

CHEVRON OIL REFINERY STORES, PEMBROKE, PEMBROKESHIRE: ARCHAEOLOGICAL WATCHING BRIEF

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Summary

This report has been produced by Dyfed Archaeological Trust Field services in response to a request from EPT Partnership, acting as agent for Chevron Ltd, to undertake an archaeological watching brief during the construction of a new central stores building, with associated access, services and settling pond, at the Chevron Oil Refinery near Pembroke, Pembrokeshire (Planning Application Number 08/0814/PA: NGR SM 9142 0232).

The proposed development area lies in close proximity to a number of sites of archaeological and historical interest that include sites dating from the prehistoric period up to the post medieval period. Given that the development area lies within an area of archaeological interest it was recommended that an archaeological watching brief be maintained during all major episodes of ground breaking and topsoil stripping.

Archaeological monitoring of the ground-works prior to the construction of the new stores building, access routes and services revealed that this area of the site was constructed on heavily made up ground containing much modern debris which probably relate to the construction and development of the refinery.

The settling lagoon site was situated to the east of the main development area and located within a green field site. No archaeological features or deposits were revealed during the settling pond excavations. However, the possible site of a lime-kiln identified through early 19th century place name evidence was identified c.150m to the south-east of the settling pond site.

It was also noted that the field boundaries of the site consisted of hedge-banks topped with mature trees and a possible former stream course was noted immediately to the north of the settling pond site.

The settling pond excavations had no impact on the sites of the possible lime-kiln, field boundaries or former stream course.

It would appear that the development had a minimal impact on the buried archaeological resource.

INTRODUCTION

Project Commission

Dyfed Archaeological Trust Field Services were commissioned by the EPT Partnership, acting as agent for Chevron Ltd, to undertake an archaeological watching brief during ground-works ahead of the construction of a new central stores building, associated access, services and settling pond at the Chevron Oil Refinery, Pembroke, Pembrokeshire (NGR SM 9142 0232).

An archaeological condition was placed on the planning permission granted for the proposed development, which required the implementation of an archaeological watching brief during all groundworks that had the potential to expose, damage or destroy archaeological remains. A Written Scheme of Investigation detailing the proposed archaeological works and methodology was prepared by Dyfed Archaeological Trust Field Services and was approved by all parties prior to the works commencing (also a requirement of the archaeological condition placed on the planning permission).

Scope of the Project

The project was designed to record any archaeological features or deposits exposed during earth moving or ground breaking that had the potential to expose, damage or destroy archaeological remains associated with the construction of the central stress building, access roads and settling pond.

Report Outline

This report describes the location of the site along with its archaeological background before summarising the watching brief results and the conclusions based on those results.

Abbreviations

Sites recorded on the Regional Historic Environment Record (HER) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR).

Illustrations

Record photographs are included at back of the report. Printed map extracts are not necessarily reproduced to their original scale and are illustrative only.

THE SITE

Location

The development is located at NGR SM 9142 0232 to the east of the Chevron Oil Refinery near Pembroke, Pembrokeshire. The proposed development site is situated at a height of c.40m above Ordnance Datum. The underlying solid geology of the development site and the surrounding area consists of Carboniferous undivided Dinantian limestone of the Visean series (British Geological Survey, 1994).

Archaeological Background

A search of the Regional HER revealed that the development area contains no recorded archaeological site, although seven archaeological sites are recorded in close proximity to the development area (see table 2). The sites range in date from the Mesolithic period up to the post medieval periods (see table 1 for time periods). None of these known sites would be directly affected by the development, however, given the presence of archaeological sites in close proximity there was considered to be a potential for hitherto unknown archaeological features and deposits being encountered during the development works.

Map evidence has revealed that from the early 19th century the development area was agricultural land (Rosecrowther & Pulcrogan Estate Map, 1824; Tithe Map 1839, Ordnance Survey, 1864 and 1908 (Figures 2 and 3)). The development area is recorded on the estate map as 'Kiln Park' occupied by William Davis of Upper Henllan Farm (Rosecrowther & Pulcrogan Estate Map, 1824).

The field name 'Kiln Park' suggests the former presence of a kiln in the vicinity. It is known that limestone was quarried in the neighbouring parish of Pwllcrochan during the early 19th century (Lewis, 1833). It is considered that 'Kiln Park' may have been the site of a limekiln, probably used to serve the needs of the farm, rather than as a commercial enterprise. The kiln may have been a simple 'sod kiln' consisting of alternating layers of limestone and fuel, possibly culm (coal dust), covered and sealed with earth. Following burning of the limestone the kiln would be dismantled and ploughed directly into the field (Brown, 1997, 9). The temporary nature of a 'sod kiln' makes it a very ephemeral element in the landscape.

Alternatively, a 'pot kiln' constructed of earth and stone, may have been utilised to produce the lime for the fields. A 'pot kiln' had drawing arches connected to a conical shaped pot or crucible and would be loaded and fired in the same way as a 'sod kiln'. The 'pot kiln' had the advantage in that it could be used on more than one occasion, with the lime being left to cool before it was extracted via the drawing arches (*ibid*). Both forms of kiln were in use in the Pembrokeshire area with 'sod kilns' popular up until the 18th century, whilst 'pot kilns' appear in the 16th century and continue until the mid 19th century (*ibid*) when limestone burning began to decline due to rising production costs and competition from imported fertilizers.

By 1839 the field was recorded as 'Upper Fly Park' owned by Sir John Owen, but occupied by Thomas John of Upper Henllan (Tithe Map and Apportionment, 1839).

Oil refining is considered a modern industry, but there has been a long association between the industry and South Wales that can be traced back to 1917, when it was proposed to open a refinery in the region. In 1922 the Anglo-Persian Oil Company, which became BP in 1935, opened the first oil refinery in

the UK at Llandarcy near Swansea. (Morgan Rees, 1973, 229). This site finally closed in 1998 following an operating life of seventy six years.

During the 1960s the Pembroke Oil Refinery was constructed to the west of the development site and when opened in 1964 it had a capacity of 6 million tonnes a year. Subsequent expansion and upgrading of the site has increased production capacity to 10.5 million tonnes per annum. The refinery, operated by Chevron, produces petrol, diesel, kerosene, jet fuel, fuel oil and LPG petrochemical feedstocks, 90% of which are exported by sea through an adjacent oil terminal capable of handling tankers of 275,000 tons¹.

¹ http://www.ukpia.com/industry_information/refining_uk_refineries/refineries/chevron_pembroke_refinery

ARCHAEOLOGICAL WATCHING BRIEF

Methodology

The archaeological watching brief methodology consisted of three site visits being made to monitor the ground-works ahead of the construction of the new central stores building, associated access, services and settling pond.

Results

Central Stores Building, Associated Access and Services. (Cover photo)

The ground-works for the central stores building, associated access and services revealed heavily disturbed modern deposits that were deemed to be of negligible archaeological significance. The deposits related to the area formerly being used as a storage / set down area, probably during the construction of elements of the existing oil refinery.

An initial site visit undertaken during site levelling works demonstrated that the site area consisted of a depth of hardcore material and crushed stone laid upon a geo-textile membrane (cover photo). In some areas it was evident that the geotextile membrane had been laid directly upon natural substrata (rab/bedock) indicating that the area had previously been levelled, and thus any archaeological remains that may have been present would have been previously removed during these works.

Settling Pond (See Table 3: Photos 1-5).

Located to the east of the main construction site within a former pasture field, the settling pond covered an area of c.650m² and was excavated to a maximum depth of 0.6m.

No archaeological features or deposits were revealed during the excavation of the settling pond.

However, at a distance of c.150m to the southeast of the settling pond excavation site a substantial area of nettles was noted which possibly suggests disturbed ground and may indicate the site of a structure, possibly the limekiln suggested by early 19th century place name evidence.

In addition it was noted that the boundaries of the field in which the settling pond was excavated consisted of hedge-banks topped with mature deciduous trees. A possible former stream course was noted to the north of the settling pond site.

The possible lime-kiln site, field boundaries and former stream course were not affected by the settling pond excavations.

CONCLUSIONS

Ground-works ahead of the construction of the new central stores building, access and services revealed heavily disturbed modern deposits considered to form part of the construction and development of the oil refinery and deemed to be of negligible archaeological significance.

The excavation of a settling pond was undertaken in a field to the east of the main construction site. No archaeological features or deposits were revealed during the excavation of the pond, however, a possible former kiln site suggested by early 19th century map evidence was identified c.80m to the southeast of the settling pond site. In addition it was noted that the boundaries of the field in which the settling pond was located consisted of hedge-banks topped with mature deciduous trees, such features are considered to be significant parts of the historic landscape. Bounding the north side of the settling pond a former stream course was also noted.

The settling pond excavations had no impact on the limekiln site, field boundaries or former stream course.

Whilst the ground-works directly identified modern deposits during the course of the development within the area of the proposed central stores building, the potential remains for hitherto unknown archaeological features and deposits to be present within the surrounding areas that may be affected by future development.

SOURCES

Map

Ordnance Survey 1864 1:10560 Pembrokeshire Sheet XXXIX SW

Ordnance Survey 1908 1:10560 Pembrokeshire Sheet XXXIX SW

Tithe Map and Apportionment 1839 Rhoscrowther Parish.

Bibliographic

Published

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Morgan Rees, D 1973 *Industrial Archaeology of Wales*. London. David & Charles.

Unpublished

Brown J L 1997 *The Limekilns within the Pembrokeshire Coast National Park*.
US/ICOMOS Intern Report for the National Trust and Pembrokeshire Coast
National Park.



Figure 1: Location map of watching brief site based on the Ordnance Survey.

Reproduced from the 1995 Ordnance Survey 1:50,000 scale Landranger Map with the permission of The Controller of Her Majesty's Stationery Office, © Crown Copyright Dyfed Archaeological Trust Ltd., The Shire Hall, Carmarthen Street, Llandello, Carmarthenshire SA19 6AF. Licence No ALS1842A

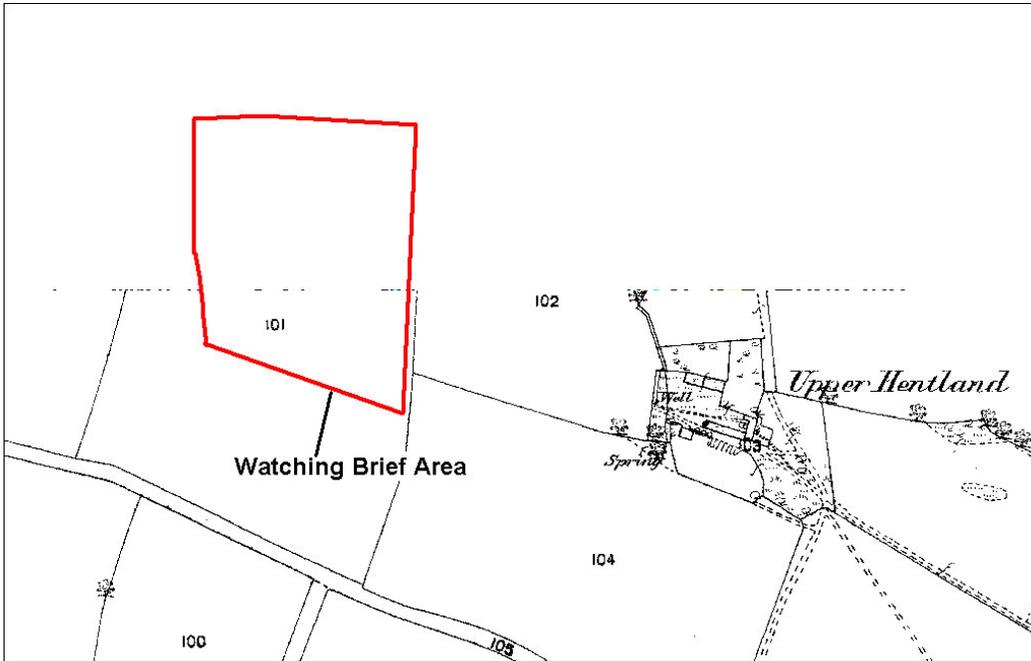


Figure 2: Extract of 1st edition Ordnance Survey Map (1864).

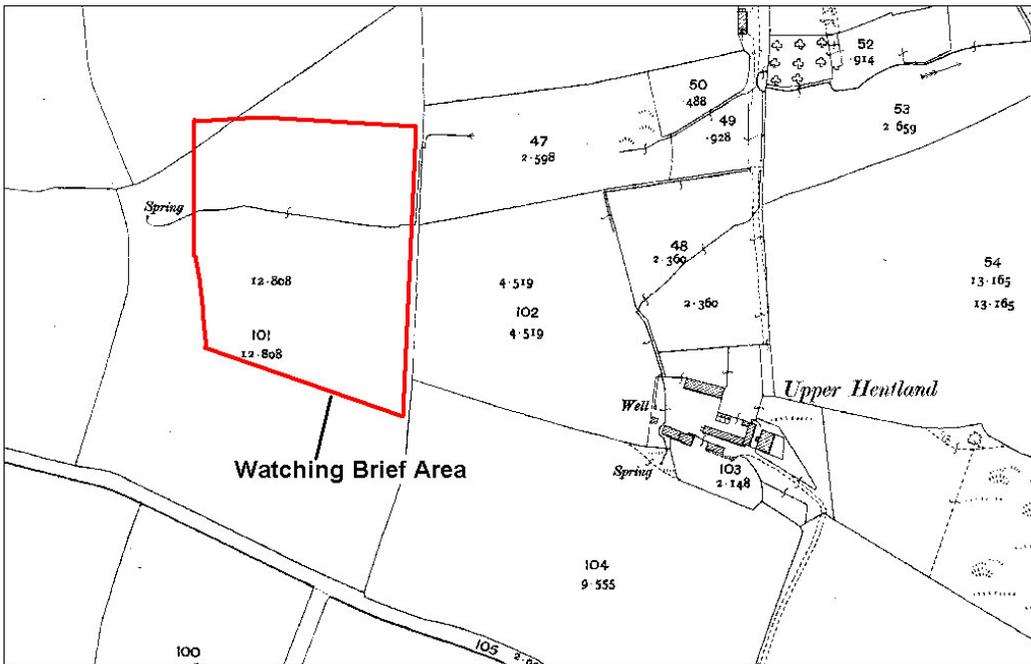


Figure 3: Extract of 2nd edition Ordnance Survey Map (1908).

PERIOD	APPROXIMATE DATE
Palaeolithic	c.225,000 BC – 10,000 BC
Mesolithic	c.10,000 BC – c.3500 BC
Neolithic	c.3500 BC – c.2000 BC
Bronze Age	c.2000 BC – c.600 BC
Iron Age	c.600 BC – 43 AD
Roman	43 AD – 410 AD
Early Medieval	410 AD - 1066
Medieval	1066 - 1485
Post Medieval	1485 – c.1900
Modern	c.1900 onwards

Table 1: Archaeological and Historical Timeline for Wales.

PRN	NGR	SITE NAME	FORM	PERIOD
3230	SM 9200 0229	Upper Hentland	Burnt Mound	Prehistoric
3238	SM 919 020	Tilley Cottage	Flint Working Site	Mesolithic/ Neolithic
7733	SM 9200 0233	Greenhill	Clearance Cairn	Post Medieval
7745	SM 916 025	Lower Henllan	Mansion	Post Medieval
7746	SM 916 025	Lower Henllan	Park	Post Medieval
60429	SM 9165 0245	Stone Building at Old Henllan	House	Post Medieval
60430	SM 9166 2517	Garden Arch at Old Henllan	Garden Arch	Post Medieval

Table 2: Recorded archaeological sites within close proximity to development area.

Settling Pond

NUMBER	DESCRIPTION	DEPTH
Layer 100	Topsoil Dark red brown silty clay of moderate compaction containing occasional small sub-angular stone.	0.55m
Layer 101	Subsoil Mid red brown clay silt of firm compaction containing occasional small to medium sub-angular stone.	0.05m

Table 3: Soil descriptions for settling pond excavations.



Photo 1: South facing representative section of settling pond.



Photo 2: General working shot of settling pond site.



Photo 3: East facing view of settling pond site.



Photo 4: South-west facing view of settling pond site.



Photo 5: Overall view of settling pond site from the west.

Chevron Oil Refinery Stores, Pembroke, Pembrokeshire: Archaeological Watching Brief

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ar ran Ymddiriedolaeth Archaeolegol Dyfed Cyf. /
on behalf of Dyfed Archaeological Trust Ltd.

Swydd / Position: **Head of Field Services**

Llofnod / Signature Dyddiad / Date

Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau
sydd gennych ar gynnwys neu strwythur yr adroddiad hwn

*As part of our desire to provide a quality service we would welcome any
comments you may have on the content or presentation of this report*