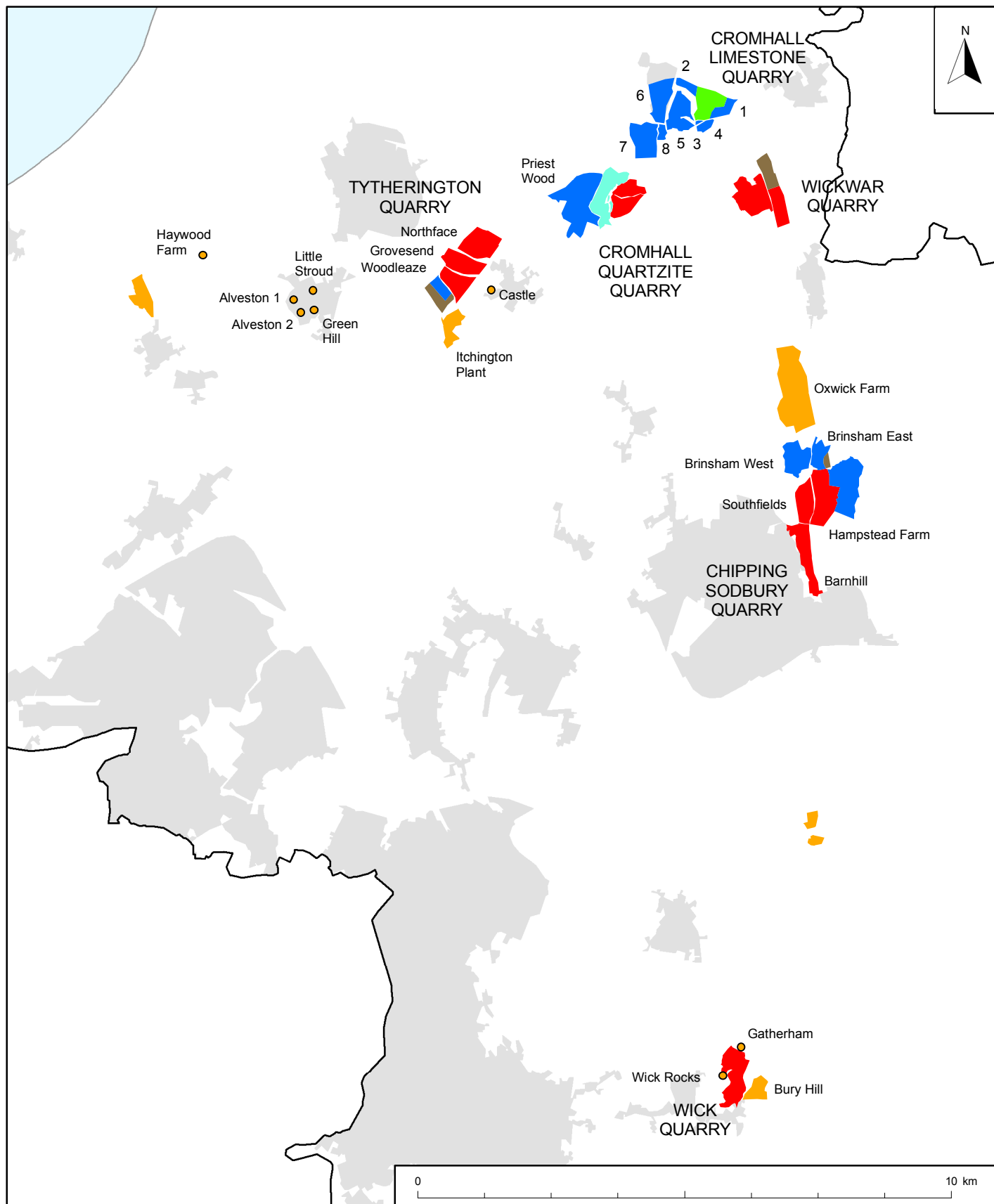
- Active quarry
- Dormant quarry
- Area of permission
- Area of revoked permission
- Preferred area
- Historic quarry/permission
- Possible dredging site
- Urban areas

**COTSWOLD ARCHAEOLOGY**

PROJECT TITLE
**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE
Aggregate extraction, overview

DRAWN BY	SCALE	PROJECT NO.	FIGURE NO.
PJM	1:200,000@A3	2845	3



- Active quarry
- Dormant quarry
- Area of permission
- Area of revoked permission
- Preferred area
- Historic quarry/permission

Urban areas



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Aggregate extraction detail

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PJM

SCALE

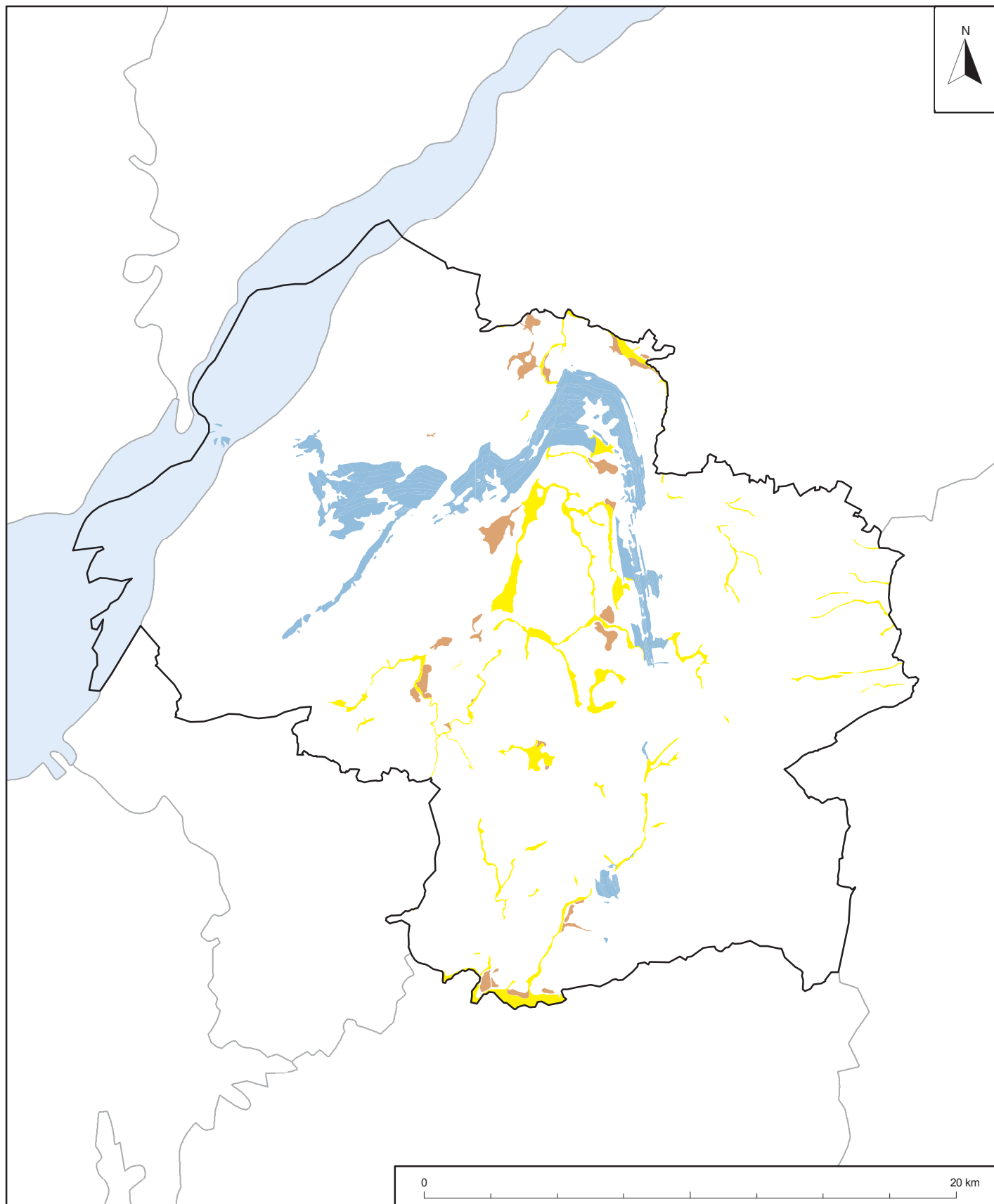
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PROJECT NO.

2845

FIGURE NO.

4



- Carboniferous Limestone
- Alluvium
- River Terrace Deposits



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Mapped geology

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SCALE

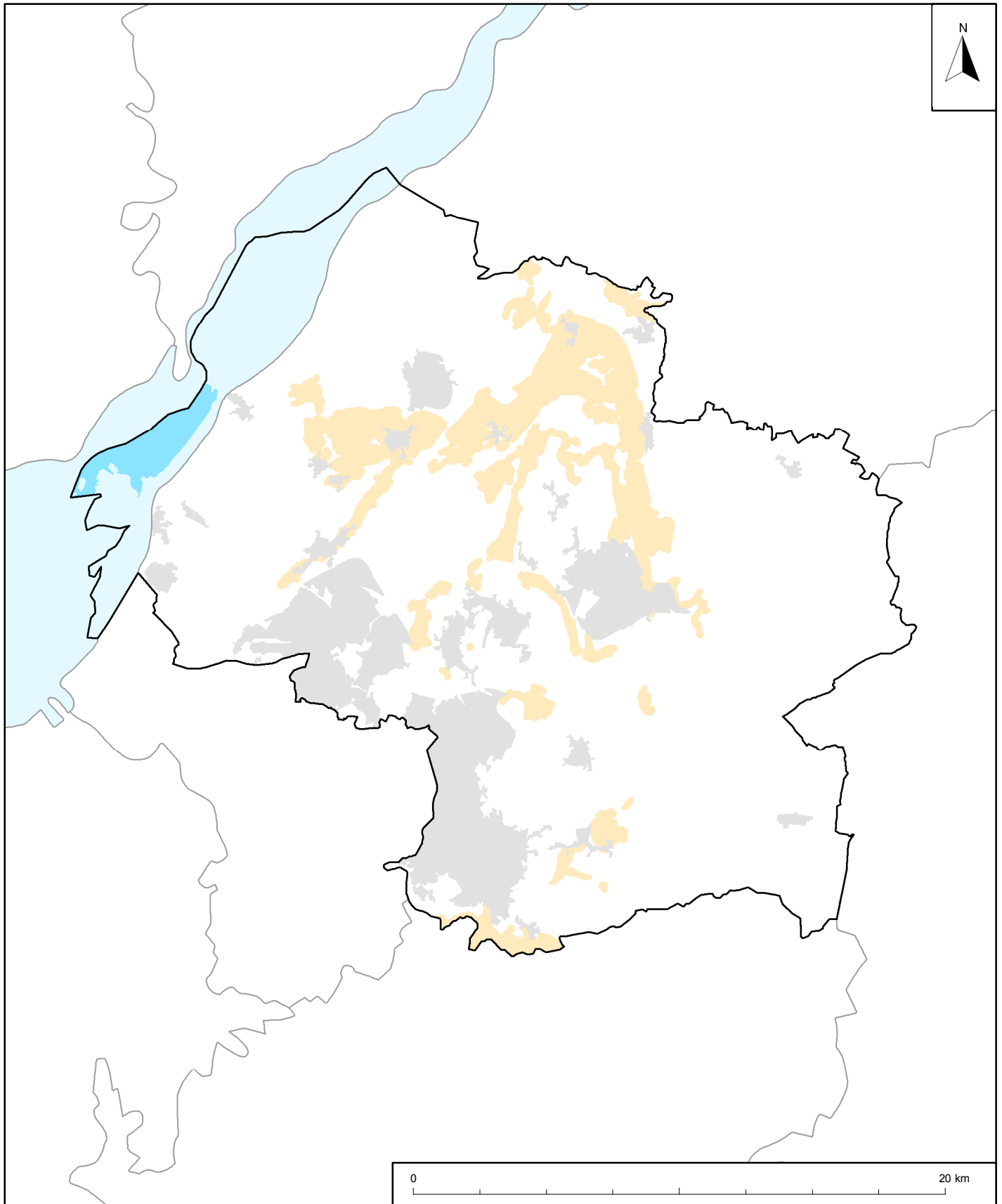
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PROJECT NO.

2845

FIGURE NO.

5



- Urban areas
- Land Based ACA
- Severn ACA



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Assessment area

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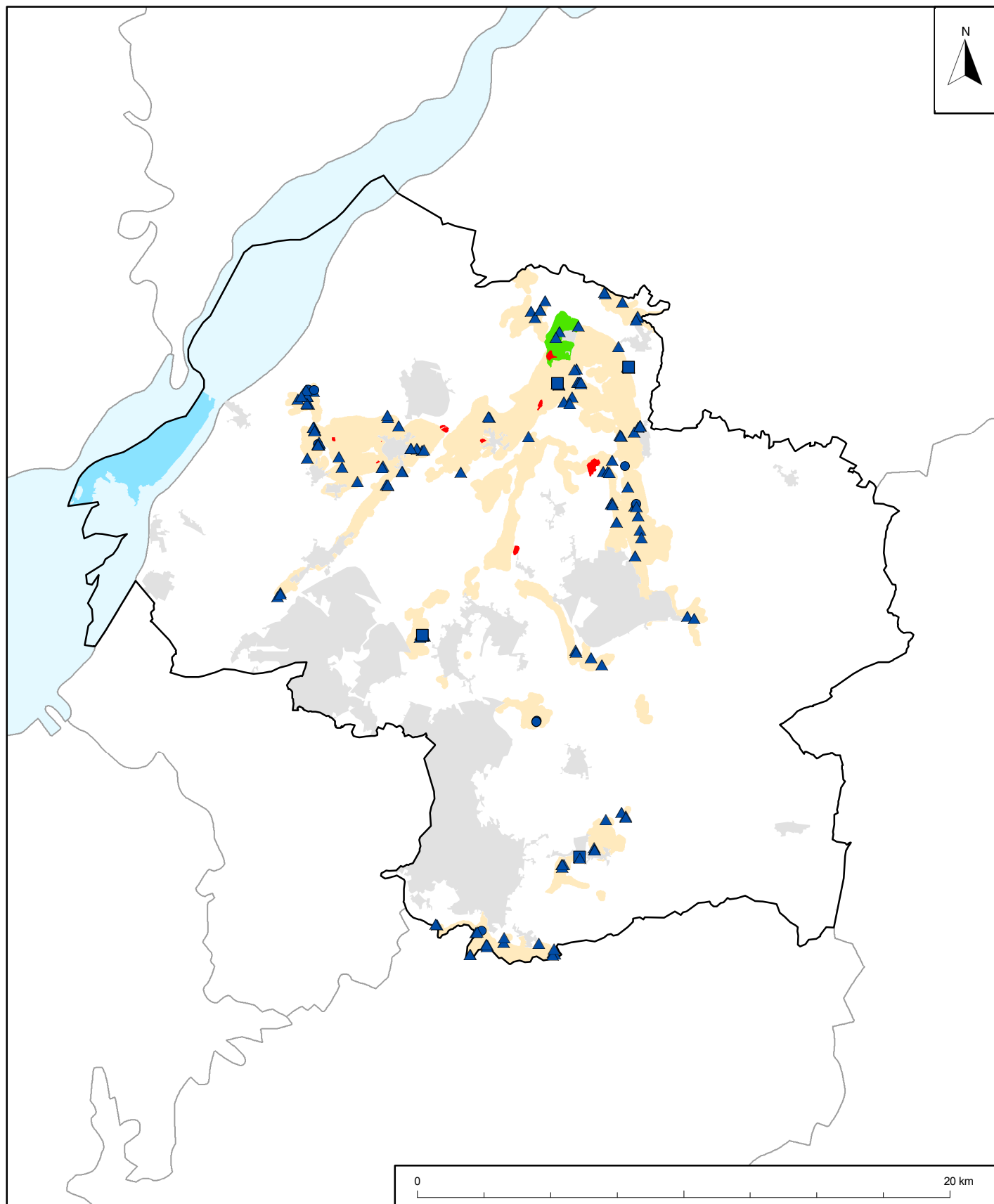
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PROJECT NO.

2845

FIGURE NO.

6



- | | |
|-----------------------------|------------------|
| ■ Grade I Listed Building | ■ Urban areas |
| ● Grade II* Listed Building | ■ Land Based ACA |
| ▲ Grade II Listed Building | ■ Severn ACA |
| ■ Scheduled Monument | |
| ■ Grade II* Registered Park | |



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Designated sites

DRAWN BY

PJM

SCALE

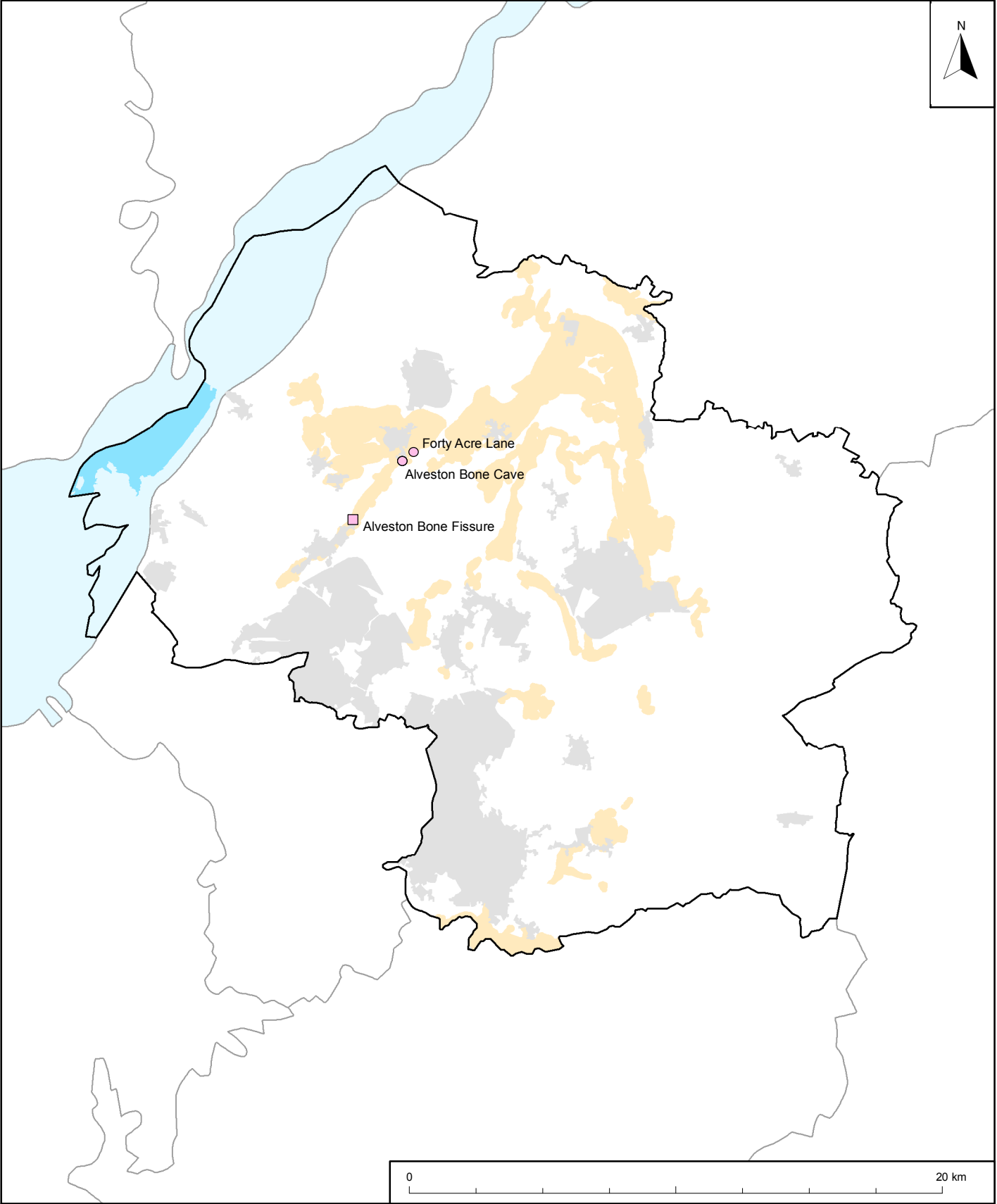
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


PROJECT NO.

2845

FIGURE NO.

7



-  Cave site with Palaeolithic finds
-  Other cave site
-  Urban areas
-  Land Based ACA
-  Severn ACA

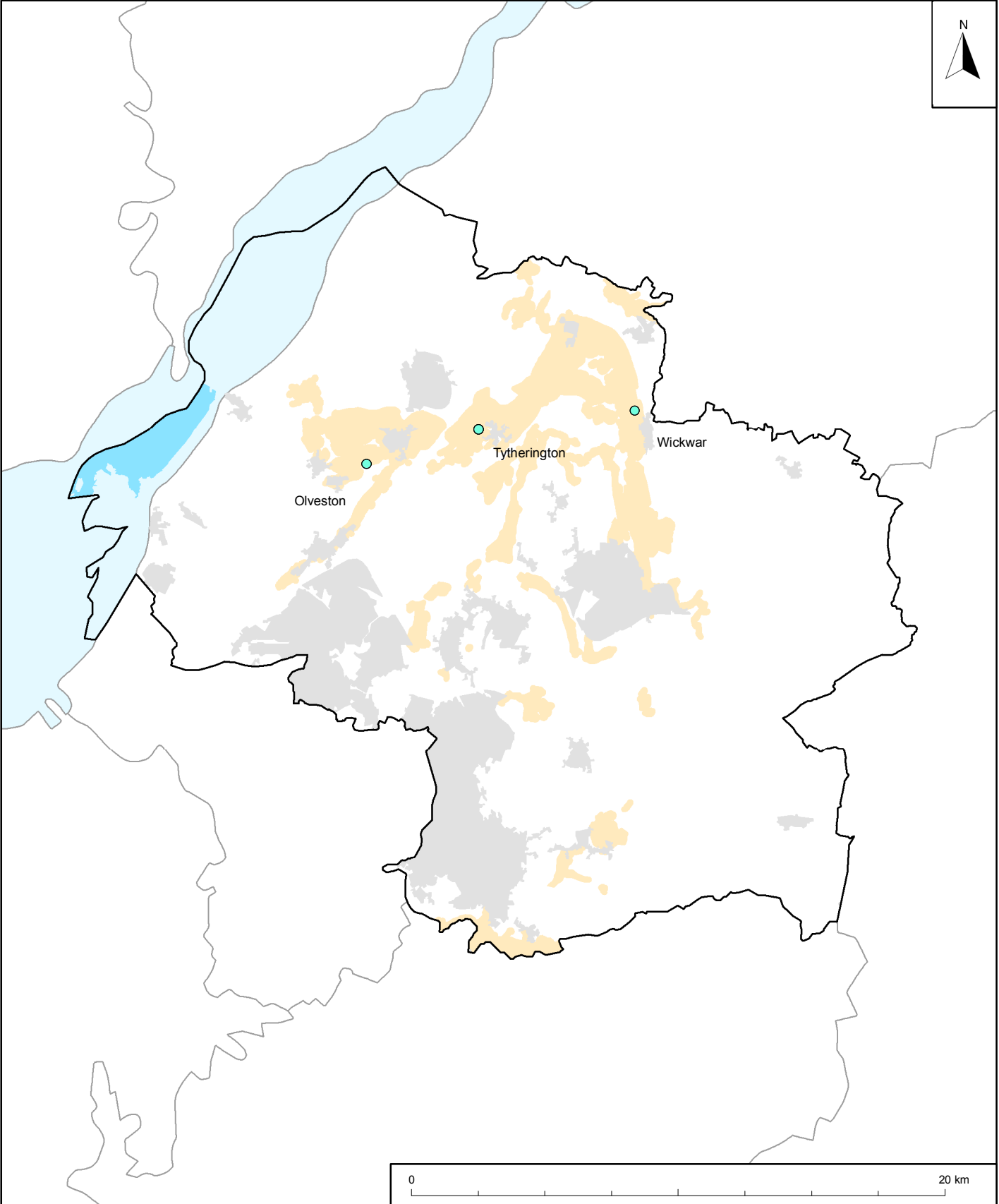


COTSWOLD ARCHAEOLOGY


PROJECT TITLE
**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE
Palaeolithic

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PJM	1:200,000@A3	2845	8



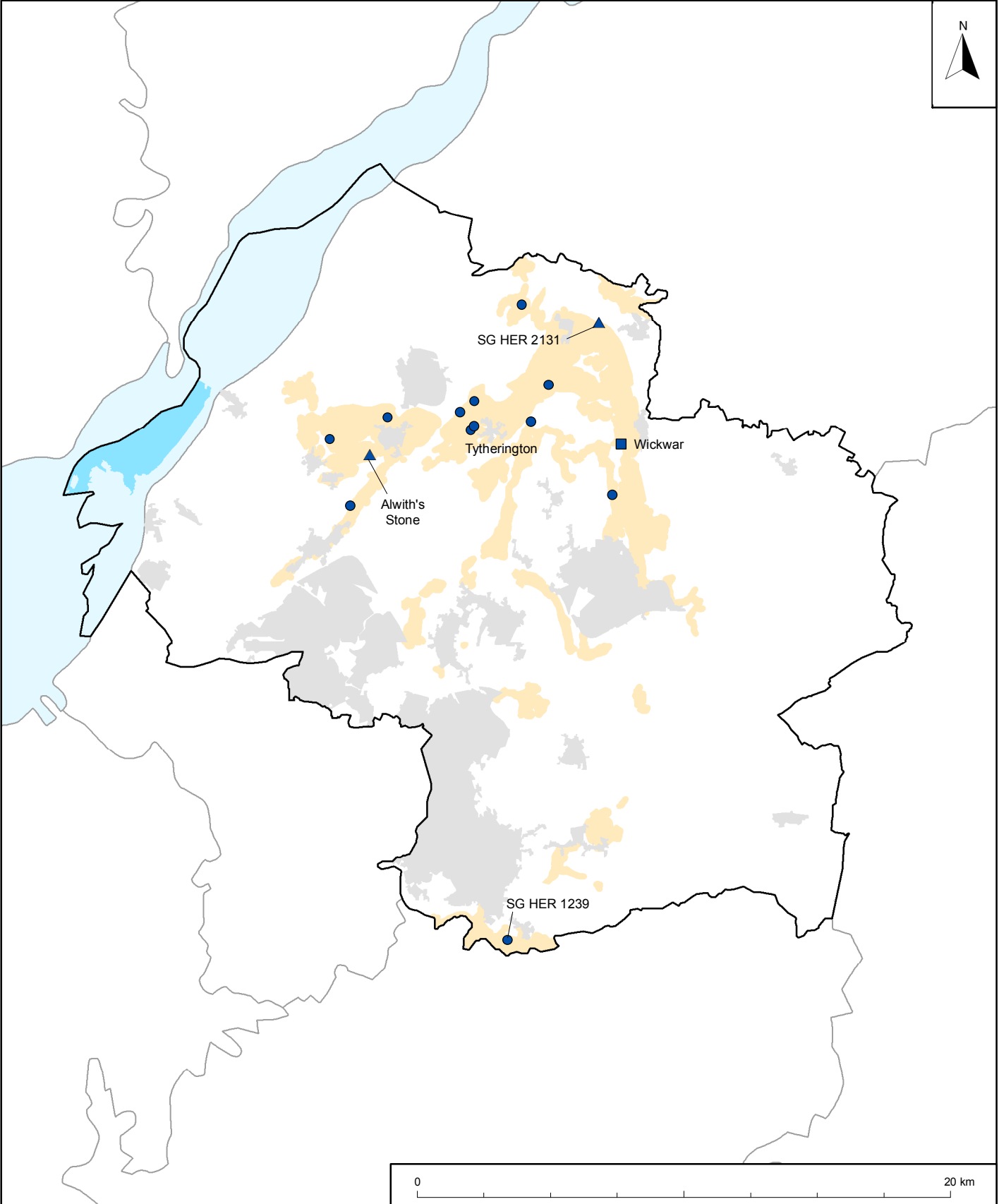
- Findspot
- Urban areas
- Land Based ACA
- Severn ACA

**COTSWOLD ARCHAEOLOGY**

PROJECT TITLE
**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE
Mesolithic

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PJM	1:200,000@A3	2845	9



- Putative Long Barrow
- ▲ Standing stone
- Findspot
- Urban areas
- Land Based ACA
- Severn ACA



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

South Gloucestershire
Aggregates Assessment

FIGURE TITLE

Neolithic

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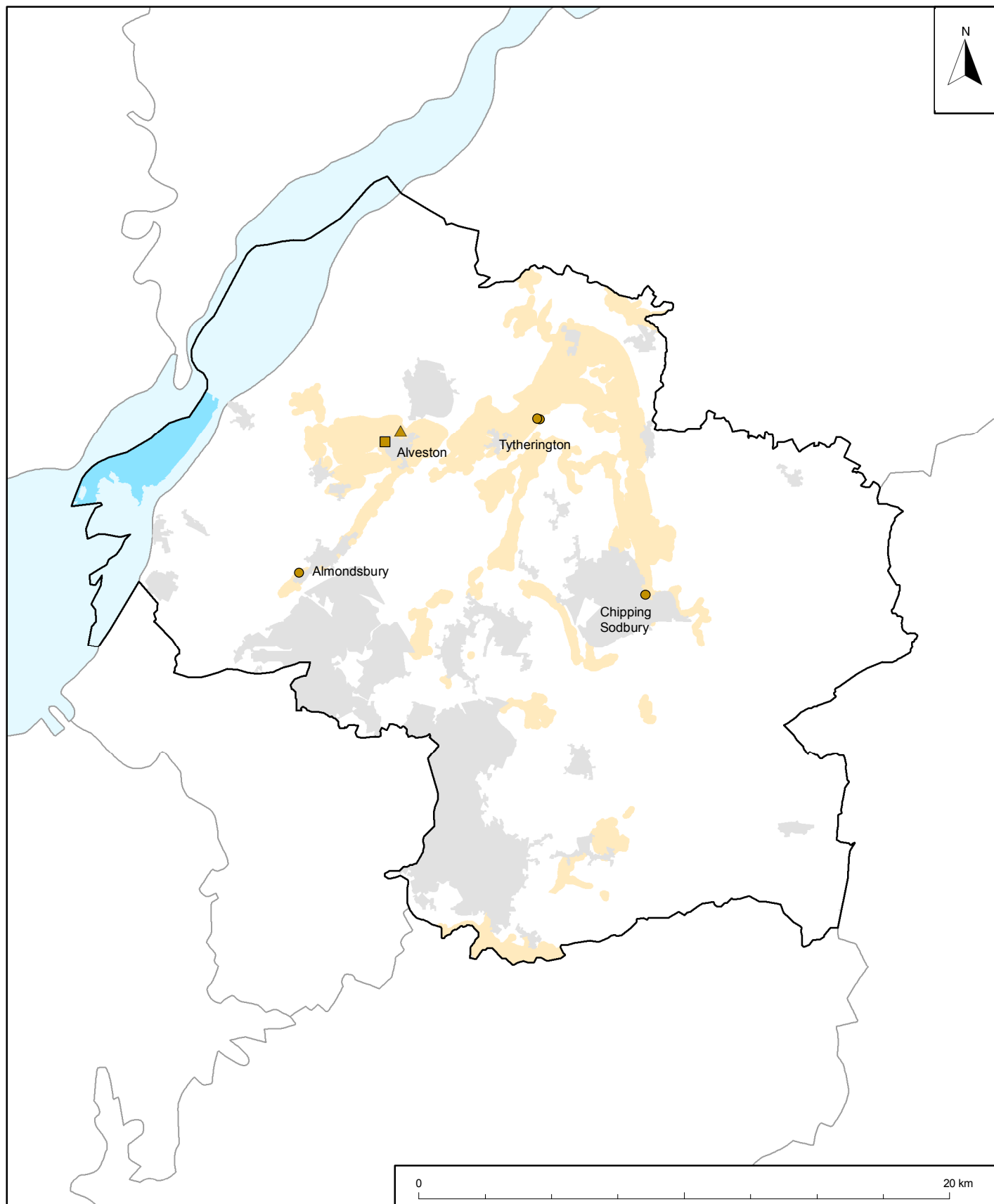
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PROJECT NO.

2845

FIGURE NO.

10



0 20 km

- Findspot
- Round Barrow
- ▲ Putative Round Barrow
- Urban areas
- Land Based ACA
- Severn ACA



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Bronze Age

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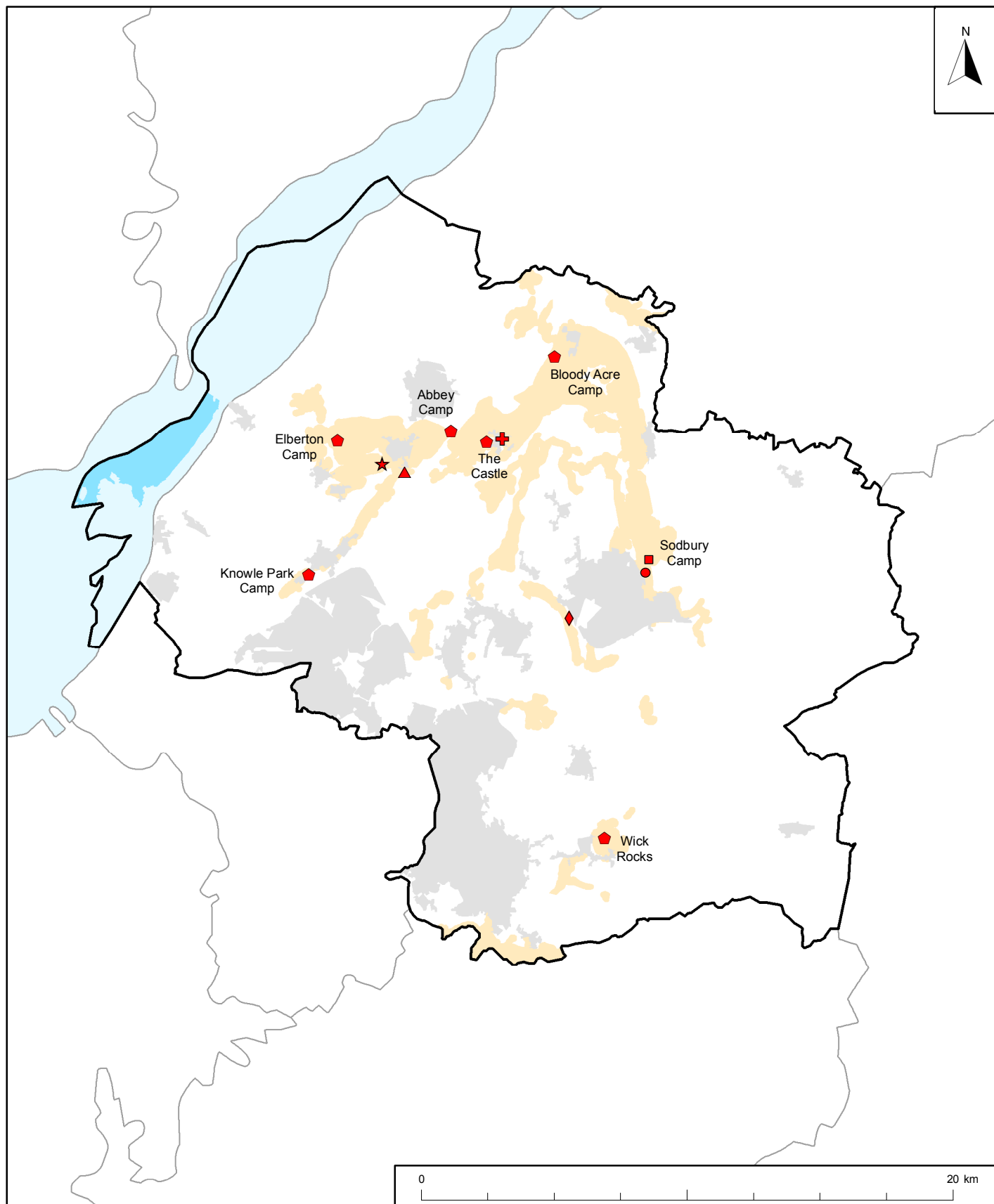
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PROJECT NO.

2845

FIGURE NO.

11



- | | |
|----------------------|----------------|
| ◆ Hillfort | Urban areas |
| ▲ Cave site | Land Based ACA |
| ■ Putative hillfort | Severn ACA |
| ★ Banjo enclosure | |
| ● Findspot | |
| ✚ Cemetery (undated) | |
| ◆ Field system | |



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Iron Age

DRAWN BY

PJM

SCALE

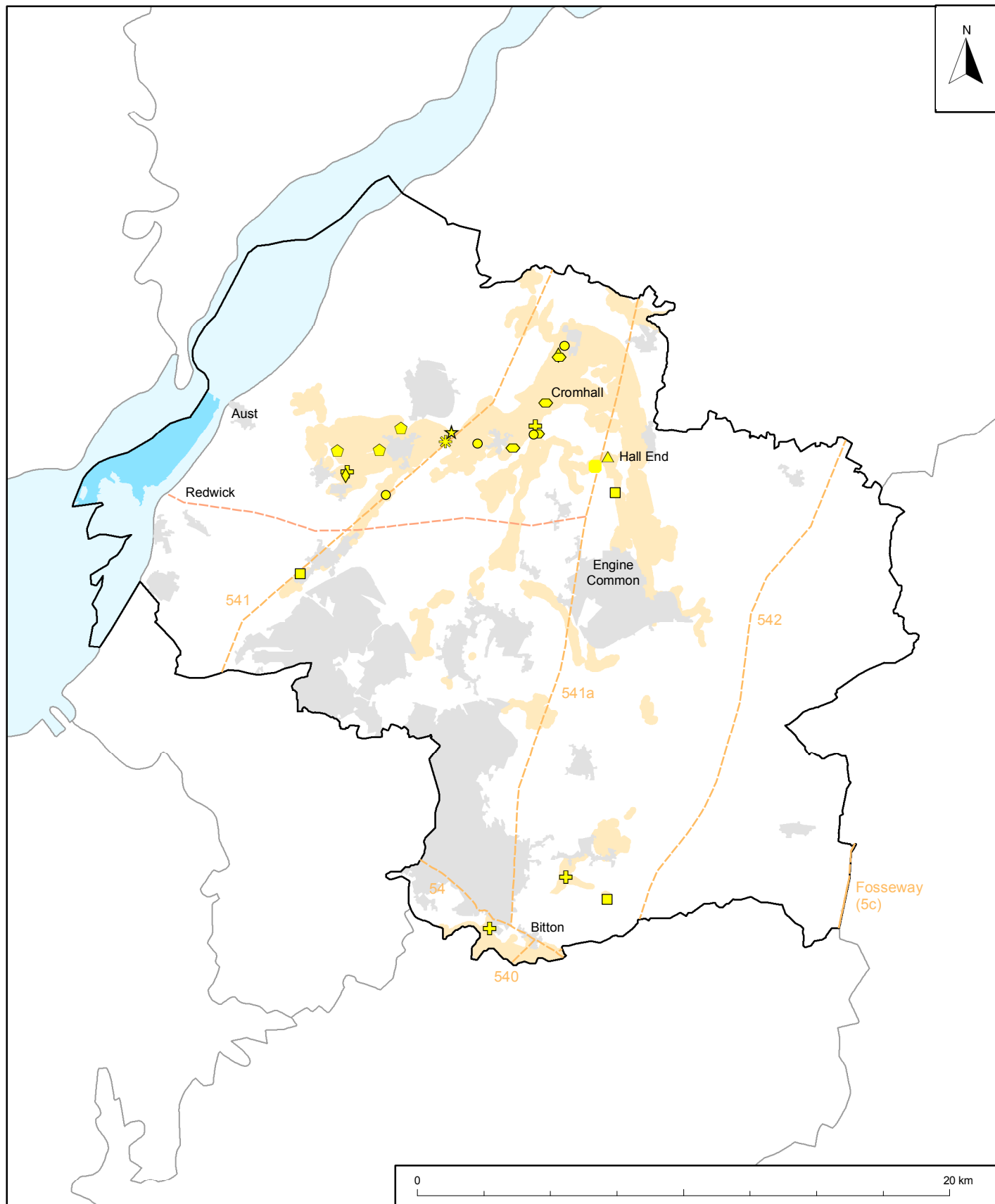
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PROJECT NO.

2845

FIGURE NO.

12



- | | |
|------------------------------------|------------------------------------|
| Villa | Key concentration of PAS findspots |
| Occupation site | Key settlement |
| Artefact scatter: poss. occupation | Roman road |
| Findspot | Putative Roman road |
| Burial | Urban areas |
| Putative temple | Land Based ACA |
| Cropmark | Severn ACA |
| Abbey Camp hillfort | |



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates assessment**

FIGURE TITLE

Roman

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SCALE

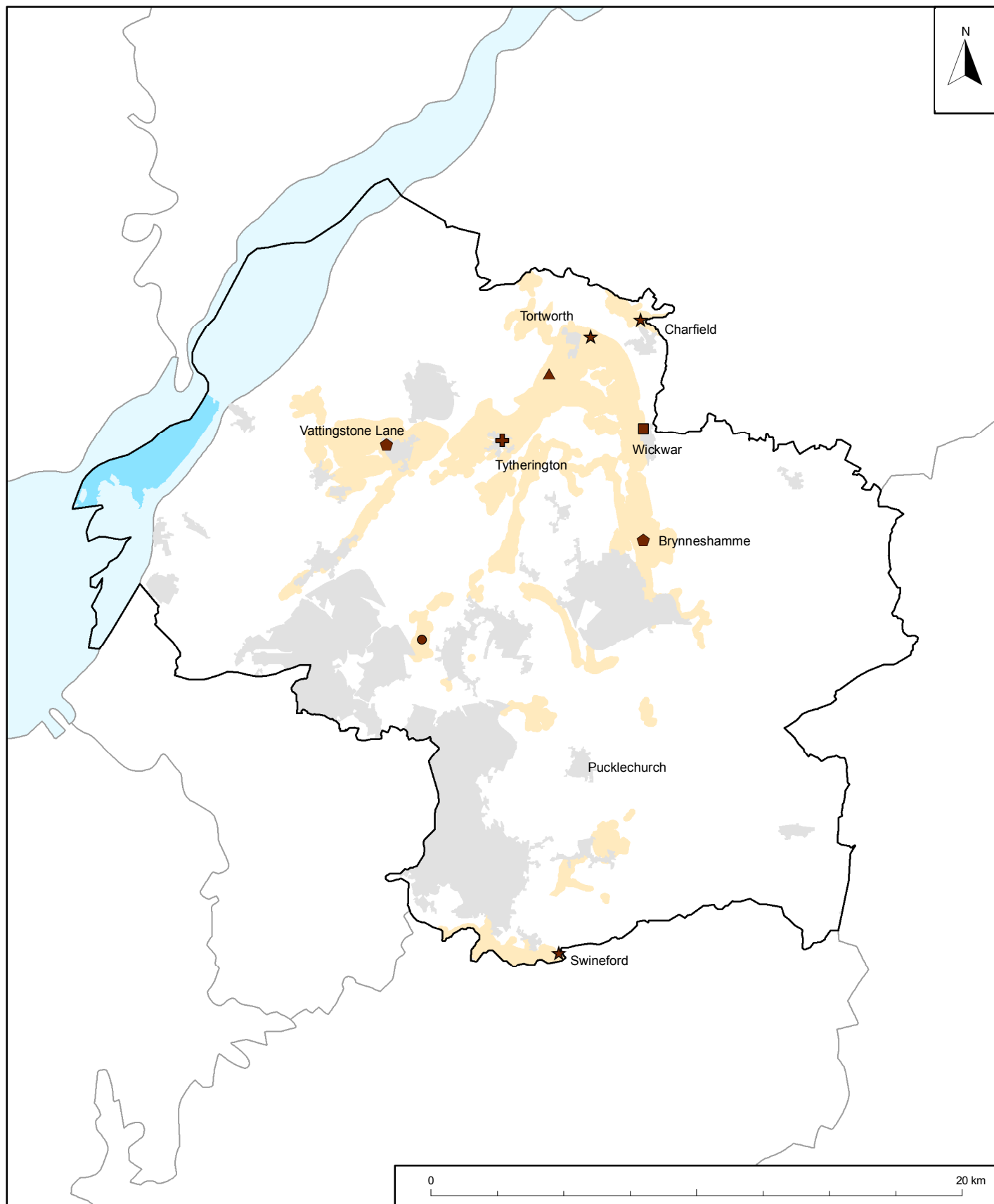
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PROJECT NO.

2845

FIGURE NO.

13



- | | |
|-------------------------|---------------------------------------|
| ■ Settlement | ■ Urban areas |
| ⬠ Documentary reference | ■ Land Based Aggregate Character Area |
| ✚ Cemetery | ■ Severn Aggregate Character Area |
| ● Findspot | |
| ★ Mill/leat | |
| ▲ Hermitage | |



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Early Medieval

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SCALE

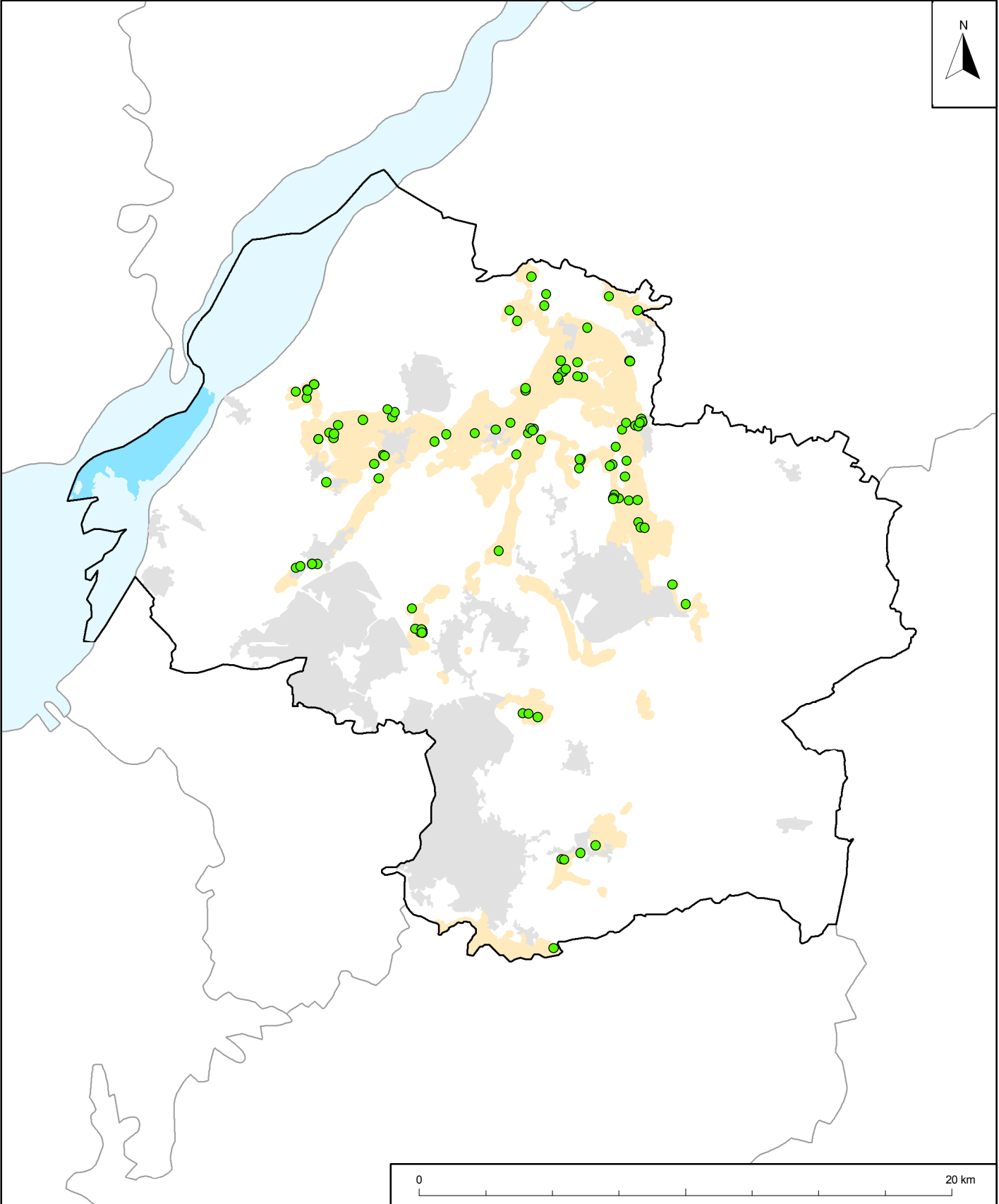
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PROJECT NO.

2845

FIGURE NO.

14



- South Gloucestershire SMR record
- Urban areas
- Land Based ACA
- Severn ACA

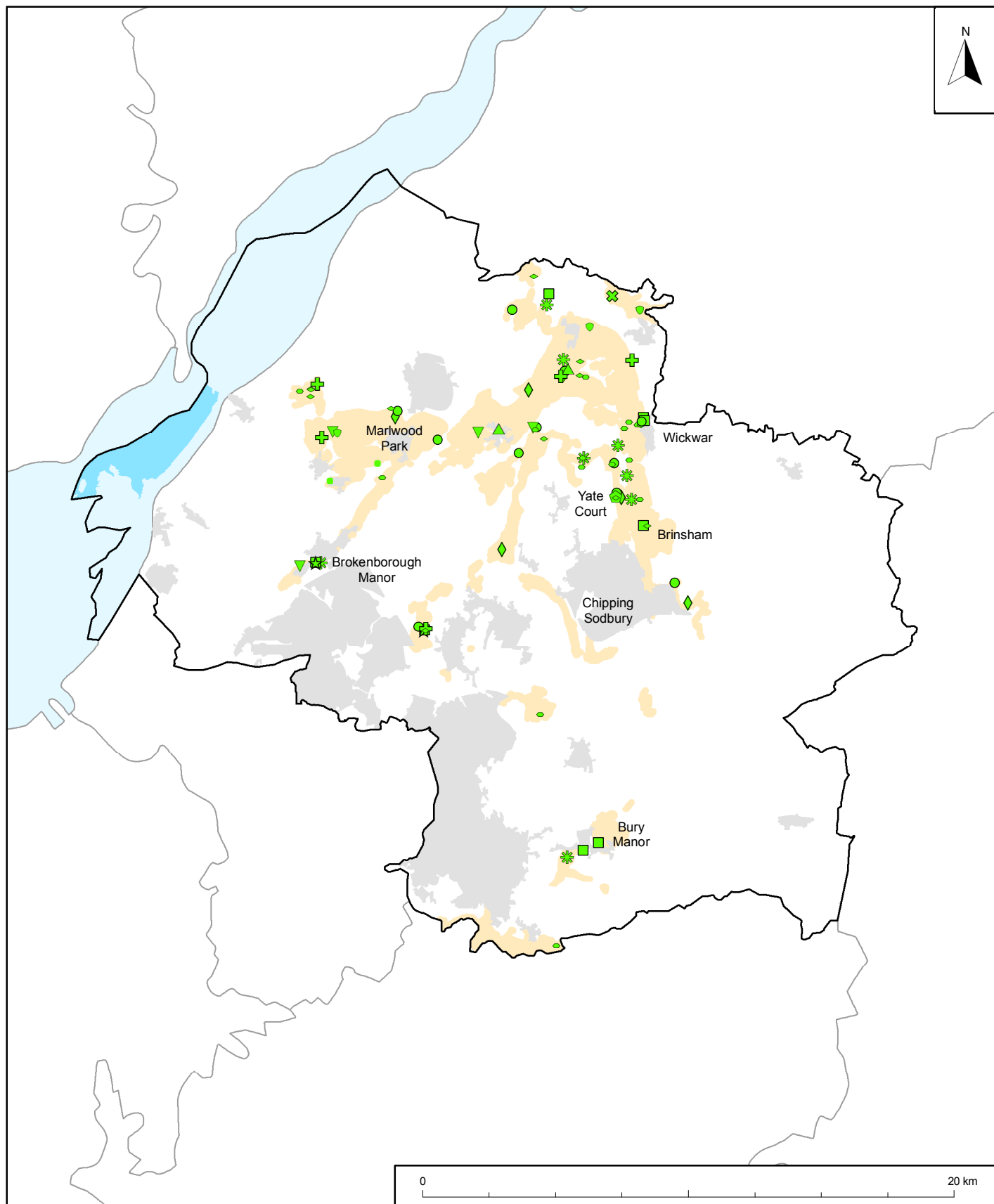


COTSWOLD ARCHAEOLOGY

PROJECT TITLE
**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE
Medieval, all sites

DRAWN BY	SCALE	PROJECT NO.	FIGURE NO.
PJM	1:200,000@A3	2845	15



- | | | |
|-----------------------|---------------------------|----------------|
| Fortified Manor House | Deserted/Shrunken village | Urban areas |
| Manor | House platform | Land Based ACA |
| Deer Park | Settlement | Severn ACA |
| Fishpond | Building | |
| Rabbit warren | Mill | |
| Dovecote | Artifact scatter | |
| Church/Chapel | Iron Working site | |



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Medieval, selected sites

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PJM

SCALE

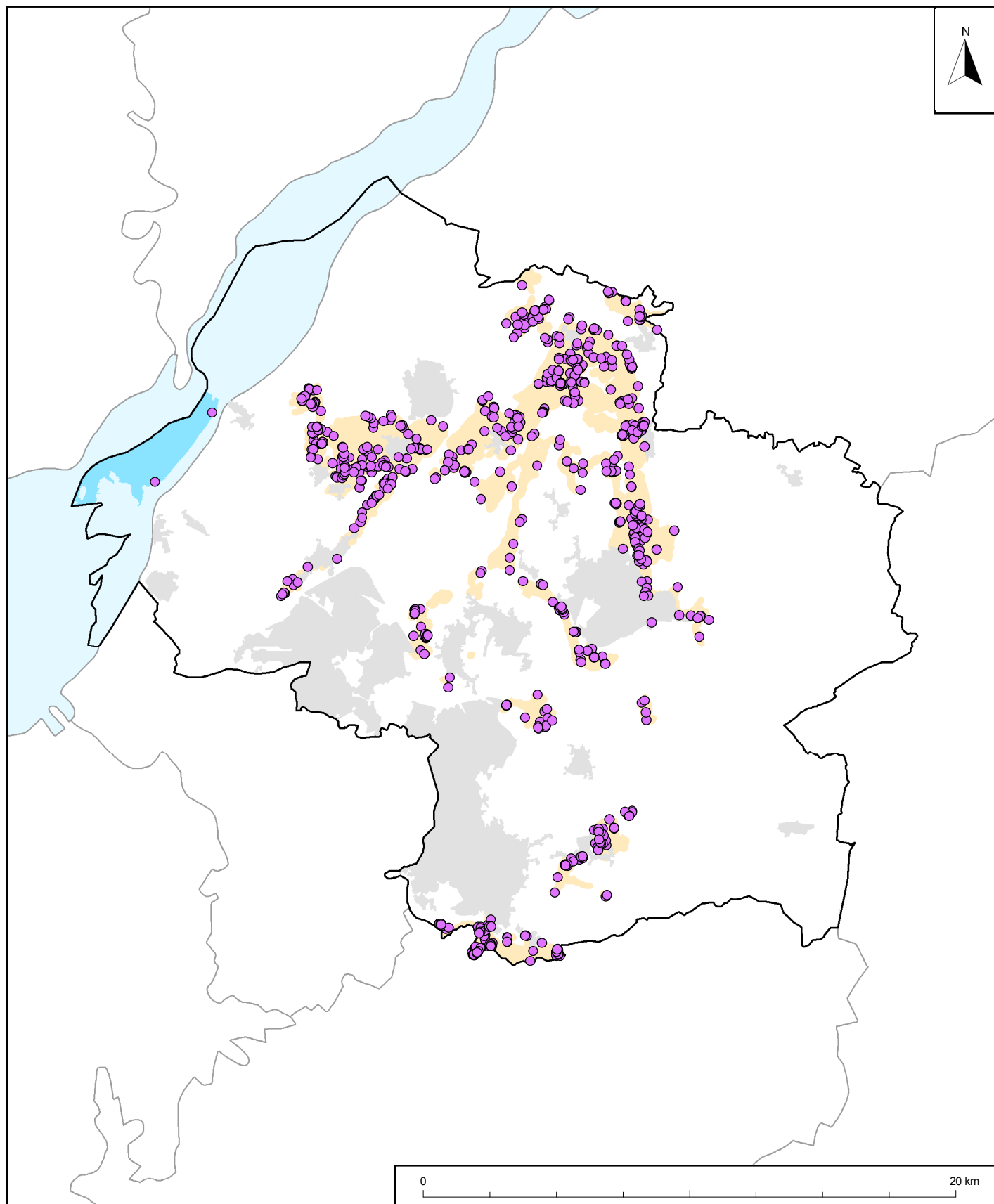
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PROJECT NO.

2845

FIGURE NO.

16



- South Gloucestershire SMR record
- Urban areas
- Land Based ACA
- Severn ACA



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Post-medieval, all sites

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PJM

SCALE

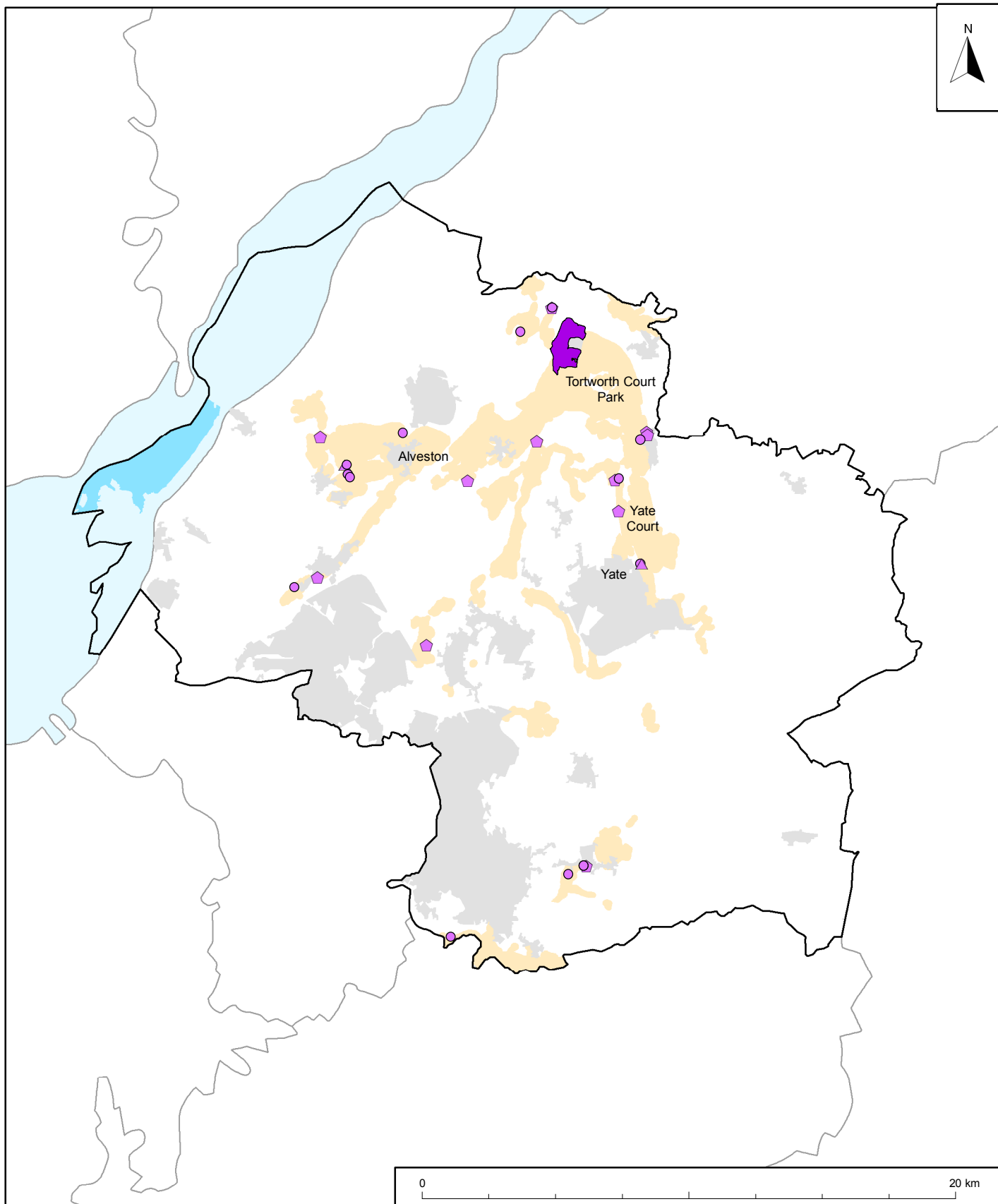
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PROJECT NO.

2845

FIGURE NO.

17



- ▲ Country House
- ◆ Manor House
- Park/Garden
- Urban areas
- Land Based ACA
- Severn ACA



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

**Post-medieval, Great houses
Parks and Gardens**

DRAWN BY

PJM

SCALE

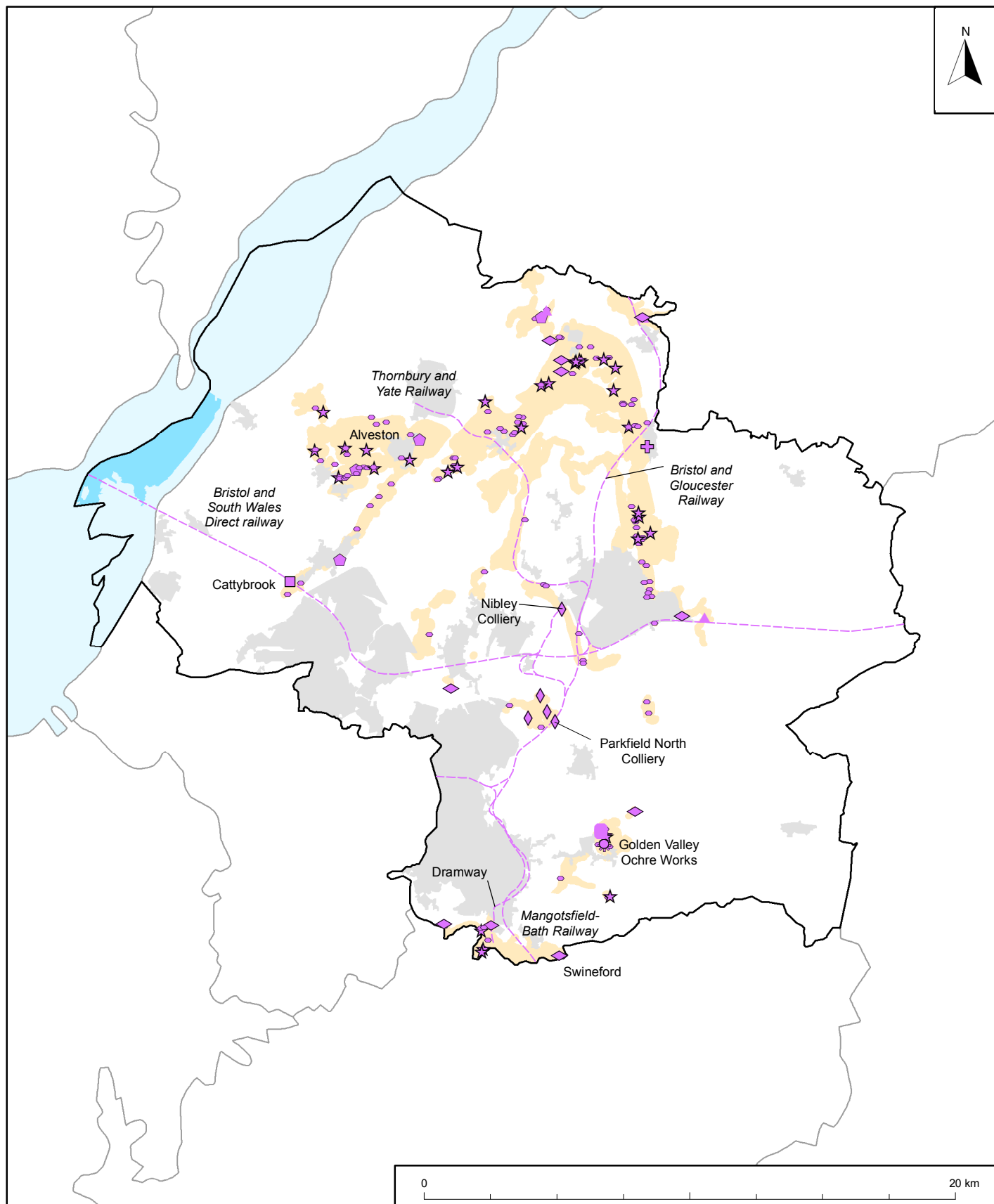
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PROJECT NO.

2845

FIGURE NO.

18



- | | | |
|-------------|-----------------------------|------------------|
| ◆ Watermill | ✱ Iron works | ■ Urban areas |
| ★ Lime kiln | ● Ochre pit | ■ Land Based ACA |
| ⬠ Windmill | ● Ochre works | ■ Severn ACA |
| ▲ Mill | ✚ Clay Tobacco Pipe factory | |
| ■ Clay pit | ● Quarry | |
| ◆ Colliery | --- Railway | |



COTSWOLD ARCHAEOLOGY

PROJECT TITLE

**South Gloucestershire
Aggregates Assessment**

FIGURE TITLE

Post-medieval, Industrial

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PJM

SCALE

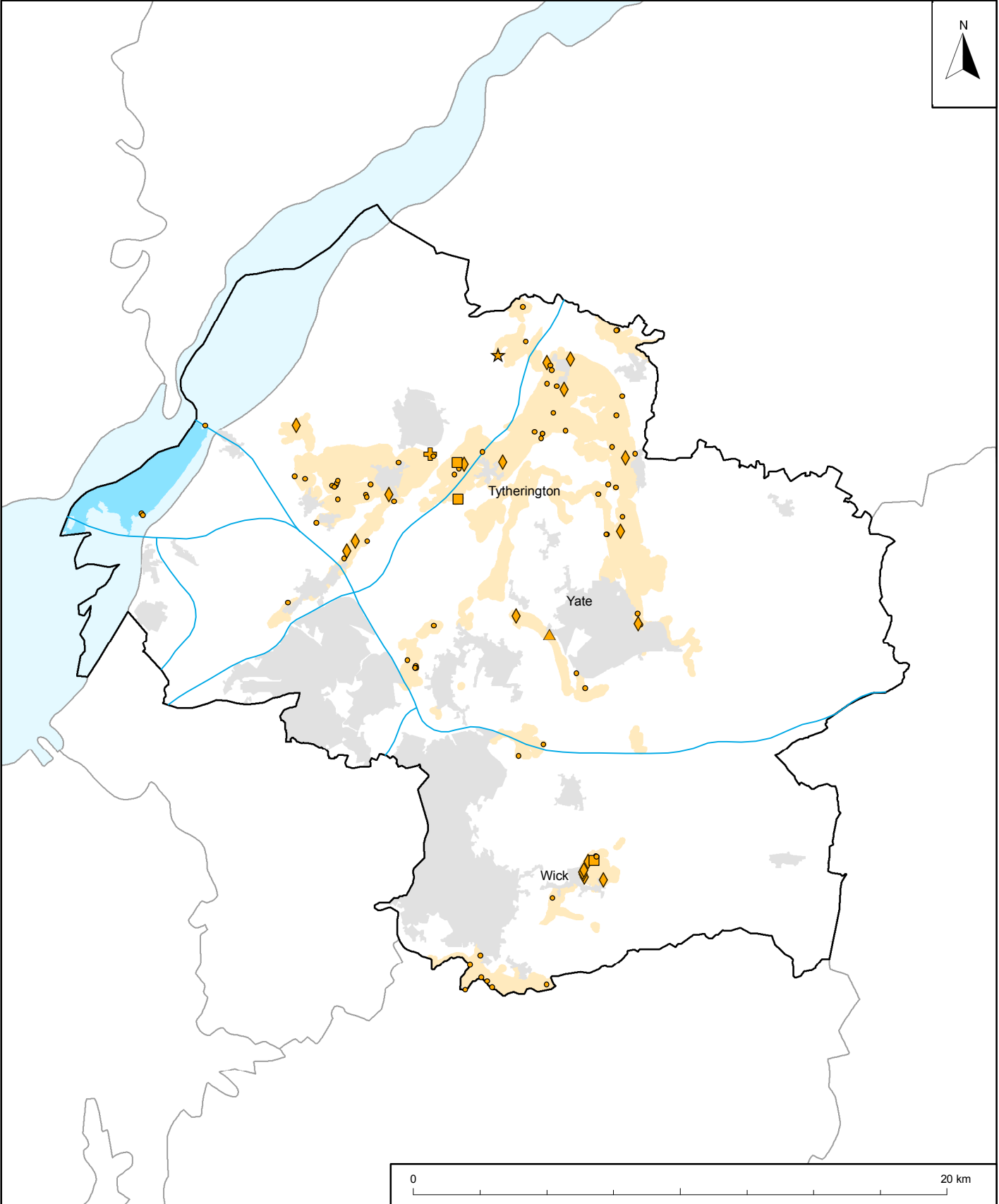
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PROJECT NO.

2845


FIGURE NO.

19



- Other site
- ◆ Quarry
- ▲ Colliery
- Lime Kiln
- ★ Civil Defence Building
- ✚ Royal Observer Corps Observation Post

- Motorway
- Urban areas
- Land Based ACA
- Severn ACA

**COTSWOLD ARCHAEOLOGY**

PROJECT TITLE
South Gloucestershire
Aggregates Assessment

FIGURE TITLE
Modern

DRAWN BY PJM	SCALE 1:200,000@A3	PROJECT NO. 2845	FIGURE NO. 20
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