

WNBC/01



WYLFA NEWYDD PROPOSED NEW NUCLEAR POWER STATION

ROCK OUTCROP TOPOGRAPHIC SURVEY

commissioned by CBRE
on behalf of Horizon Nuclear Power

February 2017

CBRE

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NUCLEAR POWER

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ARCHAEOLOGY



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project info

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PROJECT SUMMARY

Headland Archaeology was commissioned to undertake a topographic survey of two rock outcrops at Wylfa, Anglesey. This work was required in advance of proposed 'rock winning' as part of the construction of a proposed new nuclear power station (Wylfa Newydd). A full and complete topographic and photogrammetric record of the outcrops was undertaken along with archival research and an assessment of their landscape setting. During the walkover survey, a number of features relating to rock removal were identified, however, it was unclear whether these were as a result of historical quarrying or natural freeze-thaw weathering.

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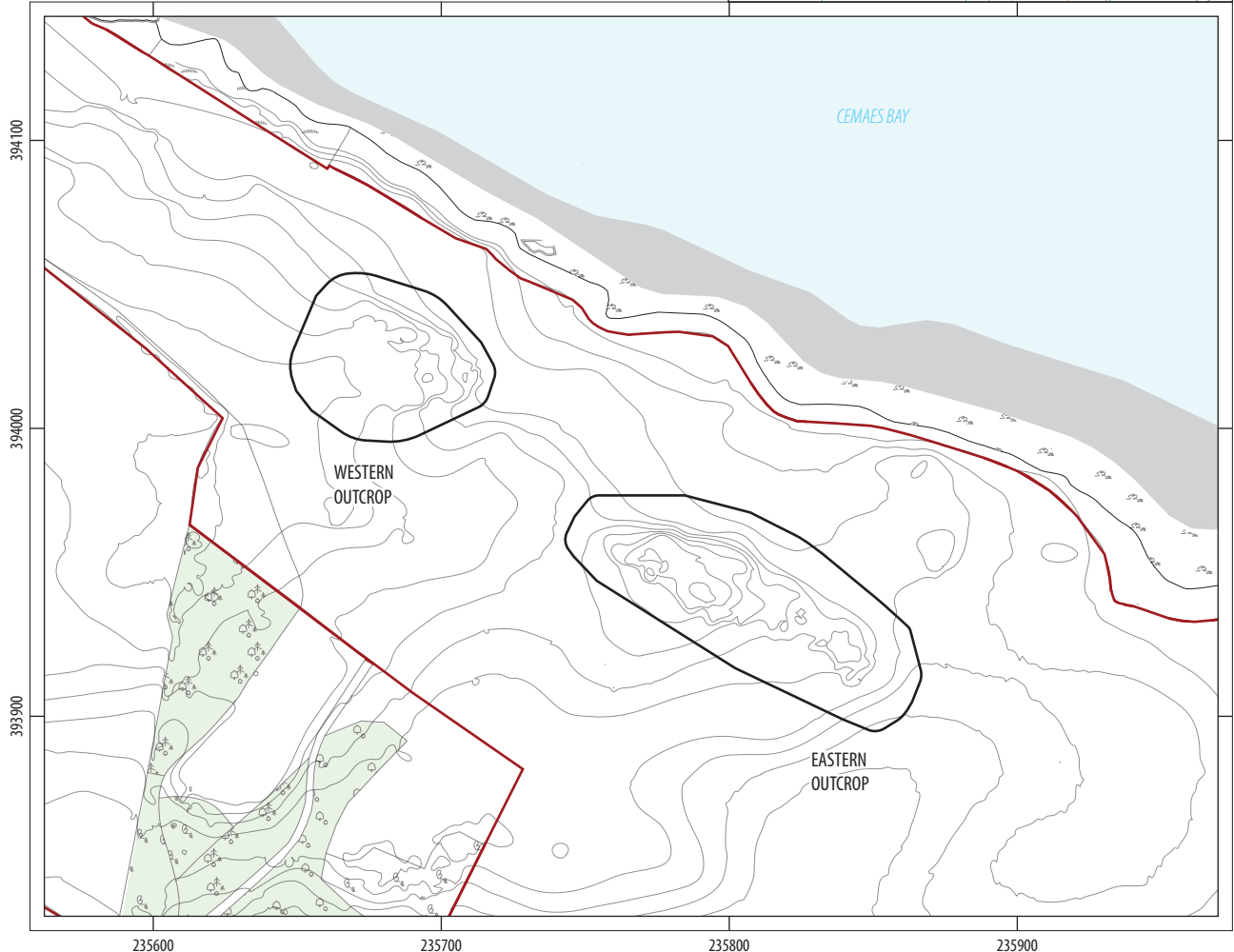
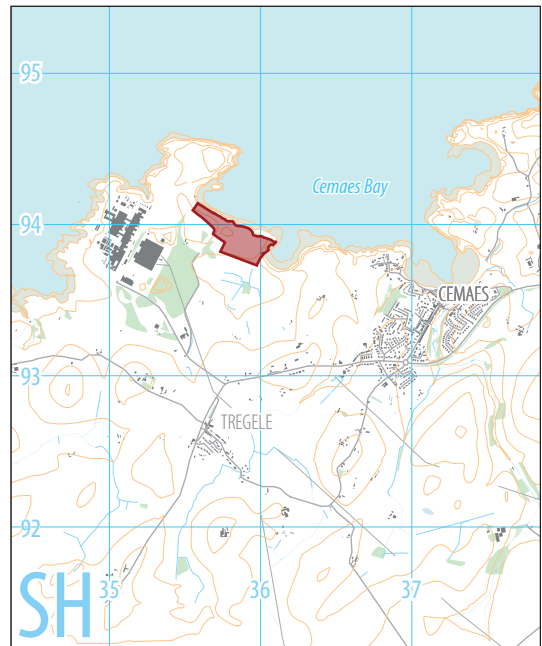
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land east of Wylfa Power Station
Wylfa Newydd
Anglesey

0 200km
1:10,000,000 @ A4

Contains OS data © Crown copyright and database right 2016



0 50m
1:2,500 @ A4

KEY
— field boundary
— surveyed area

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WYLFA NEWYDD PROPOSED NEW NUCLEAR POWER STATION

ROCK OUTCROP TOPOGRAPHIC SURVEY

1 INTRODUCTION

Horizon Nuclear Power (Horizon) is planning to construct and operate the Wylfa Newydd Project: a new nuclear facility comprising approximately 2,700MW nuclear Power Station on land adjacent to the Existing Power Station at Wylfa Head, Anglesey. As part of the site development works associated with this project it is planned to break up and remove certain rock outcrops from across the Wylfa Newydd Development Area (hereafter referred to as 'rock winning'). The rock thus gained will be crushed and used as a construction material during the project.

In order to inform the requirement for and nature of any mitigation work in relation to these rock outcrops prior to the rock winning works commencing, Horizon requested an archaeological survey of the rock outcrops to record their current state and identify any archaeological or historical remains associated with them.

Headland Archaeology (UK) Ltd was commissioned by CBRE on behalf of Horizon to undertake the archaeological survey work in accordance with a written scheme of investigation (Hounsell 2016) agreed with the senior planning archaeologist for Gwynedd Archaeological planning services.

1.1 DESCRIPTION OF THE SITE

The rock winning works are programmed to take place in the Wylfa Head Area within the field designated as L1. Two areas of outcrop located around NGR SH 35732 93992 are the subject of the survey; c. 550m to the east of the existing Magnox power station, c. 90m south of the nearest coastal point and 1.4km WNW of the centre of the modern village of Cemaes (Illus 1). The larger outcrop to the east has its central point located at NGR SH 35802 93947; the smaller outcrop to the west has its central point located at NGR SH 35682 94025.

Within field L1, the British Geological Survey (NERC 2016) mapping indicates that the overlying soil is freely draining slightly acidic loam with a superficial geology of Devensian till (Cranfield University 2016) and an underlying bedrock of schist. It is up-cropping of this schist that form the rock outcrops in L1.

1.2 ARCHAEOLOGICAL BACKGROUND

The archaeological and historical background of the project is discussed in detail in a series of desk based assessments (DBAs) for the Wylfa Newydd project (GAT reports 966, 967 and 999).

In summary, previous work in field L1 has included Desk based assessments and geophysical survey, neither of which demonstrated the presence of significant archaeological remains.

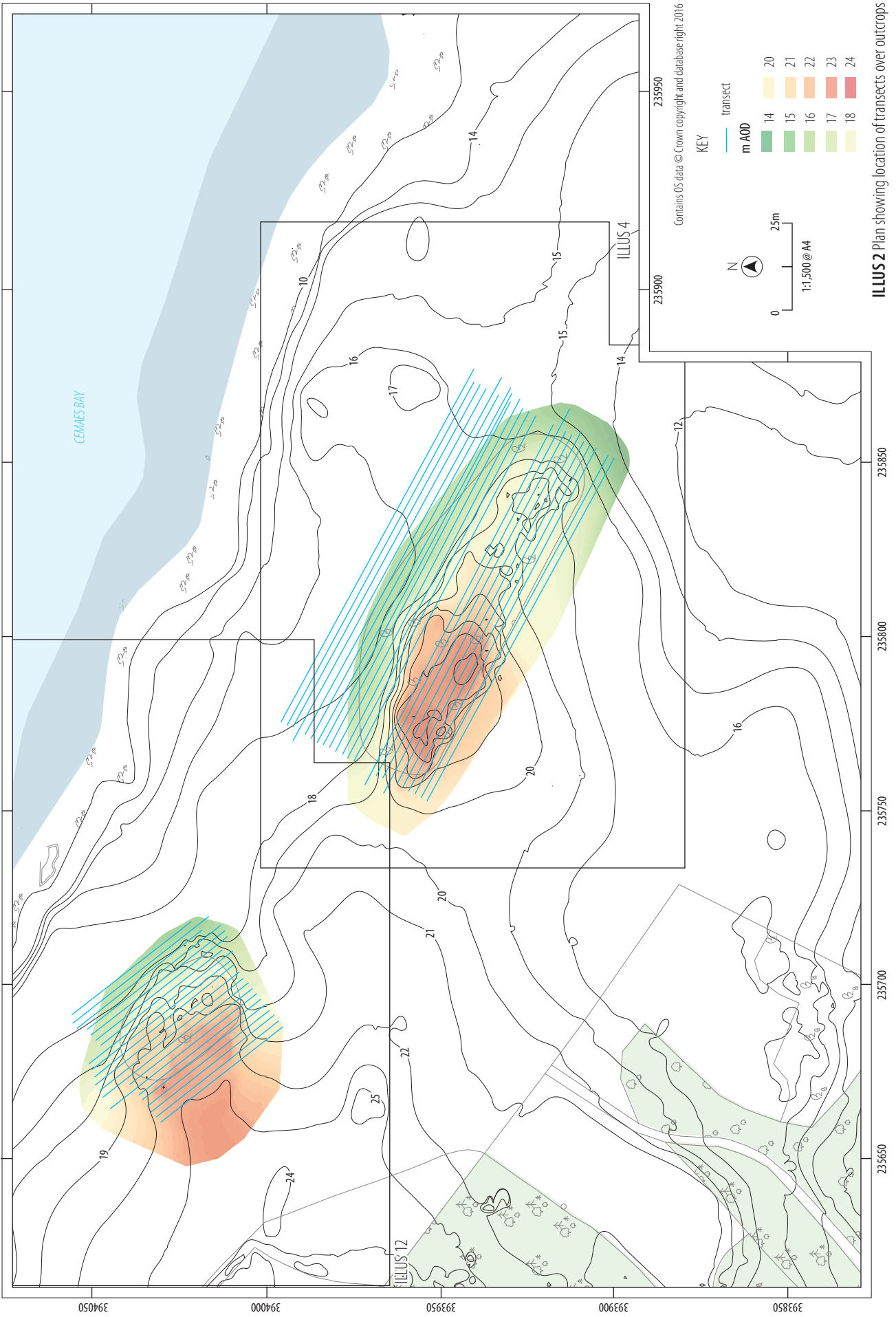
More recently, a programme of trial trenching undertaken by Headland Archaeology (Craddock-Bennett & Bain 2016) has identified a number of archaeological features in the vicinity of the outcrops. The results of this evaluation are currently being assessed, but include suspected prehistoric activity in the form of dispersed pit features and a possible burnt mound, as well as the presence of a long-cist cemetery of probable early medieval date located approximately 85m to the south of the eastern rock outcrop.

2 AIMS AND OBJECTIVES

The general aim of the survey was to gather additional information on the extent and condition of the rock outcrops and the presence, extent, nature, character, quality, condition and date of any archaeological remains associated with these rock outcrops.

More specific aims of the survey were:

- › to create a detailed three dimensional map / plan of the outcrops and any historical/archaeological remains identified;
- › to create a three dimensional photographic 'model' of the outcrops;
- › to identify the presence of any archaeological / historical activity, including (but not limited to) such things as:
 - » features (such as post or stake holes) cut into the rock;





ILLUS 3 Marking out the topological survey looking W

- » evidence of past industrial activity focused on the rock outcrops (such as quarrying);
 - » any extant upstanding structures / man-made objects; and
 - » pictogram / icons / art etc. cut into / drawn onto the rock outcrops.
- › to record (in sufficient detail and in an appropriate manner) any archaeological / historical remains / activity identified;
 - › to establish the condition, nature and age and where appropriate stratigraphic sequence, of any archaeological / historical remains identified; and
 - › to disseminate the results through reporting – which will inform the requirement for further works.

3 METHOD

The survey work undertaken on the rock outcrops broadly followed a level 2 landscape survey as defined in 'Understanding the Archaeology of Landscapes a guide to good recording practice' (English Heritage, 2007, p23). A detailed specification for the survey was produced by Horizon and submitted to Gwynedd Archaeological Planning Services (GAPS) for approval.

3.1 ARCHIVAL RESEARCH

Baseline information about the rock outcrops was gathered from previous assessments, recently completed trial trenching, and from archival research at Anglesey Archives in Llangefni as well as examination of aerial photographs in the Royal Commission of Ancient and Historic Monuments Wales (RCAHMMW) archives. The Gwynedd Historic Environment Record was also consulted and records for a search area of 1km from the rock outcrops were obtained as a digital data extract.

3.2 SETTING ASSESSMENT

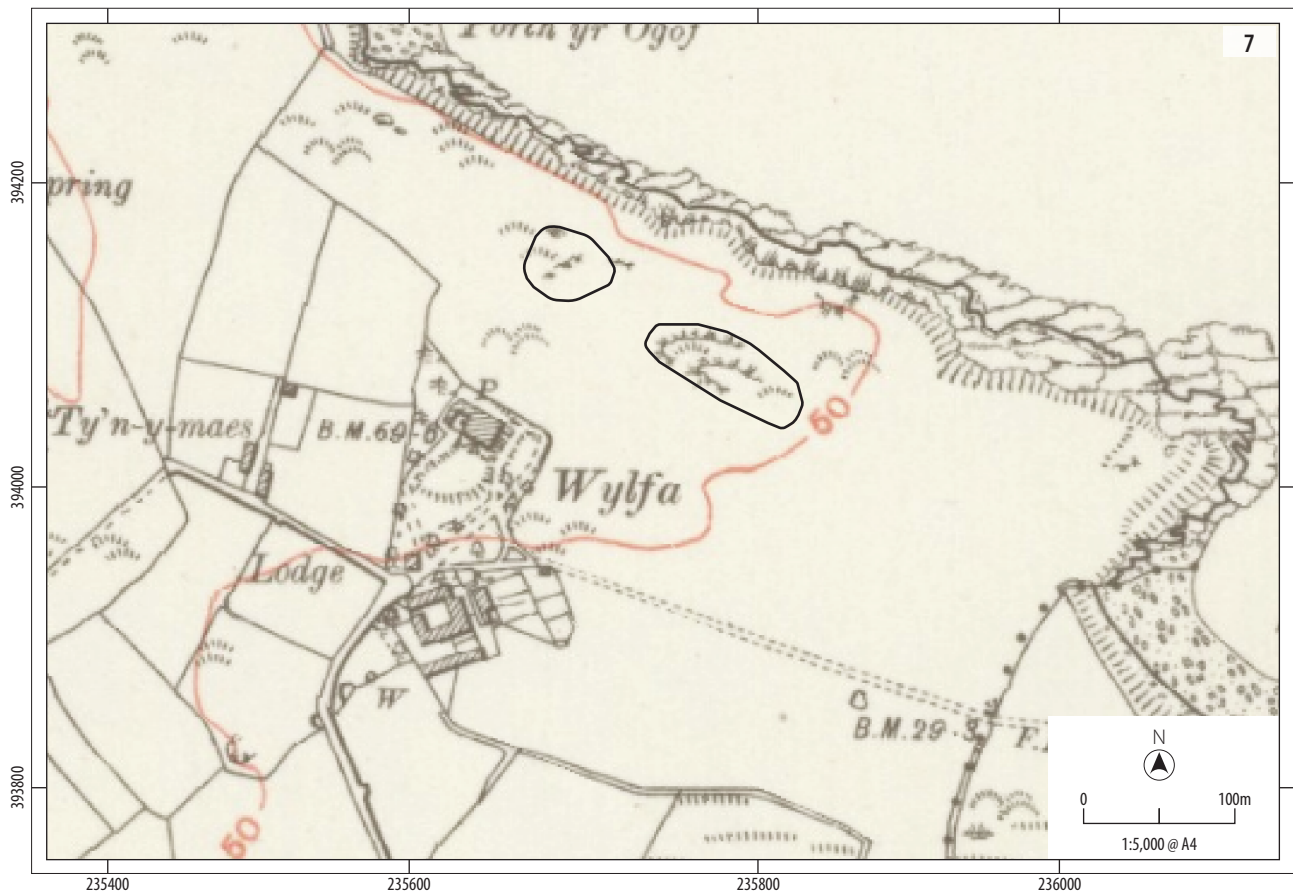
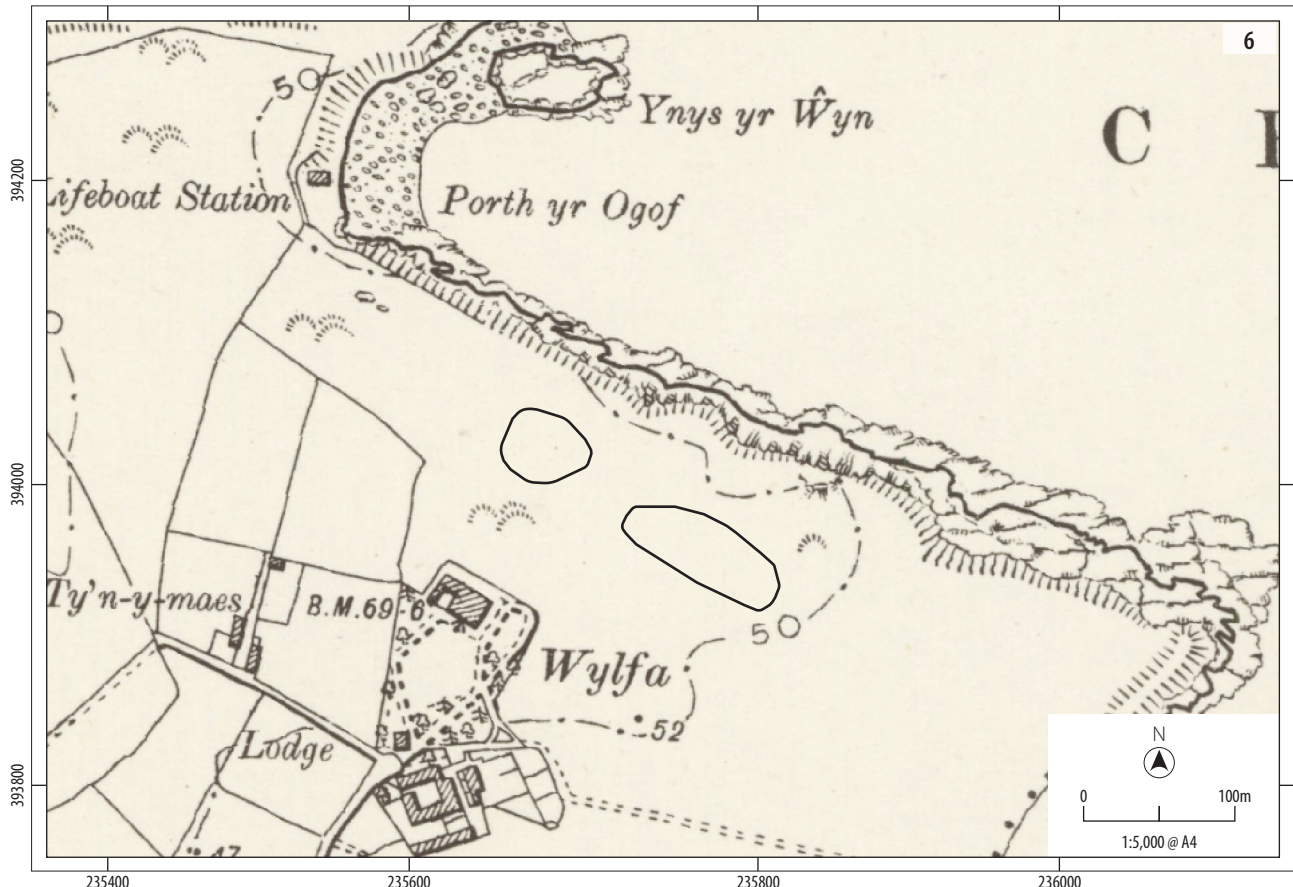
The setting of the rock outcrops, including views of and from them, was assessed through site visits to the rock outcrops and the surrounding area. This included visits to other heritage assets in the surrounding landscape, including Llanbadrig Church. The visits took place between the 23rd and 24th of November 2016.

3.3 WALK OVER SURVEY

A detailed visual walk over survey of both outcrops was undertaken prior to photographic and topographic recording. The larger, eastern outcrop was visited on the 15–16th of November 2016 and the smaller, western outcrop on the 17–18th November. Transect routes were laid out along the length of each rock outcrop, with transects spaced 2m apart (Illus 2). The transects were set out, walked and recorded by dGPS, with visual cues laid out at 1.00m intervals along each transect to aid identification of potential features. Any



ILLUS 4 Extract of Llanfechell Tithe Map ILLUS 5 Extract of OS map Anglesey II.NE & IIa.SE (includes: Llanbadrig.) Surveyed: 1887 to 1888 Published: 1888 (Reproduced with the permission of the Trustees of the National Library of Scotland)



ILLUS 6 Extract of OS map Anglesey II.NE & IIa.SE (includes: Llanbadrig.) Revised: 1899 Published: 1901 **ILLUS 7** Extract of OS map Anglesey II.NE & IIa.SE (includes: Llanbadrig.) Revised: 1922 Published: 1926. (Both maps reproduced with the permission of the Trustees of the National Library of Scotland)



ILLUS 8 Extract of 1945 aerial photograph

archaeological features or areas of interest along each transect were identified and recorded on pro forma context sheets and their positions located by dGPS. All aspects of the work were undertaken in accordance with the current relevant Standards and Guidance for the Chartered Institute for Archaeologists (CIfA 2014).

3.4 PHOTOGRAPHIC RECORD AND PHOTOGRAMMETRY

Once the walkover survey was complete, a photographic record of all identified archaeological features was undertaken in accordance with 'Metric Survey Specifications for Cultural Heritage' (Historic England 2015, p45 (section 4)). The photographic record was made using a digital camera equipped with an image sensor of 18 megapixels and archived as both uncompressed TIFF v.6 and RAW images. The images taken illustrated both the detail and the general context of each identified feature. All photographs included a suitably sized and placed scale as well a reference board detailing the context or other reference number of the feature, the site reference details and the relative position of north. Each archaeological feature was also subjected to georeferenced photogrammetric recording in order that rectified and orthographic images from the data could be accurately reproduced if required. The location of each feature photographed was recorded with a dGPS and the photogrammetry georeferenced using control points located with a dGPS.

Each rock outcrop was subject to a photographic survey designed and undertaken in such a way that a 3D photogrammetric model of each outcrop could be produced in accordance with 'Metric Survey Specifications for Cultural Heritage' (Historic England 2015). The larger, eastern outcrop was recorded over a two day period between 29–30th November. The smaller, western outcrop was recorded on 18th November. The photographic record was made using a digital camera equipped with an image sensor of 18 megapixels and archived as both uncompressed TIFF v.6 and RAW images. Control points were placed in a circle around each outcrop and recorded using a dGPS tied into the OS NGR system, in order that 3D models of the outcrops could be accurately georeferenced.

3.5 TOPOGRAPHIC SURVEY

A detailed and accurate three dimensional topographic survey of both rock outcrops was undertaken using a dGPS tied into the OS NGR system (Illus 3). The aim of this survey was to output an accurate contour plan of the outcrops in accordance with the tolerances laid out in 'Metric Survey Specifications for Cultural Heritage' (Historic England 2015, p22 (section 2.1.2) and p97 (section 6.6)). Point density (interval) was taken at 0.50m across the smaller, western outcrop, laid out on a regular grid system using a dGPS and ropes marked with visual cues at 0.50m intervals. Where sudden changes in contour required a local increase in intensity of points in order to accurately map them, this was taken into account. After consultation with the client, it was agreed that the point density could be increased to 1.00m across the



ILLUS 9 View of fields F2 and L1 from west showing outcrops **ILLUS 10** View from outcrops looking north **ILLUS 11** View from outcrops looking north-west
ILLUS 12 View from outcrops looking south **ILLUS 13** Detail of boundary wall of former Wylfa House **ILLUS 14** Detail of cist burial stones **ILLUS 15** View of outcrops from Mynydd Wylfa **ILLUS 16** Concrete mast base on Mynydd Wylfa



ILLUS 17 View from outcrops towards Llanbadrig (northeast) **ILLUS 18** View from Llanbadrig church towards rock outcrops **ILLUS 19** View from edge of churchyard towards rock outcrops **ILLUS 20** View from Llanbadrig Point towards rock outcrops

larger, eastern outcrop, though where sudden changes in contour or potential archaeological features required a local increase in intensity of points in order to accurately map them, this was taken into account.

4 RESULTS

4.1 ARCHIVAL RESEARCH

The Historic Environment Record data is included in Appendix 1. These records were found to be largely of post-medieval or modern features with no relationship to the rock outcrops. During the Second World War a Chain Home radar defence station was established at Wylfa (PRN36587) which may have encroached on the area now occupied by the rock outcrops. The only historic asset of medieval date within the study area is the route of a road from Tregele to Wylfa (PRN61101).

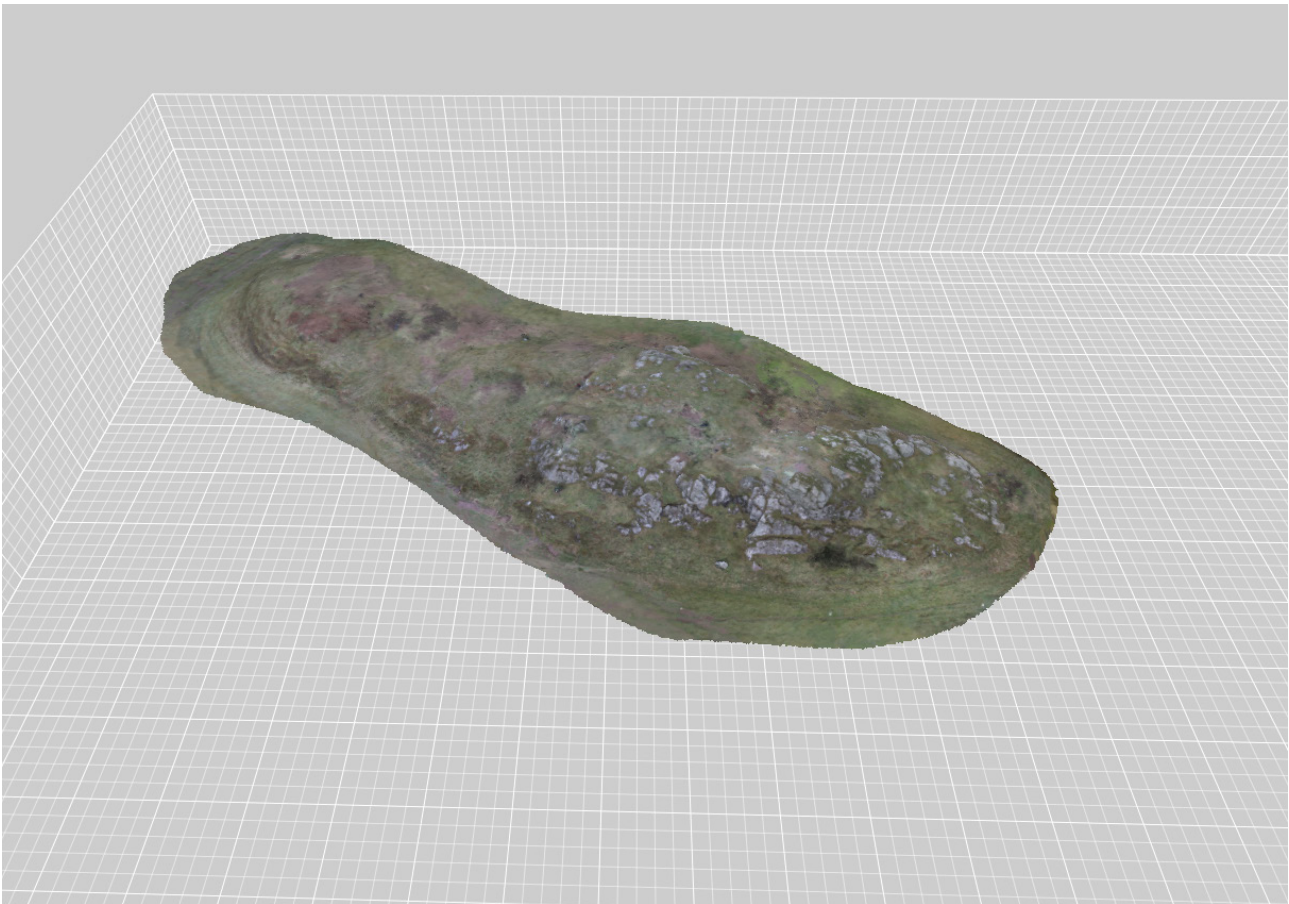
Historic map regression shows that L1 has been a single field since at least the late 19th century (Illus 4–7). At the time of the tithe map in 1822 (Illus 4) the rock outcrops were not mapped and the field was larger than at present. By the first edition Ordnance Survey map the rock outcrops were mapped and Wylfa House had been constructed to the south of them (Illus 5). The Ordnance Survey does not record that the outcrops were in use as quarries, however comparison between the first edition and later editions indicate that the westernmost was previously shown as larger than it currently is which may indicate some removal of material in the late 19th century.

A hand written letter from the vicar of Llanfechell in 1922 describes that ‘the serpentine rocks of the parish’ had been used to make a table for Napoleon (Anglesey Archives reference WM/321/7). No source is given by the vicar for this information, nor is the location of the quarry given. The BGS data indicates that Serpentinite rocks are found in bands across the Wylfa area but are located further south than the assessment site (GAT Assessment report G2096: figure 21). The stone for this table would not therefore have come from the rock outcrops that are the subject of this assessment.

An aerial photograph taken in 1945 shows the radar station on Wylfa Head and includes the rock outcrops (Illus 8). The photo does not show sufficient detail to identify a concrete post-base recorded during the walkover element of the current works (discussed below) on the eastern outcrop or that on Mynydd y Wylfa, but there are other small structures visible to the west of the outcrops which may be similar supports.

4.2 THE SETTING OF THE ROCK OUTCROPS

The rock outcrops are located within a large pasture field that contains other mounds which are probably smaller, more vegetated rock outcrops (Illus 9). There are further outcrops in the field to the northwest and in the wider area. The outcrops subject to this survey and the other mounds are generally intervisible with one another although the western outcrop obscures the eastern one in views from west of the outcrops and vice versa.



ILLUS 21 3D model of eastern outcrop

The recent evaluation trenching in field L1 revealed a cemetery with cist burials (Craddock-Bennett & Bain 2016) to the south of the eastern outcrop. The date of the burials is not yet confirmed but they are thought to be of early medieval date. It is not known if the stone for these cist burials (Illus 13 and 14) came from the rock outcrops which are the subject of this assessment, from other nearby outcrops or from further afield. The stones appear to be visually different, but only chemical analysis of samples of the rock outcrops and the cist stones can confirm this.

The location of the outcrops is an accident of geological processes rather than due to any human activity, however the physical evidence of possible quarrying means that their present size is to some degree a product of human interaction with this mineral resource. The rock outcrops also have evidence of use in the more recent past with evidence of a post base indicating the location of a probable WWII structure on the eastern outcrop (Feature 118).

The rock outcrops are visible, although not dominant landscape features, in views from Mynydd y Wylfa where there are remains of structures associated with the WWII radar station including a concrete base probably for securing either a barrage balloon or cables for a radar mast (Illus 15 and 16). This base and that on the eastern outcrop are not intervisible with one another however due to their small size.

There is no intervisibility between the rock outcrops and Llanbadrig church due to the large rock outcrop adjacent to the churchyard (Illus 18), from the far northern corner of the churchyard field L1 is

just discernible beyond the Llanbadrig outcrop (Illus 19). The rock outcrops are visible from higher ground to the west of Llanbadrig church (Illus 20) but the existing Magnox power station and Mynydd y Wylfa are more dominant in these views.

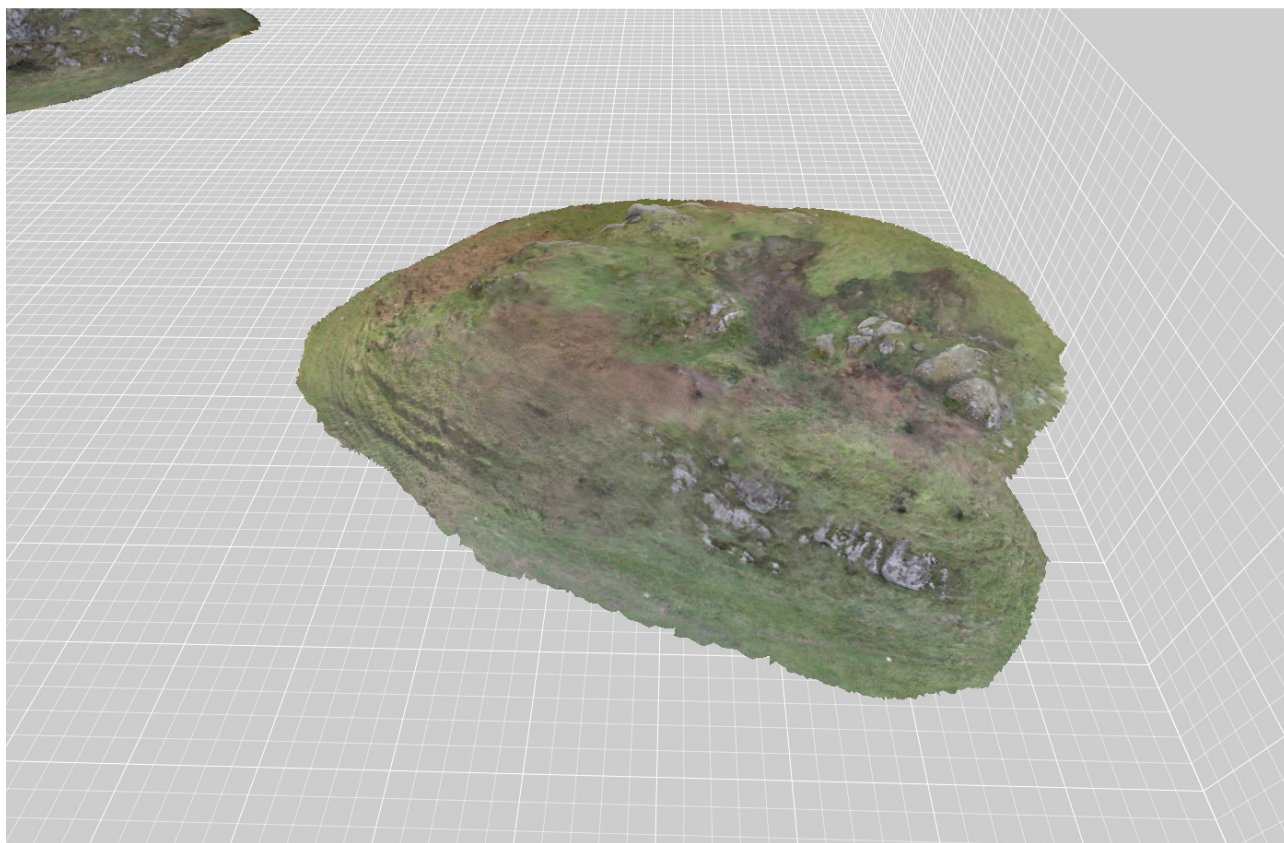
Photographs taken by GAT from the Scheduled standing stones at Llanfechell A030, from the Scheduled standing stone A080 and from the standing stone A081 looking towards the development area (GAT report 966: plates 11, 12 and 13) shows that the rock outcrops are not visible from these locations due to the undulating landform and intervening vegetation.

4.3 FIELD SURVEY

A gazetteer presenting the topographic survey and photographic record is provided in Appendix 2. Photogrammetric models of both outcrops and individual features are hosted on a private access website. The models can be viewed at the following locations;

- › Eastern Outcrop: <https://skfb.ly/ZMTD>
- › Western Outcrop: <https://skfb.ly/ZMzM>

An individual photogram of each feature can be viewed by clicking on the number labels on the outcrop models, and then following the displayed link.



ILLUS 22 3D model of western outcrop

4.4 EASTERN OUTCROP (ILLUS 21)

The eastern outcrop [101] measured 118m x 37m and comprised a low bank covered in grass and vegetation to the east, rising to sheer bedrock outcrops to the west. The walkover survey identified possible archaeological features on both the northern and southern faces of the outcrop [102–120]. Angular indentations and scoops [103, 106, 110, 113 and 115] were visible in the northern face of the outcrop and measured on average 0.50 x 0.30 x 0.05m. Although these could be attributed to stone removal as a result of quarrying, it is more likely that these weathered indentations were the result of geological frost shattering along natural fault lines in the bedrock and cannot be definitely attributed to human intervention.

Similarly, possible tool marks [102, 104, 107 and 109–113] were recorded on the northern face of the feature. These marks measured on average 0.15 x 0.06 x 0.03m and comprised randomly spaced linear indentations in the bedrock. It is not possible to definitely attribute these marks to human quarrying activity and it is likely that they are the result of the natural bedrock shattering and weathering over time. A potential strike or bar mark [116] was recorded at the upper western edge of the outcrop and measured 0.15 x 0.08 x 0.04m. Cut into natural bedrock, feature [116] lay perpendicular to the natural fault lines of the rock and may indicate a deliberate attempt at stone removal.

Feature [108] was recorded at the western end of the northern face of the outcrop. The feature measured 8.00 x 2.50 x 2.80m and comprised an indented area of noticeably darker bedrock with less lichen and moss cover. The slope of the rock face was steeper in this area and significantly smoother than the naturally weathered

bedrock to either side. This may indicate an area of quarrying activity, although no obvious quarrying detritus was evident and it is equally possible that this bedrock formation is the result of a later natural shattering event along the northern face of the outcrop.

At the eastern extent of the southern face of the outcrop Feature [119] measured 12.50 x 3.00 x 1.80m and comprised an area of smoother and more angular bedrock than the natural weathered rock face to either side. Indentations in the bedrock indicated that quarrying may have accounted for the smoothness and angularity of the bedrock in this area. However, it is also possible that natural frost shattering combined with the removal of gorse along this edge of the feature was responsible for the clean breakages along this face and therefore this feature cannot be definitely attributed to past quarrying activity.

Feature [120a] was recorded at the south-eastern top of the outcrop. [120a] measured 0.60 x 0.60 x 1.45m and comprised a truncated wooden post of which two sides survived to the south and west. Feature [120a] was set into a concrete base and held together with iron bandings and bolts at regular intervals. Three iron loops [120b, c and d] were associated with this structure and set into the bedrock at regular intervals around the post, to provide anchoring points. This feature was a modern post or mast set at the top of the outcrop and may relate to the radar defence station established at Wylfa during WWII.

4.5 WESTERN OUTCROP (ILLUS 22)

Western outcrop [200] lay 68m west of the larger outcrop and measured 60 x 47m. Outcrop [200] comprised low vegetation and

grass covered banks to the north and south with bedrock outcrops exposed at its eastern and western extents. The walkover survey identified several possible features all clustered at the central western extent of the outcrop.

Possible tool marks [201, 202, 204–206] were identified on the bedrock in this area and comprised randomly spaced angular indentations in the outcrop along with possible rounded drill holes. It is not possible, however, to definitely attribute these marks to human quarrying activity and it is equally likely that they are the result of the natural bedrock shattering and weathering over time since many of the marks run along the natural fault lines of the bedrock.

Feature [207] measured 7.00m x 4.00m x 1.00m and comprised a sub-ovoid depression at the central-northern extent of the outcrop. Feature [207] contained a dump of large angular broken pieces of schist which measured 0.50 x 0.40 x 0.25m on average. Feature [207] may represent an accumulation of dumped material as a result of quarrying, since the stones within [207] are smooth and show signs of angular breakage in contrast with the rougher, highly-weathered and lichen-covered bedrock to the east and west. It is possible that [207] comprised bedrock quarried from this outcrop, but vegetation and gorse coverage has made it impossible to identify a definite quarry face in this area.

5 CONCLUSION

No features were identified on the outcrops which could be confirmed as archaeological in origin. Although linear fracturing of the rock was identified, it could not be determined whether this was the result of human activity in the form of quarrying, or if the fracturing had been caused by natural weathering of the outcrops. No evidence for rock art was identified.

The proximity of an early medieval cemetery formed of cist burials would contribute to the significance of the outcrops if the cist stones could be shown to have been sourced from the outcrops. However, a visual assessment of both the cist stones and the outcrop suggest that this is not the case and the relationship between the cemetery and the outcrops is not considered to contribute to the significance of the outcrops. Should clarification be required, chemical analysis of the stone from both sources may be possible. Beyond this, no further work is considered necessary.

6 REFERENCES

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- Natural Environment Research Council (NERC) 2016 *British Geological Survey* [online] accessed November 2016 from www.bgs.ac.uk/
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6.1 ORIGINAL DOCUMENTS EXAMINED IN ANGLESEY ARCHIVES

- › Ordnance Survey map sheet II.7 1889 edition, 1900 edition, 1924 edition
- › WR/123 1975 Ordnance Survey map extract
- › WM/1865/99 copy of 1945 Aerial photograph
- › WM/1567/24 postcard with painting of view from Llanbadrig / St Patrick's Bay
- › WM/1567/26 postcard of photograph from Cemaes towards Wylfa
- › WM/2499/2/13-14 postcards of Cemaes Bay and Wylfa Hall
- › WM/2359/1/7 Oblique aerial photo of cropmark at Cemaes
- › WSH/5/83/30/1 photograph of Cemaes with Wylfa and lifeboat station in the background
- › Llanfechell Tithe Schedule (1842)
- › Llanfechell Tithe Map (photocopy)
- › WM/321/7 J Pritchard letter (1922)

7 APPENDICES

APPENDIX 1 HISTORIC ENVIRONMENT RECORD (HER) DATA

PRN	SITE NAME	DESCRIPTION	CONDITION	PERIOD	COMMUNITY	EASTING	NORTHING
17145	Wylfa Character Area, Llanbadrig	Headland now dominated by 20th C nuclear power station. Formerly land belonging to Cestyll.	—	Multi-period	Llanbadrig	235286	393761
36577	Pen Pistyll, Site of, Porth y Pistyll	A small-holding shown on the tithe map of 1842 owned by Edward Williams, who also owned the adjacent Tyddyn locyn (later Tan yr Allt). The origins of the plot are not known.	Destroyed	Post-medieval	Llanbadrig	234890	393520
36578	Cwt, Site of, Porth y Pistyll	A small-holding shown on the tithe map of 1842 owned by William Williams. It is mentioned in 1735, when it was the home of William Griffith, part owner and master of the ship 'Cloari' (Owen and Griffith 1931, 52).	Destroyed	Post-medieval	Llanbadrig	235160	393530
36579	Tai Hirion, Remains of, Porth y Pistyll	A small farm shown on the tithe map of 1842 owned by Rice Owen. The 1889 OS map shows it as a house to the north with farm buildings to the south. The house and some of the buildings were demolished during the construction of Wylfa A.	Damaged	Post-medieval	Mechell	235080	393290
36580	Simdde Wen, Site of, Treglele	The house is shown on the tithe map of 1842 owned by Thomas Griffith and Grace Hughes. It is mentioned in a will of William Hughes of Wylfa dated 1751 (UWB Llwydiarth Esgob 13), when it was also called Pen y Graig.	Destroyed	Post-medieval	Llanbadrig	235330	393290
36582	Cae'r Brenhin, Site of, Treglele	A small-holding shown on the tithe map of 1842 owned by Reverend Robert Williams. It is shown on the OS map of 1889, but by 1900 it had been demolished, and the lodge to Simdde Wen had been built to the east.	Destroyed	Post-medieval	Mechell	235450	393150
36583	Wylfa House, Site of, Cemaes Bay	The name Wylfa is to be found in documents from the 17th century onwards and almost certainly had earlier origins. It is recorded in 17th century documents as part of the township of Caerdegog.	Destroyed	Post-medieval	Llanbadrig	235648	393906
36584	Wylfa Garden, Remains of, Cemaes Bay	The name Wylfa is to be found in documents from the 17th century onwards and almost certainly had earlier origins. It is recorded in 17th century documents as part of the township of Caerdegog.	—	Post-medieval	Llanbadrig	235680	393900
36585	Boat House, Cemaes Bay	A lifeboat station was first opened here in 1872, initially to replace the Cemlyn lifeboat, and then to supplement it when Cemlyn re-opened. The lifeboat was housed in this building until 1907, when a new station was built a short distance to the north.	Intact	Post-medieval	Llanbadrig	235568	394186
36586	Lifeboat Station, Site of, Cemaes Bay	The second of two Cemaes lifeboats houses, this was built in 1907 to house the 'Charles Henry Ashley', a 38ft non-self-righting Watson class lifeboat. The Charles Henry Ashley was in use until 1932. The boat has survived, and has been recently restored.	Destroyed	Post-medieval	Llanbadrig	235640	394230
36587	Structures, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Not known	Modern	Llanbadrig	235680	393860
36588	Earthworks, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Not known	Modern	Llanbadrig	235440	393840
36589	Earthworks, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Not known	Modern	Llanbadrig	235390	393650
36590	Earthworks, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	235320	393440

PRN	SITE NAME	DESCRIPTION	CONDITION	PERIOD	COMMUNITY	EASTING	NORTHING
36591	Earthworks, Chain Home Guard, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	235090	393560
36592	Earthworks, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Not known	Modern	Llanbadrig	234820	393640
36593	Receiving Tower, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	234830	393790
36594	Receiving Tower, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	234920	393870
36595	Transmitter Mast, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	235090	394080
36596	Transmitter Mast, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	235170	394130
36597	Transmitter Mast, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	235380	394240
36598	Transmitter Mast, Site of, Cemaes Bay	During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation.	Destroyed	Modern	Llanbadrig	235450	394290
36605	Lodge, Simdda Wen	The lodge was built between 1889 and 1900, presumably to serve the house at Simdda Wen. At the time the lodge is built, the earlier cottage at Caer Brenin which lay in the field to the west is demolished. The lodge is sin	Intact	Post-medieval	Mechell	235499	393131
36607	Tŷn y Maes, Cemaes Bay	This house lies in a block of land west of Wylfa house. A building is marked on the tithe map in this location, though its orientation is different. The 1889 OS map shows two parallel ranges of buildings, with a small enclosed paddock, perhaps an orchard	Intact	Post-medieval	Llanbadrig	235506	393891
36608	Ty Croes, Cemaes Bay	The small farm of Ty Croes is shown on the tithe map when it was owned by Owen Jones. The 1889 map shows it as a cottage with attached outbuildings, with other scattered outbuildings in the vicinity.	Intact	Post-medieval	Llanbadrig	235610	393480
36609	Tyddyn Goronwy, Cemaes	The name of this holding preserves a reference to the medieval Gwely Goronwy Wyddel (see 5.3 above), when it formed part of a common holding with Gwyddelyn. A house is shown on the tithe map, when the farm was owned by Mary Hughes.	Intact	Post-medieval	Llanbadrig	235830	393250
36610	Tre'r Gof Uchaf, Site of, Cemaes	Tre'r Gof was a medieval township (see 5.3 above). It became part of the estate of William Broadhead on his marriage to Catherine Williams in 1730, and was lived in by two successive generations of the Broadhead family.	Destroyed	Post-medieval	Llanbadrig	236270	393190
36611	Nant Orman, Cemaes	The origins of the name Orman may be found in the name 'Tithin y Torment recorded in the 16th century. (UWB Llwydiarth Esgob, 1). In the 17th century 'Tormain	Intact	Post-medieval	Llanbadrig	236190	393350

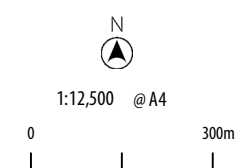
PRN	SITE NAME	DESCRIPTION	CONDITION	PERIOD	COMMUNITY	EASTING	NORTHING
36612	Park Lodge, Cemaes	Park Lodge also gives the appearance of having been carved out of Tŷr Gof lands. Its English name suggests an origin in the 19th century, though it could be earlier. The tithe map of 1842 records the owner as Thomas Edward Fanning	Intact	Post-medieval	Llanbadrig	236420	393510
55944	Building, SE of Simdda-wen	Site identified using early Ordnance Survey Maps (McGuinness, 2014)	—	Post-medieval	Mechell	235345	393259
55945	Structure, S of Simdda-wen	Site identified using early Ordnance Survey Maps (McGuinness, 2014)	—	Post-medieval	Llanbadrig	235317	393272
61078	Landscaping, Nuclear Power Station, Wylfa	Landscaping east of Wylfa 'A' designed by Dame Sylvia Crowe. Two significant mounds and a plantation of coniferous and broad-leaved trees through which nature trails are laid, as well as the route of the Anglesey Coast path, form the principal elements	Intact	Modern	Llanbadrig	235437	393963
61100	Trackway, Simdde-wen	A single lane track runs from the main Wylfa road to where Simdde Wen previously stood, and on to the property known as Tai Hirion. The track is first depicted on the Ordnan	Intact	Post-medieval	Mechell	235237	393284
61101	Road, Tregle to Wylfa	The current road from Tregle to Wylfa is first depicted on the Ordnance Survey 2" manuscript c.1820s, however the roa	Intact	Medieval	Mechell	235510	393457
61104	Boundary Wall, Tai Hirion	A 4m long section of upstanding dry stone wall running east-west within the gateway between F8/F1, identified during the excavation of the haul road route through this area. The wall was approximately 0.8m in height and 0.5m in width	Damaged	Post-medieval	Mechell	235064	393341
61105	Field Boundary, Tai Hirion	An upstanding dry stone boundary wall, running north-south through F1, identified during the excavation of the haul road route through this area. The wall was constructed of sub-angular blue grey phyllite and stood some 0.5m high.	Damaged	Post-medieval	Mechell	235018	393383
61106	Field Boundary, Tai Hirion	An upstanding dry stone wall, running east-west between F1/F4. Approximately 0.7m in height and 0.8m in width, constructed from a mix of sub-angular and sub-rounded phyllite stones, up to 0.75m in diameter.	Damaged	Post-medieval	Mechell	234987	393345
61109	Structures, Remains of, Wylfa	A cluster of features were observed within the wooded area to the west of the visitor centre. These included a brick pad, approximately 1m x 2m, which was visible on the surface, although not apparently in situ. A cluster of large boulders was also visib	Near destroyed	Modern	Mechell	235530	393240
61110	Field Drain, N of Tai Hirion	Field drain - north-west/south-east running, 4.0m x 0.4m, 0.08m in depth, concave base, single fill: soft, mid grey-brown, silt-clay with frequent sub angular stones <0.2m in diameter.	Damaged	Modern	Mechell	235034	393481
61111	Field Boundary, Site of, N of Nantorman	A band of stony material was observed running north-east/south-west across the haul road trench running north-west across F32 identified during the excavation of the haul road route through this area.	Damaged	Post-medieval	Mechell	236174	393417
61127	Field Boundary, Possible, N of Nant-y-gof	A short section of an east-west running linear was revealed within Fugro Aperiio Test Pit TP-15B (NGR SH35959304). The feature was formed of sub-rounded stone <0.25m in diameter, it was apparently only one course wide and one course high. No cut was visible.	Damaged	Post-medieval	Mechell	235950	393040
61130	Trackway, E of Tai Hirion	A northeast/southwest running linear feature observed within OT622 (for the location of OT622 cf. Figure 1). The cut was 3m wide and approximately 0.3m in depth, cut into the topsoil. The cut had steeply sloping sides and a flat base.	Damaged	Modern	Mechell	235163	393288
61131	Field Drain, E of Tai Hirion	A north/south orientated linear feature, running down the middle of OT622 (for the location of OT622 cf. Figure 1). The sides of the cut sloped moderately (the western side was slightly steeper than the east) to a narrow concave base.	Damaged	Modern	Mechell	235163	393288
61577	Well, Porth Pistyll		Not known	Modern	Llanbadrig	234887	393574
62176	Track, Porth yr Ogof	A road or track defined by heavy cobbling. This was not marked on the OS first edition, 2 inch map or the first edition 25 inch map of 1900. It lay on the line of an existing footpath and is almost certain to be a track providing access to the former life boat station.	Not known	Unknown	Llanbadrig	235569	394138

KEY

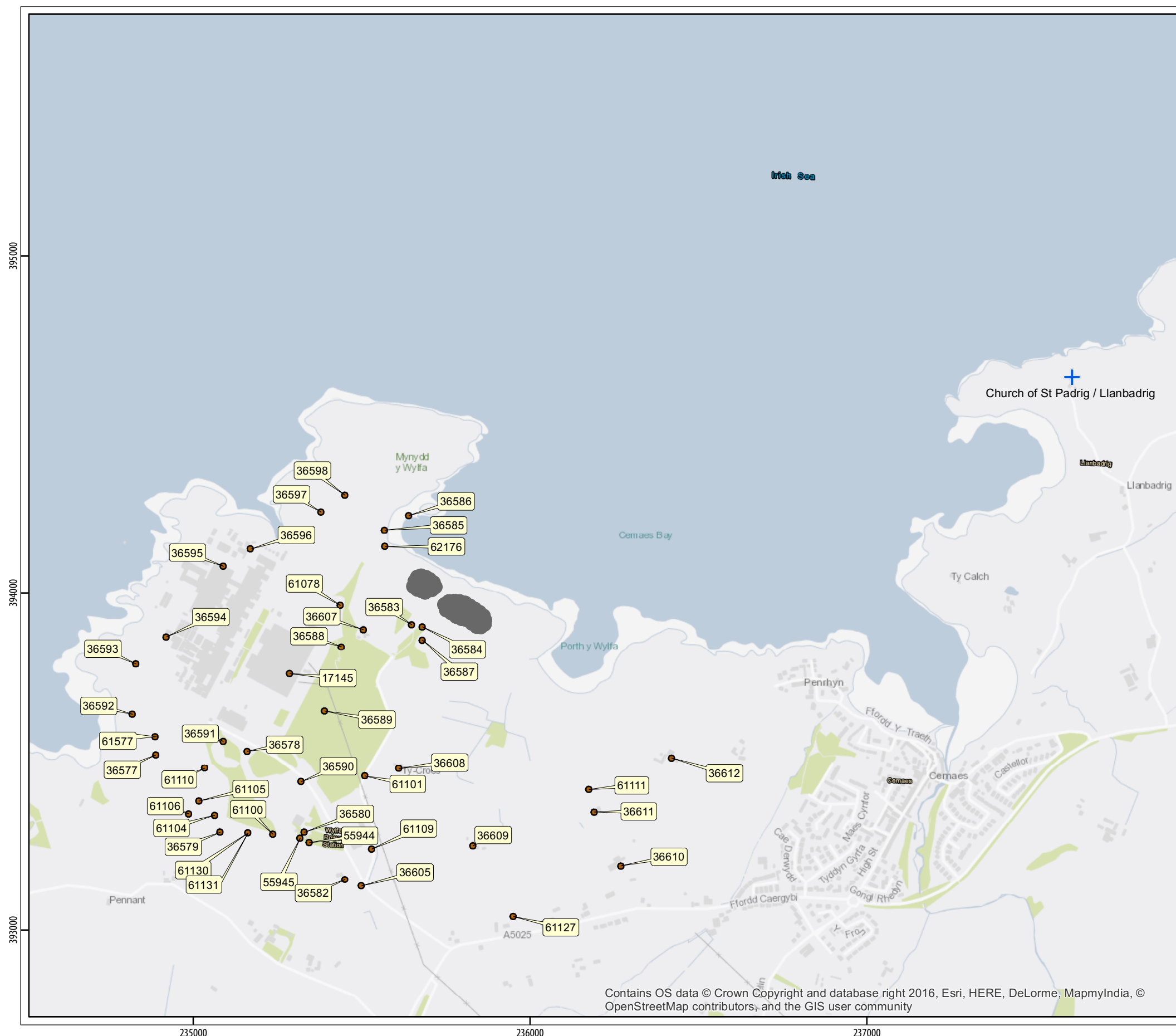
- + Listed Building
- Historic Environment Record data
- Rock Outcrops

Historic Environment Record information
derived from Gwynedd Archaeological Trust
data dated 17th November 2016
© GAT

Listed Building data obtained from
Cadw © Cadw



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ILLUS A1.1 Historic Environment Redord data locations

APPENDIX 2 GAZETTEER

FEATURE	LOCATION	OUTCROP	DESCRIPTION
101	SH 35802 93947	Eastern	Eastern rock outcrop
102	SH 35805 93962	Eastern	Area of possible early quarrying activity now covered by vegetation. Measures 3.60 x 1.60 x 2.00m.
103	SH 35820 93949	Eastern	Indentation in bedrock. Possible evidence of deliberate rock removal on north face of outcrop leaving sub-angular scoop. Indentation measures 0.60 x 0.50 x 0.10m.
104	SH 3580 93957	Eastern	Possible angular tool mark in vertical face of bedrock. Indentation measures 70mm x 40mm x 15mm.
105	SH 35795 93965	Eastern	Indentation in bedrock. Possible evidence of deliberate rock removal leaving rectangular smooth indent in naturally weathered bedrock. Indentation measures 0.60m x 0.41m x 0.10m.
106	SH 35796 93963	Eastern	Shallow indentation. Possible evidence of deliberate rock removal at base of outcrop. Angular indentation in smooth bedrock — may also be due to shearing along natural fault. Indentation measures 0.65 x 0.51 x 0.08m.
107	SH 35782 93968	Eastern	Possible multiple tool marks located at western base of outcrop though likely the result of natural erosion along laminations in bedrock. Indentations measure 0.20 x 0.06 x 0.02m on average.
108	SH 35785 93961	Eastern	Recessed area of north face of outcrop where bedrock is darker sharper and smoother with less vegetation coverage. Possible quarry area measuring 8.00 x 2.50 x 2.80m.
109	SH 35795 93962	Eastern	Possible single angular strike mark in bedrock 3.00m east of possible quarry area [108]. indentation measures 0.10 x 0.03 x 0.02m.
110	SH 35818 93948	Eastern	Possible evidence of deliberate rock removal leaving sub-ovoid indentation inconsistent with smooth weathering of bedrock. Indentation measures 0.55 x 0.50 x 0.04m.
111	SH 35791 93959	Eastern	Possible sub-rectangular strike mark in north face of outcrop. Indentation measures 0.20m x 0.05m x 0.02m.
112	SH 35774 93964	Eastern	Natural fault lines creating striations in bedrock.
113	SH 35791 93957	Eastern	Possible multiple strike marks on weathered top of outcrop. Several run E-W at different angle to naturally occurring N-S faults in the rock. Measuring 80mm x 30mm x 20mm average.
114	SH 35783 93960	Eastern	Possible area of earlier quarrying 2.00m above [108]. No tool or cut marks, however angularity of rocks compared to smoother weathering in area may indicate quarry activity. Measures 2.10 x 1.20 x 1.50m.
115	SH 35772 93959	Eastern	Possible evidence of deliberate rock removal leaving sub-ovoid indentation inconsistent with smooth weathering of bedrock. indentation cuts across natural fault lines in bedrock and measures 0.25 x 0.15 x 0.04m
116	SH 35772 93958	Eastern	Possible pick or bar mark. Indentation in rock perpendicular to natural fault lines. Indentation measures 0.15 x 0.08 x 0.04m.

FEATURE	LOCATION	OUTCROP	DESCRIPTION
117	SH 35773 93959	Eastern	Possible evidence of deliberate rock removal leaving sub-rectangular indentation inconsistent with smooth weathering of bedrock. indentation cuts across natural fault lines in bedrock and measures 0.17 x 0.18 x 0.03m.
118	SH 35790 93941	Eastern	Rounded and angular cuts into bedrock 1.50m east of modern post [120]. Likely modern cuts associated with placement of [120]. Area measures 3.00 x 0.50m x unseen
119	SH 35791 93936	Eastern	Area of south face of outcrop where bedrock is more angular and broken with less vegetation coverage. Possible quarry area measuring 8.00 x 2.50 x 2.80m
120	SH 35789 93942	Eastern	Wooden and iron post set into concrete base at top of outcrop. Associated with cut [118]. Modern mast / flag pole. Survives to a height of 1.25m.
200	SH 35682 94025	Western	Western rock outcrop.
201	SH 35666 94028	Western	Possible single angular strike mark running E-W at base of bedrock measuring 40mm x 20mm x 10mm. Possible single rounded drill-hole 50mm beneath horizontal strike mark measuring 30mm diameter x 10mm depth.
202	SH 35668 94032	Western	View of possible tool marks looking e. possible multiple sub-rectangular tool marks in weathered bedrock. Several possible tool marks running perpendicular to natural fault line and striations. Tool marks measure 40mm x 20mm x 10mm average.
203	SH 35671 94029	Western	Concave circular depression in bedrock — likely natural shatter along fault lines. Indentation measures 0.50m x 0.15m x 0.35m.
204	SH 35673 94025	Western	Possible circular drill holes at base of bedrock inconsistent with natural erosion and breakage of bedrock. Each hole measures 20mm in diameter and 10mm in depth.
205	SH 35675 94025	Western	Possible multiple angular strikes running N-S into bedrock. Likely erosion following natural fault lines strike marks measure 40mm x 30mm x 5mm average.
206	SH 35673 94031	Western	Possible multiple strike marks looking SSW. Multiple possible linear tool marks on rounded well-weathered bedrock. Some appear to be on natural faults in the rock and may be an attempt to create a break along the fault lines. Tool marks measure 40mm x 20mm x 5mm average.
207	SH 35685 94031	Western	Large area of dumped and broken pieces of bedrock within sub-circular depression. Comprised of sub-angular smooth stones lightly weathered in comparison to surrounding natural outcrop. Possible accumulation of dumped material as a result of quarrying. Area measures 7.00 x 4.00 x 1.00m fault lines strike marks measure 40mm x 30mm x 5mm average.

Eastern outcrop



FEATURE 101 LOCATION SH 35802 93947 DESCRIPTION View of Eastern Outcrop looking E. General view of western extent of outcrop



FEATURE 102 LOCATION SH 35805 93962 DESCRIPTION View of sub-angular broken rock face looking SE. Possible area of early quarrying activity now covered by vegetation. Measures 3.60 x1.60 x 2.00m



FEATURE 103

LOCATION SH 35820 93949

DESCRIPTION View of indentation in bedrock looking SW. Possible evidence of deliberate rock removal on north face of outcrop leaving sub-angular scoop. Indentation measures 0.60 x 0.50 x 0.10m



FEATURE 104

LOCATION SH 3580 93957

DESCRIPTION View of possible tool mark in bedrock looking SSW. Possible angular tool mark in vertical face of bedrock. Indentation measures 70mm x 40mm x 15mm



FEATURE 105 **LOCATION** SH 35795 93965 **DESCRIPTION** View of indentation looking SW. Possible evidence of deliberate rock removal leaving rectangular, smooth indent in naturally weathered bedrock. Indentation measures 0.60m x 0.41m x 0.10m



FEATURE 106 **LOCATION** SH 35796 93963 **DESCRIPTION** View of shallow indentation looking W. Possible evidence of deliberate rock removal at base of outcrop. Angular indentation in smooth bedrock – may also be due to shearing along natural fault. Indentation measures 0.65 x 0.51 x 0.08m



FEATURE 107

LOCATION SH 35782 93968

DESCRIPTION View of possible tool marks looking SSW. Possible multiple tool marks located at western base of outcrop, though likely the result of natural erosion along laminations in bedrock. Indentations measure 0.20 x 0.06 x 0.02m on average



FEATURE 108

LOCATION SH 35785 93961

DESCRIPTION View of possible quarry face looking SSW. Recessed area of north face of outcrop where bedrock is, darker, sharper and smoother with less vegetation coverage. Possible quarry area measuring 8.00 x 2.50 x 2.80m



FEATURE 109 **LOCATION** SH 35795 93962 **DESCRIPTION** View of possible strike mark in bedrock looking SSW. Possible single angular strike mark in bedrock 3.00m east of possible quarry area [108]. Indentation measures 0.10 x 0.03 x 0.02m



FEATURE 110 **LOCATION** SH 35818 93948 **DESCRIPTION** View of indentation looking W. Possible evidence of deliberate rock removal leaving sub-ovoid indentation inconsistent with smooth weathering of bedrock. Indentation measures 0.55 x 0.50 x 0.04m



FEATURE 111 **LOCATION** SH 35791 93959 **DESCRIPTION** View of possible strike mark looking SSW. Possible sub-rectangular strike mark in north face of outcrop. Indentation measures 0.20m x 0.05m x 0.02m



FEATURE 112 **LOCATION** SH 35774 93964 **DESCRIPTION** View of natural fault lines in bedrock looking SSW. Natural fault lines creating striations in bedrock



FEATURE 113 **LOCATION** SH 35791 93957 **DESCRIPTION** View of possible tool marks looking S. Possible multiple strike marks on weathered top of outcrop. Several run E-W at different angle to naturally occurring N-S faults in the rock. Measuring 80mm x 30mm x 20mm average



FEATURE 114 **LOCATION** SH 35783 93960 **DESCRIPTION** View of rock face looking S. Possible area of earlier quarrying 2.00m above [108]. No tool or cut marks, however angularity of rocks compared to smoother weathering in area may indicate quarry activity. Measures 2.10 x 1.20 x 1.50m



FEATURE 115

LOCATION SH 35772 93959

DESCRIPTION View of indentation looking S. Possible evidence of deliberate rock removal leaving sub-ovoid indentation inconsistent with smooth weathering of bedrock. Indentation cuts across natural fault lines in bedrock and measures 0.25 x 0.15 x 0.04m



FEATURE 116

LOCATION SH 35772 93958

DESCRIPTION View of possible tool mark looking S. Possible pick or bar mark. Indentation in rock perpendicular to natural fault lines. Indentation measures 0.15 x 0.08 x 0.04m



FEATURE 117 **LOCATION** SH 35773 93959 **DESCRIPTION** View of indentation looking SE. Possible evidence of deliberate rock removal leaving sub-rectangular indentation inconsistent with smooth weathering of bedrock. Indentation cuts across natural fault lines in bedrock and measures 0.17 x 0.18 x 0.03m



FEATURE 118 **LOCATION** SH 35790 93941 **DESCRIPTION** View of modern post and associated angular cuts looking S. Rounded and angular cuts into bedrock 1.50m east of modern post [120]. Likely modern cuts associated with placement of [120]. Area measures 3.00 x 0.50m x unseen



FEATURE 119

LOCATION SH 35791 93936

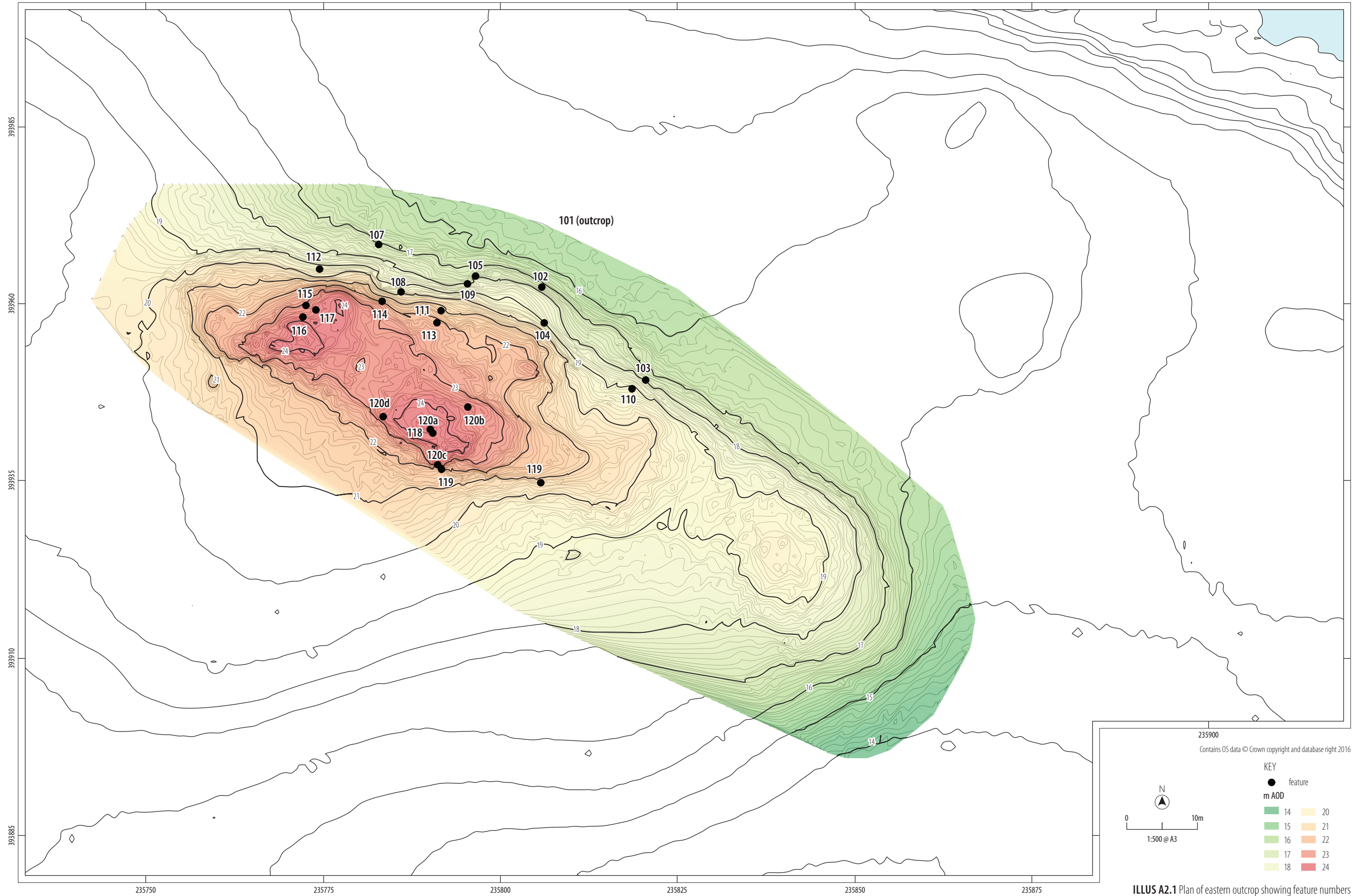
DESCRIPTION View of possible quarry face looking N. Area of south face of outcrop where bedrock is more angular and broken with less vegetation coverage. Possible quarry area measuring 8.00 x 2.50 x 2.80m



FEATURE 120

LOCATION SH 35789 93942

DESCRIPTION View of modern post looking S. Wooden and iron post set into concrete base at top of outcrop. Associated with cut [118]. Modern mast / flag pole. Survives to a height of 1.25m



ILLUS A2.1 Plan of eastern outcrop showing feature numbers

Western outcrop



FEATURE 200

LOCATION SH 35682 94025

DESCRIPTION View of western Outcrop looking W. General view of western outcrop



FEATURE 201

LOCATION SH 35666 94028

DESCRIPTION View of possible tool marks looking E. Possible single angular strike mark running E-W at base of bedrock measuring 40mm x 20mm x 10mm. Possible single rounded drill-hole 50mm beneath horizontal strike mark measuring 30mm diameter x 10mm depth.



FEATURE 202 **LOCATION** SH 35668 94032 **DESCRIPTION** View of possible tool marks looking E. Possible multiple sub-rectangular tool marks in weathered bedrock. Several possible tool marks running perpendicular to natural fault line and striations. Tool marks measure 40mm x 20mm x 10mm average.



FEATURE 203 **LOCATION** SH 35671 94029 **DESCRIPTION** View of indentation in bedrock looking W. Concave circular depression in bedrock – likely natural shatter along fault lines. Indentation measures 0.50m x 0.15m x 0.35m.



FEATURE 204 **LOCATION** SH 35673 94025 **DESCRIPTION** View of possible tool marks looking W. Possible circular drill holes at base of bedrock inconsistent with natural erosion and breakage of bedrock. Each hole measures 20mm in diameter and 10mm in depth.



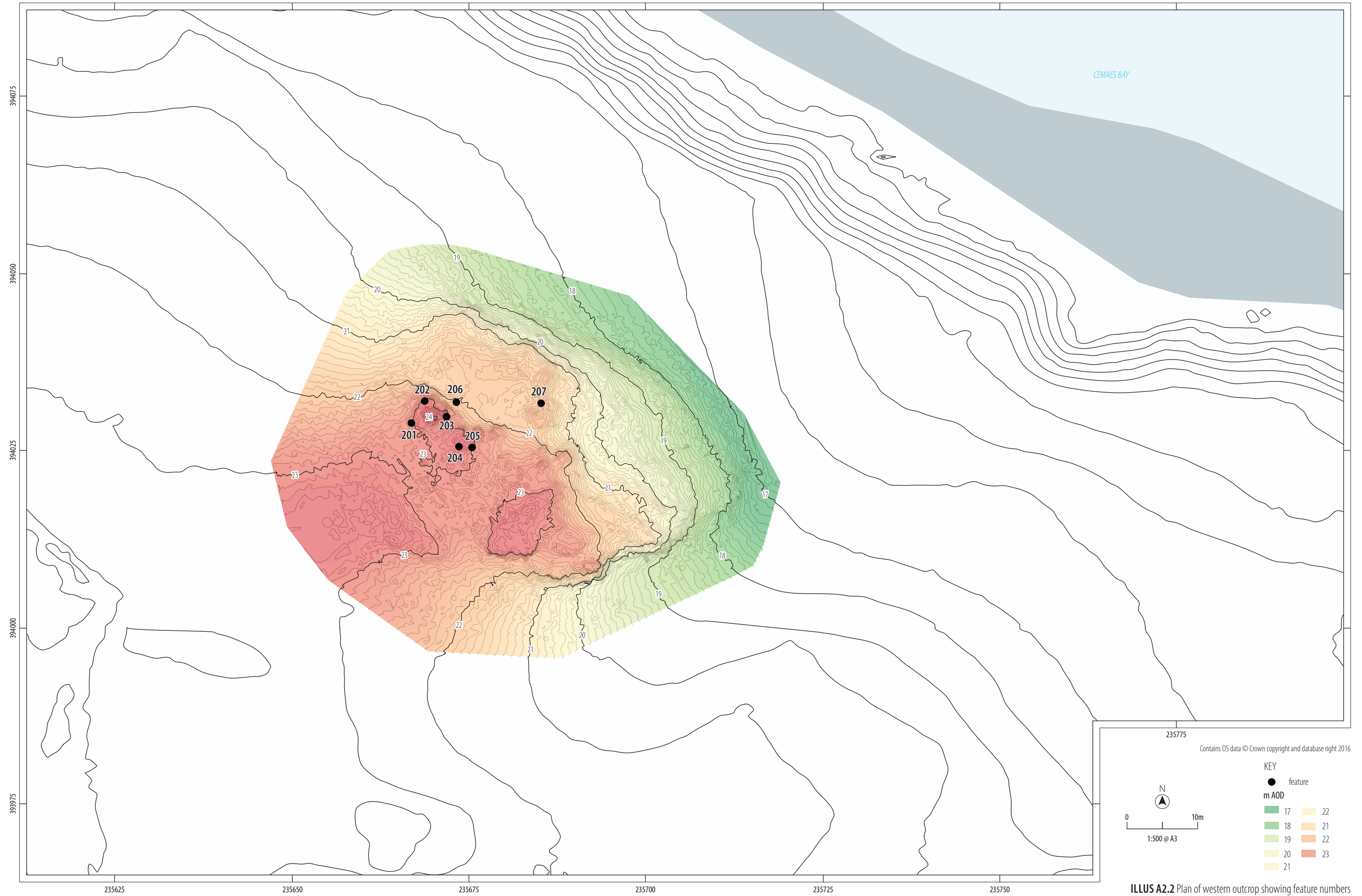
FEATURE 205 **LOCATION** SH 35675 94025 **DESCRIPTION** View of possible tool marks looking W. Possible multiple angular strikes running N-S into bedrock. Likely erosion following natural fault lines, strike marks measure 40mm x 30mm x 5mm average.



FEATURE 206 **LOCATION** SH 35673 94031 **DESCRIPTION** View of possible multiple strike marks looking SSW. Multiple possible linear tool marks on rounded, well-weathered bedrock. Some appear to be on natural faults in the rock and may be an attempt to create a break along the fault lines. Tool marks measure 40mm x 20mm x 5mm average.



FEATURE 207 **LOCATION** SH 35685 94031 **DESCRIPTION** View of area of dumped stone looking W. Large area of dumped and broken pieces of bedrock within sub-circular depression. Comprised of sub-angular smooth stones, lightly weathered in comparison to surrounding natural outcrop. Possible accumulation of dumped material as a result of quarrying. Area measures 7.00 x 4.00 x 1.00m fault lines, strike marks measure 40mm x 30mm x 5mm average.



ILLUS A2.2 Plan of western outcrop showing feature numbers



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