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## Aberoedd Taf, Tywi a Gwendraeth – disgrifiad cryno

Llanw a thrai sy'n rheoli rhan helaeth o'r ardal hon. Pan fydd y llanw ar drai gellir gweld ehangder mawr o fwd a thywod yn ymestyn ar hyd yr arfordir tua'r gorllewin, tua'r dwyrain a thua'r tir ar hyd y tair aber fawr, droellog. Y tu ôl i'r arfordir agored ceir twyni tywod eang. A'r tu ôl i'r twyni ac yn rhedeg i fyny'r aberoedd ceir morfeydd heli sydd, yn y pen draw, yn ildio i gorsydd pori a chaeau syth. Nid yw rhan helaeth o'r ardal hon wedi'i datblygu – gwylltineb a phrosesau arfordirol gweithredol sydd â'r llaw uchaf o hyd. Clywir murmur y môr a galwadau adar môr yn gyffredin.

Mae Traeth Pentywyn yn boblogaidd ymhlith ymwelwyr. Mewn amgueddfa yno dangosir sut y cafodd milltiroedd o'r traeth agored eu defnyddio ar gyfer ceisio torri record cyflymder y byd ar dir. Fodd bynnag, caiff y tir y tu ôl i'r twyni ei ddefnyddio at ddibenion milwrol. Yn yr un modd, mae traeth Pen-bre yn boblogaidd ymhlith ymwelwyr, gyda'r tir y tu ôl iddo'n cynnwys parc gwledig a choedwig fawr.

Cydweli ar lan Afon Gwendraeth, Llansteffan ar lan Afon Tywi a Thalacharn ar lan Afon Taf – trefi bach hynafol sy'n swatio yng nghesail y bryniau ar ochrau gogleddol a gorllewinol yr

aberoedd, yn amddiffyn y llwybrau tua'r tir. Ynddynt ceir adfeilion hardd o gestyll yn edrych dros yr aberoedd, gydag olion o fordwyo, pysgota a masnachu i'w gweld o hyd. Ymhellach, Talacharn yw cynefin y cregyn gleision a'r crehyrod y sonia Dylan Thomas amdanynt ('mussel-pooled and heron-priested shore'), a'r ardal sy'n enwog am fod yn gartref i'r bardd.

## Summary description

Much of this area is dominated by the ebb and flow of the tides. When out, a vast expanse of mud and sweeping sands stretches along the coast westwards, eastwards and inland along each of the three large, sinuous estuaries. The open coast is backed by extensive sand dunes. Behind the dunes and running up the estuaries there are salt marshes that eventually give way to marsh grazing and rectilinear field enclosure patterns. Much of the area is devoid of development, with qualities of wildness and active coastal processes dominating. The sound of the sea and the call of sea birds are commonly heard.

Pendine Sands are popular with visitors. A museum there shows how Pendine's miles of open sands have been used for world land speed record attempts. However the land behind the dunes is used for Military purposes. Pembrey sands is likewise popular with visitors, with its land behind including a country park and extensive forestry.

Kidwelly on the Gwendraeth, Llansteffan on the Tywi and Laugharne on the Taf are all ancient small towns, tucked away in the lee of rolling hills on the northern or western sides of the mouths of the rivers, guarding the routes inland. They have picturesque ruined castles overlooking the estuaries, with visible remnants of their former seafaring, fishing and trading. Laugharne is also Dylan Thomas' 'mussel-pooled and heron-priested shore', the area famous for being the poet's home.

Key Characteristics
<b>Soft coastline with 3 broad sinuous estuaries</b>
Underlain by Devonian Old red Sandstone, but early Carboniferous rock below the southern coastal areas with limestone cliffs exposed at the coast near Pendine.
<b>Extensive sand dune systems</b> – define the coastal edge, internationally important for biodiversity including much of southern Britain's <b>dune alder dominated woodland</b>
Sand dunes in the west developed on a <b>glacial cobble-boulder ridge</b> , formed through post-glacial sea level rise.
<b>Extensive estuary marshes</b> - grazed by livestock, including horses and ponies.
<b>Rolling hills</b> between the estuaries - with pasture is used for dairy or sheep rearing.
<b>Military</b> - Large areas of coastal marsh are used by the military.
<b>Pembrey Forest</b> - also a Country Park, occupies a large tract of land at Pembrey Burrows.
<b>Drainage and enclosure pattern</b> - on coastal marshes fields are divided by drainage ditches or fences in a rectilinear pattern. Inland there are medium size irregular fields bounded by hedgerows, many of which are unmanaged.
<b>Historic strategic importance of estuaries</b> - for trade and defence is reflected in a number of visible historic features, including <b>Norman castles</b> and <b>quarrying remains</b> .
<b>Settlement pattern</b> – Scattered, usually linear and located along the coast, roads or watercourses.
<b>Openness</b> - open and exposed estuaries and coastline contrasting with the more intimate rolling pastures and woodlands of the river valleys.
<b>Dylan Thomas</b> – former home of acclaimed poet and setting for his works

## Visual and Sensory profile

The coastal estuary areas have a wild, rugged appearance with undulating sand dunes, windswept grasslands and scrub. The extensive estuary mud flats and sands form a smooth backdrop to this visually complex area. The varied, open landscape of the estuaries creates a strong contrast to the intimate, pastoral character of the inland river valleys, with lush green fields and swathes of woodland sweeping across the rolling topography.

The exposed coastline at Pembrey is interrupted by the large and prominent forestry plantation, now a popular Country Park and tourist attraction. The forest interrupts much of the views across Carmarthen Bay from Pembrey and the Gwendraeth valley, with its dark green outline standing out against the pale browns, yellows and creams of the coastal flats.

At both Pendine and Pembrey, the presence of the military pervades, where large tracts of the flat lands hugging the coast are cordoned off by forbidding chain link fencing, festooned with a multitude of warning and prohibitive signs. The sands themselves are used for military exercises on occasions. This is strangely juxtaposed with all the popular recreation in the area, the bathing beaches, caravan parks, golf courses, country park, motor racing track and civilian airfield, and not least with the tranquil agricultural hinterland beyond. Unmanaged hedgerows and areas of scrub give the area an unkempt appearance in places, including along the coastal flats, which are otherwise open and exposed. The caravan parks and golf courses in particular stand out against their rural landscape setting.

From Pendine and Pembrey sands, to either side of the estuaries, there are long views afforded along the coast on clear days, to Tenby and Caldy Island in the west, and across to the outline of the Gower peninsula and the very distinctive Worm's Head in the east.



Panorama eastward across Cywyn valley, with the estuary in extreme right © Bronwen Thomas



Marshy floor of the Cywyn valley at Pilgrim's Rest © Bronwen Thomas



View east along Pendine Sands, with Speed Museum in middle distance © Bronwen Thomas



Golf course near Carway, east of Kidwelly © LUC



Pasture fields in the Gwendraeth valley © LUC



View east across Pendine Burrows © LUC



Llansteffan Castle remains © LUC



Looking across the Tywi estuary from Ferryside to Llansteffan © LUC

## Geological Landscape influences

This area includes the combined estuaries and lower reaches of the Gwendraeth, Taf and Tywi rivers that flow into Carmarthen Bay. The lower reaches of the Taf and Tywi have relatively narrow valley floors, while the Gwendraeth Fawr has a significantly broader, flatter floor. The landscape is generally characterised by very long sandy beaches at Pendine and Pembrey, backed by extensive sand dunes, coastal marshes and flat, low-lying land with a backdrop of former coastal cliffs that rise to between 90-100m around Croesyceiliog. The fossil coastal cliffs are particularly impressive between Pendine and Laugharne, and inland of Pembrey. The shoreline is dynamic with significant sediment transfer and a large intertidal area that is prominent at low tide. The Pendine and Pembrey Sands are collectively one of the largest areas of open sand in the UK.

The oldest rocks are Ordovician mudstones that underlie the upper part of the Taf Estuary towards St Clears. The bedrock geology of this area, however, is dominated by Devonian Old Red Sandstone characterised by mudstones, siltstones, sandstones and conglomerates which were deposited in fluvial environments, such as meandering channels and floodplains. These rocks are found under the Taf and Tywi estuaries and the area from Pendine to Llansteffan. The rocks around Llansteffan include important exposures of calcrete (which is a fossil soil indicative of an arid or semi-arid environment). Overlying the Old red Sandstone is a classic sequence of Carboniferous rocks including shallow-marine carbonates (Carboniferous Limestone), shallow-marine and fluvio-deltaic deposits (Millstone Grit), and lacustrine, delta plain sediments and coal (Coal Measures).

A small area of Carboniferous Limestone and Millstone Grit underlies Kidwelly but the majority of the Gwendraeth is underlain by Coal Measures which form the valley floor. The area between Trimsaran and Pont Henri has historically been important for coal mining, firstly through deep mining and more recently by opencast methods. The Gwendraeth Fawr is flanked to the east by a ridge of Pennant Sandstone (Upper Coal Measures) which forms the cliffs behind Pembrey, and to the west by a ridge of Carboniferous Limestone and Millstone Grit which extends along Mynydd y Garreg, Meincau and towards Crwbin.

Evidence of glaciation, by Welsh ice that moved down from the uplands, is now preserved with the maximum southern limit being marked only a short distance away on Gower and in Carmarthen Bay. During the Ice Age which ended about 12,000 years ago, ice sheets flowed south through the area to meet the eastwards flowing Irish Sea ice in the Bristol Channel at Carmarthen Bay. The resulting land form is gently undulating, rising up from the lower river courses and their estuaries to reach a maximum altitude of 150 metres.

Although much of the area is mantled with boulder clay or till and sands and gravels, these deposits have been progressively reworked into the impressive coastal sediment systems and landforms which today dominate the coastal fringe. The coastline at Pendine is notable for its sands and including a dunefield that is 700m wide and extends for 9.5km, with individual dunes reaching 15m in height. At Cefn Sidan there is a long sandy beach which mirrors Pendine and has an extensive dune system which reaches 20m in height and over 2km in width. Although much of the duneland is afforested, a zone of active dunes extends north-westwards into the Gwendraeth Estuary and south-eastwards into the Loughor Estuary.

The Taf Estuary is bounded by rocks on its western side but has a cobble spit with some saltmarsh on the eastern side. Both sides of the Tywi Estuary are formed by low vertical cliffs. The Gwendraeth Estuary is fed by the Gwendraeth Fach and the Gwendraeth Fawr,

which flow into the estuary just west of Cydweli, and is dominated by mudflats that merge into saltmarsh that has developed in the lee of Tywyn Point.

The outstanding geological diversity of the area is represented in several SSSI by the following geological features, namely Creigiau Llansteffan (Non-marine Devonian Stratigraphy) and Carmarthen Bay (Coastal Geomorphology of Wales).

## Landscape Habitats influences

The confluence of the rivers Taf, Tywi and Gwendraeth, where they meet and discharge into Carmarthen Bay, forms an interesting and unique landscape and series of coastal, intertidal and terrestrial habitats.

The area immediately offshore is protected as the Carmarthen coast and estuaries SPA and SAC. The coastal habitats are dominated visually by intertidal sand, mudflats, saltmarshes and grazing marshes at the mouth of the Taf, Tywi and Gwendraeth valleys, all protected as SSSI. These support a variety of wading birds and interesting saltmarsh plant species.

Above high tide a large area of sand dunes has formed in the past, now largely stabilised with marram grass, but supporting interesting and unique dune scrub, open dune, dune slack, swamp and dune grass communities. These are largely protected, as the Laugharne/ Pendine Burrows SSSI on the western side of the estuary, and the Pembrey Coast SSSI on the east. Petalwort is a key BAP species found in this habitat. Habitats of importance include dune grasslands dominated by red fescue; dune alder woodlands (representing the bulk of this habitat resource in southern Britain); and herbaceous rich salt marshes including species such as sea plantain. The coastal habitats support internationally rare invertebrate species including the ground beetle and robber fly.

Areas of reclaimed grazing marsh and fenland are protected from the sea by the sand dune systems. They are grazed by livestock in large, rectilinear fields bounded by open drainage ditches or fences. These include large horse and pony paddocks, particularly around Pembrey. The original fenland is now largely improved agricultural land, on groundwater gley soils, with extensive productive grasslands, albeit wet and difficult to manage. Most of the original botanical diversity has been lost. Ffrwd Farm Mire NNR is one of the least disturbed areas of original fenland and contains an interesting and diverse fenland flora, with a range of dragonfly and damselfly populations. Gwernydd Penbre, inland from the Pembrey Forest has extensive reedbeds and associated communities, originally reclaimed in the 18th century, but now reverted to waterlogged pasture and fenland, colonised by common reed, with important breeding populations of cetti's warbler and water rail. Bitterns are regular visitors.

Further inland, loamy and sandy soils are largely well drained, with seasonal waterlogging in places. The agricultural use of the land fringing the inland rivers is mainly pasture for sheep rearing and dairying. Fields are generally medium sized and irregularly shaped, enclosed by mixed hedgerows which are overgrown in places.

Woodland is not generally an important feature of the Taf, Tywi and Gwendraeth estuaries, apart from the Pembrey Forest, a large coniferous woodland planted in the 1920s. The forest is a Local Nature Reserve, with an interesting flora and butterfly population, with 31 butterfly species recorded, and one of only three recorded colonies of grizzled skipper in Wales. Further inland, small bands of semi-natural woodland often clothe the river valley

slopes in the Gwendraeth valley, with young woodland and scrub colonising unmanaged land. As with other low-lying areas of reclaimed fenland, small areas of willow carr and individual gnarled willow trees provide important features in the landscape and local important habitats.

The Gwendraeth Valley stretches up into the Carmarthenshire coalfield, where the groundwater gley soils continue to dominate. Here there is a mosaic of improved land alongside smaller areas of rhos pastures, where purple moor-grass is dominant, and wet woodland. Cors Pum Heol NNR is a protected remnant of rhos pasture, where royal fern is common.

## Historic Landscape influences

The historic landscape of this triple estuary contain diverse evidence of activity from the prehistoric period onwards, principally relating to coastal trade and land reclamation from the sea. Glacially deposited, raised areas of ground on the floor of the Tywi are likely to have been the location of prehistoric settlements. The prominent Norman castle at Llansteffan is situated on the site of a much earlier Iron Age hillfort - its double ditch can still be seen to the west of the castle.

The estuary mouths provided the strategic setting for further Medieval castles including Kidwelly and Laugharne. Kidwelly castle was one of several established by the Normans to assert control over the kingship of Deheubarth in South West Wales, and was situated both to control coastal traffic and protect the Gwendraeth.

The town of Kidwelly developed further in the later Medieval period as a centre for the cloth industry, and for iron smelting in the 18th century. Industrial remains are present along the Gwendraeth, including those of a blast furnace at Pont Henry. Other visible remains include traces of C17th sea walls and successive enclosures of the early C19th.

Infrastructure relating to limestone quarrying at Coygan is also in evidence. Stone would have been transported to the river at Laugharne via a tramway and small creek (Ralisgate Pill). Today these remains provide well-preserved evidence for trade, which persisted in the small estuary ports until the Second World War. Settlement is generally scattered in a linear form along roads, watercourses and the coast. Coloured render and slate is the predominant building material found throughout the area.

## Cultural Landscape influences

This area is notably associated with the author Dylan Thomas (1914-1953), his residence beside the estuary at Laugharne, and his inspired and lyrical description of the fictitious small Welsh village of *Llareggub* in his novel 'Under Milk Wood'.

Other literary associations include Richard Hughes (1900-1976), novelist, neighbour to Thomas and instrumental in Thomas settling more permanently in Laugharne. Hughes' novel 'The Fox in the Attic' (1961) ranges from a landscape based on Abertaf to Munich at the time of Hitler's abortive putsch.

Earlier associations include the Dwnn family of Kidwelly, from which the English poet John Donne (1572-1631) is descended. Earlier still, Gwenllian, the daughter of Gruffydd ap Cynan, was killed leading an attack on the castle in 1136, at a place still known as Maes Gwenllian.

Pendine sands, being long and flat, were ideal for the motor-racing and in the 1920s the annual Welsh TT cycle race was held there, the surface being smoother than motor roads at the time. Land speed record attempts were also made there, notably Malcolm Campbell's record set in 1924 was broken by the Welshman John Godfrey Parry-Thomas from Wrexham in 1927, though he was killed in the process. His car, Babs, was buried in the dunes, but has since been recovered and restored and is in the Pendine Museum of Speed. Amy Johnson took off from Pendine to fly non-stop to the USA in 1933.

The dunes at Pendine were taken over as a Military firing range during World War 2, limiting access there ever since. Meanwhile the neighbouring Pembrey Dunes were taken over for forestry. Since then, the extensive beaches have become popular for sport and recreational activities, with car-parking becoming popular on the beach at Pendine and a Country Park being established at Pembrey Burrows in the 1980s.