NORTHLIGHT HERITAGE	**The Wemyss Caves, Fife**
REPORT: 132	**Conservation Management Plan**
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The Wemyss Caves, Fife

NGR: 344 972

Conservation Management Plan

on behalf of

Save the Wemyss Ancient Caves Society

Cover Plate: The Well Cave complex on Castle Green, with Macduff's Castle, coastal protection measures and erosional bites (Eddie Martin).

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ILLUSTRATIONS

1. Introduction

1.1. This document is a Conservation Management Plan for the Wemyss Caves, a group of six caves with statutory protection under the Ancient Monuments and Archaeological Areas Act 1979, which are part of a larger group of caves cut into the coast near East Wemyss in Fife. The Plan was commissioned by the Saves the Wemyss Ancient Caves Society (SWACS) on behalf of the Wemyss Caves Working Group (WCWG). The draft plan was produced by Northlight Heritage in February-April 2015 with the final draft produced in May 2016.

1.2. The nationally important heritage assets of the six scheduled caves are under threat from a range of processes, the main ones being coastal erosion, structural instability, vandalism and rock surface lamination. The Conservation Management Plan has been developed to establish and conserve the significance of the site and to inform the management and monitoring of the Wemyss Caves over the next five years.

1.3. It addresses three broad conservation aims, as set out in the 2014 report produced by the Wemyss Caves Working Group (WCWG 2014, paragraphs 59-61), which are structured around three levels of conservation options:

- Base level: Monitor the retreating coastline and specific heritage assets, and intervene only on a 'rescue by record' approach as and when significant archaeological deposits and features become exposed or are at risk.

- Medium level: Stabilise the structural integrity of the caves and deliver a specialist monitoring programme. The stabilisation effort would focus specifically on making safe the Well Cave, thereby also protecting Macduff's Castle from the risk of future collapse.

- Highest level: Secure the coastal stretch of c 700 m in front of the caves through the combined strategy outlined for base- and medium-level conservation, and also stabilise Macduff's Castle.

Methodology

1.4. Northlight Heritage prepared a Method Statement for production of the Conservation Management Plan in January 2015, in response to a Terms of Reference produced by the Wemyss Caves Working Group in December 2014. The Plan has been produced with reference to relevant guidance (see paragraph 1.13).

1.5. The collection of baseline data undertaken to inform the Plan included desk-based research, walkover survey, analysis using GIS and consultations. Digital data collected as part of the Wemyss 4D project has provided highly detailed spatial information for the site.

1.6. The baseline audit of the heritage assets at the Wemyss Caves was conducted primarily through desk-based research. It focused on the six scheduled caves as well as areas of archaeological potential in front of, adjacent to and above the caves. It also took into account the wider landscape context, including the other six caves in the Wemyss Caves complex and their immediate environs, extending to a buffer zone of 200 metres.

1.7. Desk-based research was undertaken to gather all available evidence about the site, including recorded archaeological features, deposits and finds; information from historic maps and other primary sources; reports on antiquarian and more recent archaeological surveys and excavations; archive photographs, and aerial photographs.

1.8. Information was collected from the following repositories and documents:

- the online database Pastmap;
- Historic Environment Scotland's database of Scheduled Monuments;
- Fife Coastal Zone Assessment Survey records;
- RCAHMS' National Collection of Aerial Photography;
- published reports on previous archaeological surveys and excavations;
- unpublished information on previous archaeological investigations, held at the National Monuments Record of Scotland;
- Historic Environment Scotland Scheduling Document *Wemyss Caves and Macduff's Castle* (1937)
- SWACS' Statement of Aspiration;
- Wemyss Coast Tourism Feasibility Study, Report to Fife Regional Council 1990 (Edward Taylor, Architect and Planning Consultant)
- Wemyss Caves, East Wemyss: Structural Study of the Coastal Caves and Macduff's Castle (Ove Arup, April 1990)
- Wemyss Caves, East Wemyss: Study of Coastal Protection Measures (Ove Arup, February 1991)
- Archaeological Shoreline Management Plans (Ian Oxley, 1998)
- Macduff's Castle: Architect's Advisory Report and Addendum (Graeme Bell, 1998 & 2013)
- Fife Coastal Path Usage and Impact Study Report (December 2007)
- A system for prioritising action at archaeological sites recorded in the Coastal Zone Assessment Surveys 1996-2009 (Tom Dawson, January 2010)
- Fife Shoreline Management Plan (December 2011)
- Coastal Flooding in Scotland: a guidance document for practitioners (CREW 2012)
- Scotland's Historic Environment Audit 2012
- Wemyss Caves: Coastal Protection Options (Murray Scott, July 2013)
- Wemyss Caves: Engineering Report (John Turner, August 2013)
- Wemyss Shoreline Archaeological Monitoring Plan (Douglas Speirs, August 2013)
- Risk Assessment (Jeanette Roberts, September 2013)
- Health & Safety Advisory Report (Jeanette Roberts, September 2013)

- East Wemyss Caves, Stone Carvings (Stephen Gordon, November 2013)
- Coastal erosion in Scotland and human responses (Professor Jim Hansom, December 2013)
- Coastal erosion in Fife and natural heritage designations (David Shepherd, December 2013)
- Coastal erosion and specific responses to historic environment sites in Scotland (Tom Dawson, December 2013)
- Wemyss Caves Coastal interim protection works: Specification and Quote prepared for Fife Council, January 2104
- Report of the Wemyss Caves Working Group to the Cabinet Secretary for Culture and External Affairs on the options and recommendation for the management of the Wemyss Caves, Fife (Wemyss Caves Working Group, March 2014)
- A summary of Coast Protection Interventions at the Wemyss Caves 1998-1996 (Douglas Speirs, July 2014)

1.9. Walkover survey was carried out over two days in February in order to identify, characterise, map and assess heritage assets at the site. This resulted in the identification of terrain units, including individual caves, the areas outside and above them and stretches of intervening raised beach and coastline. Existing descriptions of heritage assets (from Canmore and the CZAS records) were checked and additional observations recorded for individual and group assets and for each cave as a whole. Features were recorded by photograph and their location, condition and any observable threats were recorded.

1.10. All spatial data collected during the baseline audit were compiled into a Geographic Information System (GIS) to facilitate analysis.

1.11. Consultation during the preparation of this Conservation Management Plan has been carried out with:

- Stephen Gordon, Head of Applied Conservation, Historic Environment Scotland
- Professor Jim Hansom, School of Geographical & Earth Sciences, University of Glasgow
- Dr Anna Ritchie, specialist in early medieval and Pictish archaeology
- Dr Meggen Gondek, Reader at the Department of Archaeology, University of Chester

1.12. The Conservation Management Plan follows guidance provided in Historic Environment Scotland's *A Guide to the Preparation of Conservation Plans* (2000) and the template developed by Historic Environment Scotland (formerly Historic Environment Scotland) for assessing significance (2014), which is based on internationally recognised models.

1.13. It is informed by policies and guidance including:

- *Scottish Historic Environment Policy* (Historic Environment Scotland 2011)
- *Guide to the Preparation of Conservation Plans* (Historic Environment Scotland 2000)
- *Setting: Managing Change in the Historic Environment Guidance Note* (Historic Environment Scotland 2010)
- *Carved Stones: Scottish Executive Policy and Guidance* (Historic Environment Scotland 2005)
- *Conservation Principles: policies and guidance* (English Heritage 2008)
- *Planning Advice Note PAN 2/2011: Planning and Archaeology* (The Scottish Government 2011)
- *The Setting of Heritage Assets* (English Heritage 2011)
- *Conservation Plan Guidance* (Heritage Lottery Fund 2012)

- *Understanding the Archaeology of Landscapes: a guide to good recording practice* (English Heritage 2007)
- *Recording Archaeological Field Monuments: a descriptive specification* (RCHME 1999)
- *Introductions to Heritage Assets: Caves, Fissures and Rockshelters* (English Heritage 2011)
- *Standard and Guidance for Stewardship of the Historic Environment* (CiFA, October 2008)
- *Standard and Guidance for Historic Environment Desk-based Assessment* (CiFA, November 2012)
- *Standard and Guidance for Commissioning Work on, or Providing Consultancy Advice on, Archaeology and the Historic Environment* (CiFA, October 2013)

Location, topography and geology

1.14. The Wemyss Caves are set into sandstone cliffs on the north shore of the Firth of Forth, below the village of East Wemyss. They are part of a larger complex of 12 known caves, some of which are no longer accessible (Illus 1).

1.15. The caves were created by wave action between 6800-5700 BP, during the formation of the Main Postglacial Shoreline (the 25-foot raised beach) (Cullingford et al 1991). The cliffs into which they are cut are sedimentary bedrock of the Scottish Middle Coal Measures Formation, which formed 310-312 million years ago in the Carboniferous period when the local environment was dominated by swamps, estuaries and deltas. The bedrock's bedding planes dip at an angle of 12˚ south-eastward, and it consists of moderately weak, pinkish red, coarse-grained sandstone with occasional layers of fine conglomerate (Ove Arup 1990).

1.16. The superficial deposits above the cliffs consist of Devensian raised marine deposits of clay, silt, sand and gravel which formed up to two million years ago when the local environment was dominated by shallow seas, while the superficial geology in front of the caves comprises marine beach deposits of gravel and silt, formed up to three million years ago when shoreline environments dominated (http://www.bgs.ac.uk/). Archaeological excavations have shown that a considerable amount of colluvium derived from landslip overlies the raised beach deposits (see paragraphs 3.16-17).

1.17. The six caves which are the main focus of this Plan extend along a 660-metre stretch of shoreline, from Court Cave in the south-west to Gasworks Cave in the north-east (Illus 2). The caves, with their national grid references, are:

Court Cave	NT 34269 96942
Doo Cave (or Dovecot Cave)	NT 34329 97002
Well Cave	NT 34426 97136
Jonathan's Cave (or Cat Cave / Factor's Cave)	NT 34561 97232
Sliding Cave (or Sloping Cave)	NT 34613 97267
Gasworks Cave	NT 34747 97385

1.18. Adjoining the Doo Cave on the west is West Doo Cave (Illus 2). It contains a number of important early carvings, but its entrances collapsed during World War I due to the vibrations of a gun emplacement on the cliff top directly above (http://www.wemysscaves.info/html/doo_cave.html) and it is no longer accessible.

1.19. The Well Cave is part of a complex of caves at the back of the raised beach embayment known as Castle Green. The other caves in the complex contain no recorded carvings; they include Well Cave 2 (also known as Fern Cave), a shallow rock shelter; Well Cave 3 (also known as Unnamed Cave), a low chamber with its entrance largely blocked with debris and containing shallow deposits at its rear, and Well Cave 4, the entrance to which is almost entirely blocked.

1.20. A cave known as New Cave is now visible to the east of Doo Cave, where the path ascends to Macduff's Castle (NGR NT 34349 97060). Another known as Whitecove Cave lies at the end of the quarry between Jonathan's Cave and Sliding Cave (NGR NT 3465 9734), but it is now largely blocked. Although there are anecdotal accounts of burials having been found in it (Rankin 1988, 36), these are not recorded in the NMRS entry for the cave (NT39NW 15).

1.21. Two other caves containing early carvings, both now blocked, are known to the south-west of East Wemyss. Glass Cave (NGR: NT 3340 9585), one of the largest in the area, collapsed due to subsidence caused by mining activity in the late 19th century (Guttmann 2002, 112). It contained carvings of crosses and Pictish symbols. The Michael Cave (NGR: NT 3342 9587), which contained carvings as well as occupation deposits, was filled in with concrete to support boilers built directly above it for the mine (ibid). The carvings were identified as a cup-and-ring of probable Bronze Age date and what may have been a hunting scene. The earliest date carved inside it is 1690 (Deas 1948).

Ownership, management and stakeholders

1.22. The caves are owned by the Wemyss Estates and managed by Savills UK. The estates have no active use of the land.

1.23. Fife Council maintains a walking route, the Fife Coastal Path, along the coast through the independent environmental charity Fife Coast and Countryside Trust (http://www.fifecoastalpath.co.uk/). The path runs along the foreshore in front of Court and Doo Caves and then climbs via steps to Macduff's Castle and continues east along the high ground. Another path under separate ownership descends from the castle to Well Green and continues east along the foreshore. The ownership of this eastern section is currently unclear.

1.24. A number of stakeholder groups have contributed to consideration of the caves' management needs, which led to the commission of this Plan. The Save the Wemyss Ancient Caves Society (SWACS) was formed in 1986 after vandals drove a car into Jonathan's Cave and set it on fire, destroying several Pictish carvings. SWACS works for the preservation and recording of the caves and the carvings they contain and for promoting education about this unique set of heritage assets.

1.25. The Wemyss Caves Working Group (WCWG) was formed in 2013 to develop options and recommendations for the management of the caves, in response to a request to Historic Environment Scotland by the Cabinet Secretary for Culture and External Affairs following concerns

about their condition and future. The group is made up of representatives from Wemyss Estate, SWACS, Scottish Coastal Archaeology and the Problem of Erosion (SCAPE), Fife Coast and Countryside Trust, Fife Council and Historic Environment Scotland. They bring a wide range of knowledge and experience of the regional context and of the caves themselves, the coastal dynamics and other threats.

1.26. In 2014, a report was compiled by the WCWG for the Cabinet Secretary for Culture and External Affairs on options and recommendations for the management of the Wemyss Caves, Fife. This drew on a review of relevant evidence, advice from specialist reports, an informal survey of public attitudes towards the caves (from questions posed at SWACS open days) and a bilateral meeting with stakeholders. Attendees included the members of the WCWG as well as three local councillors, the local Member of Scottish Parliament and the Cabinet Secretary for Culture and External Affairs.

Statutory and policy frameworks

1.27. The core group of six caves is considered to be of national importance and is designated as a scheduled monument (SM 817) under the Ancient Monuments and Archaeological Areas Act 1979. A key element of this national importance rests in the carvings they contain, which were created at different points arguably over the last 4,000 years, from prehistory to the early modern period. A number of these date to the Pictish period, between the 6th and 10th centuries AD, and are rare examples of Pictish carvings that were not intended as high art or for display on symbol stones. The archaeological deposits recorded inside and outside the caves contribute further to their national significance.

1.28. Macduff's Castle stands on the cliff above the Well Cave complex and is included in the same scheduling designation as the caves. It is also listed at Category B (16707). Although this Plan does not directly address the conservation management needs of the castle, it is closely linked to the heritage of the caves through physical proximity and historical connections.

1.29. Most of the caves lie within the Firth of Forth Site of Special Scientific Interest (SSSI), which extends along the north shore of the firth from Alloa as far as Crail. Its 49 notified features include botanically rich coastal grasslands; a wide range of geology, including the Upper Carboniferous bedrock into which the caves are cut, and a variety of coastal habitats and feeding grounds for nationally and internationally important numbers of wintering and migratory birds (Scottish Natural Heritage 2011). The area also forms part of the Firth of Forth Special Protection Area (SPA), a European Union Directive on the Conservation of Wild Birds that covers the complex of estuarine and coastal habitats stretching eastwards from Alloa along the Fife and East Lothian coasts.

1.30. Responsibility for the management of the heritage assets at Wemyss, as with all archaeological sites and monuments in Scotland, rests primarily with the landowner. However, the caves' scheduled status neither carries a compulsory management regime nor negates the owners' rights and responsibilities. Historic Environment Scotland's role is to provide support and advice to stakeholders and to act as regulatory authority for works that could have a direct physical impact on the scheduled sections of the Wemyss Caves complex.

1.31. Key principles of the *Scottish Historic Environment Policy* state that 'there should be a presumption

in favour of preservation of individual historic assets and also the pattern of the wider historic environment; no historic asset should be lost or radically changed without adequate consideration of its significance and of all the means available to manage and conserve it.' Where continued preservation becomes impossible or where loss is occurring through change and decay, conservation measures should make provision for recording of heritage assets and ensure that all records are properly archived and accessible (Historic Environment Scotland 2011, paragraph 1.14.b).

1.32. In the last decade, Fife Council has adopted the latter approach of rescue by record. Following attempts at *in-situ* preservation in the 1990s and early 2000s - some designed to protect the caves and some to protect other assets (see Table 5) - the Council took the view that further coastal protection measures were not the best value management solution, nor would they protect the caves against the other threats of rock surface erosion, vandalism and instability (Speirs 2004).

1.33. In recent decades, Historic Environment Scotland's response to the considerable threat of coastal erosion upon the historic environment has been to sponsor a series of Coastal Zone Assessment Surveys (CZAS) to create a baseline record of heritage assets and impacts upon them, undertake focal studies and fund rescue excavations of several eroding sites. Historic Environment Scotland maintains or contributes towards coastal defences at a limited number of monuments in State care for which it has responsibility. Such measures are undertaken to conserve the cultural significance of nationally or internationally important sites, but also serve to maintain important economic and social benefits. In general, the use of coastal defences is not considered a financially viable medium- or long-term option for the vast majority of archaeological sites (WCWG 2014, paragraphs 49-50).

1.34. Under the Coast Protection Act 1949, local authorities can execute coastal defence works with funding from a block grant from the Scottish Government. Non-statutory Shoreline Management Plans are the tool through which these powers are implemented. The Fife Shoreline Management Plan 2 (Mouchel 2011) divides the shoreline into Policy Units and presents the preferred policy and its implications for each, based on the assessment of costs and benefits for economic and residential interests. For Policy Unit 30 East Wemyss to Buckhaven, which includes the entrances to all six caves, the plan proposes a No Active Intervention (NAI) policy. This accepts that as the Wemyss Caves will be subject to coastal flooding and erosion, provision will be given for Historic Environment Scotland to defend the site as required.

1.35. The position of the Wemyss Caves Working Group (WCWG 2014) is that the Fife Council policy neither adequately took into account all of the interests and values of Policy Unit 30, nor recognised that multiple partners held an interest in the site's management. It agreed that the results of an options appraisal of engineering solutions, conducted for the WCWG report (2014, paragraphs 23-27), should contribute to the next version of the Shoreline Management Plan.

Access to the caves

1.36. The caves are accessible via a public footpath that leads north-east from a car park at the foot of East Brae, where display boards provide visitors with information about the site and its archaeology. The retention of these is currently under review, as they can be seen as encouraging visits to caves which may not be safe for public access.

1.37. The Fife Coastal Path runs along the foreshore outside the entrances to Court Cave and Doo Cave, ascends the slope to skirt Macduff's Castle and then continues north-east along the high ground; this forms part of the 'Burntisland to Buckhaven' leg of the Fife Coastal Path. Another path leads visitors down slope to Castle Green and the Well Cave complex. Construction of the section of path between Doo Cave and Well Cave was commissioned by SWACS with external funding, after wave action washed out a large section of intervening foreshore behind a wall that protects a now-disused sewer pipe.

1.38. From the Well Cave complex, an informal path continues north-eastward to Jonathan's Cave, following the route of a vehicle track that served the former gasworks at the north-east end of the site. Access to Sliding Cave and Gasworks Cave is now only possible by walking along the beach, with some scrambling required.

1.39. SWACS maintains a visitor centre in the Wemyss Environmental Centre in the basement of East Wemyss Primary School, to which it has access seven Sundays per year. The centre is about ten minutes' walk from the nearest cave. It has some catering and toilet facilities, but disabled access is extremely difficult. The centre displays artefacts discovered locally (most of them owned by SWACS) and information about local heritage, especially the caves. SWACS runs tours of the caves and gives talks on seven Open Sundays each year, as well as at other times. The Open Sundays attract about 60 visitors each (over 400 per year), including tourists from other areas as well as repeat local visitors (http://www.wemysscaves.org; WCWG 2014).

Amenity value

1.40. The caves and the Fife Coastal Path, which is used regularly by dog-walkers, ramblers, birdwatchers and others, provide an important and valued amenity for East Wemyss village and the region as a whole, with associated social and economic benefits.

1.41 Summary

The assessment of significance for the Wemyss Caves is based upon a study of the character of the caves, the site's heritage assets and the results of previous investigations. These are drawn together to form an understanding of the site's chronology from its earlier prehistoric use to the present. A summary of the heritage assets and their assessed values, importance and significance is presented below.

Heritage Assets	Location	Values	Importance	Significance
Ancient carvings of unknown date	Court Cave Jonathan's Cave	Evidential	National	Moderate
Pictish carvings	Court Cave Jonathan's Cave Sliding Cave	Evidential Historical Artistic	National	Exceptional
Early Christian carvings	Jonathan's Cave ?Court Cave	Evidential Historical Artistic	National	Exceptional
Aumbreys	Court Cave	Historical	Regional	Moderate
18th/19th C graffiti	Well Cave	Historical	Local	Moderate
Cleats	All caves	Historical	Local	Moderate
Nesting boxes	Doo Cave	Historical	Regional	Moderate
In-situ archaeological deposits	All caves	Evidential	National	Exceptional
In-situ archaeological deposits	Raised beach Foreshore	Evidential	Regional	Exceptional
Archaeological material in secondary contexts	Raised beach Foreshore	Evidential	Local	Moderate
Mining waste deposits	Foreshore	Historical	Local	Neutral
Setting of the caves	N/A	Landscape Aesthetic	Regional	Considerable

The exceptional significance of the caves, early carvings and in-situ archaeological deposits derives from the rare juxtaposition of informal symbols still in their context of creation, along with the site's geographical position relative to contemporary Pictland and the enormous potential for knowledge of the Picts to emerge from its further study. The site's historical value and associations range from Iron Age food and farming to medieval pilgrimage to 19th-century mining.

Analysis and assessment of the site's conservation needs has confirmed that coastal erosion, subsidence and rock surface erosion through salt crystallisation, water action and biological activity pose serious threats to the caves and heritage assets. The Action Plan addresses base, medium and high levels of conservation and is structured according to four key objectives:

- Secure the stability of the caves, carvings and archaeological deposits
- Manage and ensure safe access to the caves and carvings
- Increase knowledge of the character and significance of the cultural heritage at the Wemyss Caves to support their management
- Share and celebrate the heritage of the Wemyss Caves

2. Understanding the Site

2.1. This section draws together the findings of previous surveys and excavations – both inside the Wemyss Caves and along the adjacent foreshore – into an understanding of how the site has developed and been used over time. It forms the basis for the assessment of significance which follows (section 4).

2.2. Kirkcaldy Museum holds artefacts and archival material relating to the caves, which have not been examined as part of this study but which could add to the understanding of the site presented here.

Antiquarian and modern surveys

19th- and early 20th-century surveys

2.3. The Wemyss Caves were first examined and recorded by antiquarian archaeologists in the mid-19th century. In 1856, the genealogist and scholar John Stuart published his first volume of *The Sculptured Stones of Scotland*, which contained the first systematic study of Pictish symbol stones and provided a valuable reference work for other researchers. He visited the caves, recognised many of the carvings as belonging to the Pictish repertoire and described them in his second volume (Stuart 1867).

2.4. The pioneering medic Professor James Young Simpson visited the caves in 1864 and recorded Pictish symbols and other carvings in Jonathan's Cave, Court Cave, West Doo Cave, Well Cave and Sliding Cave, and published illustrations of some of the carvings (Simpson 1866; 1867). He observed archaeological deposits and some possible querns in Gasworks Cave, and also noted perforations through the projecting rock ledges and corners in several caves, which he termed 'holdfasts' and interpreted as having held ropes to suspend or hold objects.

2.5. In 1875, Christian MacLagan reported on her own study of the Wemyss Caves. She observed the carvings recorded by Simpson in Glass Cave and Court Cave. In Doo Cave she did not see all those Simpson recorded but in Jonathan's Cave, where she 'had the carvings carefully brushed free from the lichens which obscured them', she observed and recorded some he had not seen. Her paper in the *Proceedings of the Society of Antiquaries of Scotland* (MacLagan 1875) included reproductions of some of Simpson's illustrations. They were also re-published in Allen's *The Early Christian Monuments of Scotland* (1903, 370-73) and in Anderson's *Scotland in Early Christian Times* (1881, 184).

2.6. The Edinburgh photographer John Patrick carried out further survey of the Doo Cave complex, Jonathan's Cave (which he called Factor's Cave) and Court Cave. He was the first to publish photographs of the carvings and the caves' exteriors (Patrick 1905; 1906), which provide a useful record against which to measure the pace of coastal erosion and rock surface deterioration (Guttmann 2002, 111). In 1926-29, George Deas made another detailed photographic record of the carvings, and he later published some of them in *Rothmill Quarterly Magazine* (Deas 1948). Some of his originals and prints are held at the RCAHMS. Deas, a Fellow of the Society of Antiquaries of Scotland, also alerted staff at the National Museum of Antiquities of Scotland and the RCAHMS to the imminent infilling of the Michael Cave, and they were able to record the carvings as well as archaeological deposits (Edwards 1933, 175).

2.7. In 1937, the six caves were inscribed as a group on the list of scheduled monuments as 'prehistoric domestic and defensive' (SM 817) under the Ancient Monuments Acts of 1913 and 1931.

Late 20th-century surveys

2.8. The first attempt to systematically number and classify the carvings was undertaken in the 1970s and published in a pamphlet prepared to accompany an exhibition in Buckhaven Museum (Buckley et al 1974). This included illustrations of all the key carvings that were accessible at the time, including many that had not previously been published (Guttmann 2002, 111). *A Guide to Wemyss Caves* (Rankin 1988), written for visitors, includes illustrations and observations drawn largely from Simpson (1866) along with local stories and legends connected to the caves.

2.9. In 1983-84, the RCAHMS carried out a detailed survey of the visible carvings – photographing, drawing and taking rubbings of them. In 1991, the National Museums of Scotland undertook further recording, making plaster casts of many carvings (Ritchie & Stevenson 1993).

2.10. In recent years the caves have been recorded digitally - first in 2004, in a project initiated by Fife Council, and more comprehensively in 2014-15 with Wemyss Caves 4D, which was commissioned by SCAPE as part of SCHARP (Scotland's Coastal Heritage at Risk) and conducted by York Archaeological Trust (http://4dwemysscaves.org/).

Archaeological investigations

2.11. A number of excavations have been carried out at the site, both inside some of the caves and along stretches of the foreshore. All of those pre-dating 2002 have been summarised by Guttmann (2002, 114-20).

2.12. A rapid, partial excavation of the deposits in Michael's Cave before it was filled in 1926 identified two distinct occupation levels. They contained limpet and whelk shells, medieval pottery, three stone pounders and a stone spindle whorl, along with abundant animal bone. Many of the bones were burnt and included those of pig, sheep/goat and horse, but most were from cattle and many of these had been split to extract marrow (Edwards 1933, 171-75).

2.13. The first modern excavations were conducted by the Hunterian Museum in 1980 and focused on areas outside two caves. Erosion of coastal sections led to the exposure and excavation of archaeological deposits at several points along the coastline throughout the late 1980s and 1990s (see Table 1).

2.14. In 2004, Channel Four's *Time Team* conducted geophysical survey on the foreshore and archaeological evaluation of deposits inside and outside several of the caves, as part of the project initiated by Fife Council.

2.15. The locations of most of these investigations are shown in Illus 3 and their results are summarised in Table 1.

Area	**Excavator/ Year**	**Findings**	**Dates of activity recorded**
Foreshore in front of caves	CEU/1986	Installation of a sewer pipe parallel to the shore was monitored. It cut through mining debris and shale.	Early modern
Sliding Cave interior	WA/2004	Trench 8 exposed a cobbled surface sealed by a charcoal-rich compacted floor (804) containing animal bones, cereal grains and hazelnut shells. Inwashed rubble above lay against a wall carving of a Pictish double serpent symbol. Layers of wind- and water-borne sediment sealed it; the uppermost contained post-medieval pottery.	cal AD 240-390 C14 date from barley seed in compacted floor (804)
Sliding Cave cliff section	CEU/1989	Recording of an eroding cliff section identified a ditch and 2-3 pebbly lag deposits, sealed by seven colluvial deposits containing abundant stone and shell.	Unknown
Sliding Cave cliff section	FAS/1984	Eroding midden deposit recorded near the cave, with 50 lbs of animal bone collected on one visit.	Unknown
Sliding Cave cliff section and exterior	APG/1990	In an 80-m stretch of eroding foreshore between Jonathan's Cave and Gasworks Cave, features excavated near the quarry included substantial wall footings representing five phases of construction, exhibiting different alignments and techniques, with intervening dumped and colluvial deposits. A shell-rich deposit sealed the footings beneath slumped quarry waste and colluvium. A foundation trench, level flagged area and pit were recorded in Area B.	Medieval
Sliding Cave exterior	SF/1994	A watching brief in front and east of the cave, where the shoreline had eroded 3m since 1990, recorded two shell middens: a lower one containing burnt and unburnt bone and fire-cracked stone, and an upper one consisting mostly of shells. Both contained small amounts of charcoal but no diagnostic artefacts.	Unknown
Jonathan's Cave interior	WA/2004	Trench 1 along the west side revealed 0.3m of early modern and natural deposits: bedrock bearing a possible cupmark, sealed by silts derived from collapse, sealed by a nail-rich horizon. Trench 2 inside the entrance found bedrock containing two postholes and a crescent-shaped cut, sealed by inwashed boulders and midden and then by collapsed and inwashed rubble and sands. Above this were two deposits containing nails, ash and clinker.	Jonathan's Cave interior
Jonathan's Cave exterior	HM/1980	Two trenches outside the cave revealed raised beach deposits overlying bedrock, sealed by material fallen from the cliff, sealed in turn by a dune deposit followed by more collapsed material, including much sandstone	370-201 cal BC C14 date (earliest colluvium J5 sealing raised beach deposits)

		rubble. Above lay beneath a midden-rich layer of fallen material containing marine shells, animal bone and an Iron Age jet spindle whorl. Above this was a deposit (J2) with abundant shell fragments, animal bones, medieval pottery, a Norse-type bone pin and awls, jet ornaments and a spindle whorl, and residual flint flakes. Stone paving sealed it and was covered with shell-free colluvium containing medieval, post-medieval and 19th-century pottery.	Iron Age jet spindle whorl in windblown sand (J3) cal AD 900-1240 C14 date from charcoal in J2, along with 9th-10th century bone pin
Jonathan's Cave exterior	FAS/1984	A section 2m x 0.5m excavated in front of the cave found 1.7m of midden deposit above beach level, with abundant animal bones in one of the layers near the base.	Unknown
Jonathan's Cave exterior	CEU/1989	An east/west wall at right angle to the foreshore several metres south of the cave measured c 0.6m wide and 0.3m high, with a single sandstone course set atop bedrock. It was sealed by tarmac and cinders making up the former gasworks track.	Unknown
Jonathan's Cave cliff section	CEU/1986	A two-metre section of cliff was excavated 50 cm deep into the eroding face. Five layers between the natural beach deposits and topsoil were recorded. All contained shell and bones mostly of cattle and sheep/goat, with some red deer and scarce pig and horse. Although initially interpreted as in-situ midden, the deposits may have been midden-rich colluvium.	
Jonathan's Cave cliff section	CEU/1989	A 7.4m stretch of eroded foreshore exposed a stratified sequence of 21 layers, interpreted as colluvium that had collapsed from the cliff onto raised beach material. The colluvial deposits contained animal bone and shell, with flint, slag and iron also occurring in the upper half of the sequence.	Full sequence of dated samples, from 770-360 cal BC at the base of the section to AD 420-640 at the top, with anomalous Neolithic dates from cattle and pig bones in the uppermost layer
Jonathan's Cave exterior (south)	FAS/ 1988	Erosion of the foreshore c 50m south of the cave exposed the extended skeleton of a male, 30-40 years old and c 170cm tall, lying with arms folded across the chest and head to the west. The burial lay beneath 0.7m of overburden, with no trace of a coffin, cist or grave cut.	cal AD 890-1220
Jonathan's Cave exterior (south)	FAS/ 1992	A second extended burial was discovered 5m from the first, 1.4m below the modern surface; it was disturbed by police before excavation (D Speirs, pers comm). The skeleton was that of a young adult, probably female, in her early 20s with evidence of chronic iron deficiency and hard labour in her upper body. She lay extended with head propped and to the west, right hand below the pelvis and legs slightly twisted.	cal AD 1020-1180
Jonathan's Cave exterior (south)	SUAT/1995	A watching brief on coastal defence works, near the location of the burials found in 1988 and 1992, recorded only natural deposits to a depth of 0.6m onto bedrock.	N/A
Well Cave	HM/1980	Two small trenches outside Well Cave 3 revealed a very	Medieval material in

exterior		similar stratigraphic sequence to that outside Jonathan's Cave. A deposit (W3) equivalent to J2 contained animal bone, pottery, a bone toggle and a mortar fragment. No paving was found above it here.	bioturbated colluvium (W3)
Well Cave interior	WA/2004	Trench 4 over the well site revealed a roughly circular cut in sandstone bedrock, 1.7m diameter and 1.2m deep, with compacted and cobbled informal floor surfaces beside it. Trench 5, an unsuccessful attempt to locate the passage linking the cave to the castle, revealed a shallow stratigraphic sequence including inwashed deposits and some medieval pottery.	Medieval pottery from floor levels beside well and in Trench 5.
Well Cave exterior	WA/2004	Trench 7 near the cave entrance uncovered a sandy horizon cut by ard marks, which lay beneath a humic layer (705) containing charcoal, shell and bone derived mainly from an overlying *in-situ* midden deposit. This midden contained abundant shell, bones of juvenile sheep/goat and other animals, and charred emmer wheat. Collapsed material covered it and was sealed by modern deposits in a sequence similar to that recorded by HM in 1980. Trench 6, farther out on the foreshore, exposed post-medieval to modern deposits.	750-410 cal BC C 14 date for charcoal from the humic layer (705)
Well Cave cliff section (north)	WA/2004	An eroding section was cut back and recorded in Trench 9. Bedrock lay beneath three layers of inwashed material, which were sealed by two layers of colluvium containing midden material. A weathered sandstone orthostat stood 1.2m high in a vertical cut through the lower deposits.	?Neolithic
Court Cave	SUAT/1994	Monitoring during the construction of coastal defences along a 90-m length of coastline found natural and dumped coal waste deposits.	Early modern

Table 1: The results of excavations at East Wemyss from 1980-2004. Radiocarbon dates are calibrated at 95.4% probability using OxCal v 4.2. Key to abbreviations in Tables 1 and 2: SUAT = Scottish Urban Archaeological Trust; HM = Hunterian Museum; CEU = Central Excavation Unit; APG = Archaeological Projects Glasgow; WA = Wessex Archaeology; FAS = Fife Archaeological Service; SF = Stuart Farrell).

Lab No.	Material	Context	BP	68.2% probability	95.4% probability
Jonathan's Cave exterior (HM 1980)					
GU-2138	Animal bone	J5	2230±50	290-230 BC	370-210 BC
GU-1369	Charcoal	J2	955±70	AD 1020-1160	AD 900-1240
Jonathan's Cave cliff section (CEU 1986)					
GU-2714	Periwinkle	F2	1920±50	AD 430-610	AD 420-640
GU-2711	Animal bone	F2	3830±60	2440-2150 BC	2470-2060 BC
GU-2996	Charcoal	F2	1800±80	AD 130-330	AD 60-400
GU-2715	Periwinkle	F4	2320±50	AD 20-140	40 BC-230 AD
GU-2713	Periwinkle	F6	2790±50	760-390 BC	770-380 BC
GU-1701	Charcoal	F6	2340±50	510-370 BC	740-210 BC
GU-2716	Flat winkle	F7	2770±50	760-380 BC	770-360 BC
Jonathan's Cave exterior (south) (Provan 1988, Yeoman &Provan 1992)					
GU-3038	Human bone	Male skeleton	980±80	AD 990-1160	AD 890-1220
AA-44972	Human bone	?Female skeleton		AD 1040-1150	AD 1020-1180
Well Cave exterior (WA 2004)					
NZA-25540	Charred roundwood twig	705 ?buried soil	2443±30	730-430 BC	750-410 BC
Sliding Cave interior (WA 2004)					
NZA-20755	Barley	804 floor	1726±30	AD 250-380	AD 240-390

Table 2: The radiocarbon determinations from various excavations at the site. Dates for shells from the 1986 Jonathan's Cave cliff section were calibrated by Guttmann (2002, 118), with 395 years added to the C14 dates before calibration to counter the marine effect. All other dates have been recalibrated using OxCal 4.2.

2.16. Geomorphological analysis has been conducted on some of the deposits recorded in these excavations. In the eroding cliff section in front of Jonathan's Cave (CEU/1989), the sequence above the raised beach deposits was interpreted as made up entirely of glacial till that had fallen from the cliff above and had not been reworked by wave action (Guttmann 2002, 120; Carter 1990). Analysis of the 80-metre section in front of Sliding Cave (APG/1990) showed it was made up of layers of colluvium along with quarry waste, beach sands and slump deposits containing intrusive material, with archaeological horizons lying on and beneath the slump deposits, all sealed by industrial waste derived from mining (Guttmann 2002, 120; Maté 1991).

2.17. The excavations outside the caves established that much of the foreshore is made up of industrial waste that lies above rubble and sediment which has fallen from the cliffs and cliff-top fields. At

least some of the archaeological material in the colluvium is in its secondary place of deposition, and probably originated in prehistoric activity on the higher ground and the middening of fields associated with the castle. The former is evident in the late third millennium cal BC radiocarbon date from residual animal bone, found near the top of the eroding section recorded by Jonathan's Cave (GU-2711; CEU/1986).

2.18. The excavations also demonstrate that people were active along the foreshore at particular periods and that in-situ traces of this do survive – for example, in the two medieval burials in front of Jonathan's Cave, the ard marks that were made before 770-400 cal BC outside Well Cave and the late medieval structural remains and shell middens outside Sliding Cave.

2.19. The excavations also established that occupation layers and cut features exist inside the caves, as in Jonathan's Cave and Well Cave, in some cases protected beneath deep inwashed deposits.

Chronology of the Wemyss Caves

2.20. Numbers of heritage assets (HA) discussed in this section correspond to their entries in the Gazetteer of Heritage Assets (section 11). Their locations are shown in Illus 4. References to previous archaeological investigations are by excavator and year, as detailed in Table 1. Radiocarbon dates are presented as calibrated to 95.4% probability, with detailed determinations provided in Table 2.

Third millennium BC: late Neolithic to early Bronze Age

2.21. The animal bone dated by radiocarbon to the late third millennium cal BC (GU-2711), which occurred as residual material in an upper layer in the Jonathan's Cave cliff section (CEU/1989), indicates probable settlement and domestic activity on the ground above the cliffs in the later Neolithic to early Bronze Age.

2.22. Some of the caves also contain evidence of activity in this period. A Bronze Age carving, consisting of a cup with three concentric rings, was recorded in Michael Cave before it was filled in (see Edwards & Low 1933, 172, Figure 5). A cluster of cup marks, consisting of nine small hollows forming two perpendicular lines with a small adjacent cluster, occurs on the wall of the southern chamber in Court Cave (HA 1). This could be early prehistoric, but it is at least equally likely to date to the 10th or 11th century AD (see paragraph 3.53).

2.23. During the mid to late third millennium BC, the caves may have been considered significant places and the focus for ritual or symbolic practices that included creating rock art. Although it is undated, the large orthostat found standing in a vertical cut through layers of beach inwash material to the north-east of the Well Cave complex (HA 2; Gibson & Stevens 2004, 93) could have been a standing stone erected in earlier prehistory – perhaps as a marker of the site's significance or a focal point for ceremonial activities.

First millennium BC: Early to middle Iron Age

2.24. By 750-410 cal BC (NZA-25540), the raised beach embayment in front of the Well Caves was being used for cultivation (HA 3). The foreshore would have been more extensive then, based on

proposed curves of regional change in sea level (Shennan & Horton 2002) and in light of documented coastal erosion. The evidence suggests that a thick spread of midden material was ploughed and cultivated, with the ards cutting through the underlying B horizon and clipping the subsoil beneath so that shell, bone and charcoal percolated down through the soil profile (Gibson & Stevens 2007, 94-5; WA/2004). Middens were rich sources of nutrients that increased the productivity of soils, and evidence for this practice has been found in other Iron Age contexts in Scotland, particularly in the Northern Isles (Guttmann et al 2004; Guttmann 2005).

2.25. The radiocarbon date for charcoal from a layer above the natural beach deposits in the Jonathan's Cave cliff section (CEU/1989; GU-1701) correlates broadly with this period of activity, although the charcoal could have come down from the upper ground in colluvium (Carter 1990; Guttmann 2002, 117).

2.26. Evidence of local activity and probable settlement later in the mid to late first millennium BC was found outside Jonathan's Cave and by extrapolation outside Well Cave 3, where a very similar although undated sequence was recorded (HA 4 and 5; HM/1980). The stratigraphy showed that the glacial till above the sandstone cliffs had collapsed on several occasions. A sample of animal bone in the first layer of collapse dated to 370-210 cal BC (GU-2138). Windblown sand and rubble from localised episodes of collapse then accumulated, followed by more windblown sand that contained a jet spindle whorl of probable Iron Age date and animal bones (MacKie 1986); these may have derived from activity on the foreshore.

Early first millennium AD: Late Iron Age into Pictish period

2.27. In the early centuries of the first millennium AD, when communities known as Picts were first recorded as living in north and east Scotland, archaeological evidence points to settlement in the vicinity of the Wemyss Caves as well as related activity inside Sliding Cave. The Picts emerge in the proto-historical record in the late 3rd century AD, when Eumenius described the groups living north of the firths of Forth and Clyde as 'Picti' (Ritchie 1994).

2.28. Domestic activity took place along the foreshore by Jonathan's Cave or on the clifftop above it around this time, as evident in the animal bones from a layer of midden or midden-rich colluvium in the Jonathan's Cave cliff section (CEU/1989, Table 1), along with charcoal dating to cal AD 60-400 (GU-2996; Guttmann 2002, 117).

2.29. Domestic activity was also taking place in Sliding Cave in cal AD 240-390 (HA 7; NZA-20755; WA/20004). The compacted floor that formed over a roughly paved surface contained abundant hazelnut shells and cereal grains, including hulled barley, oat and probable emmer wheat (Wessex Archaeology 2005, 19). In general, the macroplant assemblage indicates the cereal crops were threshed, winnowed and sieved through a coarse mesh and probably also a fine one before they were brought into the cave, with the weed seeds indicating they had been sown in spring (Gibson & Stevens 2004, 97). The grains most likely charred accidentally while being dried over a fire to prolong their shelf life. The cave may have been used to dry cereals cultivated on the foreshore before they were taken to nearby settlements, or it may have served as a domestic space itself.

Mid first millennium AD: Pictish period

2.30. At some point after the cereal-rich floor in Sliding Cave formed, a storm or other high-energy event left a thick stony deposit over it (Wessex Archaeology 2005, 19). This storm-driven deposit settled against the adjacent wall of the cave, covering a carving of two sinuous lines which is likely to be a Pictish double serpent. Its position close to ground level may evoke the characteristics of a snake (Dr Anna Ritchie, pers comm). It was carved using techniques like those used to create the comb case and mirror carvings in Sliding Cave as well as other Pictish symbols at Wemyss (Gibson & Stevens 2007, 95).

2.31. There was no direct stratigraphic relationship between the carving and the excavated deposits. However, the radiocarbon date for barley (cal AD 240-390 (NZA-20755) from the cereal-rich floor indicates the carving was made before the floor formed or while it was forming. The barley was harvested at least two centuries before the generally accepted date for the origin of Pictish symbols (see below), but at a time when people living in parts of Scotland were being recognised as Picts.

2.32. Whether or not this particular carving was made by Picts, one of the most intensive periods of activity at the caves certainly occurred while Pictish symbols were current. The first visits by scholarly observers provide a baseline record of the carvings that were visible in the second half of the 19th century, and this can help establish the likely authenticity of those carvings which appear ancient but which may have been added later or modified.

2.33. Simpson (1866) and MacLagan (1875) recorded Pictish symbols in Court Cave, Jonathan's Cave and Sliding Cave, and also in the now-blocked West Doo Cave and Glass Cave. Illus 5, 6 and 7 show some of the symbols recorded by the RCAHMS (HA 8, 9 and 10 on Illus 4). In the caves which are currently accessible, the highest concentrations are in Jonathan's Cave and Court Cave. The symbols include abstract geometric forms such as double discs and rods (Court Cave, Jonathan's Cave, West Doo Cave); rectangles (Sliding Cave), and zoomorphic forms such as birds (Court Cave, Jonathan's Cave), 'elephants' (West Doo Cave, Jonathan's Cave), fish and a horse (Jonathan's Cave).

2.34. A complex carving incorporating a double-disc, floriated Z-rod and animal's head, recorded in West Doo Cave by Simpson (1866), is very similar to those on two virtually identical silver plaques from the Norrie's Law hoard, found in a burial cairn about 13 km to the north-east (Simpson 1866) and thought to have been deposited in the later 7th century (Graham-Campbell 1991) (see Illus 8). Some of the carvings recorded by antiquarians, including two very different, apparently human figures in Court Cave and Jonathan's Cave (Simpson 1866), appear ancient but are not recognisably Pictish. At least one symbol – a fish in Jonathan's Cave – is known to be a modern addition. The authenticity of the boat carved in Jonathan's Cave is also matter of some debate (see paragraphs 3.61ff).

2.35. The generally accepted chronology for Pictish symbols has them emerging around AD 600. Laing & Laing (1984, 264) note that this derives from an assumption, first made by Allen & Anderson (1903), that the absence of Class I symbol stones (bearing only symbols, with no Christian iconography) in the Scottish kingdom of Dalriada means that they post-date the kingdom's formation in the 5th century. The Laings argue for earlier origins in the late 4th or 5th century under Romano-British cultural influence, while Thomas (1961, 57) believed they originated even earlier in the 2nd century AD. The earliest dated context for a carved symbol is a slab found lying face down in a 6th-century paved courtyard at the multi-period settlement of Pool, Sanday in

Orkney (Hunter 1990, 185).

2.36. Class I symbol stones have been studied from a variety of angles, ranging from art historical to archaeological to linguistic. They have been interpreted as markers of social status and tribal membership (Thomas 1963), matrilineal marriage alliances (Jackson 1984), land ownership (Henderson 1971), burial or commemoration (Ashmore 1980; Close Brooks 1980) and estate boundaries linked to social identity during the formation of the Pictish kingdom (Driscoll 1988).

2.37. Most studies have focused on symbols carved on free-standing stones, neglecting other contexts such as cave walls, portable objects and metalwork (Gondek 2007), although the comprehensive study by Henderson & Henderson (2004) takes a more holistic if art historical approach. The Hendersons suggest that Pictish symbols evolved from the animal and decorative art on Iron Age shields and weaponry, which evoked strength and guardianship (ibid, 171-2).

2.38. Symbols carved on Class I stones usually appear in vertically arranged, closely set pairs and this has led to considerations of the grammar and syntax of their combinations. Samson (1992) proposed that the pairs represented the di-thematic personal names of individuals, similar to contemporary Anglo-Saxon names such as Aethulwulf.

2.39. Forsyth (1995) built upon Samson's theory to construct an argument for the symbols as a system of writing. In her view, they represent words rather than ideas and their distribution reflects the extent to which the Pictish language was spoken. As with ogham (also found carved on monuments, cave walls and portable objects), the symbols had meaning only in relation to each other and were therefore invented over a very short time span (ibid, 92). Importantly for the Wemyss Caves carvings, in this model what have been previously considered basic early forms, precursors of the more sophisticated carvings on symbol stones (Henderson & Henderson 2004, 171), are simply informal versions of the standard symbols (Forsyth 1995, 93).

2.40. Forsyth's theory shifts attention onto the *contexts* of Pictish symbols, so that they are seen as part of a monument rather than the reason for it (Gondek 2007, 73). Pictish symbols carved in caves pull this issue of context into sharp focus. Like large panels of prehistoric rock art, they evoke the likelihood of periodic carving events in 'a rich social and ideological environment . . . within a set point in the landscape as people return to carve again and again' (ibid, 79).

2.41. Three other Scottish caves contain carved Pictish symbols, although none as abundantly as at Wemyss. At the Caiplie Cave complex in Fife, a Z-rod is carved in Chapel Cave (which also contains many early Christian crosses) and an arch symbol in an adjacent cave (Guttmann 2002, 113). A crescent and V-rod are carved in a cave at Clashach Cove in Moray (NMRS NJ17SE 9).

2.42. Pictish symbols are also carved at Sculptor's Cave, Covesea on the Moray Firth, which like the Wemyss Caves is cut into sandstone sea-cliffs facing onto the foreshore. At least 15 symbols, set in groups, are carved near the mouths of its two entrance passages. They include a fish standing on its tail, a flower symbol, a large mirror and crescent, and abstract geometrical forms including a pair of pentacles, two triple ovals, crescent and V-rod symbols and several discs and rectangles (Allen & Anderson 1903; RCAHMS 1994).

2.43. Two excavation campaigns (1928-30 and 1979) and a recent programme of AMS dating (Armit 35 al

2011) have established that there was intensive activity in its two entrance passages during the 12th-10th centuries cal BC, when abundant human remains were placed there. Although most of the bones recovered in the first excavation campaign were barely studied and appear to have been discarded, surviving records indicate that a preponderance came from sub-adults, with children and infants also represented (ibid, 255-7).

2.44. Much less intensive, possibly episodic activity continued through the 1st millennium BC and into the 1st millennium AD. More human remains were deposited in cal AD 220-335, around the time that Sliding Cave was being used to process or store crops. Cut marks on these bones show that people were being decapitated – possibly in the cave itself in acts of execution or sacrifice – and the flesh was scraped from one child's skull. Armit proposes that the decapitations represent 'executions carried out in a place of considerable ritual importance at a time of rapid political change' (ibid, 276).

2.45. Also during the second to fourth centuries AD, Roman Iron Age objects including rings, pins, beads, bracelets and toilet instruments were left in Sculptor's Cave, as well as a hoard of Roman coins most likely deposited in AD 353-365 (ibid, 259). These may have been votive deposits which, like the treatment of people and their remains after death, were part of a set of cultic practices focusing on the cave and expressing contemporary belief systems.

2.46. The 3rd-century phase of activity at Sculptor's Cave pre-dates the first uses of Pictish symbols, based on the generally accepted dating for their origins in the 6th century, and by this reckoning the symbols carved around the entrance indicate the site's continued significance for at least two centuries afterwards. Evidence from this and other sites, such as the rock-cut cistern at Burghead in Moray, suggests that for Picts, underground spaces were strongly associated with cultic practices and belief systems. As places that linked open-air and subterranean environments and were poised at the borders of land and sea, caves like Wemyss and Covesea were perhaps thought to offer points of access to other, supernatural worlds (similar to the role of underground places in early medieval Irish mythology).

2.47. Gondek (forthcoming) has analysed the use of Pictish symbols in structural contexts and found they often occur at thresholds and liminal points. She argues that the deployment of symbols in cave and structural contexts was votive, designed to carry messages not intended solely for the living community but perhaps to do with movement between the worlds of humans and spirits or the living and the dead. At Wemyss, the crosses carved later in the first millennium AD suggest that their cultic significance continued into the early Christian period, when it was fairly common practice to establish chapels or shrines at spots that were already considered sacred or associated with the supernatural.

2.48. It has also been suggested, somewhat tenuously, that the Wemyss Caves were used as temporary or seasonal campsites by silversmiths on the southern boundary of Pictland (Henderson & Henderson 2004, 90). This has arisen because of the occurrence of the rare 'S' curve symbol, which is only known at Wemyss, on sculpture north of the Grampians and on the terminal ring of a massive silver chain from Parkhill, Aberdeenshire (ibid, 87), and because of the close similarity of the West Doo Cave carving to the silver plaques from the Norrie's Law hoard (see paragraph 3.34). The functions of these plaques and of stone discs bearing carved symbols are unclear, but they may have had votive uses, such as the plaques carved with bulls from the Pictish fort of Burghead

(Ralston & Armit 2003, 221-5) and the stone discs sometimes found with contemporary burials.

2.49. It seems probable that silversmiths would have worked their craft at their patron's power centre (Dr Anna Ritchie, pers comm) – as they did at the royal site of Rhynie in Aberdeenshire (Nobel & Gondek 2011) and perhaps at East Lomond Hill, 15km to the north-west of Wemyss, which may have seen re-use during the Pictish period; a silver ingot and a carved plaque were found here (RCAHMS 1933). However, they might have come together at places like the caves at other times – to share technical knowledge or ideas for motifs, and for cultic practices that were considered integral to their craft. Heald (2005) argues that in late Iron Age Scotland, smiths were viewed as having connections to the supernatural qualities of a different and perhaps dangerous world beyond the settlement, through their esoteric knowledge and ability to transform rock into precious metal. Irish texts contemporary with the Pictish period also convey this perceived relationship between magic, status and the power of the smith (Heald 2005, 220-3).

2.50. Although Fife has few Class I symbol stones, other kinds of evidence such as place-names and metalwork indicate Pictish culture and society were well established here. Ptolemy's 2nd-century map, which was based on information gathered by Agricola's army, shows the area occupied by a tribe named the Venicones. By the middle of the 1st millennium AD (if not before) the landscape was occupied by wealthy estates, modest farms like the 6th- to 7th-century one at Easter Kinnear (Driscoll 1997) and hilltop citadels like Clatchard Craig, 23km to the NNW of Wemyss. Cemeteries like the one at Lundin Links 8km to the east, where burials were placed in long cists and under cairns from cal AD 450-650 (Greig et al 2000), are another indicator of substantial settlement. The carving of symbols at Wemyss, perched as it was on the southern edge of Pictland and looking across to other lands, may have had special meanings within this wider political and social landscape.

Mid first millennium AD -13th century: Early medieval to medieval

2.51. Radiocarbon dates and artefacts have provided evidence of activity outside the Wemyss Caves in the 10th-13th centuries AD (see below), but it is worth noting that the site may have been a focus for Christian practice as early as the mid first millennium AD. Christianity may have spread to Fife from its initial base at Whithorn in the south-west as early as the 6th century AD, and some of the carvings discussed below may have been created during this period of initial conversion.

2.52. Simpson (1866) notes that the crosses in Jonathan's Cave (Illus 9) are arranged in a line on a projecting ledge at the inner end of the cave, and are distributed among Pictish symbols but cut less cleanly than they are, using tools that splintered small fragments of stone at the edges (HA 13). The group includes an equal-armed cross and another with six limbs (Figure 16 in MacLagan 1875, 116), and three symbols incorporating a trident and cross (Plate IV, 11 and 12 in MacLagan 1875) (see Illus 9, bottom panel). The presence of these symbols would suggest that Jonathan's Cave was used at times for Christian practices; these could have ranged in scale from use by individuals such as hermits to communal use as a chapel to occasional use by pilgrims en route to the Isle of May, 30 km to the east. Calibrated radiocarbon dates from burials indicate a monastery existed on the island as early as the 5th century AD (James & Yeoman 2008), while the priory of St Adrian, established by David I in the 12th century, became a hub for medieval pilgrimage in Scotland.

2.53. Another possible early Christian symbol is carved in the southern chamber of Court Cave. This

cluster of nine small cups forming two perpendicular lines with a small adjacent cluster (Illus 10) has generally been interpreted as Bronze Age rock art. However, comparison with similar carvings from Galloway suggests it is a Christian symbol dating to the late 10th century. Collingwood (1923) discusses several cross-slabs in Galloway with similar clusters of small cups in cruciform arrangement (lllus 11), which he ascribes to that period and to Norse cultural influence. They occur on sculptured stones from Craignarget (ibid, Figure XIV.45), Sinniness (ibid, Figure XIV.47) and Minnigaff (ibid, Figure XIII.43). A set of similar carvings on living rock has also been found in the Wigtown area. This consists of nine clusters set closely together, each one consisting of four or five small cups arranged like dots on a domino (Eggerness 3 in Morris & van Hoek 1987, Figure 2).

2.54. Other caves containing carved crosses are known in Fife and these may have also seen early Christian as well as medieval use. They include Chapel Cave, Constantine's Cave and Kinkell Cave (Guttmann 2002, 113-14). A burial was found in front of Chapel Cave, with others of uncertain antiquity found in another cave in the Caiplie Cave complex. Long cists were also found in the immediate vicinity of Constantine's Cave (RCAHMS 1933, 65).

2.55. Henderson (1987, 49) has suggested that, while the symbol of the cross was clearly a monastic contribution, the techniques used to incise the simple cross-slabs were the same as those used to create symbol stones and that their distribution shows the northward spread of missionary activity in the 7th and 8th centuries cal AD. More recently she has observed that the need for simple, linear crosses would have continued well beyond the missionary activity and some are probably of later date (2004, 160).

2.56. The shoreline at East Wemyss was a focus for burial on at least two occasions between 890 and 1180 cal AD (HA 11 and 12), as evident in the two extended, oriented skeletons found about 50 metres south-west of Jonathan's Cave. It is not clear whether they were part of a formal cemetery. There is no tradition of a church or chapel along the shoreline, with which ground consecrated for burial would have been linked. It is possible that they were of anonymous drowning victims whose eligibility for heaven was unknown, but in any case they suggest the Christian identity of those who conducted the burial. The discovery of burials along the shore near other caves in Fife (see above) shows this practice extended to other places in the region.

2.57. It is worth noting that the supposed well in Well Cave is thought to have been dedicated to St Margaret, queen of Scotland (d 1093) and wife of Malcolm III (Rankin 1988, 25). Margaret's cult was particularly current in the early 12th century and again after she was canonised and translated in the mid-13th century (Huntington 2013).

2.58. There is also evidence for domestic and possibly maritime activity during the medieval period. The excavations outside Jonathan's Cave (HM/ 1980) recovered a range of material indicating activity in the 9th to 13th centuries, although much if not all of it may have derived from activity on the cliff top (HA 6). A thistle-headed bone pin of Norse type, dating to the 9th or 10th century by comparison with examples from Jarlshof in Shetland (MacKie 1986, 76), was also found. It came from a shell-rich layer that contained medieval pottery, animal bones (including deer antler) and charcoal dating to cal AD 900-1240 (GU-1369), but also residual prehistoric material. A compacted pebbly floor level above patches of charcoal and ash was initially identified (ibid, 75), but has been re-interpreted as the product of erosion (Guttmann 2002, 113). Even if the layer formed as a result of land slip, the material indicates some domestic activity in the vicinity during this period.

2.59. The archaeological evidence is tenuous, but it suggests that from the late 900s, settlements existed in the vicinity and the coast here was a port of call for ships that frequented other places around the mainland and islands where Norse ideas, symbols and objects were current, such as Shetland and Galloway. The Court Cave carvings of possible 10th- to 11th-century date, the 9th- or 10th-century Norse-type bone pin and the likely late 1st-millennium character of the Jonathan's Cave boat carving (see below) all evoke strong sea-borne connections between Wemyss and other places, including some that lay under Norse and Hiberno-Norse influence. The caves would have been landmarks well known to seafarers and their Christian and pre-Christian religious associations may have drawn some, passing for trade or pilgrimage, to land there. Certainly Viking ships plied these waters and would have known of the caves. Church annals record that the monastery on the Isle of May under St Adrian was devastated by Vikings in AD 875.

2.60. Although eastern Scotland is not generally recognised as an area of extensive Norse settlement, some Norse place-names are known across Angus, Fife and East Lothian. Simon Taylor has identified six *-byr* names in Fife that related to isolated farms on marginal land and that he argues may have been cleared, established and named by Norse settlers in the 10th century. Alternatively, they may originated in the 12th century, when speakers of a Scandinavian-influenced Anglian dialect from Lothian and northern England were settling areas north of the Forth (Graham-Campbell & Batey 1998, 102). One of these *-byr* names is apparently located to the north-east of Wemyss, near the southern coast of the East Neuk of Fife (ibid, Figure 3.2); it has not been possible to identify the exact location as part of this research.

A consideration of the Jonathan's Cave boat

2.61. The carved boat on the east wall of Jonathan's Cave (Illus 12; HA 14) is often described as the oldest depiction of a boat in Scotland (e.g., Rankin 1988; www.4dwemysscaves.org/). However, its origin is a matter of some debate.

2.62. The feature was first recorded by Patrick (1906); none of the 19th-century scholars who recorded the carvings appear to have described it. Stuart (1867) does not mention it, although he did count carvings of ships elsewhere (such as the Cossans boat at Glamis) as Pictish art (Le Bon 1992, 340). Stuart (1867) and MacLagan (1875), both of whom were experienced and methodical observers, explicitly mention the total absence of carvings on the east side of Jonathan's Cave. MacLagan 'had the carvings [in Jonathan's Cave] carefully brushed free from the lichens which obscured them' (1875, 108), although she does not say whether this was only on the west or along both walls of the cave; her wording would suggest it was only in the areas where she perceived there were carvings. Anderson discussed the Wemyss carvings at two lectures he gave in Edinburgh in 1880, but did not mention the boat, and Allen and Anderson also do not mention it in their (1903) *Early Christian Monuments of Scotland*. For such a large and striking carving in a prominent position in one of the most accessible of the caves, these seem to be extraordinary omissions.

2.63. However, Simpson (1866) does describe (but does not illustrate) a remarkably similar feature in Doo Cave: a large figure with an irregular head, elongated body and six limbs stretching downward, with dimensions virtually identical to those of the Jonathan's Cave boat. He adds, 'perhaps it is intended as the figure of a boat' or of a serpent or monster like some that occur on symbol stones.

2.64. Le Bon (1992, 337) observes that the boat was created entirely by intaglio (pecking), while the Pictish carvings in the cave were originally incised, with some of them modified using intaglio at some point after Patrick's 1902 photographic survey. She also points out that the figure lacks the oval eye that usually appears in Pictish depictions of people (ibid, 340). She offers three possible interpretations of the boat. The first is that it is ancient (although not necessarily Pictish) and that Stuart and MacLagan simply failed to notice it, while Simpson reported it in the wrong cave; however, he accurately recorded many other drawings in Jonathan's Cave and this would have been unusual mistake for a rigorous scholar to make. The second is that the carving is an ancient image that was retouched between Simpson's and Patrick's visits to make it more closely resemble a boat. The third is that the carving was created between 1875 and 1902 (ibid, 342). A fourth possibility is that it was made after the previous surveys and before Patrick's visits, by someone who had read Simpson's account of the carving in Doo Cave and tried to replicate it.

2.65. While the failure of several early observers to mention it does seem extraordinary, the similarity of the carving to Simpson's description is equally remarkable. Simpson (1866) details the carvings in each cave in turn, working eastwards from Court Cave. Although he places the possible boat or serpent carving in Doo Cave, he does confuse the names of some caves, mistakenly calling Factor's Cave by the name Jonathan's Cave. (In fact, it is due to his mistake that it is now generally known by that name.) It may be that because he attributed the carving to Doo Cave, subsequent surveyors up until Patrick did not look for it in Jonathan's Cave. Furthermore, it is not particularly easy to see, as the east side of the cave is perpetually in shadow. On balance, it is entirely possible that Simpson mixed up his own notes and attributed the carving to the wrong cave.

2.66. If the carving is indeed ancient (or a copy of one in Doo Cave), it may show an early medieval clinker-built vessel. Le Bon (1992) notes that it has a more sharply rising bow and stern and a more U-shaped hull than the boat carved on the St Orland's Class II symbol stone at Glamis (NMRS NO45SW 4) (Illus 13) and another early medieval example at Bantry in County Cork, Ireland. Its hull shape is similar to that of a distinctively Viking boat depicted in graffito at Jarlshof in Shetland, although it lacks a mast or rigging (Illus 13).

Later medieval: 14th-16th centuries

2.67. From the late 14th century, the Wemyss Caves lay in the shadow of Macduff's Castle (Illus 14; HA 15). The first tower was built then, with possible further construction in the 15th century and with the addition of a second tower and a range of buildings running between the towers in the 16th century. In the late 16th or early 17th century an outer wall was built around the castle, with gun loops and with turrets on the west (RCAHMS 1933, 280-83).

2.68. The red sandstone used to build the castle was probably extracted about 400 metres north-east of Sliding Cave, where an old quarry bites into the cliff at the back of the raised beach (HA 16). Successive structures stood at the mouth of the quarry over a relatively long period, evident in the five phases of unmortared red sandstone footings with different alignments and construction techniques and the collapsed and slumped deposits separating them (HA 17; APG/1990). This longevity could equate to the c 200 years during which the castle was being built and periodically remodelled. No domestic material was associated with the building other than a few small sherds of Scottish White Gritty Ware (14th-15th century), and this would suggest it had functions related

to the quarry such as tool storage or shelter for workers.

2.69. The shell midden that covered the latest phase of footings contained a high proportion of juvenile periwinkle shells, which have low calorific value. They may have been used to make lime for mortar to build parts of the castle, an interpretation apparently confirmed by the identification of marine shells in a mortar sample from the castle (Pollard 1991).

2.70. Well Cave has a close historical association with the castle. According to local traditions, a spiral staircase once led down from Macduff's Castle into the cave's expansive rear chamber (Guttmann 2002, 112); this would have provided the occupants of the castle with safe access to fresh water times of siege. Although excavation found sherds of Scottish White Gritty Ware beside the supposed site of the well (WA/2004, Table 1), evidence for the well itself was inconclusive and it is likely that, if it does exist at this spot, the excavations did not penetrate deep enough to expose it (D Speirs, pers comm). Sherds of medieval pottery were also found at the supposed site of the staircase, where large rubble could indicate it had collapsed or been blocked (HA 18; Gibson & Stevens 2007, 96). Walkover survey has also identified a small but substantial masonry pier supporting the ceiling on the eastern side of the inner chamber (Illus 15; HA 19).

2.71. A doocot, built in the 16th century, formerly stood by the shore to the south-west of the Well Cave complex (HA 20; RCAHMS 1933, 283). This would have supplied the later occupants of the castle with a valuable source of meat and eggs and also droppings for use as fertiliser. It began to be damaged by storms during the 20th century; wave action finally topped it in 1986 while a boat was tethered to it (Rankin 1988, 21; SWACS, pers comm).

2.72. Court Cave, which the Ordnance Survey also recorded in 1854 under the name 'Kings Cave' (OS 1/13/125/12), acquired its name from two traditions recorded in the *Statistical Account of Scotland*; neither is verifiable at this point. The first was that when the lands of East Wemyss were the property of the Colvilles from 1530 to 1634, they held their baron-court in the cave to settle disputes, levy fines and try local residents for minor offences. Aumbreys chiselled out of the cave walls could derive from this use (Illus 16; HA 21). Marks from a bell rope that hung at the entrance and was used to summon the court were apparently visible before its collapse in 1970 (Rankin 1988).

2.73. The second tradition is that

> King James IV in a frolick once joined a company of gypsies, who were here making merry, and when the liquor began to operate, the gypsies as usual with people of their character, began to quarrel among themselves; upon this his Majesty attempted to mediate between the parties, but they, ignorant of the rank of their new associate, were about to handle him pretty roughly for his goodness, which obliged the King to discover himself; in allusion to this affair, the Cave was afterwards ironically called the Court Cave (Gib 1791-99, 532).

2.74. King James IV, who ruled from 1488-1513, had a habit of travelling the country in disguise, observing and mingling with ordinary people. This lends the story a certain credibility, although the minister's source is unknown and its verity cannot be confirmed. Whether or not it is true, it makes an important contribution to the perceived historical character of Court Cave, and could also

preserve a folk memory of the caves' use for temporary occupation by itinerant communities, as well as for festivities like the annual ones in Well Cave (see paragraphs 3.80-81). It is a tradition that continues today, as members of Traveller communities sometimes lodge in the caves.

Post-medieval to early modern: 17th-19th centuries

2.75. The aumbreys in Court Cave are also linked by local tradition to the cave's use by Covenanters for religious assemblies in the 17th century (Sue Hamstead, pers comm), although no documentary references to that use have been found in this study. On the west wall of the eastern chamber is a long, undulating incised line that begins at the end of a natural fault and continues its approximate line for about eight metres, with several gaps. It stops at either side of an aumbrey, so it appears to have been carved after the aumbrey was created.

2.76. The Wemyss Caves make their first cartographic appearance in 1642, on Gordon's map of *Fyfe Shire*, and in 1654 on Gordon and Blaeu's *Fifae Vicecomitatus, The Sherifdome of Fyfe*, as 'Cave head' (or 'heid') (Illus 17). Both maps also show a church at East Wemyss, the former parish church of St Mary's By-the-Sea. It was rebuilt about 1528 on the site of an earlier church that may have been established in the 14th century, when devotion to Mary permeated Scottish society and church dedications to the Virgin were particularly popular among the aristocracy (Boardman & Williamson 2010). Transeptal north and south aisles were added to the church in 1659 (http://data.historic-scotland.gov.uk/pls/htmldb/). It is no longer used as a church and is a listed building (No. 1674).

2.77. Adair's map *The East Part of Fife* (1684) shows what appears to be Macduff's Castle in its enclosure and the church among a cluster of buildings, and his 1703 map *The Frith of Forth from the Entry to the Queen's ferry* shows these more distinctly (Illus 18). Moll's 1745 map *The Shires of Fife and Kinros* depicts little detail. Roy's Military Survey of Scotland (1747-55, Sheets 18/1d/W and 18/1e/E) shows the village of East Wemyss and what appears to be the castle atop a cliff (Illus 19). Ainslie's *County of Fife* (1775) and *A chart of part of the South of Scotland...* (1785) show 'Caves' between East and West Wemyss, with the castle annotated 'Tower Ruins' on the earlier map, but neither contains much detail. The *Map of the counties of Fife and Kinross* (Sharp, Greenwood & Fowler 1828) depicts 'Glass Cave' and 'Castle in Ruin' (Illus 20).

2.78. The minister writing *The Statistical Account of Scotland* (1791-99) for the parish describes seven caves a little to the east of East Wemyss, all but one about 100 yards from the High Water Mark. Four of these, he writes, were fitted up some time before as 'pigeon-houses' and were still being used as such. These may have been converted for this use in addition to the 16th-century doocot, or after it had fallen out of use. Only Doo Cave is known to contain rock-cut nesting boxes now.

2.79. He also mentions the Court Cave, with the anecdote about James IV quoted above (paragraph 3.74), and Glass Cave, which he says was equipped as a glassworks by a tacksman about 60 years previously but left to decay after he became bankrupt (ibid, 532).

2.80. He notes two caves at the base of the cliff beneath the ruins of Macduff's Castle. One he called Jonathan's Cave (what we now call Fern Cave or Well Cave 2), 'from a man who, with his family, resided some time in it' (Gib 1791-99, 531). The other was Well Cave, and at the time of writing the well was still accessible: 'The entrance . . . is very narrow, but after having got through it, you

find yourself in a very spacious place, in which is a well of excellent water; it is annually visited by the young people of Easter Wemyss, with lights, upon the first Monday of January Old Style.' The author notes that he does not know the origins of the custom (ibid). (Also known as Handsel Monday, the term 'Old Style' refers to the use of the old Julian calendar rather than the Gregorian, which was adopted in Scotland in 1756.)

2.81. Simpson (1866) also mentions that 'for long [Well Cave] was a favourite place of pilgrimage, feasting, and frolic to the neighbouring inhabitants of Fife on New Year's Day, old style, when it's interior was duly lighted up.' The walls of the inner chamber are densely covered in names and initials from this period, many of them dated and several set in carved frames, including several made in 1866 around the time he was surveying the cave (Illus 21; HA 22).

2.82. Local traditions record the use of Jonathan's Cave for making iron nails by hand. The 2004 excavations recovered abundant nails in the uppermost layer of Trench 8 (Gibson & Stevens 2007). If they were being made in the cave, this would represent small-scale manufacture for local use. Nails were being manufactured on a large scale in Kirkcaldy from the post-medieval period and more widely in the region from the 18th century (Rankin 1988, 29).

2.83. The Ordnance Survey first edition six-inch map of 1856 (Fife, Sheet 32; surveyed 1854) shows the coast in considerable detail (Illus 23). Cat Cave (in the location of Jonathan's Cave), Well Cave, Dovecot Cave and Court Cave are all shown, along with Glass Cave, the 'Dovecot', the ruin of Macduff's Castle and the East Wemyss & Buckhaven Gas Works (built in 1846; HA 23). A path leads along the shore in front of the cave to the gasworks and continues beyond it, and another descends the contour between Well Cave and Cat Cave.

2.84. The Ordnance Survey *Name Book* for the parish (Fife and Kinross-shire, Volume 125) records information given to the surveyors by local residents. The names of two caves differ from those used today: Jonathan's Cave, also known as Well Cave, is described as a large double cave immediately beneath the castle containing a spring (OS 1/13/125/14), while Cat Cave is 'a small Cave a little to the N.E. of Macduffs Castle' (OS 1 /13/125/12). Numerous cat bones found in 2004 excavations have been interpreted as explaining the name's origins (Gibson & Stevens 2007, 96). A third name of Factor's Cave has been recorded elsewhere, and derives from a tradition that pigeons nesting in it were reserved for the factor's use (Patrick 1905, *contra* Rankin 1988).

2.85. The *Name Book* notes two alternative names for Court Cave: Kings Cave and Bark Cave. The latter derives from a tradition that fishermen used to tan their sails in bark in the cave, although in Patrick's (1905) version they steeped their nets in a solution made from the bark of oaks.

2.86. The *Name Book* also notes that 'Dovecot Cave' had several entrances which had recently been walled up to convert the cave into a 'pigeon house' (OS 1/13/125/18). The Ordnance Survey records suggest this was a 19th-century development, but the *OSA* record (Gib 1791-99) implies it had earlier origins and also that other caves were used for this purpose in the 18th century, if not earlier. Nesting boxes of consistent depth have been carved in rows along the east and rear wall of Doo Cave, including several double and triple examples (HA 24). Formerly 92 were visible, but accumulated silts have left only about 70 visible (Rankin 1988). Closely set chisel marks visible across the walls above the nesting boxes indicate smoothing of the surfaces, probably to prevent pigeons from roosting higher up and out of reach (Illus 22).

2.87. It seems unlikely the OS surveyors actually entered the caves, as the *Name Book* does not mention any of the carvings. Although the Gasworks Cave had already been discovered (in 1846, when the gasworks was built), neither the *Name Book* nor the map refers to it. It was several years after the Ordnance Survey's work that the Wemyss Caves came to the attention of scholars like Stuart and Simpson. MacLagan (1875, 109) notes that when she visited the site, corn was growing outside the entrance to Jonathan's Cave.

2.88. On the second edition six-inch Ordnance Survey map (surveyed 1893, published 1896), the caves retain their nomenclature and again neither Gasworks Cave nor Sliding Cave is shown (Illus 24). A rifle range extends along the foreshore between Well Cave and the 'Old Quarry'.

2.89. In the early 19th century, a tunnel was cut through the seaward section of Court Cave to allow dry passage when high flood tides blocked the coastal path around the cave (Guttmann 2002, 122). A mortared stone wall, built in the mid-19th century, ran along the edge of the foreshore and demarcated the boundary between the land and the beach (Speirs 2014). Up to the late 19th century, the shoreline in front of the caves appears to have been relatively stable and it was broad enough to take a track that led to the gasworks (see Illus 25).

2.90. Over the following 70 years, mining activity would have significant effects on processes of accretion and erosion along the coast. Deep mining for house and steam coal commenced in 1880 at Rosie Colliery, c 500 metres north of Gasworks Cave, while Denbeath Colliery to the east of Buckhaven began in 1883-5, both under the ownership of Bowman & Company. By the 1890s the Denbeath mines had extended their reach beneath the Firth of Forth (Saiu & McManus 1998, 58-9).

Modern: 20th century

2.91. In 1905, Denbeath and Rosie Colliery changed hands and became Wellesley Colliery under the ownership of the Wemyss Coal Company. Rosie only ever employed a few hundred people, but at Wellesley a third shaft was added in 1907 and its output in 1948 was 1700 tons per day with its workforce peaking at 2,603 in 1957, second in Scotland only to nearby Michael Colliery (Oglethorpe 2006; NMRS NT39NE 59). The Wemyss Company Railway ran from the colliery south-west along the higher ground, parallel to the shore and linking Wellesley with Michael to the south-west of Wemyss.

2.92. The Michael Colliery commenced production in 1898 under the same company. It became the largest producer of coal in Scotland, in spite of persistent problems with spontaneous combustion and gas. Its two shafts were deepened and enlarged in the 1930s to permit undersea mining and a third shaft was added. Its steam winder was driven by 13 boilers, which were built directly above the Michael Cave and were the cause of its infilling (Edwards 1933). By 1948 it was producing 2,330 tons per day, with its workforce peaking at 3,353 in 1957. Rosie Colliery closed in 1953 and Wellesley and Michael in 1967, the latter after a disastrous fire that killed nine men and destroyed the new reserves (Oglethorpe 2006; NMRS NT39NE 23; Hume 1977).

2.93. In 1934, the Wemyss Coal Company constructed five brick pillars to support the roof in Court Cave, which was evidently considered unstable. In 1970, a section of roof at the entrance collapsed and toppled one of the pillars. Illus 25 shows the entrance before the collapse took place and illus 26

shows the site after the collapse.

2.94. Excess waste from mines was dumped into the Forth over a period of more than 80 years, dramatically if temporarily altering the coastline. By the 1950s, the bing beside Wellesley Colliery extended over 100 metres into the water, leaving Buckhaven harbour stranded inland, while waste from Michael Colliery had created a 150-metre long headland. The overall effect was to submerge the coastline of south-east Fife in a blanket of colliery waste (Saiu & McManus 1998, 59-60).

2.95. When dumping ceased after 1967, the unprotected deposits began to be eroded by dominant waves from the south-east, releasing sediments that were driven westward. The headland at Michael migrated west towards West Wemyss. At Buckhaven, after 30 metres of made ground disappeared in a six-month period, boulder rip-rap protection was built. This had the effect of deflecting erosion to the coastline at either side, including towards East Wemyss. The combination of wave attack and sediment starvation steadily devoured the terraces of waste in front of the old cliffline, leaving them exposed to the sea (ibid, 60, 65).

2.96. Comparison of Ordnance Survey maps from 1894, 1914, 1960 and 1994 demonstrates dramatic changes in the coastline over the 100 years from 1894 to 1994 (ibid, 65). Mining subsidence has also been identified as a contributing significantly to the erosion of the coast (Saius 1993). The overall effect has been to leave the Wemyss Caves more vulnerable to coastal erosion than they were at the end of the 19th century, with High Water Mark approximately 30 m higher than it was in 1894 (Saiu & McManus 1998, 65). A more detailed analysis of the dynamics and progress of coastal erosion in front of the Wemyss Caves is presented in section 6 below.

2.97. Early 20th-century military activity along the coast also affected the caves. An annotated copy of the 2nd edition Ordnance Survey of 1894 shows three World War I practice trenches with upcast ramparts in front of Well Cave and above Doo Cave, and a third at Macduff's Castle (Illus 27). 'Targets' are shown between the two caves and 'Rifle Range' along the foreshore in front of Jonathan's Cave. Vibration from a gun emplacement above West Doo Cave caused the collapse of its entrance in 1915.

2.98. Dated initials and names from the 20th century are carved in many of the caves. Comparison of the ancient carvings to their early published depictions show that some have been altered in the interim; for example, the horse in Jonathan's Cave has been damaged by scoring since it was photographed by Patrick in 1902 (Illus 28). In Jonathan's Cave, the fish placed horizontally next to the human figure is a modern addition (Rankin 1988, 34), and there may be other modern additions.

2.99. The rock-cut intertidal bathing pool known as the East Wemyss Dookin' Dub was created by and for local miners before 1894 and it was still in use in 1914, according to the Ordnance Survey maps (HA 34). The 16th-century doocot was apparently demolished during construction of the Rosie storm outfall sewer pipe along the shoreline (Speirs 2014).

Activity of unknown date

2.100. Some of the carvings in the caves are difficult to assign to a particular period, although they were recorded by 19th-century surveyors and may be ancient. These include two human figures, carved

in very different styles in Court Cave (Illus 29) and Jonathan's Cave (Illus 30).

2.101. In several of the caves and at different points along the shoreline, pre-modern features and deposits of unknown date have been recorded. Several midden deposits rich in animal bone and shell have been recorded during monitoring of the eroding shoreline over recent decades (HA 26 and 30). At HA 26 near Sliding Cave (FAS/1984) about 50 lbs of animal bone were recovered, and two shell middens were found in front and east of the cave (SF/1994 in Table 1) (Guttmann 2002, 119-20). Unmortared sandstone walls have been found eroding out of slopes and sections in several places. Three walls east of Sliding Cave were associated with well-stratified midden deposits (HA 33; APG 1990), and a pair of walls recorded near Jonathan's Cave may have been associated with Macduff's Castle (HA 32).

2.102. In Jonathan's Cave, Simpson (1867, 177) dug into deposits of unknown date and recovered marine shells and animal bones, which are now in Kirkcaldy Museum (Guttmann 2002, 113). Excavations in 2004 exposed two postholes and a crescent-shaped feature cut into bedrock, sealed by inwashed and boulders and midden, all of unknown date (WA/2004; Gibson & Stevens 2007).

2.103. In Gasworks Cave, Simpson also dug into deposits and found 'a quantity of bones, etc.' (ibid). He also mentions bowl-shaped hollows in level rock surfaces which contained 'microscopic remains of cereals' and which he believed were querns (HA 28). MacLagan (1875, 109) records something similar – a globular 'mortar' containing traces of grain, carved out of the end of a projecting rock ledge near the entrance. She also notes that the floor was paved with large limestone boulders from the beach, which had been disturbed by treasure-hunters.

2.104. There is possible evidence that some of the caves were used to stable animals. Court Cave, Jonathan's Cave, Sliding Cave and Gasworks Cave all contain perforations through natural projections in the rock, usually horizontal ledges, called cleats (or 'holdfasts' by antiquarian visitors) (HA 29). Ropes passed through the projections could have been used to tether animals put to graze on seaweed in the intertidal zone or, during fallow periods, grass on the foreshore. In Gasworks Cave, which contains the highest number, some are set too close together to have been used at the same time for tethering and many are broken, as if when one gave away another was drilled beside it (Illus 31). There are no historical references to this practice, which might suggest it pre-dates the 18th century, although alternatively it was considered too commonplace to mention in records like the *First Statistical Account*. Many other coastal caves in Fife contain similar features (MacLagan 1875).

The character of the caves

2.105. During the walkover survey, the area including the six scheduled caves and adjacent coast was divided into terrain units based on topographic characteristics and condition. Simple caves formed a single terrain unit while large complex caves contained several units, and areas outside the caves were also subdivided into terrain units. The gazetteer of terrain units is provided in section 11 and the character of each cave is summarised below. Illus 32 shows their locations.

2.106. Court Cave – Terrain Units 1, 4-7

PHYSICAL CHARACTER:

A complex cave with multiple entrances, chambers and passages. There are two entrances to the main chamber, a passage that runs off the rear of the main chamber and a separate passage, now blocked. Part of the roof collapsed at the entrance in 1970 and four out of five original brick pillars, erected in 1934, currently support the roof. The roof at the rear of the main chamber has also collapsed and the passage is now blocked by fallen material. The cave is generally dry, although water is entering from the collapse at the rear.

HERITAGE ASSETS:

Main chamber: dense concentration of carved Pictish symbols; several aumbreys. Small chamber: animal with human figure holding staff; cluster of small cup marks; several aumbreys; cleats; possible joist sockets; evidence of chiselling along walls.

CONDITION AND THREATS:

Stability and collapse – There are large cracks in the roof and walls of the cave next to the pillars and the northern entrance has a large crack with an overhang unsupported by the pillars, close to the collapsed portion. The collapse of the roof at the rear is evident as a depression in the top of the cliff above the cave.

Surface condition and erosion – The walls of the cave have crust deposits formed of soluble water-borne salts that have accumulated on the surface, and in places these are exfoliating the wall surfaces. On the west wall of the main chamber the rock face is very friable and crumbling, and exfoliation has led to the formation of a sand deposit at its base. In some carvings these deposits have formed within the grooves and this may relate to the preferential flow or channelling of water along the grooves.

Biological activity – There is biological activity in the form of algal and lichen growth on the walls, particularly within the entrances. Biological growth often coincides with the formation of crust deposits, as both require moisture. Although there is water ingress at the rear of the cave via the roof collapse, it does not appear to have encouraged biological activity in this area, probably due to a lack of light.

Vandalism and inadvertent damage – Vandalism in the cave has included fires being set and graffiti painted, although the latter is primarily evident on the brick columns.

2.107. Doo Cave – Terrain Units 9-11

PHYSICAL CHARACTER:

A large cave with a planed main chamber, sub rectangular in plan, with a rear passage that formerly connected to a second entrance. The latter is now blocked by a collapse which has brought large quantities of material into the cave from the cliff top above, where a large depression is visible. Its size suggests the collapse may relate to a larger area than the visible blockage inside the chamber. The collapse has left a small hole in the roof of the passage through which water is entering and a tree is growing. A side passage can be accessed via a connection from the main chamber; it originally had a separate entrance but this has been bricked up. This long, narrow passage runs back from the rock face parallel to the main chamber's axis. The cave is damp, with moisture on large areas of wall, parts of the roof and the floor.

HERITAGE ASSETS:

The cave was formerly used as a doocot and more than 70 square rock carved nesting boxes run along the walls. Above these the sides and roof have been worked smooth with extensive chip marks. The numerous carvings described by antiquarian observers may still exist in the now-blocked West Doo Cave, but this cannot be verified at present.

CONDITION AND THREATS:

Stability and collapse – The main chamber appears stable, although the collapse at the rear shows there is instability in the rock above. The adjacent Doo Cave West has collapsed and is no longer accessible.

Surface condition and erosion – There are extensive salt crust deposits on many parts of the walls and in the side passage. In these areas, exfoliation of the rock surface is leaving patches of clean red sandstone among the crust deposits and biological growth.

Biological activity – There is extensive biological growth, moss, algae and lichen on many areas, particularly the lower walls at the rear of the main chamber. This results from the water accessing the cave via the roof collapse at the rear and the cave's height enabling sunlight to penetrate to the rear wall. This growth has covered many of the nesting boxes and their surface condition is unclear.

Vandalism and inadvertent damage – Some rubbish has been left in the cave.

2.108. New Cave – Terrain Unit 14

PHYSICAL CHARACTER:

A small cave located on the north-east edge of a small V-shaped valley. It has a low arched roof and is largely filled with sediment that appears to have washed in from the valley, which makes it difficult to enter. Generally dry as far as can be observed.

HERITAGE ASSETS:

None known.

CONDITION AND THREATS:

Stability and collapse – There is no evidence that the cave is unstable in its current condition, but access problems made examination difficult.

Surface condition and erosion – There are salt crust deposits in the entrance and further inside, with some clear sandstone patches suggesting that exfoliation is taking place.

Biological activity – There is biological growth on the roof.

Vandalism and inadvertent damage – Some rubbish has been thrown in the cave.

2.109. Well Cave 2 / Fern Cave – Terrain Unit 17

PHYSICAL CHARACTER:

Located facing Castle Green, with a low arched entrance and a mound on the drip line of the overhang in front. The cave is small and largely filled in with sediment that restricts access. Its internal condition is therefore difficult to assess. The cave is generally dry as far as can be observed.

HERITAGE ASSETS:

None known.

CONDITION AND THREATS:

Stability and collapse – Unknown.

Surface condition and erosion – The roof and walls at the entrance have salt crust deposits and these, along with biological growth and soot from fires, are exfoliating patches of the rock surface and exposing clean red sandstone.

Biological activity – There is some biological growth inside the cave, but it does not appear to be extensive except around the entrance.

Vandalism and inadvertent damage – There is incised and sprayed graffiti on the rock face around the entrance. There is extensive sooting of the entrance roof and some rubbish has been thrown in the cave.

2.110. Well Cave – Terrain Units 18, 29-30

PHYSICAL CHARACTER:

A large cave comprising a narrow entrance passage that opens into a large sub circular chamber with a second side passage, now blocked, running off from the main chamber to the north-east. Metal railings with a gateway have been placed across the entrance but this is not locked. The entrance sits directly below a large section of castle stonework on the cliff edge. The stonework is aligned with two cracks, 5.9m apart, in the cliff face below it. The cracks may relate to the presence of the stonework but there is no visible subsidence of its central section, relative to the geological bedding on either side. In the main chamber the soot-blackened roof has suffered recent rock falls, apparently due to a pipe that was drilled down into the chamber from above. Six rock bolts have been inserted to stabilise the roof. Piles of rubble and large blocks from roof collapse lie in the main chamber and side passage. The cave is generally dry as far as can be observed.

HERITAGE ASSETS:

Well identified through excavation, probably of medieval date; small masonry pier supporting roof at junction of side passage and main chamber; abundant early modern graffiti in the main chamber, at least some deriving from its annual use for parties on Handsel Monday.

CONDITION AND THREATS:

Stability and Collapse – The insertion of a pipe through the roof in the early 1990s (by Kirkcaldy Council in order to ventilate the cave, in response to the structural stability report by Ove Arup) has destabilised the roof and probably caused collapse. Rock bolts were put in to stabilise it. Rock falls are known to have occurred in recent years (c 2011) in the main chamber.

Surface condition and erosion – The surface condition of the rock is highly variable. The extensive falls from the roof in the main chamber and side passage have destroyed much of the original surface. Extensive soot blackening also obscures the surface in places, but some of the historic graffiti is well preserved. Salt crust deposits are present in the entrance and entrance passage but largely absent in the main chamber. Exfoliation is minor in the entrance and entrance passage.

Biological activity – There is biological activity, algal and lichen growth on the walls of the entrance and entrance passage but none apparent in the main chamber and side passage.

Vandalism and inadvertent damage – There is modern painted graffiti in the cave entrance and

extensive soot blackening from fires over the years, with the remains of two recent fires evident. The main damage relates to the roof collapse that was caused by drilling for the ventilation pipe, as well as more recent episodes of collapse.

2.111. Well Cave 3 – Terrain Unit 19

PHYSICAL CHARACTER:

Single chamber cave with an earthen mound in front on the drip line. The entrance has a low roof and slopes down into the cave where the roof height is higher due to the lower floor level.

HERITAGE ASSETS:

None known.

CONDITION AND THREATS:

Stability and collapse – Slabs of stone have fallen from the roof inside the cave, and patches of algal or lichen growth extend onto the clean surface exposed by the fall showing it was not very recent. The fall demonstrates instability in the roof.

Surface condition and erosion – The walls of the cave entrance and interior have salt crust deposits with large clean gaps where slabs have fallen from the roof and patches of exfoliation inside and outside.

Biological activity – Biological growth is extensive in the entrance with smaller patches in the interior.

Vandalism and inadvertent damage – There is incised graffiti on the exterior rock face and painted graffiti inside. Black staining on the roof at the entrance may be old soot, although no remains of fires were found.

2.112. Well Cave 4 – Terrain Unit 20

PHYSICAL CHARACTER:

Blocked cave to the east of Well Cave 3, at the base of the rock face. It is blocked almost to the roof with a mix of rubble and fine sediment. Only a small crack provides access but the cave is at least 2m deep. It was not possible to enter the cave to assess its condition.

HERITAGE ASSETS:

None known.

CONDITION AND THREATS:

Stability and collapse – Unknown

Surface condition and erosion – The exterior rock face above the entrance has some patches of salt crust deposits.

Biological activity – The rock face above the entrance has large areas of algal and lichen growth.

Vandalism and inadvertent damage – None visible on the exterior.

2.113. Jonathan's Cave – Terrain Unit 21

PHYSICAL CHARACTER:

A large cave with two arched entrances that both open into a large single chamber. The smaller entrance has been blocked with railings and the remains of a concrete wall and the stubs of former railings are present in the larger entrance. The ground level in the cave is lower than the ground in front of the cave. It is generally dry.
HERITAGE ASSETS: Numerous carved Pictish symbols; carved Christian crosses and other symbols at rear of cave; carving of human figure and boat, both of unknown date; possible structural features cut into bedrock; nail-rich early modern occupation deposits; numerous cat bones.
CONDITION AND THREATS: *Stability and collapse* – No evidence of recent collapse or instability. *Surface condition and erosion* – There are salt crust deposits in the entrance and these extend patchily into the cave. *Biological activity* – The entrance has extensive algal and lichen growth which extends patchily into the cave. *Vandalism and inadvertent damage* – There are soot deposits near the entrance, with the remains of two recent fires and modern painted graffiti in the cave. Some carvings (for example, the horse) have been deformed by scoring since they were first photographed in 1903.

2.114. Sliding Cave – Terrain Unit 24

PHYSICAL CHARACTER: A long narrow passage cave with an entrance that slopes down steeply and is partly filled with fine sediment and large rocks. The floor is fine sediment which has dried and cracked, showing that irregular water ingress allows temporary puddles to form. As there were no obvious drips from the roof, water may enter via the entrance and puddle at the base of the slope inside.
HERITAGE ASSETS: Two Pictish rectangle symbols; Pictish double serpent symbol near base of west wall, now covered; Pictish double disc; occupation deposits containing charred cereal grains dated by radiocarbon to the 3rd and 4th centuries AD; abundant early modern graffiti at the rear of the cave.
CONDITION AND THREATS *Stability and collapse* – No obvious signs of instability or collapse. *Surface condition and erosion* – The rock walls in the entrance have crust deposits which extend into the cave. *Biological activity* – Biological growth (algal and lichen) in the entrance extends into the cave on the north side where light penetrates. *Vandalism and inadvertent damage* – The cave contains modern incised graffiti and there are candle remains along with some discarded rubbish. At the rear a sub rectangular hole was dug during the late autumn or winter of 2014-15; its sides and base are now slumped and silted. A recent flake scar at the edge of a Pictish rectangle symbol appears to be the result of deliberate damage.

2.115. Gasworks Cave – Terrain Unit 26

PHYSICAL CHARACTER:

A large cave with its current entrance in a vertical rock face that was cut during the gasworks construction in 1846. The entrance has a large fissure on its east side where material has fallen and washed down from above, partially blocking the entrance. Inside the cave, mainly on the west side, are large slabs of rock from previous roof collapses. There are a number of large cracks in the roof. The cave is damp, with constant drips of water from the roof in some areas.

HERITAGE ASSETS:

Numerous cleats; deposits containing animal bones and stone-cut querns found by antiquarian visitors, not identified in modern surveys.

CONDITION AND THREATS

Stability and collapse – The large entrance fissure, collapsed roof slabs and cracks in the roof of the cave show that it is unstable.

Surface condition and erosion – The roof have lost significant areas of rock surface, lying as slabs on the floor. The walls are in better condition although large areas of salt crust deposits are present. There is no evidence of small scale exfoliation.

Biological activity – A tree is growing in the entrance fissure and algal and lichen growth occurs in patches inside the cave.

Vandalism and inadvertent damage – The cutting back of the rock face during construction of the gasworks removed an unknown length of cave. The cave shows little sign of current human activity; its damp condition and distance from East Wemyss may discourage use.

3. Assessment of Significance

3.1. This section discusses the values and significance of the six scheduled Wemyss Caves and the areas in front of, adjacent to and above the caves, based upon the understanding of the site developed above (section 3). Assessment of significance is designed to help establish why a place or feature is considered to be important and why it is valued. The assessment of significance is fundamental to the management plan process but can be a subjective exercise – reflecting the moment in history when it is written and the state of knowledge about the site at that time. This means that the assessment of significance has the potential to change as knowledge and understanding of the site increase.

Assessment criteria relating to heritage assets

3.2. Heritage assets include standing, buried and submerged archaeological remains, sites and landscapes; buildings, and parks and gardens. Significance can be identified through a consideration of values relating to intrinsic, contextual and associative characteristics inherent in the site or monument, its fabric, setting, use, associations, meanings, records and related monuments or objects. These characteristics contribute to its evidential, historical, architectural/artistic, landscape/aesthetic, natural heritage and contemporary/use values, on which the assessment of significance is based (Historic Environment Scotland 2011, 71-2; 2014).

3.3. The *Scottish Historic Environment Policy* (Historic Environment Scotland 2011, 73) notes that establishing the significance of a monument in order to define its importance can be based on one or more of the following criteria:

- its inherent capability or potential to make a significant addition to the understanding or appreciation of the past;
- its retention of the structural, decorative or field characteristics of its kind to a marked degree;
- its contribution, or the contribution of its class, to today's landscape and/or the historic landscape;
- the quality and extent of any documentation or association that adds to the understanding of the monument or its context;
- the diminution of the potential of a particular class or classes of monument to contribute to an understanding of the past, should the monument be lost or damaged, and
- its place in the national consciousness, a factor considered in support of other factors.

3.4. To help inform management of the Wemyss Caves, its heritage assets are assigned to one of six significance categories following guidance provided by Kerr (2013, 19). The **significance** categories are:

- **Exceptional**: meaning that the character and/or historic integrity and/or outstanding interest of the building, landscape or feature would be fundamentally damaged by the modification or loss of this element.
- **Considerable**: meaning the character and historic integrity of the building/landscape or feature would be seriously affected by the modification or loss of this element.
- **Moderate**: meaning the character and historic integrity of the building/landscape or feature would be affected by the modification or loss of this element.
- **Slight**: meaning the character and historic integrity of the building/landscape or feature would be slightly affected by the modification or loss of this element.
- **Neutral**: meaning the character and historic integrity of the building/landscape or feature would not be affected by the modification or loss of this element.
- **Unknown**: meaning the values and significance of the heritage asset cannot be assessed based on currently available evidence.

3.5. The establishment of a site's or monument's relative importance is a separate process; a particular level of cultural significance is required for it to be considered of national importance (Historic Environment Scotland 2011, 71). Importance can be determined through the analysis of period, rarity, documentation, group value, vulnerability and diversity, as well as through any existing designations of the site or feature.

3.6. In this Conservation Management Plan, the importance of heritage assets is assigned to one of five categories:

- **National**: meaning the site or feature is part of our national heritage and important on a UK-wide scale. This would include all A-listed buildings, scheduled monuments, SSSIs, and Inventoried parks and gardens, as well as sites located within National Parks or Areas of Outstanding Natural Beauty. The site or feature is likely to be assessed as being of exceptional or considerable significance.
- **Regional**: meaning the site or feature is important within the region of the country in which it is located; for the Wemyss Caves this would be Fife and the Firth of Forth.
- **Local**: meaning the site or feature is important either to the local area, or (in the case of a feature) to just the site itself. This would include conservation areas.
- **Negligible**: meaning that the site or feature has little or no importance to the local area, or has been damaged to the extent that its former significance has been lost.
- **Unknown**: meaning that the current lack of knowledge of the extent or character of a site or feature prevents assessment of its significance.

3.7. Assignment to a significance category is designed to support the future management of the Wemyss Caves, in order to conserve the site's heritage value. It is important to recognise that the designation of 'moderate' significance should not be regarded as a suggestion that these elements might be removed or damaged without affecting the value of the site as a whole. The cumulative loss of elements assessed in this or other categories could have a marked effect on the site's value and this cumulative effect needs to be kept in mind.

3.8. The setting of heritage assets is also an important consideration in relation to future management. Setting is defined as the surroundings in which the asset is experienced and it can contribute to or detract from its heritage values (Historic Environment Scotland 2010, 3).

Summary

3.9. Several factors give the Wemyss Caves, the Pictish carvings and any associated archaeological deposits **exceptional significance**: the rare juxtaposition of informal symbols in their context of creation, the site's geographical position relative to contemporary Pictland and the huge potential for knowledge of the Picts to emerge from further study of the site. Other carvings of early Christian and medieval date are likewise considered to have **exceptional significance**, along with any associated *in-situ* deposits. Deposits outside the caves which contain *in-situ* remains of contemporary activity also have **exceptional significance**. All of these have high evidential and historical values, with the carvings also possessing some artistic value.

3.10. Carvings of unknown but ancient date, the early modern graffiti in Well Cave, the aumbreys in Court Cave, the nesting boxes in Doo Cave and the possible animal-tethering cleats found in several caves have **moderate significance** for their historical value and associations. They illustrate some of the site's historical themes, conveying the story of the caves' use during the post-medieval and early modern periods.

3.11. Foreshore deposits comprising colluvium and containing archaeological material in secondary contexts possess **moderate significance**. They demonstrate something of the nature and date of activity nearby on higher ground, which can shed light on the relationship of contemporary settlement and agricultural activity to the use of the caves and foreshore.

3.12. The caves' setting is of **considerable significance**, given that the site's setting and geographical location may have been partly why it was chosen for the focus of activity in the Pictish period. Its close topographical and geological connections to the sea, and views to places with historical and maritime connections to Wemyss, give it high landscape values.

3.13. The key heritage assets of the Wemyss Caves and their significance, values and importance are summarised in Table 3. More detailed discussion of the site's values follows.

Heritage Assets	Location	Values	Importance	Significance
Ancient carvings of unknown date	Court Cave Jonathan's Cave	Evidential	National	Moderate
Pictish carvings	Court Cave Jonathan's Cave Sliding Cave	Evidential Historical Artistic	National	Exceptional
Early Christian carvings	Jonathan's Cave ?Court Cave	Evidential Historical Artistic	National	Exceptional
Aumbreys	Court Cave	Historical	Regional	Moderate
18th/19th C graffiti	Well Cave	Historical	Local	Moderate
Cleats	All caves	Historical	Local	Moderate
Nesting boxes	Doo Cave	Historical	Regional	Moderate
In-situ archaeological deposits	All caves	Evidential	National	Exceptional
In-situ archaeological deposits	Raised beach Foreshore	Evidential	Regional	Exceptional
Archaeological material in secondary contexts	Raised beach Foreshore	Evidential	Local	Moderate
Mining waste deposits	Foreshore	Historical	Local	Neutral
Setting of the caves	N/A	Landscape Aesthetic	Regional	Considerable

Table 3: Summary assessment of the significance of heritage assets at the Wemyss Caves.

Evidential values

3.14. The national importance of the heritage assets in the Wemyss Caves is reflected in their status as scheduled monuments (SAM 817). Although deposits outside the caves are not protected by scheduling, the survival of some *in-situ* features possibly associated with the caves' use (along with much redeposited material) lends them at least regional importance.

3.15. The Wemyss Caves, the Pictish carvings that three of them contain and any associated deposits comprise a heritage resource with high evidential value. They are a unique combination of elements, all of which are found at other sites (although rarely in this combination), some of which are caves. The most closely comparable site in Scotland is Sculptor's Cave, Covesea and there are both similarities and differences between them that contribute to this value. Wemyss and Covesea are perched by the sea at the extremities of northern and southern Pictland and both contain informal Pictish symbols, factors which suggest they relate to a shared set of cultural practices and world views. At Wemyss, however, there are many more symbols and they are carved inside several of the caves rather than around the entrance of one. There is no evidence that executions or decapitations were carried out, although only limited investigation has taken place. The interior deposits are relatively intact as far as excavation has been able to establish, but those in Jonathan's Cave appear to have been scoured out by natural processes in the two locations investigated.

3.16. The Wemyss Caves have enormous potential for yielding new information through contextual study. Closer study of the symbols – particularly using the scanned data – could increase knowledge of where and how they were carved in the caves, whether they were made by a few or many artists, the temporal rhythm of their creation and how they were used – whether as artistic expression, a formal writing system or votive acts. Deposits inside the caves have potential to illuminate what other activities accompanied acts of carving and challenge current ideas about when the symbols were developed, as the 2nd- to late 3rd-century occupation deposit in Sliding Cave shows.

3.17. The early Christian carvings in Jonathan's Cave and possibly also Court Cave also have high evidential value for their potential to illuminate their use as shrines or chapels or as places along an important pilgrimage route, as at other caves in Fife.

3.18. Carvings of human (Court and Jonathan's Caves) and animal figures (Court Cave) of unknown but probably ancient date also have some evidential value, given their occurrence in original contexts of creation and the potential for surviving, associated archaeological deposits.

3.19. Assuming the carved boat in Jonathan's Cave is of early medieval date, it possesses high evidential value – pointing to, for example, the use of the caves by seafarers and wider cultural connections. This value is enhanced in combination with other early medieval indicators such as the burials, Norse-type bone pin and the possibly contemporary Court Cave cup marks. If it is a late 19th-century creation, perhaps replicating a carving observed by Simpson in West Doo Cave, then it could at least illustrate an ancient carving which is no longer accessible. Given that the question may never be resolved, it would seem safer to assume ancient origins and therefore high evidential value.

3.20. Although some of the carvings have been damaged by human intervention such as chalking, fires and scoring and by natural processes of erosion, 19th- and early 20th-century records allow visualisation of their original forms to be discerned.

3.21. Limited excavation in four of the caves has demonstrated the survival of occupation deposits relating to various phases of use, including late Iron Age activity in Sliding Cave, medieval activity in Well Cave and possible prehistoric activity in Gasworks Cave, with structural features of unknown date in Jonathan's Cave. The modern excavations have shown that archaeological horizons are generally sealed beneath at least 0.5 metre of inwashed and modern deposits (Wessex Archaeology 2004). Although no investigation has taken place in the other caves, given the numerous early carvings in Court Cave and the close relationship of Doo Cave to the abundantly-carved West Doo Cave, both of these have high potential to contain deposits that could illuminate the nature of related activity. The deposits in the caves are therefore considered to have high evidential value.

3.22. Excavations outside the caves have shown that in-situ features and deposits, including burials, prehistoric cultivation traces and medieval buildings and middens, do survive in places along the foreshore. The *in-situ* archaeology has considerable potential to yield information on how the caves and adjacent ground were used at different times in the past, particularly during the Iron Age, Pictish, early Christian and medieval periods, and therefore also has high evidential value.

3.23. Excavations have also shown that much of the foreshore is made up of colluvium and dumped material, although these deposits do contain artefactual material deriving from various phases of activity on the higher ground. Areas of the foreshore where these deposits have been found have lower evidential value, although material in secondary contexts can shed light on activity on the clifftop at different periods.

3.24. Along large sections of the foreshore that have not been examined through excavation, the presence or absence of *in-situ* archaeology has not been established. This is also the case for the ground above the cliff top, although Neolithic, Iron Age and medieval material fallen onto the foreshore suggests remains of earlier activity do or did exist there.

Historical values

3.25. Some key historical themes emerge from the narrative of the caves' history of use (section 3). The links between the themes and certain heritage assets give them high historical value.

THEME 1: Iron Age food and farming

3.26. In the mid first millennium BC, a community's domestic rubbish – including cereal grains and animal bones – piled up on the raised beach outside Well Cave. The midden may have been ploughed as a way of fertilising the cultivation soil, a practice in evidence at other Iron Age settlements around the coasts of Scotland. Cultivation outside the caves may have also occurred in the early first millennium AD, when cereals were charred and perhaps stored in Sliding Cave. Artefacts and radiocarbon dated material from slumped deposits also point to Iron Age occupation on the cliff top.

THEME 2: Liminal spaces on Pictland's southern frontier

3.27. While the meanings of the carved Pictish symbols – both in relation to each other and to their social context of production – are not understood at present, they point to some key historical aspects of Pictish activity at Wemyss. It may have been connected to the liminal character of the caves, poised as they were between earth and sky, land and sea, the territory of Picts and lands belonging to other groups. By comparison with evidence for activity at other semi-subterranean places in Pictland, they may have been the focus for cultic practices arising from beliefs about the supernatural. The carving of several motifs that also occur on metalwork could indicate they were used for gatherings of silversmiths, and this might have been linked to its perceived cultic properties. This activity would have taken place within the wider Pictish context of political, social and economic structures, artistic endeavours, religious beliefs and mythologies.

THEME 3: Pilgrimage and sacred spaces

3.28. The Wemyss Caves may have been a focus for early Christian monasticism as it spread northward across Pictland as early as the 6th century. The crosses carved in Jonathan's Cave could derive from its use as a chapel or as a shrine or hermitage for monks seeking solitude in the eremitic tradition. If the caves had held cultic significance during the Pictish period, this could represent the appropriation of a pre-Christian sacred site and its perceived special properties. Such perceptions persisted into the 10th century, when a Christian symbol then current in Galloway – the ancient

seat of Christianity in Scotland – may have been carved in Court Cave. The burial of two people near Jonathan's Cave also points to Christian associations in the 10th-12th centuries. By the 12th century, the caves would have lain along a well-travelled pilgrimage route to St Andrews, as well as the priory church of St Adrian on the Isle of May and other places in the region. Pilgrims pausing here may have carved Christian symbols to mark stations on their journeys.

3.29. Court Cave may have been used again for religious assemblies by dissenting Covenanters in the 17th century, as evident in its carved aumbries (although these could relate to a different use – see Theme 5). The early modern carved graffiti in Well Cave, much of it carefully executed, attests to its importance in the annual social calendar in the 18th and 19th centuries, and perhaps even earlier. Traditional Handsel Monday festivities, part of a wider cultural tradition in Fife (Graham 1899), brought processions of local people to crawl through the narrow passage into the large, womb-like main chamber, where torches and candlelight illuminated the space and reflected on the surface of the well. The graffiti thus signify a more recent key strand in local religious practice.

THEME 4: Maritime traffic in the Firth of Forth

3.30. The caves appear to have been connected by sea to places flavoured with Norse and Hiberno-Irish cultural influence in the 11th-13th centuries. Ships sailing up the Forth from southern ports, the Northern Isles or the western seaboard would have sought opportunities to trade, raid or settle - like the one that carried Vikings to lay waste the monastery on the Isle of May in AD 875. The bone pin found outside Jonathan's Cave could have found its way on such a ship.

THEME 5: Medieval power, protection and practicalities

3.31. There are strong associations between the site and the local power centre of Macduff's Castle, seat of the Wemyss family. These are drawn out in the well in Well Cave and medieval pottery found near its supposed site; traditions of a staircase linking the cave to the castle, which would have given the occupants protected access to a water source; evidence for quarrying and mortar-making for castle construction, and the domestic rubbish that was used to fertilise fields beside the castle and has fallen (or in some cases been dumped) over the cliff edge. Tradition associates the castle with the late 11th-century Macduff, thane of Fife and slayer of Shakespeare's *Macbeth*, but the castle was built in the 14th century as part of an integrated defensive line, erected in response to the increased threat from England. It is of national importance, as reflected in its scheduled status (SAM 860).

3.32. The tradition that King James IV (who ruled 1488-1513) joined the revels of a party of gypsies in Court Cave may or may not be true, but it does accord with the incognito travelling habit of this adventurous, charismatic, dentistry-practising, golf-playing, linguistically-talented Renaissance monarch of the Stewart line. In the alternative tradition, local lairds the Colvilles held baron courts in the cave between 1530-1634. Here they might have tried tenants for offences recorded at other contemporary baron courts, such as using a mill other than the barony's to grind corn, owning trespassing geese, allowing their animals to graze on other people's crops, having too many guests at weddings or baptisms and unnecessary changes of clothing at weddings (archive.org/stream/recordsofbaronco00sticrich). Some of the aumbreys carved in Court Cave could relate to this use and been used to hold candles or documents.

THEME 6: Rhythms of domestic life, industry and agriculture

3.33. The caves saw temporary, perhaps seasonal use as living spaces, animal byres, fishing stations and industrial workshops from post medieval to early modern times. There are traditions of itinerant groups (in Court Cave) and impoverished families (in Jonathan's Cave) using them as temporary homes. The shelter provided by the caves also served local agricultural regimes and small-scale industry. The cleats found in several of them attest to their use as overnight byres for animals grazing on the foreshore in summer months, and Doo Cave was elaborately and laboriously fitted out to house pigeons that would provide meat, eggs and fertiliser. Jonathan's Cave housed a nail-making workshop, as evident from the abundant handmade nails in its upper deposits, and fishermen steeped their nets in bark in Court Cave. Much of this activity is undated, although historic references suggest these uses took place in the late 16th to early 17th-century and continued through the 19th century. The associated heritage assets have had a major physical impact on the fabric of the caves, particularly in Doo Cave.

THEME 7: Mining the Forth

3.34. Mining for coal, specifically the excavation of subsea mines extending beneath the Firth of Forth, has had significant effects on the caves' relationship to the sea, causing subsidence and extreme fluctuations in the shoreline. Although the effects have been detrimental, mining is a key aspect of the area's early modern social and economic history, and has produced some of the material making up the foreshore.

Architectural and artistic values

3.35. *Artistic values:* The Pictish symbols in the Wemyss Caves possess artistic value as informal examples of symbols that have generally been much more carefully executed on free-standing symbol stones. Their value resides particularly in their rare informality, original context and links to metalwork motifs, thus overlapping with their evidential value. Although these informal symbols tend to have been ignored by art historians, the recent digital recording of the carvings in the Wemyss 4D project has created a valuable resource for more detailed study of techniques used to execute the carvings, their associations and relative positions and the ways that they deviate from higher quality versions. Other carvings of early Christian and possible prehistoric date also possess some artistic value.

3.36. *Architectural values:* Macduff's Castle, as a scheduled monument and category B listed building (16707), is considered to be of national cultural importance with architectural value in its regional context.

Landscape and aesthetic values

3.37. The caves' setting can be defined as the way in which their surroundings contribute to how they are experienced, understood and appreciated (Historic Environment Scotland 2010, 3). The Wemyss Caves are intimately associated with the sea. This link runs through the wave action that created them, their positions at the back of the raised beach, their possible status as liminal spaces between land and sea in the Pictish period, their use by fishermen in the post-medieval period and

the recent mining activity that has altered the shoreline and destabilised the solid geology. The threat of coastal erosion also draws this link into the narrative of the caves' future management.

3.38. Views from the caves extend across to the island of Inchkeith and the shore of East Lothian with its prominent landmarks of the Bass Rock and North Berwick Law, highlighting the site's intangible connections to other places. Before the advent of improved roads and railways in the late 18th to 19th century, access to the Wemyss Caves from locations beyond the immediate environs would have been more straightforward by boat than by foot. The Firth of Forth would have provided a key mode of transport, linking rather dividing different communities around its shores. The prehistoric rock art, Pictish and Christian symbols, early medieval boat and the Norse-type bone pin all attest to the sharing of cultural traditions with other places around the coasts of Britain, including the Northern Isles and perhaps also the Continent.

3.39. The presence of the sea is a fundamental aspect of the caves' character and a key part of any experience of them, via various senses. The visitor experiences not just views of the sea but the smell of salt, the sound of waves and the feel of onshore winds and salt spray, and can see the impacts of its powerful energy upon the eroding shoreline and sea wall and the effects of spray-borne salt upon the carvings.

3.40. Although the Buckhaven-Wemyss littoral is somewhat degraded through mining and dumping (Prof J Hansom, pers comm), the Wemyss Caves retain their original character as dramatic natural features and the seascape continues to contribute to their landscape and aesthetic value.

3.41. Caves tend to draw strong aesthetic responses from people, both negative and positive. The relative paucity of scholarly attention paid to the carvings may have something to do with aversion to dark, damp cave environments and the carvings' lack of aesthetic appeal to scholars, in comparison with the more carefully executed symbols on Class I and II Pictish stones. In fact, the extreme and for some uncomfortable nature of caves may be inextricably linked to the informal character of the carvings and have much to do with why they were made here.

Natural heritage values

3.42. The site is considered of national importance for its natural heritage values due to its inclusion in the Firth of Forth Site of Special Scientific Interest (SSSI) (http://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa_code=8163#Site_map) and the EU directive Firth of Forth Special Protection Area (SPA) for the conservation of wild birds. The Upper Carboniferous bedrock that contains the caves is among the 49 notified features of the SSSI, while the SPA extends protection to estuarine and coastal habitats for birds (Scottish Natural Heritage 2011).

Contemporary/use values

3.43. *Social and use values*: The caves and associated shoreline, with their heritage assets including Macduff's Castle, are used frequently as an area for outdoor recreation and contribute to local sense of identity. They can therefore be said to possess community values. The role of the heritage assets in this appears to be uneven, with the low value sometimes ascribed to them

evident in vandalism and inadvertent damage to carvings and fabric of the caves. This could increase in the future as their protection, understanding and interpretation improve. The site has high education values, offering a rare opportunity to experience the caves as places to which people returned over time and used in a variety of ways, and to see informal Pictish symbols in their original contexts. The access values are relatively low, given difficulties of access to all the caves for less mobile people and to the northern two caves at high tide.

3.44. *Corporate value:* The vulnerabilities of the caves and the carvings, particularly the threat of rock surface erosion, pose particular technical challenges as well as opportunities to develop methods of conservation and/or replication to maintain its high education values and improve access values.

Major gaps in understanding

3.45. For a site of such rarity and exceptional significance in terms of the presence of informal Pictish symbols, the Wemyss Caves have been the object of astonishingly little detailed study by modern scholars. The carvings have been mentioned in recent works addressing Pictish art and writing in general, such as those by Forsyth (1995), Henderson & Henderson (2004) and Gondek (2007), and the subject of highly detailed recording by the RCAHMS and Wemyss 4D. However, no contextual study has been carried out of the carvings at Wemyss to consider their context in the caves and in relation to each other, nor how they related to broader social practices among Picts. This may be because has scholarly attention has tended to focus on the higher quality carvings of Class I and II stones. There is considerable potential, therefore, for further understanding of them to emerge which will allow refinement of this Statement of Significance.

3.46. Although excavations have established the survival of archaeological deposits in the caves relating to late Iron Age and post-medieval activity, the picture is very limited so far. There is potential for the caves to contain deposits relating to all the phases of activity outlined in paragraphs 4.25ff under Historical values. Likewise, the excavations outside the caves have produced small windows onto the nature and dates of activity there but the picture is far from complete.

3.47. The social context of production for Pictish symbols in general, the timespan over which they were carved and the ways in which their creation and deployment fit within wider social practice and contemporary cosmologies are all areas that are presently not well understood in the field of early medieval scholarship. These limitations in understanding also limit the assessment of significance presented here.

3.48. While the wider context of the carved Christian iconography is much better known, how it related to practices conducted in Jonathan's Cave (and other caves in Fife) and its relationship, if any, to burials outside the cave are not well understood.

3.49. The medieval occupants of Macduff's Castle clearly used the foreshore and caves for various purposes, but our understanding of these uses and the physical relationship between the castle and Well Cave is not well developed. The results of the recent digital recording of the cave in Wemyss 4D should clarify the latter.

3.50. Although assessing the significance of artefactual assemblages from the Wemyss Caves lies beyond the scope of the brief for this Conservation Management Plan, it could range from moderate to

exceptional depending on their contexts and circumstances of discovery. They would warrant detailed examination to inform an assessment of their evidential values and significance (see section 5, Opportunities).

3.51. Gaps in current understanding could be addressed through targeted pieces of research which would support management aims and help refine the Statement of Significance. Some potential avenues are outlined in the Action Plan (section 6).

4. Assessment and Analysis of Conservation Needs

Vulnerabilities

4.1. The Wemyss Caves, the carvings they contain and archaeological deposits both in the caves and along the foreshore are currently under threat from a variety of processes and activities, including coastal erosion, vandalism, subsidence, structural instability and rock surface erosion. This section outlines the nature of these threats in more detail.

Coastal erosion

4.2. The sea is a dynamic and powerful force that batters shorelines and is the very agent that carved the caves at Wemyss. Erosion results from the scouring power of water, the attritional impact of water and its sediment load and the compressive effect of incoming water acting in cracks and fissures in rock faces. These processes do not act equally on the shoreline; they have greater impacts on loose sediments, on softer bedrocks or where local topography can focus the power and forces involved on specific areas. The sea's erosive power can undermine cliff faces, leading to large scale collapse and slumping of the overlying rocks and sediment.

4.3. Coastal erosion at Wemyss is evident in a series of 23 aerial photographs taken between 1947 and 1988, analysed by Ove Arup & Partners Scotland (1990). On the 1947 photographs, parallel bands visible on the land above the sea cliffs relate to phases of growth of the raised beach. By 1974, substantial sand and shingle deposits had built up along the current beach, indicating a long-term depositional trend. However, by 1988 the shoreline had retreated to the base of the cliffs in several places and erosion had breached the vehicle track that formerly led from East Wemyss village to the gasworks. Erosion from wave action is now reaching to 50 metres and more beyond the high tide mark (Speirs 2004).

4.4. The history of coastal erosion at Wemyss has been complicated by a number of interacting processes and events including mining, spoil dumping, subsidence, and intermittent and variable approaches to sea defense.

4.5. The most significant factors driving erosion of the coast in front of the caves have been those arising from mining activity (Saiu & McManus 1998). As described above (paragraph 3.92), after the local mines closed in 1967 and the dumping of mining waste ceased, the sea began to erode the substantial waste deposits in front of the former Wellesley and Michael collieries, releasing sediments that migrated westward. The construction of rip rap protection for the made ground at

Buckhaven deflected erosion to the coastline at either side, including towards East Wemyss. As tides and storms have steadily eroded the sediment-starved deposits in front of the caves, the shoreline has retreated towards the shore.

4.6. Saiu & McManus (1998, 65) have conducted a comparative analysis of Ordnance Survey maps from 1894, 1914, 1960 and 1994 and identified dramatic changes in the coastline over this 100 year period, summarised in Table 3. Illus 33 shows the changes documented on these maps.

Period	Coastline	Changes
1894 - 1914	LWM	Stable
1914 - 1956	LWM	Retreated landward by 150 metres, while the distance between HWM and LWM decreased from >200m to <50m and beach gradient steepened from 0.025 to 0.1m
1956 - 1994	LWM	Stable
1894 - 1914	HWM	Retreated landward by average of 10m
1914 - 1956	HWM	Advanced seaward by between 25-70m (varying by location), from dumping of mining waste
1956 - 1994	HWM	Retreated landward up to 130m, to a position 20m landward of its 1914 position and an average of 30m landward of its 1894 position

Table 4: Coastal changes, based on analysis of Ordnance Survey 1:2500 scale plans of the coastline for 1894, 1914, 1960 and 1994, for the coastline between Silver Sands Bay and East Wemyss (Saiu & McManus 1998, 62). Distance values have an error margin of ±10%.

4.7. Subsidence due to mining has also contributed significantly to coastal erosion in south-east Fife (Saiu 1993). The areas most affected are those where the most coal was extracted. Where the Low Water Mark lies on the rock platform, as it does in front of the Wemyss Caves, it has migrated shoreward due to subsidence (http://www.st-andrews.ac.uk/~rab/st-a_www_files/gg3052buck.html).

4.8. Analysis of Ordnance Survey benchmarks near the coast found that more than 12 had subsided between 0.41m and 2m over the period 1896-1960, allowing for variation of ±0.3m due to natural error (Saiu & McManus 1998, 64). Between 1850 and 1970, 19 separate coal seams were worked along the stretch of coast between Dysart and Buckhaven, undermining much of the area. Most of this consisted of a combination of pillar and room workings, and later of longwall workings that involved backfilling. The latter causes relatively rapid and predictable subsidence, but subsidence due to pillar and room working can occur more than 100 years after mining ceases.

4.9. The effects of mining have left the Wemyss Caves more vulnerable to coastal erosion than they were at the end of the 19th century. Subsidence has generally been between 1-2 metres along the coast, but greater in those areas where most coal was extracted, specifically at the Wemyss Caves and Silver Sands. Subsidence has been greatest to the east of the gasworks, calculated at 5.5m (with 20% margins of error). At the caves the Low Water Mark, which rests on the rock platform,

has migrated shorewards and the High Water Mark is about 30 m higher than it was in 1894 (Saiu & McManus 1998, 61, 65; see Table 3). The subsidence will have produced stresses and strains in the bedrock and created cracks, fissures and faults, all of which reduce the inherent structural integrity of the bedrock and act as weak points for further attack by coastal erosion. Further potential subsidence for the stretch of coastline that includes the caves is likely to be between 1 and 2 metres (ibid).

4.10. Speirs (2014) has compiled an account of the coastal protection measures undertaken in the last century; these are summarised in Table 5 and shown in Illus 34-36. The rate of coastal erosion was observed to be increasing during the 1980s and by the end of the decade concerns were being raised about the potential impact of this upon the caves. Between 1988 and 1996, Fife Regional Council intervened 10 times to construct protective works. These have not been maintained and they now provide little or no barrier to erosion (ibid). In Table 5, the use of the asterisk symbol * denotes interventions undertaken specifically for the caves.

No.	Date	Intervention	Processes of attrition and current state
1	mid 19th C	Mortared bonded sea wall on stone block foundation along shore in front of caves	Began to fail in 1920s with loss of sediment behind the wall. Completely destroyed by 1940s.
2	1922	Reinforced concrete wall to protect expanded gasworks.	Gasworks decommissioned in 1940s and ruinous by 1950s. Sea began undermining and overtopping wall from 1970s, eroding gasworks and completely destroying the wall by 2013. Concrete gasometer base remains and is slowing erosion, but is being undermined.
3	1960s	Concrete-clad pipe for Rosie storm outfall sewer with piled concrete sea wall, from East Wemyss village to Gasworks Rd cutting.	In 1992 storms and high tides undermined and cracked sea wall with considerable loss of sediment behind it and blocked vehicle and pedestrian access to Castle Green. W part of wall was deliberately toppled in 1992 (see 10) and now forms part of the coastal path. Part of E wall is upstanding but severely undermined, and forms section of precarious coastal path to W of Castle Green.
4*	1988	Short length of temporary rock defences in front of Jonathan's Cave.	Damaged by storms in January 1990 (see 6 for current state).
5	March 1989	Addition of c 60m of rock armour against coast edge of Castle Green running E from end of standing portion Rosie sewer sea wall, with rock armour also placed in front of sea wall to stop it being undermined.	Rock armour remains but has been displaced and somewhat depleted by wave action.
6*	January 1990	c. 30m length of concrete / red sandstone sea defences to replace	Winter storms in 1990/1 eroded beachfront to east of cave and began to erode sediment

		damaged defences in front of Jonathan's Cave, built using concrete from former gasworks wall and beach material.	behind concrete / sandstone wall; it was extended as a result in 1991 (see 7). Further damage occurred in 1994 (see 11). Defences are still standing and in a reasonably good state of repair.
7*	March 1991	Sea defences in front of Jonathan's Cave extended by c 12m to the E to sandstone outcrop, using large imported whinstone rocks.	Standing and in a reasonably good state of repair.
8*	October 1991	15 m length of whinstone boulder defence wall, running N/S along E face of headland to W of Jonathan's Cave.	Still in place and providing some protection.
9*	October 1991	52 m length of rock armour from the Jonathan's Cave headland running W towards a concrete outfall sewer that runs N/S into the sea.	Somewhat dispersed and displaced but providing some protection.
10*	May 1992	After storms and high tides cracked and undermined Rosie sea wall, it was cut into sections and felled to create makeshift sea defence and access path.	Toppled sea wall still forms access path and provides some protection from erosion.
11*	1994	Lines of rock armour built in front and W of Sliding Cave in response to continuing erosion between this and Jonathan's Cave. Groyne line along LWM in front of Sliding Cave built of large boulders behind iron fence bedded in bedrock to reduce force of wave impact.	After 1996 waves began pushing rock armour and breaking iron cross-members. No maintenance undertaken and rate of failure increased. Cross-members are gone and boulders remain as a scatter. Iron uprights survive and provide minimal protection.
12	June 1994	Rock armour to W of Court Cave, in front of and E of car park.	Still in place and providing some protection.
13*	June 1994	150m of medium rip rap placed on beachfront from car park to end of upstanding Rosie sea wall to W of Castle Green. Large amounts of small rock rip rap dumped in Doo Cave area and along E beachfront at Castle Green to replace depleting beach deposits.	Somewhat dispersed and displaced but providing some protection.
14*	1995	Groynes of iron fence 1.5m high and bedded 1m into bedrock on steel piles built along HWM in front of Jonathan's Cave, with tightly packed whinstone boulder armour 2m high and 3m wide.	Iron fence largely survives but rock armour has been scattered by waves and reduced to 0.6m average height. Groynes still offer reduced protection.
15*	1996	Medium rip rap placed on beachfront outside Court Cave to replace	Somewhat dispersed and displaced but

		depleting beach deposits.	providing some protection.

Table 5: Summary of coastal protection interventions at the Wemyss Caves from mid-19th century to 1996 (based on Speirs 2014). Their locations are shown in Illus 34.

4.11. Coastal erosion is continuing, with the soft deposits in front of the caves having retreated by several metres since 1996. The rock armour around the East Wemyss car park is deflecting waves to the west, resulting in a large erosional bite into the made ground beyond it to the west (Prof Jim Hansom, pers comm).

4.12. A further factor that will add to future problems of coastal erosion is global warming, which is causing rising sea levels and increased storminess. It has been predicted that seal level along the Forth coastline will rise between 0.32-0.58 metres during the next 100 years (Firth et al 1997, 86). This would have significant impact on the low-lying sea caves at Wemyss, in particular: 1) areas that were previously above water and provided a barrier between the cliff face and the cave will be inundated, and 2) areas that had previously been above water will come within reach of the sea's erosive power, particularly during high-energy events.

Structural instability

4.13. The structural stability of the caves is a major factor in their vulnerability. All sea caves are, by their very nature, temporary topographic features. The method of formation and location, unless raised up through tectonic processes, means that they are in geomorphologically active environments. The caves at Wemyss are formed in bedded sandstone of varying hardness. The bedding planes are natural weak points at which cracks can form.

4.14. The coastal erosion taking place at Wemyss is reducing the protection offered by the beach, which absorbs some of the waves' force, leading to the application of greater force on the cliff face into which the caves are cut. Additionally, the erosion and redeposition of unconsolidated deposits from the beach environment in front of the caves means that forces affecting the structural loading on the bedrock are subject to constant change, exposing weak points to further erosive forces that can increase structural instability. The caves' instability has been increased by the subsidence due to mining activity (see paragraphs 5.7-5.9).

4.15. A structural stability survey by Ove Arup (1990) concluded that, while all of the caves showed signs of rock movements and presented the evidence for this in each case, most of them were not likely to be damaged through collapse in the near future. However, the risk to visitors remained and would increase should access be increased or encouraged.

4.16. An inspection by Historic Environment Scotland in 2013 found no obvious significant change in the condition of the caves in the intervening period, but identified the continuing risk of large blocks falling. Jonathan's Cave was considered the easiest to make safe for access.

4.17. There is ample evidence for structural instability in some of the caves, as evident in a number of collapses and areas at risk of further collapse. Court Cave has seen major collapse at its entrance and rear (Illus 37). Support pillars have been constructed in the entrance but there are still large

cracks in the roof (Illus 38). One of these lies forward of the pillars in the northern entrance and this overhang is potentially at risk of collapse. Doo Cave has seen a collapse which blocked its second entrance and led to the complete closure of West Doo Cave. Large slabs of rock have fallen from the roof in Unnamed and Gasworks Cave. A further major collapse in the main chamber of Well Cave will be discussed in relation to vandalism and inadvertent damage. In Court, Doo and Well Caves, collapses have led to large blockages forming at the rear. In several cases collapse has provided points of ingress for sediment and water which have affected the environment inside the caves; some – notably Doo and Gasworks Caves – are very wet as a result. Caves which have suffered from collapse may now be stable, but several including Court, Well and Gasworks Caves (Illus 39) have large cracks in the roofs or walls that could lead to further collapse.

4.18. This structural instability has been induced variously by mining-related subsidence (Court Cave), weight or vibrations above the caves (Glassworks Cave and West Doo Cave) and inadvertent damage through intervention (Well Cave). However, some of it is probably due to natural processes and forces, including weathering and gravity, which may account for more recent collapses in Well Cave (c 2011) and Caiplie Cave (D Speirs, pers comm).

4.19. Structural instability places the caves and carvings themselves at risk, as they could be lost either through complete collapse (as West Doo Cave was) or a series of smaller events. This would reduce the significance, heritage value and opportunities of the Wemyss Caves by eroding their group value.

Soil slippage

4.20. Soil slippage is another ongoing geomorphological process at the Wemyss Caves. For example, in December 2012, a major landslip occurred around Sliding Cave, bringing tons of material down the cliffs overnight (D Speirs, pers comm). The caves are set within a steep to vertical rock face that is mostly obscured by overlying sediment, which protects the rock face from weathering to some extent. Archaeological material can be buried within this sediment, as evidenced by the burials found in front of Jonathans Cave.

4.21. On any slope, soil slippage will occur as gravity pulls on any loose or unstable material. At Wemyss, soil slippage could occur to the deposits below, above and to the side of the cave as well as inside the caves. The rate of soil slippage will depend on a number of factors including slope steepness, vegetation cover, sediment cohesiveness and water content. A further factor at Wemyss is the impact of coastal erosion, which removes sediment from the base of the slopes, resulting in instability and collapse of the sediments above.

4.22. Soil slippage presents both risks and opportunities.

4.23. From above, on the cliff top, soil is slipping down and accumulating on the ground below. This is evident around Castle Green, where mounds of earth have built up below the drip line of the overhanging rock face (Illus 40). These mounds are now partially blocking the entrances to some of the caves and if the process continues could eventually block access. The entrance of Well Cave 4 may well have been blocked by this process.

4.24. Soil slippage below and inside the caves could expose previously buried archaeological deposits, requiring action to record them. Although this is a vulnerability, it would present the opportunity to recover information on the date and nature of activity that led to their formation. Slippage at the base of rock faces could even expose previously unrecorded caves.

Rock surface erosion

4.25. The weathering and erosion of the rock surface is a process that will affect any rock carving exposed to the natural environment. It comes about through the impact of multiple weathering processes and related factors upon the surface of the rock. As with any weathering or corrosive process, environmental stability is often the best protection, as changes in temperature, humidity and the chemical environment often accelerate weathering processes. Caves are generally stable environments, as they are protected against the worst extremes of the weather and the mass of bedrock around them regulates against extreme temperature fluctuations. As the Wemyss Caves are sea caves, they are subject to greater environmental variation than inland caves, but the rock faces inside them are better protected than those outside.

4.26. Four main factors are impacting the weathering and erosion of the rock surfaces inside the caves: abrasion, salt deposition, water flow and biological activity. It is the interaction of these different factors that determines the speed at which the rock surface erodes. Such erosion can take place through the loss of individual particles of sand from the sandstone, as is apparent in one area of Court Cave where it is producing a sand deposit at the base of the cave wall (Illus 41). Alternatively, the sandstone surface can be lost by delamination in which areas of the sandstone surface flake off. This was observed in several caves and is easily spotted when the weathered surface has been lost, exposing clean, unweathered patches of rock surface.

4.27. Abrasion can be the result of wind- or water-borne particles impacting on the rock face and the carvings. This is a long, slow process of attrition. Additional abrasive action can come from visitors to the cave and falls within the section on inadvertent damage and vandalism, discussed below.

4.28. Within the caves, many of the rock faces have areas where soluble salts in the rock are being deposited on the surface, leaving a crust. This was observed during a 1991 condition survey of the caves, conducted by the National Museums of Scotland Archaeology and Conservation Departments. The survey noting that the crystallization of soluble salts in the rock causes the rock to delaminate, or flake off along its bedding planes (Guttmann 2002, 121). The deposition of these soluble salts is related to the presence and flow of water in the caves. Concentrations of salt were observed during the current survey along bedding planes and natural cracks and fissures in the bedrock. However, in some cases a focus of crystallization was observed taking place within carvings, possibly due to the preferential flow of salt-bearing water along the incised grooves.

4.29. Biological activity from the growth of algae, lichen, mosses and occasionally larger plants was observed in most of the caves. This was primarily in the entrances, where water and light are both present, although it was also observed at the rear of caves such as Doo Cave which have high roofs that let in plenty of light. As water is essential to biological activity, caves with water ingress through collapsed roofs, such as Doo and Gasworks Cave, have large trees growing out of collapsed areas. The most extreme example of biological growth is in Doo Cave, where plentiful water and

sunlight has allowed algae, lichens and moss to spread over the nesting boxes at the back of the cave. Biological growth on the rock faces can obscure the carvings and also, by changing the local chemical environment, increase the weathering processes acting on the rock face.

4.30. It was also observed that in some caves, biological growth and the deposition of salt deposits appear to coincide. Where this is the case there are often patches of fresh bedrock exposed where the salt and biological growth have flaked off, taking the rock surface with them (Illus 42).

4.31. The fourth factor of concern is water flow. As caves are in sandstone the bedrock itself is not soluble, but the presence and flow of water does appear to be a significant factor in the formation of salt deposits and biological activity, which between them are enhancing the loss of the rock surface. The actual erosive power of the water flow observed in the caves is slight, but its presence aids other processes.

Vandalism and inadvertent damage

4.32. The heritage values of the site are vulnerable to inadvertent or unintentional damage, as well as some intentional acts of vandalism.

4.33. The drilling of the pipe into the rear of Well Cave was undertaken to provide access for infill material to be deposited in the cave. This has caused major roof collapse and falls of large blocks of stone, which have required rock bolts to stabilise the roof. The cave's current condition is still considered unstable.

4.34. In 1986, a car was driven into Jonathan's Cave and set alight, destroying the swan and elephant figures. As a result, the metal grille was erected over both entrances in 1988 and SWACS was established to help manage and protect the caves and their heritage assets.

4.35. Campfires are regularly set in some of the caves (Illus 43), and soot accumulation has been noted on the roofs and walls of several caves. Sandstone subjected to fire has been shown to have an unpredictable response to salt weathering, while soot can form a waxy, relatively impermeable layer on the surface which repels water but ultimately accelerates decay as salt enters the substrate through more permeable areas and crystallises behind it (McCabe et al 2007). This activity could also damage archaeologically sensitive deposits on the floors of the caves through heating and surface disturbance. A campfire set against the wall of Court Cave was noted during the survey to have caused the rock surface to flake off (Illus 44).

4.36. Informal excavations also sometimes take place, with an example of this occurring over the past winter in Sliding Cave (Illus 45). Dumping of waste materials has occurred in several caves. As well as being unsightly and potentially a health hazard, these materials could contain damaging chemicals or compounds which alter the chemical properties of the soil, affecting buried archaeological deposits as well as obscuring carvings and other parts of the cave interiors.

4.37. Visitors sometimes draw over the carvings with chalk to enhance their visibility for viewing and photography. This practice will have had a cumulative erosive effect on tool marks and details of the symbols. Modern graffiti, including carving and painting (Illus 46) can also obscure and damage

ancient features. Some ancient carvings appear to have been intentionally altered (and some destroyed) by visitors. Evidence of damage by air rifle pellets, focused on some animal carvings, has been recorded in Jonathan's Cave.

Multiple stakeholders

4.38. The site benefits from falling under the ownership of a single landowner, but holds a great deal of interest for multiple stakeholders. They have differing aspirations and levels of interest, which adds complexity to the decision-making process and the long-term management of the site. Continued partnership working and good communication are essential, and an extremely valuable and effective forum has been created in the Wemyss Caves Working Group.

Opportunities

Collaborative working

4.39. This Conservation Management Plan is the product of efforts by the Wemyss Caves Working Group to raise awareness of the site's conservation needs and potential public benefits and to research management options to inform decisions about its conserving its heritage values. Although the diverse interests in the site require careful management, they also offer a real opportunity for creative, collaborative working practices and new partnerships.

4.40. Collaborative working will strengthen advocacy and build on the existing momentum generated by the Working Group. It will help to ensure that all views and interests are represented and can contribute to the management, investigation and preservation of the values of the site (see paragraphs 5.55ff).

Preservation of the tangible heritage

4.41. Coastal erosion threatens the caves, archaeological deposits and carvings and cave features. It is considered that if no coastal protection measures are undertaken, the shoreline will eventually retreat to the front of the caves; once the sea reaches the rock faces erosion rates will be dramatically reduced. However, during storm events and high tides salt spray (and potentially waves) would enter the caves at a much higher rate than at present (Prof Jim Hanson, pers comm).

4.42. The opportunity exists to reduce the impact of coastal erosion through a range of different sea defence options; their effectiveness, lifespan and cost implications vary greatly. In assessing the merit of any scheme, a 50-year lifespan would be the maximum period that could realistically be considered.

4.43. Other threats, including structural instability and vandalism, can be mitigated in a variety of ways to ensure safety and access and in ways that create opportunities for education and research with partners.

Preservation of the intangible heritage values

4.44. The intangible heritage of the site comprises a critical element of its significance. The non-physical

heritage lies in communal traditions, stories, perceptions and memory passed down through generations. These values must be transmitted to future generations, especially as they may outlive the physical heritage of the site in the long term.

4.45. Preservation of the non-physical heritage values can take place regardless of the decisions made about any physical protection. There is a great deal of scope to devise projects to record oral histories, stories, historic photographs, etc. which would also have excellent potential for embedding inter-generational working, and collaborative working between SWACS, the local community and local authority and national institutions.

Tourism and community benefits

4.46. The report by the Working Group (2014) makes it clear that there is significant potential for the heritage of the site to provide a major part of any future tourism offering for the site, celebrating East Wemyss' distinctive character and history, which is quite different from West Wemyss and Coaltown. The Fife Coastal Path draws a large number of visitors to and through the area, and provides an excellent framework (with added value) around which to build an enhanced set of visitor facilities and increased interpretative schemes, based upon the heritage resources of the caves. This would benefit local communities directly, by increasing their access to local heritage, and indirectly through the economic benefits that increased tourism would bring.

4.47. There is good potential to develop a Cave trail (depending upon site access and the physical protection options that are pursued). It would be important that interpretative schemes integrate the human heritage with the natural heritage as well as discussing issues of conservation, coastal erosion and climate change.

4.48. These strands could be drawn together into a new cultural centre for the village, which would present and interpret its cultural and natural heritage assets for tourists and local residents, provide educational facilities, draw in greater numbers of tourists and serve as a hub for the community. This would be in line with SWACS' expressed aspirations.

4.49. Macduff's Castle is a characterful structure which would provide a superb focal point for new interpretative schemes. The use of the space for other community activities (such as an outdoor performance space) should be considered in any consolidation scheme, to maximise the potential uses of the site.

Knowledge / learning & capacity building

4.50. A skills audit could be conducted to identify skills gaps among stakeholders and partners and match these to the site's management needs. The Monitoring Schedule will provide opportunities to offer training to volunteers, helping them develop recording and monitoring skills and building capacity in the area for heritage. If funding could be secured to consolidate Macduff's Castle, there would be scope to provide heritage skills training opportunities (e.g. for stone masonry, repairs works etc.).

4.51. The work of SWACS to educate the public via the existing heritage centre could be enhanced and extended with a more intensive and wide-reaching programme of education. This could have very

positive management outcomes and potentially address one of the biggest threats to the integrity of the carvings, that is vandalism, by raising awareness of their significance and value, especially among younger people.

4.52. Supporting and encouraging more academic research and formalising existing links with academia, coupled with targeted research on the heritage assets at the caves, could do much to refine the assessment of the site's significance and help interpret it within its geographical and chronological context.

Implications of the Assessment and Analysis of Conservation Needs

4.53. Of the various processes and activities posing threats to the Wemyss Caves, all can be managed to some extent. The key issues that should inform choices about conservation are those of safety and access to the heritage assets in the caves.

4.54. The caves' coastal position and the nature of the bedrock pose inherent threats to the carvings; water seeping down through cracks and fissures nourishes biological growth, and air- and water-borne salts crystallise and cause the rock to delaminate and crumble to sand. No conservation treatment can halt or slow these processes (Steven Gordon, pers comm).

4.55. On a human scale, more extensive and intensive education could do much to reduce vandalism, rubbing and chalking of the carvings, disturbance of deposits in the caves and inadvertent damage. However, to completely halt damage by human action would require sealing off the caves. Within the five years of this Conservation Management Plan this is not considered necessary, although it may become so eventually.

4.56. In that case, the digital record of the carvings would allow the complete replication of the caves and carvings, as has been done at considerable cost with the caves containing 36,000-year-old paintings at Chauvet Pont-d'Arc in the Ardèche (http://www.france.fr/en/art-and-culture/chauvet-pont-darc-cave-replica-site-open-public-end-2014.html).

4.57. Mining activity beneath the caves has destabilised the moderately weak sedimentary bedrock and set in motion a slow but inexorable process of subsidence. Although none of the caves appear to be at risk of imminent damage, the potential for large- and small-scale collapse continues to pose a major risk to visitors as well as heritage assets.

4.58. Monitoring should be carried out in conjunction with further specialist study to increase understanding of the rate and nature of subsidence and inform proposals for remedial works.

4.59. The coastline is sinking as relative sea levels rise in the wake of the Devensian Ice Age. At the same time, global climate change is most likely the cause of more frequent storms, rising sea levels and higher waves and tides which are depleting the already sediment-starved beach, which should be absorbing much of the waves' energy. It has been predicted that all of the sediments in front of the caves will be lost within 50 years, bringing the sea to their thresholds.

4.60. The construction of substantial and comprehensive coastal defences along the caves' coastal edge

has hitherto not been considered an economically viable option, nor an effective one, as it would deflect erosion towards the west (Mouchel 2011; Prof Jim Hansom, pers comm). An alternative approach would be to stabilise the coast in priority areas, specifically those identified as of exceptional and considerable significance.

4.61. Selective stabilisation along prioritised sections could involve:

- constructing absorbent boulder rip-rap protection;
- feeding the beach with coarse material to elevate it and increase its energy absorbency;
- point the existing wall in front of Jonathan's Cave to reinforce it, raising it by one tier and extending it eastward to the groyne, and enhancing the existing boulder rip- rap at the base of the beach;
- filling the eroded gap behind the sea wall at Castle Green with boulders to prolong the wall's lifespan.

4.62. This combination of measures would halt or slow erosion for 15-20 years, although the beach could require feeding again after between 5 and 10 years (Prof Jim Hansom, pers comm).

5. **Action Plan**

5.1. The report of the Wemyss Caves Working Group (2014) set out three broad conservation aims structured around three levels of conservation:

- Base level: Monitor the retreating coastline and specific heritage assets, and intervene only on a 'rescue by record' approach as and when significant archaeological deposits and features become exposed or at risk.
- Medium level: Stabilise the structural integrity of the caves and deliver a specialist monitoring programme. The stabilisation effort would focus specifically on making safe the Well Cave, thereby also protecting Macduff's Castle from the risk of future collapse.
- Highest level: Secure the coastal stretch of c 700m in front of the caves through the combined strategy outlined for base and medium level conservation, and also stabilise Macduff's Castle.

5.2. These form the basis of the works outlined in the Action Plan, with some revisions and to take account of information received since the publication of the report. For example, 3D scanning of the caves has shown that the relationship between Macduff's Castle and the Well Cave is not as close as was previously thought.

5.3. These three levels are expressed in the Action Plan as:

- Short term (1-5 years). These actions should be undertaken within the 5 year period of the Plan.
- Long term (5-10 years). These actions are likely to be dependent on external factors or the outcomes of short –term actions already listed in the Plan, or may be on-going activities. If circumstances allow, it may be possible to initiate some long-term actions within an earlier timeframe which is why they are included.
- Aspirational (indeterminate). These actions are desirable but may fall outwith the control of the Working Group or may require significant resources beyond the perceived range of the Working Group at this time. They have been included in this first version of the Action Plan to reflect the ultimate aims and ambitions of the project.

5.4. The Action Plan is structured according to four key aims. Each of these aligns with one of the three strategic priorities expressed in Our Place In Time: The Historic Environment Strategy for Scotland (2015) which sets out the Government's strategic framework, as follows:

UNDERSTAND Investigate and Record	PROTECT Care and Protect	VALUE Share and Celebrate
Knowledge development Accessible knowledge	Holistic, sustainable approach Effective, proportionate protection and regulation with controls and incentives Ensuring capacity	Enhancing participation Broad-ranging approach to learning Tourism

5.5 The Action Plan is presented below, with actions grouped according to Historic Environment Strategy priorities. The identifiers for individual actions can be used to cross-reference them to the following table (Table 6), which shows the vulnerabilities and opportunities that each will address.

5.6 Each action is assigned an Executive; the organisation(s) responsible for taking the action forward. Some long term and aspirational actions do not have an executive assigned as they are likely to fall outwith the 5 year period of the Action plan. If the opportunity arises to take any of these actions forward, the Working Group will consider the options and assign an Executive.

HES Priority: CARE AND PROTECT						
AIM	**OBJECTIVE**	**ACTION**	**TIME SCALE**			**EXECUTIVE**
			Short term	**Long term**	**Aspirational**	
I. Secure the stability of the caves, carvings and archaeological deposits	A. Secure structural stability	1. Commission re-assessment of the current stability of the caves, using 1990 Ove Arup report as a baseline, to establish individual structural issues and mitigation measures	✓			Working Group
		2. Implement mitigation measures recommended in the stability re-assessment (**I.A.1**)	✓			Working Group
		3. Investigate options to conserve Macduff's Castle			✓	Working Group
	B. Monitor stability of carvings	1. Conduct annual observation and photographic recording to monitor changes to carvings	✓	✓		SWACS; SCAPE; Fife Council
		2. Commission comparison of historic casts with other data to investigate rate of carving erosion		✓		SWACS; SCAPE; Fife Council
	C. Monitor change and its impacts on the heritage resource	1. Implement Monitoring Plan (chapter 8) to monitor environmental change and impacts upon archaeological deposits, including priority areas	✓			SWACS; SCAPE; Fife Council
		2. Develop and implement a mitigation strategy to address issues identified through Monitoring Plan		✓		Fife Council; SWACS; SCAPE
		3. Stabilise priority sections of coastline (identified through **III.A.3**) to protect the heritage resource over the long term		✓		Fife Council; SWACS

		4. Ensure Working Group input to the next planning cycle for the Fife Shoreline Management Plan to ensure heritage values are adequately addressed	✓			Fife Council; Historic Environment Scotland
		5. Maintain the Wemyss Caves Working Group as a key forum and advocacy group for the site's long-term management	✓	✓		All Working Group members
HES Priority: CARE AND PROTECT						
AIM	**OBJECTIVE**	**ACTION**	**TIME SCALE**			**EXECUTIVE**
			Short term	**Long term**	**Aspirational**	
II. Manage and ensure safe access to the caves and carvings	A. Develop public access to the caves and carvings which secures the archaeological resource	1. Commission an assessment of access arrangements, focussed on protecting the archaeological resource and on visitor safety (with reference to **I.A.1**).	✓			Fife Council; SWACS
		2. Implement recommendations for managing access to the caves and carvings generated in **II.A.1**	✓			Fife Council; SWACS
	B. Manage safe public access to the caves and carvings	1. Erect on-site signage to warn of health & safety risks (to be considered in conjunction with **IV.A.II**)	✓			SWACS: Fife Council
		2. Regularly monitor the site for safety of public access	✓	✓		Fife Council; SWACS

HES Priority: INVESTIGATE AND RECORD						
AIM	**OBJECTIVE**	**ACTION**	**TIME SCALE**			**EXECUTIVE**
			Short term	**Long term**	**Aspirational**	
III. Increase knowledge of the character and significance of cultural heritage at Wemyss Caves to support their management	A. Enhance understanding of the nature and significance of the carvings and archaeological deposits	1. Record archaeological deposits and features when they become exposed or are at risk (through implementation of Monitoring Plan - **I.C.1**)	✓	✓		SWACS; SCAPE; Fife Council
		2. Undertake desk-based synthesis of existing knowledge to identify areas of significance and to inform future work	✓			Fife Council
		3. Develop programme of archaeological investigation to enhance our understanding of the character and significance of the site (with reference to the results of **III.A.2** and **I.C.1**.)		✓		Fife Council
	B. Refine understanding of the site in its chronological, geographical and cultural context	1. Audit artefactual assemblages from the site to inform assessment of their significance, input to interpretation, inform curation strategies	✓			SWACS
		2. Facilitate contextual studies of the carvings using the digital dataset.			✓	SCAPE and others
		3. Cultivate links with academic institutions to encourage research and collaboration	✓	✓		SWACS; HES; SCAPE

HES Priority: SHARE AND CELEBRATE						
AIM	**OBJECTIVE**	**ACTION**	**TIME SCALE**			**EXECUTIVE**
			Short-term	**Long-term**	**Aspirational**	
IV. Share and celebrate the heritage of the Wemyss Caves	A. Enhance participation in the heritage of the site	1. Strengthen links to Fife Coastal Path to deliver shared objectives for the promotion of the coast and caves	✓			Fife Coast and Countryside Trust
		2. Develop and implement on-site interpretation scheme.	✓			SWACS; Fife Council; Fife Coast and Countryside Trust
		3. Ensure scanned data is freely accessible	✓			SCAPE
		4. Conduct community consultation to raise awareness of the heritage resource	✓			SWACS
		5. SWACS to gain status as charitable company limited by guarantee to provide protection from personal liability and enable access to other income streams	✓			SWACS
		6. Continue and expand SWACS' events and educational programme to local schools and communities	✓	✓		SWACS
		7. Develop community volunteering programme to support management of the site, encourage a sense of local ownership	✓	✓		SWACS; Fife Council; Fife Coast and Countryside

						Trust
		8. Maintain SWACS' input to Community Council	✓	✓		SWACS
		9. Continue to develop training and build capacity among SWACS members.	✓			SWACS; SCAPE; Fife Council
		10. Participate in development of Town Twinning initiative	✓			SWACS
	B. Promote tourism and learning about the Wemyss Caves	1. Commission a feasibility study for a new cultural centre, with consideration of potential employment and enterprise opportunities	✓			SWACS; Fife Council
		2. Prepare annual report recording visitor numbers, activities, media coverage, merchandising figures etc. to quantify existing economic and social benefit of Caves.	✓			SWACS; Fife Coast and Countryside Trust (for Coastal Path info)
		3. Investigate options for economic development potential linked to the Caves within wider community area (in conjunction with **IV.B.1**).	✓			Fife Council
		4. Promote the site as a valuable case study area for heritage, climate change and engineering			✓	Working Group

6. Review Arrangements

6.1 The Wemyss Caves Working Group will be responsible for monitoring the impact, effectiveness and application of the Conservation Management Plan or delegating that responsibility to another organisation.

6.2 A review of the CMP should be undertaken after three to five years. Given the dynamic nature of the landscape and processes affecting the caves, review after three years may be more appropriate.

7. Monitoring Schedule

7.1 This section presents a monitoring programme for the Wemyss Caves over the five-year lifetime of this Conservation Management Plan. It will have four key objectives:

1) to monitor the carvings twice annually and record any changes to them through natural decay, vandalism and inadvertent damage;
2) to monitor deposits and other heritage assets inside the caves and along the shoreline twice annually and after major storms, and record any disturbance to or exposure of known and unknown heritage assets through natural processes of erosion as well as vandalism and inadvertent damage;
3) to monitor and measure the rate of coastal erosion and shoreline change at the caves on a quarterly basis, and
4) to monitor the caves for evidence of instability and record any episodes of collapse twice annually, if it is safe to do so.

7.2 Parts of this programme (specifically activities 6, 7 and 8) will be deliverable by SWACS volunteers with appropriate support and training from SCAPE. (NB: Activities 6, 7 and 8 could be carried out by volunteers supported by SCAPE and Fife Council on the same weekend each year.)

7.3 A protocol should be established for reporting any damage observed, for example to the Regional Archaeologist or to SWACS. This information and contact details could be posted on the Wemyss Caves website (http://www.wemysscaves.org/) and also on interpretation boards placed at the site.

Phase	Activity	Frequency	Lead/responsible
Set Up	1. Create management tool based on data collected through digitisation project and other recording processes	Once	SWACS/SCAPE/HES
	2. Establish standardised survey, monitoring recording system	Once	HES/Fife Council/FCCC
	3. Purchase equipment (cameras, tablets, tapes etc)	Once	SWACS
	4. SCAPE to train SWACS and other volunteers in recording techniques and refresh training	Once each year	SCAPE
Heritage asset	6. Inspect heritage assets in the caves, identify any changes to them	Twice each year This happens at	SWACS

monitoring	through natural decay, vandalism and inadvertent damage by comparison with other baseline data and record current condition	least monthly in the summer anyway and periodically over the winter	
	7. Monitor shoreline regularly and after storms and record any exposed archaeological features or deposits	Annually?/and as needed	Fife council archaeologist/SWACS
Coastal erosion monitoring	8. Record the shoreline using high-resolution colour photography from fixed points which afford views which best characterise the shoreline, with consistent and recorded focal points and directions. Fixed points should be marked on the ground and surveyed to establish their positions	Annually/Quarterly and as needed following extreme weather events	SCAPE/SWACS
	9. Make a periodic aerial photographic record of the coastline using oblique and vertical high resolution colour photography from unmanned drone, rectify photographs and compare with rectified images to quantify rate of erosion	Every 5 years in winter and after major storms	Fife Council
Stability monitoring	10. Commission specialist structural inspection of caves for structural instability at regular intervals and after any episodes of collapse	Every 3 years/as needed	Working Group – Fife Council to lead

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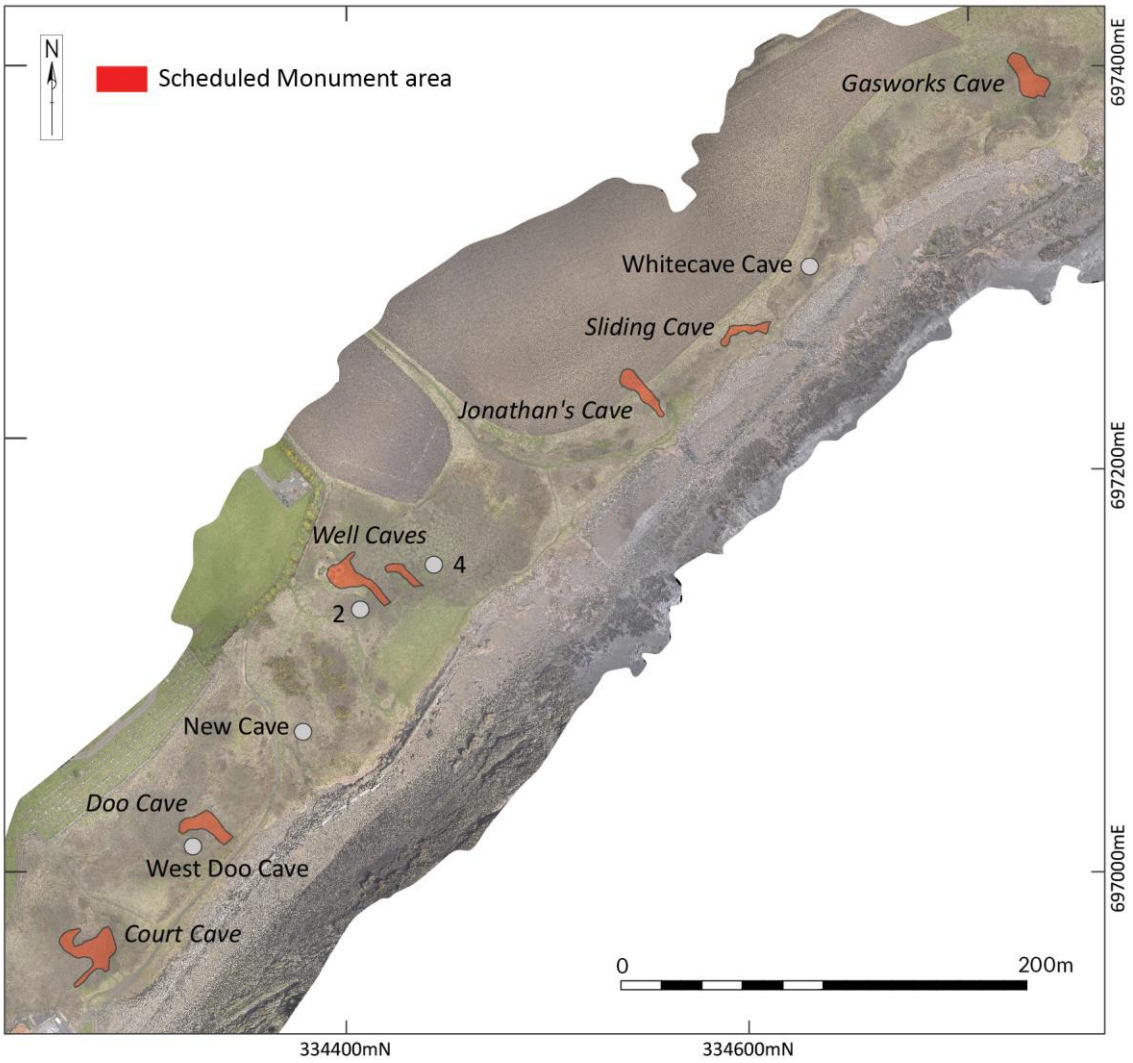
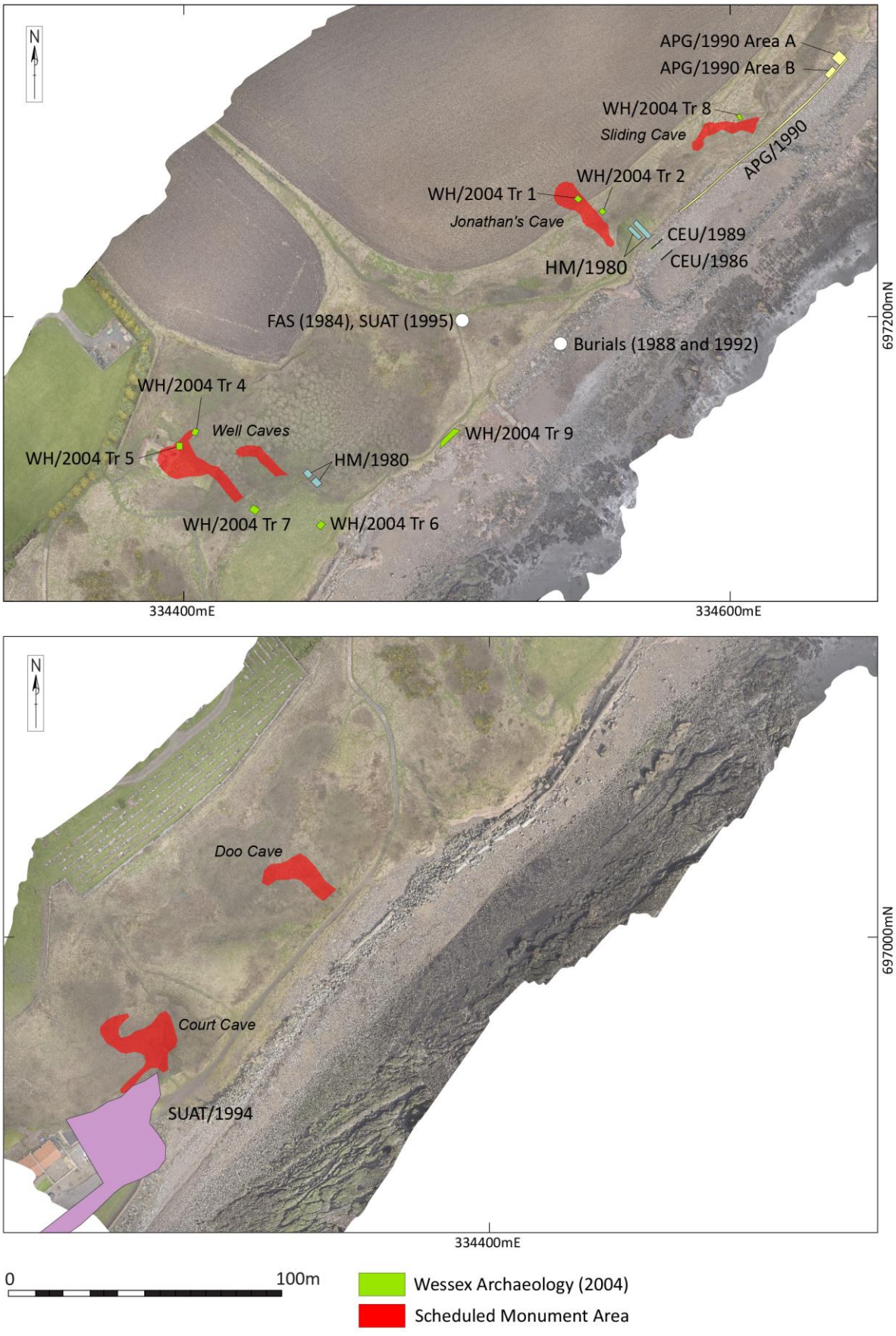
9. **Illustrations**

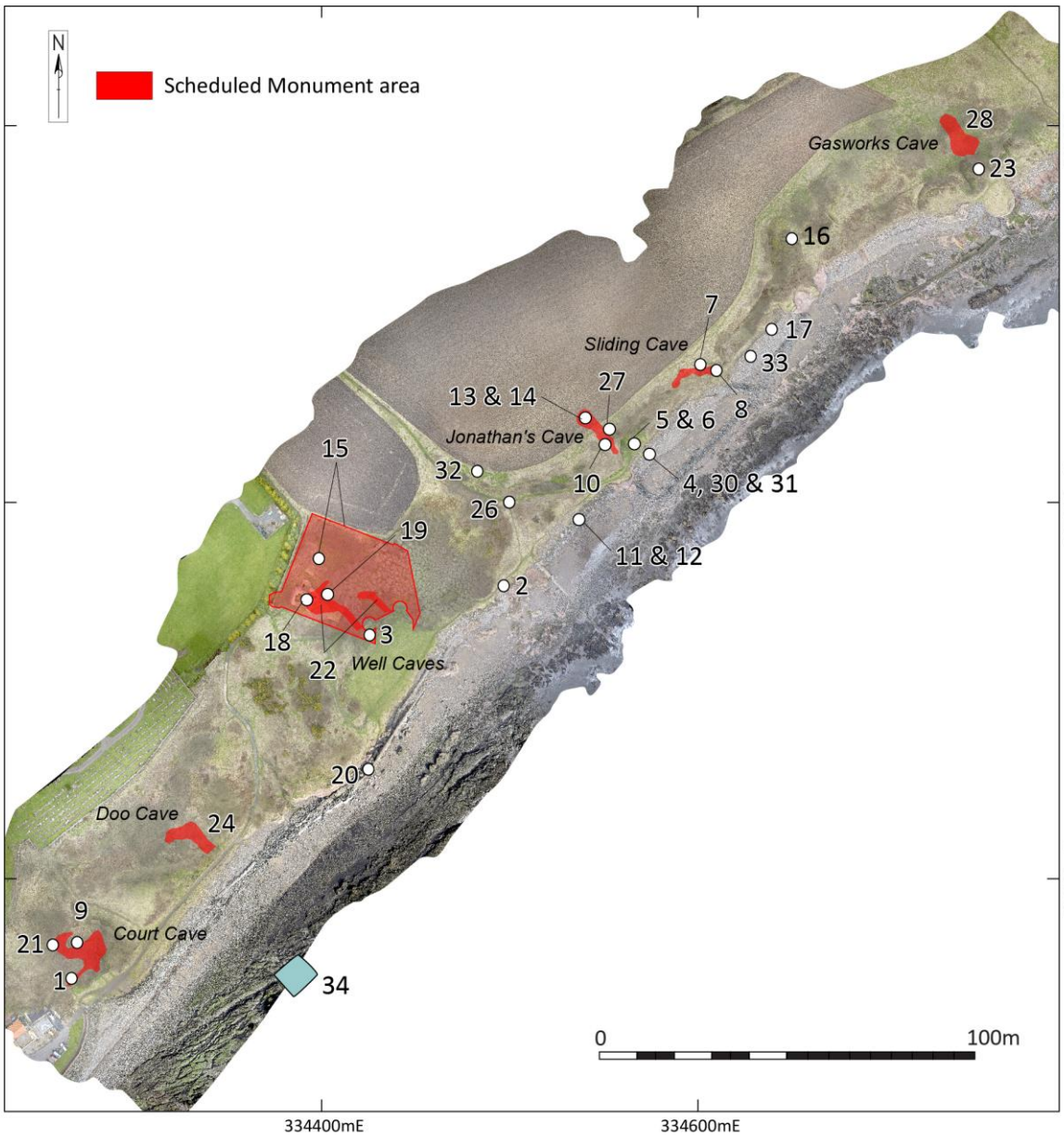
Illus 1: Location map.



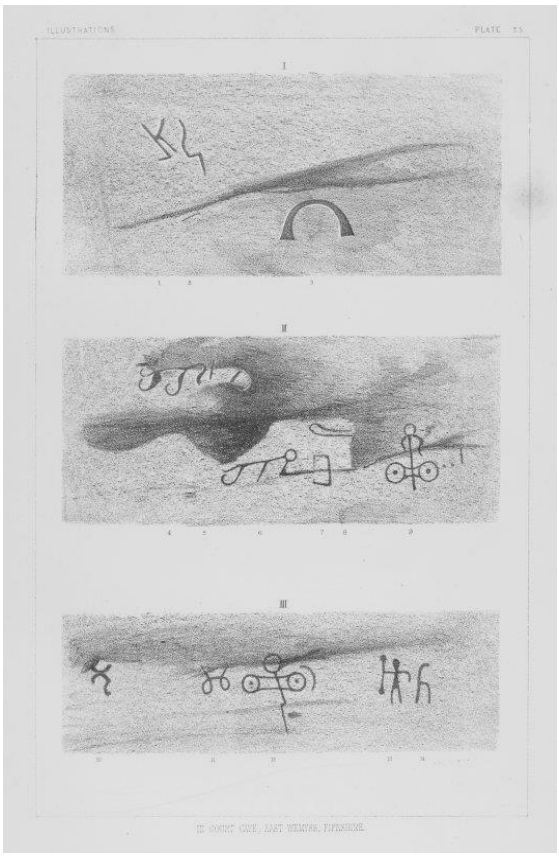
Illus 2: Locations of the six scheduled caves and other caves recorded at Wemyss.
(N.B the name Whitecave is a typological error in the source map. The correct name should be Whitecove)

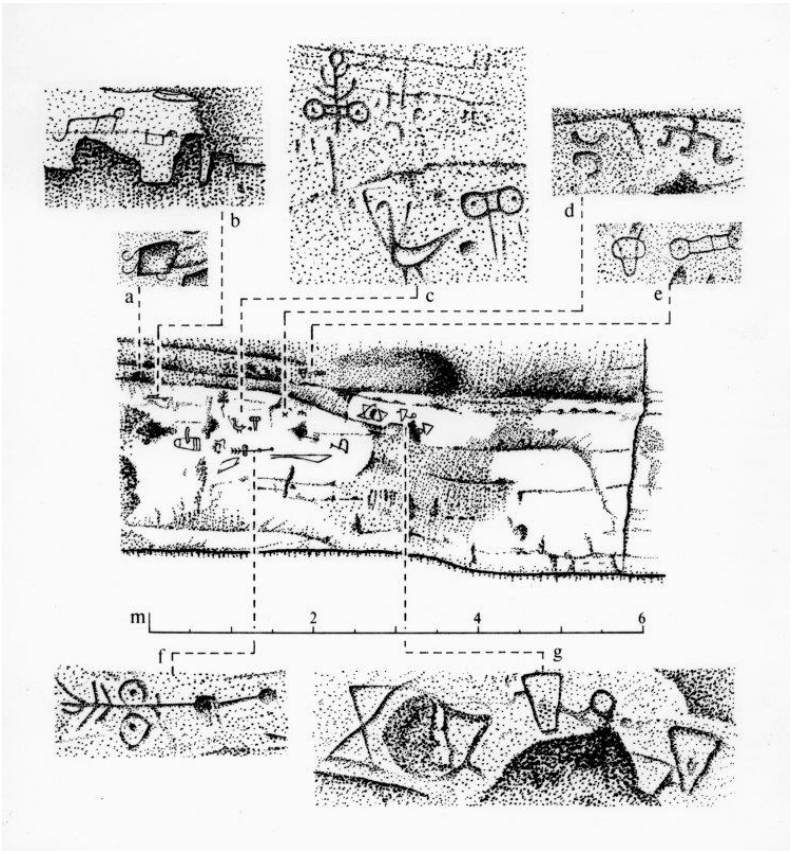


Illus 3: The locations of previous archaeological investigations.

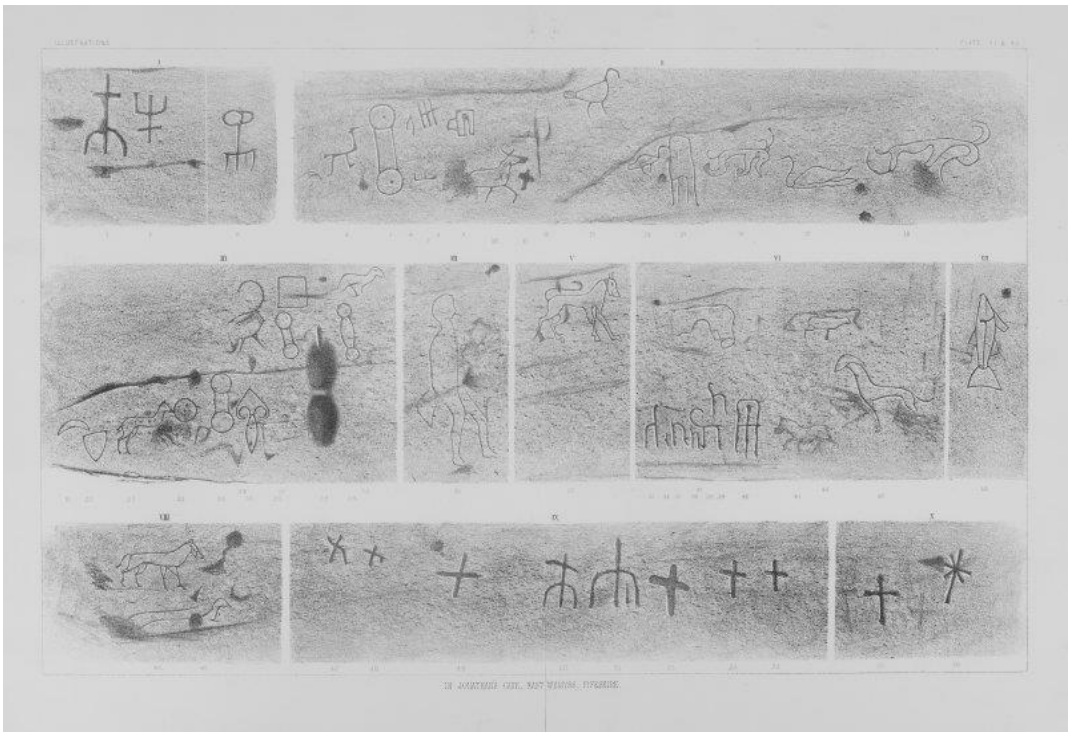


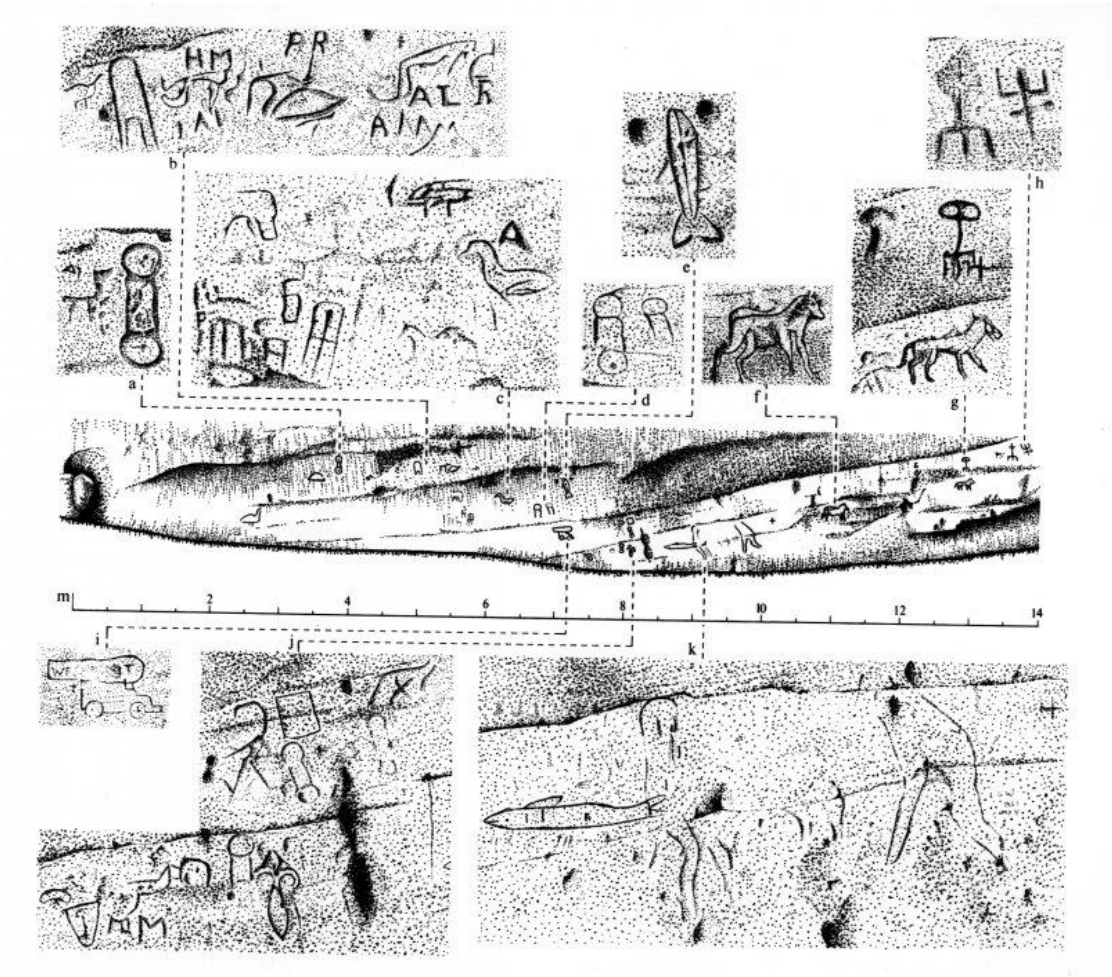
Illus 4: The locations of heritage assets at the Wemyss Caves (numbering system for heritage assets in this and subsequent illustrations refers to Gazetteer entries in Section 10).





Illus 5: Drawings of symbols in Court Cave by Stuart (1867, Vol 2, Plate 35, above) and the RCAHMS (below).

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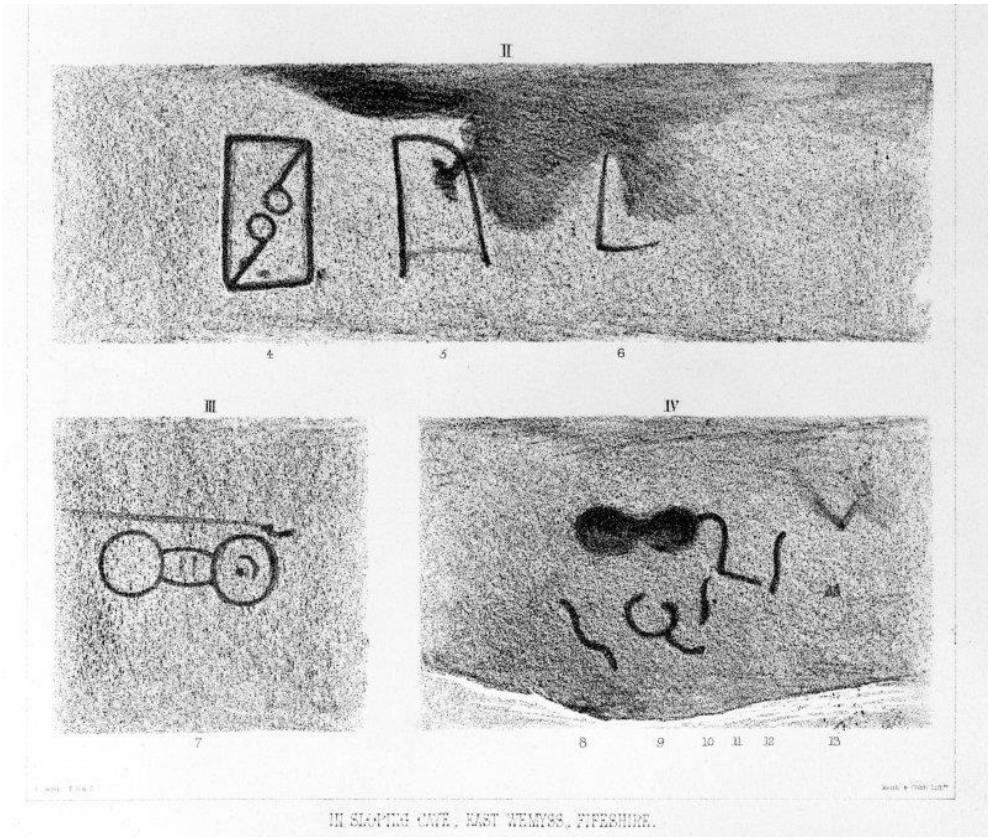
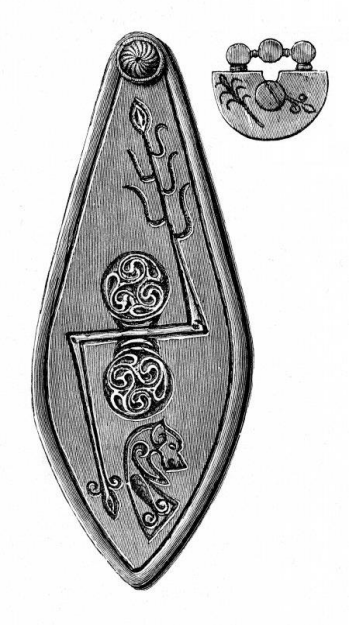
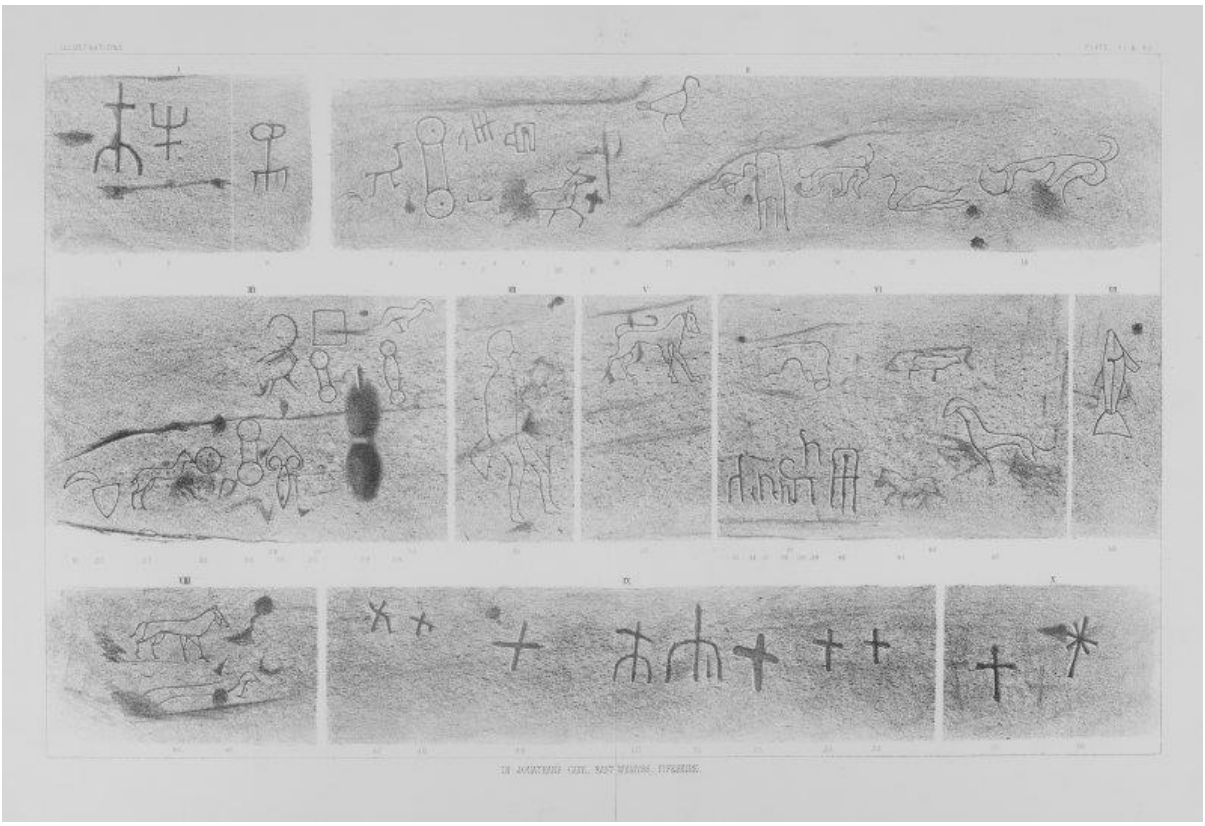
Illus 6: Symbols in Jonathan's Cave drawn by Stuart (1867, Vol 2, Plates 31-2, above) and the RCAHMS (below).



Illus 7: Drawings of symbols in Sliding Cave by Stuart (1867, Vol 2, Plate 30).

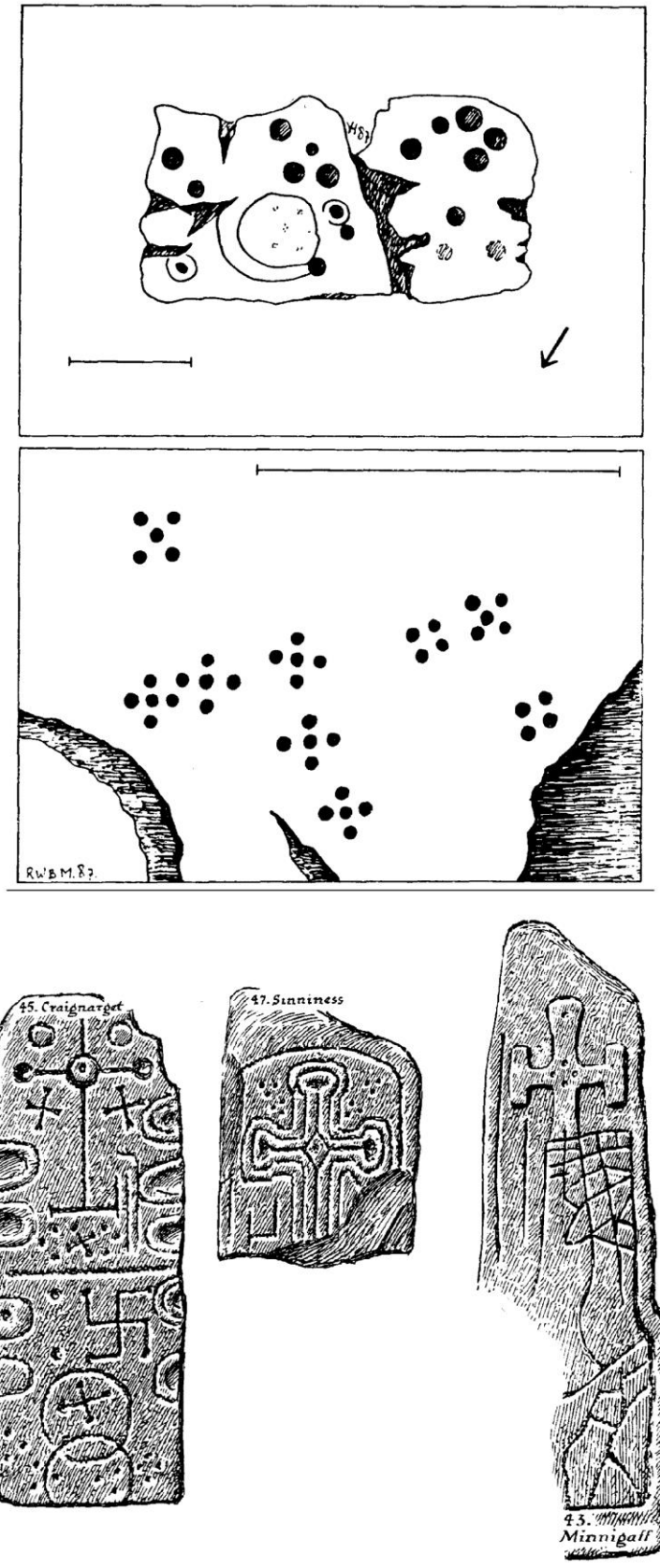


Illus 8: (left) The double disc, floriated Z-rod and beast's head in West Doo Cave (RCAHMS), and (right) the same set of symbols on the silver plaque from the Norrie's Law hoard in Fife (*PSAS* 6 (1864-6)).

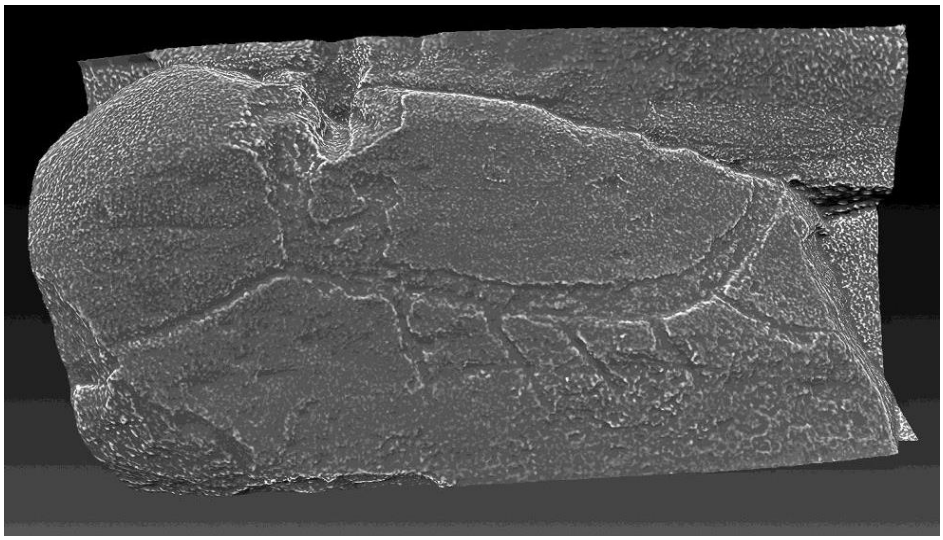


Illus 9: Christian iconography carved in Jonathan's Cave, as recorded by Stuart (1867, Vol 2, Plates 31-2).

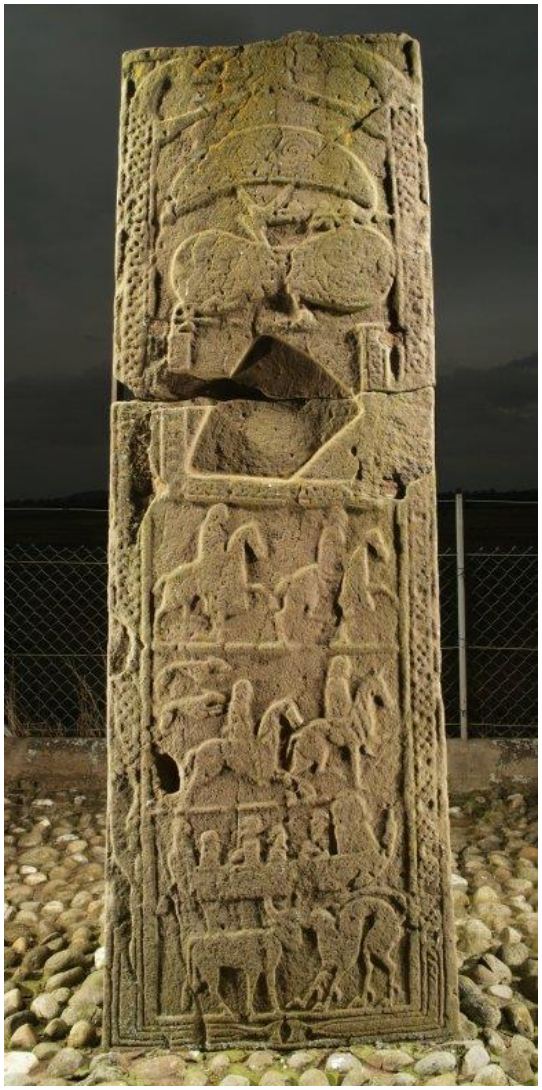
Illus 10: The clusters of small cup marks in Court Cave (to left of image), with a Pictish arch symbol to the upper right.

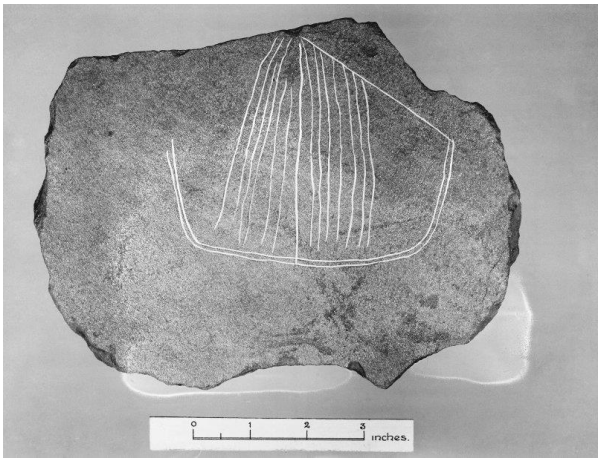


Illus 11: Clusters of cup marks from Galloway: (above) on a vertical outcrop face in the Garlieston area (Morris & van Hoek 1987, Fig 2) and (below) on late 10th- to 11th-century cross slabs at (from left to right) Craignarget, Sinniness and Minnigaff (Collingwood 1923, Figures XIII.43, XIV.45, XIV.47).



Illus 12: Enhanced radiance scaled image of the boat carved in Jonathan's Cave.





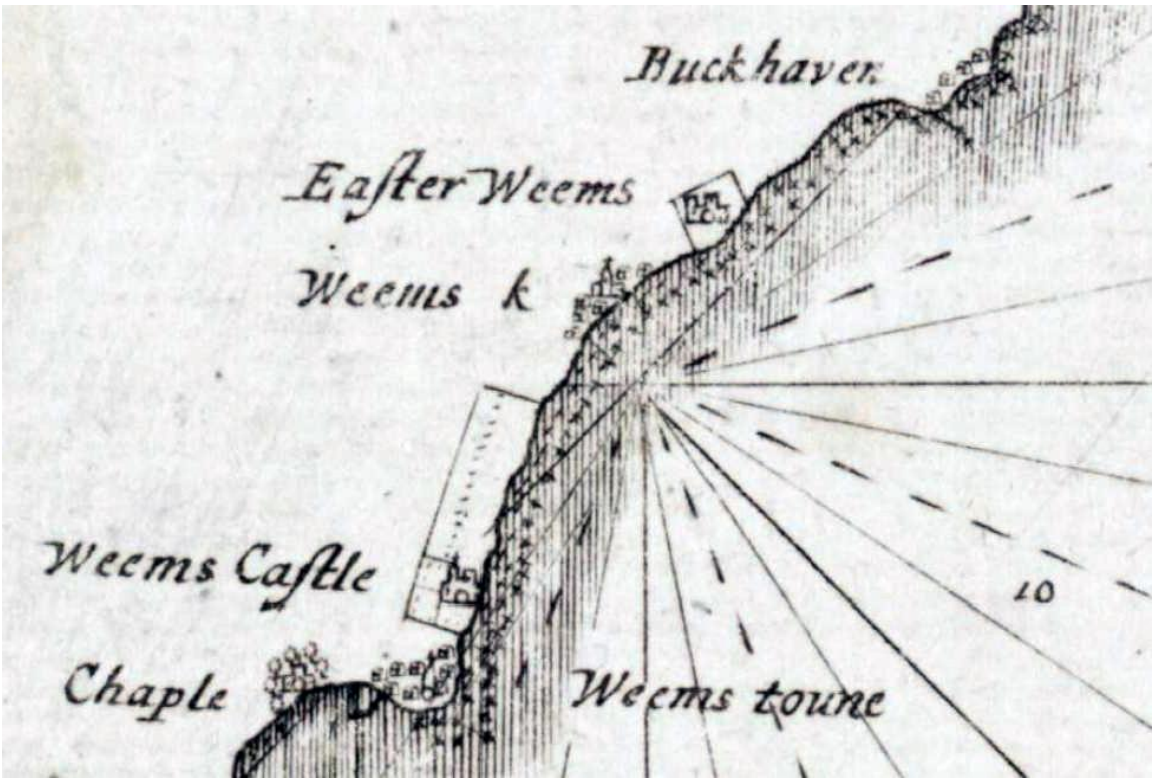
Illus 13: The boats carved on St Orland's Stone, Cossans (RCAHMS) to left and on a slab found at Jarlshof, Shetland (RCAHMS SC 11221187).

Illus 14: Macduff's Castle.

Illus 15: The drystone masonry pier on the east side of the main chamber of Well Cave.

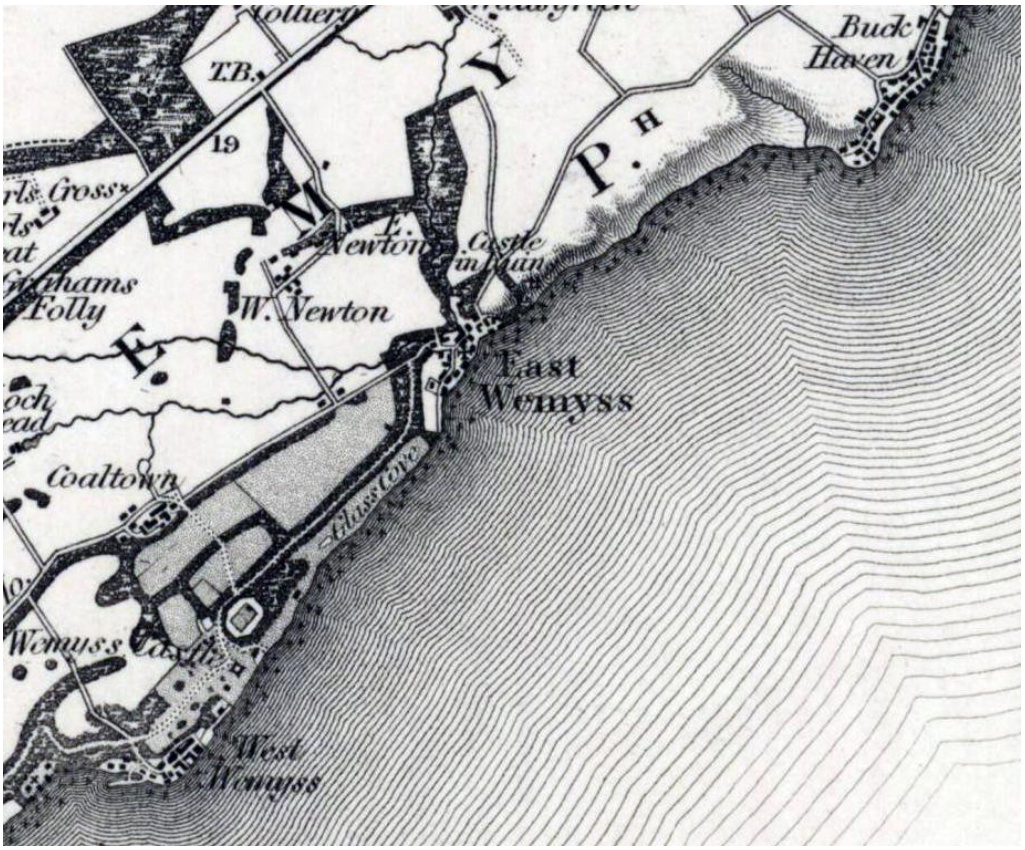
Illus 16: A chiselled aumbrey near the entrance to Court Cave.

Illus 17: Extracts from Gordon's 1642 map of Fyfe Shire (MDCXLII), above, and Blaeu's 1654 map of The Sherifdome of Fyfe.

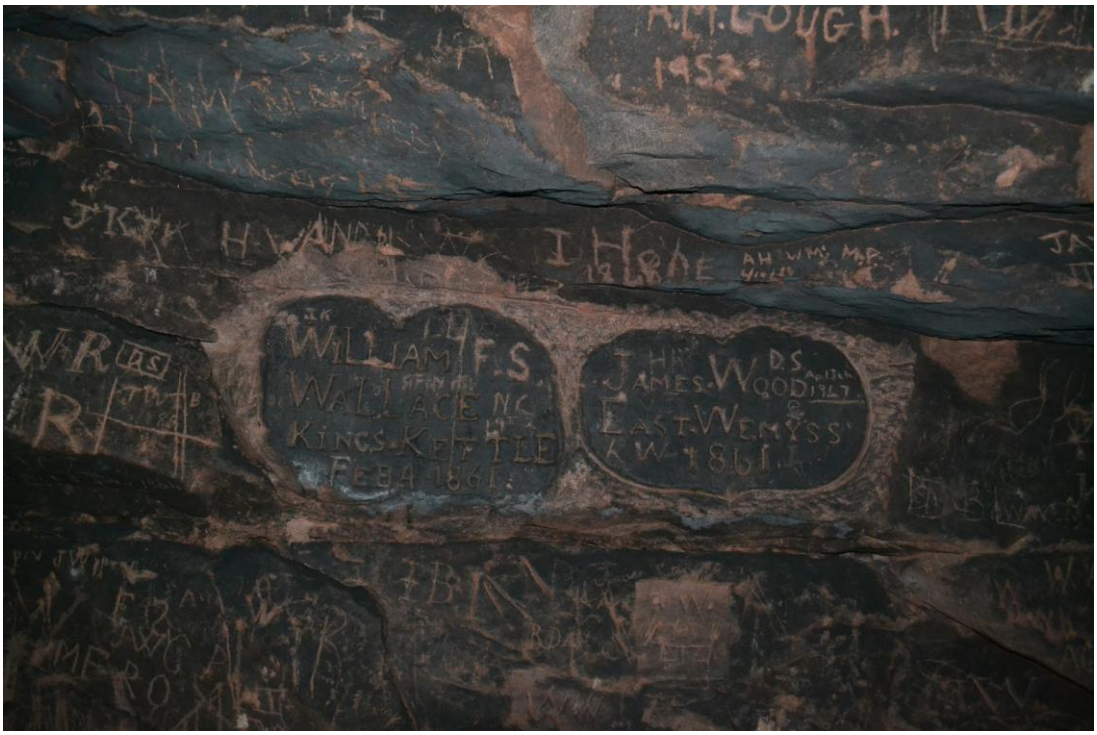


Illus 18: Extract from Adair's 1703 map The Frith of Forth from the Entry to the Queen's Ferry.

Illus 19: Extract from Roy's Military Survey of Scotland (Sheets 18/1dW and 18/1eE) (1747-55).

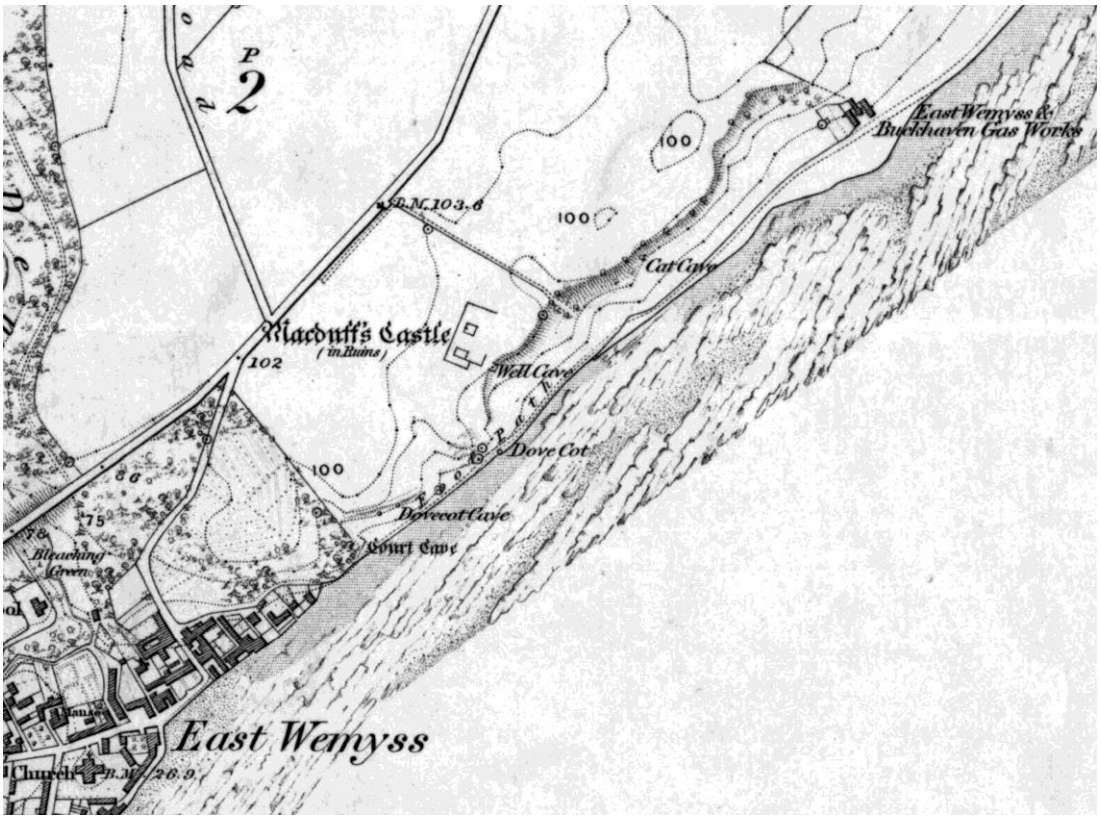


Illus 20: Extract from the Map of the counties of Fife and Kinross published by Greenwood, Fowler & Sharp (1828).

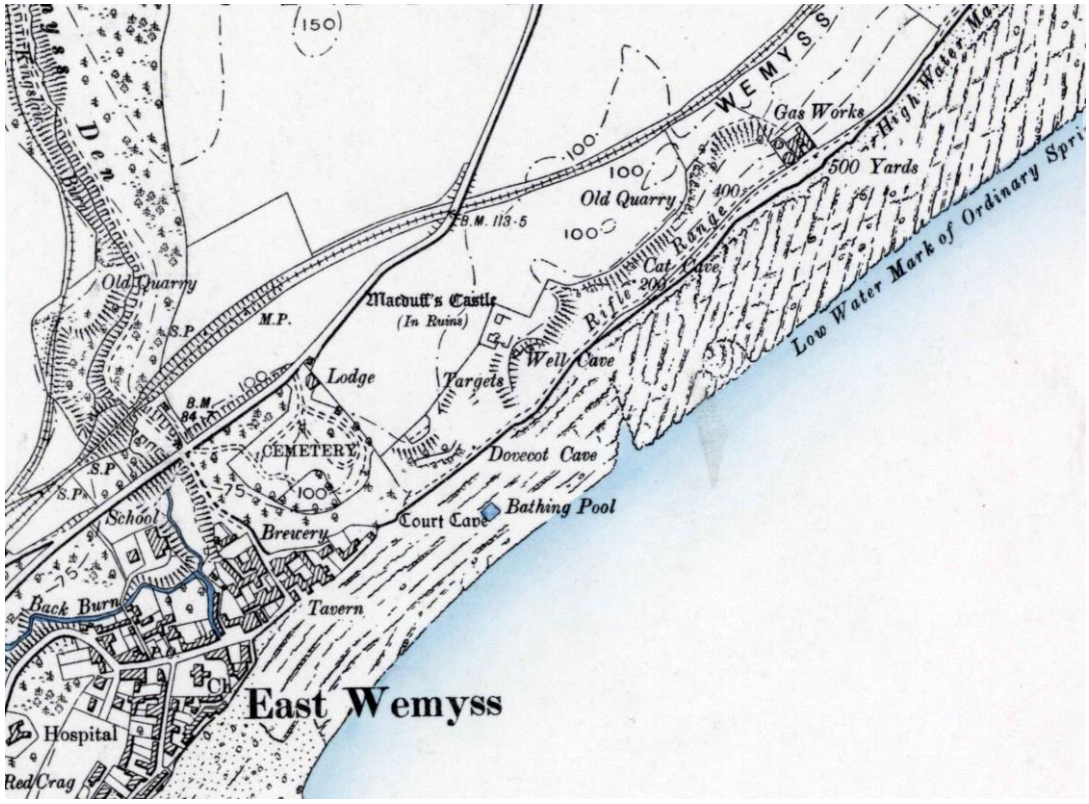


Illus 21: Early modern graffiti in the Well Cave.

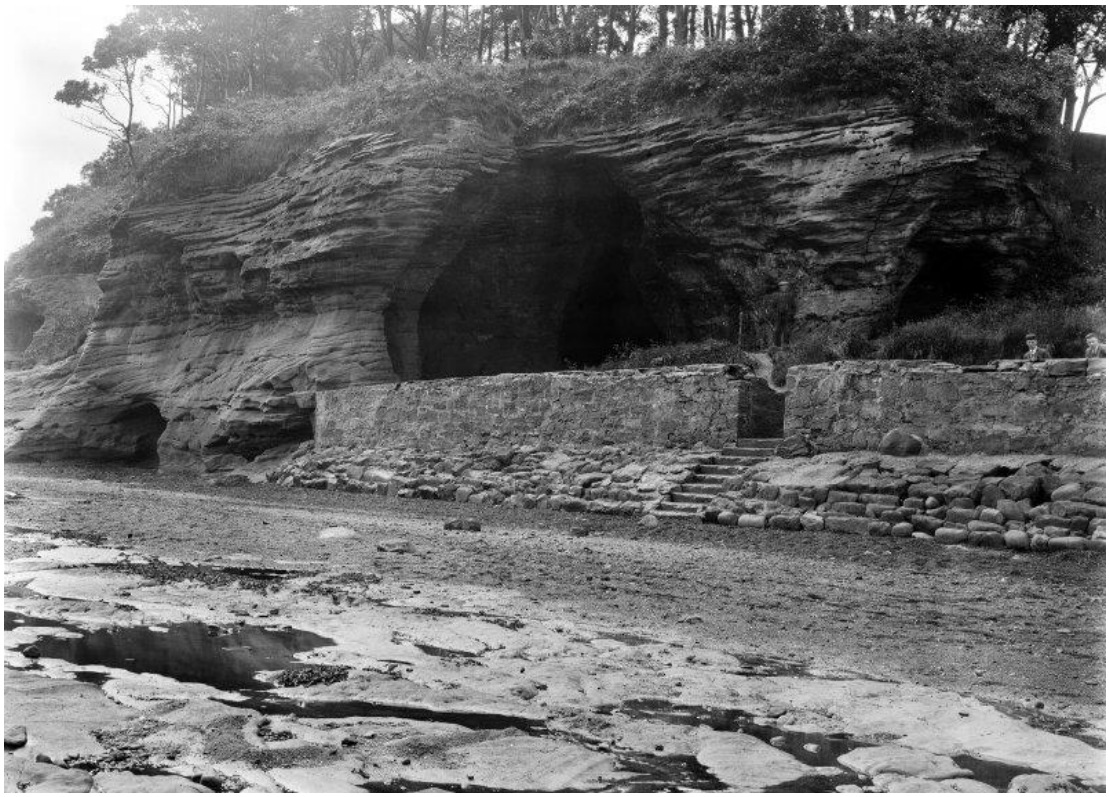
Illus 22: Nesting boxes, chiselled walls and joist sockets in Doo Cave.



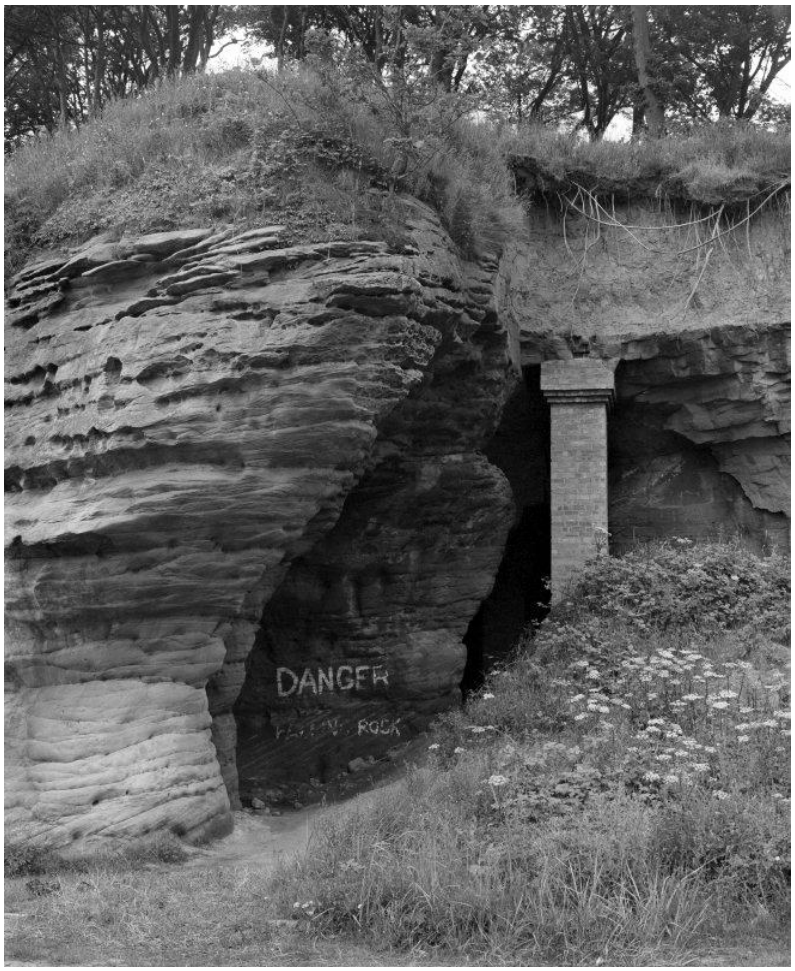
Illus 23: Extract from the 1st edition Ordnance Survey map at six inches to the mile (1856).



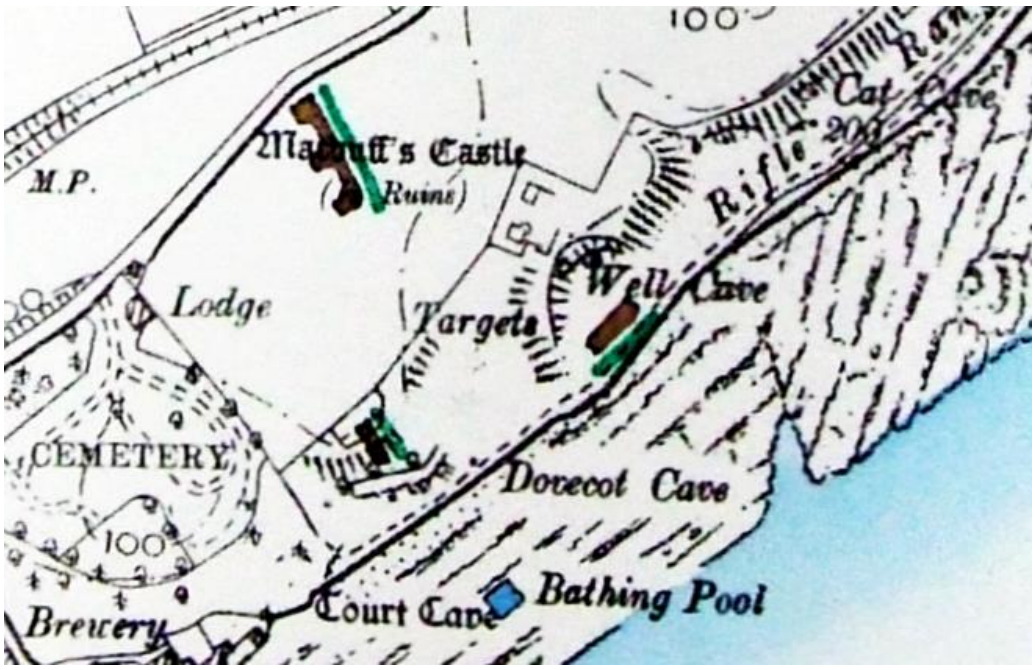
Illus 24: Extract from the 2nd edition Ordnance Survey map at six inches to the mile (1894).



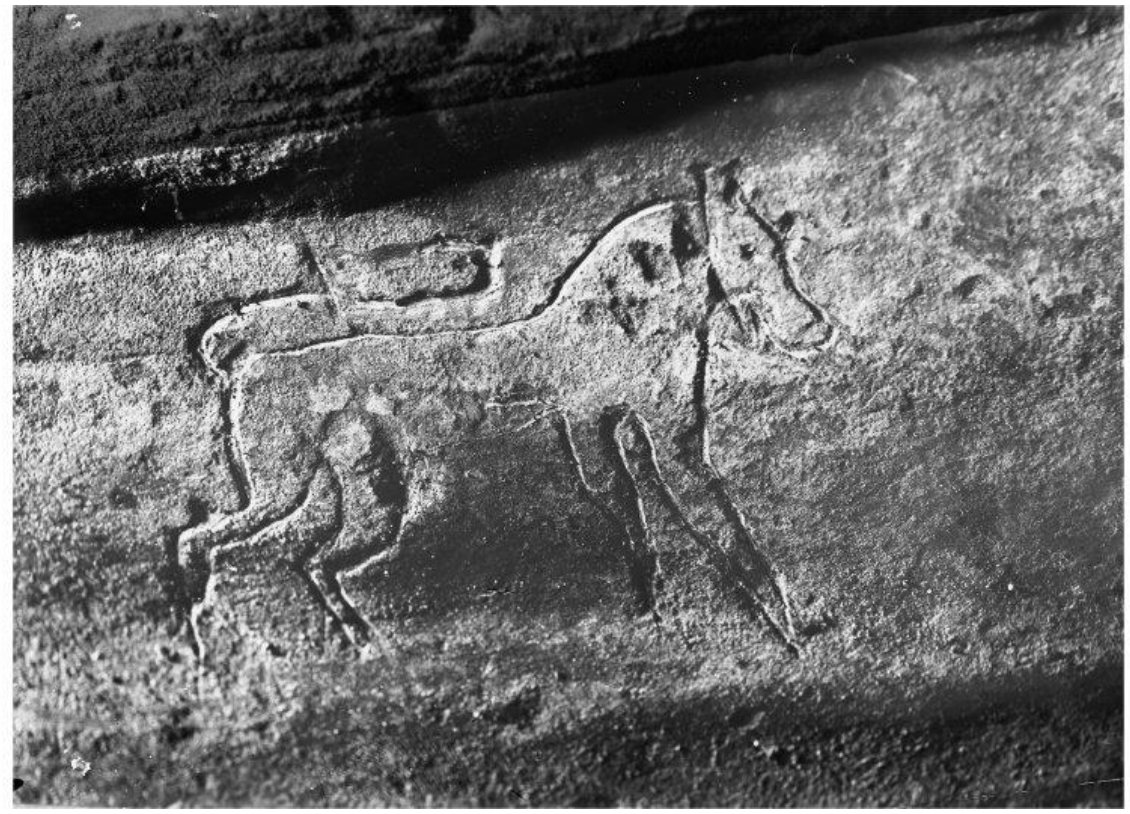
Illus 25: 1902 photographs of the foreshore in front of Court Cave and Jonathan's Cave, showing the 19th-century mortared sea wall and the vehicle track (RCAHMS SC 1214779 (upper) and SC 1408907 (lower)).



Illus 26: 1979 photograph of the entrance to Court Cave showing the scar in the rock face from the collapse of part of the entrance in 1970 (RCAHMS SC 1463655).

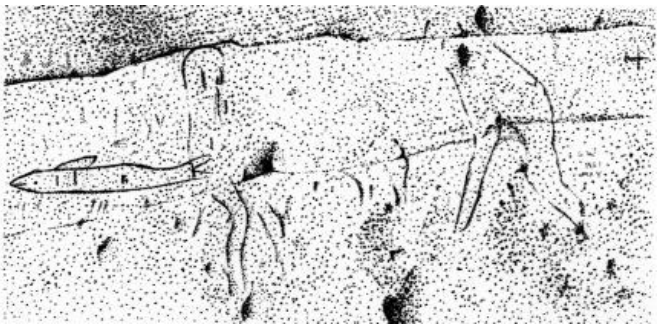


Illus 27: Annotated 2nd edition OS map (1894), showing WWI practice trenches, targets and rifle range.



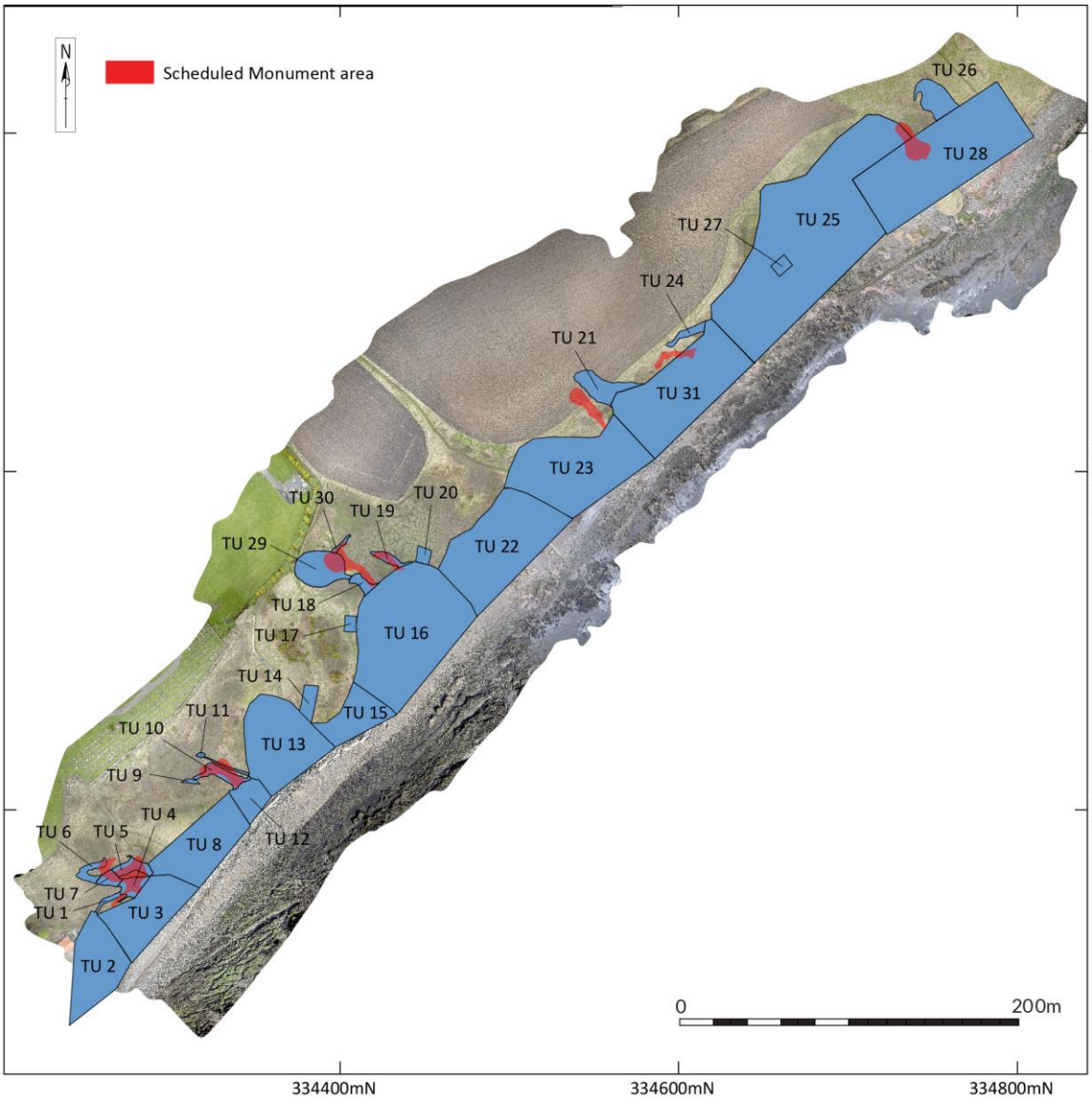
Illus 28: The carving of the horse in Jonathan's Cave, as photographed by John Patrick in 1903 (above) and in February 2015.

Illus 29: Carving of an animal with a human figure holding a staff in Court Cave (RCAHMS).

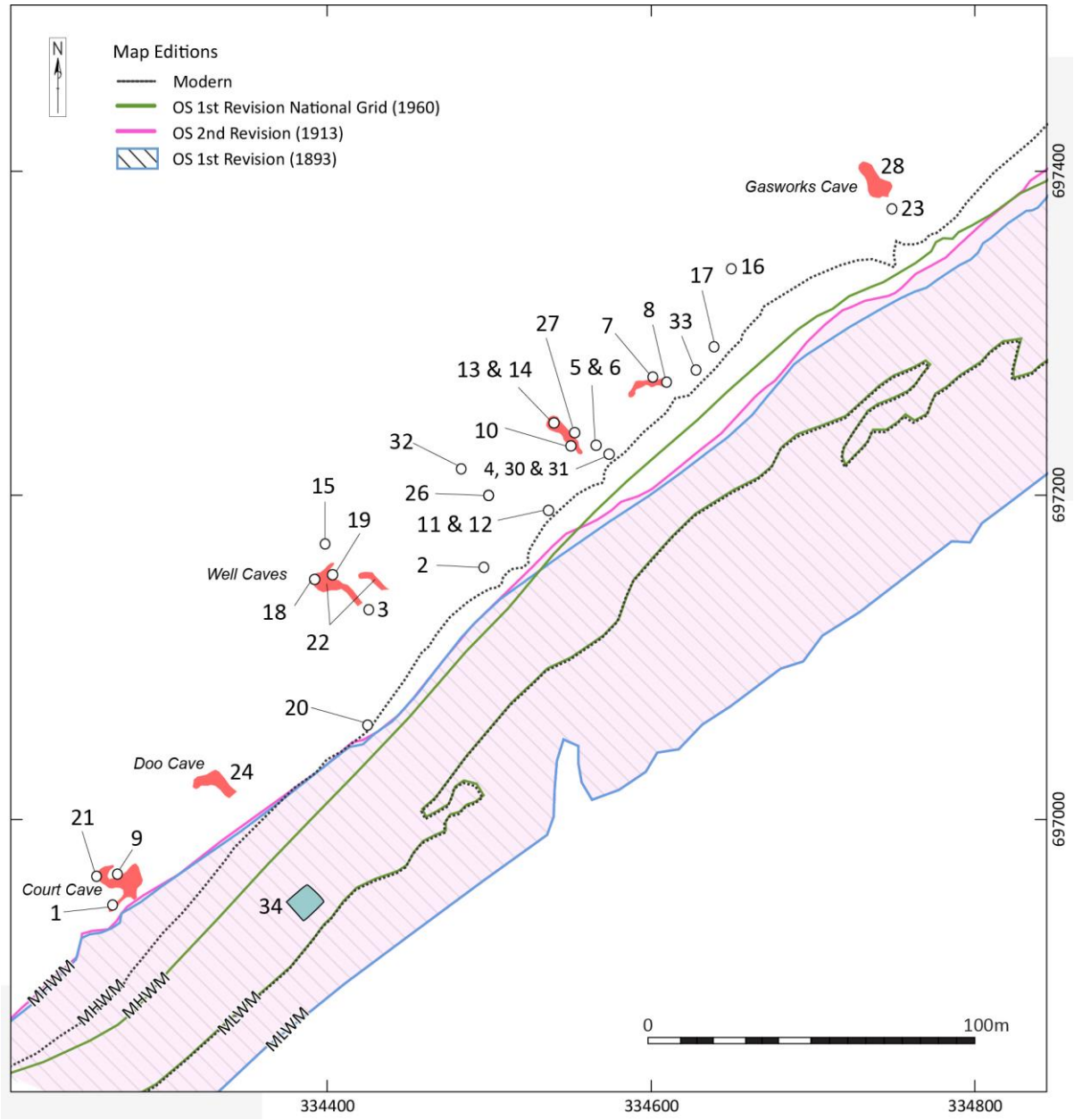


Illus 30: Carvings of two human figures in Jonathan's Cave (RCAHMS).

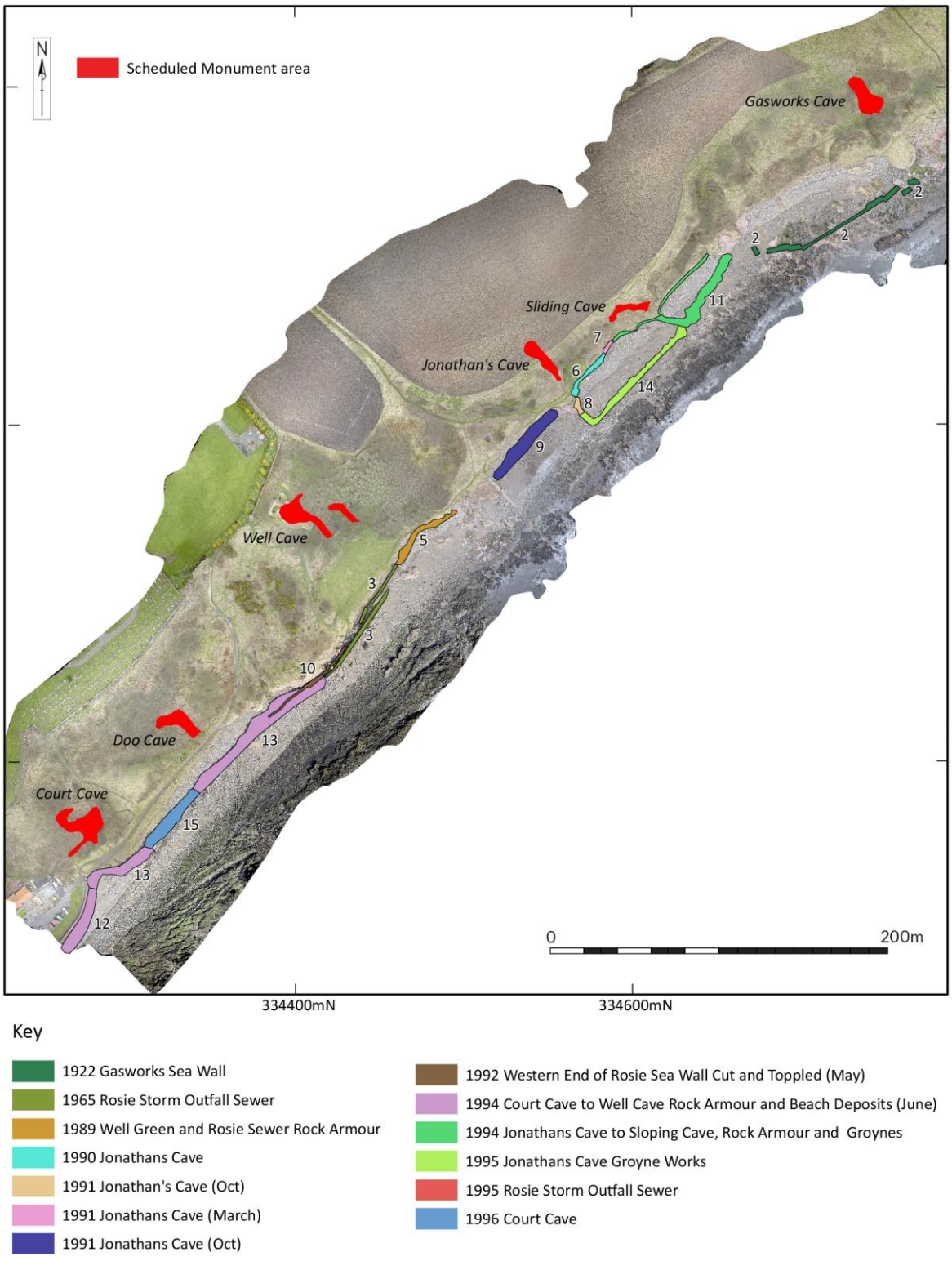
Illus 31: Closely set cleats perforating the projecting rock ledge on the east wall of Gasworks Cave.



Illus 32: Map of the terrain units identified at the Wemyss Caves (see paras 3.105ff).



Illus 33: Coastal changes evident from the 1893 to current Ordnance Survey maps, with locations of heritage assets.



Illus 34: Locations of coastal protection measures at the Wemyss Caves (1922-96) (after Speirs 2014). Numbers relate to Table 5

Illus 35: The upstanding portion of sea wall and broken concrete casing for the Rosie sewer pipe (Intervention 3, Table 5) and erosion bites behind it at Castle Green (Eddie Martin 2013).

Illus 36: Sea defences (Interventions 6 and 7, Table 5) and dispersed rock armour with surviving iron elements of groynes (Intervention 14) in front of Jonathan's Cave (Eddie Martin 2013).

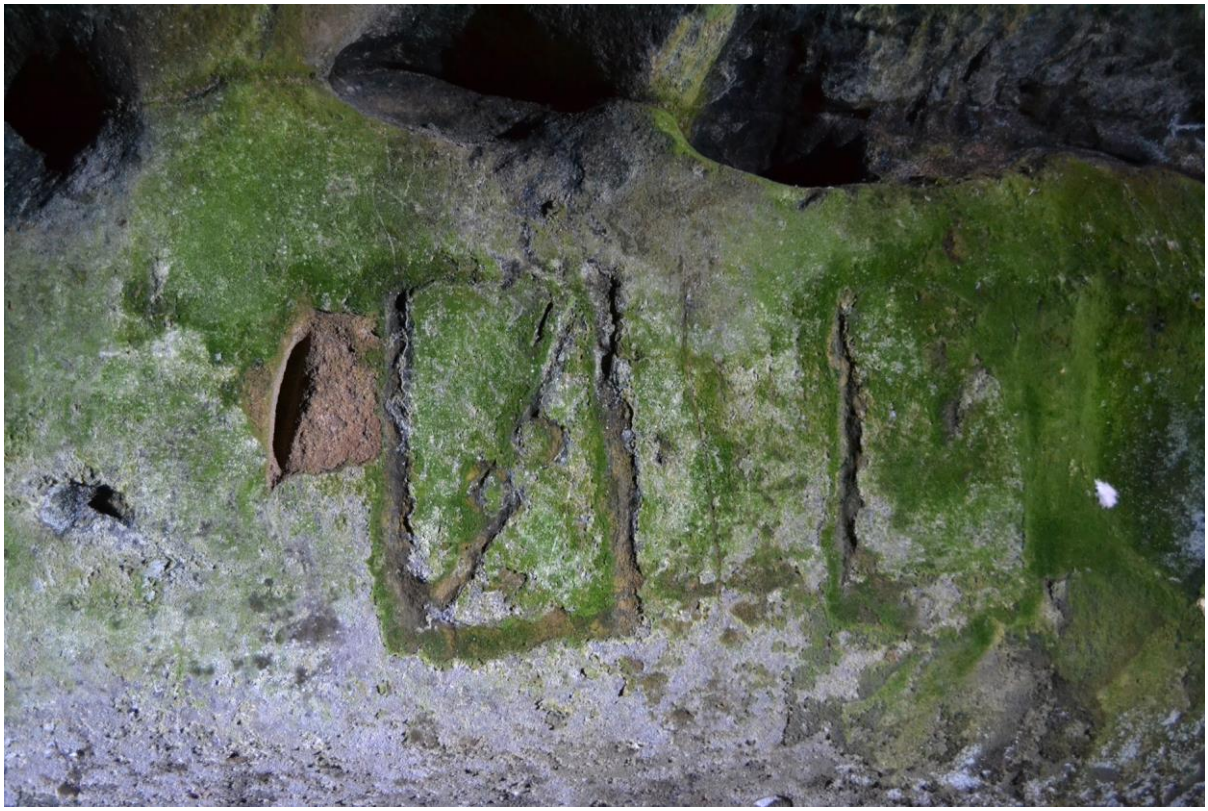
Illus 37: Collapsed material at the entrance to Court Cave.

Illus 38: Crack in the roof near the entrance to Court Cave.

Illus 39: Tree growing in collapsed section at the entrance to Gasworks Cave.

Illus 40: The results of soil slippage on Castle Green, with mounds of earth accumulated below the drip line of the overhanging rock face.

Illus 41: Sand deposit accumulated as a result of erosion at the base of the western wall of Court Cave.



Illus 42: Algal growth on the symbols in Sliding Cave, with delamination at the edge of the symbol to the left.

Illus 43: The remains of campfires in Jonathan's Cave.

Illus 44: The remains of a campfire in Court Cave; the heat has caused part of the rock surface to flake off.

Illus 45: Hole dug at the rear of Sliding Cave during the winter of 2014-15, with rubbish.

Illus 46: Modern painted graffiti in Gasworks Cave.

10. Gazetteer of Heritage Assets

Site No	Description	Source ID	Intervention	Easting	Northing	Date
1	Court Cave cluster of small cup marks	Canmore 53973		334267	696947	?Early medieval
2	Orthostat outside Well Caves	Canmore 53965 / Gibson & Stevens 2007	WA/2004 Tr 9	334496	697156	?Prehistoric
3	Prehistoric ard marks, midden outside Well Caves	Canmore 53965 / Gibson & Stevens 2007	WA/2004 Tr 7	334425	697129	750-410 cal BC
4	IA and LIA material in colluvium excavated outside Jonathan's Cave		CEU/1989	334575	697225	770-360 cal BC - cal AD 420-640
5	Colluvium and midden excavated outside Well Cave	MacKie 1986	HM/1980	334566	697231	?IA - LIA
6	10th-13th C Norse type pin and other medieval midden material in colluvium outside Jonathan's Cave	MacKie 1986	HM/1980	334566	697231	cal AD 900-1240
7	LIA occupation deposit, charred cereals, carved symbol in Sliding Cave	Canmore 53965 / Gibson & Stevens 2007	WA/2004 Tr 8	334603	697273	cal AD 240-390
8	Court Cave symbols	Canmore 53978		334608	697270	Pictish
9	Jonathan's Cave symbols	Canmore 539797		334270	696965	Pictish
10	Sliding Cave symbols	Canmore 539797		334551	697230	Pictish
11	Burial	Canmore 53972	FAS/1988	334537	697191	cal AD 890-1220
12	Burial	Canmore 101012	FAS/1993	334537	697191	cal AD 1020-1180
13	Jonathan's Cave crosses and Christian symbols	Canmore 539797		334539	697245	Early medieval
14	Jonathan's Cave boat	Canmore 539797		334540	697245	Early medieval
15	Macduff's Castle Ruins of castle including 14th-C tower, possible 15th-C remains, 16th-C range of buildings terminating in second tower and late 16th/early 17th-C outer wall.	Canmore 53974		334392	697155	14-17th C
16	Quarry	CZAS 1996		334646	697339	?14-17th C
17	Structural remains, flagged area and shell midden excavated by quarry	Canmore 53971	APG/1990 Area A	334640	697295	?14-17th C
18	Well Cave well, staircase	Gibson & Stevens 2007	WA/2004	334393	697148	?14-17th C

19	Well Cave masonry pier	CMP 2015		334404	697150	?14-17th C
20	Cylindrical doocot - now destroyed.	Canmore 53975		334425	697059	16th C
21	Court Cave aumbreys, carved line			334257	696965	17th C
22	Well Cave early mod graffiti	Canmore 53953		334416	697142	18th-early 20th C
23	Gasworks - brick foundations levelled to the ground, a concrete circular basin, remains of a brick structure in the eroding face, an outer sea defence wall and several stone boundary walls. The remains originate from the East Wemyss Gas Works.	Canmore 53964		334748	697374	1846
24	Doo Cave nesting boxes	Canmore 53977		334336	697020	?18th C
25	Mid-20th- to 21st-century graffiti, all caves					Modern
26	Midden including abundant animal bone, excavated in front of Jonathan's Cave	Canmore 101020 / NMRS NT39NW 31.06	FAS/1984	334499	697199	Unknown
27	Cut features, nails, ash, clinker in Jonathan's Cave	Gibson & Stevens 2007	WA/2004 Tr 2	334553	697238	Unknown
28	Gasworks deposits, querns	Canmore 53956 / NMRS NT39NW 13		334741	697391	Unknown
29	Cleats, all caves	Canmore 53973				?Post-medieval
30	Middens with abundant shell and animal bone, ditch, bank, crucible fragment, walling recorded in eroding foreshore in front of Jonathan's & Sliding Caves.	Canmore 72437, 281235	CEU/1989 FAS/1984 SF/1994	334575	697225	Unknown
31	Faced sandstone single-course wall and thick midden layers with abundant animal bone exposed by wave action outside Jonathan's Cave.	Canmore 101018	CEU/1989 CEU/1986	334575	697225	Unknown
32	Two walls exposed in section in S-facing side of cutting for track leading down to Jonathan's Cave. The walls are c 5m apart and lay 0.8m below 1989 ground surface.	Canmore 53971	CEU/1989	334483	697216	Unknown
33	Three drystone walls exposed in eroding section E of Sliding Cave, embedded in well stratified midden layers containing shall and animal bone, up to 1.5m thick.	Canmore 53965	APG/1990	334628	697278	Unknown
34	Dookin' Dub intertidal swimming pool, created by local miners in 1884 and enlarged in 1921. Shown as 'bathing pool' on 25" OS maps up to 1947. Measures c 15m x 24m. Now completely submerged.	CZAS 1996		334384	696947	late 19th-20th C

11. Acknowledgements

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