

## Case Study 7 - Wales

### 7.1. Introduction

The landscape of Wales is characterised by relatively low-lying coastal zones backed by a hinterland of high mountains and hills, which have been dissected by river valleys flowing from the uplands towards the sea. The Welsh coastal zone itself comprises a strip of land and its adjacent shoreline and marine environment, which varies in width depending on the natural environment and the management needs of the area. Parts of the Welsh coastal zone are recognised as being important natural habitats and environments. Along these beautiful coastlines, historical developments illustrate the history of the country dating back to Roman times. Later, numerous magnificent castles were built, which has resulted in Wales having an outstanding legacy in terms of its architectural heritage (McInnes & Benstead, 2013<sup>1</sup>).

#### 7.1.1. Geology & Geomorphology

Within its land area of just over 23,200 sq. km (8,000 sq. m) and measuring some 256km (160m) by 96km (60m), elements of all the major geological systems can be found in Wales, ranging from the ancient Cambrian rocks through to the Holocene. Mountain-building over geological time together with structural effects including uplifting, folding, faulting and subsequently weathering and erosion, have resulted in a coastline of great interest and diversity, which displays a wide range of geomorphological features as well as creating a landscape of enormous scenic beauty. The mountainous interior was severely affected by glaciation, and from this hinterland rivers incised deeply as they flowed from the centre of the country down to the relatively low-lying coastline. The variety of the coastal geology of Wales, as well as the structural form of the exposures including the joint lines, bedding planes and the angles of dip of the strata, all have an influence on the appearance of the coastline and contribute to form the features that are so much admired.

Where soft rock coastlines exist these have been affected by marine erosion at the toe of cliffs and slopes leading to a cliff retreat and coastal landsliding. Elsewhere, low-lying beaches may form modest protection for some coastal settlements. These developments may suffer from an increasing risk of flooding over time, particularly in view of predicted rates of sea level rise of over one metre by the year 2100 (Halcrow, 2010<sup>2</sup>).

#### 7.1.2. Coastal Processes

The evolution and shaping of the Welsh coastline has been influenced by a number of factors since the last Ice Age, including the rate of sea level rise and the resulting nature and severity of coastal erosion. The influence of climate is also particularly significant for soft rock coastal frontages as rainfall weakens soft cliffs, often promoting slope instability of cliff failures. Along the coast itself the process of erosion and the subsequent transport of materials by longshore drift has resulted in the formation of magnificent beaches as a result of accretion in some locations, but depletion along other frontages. Evidence of change around the dynamic coastline of Wales can be found from early historical accounts, which sometimes describe the need for replacement of buildings and structures previously lost to the sea. For example, the church of St Ina near Newquay, Ceredigion, was dedicated to a Saxon king. The original church was lost to coastal erosion and the existing building is, perhaps, at least the third constructed on the site. Further evidence of coastal change is provided by historic lime kilns, which were constructed on the coast for easy transport of materials; these can also be found in Ceredigion. Early maps indicate their coastal locations and their gradual loss to the sea over time.

Around the Welsh coast there is evidence of change both in terms of significant accretion in some locations and land loss in others. At Morfa Harlech extensive accretion has taken place for centuries both from wind-blown sand and accumulated material washed down by rivers from the mountains of Snowdonia in the hinterland. Harlech Castle, which was built in 1274, was originally sited on the shoreline but now an extensive National Nature Reserve, comprising rolling dunes covered in marram grass separates the historic building from the sea. Severe coastal storms through the early twentieth century have resulted in flooding and property loss at a number of locations. Major events include those at Conwy and Aberaeron, which led to extensive flooding in 1910, the Gwynedd storms of 1927, the great storm at Aberystwyth of 1938 and storms affecting Amroth in Pembrokeshire in the 1950s (McInnes & Benstead, 2013<sup>1</sup>).

The written accounts of early travellers can also provide us with an insight into coastal change over time. One of the most comprehensive topographical accounts of the Welsh coast is that provided in *'A Voyage Round Great Britain'* undertaken by the artist, William Daniell, and his colleague, Richard Ayton, who wrote much of the Welsh text to accompany Daniell's illustrations. Starting in 1814, Daniell and Ayton toured the coastline of Great Britain, producing 308 delicate aquatints over an eleven year period. The Welsh part of their voyage started on the south coast and continued northwards to include Anglesey, and along the north coast, before proceeding to Lancashire and into Scotland. Alongside Daniell's wonderful aquatints, Ayton provided detailed descriptions; his interest in the coastline itself, its geology and processes is evident from the text. For example, at St Donat's in Glamorganshire he states *"the coast at St Donat's is low and tame, but about a league further to the westward it assumes a bolder character, and continues for a few miles in a range of cliffs, perhaps not exceeding 80 feet in height, but remarkable for some curious excavations formed by the action of the sea, in some of which the rocks are fretted into a most perplexing variety of fantastic configurations, and in others disposed into such formal combinations, with such a singular correspondence of parts, that they look more like the work of art than a thing of nature"* (Daniell & Ayton, 1914<sup>3</sup>).

Further westwards he describes the coastline in the vicinity of The Mumbles at Swansea Bay. *'The shore immediately about The Mumbles, and for some distance both to the westward and northward of it, is strewn with large fragments of rock, the certain memorials of encroachments by the sea, and it is said that a great extent of land has been swallowed up between this point and the opposite side of the bay'*. Ayton also observes *"that the shores of Swansea Bay have suffered greatly by the encroachment of the sea, at no very distant period, is extremely obvious. A wide extent of forest land now lies buried beneath its sands"*. At Oxwich Bay a major rockfall occurred in 1993. Daniell and Ayton also noted this process where *"when we stood at the extremity of the cliffs near the sea, we could at the same time see the shattered front of the cliffs, the vast bits of rock were laid open on all sides to us and formed a sea of ruin that was perfectly sublime"* (Daniell & Ayton, 1814<sup>3</sup>).

The scenery in the vicinity of Beaumaris was much admired by Daniell and Ayton. *"Vessels of the largest burden may navigate the channel at all periods of the tide, the depth of water being never less than seven fathoms; but the space between its eastern border and the Caernarvonshire shore becomes at half ebb a great plain of sand, called the Lavan Sands, or Wylofaen, the 'Place of weeping', from the lamentations of those who were overwhelmed or who saw their houses and lands overwhelmed by the sea. On the shore at Beaumaris, the sea has evidently, at some period, conceded something to the land, the Green being merely a bed of beach with a thin turf spread over it. At the southern extremity of the town is Ormond's Point, a similar kind of bank, projecting into the Strait, though not covered with earth; but these formations must have existed prior to the great inundation, for the sea is now obviously encroaching upon the Anglesey coast of the bay, and, according to ancient records the marsh on which Beaumaris is built, and from which it takes its name, was formerly of much greater extent than the present and covered with fine bulrushes. Between the Green and Ormond's Point the sea flows up to the very walls of the town"* (Daniell & Ayton, 1814<sup>3</sup>).

Along the North Wales coast, Ayton comments *"it is very evident from the present aspect of the Welsh coast, from its deep indentations, the frequency of long narrow promontories, and the numerous small islands scattered about it, and, still more directly, from the occurrence of large tracks of loamy soil and of peat moss, extending far from the shore, that the sea has made great advances both upon its western and northern fronts. There can be little doubt that the sands which border the coasts of Merioneth and Caernarvonshire were once forests or cultivated land, forming extensive plains at the base of the mountains behind. These plains are now reduced to narrow strips, which the sea still continues to encroach upon, and will, in the course of time, swallow up and meet an effectual barrier in the mountains against its further progress"* (Daniell & Ayton, 1814<sup>3</sup>).

Towards the completion of their voyage around the Welsh coast, Daniell and Ayton passed along the seaward side of Penmaen Mawr. They noted that *"the whole western front of the mountain strikes down to the sea with a very rapid descent, and the great mass of bare rock which forms the summit is, on the seaward side, quite perpendicular. There is very little vegetation on this front, almost the whole surface being covered with loose stones, amongst which are many huge fragments, some lying in very alarming positions. Two of these, of immense size, not far above the road, had low walls built under them for their support, but so slight that they serve rather to point out the danger than to give assurance of being guarded against. In the solid rock I observed the marks of recent falls, and in various parts of the wall there were considerable breaches made by large stones precipitated from the steep cliff above"*.

Further to the east they visited the *"little village of Llandudno"*. *"We left our horses and proceeded by the shore along the south side of the promontory and came to Gogarth, the ruins of a monastery, which was annexed to the Abbey of Conway. Enough of the edifice remains to show that it was large and strongly built, but we could discover nothing more about it. It stands close to the shore, and some parts of it have been washed away by the sea"*. Further east, at Abergeleu (sic) they noted that the village *"stands on the skirts of a large track of level land, called Rhuddian Marsh, supposed to have been formerly of much greater extent, and reduce by the depredations of the sea. The advance of the sea is attested by an epitaph in the churchyard of the village, which has neither name nor date, but simply records that in the churchyard lies a man who lived three miles to the northward of it; and if this assertion be true, the sea must have advanced two miles upon the land"* (Daniell & Ayton, 1814<sup>3</sup>).

The written observations of coastal change described by Daniell and Ayton and illustrated in their numerous accompanying aquatint engravings emphasise the dynamic nature of the Welsh coast and this presents significant issues now and looking to the future.

The challenges of climate change around the Welsh coast have been emphasised by the National Trust, which owns one sixth of the coastline of Wales. The Trust is working on the assumption of a one metre sea level rise by the year 2100 for most of its coastal properties. In 2007, the Trust published a strategy document entitled *'Shifting Shores'* (National Trust, 2005<sup>4</sup>) which set out policy proposals that plan for 'a future of advancing seas'. The Trust warned that, in Wales, sixty-six coastal sites covering some 1,572 hectares were at risk of flooding in the next 100 years. Internationally recognised sites which could be under threat included the Stackpole Estate in Pembrokeshire, Cemlyn Lagoon on Anglesey – an important wildlife site, as well as dune systems on the Gower Peninsula near Swansea and historic sea forts such as Dinas Dinlle in Gwynedd. Furthermore, increased coastal erosion is likely to affect two of the National Trust's land holdings at Port Dinllaen in North Wales and Rhossili in the south. The Trust has highlighted that erosion is already taking place at Rhossili's famous 5km (3m) beach, and erosion of the surrounding cliffs is leading to landslides and rock falls. The erosion at Rhossili is also endangering an abandoned and sand-covered village that dates back to medieval times. Such changes will lead to increasing scour of beaches and their lowering in front of hard clifflines (National Trust, 2005<sup>4</sup>). Since its original research the National Trust has analysed coastal land use change on its estate to support future planning and management in the face of climate change (National Trust, 2015<sup>5</sup>).

### **7.1.3. The Coastal Environment**

The exceptional environmental quality of long stretches of the Welsh coast is reflected in a wide range of designations that protect landscapes, habitats and species. Approximately 75% of the Welsh coast is designated as Sites of Special Scientific Interest to protect nationally important nature conservation and/or geological features. More than 60% of the Welsh coast is also designated under the European Habitats or Birds Directives (Countryside Council for Wales, 2012<sup>6</sup>). The high-quality coastal landscape is also reflected by the designation of over 800km of Heritage Coast, three coastal Areas of Outstanding Natural Beauty and two national parks. The special features of these coastal protected landscapes include their wildness, and the untamed visual, ecological and physical transitions from land to sea, as well as the importance of the visible geology and geomorphology (Europe Art Federation, 2010). The most extensive coastal habitats to be found include sand dunes, saltmarsh and sea cliffs, within which can be found 16 national nature reserves.

Although only 28% of the 2,700km length of the Welsh coastline is defended, there are nevertheless significant pressures on some of the habitats due to coastal squeeze as a result of sea level rise and beach lowering against hard cliffs or hard defences. The implementation of the Welsh National Strategy for Flood and Coastal Erosion Risk Management (Welsh Government, 2011<sup>7</sup>) and strategic monitoring of the coastline will provide sustainable and innovative approaches that are required to ensure the protection of the landscapes and habitats for the future.

### **7.1.4. Coastal Heritage**

The coastline of Wales has a particularly rich architectural heritage including ecclesiastical buildings ranging from the sixth-century tiny chapel of St Trillo at Rhos-on-Sea to the great castles that line the Welsh coast. Elsewhere, elegant holiday resorts that developed in the middle of the nineteenth century, such as Llandudno, expanded as the railway lines were extended through to the Welsh coast. However, the history of many of these coastal towns dates back much earlier from the Bronze Age to Roman times. Close to Llandudno at Great Orme's Head copper mining took place in the eighteenth and nineteenth centuries, but there is evidence of mining having been carried out as early as the Bronze Age. To the south of Great Ormes Head lies Conwy Castle, which was constructed between 1283 and 1289 by King Edward I. Views of the dramatically located castle with its long curtain walls were painted by nearly all of our leading landscape artists in the late eighteenth and early nineteenth centuries, including Paul Sandby and J. M. W. Turner.

Overlooking the Menai Strait, Edward I built another castle at Caernarfon in the late thirteenth century; the structure took some forty years to complete. One of the most important Welsh Castles, Caernarfon dates from medieval times and the town walls enclose the oldest part of the town with adjacent streets including many eighteenth and nineteenth century properties.

At Criccieth, on the south side of the Llyn Peninsula, the ruins of a castle stand on a headland overlooking the bay. Also dating from the thirteenth century the castle was the site of numerous battles through medieval times, until it was eventually sacked and burnt. East of Criccieth, at Morfa Harlech, is the town of Portmeirion, which was designed by the architect, Clough Williams-Ellis, who based the design on the town on Portofino in Italy. This Italianate town was developed gradually from the 1920s and includes some fifty diverse buildings. To the south is another of Edward I's castles at Harlech. The castle is in an imposing location, situated on a ledge high above the farmland and marsh, the farmland below overlooking Tremadog Bay.

Located centrally overlooking Cardigan Bay is the town of Aberystwyth, which has a fine curved promenade of Victorian villas and hotels. At the southern end of the town is the castle, which also dates from the late thirteenth century, being constructed during the reign of Edward I.

On the south-west coast, at the southern end of St Bride's Bay, is St Bride's Haven where its ancient church stands above the beach. Here also can be seen an ancient lime kiln on the headland and the remains of early graves in the cliffline. Along the south Pembrokeshire coast at St Gauvan's, a tiny chapel was constructed within the rocks in the late eighteenth century.

To the east is the elegant seaside resort of Tenby, the beauty of which was greatly admired by the artist, William Daniell, on his *'Voyage Round Great Britain'*. The town developed in the nineteenth century although its castle dates from Norman times and parts of the medieval town wall still exist, including its old West Gate. A short distance offshore is Caldey Island, which was first settled by monks in the sixth century. It continued to be occupied until the dissolution of the monasteries during the reign of King Henry VIII. The buildings were refurbished and occupied as a monastery again from 1929. East of the open and wild Gower coast are the more developed frontages of Swansea through to Cardiff and Newport. Although best known for their rich industrial heritage, these towns and cities date back to Roman times and were first fortified before the Normans constructed their own castle at Cardiff nearly a thousand years later. The Cardiff waterfront was developed as Bute Docks particularly for the export of coal. Since the decline of that industry, the waterfront has been redeveloped in a way that largely retains much of its historic character.

### 7.1.5. Coastal Art History

The Welsh coast was visited by many artists in the eighteenth, nineteenth and early twentieth centuries. The dramatic scenery of Snowdonia, the Wye Valley, and the coast itself have been portrayed through the works of celebrated artists and amateurs who painted the varied coastal landforms and landscapes; these, collectively, form an illustrated chronology of coastal change since the late eighteenth century. It is also important to recognise that works of art form a medium that continues to be enjoyed and understood by those who live on the coast or who are interested in it, and historical artworks often form images that coastal residents can immediately relate to. People who live along varied and beautiful coastlines, such as those of Wales, often have a fascination for the history and culture of their location, as well as a great attachment to it.

The art history of Wales and the British Isles more widely has been described or listed comprehensively by a number of eminent authors (Williams, I. J., 1926<sup>8</sup>; Hardie, 1966<sup>9</sup>; Mallalieu, 1976<sup>10</sup>; Wilton, 1993<sup>11</sup>; Wood, 1995<sup>12</sup>; Joyner, 1997<sup>13</sup>; Alston *et al.*, 1998<sup>14</sup>; Fairclough (Ed.), 2011<sup>15</sup>). In fact, some of the earliest British coastal landscapes are those of the Welsh coast drawn by Francis Place (1647-1728) who, assisted by the artist and etcher, Wenceslaus Hollar, produced views of Cardiff, Oystermouth and Tenby. These fascinating and detailed pen and ink and wash drawings pre-date, by over a century, most of the coastal landscape paintings found in other coastal locations such as the East Anglian coastline or those of Hampshire and the Isle of Wight.

The quality of the Welsh landscape was also further highlighted by the important watercolourist, Paul Sandby, whose works brought its dramatic beauty to a much wider audience. In fact, views of Wales played a key role in promoting the concept of the *'Picturesque'* with numerous works being exhibited at major exhibitions such as the Royal Academy. The establishment of the Society of Painters in Watercolours in 1804, to meet the increasing demand for a separate exhibition for the works of watercolour artists, allowed watercolourists such as John Varley OWS (1778-1842), Francis Towne (1740-1816) and Thomas Girtin (1775-1802) to display their Welsh works. Alongside the watercolours painted by such eminent artists, over one hundred *'tours'* are estimated to have been made and described through publications over the period from the 1650s to the 1850s, providing rich detail on the changing scenery of the Welsh countryside and coastline over that time (Kenyon, in Alston *et al.*, 1998<sup>14</sup>).

During the late eighteenth century and early into the nineteenth century the scenery of Wales was described by many others, including Thomas Compton in his *'The Northern Cambrian Mountains; or, a Tour through North Wales: Describing the Scenery and General Characteristics of that Romantic Country'*

(Compton, 1820<sup>16</sup>), *'Tour in North Wales'* by Thomas Pennant (Pennant, 1810<sup>17</sup>), *'The Principal Rivers of Wales Illustrated; Consisting of a Series of Views from the Source of each River to its Mouth'* (Wood, 1811-1813<sup>18</sup>), and *'A Picturesque Description of North Wales: Embellished with Twenty Select Views from Nature'* (M'Lean, 1823<sup>19</sup>). Later, with increasing Victorian seaside developments, the needs of early tourists were met by numerous authors who provided guidebooks illustrated with steel plate engravings such as those by Thomas Roscoe *'Wanderings and Excursions in North Wales'* (Roscoe, 1836<sup>20</sup>) and *'Wanderings and Excursions in South Wales including the River Wye'* (Roscoe, 1836<sup>21</sup>). A more detailed description of the tourist in Wales has been eloquently described by Kenyon (in Alston, *et al.*, 1998<sup>14</sup>).

Early artists from the seventeenth and early eighteenth centuries, for example Francis Place, used watercolour in a very limited way, combining pen and ink with coloured washes to record the landscape in highly topographically accurate terms. It was not until the second half of the eighteenth century that artists began to discover the wider possibilities of the landscape (Barron, in Alston *et al.*, 1998<sup>14</sup>). A new approach to depiction of the Welsh landscape was pioneered by the Welshman, Richard Wilson RA (1714-1782), who had been strongly influenced through working in Italy and who was noted for both his Italian and Welsh landscape paintings. Such works of the Welsh landscape, often depicted in the manner of the Italian *campagna*, appealed to the wealthy clientele of artist such as Wilson and his pupil, Thomas Jones (1742-1803). It was interesting to note that one of Wilson's pupils, Joseph Farington, remarked "*Wilson, when he painted views seldom adhered to the scene as it was*", instead interpreting the landscape through the eyes of Italian artists such as Salvatore Rosa and others.

The particular interest generated in the Welsh landscape by early writers and artists led many of Britain's leading watercolourists and painters to Wales. John 'Warwick' Smith (1749-1831) painted *'A distant view of the Eifl Hills'* showing Penmaen Mawr, whilst both Thomas Girtin (1775-1802) and Samuel Hieronymous Grimm (1733-1794) painted Caernarfon Castle. Grimm also painted a delicate view of Briton Ferry, Glamorganshire, a favoured viewpoint for many artists passing along the South Wales coast. Other important artists including Julius Caesar Ibbetson (1759-1817), Anthony Vandyke Copley Fielding POWS (1787-1855) and Thomas Rowlandson (1756-1827) visited and depicted the Welsh coast. Ibbetson painted a fishing scene on Tenby Beach entitled *'A Draw-Net at Tenby'* in 1795.

In addition to the works of the early watercolourists, topographical views of Wales were published in important coastal tours of the British Isles as a whole. One of the most significant publications was *'A Voyage Round Great Britain'* by William Daniell and Richard Ayton (Daniell & Ayton, 1814<sup>23</sup>). The voyage commenced in 1814 and took eleven years to complete with Daniell's Welsh views, delicate sepia aquatints, being undertaken in the early years of the voyage. Altogether Daniell produced twenty-five views covering the coast of Wales, including the Island of Anglesey.

Later, the Finden Brothers published their *'Ports, Harbours, Watering Places and Picturesque Scenery of Great Britain'* (Finden, 1838<sup>22</sup>), which also covered the whole of the British coast and included numerous steel engravings of the Welsh coast, together with a detailed accompanying descriptive account.

J. M. W. Turner visited Wales no less than five times in eight years in the 1790s. He produced fine paintings of Harlech Castle, Beaumaris, Caernarfon, Conwy, Laugharne and Pembroke and many other subjects during that time, often referring back to his original drawings to produce further works in later life. He was very impressed by the paintings being produced by his friend, Richard Wilson, who was strongly influenced by the artist, Salvator Rosa, whom Turner also admired. Through the early-to-mid nineteenth century, further important artists came to the Welsh coast. David Cox (1783-1859) painted *'Rhyl Sands'*, and a view of *'Barmouth'* from a short distance offshore in about 1840, whilst Joseph Murray Ince (1806-1859) painted the picturesque coastal town of *'Tenby'* in the same year. Anthony Vandyke Copley Fielding (1787-1855) produced a fine watercolour of the *'Rhuddlan Bridge'* in Flintshire in 1809. John La Porte (1761-1839) painted Beaumaris and Bangor, a subject also depicted in a very detailed watercolour by John Glover (1767-1849).

A further important watercolourist, John Varley (1778-1842), made his first journey to North Wales in the company of the painter, George Arnald ARA (1763-1841), in 1799. Varley was encouraged by Dr Thomas Monro (1759-1833), a physician and supporter of Turner and Girtin, to *'sketch from nature'* and gave him access to his collection of watercolours, including examples by these rising stars of the art world. The work of Varley was the topic of conversation at Dr Monro's house in November 1802, exactly a week before Girtin's death, when Joseph Farington ARA (1747-1821) records that *"much was said about the singularities of Varley, an ingenious young man who had made drawings in Wales"* (Spink & Wilcox, 2008<sup>23</sup>). Varley produced fine views of *'Aberystwyth Castle from the Beach'* (1807), *'Barmouth from the Beach'* (1813), *'Caernarfon Castle'* (c.1805), *'Conwy Castle'* (c.1800), and *'Harlech Castle and Snowdon'* (1803).

Numerous topographical artists visited the Welsh coast at this time. George Stainton (fl.1860-1904) painted the expanding town of Newport on the south coast from the sea. Henry Moore RA RWS (1831-1895) visited Wales in 1868 painting beach and dune scenes at Harlech and on the Llyn Peninsula. Moore was particularly fond of painting wide expanses of sand and sea from a vantage point. Benjamin Williams Leader RA (1831-1928) also appreciated such landscapes and produced a number of fine oils, including *'On the Welsh Coast near Towyn'* and *'On the Sands at Harlech'*. Alfred De Breanski Snr. Painted *'Caernarvon Castle'* in North Wales at sunset with numerous crafts anchored below the massive curtain wall of the castle; J. W. Carmichael (1800-1868) also painted a fine oil of *'The Menai Straits'* in 1830.

To cater for the growing numbers of visitors, guidebooks illustrated with steel engravings appeared in increasing numbers by the middle of the nineteenth century. In addition, fine lithographic views were produced either individually or sometimes in portfolios. Publications by Roscoe, Catherall, and, later, Rock and Co, contained steel engravings of vignettes which provide a chronology of coastal development and expansion of the seaside towns. In addition, some very fine lithographs were being published of the expanding coastal resorts, particularly Llandudno, Aberystwyth, Tenby and Rhyl, often featuring, prominently, the major hotels, where they could be purchased. The publishers and printers, Day & Son and N. Hanhart, were particularly active. At the same time important watercolourists and painters in oils continue to visit the coast. One of our finest watercolourists, Myles Birket Foster RWS, painted the picturesque coastal town of Tenby as well as scenes in North Wales; some of his sketchbooks sold in his studio sale also contain pencil drawings of Welsh scenery.

One of the most influential artists of the mid-nineteenth century with respect to coastal landscape painting in Wales was the Pre-Raphaelite artist, John Brett ARA (1830-1902). The Pre-Raphaelite Brotherhood was a group of artists who wished to capture nature in its precise detail and beauty, often through painting out of doors. Famous works by the Pre-Raphaelites can be found in art galleries across Britain. The artist, John Brett, is probably best known for paintings such as *'The Stone Breaker'* (1858) and *'The Val D'Aosta'* (1859). His paintings are keenly observed and depict the coastal cliffs of Wales and the beaches in precise detail. His paintings of the Welsh coast from the 1860s to the 1890s provide an invaluable record for those interested in coastal change over that time period (Southall (Ed.), 2001<sup>24</sup>). Some of his depictions of the coastal geology and beach levels bear interesting comparison with the present day situation, for example, *'Forest Cove'* in Cardigan Bay (1883), *'Mewslade Bay'* at the western end of the Gower (1888), *'Caswell Gates'* and *'White Rock, Caswell'* (1887), *'Fishguard Bay'* (1883) and *'Proud Giltar'* to the west of Tenby (1879).

Like other coastal topographic painters such as Edward William Cooke RA, Brett no doubt shared a keen interest in geology, an emerging science that had seen fundamental research being undertaken both inland and on the coast in Wales in terms of developing an understanding of British stratigraphy. Whilst Brett's paintings tend to concentrate on the dramatic hard rock coasts, they also show beach and cliff face conditions, as well as coastal environments, for example *'Anglesey Hill Sands'* (1876).

The late nineteenth and early twentieth centuries saw increasing numbers of colour plate book illustrations to cater for the growing numbers of coastal visitors, as well as the introduction of colour

picture postcards by famous companies, such as Raphael Tuck and J. & F. Salmon of Sevenoaks in Kent. Book publishers, including A. & C. Black and Salmon's, commissioned a range of artists including Myles Birket Foster RWS (1825-1899), Alfred Robert Quinton (1853-c.1934), Ernest William Haslehurst (1866-1949) and others to produce attractive views that could be illustrated as postcards or as book illustrations. In 1900, A. & C. Black published their *'Beautiful Wales'*, which was illustrated with numerous colour plates by Robert Fowler (Thomas & Fowler, c.1900<sup>25</sup>).

### 7.1.6. Case Study Sites

For the purposes of this study four frontages along the Welsh coast have been selected for more detailed consideration of those changes that can be observed through a few historical artworks over time. The study sites were selected in order to provide a representative selection of the scenery, environments and heritage of Wales, but also taking account of the available resources of images to illustrate the overall concepts of this study. For the Welsh coast, the study sites are:

- The Mumbles to Worm's Head;
- The town of Tenby;
- Barmouth to Cricceith;
- Conwy to Great Orme.

The case studies, illustrated by artworks dating back as far as the late eighteenth century, are provided in the following pages.

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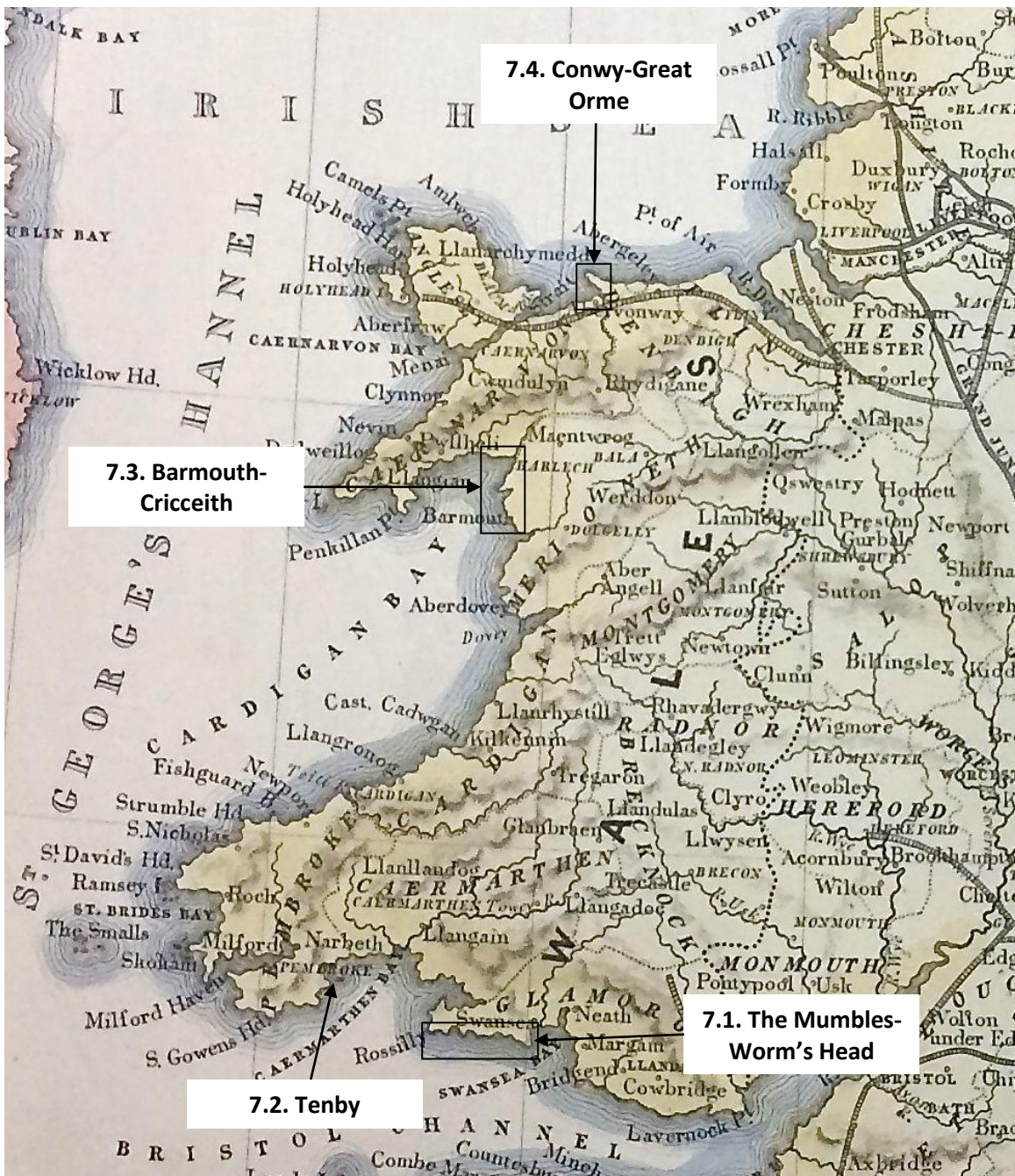


Fig.  
CS7.1.1.  
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## Case Study 7.1 – The Mumbles to Worm’s Head, South Wales

### 1. Location

The case study extends from Mumbles Head to the west of Swansea in the east, along the 21km (16m) section of the coast, westward to Worm’s Head.

### 2. Why was the Case Study Site selected?

The case study site, comprising a considerable length of the Gower coast, is renowned for its dramatic coastal geology and geomorphology. The natural attractions of this landscape led many artists here, who captured the coastal scenery in particular detail. These artworks allow comparisons to be made of the nature and scale of coastal change since the early nineteenth century.

### 3. Summary of the Geology, Geomorphology & Coastal Processes

The coastline displays dramatic formations of Devonian and Carboniferous rocks including considerable thicknesses of limestone, which overlay the sandstone. Subsequent earth movements resulted in compression, folding and faulting, which has added to the special qualities of the coastal scenery of the Gower. About 280 million years ago the structural geology of the Gower coast was similar to that we can observe today.

Sedimentary processes are driven by the wind regime which blows primarily from the south-west, allowing Atlantic storm waves with a considerable fetch to erode the coastline. Particularly during winter storms the wave action can result in significant changes to beach levels, often moving the material from the upper beaches to just offshore. Along parts of the Gower coast the wave energy can be significantly dissipated in the shallower water or where wide sandy beaches exist; here, there is much less impact from the effects of storms. The combination of wave action and currents, therefore, results in a general trend for sediment movement from west to east along the frontage. The Gower coast is a largely natural one with coast defence measures often being confined to the backs of bays. Wherever possible a policy is to continue to allow the coastline to evolve and retreat naturally through ‘no active intervention’, thereby maintaining the landscape value of this shoreline, and helping to ensure that the designated geological exposures do not become obscured by defences. Elsewhere, policies for managed realignment of the coast will allow largely undeveloped extensive dune systems such as those at Oxwich Bay to respond and evolve naturally, whilst enabling long-term habitat management activities to be undertaken (Pye & Blott, 2009<sup>1</sup>; Halcrow, 2010<sup>2</sup>).

### 4. How can the art imagery resources inform us of changes that have affected this coastal zone?

Images by artists who painted this coast, particularly during the mid to late nineteenth century, show an undefended, natural coastline, which is remarkably similar to the one that exists today. Detailed oil paintings by the Pre-Raphaelite artist, John Brett, for example, show the coastal geology in exceptional detail, and allow comparisons to be made of beach levels between the 1880s and the present day. These appear to indicate relatively little change over time, although levels may fluctuate considerably after storm events. At the western end of the frontage is Worm’s Head, and to the north of it is Rhossili Bay, which form part of the Gower Heritage Coast. At Rhossili Bay, although beach levels appear to have remained healthy over the last century, rising sea levels and increased wave scour may result in beach lowering over the next century. The case study site, therefore, illustrates a coastline which appears to show relatively little change over the last 150 years, although the physical impacts predicted over the next century could result in beach lowering and a serious problem of coastal squeeze against the hard rock cliffs that line the backshore of much of this coast (National Trust, 2015<sup>3</sup>).

### 5. Key issues that can be learnt from this site.

Artworks of the Gower illustrate the fine detail that could be obtained by some of Britain’s leading artists, such as John Brett, and the information that can be obtained in terms of beaches, cliffs and coastal vegetation patterns, which can be compared with those of today.



## 6. References

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**Fig CS7.1.2-CS7.1.3** show views of The Mumbles, which forms the western boundary of Swansea Bay.

The top view was produced by William Daniell near the start of his *'Voyage Round Great Britain'* in 1814 (Daniell & Ayton, 1814-1825). The watercolour (centre) painted by David Addey appears to show little physical change, although the lighthouse buildings have been extended. This is a resilient coast and the impacts of erosion are limited, although occasionally large rockfalls do occur.

**Fig. CS7.1.2. (centre)** courtesy of David Addey.





**Fig. CS7.1.3. (top)** This watercolour shows a scene on Rhossili Beach with the Worm's Head in the distance.

Image courtesy of the National Museum of Wales.



The watercolour of the wreck of the 'Helvetica' (1887) on Rhossili Beach was painted by Alfred Parkman in 1910.

Today the remains of the wreck can still be seen in the intertidal zone (**Fig. CS7.1.4. middle**); the photograph was taken in the year 2002. The visible presence of the wreck in the same location after 130 years suggests that there has been little overall change in beach levels over time, although beach levels may fluctuate. The National Trust report 'Shifting Shores' (National Trust, 2005<sup>2</sup>) suggests that this beach may be seriously affected by 'coastal squeeze' and lowering over time against the hard rock cliffs of the backshore.



**Fig. CS7.1.5. (bottom)** shows the extensive Rhossili Beach, which extends northwards from Worm's Head. The beach and adjacent coastline are in the ownership of the National Trust, which has undertaken detailed studies of the implications of climate change on its coastal landholdings in order to assess future management needs.



## Case Study 7.2 – Tenby, Pembrokeshire

### 1. Location

The case study is confined to the town of Tenby, which is located on the western side of Carmarthen Bay.

### 2. Why was the Case Study Site selected?

The town of Tenby occupies a dramatic situation on the rugged cliffs of western Carmarthen Bay. Its natural attractions, including the coastal geology and its excellent sandy beaches, led to the development of the town as a popular seaside resort and this also brought many artists to paint the coastal scenery. There is, therefore, a particularly rich art heritage which can be drawn upon to illustrate both physical coastal features and this developing resort since the 1840s.

### 3. Summary of the Geology, Geomorphology & Coastal Processes

Tenby is situated on Carboniferous limestones and the Mill stone Grit, which forms a dramatic cliffline around this part of Carmarthen Bay. The strata along this frontage have been affected by mountain building phases, which have resulted in the folding, faulting and displacement of the strata, between 350 and 280 million years ago. Compression of the rocks in particular has led to the formation of features such as anticlines, which form textbook examples of such geological features. Offshore of Tenby is St Catherine's Island, which is also formed of Carboniferous Limestone; where softer sediments outcrop there are examples of caves within the cliffs.

The town of Tenby derives some degree of shelter from its position in Carmarthen Bay and also benefits from the protection of Caldey Island to the south. To the south-west of the town, between Giltar Point and the town itself, there is a wide dune barrier beach, which has been largely stabilised through coastal defences. At Tenby's South Beach sediment movements tend to be mainly in an onshore/offshore direction, although offshore movements are less frequent. Tenby's main beach, which is backed by a solid cliffline, whilst healthy at present, may be increasingly affected by coastal squeeze as a result of sea level rise, taking account of the fact that the rate of cliff retreat is extremely small (Pye & Blott, 2009<sup>1</sup>).

### 4. How can the art imagery resources inform us of changes that have affected this coastal zone?

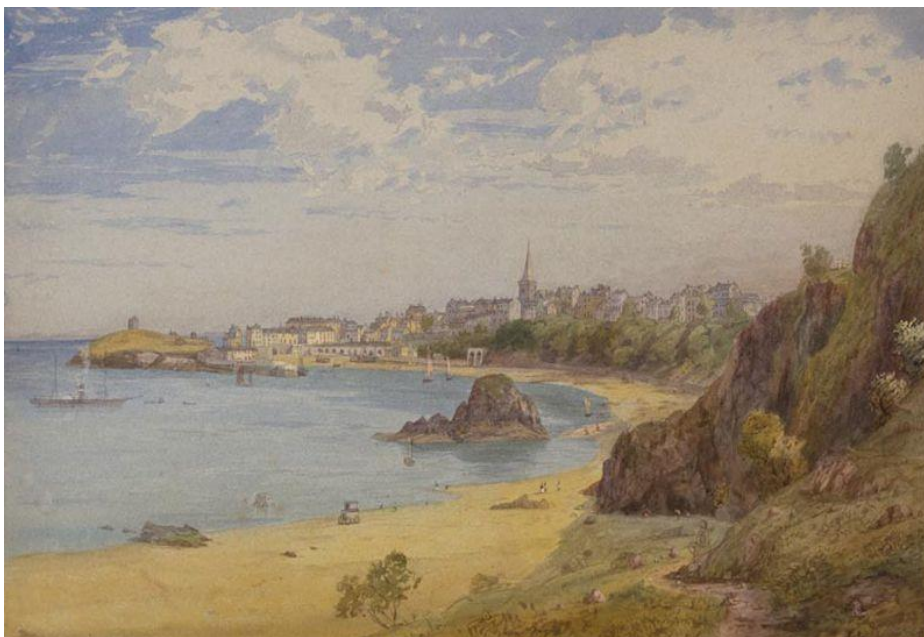
This case study illustrates the development of the town of Tenby and its coastal environment since the 1840s. The images provide information on beach conditions since the 1920s through the detailed watercolours of the prolific artist, Alfred Robert Quinton. His views allow us to make direct comparisons with present day photographs. Apart from physical change, Quinton's watercolours show the nature and extent of development at that time, providing a wealth of architectural detail relating to the villas and hotels that line the rocky cliffs. The watercolours also show changes that have taken place to the harbour, the pier, as well as depicting the state of the natural coast to the west of the town. The exceptional geological paintings by the Pre-Raphaelite artist, John Brett, exhibit the coastal scenery, such as that at Giltar Point to the south-west of the town.

### 5. Key issues that can be learnt from this site.

There are numerous artworks of Tenby, which illustrate the physical location of the town and its development patterns since the mid-nineteenth century. There is significant concern about the impacts of coastal change on beach levels along the whole of the south coast of Wales, and an improved understanding of long-term coastal change and its potential implications can be gained through examination of such historical images. They show quite precisely the extent and height of beaches long before any systematic monitoring of coastal conditions was introduced. The artworks will also be of particular interest to heritage and conservation organisations on account of the detail provided of some of the town's important buildings. Alterations to the original buildings that have since taken place can be compared and an understanding of how the town developed over time can be appreciated. Such information can inform conservation area planning and management for the future.

### 6. References

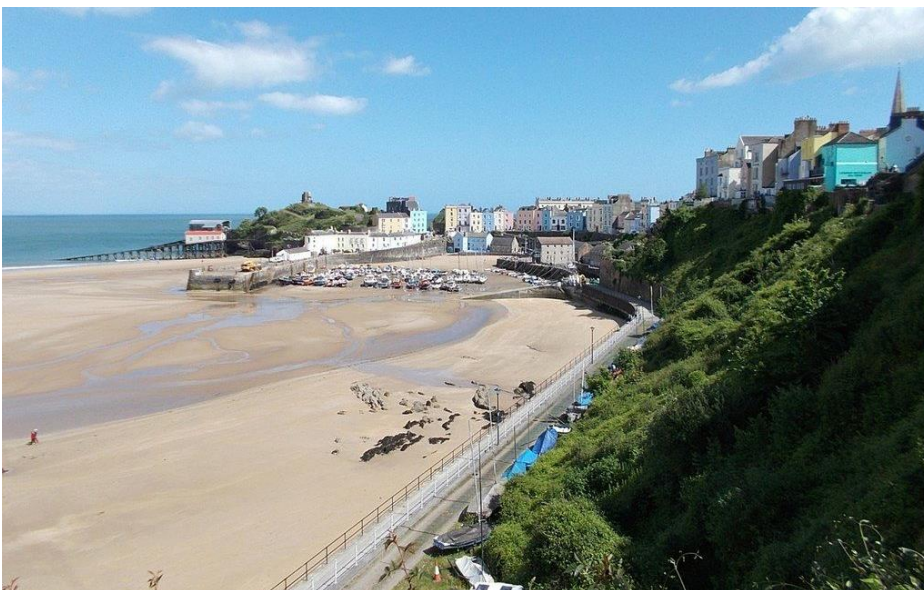
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2. Pye, K. & Blott, S. J., 2009. 'Coastal Processes and Shoreline Behaviour of Estuary Dominated Systems in Swansea Bay and Carmarthen Bay'. Report for Halcrow Group.



**Fig. CS7.2.1.-CS7.2.3.** show the development of Tenby from 1850 to the present day. By the time James Baker Pyne painted his watercolour (top) the town was already well-established with late Georgian style and Victorian villas lining the rugged clifftops. The large rock on the beach is just outside the view painted by A. R. Quinton in about 1920 (centre), but can be seen in Fig. CS7.2.4 and CS7.2.5. (overleaf). Quinton's watercolour provides a very precise depiction of the sandy and rock-strewn beach, looking westwards towards the harbour and the pier. The pastel shades of the villas and their architectural styles are also clearly delineated; these lie within the town's Conservation Area, which follows the line of the coast on its seaward side and contains many of the town's 370 Listed Buildings and Structures.

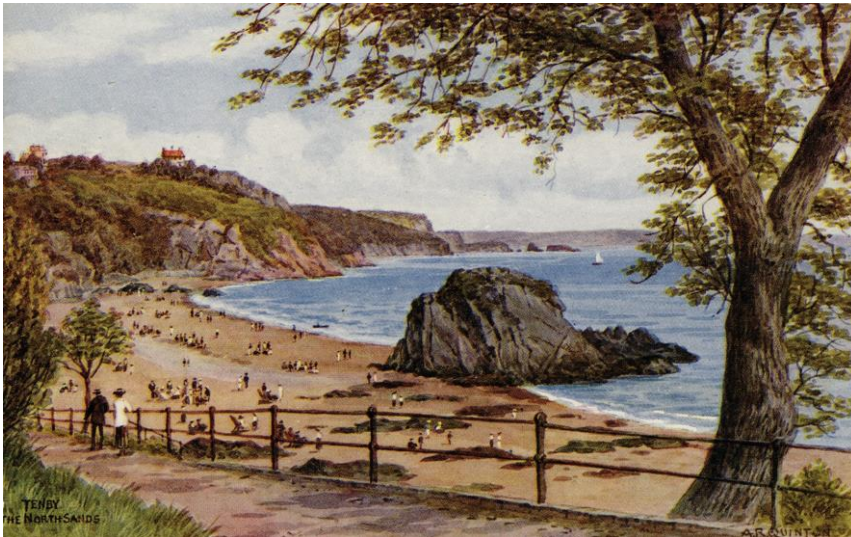


The present day view (**bottom**) shows the extensive beach at Low Water with many of the rocks shown in Quinton's view covered by sand; a refurbished seawall protects the base of the cliff. There are concerns that rising sea levels will 'squeeze' and lower the beach as waves reflect off the wall at the back of the bay.



Images courtesy of **Fig. CS7.2.1.** Newport Museum; **Fig. CS7.2.2.** Salmon's; **Fig. CS7.2.3.** © Anthony Dixon/Creative Commons Licence.

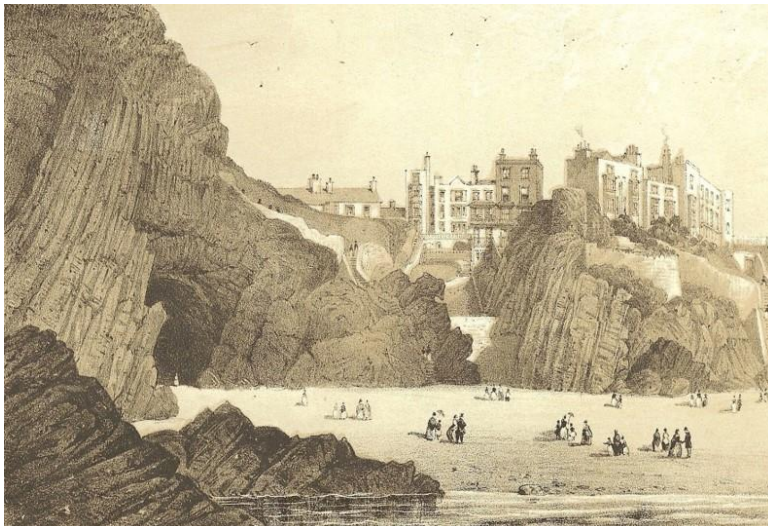




**Fig. CS7.2.4. (top) & CS7.2.5. (below right)** show views of Tenby's main beach looking east from the harbour (the opposite direction to Fig. CS7.2.1.-CS7.2.3.). Again, the nature of the beach as depicted by A. R. Quinton (left) can be compared with the present day view (below). Since the 1920s the cliffs have become more vegetated and beach levels appear to have risen considerably.



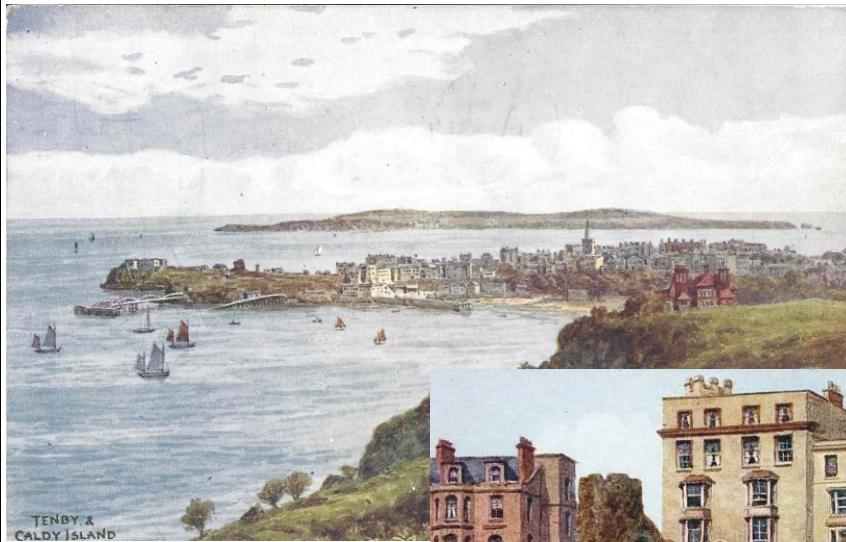
Fig. CS7.2.4. (top) courtesy of Salmon's.



**Fig. CS7.2.6. (left) & CS7.2.7. (below)** show mid-nineteenth century and present day views of Tenby South Beach. Although beach levels are subject to post-storm fluctuations overall change appears limited.







**Fig. CS7.2.8.-CS7.2.11. (below)** show a series of views of Tenby painted in the 1920s by the prolific coastal watercolourist, Alfred Robert Quinton. They provide very detailed depictions of the geology, beach conditions and heritage features that allow comparisons of changes affecting the town to be constructed in a very concise way.

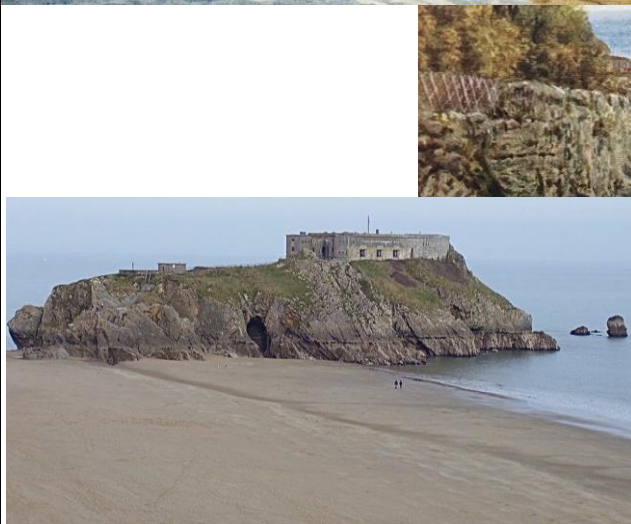
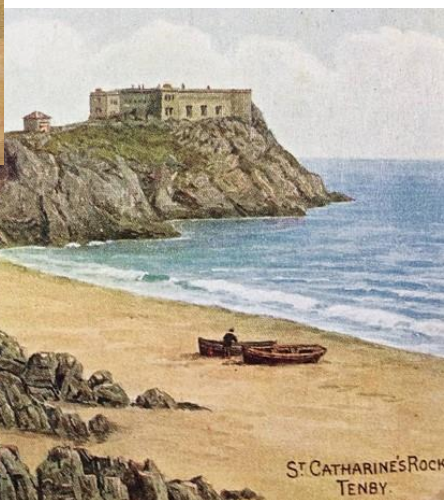
**Fig. CS7.2.8. (top)** Tenby and Caldy Island.

**Fig. CS7.2.9. (right)** Cliff top villas.

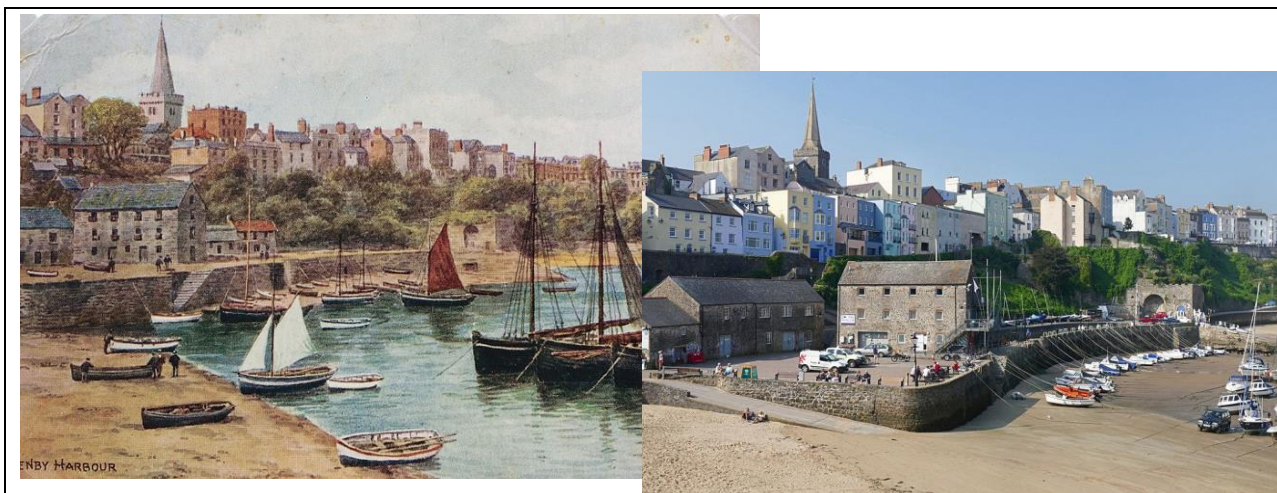
**Fig. CS7.2.10. (below)** Tenby South Sands

**Fig. CS7.2.11. (bottom right)** St Catherine's Rock.

**Fig. CS7.2.12. (bottom left)** Image courtesy © Welshbabe/Creative Commons Licence.







**Fig. CS7.2.13.** by A. R. Quinton shows Tenby Harbour in c.1920 and the elegant row of villas lining the cliff tops, which still exist today (**Fig. CS7.2.14. top right**). All the historic harbourside buildings still exist today.



**Fig. CS7.2.15. (middle)** shows the fine construction of Tenby's steel-arched pier which opened in 1899. The pier was demolished between 1946-1953 after falling into disrepair during World War II.

Watercolours such as this may provide the only record of such lost structures in full colour.

**Fig. CS7.2.16. (bottom)** shows a view of the town from The Burrows – the sand dunes, which lie to the west of the town, painted by A. R. Quinton, c.1920.

Watercolour drawings in particular often illustrate the natural environments of coastal zones and can provide valuable information on past habitats and species, which can inform us of how environments may have changed over time.

Images courtesy of Fig. CS7.2.13, CS7.2.15 & CS7.2.16 Salmon's; Fig. CS7.2.14 © Alan Hunt/Creative Commons Licence.







**Fig. CS7.2.17. (above)** is an oil painting by the Pre-Raphaelite artist, John Brett, who is well-known for his precise 'geological' pictures. Painted in 1879 and entitled '*Proud Giltar*' the view is taken from Lydstep near Tenby and looks towards Caldey Island in the distance.



**Fig. CS7.2.18. (left) & CS7.2.19. (below)** show present day views, the beach in the foreground now protected by rock armourstone.

The works by Brett and other artists who were Followers of the Pre-Raphaelite ethos of painting nature truthfully and accurately (such as E. W. Cooke RA) offer the opportunity to make not just qualitative but also quantitative assessments of cliff and beach change.

Images courtesy of Fig. CS7.2.17. Private Collection; Fig. CS7.2.19. © N. Chadwick/Creative Commons Licence.



## Case Study 7.3 – Barmouth to Cricceith, Wales

### 1. Location

The study site extends from Barmouth in the south, northwards past the harbour town of Porthmadog, and westwards to Cricceith, a distance of approximately 32km (20m).

### 2. Why was the Case Study Site selected?

The harbour towns of Barmouth and Porthmadog both lie at the mouths of estuaries, which have experienced coastal change over the last century. Together with the historic town of Cricceith this part of the Welsh coast was much visited by artists from the late eighteenth century and there is a good representation of artworks depicting the changes that have affected these locations over that time period.

### 3. Summary of the Geology, Geomorphology & Coastal Processes

This coastal frontage comprises the relatively mountainous coastline of Cardigan Bay between the two estuaries of the Mawddach in the south and Traith Bach at Porthmadog to the north, whilst Cricceith lies on the south side of the Llyn Peninsula, overlooking Tremadog Bay. The geology of this part of the North Wales coast comprises ancient rocks of the Cambrian and Ordovician Periods, which have been intruded by volcanic or divisional rocks. The whole of this part of the north-west Welsh coast was affected by glaciation and thick glacial deposits overlie the underlying hard geology at some locations. The study site coastline faces west and south over Cardigan Bay, facing the prevailing wind direction from the south-west. There is generally a weak littoral drift around this part of the coast, which is influenced by the two major estuaries and there tends to be drift towards the entrances of both of these at Porthmadog and Barmouth. Along the south coast of the Llyn Peninsula the drift tends to be weak in an easterly direction with coastal erosion restricted to the areas of weaker cliff and beach deposits. There is a general trend for accretion within the estuaries, although there has been some erosion of saltmarshes (Royal Haskoning, 2011<sup>1</sup>).

### 4. How can the art imagery resources inform us of changes that have affected this coastal zone?

Views of the coastal town of Barmouth date back to 1813 and show the evolution of the coast and the mouth of the Mawddach Estuary and siltation of the frontage over time. They illustrate the problems of wind-blown sand and sediment accretion, which have been described in a number of topographical accounts, an issue that still persists today. Fine drawings illustrate the Cob at Porthmadog, a thriving port in the nineteenth century. Here, significant accretion can be noted on both sides of the Cob since the mid-nineteenth century. The historic town of Cricceith was visited and painted by numerous artists on account of its castle located dramatically overlooking the shoreline. Precise watercolour drawings of the beaches at Cricceith by Alfred Robert Quinton in the 1920s illustrate the effectiveness of the coast protection structures installed at that time and allow comparisons to be made with the beach today. The artworks of this case study site do, therefore, provide a valuable record of coastal conditions since the early to mid-nineteenth century.

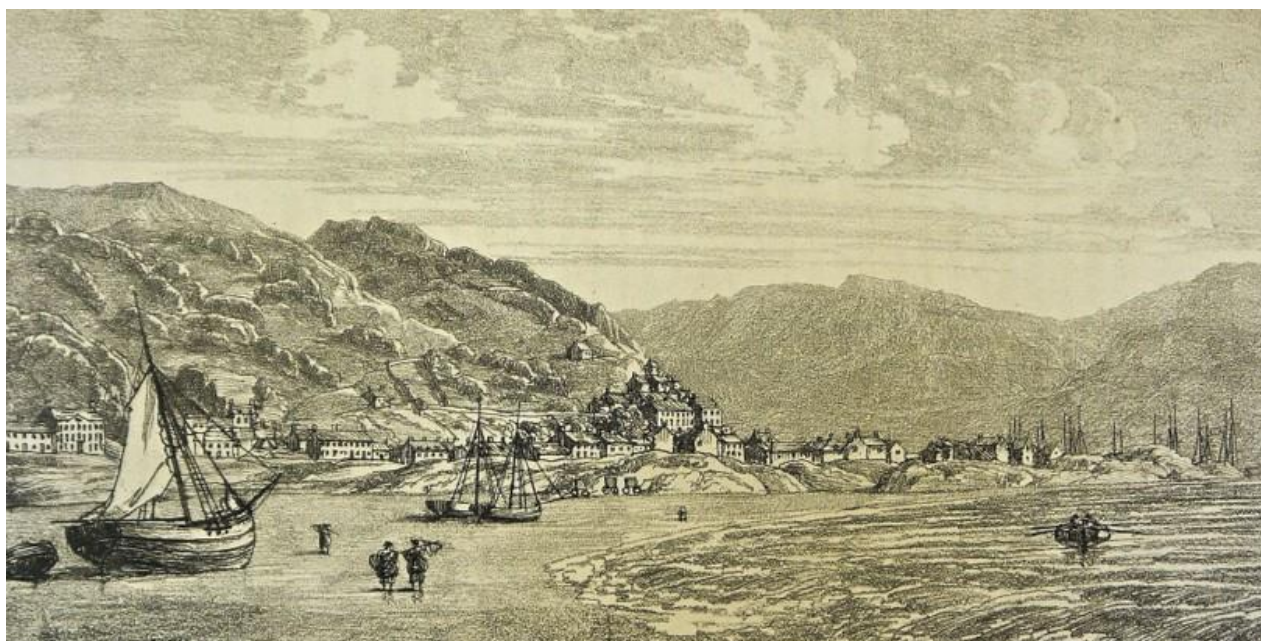
### 5. Key issues that can be learnt from this site.

Certain coastal frontages can benefit from a continuous succession of illustrations that illustrate the chronology of change over time; this case study provides a good example of the art resource. There are also detailed depictions of the coastal defences constructed, particularly since the early twentieth century. Designers who are undertaking replacement or refurbishment of coastal defences often wish to understand the nature of past constructions, for example whether to remove existing structures or perhaps encase them, and an understanding of the nature and extent of the original defences can inform the design and perhaps reduce the cost of expensive site investigations.

### 6. References

1. Royal Haskoning, 2011. *'West of Wales Shoreline Management Plan 2'*. Section 4. Coastal Area D.





The estuaries along the coast of Northern Cardigan Bay have been affected by change as this coastline evolves. **Fig. CS7.3.1. (top)** This view of Barmouth by J. G. Wood was drawn in 1813, whilst **Fig. CS7.3.2. (middle)** by C. F. Williams dates from 1849. The evolution of the coast at Barmouth and the mouth of the Mawddach is of interest and concern because of siltation of the North Channel and within the harbour itself. The chronology of coastal change is postulated in the Shoreline Management Plan. This sequence of images of Barmouth (see also overleaf) can support our understanding of changes that have taken place along this part of the Welsh coast.

Images courtesy of Fig. CS7.3.2.  
National Museum of Wales.

**Fig. CS7.3.3. (bottom)** shows the coast at Barmouth in c.1915 by A. R. Quinton and is one of numerous watercolours painted by this artist in the vicinity of the town.

Image courtesy of Salmon's.





**Fig. CS7.3.4. (above)** This fine detailed watercolour by David Cox (c.1840s) shows the extent of the growing town of Barmouth at that time.

Image courtesy of Christie's Images Limited © 2012.

The problem of wind-blown sand and sediment accretion was described by William Daniell and Richard Ayton on their tour of the Welsh coast (1815), an issue that still persists today. The current extent of the dunes and beach fronting the town is illustrated in **Fig. CS7.3.5. (below)**.







**Fig. CS7.3.6. (top)** This finely drawn view by C. F. Williams (1849) shows the Cob at Porthmadog, a thriving port for the export of slate located to the north of Barmouth. The causeway now carries the A487. In contrast to the view by Williams, the present day photographs show there has since been significant accretion on both sides of the Cob, with build-up of beach material on the seaward side (**Fig. CS7.3.7. middle**) and the development of saltmarsh on the inland side (**CS7.3.8. bottom**).



Fig. CS7.3.6. courtesy of the National Museum of Wales.







**Fig. CS7.3.9.** This detailed watercolour of Cricceith Castle, a popular subject, was painted by Thomas Collier in c.1850. It portrays the ruined castle, the nature of the shoreline and the cottages on the backshore, which had been replaced and the coastline re-developed by the time A. R.



Quinton painted the scene in c.1925 (**Fig. CS7.3.10 left**). Quinton's view shows an eroding cliff in the lee of the breakwater. Two properties were lost in the storm of 1927. The beach appears to have increased in extent in the present day view (**Fig. CS7.3.11. bottom**).



Images courtesy of Fig. CS7.3.9. Private Collection; Fig. CS7.3.10 Courtesy of Salmon's.





**Fig. CS7.3.12.** In this view of Cricceith by Quinton the breakwater in the foreground is encouraging the accretion of beach material below the Castle. This view illustrates the narrowing of the beach in the centre of the bay, which is still a feature today, and the role of the easternmost groyne in controlling the beach.



**Fig. CS7.3.13.** This watercolour of Cricceith's West Bay shows the seawall and groyne field in about 1920. The beach appears more extensive in the present day photograph (**bottom**).



Images courtesy of Fig. CS7.3.12. & CS7.3.13. Salmon's.



## Case Study 7.4 – Conwy to Great Orme, North Wales

### 1. Location

The study site comprises the coastal frontage extending from the historic town of Conwy, past the mouth of the River Conwy to the resort of Llandudno, and to Great Orme, a coastal frontage of approximately 8km (5m).

### 2. Why was the Case Study Site selected?

The study site was a particular attraction for artists on account of both the magnificent castle at Conwy and the fashionable resort of Llandudno in its dramatic setting, flanked by Great Orme Head. Artistic tours made in the late eighteenth century were undertaken by artists wishing to record the picturesque landscapes of this part of the Welsh coast, whilst, later, paintings and engravings of the resort of Llandudno found a ready market with wealthy visitors who took holidays in this grand resort. As a result, there is a rich art legacy for this particular frontage.

### 3. Summary of the Geology, Geomorphology & Coastal Processes

The geology of this part of the North Wales coast comprises rocks of the Silurian Period and at Great Orme early Carboniferous limestones and dolomite. The Great Orme Peninsula is up to 340 million years old and is remarkable for its coastal geomorphology including the limestone pavements that occupy several of its headlands. The coastline itself benefits from shelter provided by Anglesey and Puffin Island to the west, and the presence of the Great Orme gives rise to a north-easterly dominant wave climate at this location (Royal Haskoning, 2011<sup>1</sup>). There is a general sediment transport drift eastwards along the coast towards Conwy, with more significant accretions to be seen at Llandudno west shore, encouraged by coastal defence measures.

### 4. How can the art imagery resources inform us of changes that have affected this coastal zone?

The images being utilised for this case study illustrate three particular aspects of the coastal zone. First, they illustrate architectural heritage, such as Conwy Castle and the villa developments along the seafront at Llandudno; second, the extent and nature of the beach at Llandudno, and, finally, some views illustrating the environment of the Great Orme, which is a site recognised as being of particular scientific interest on account of its flora and fauna, all located within a Heritage Coast. The National Trust purchased farmland on the summit of Great Orme in 2015.

Some of the leading seaside resorts in Wales were illustrated using the lithographic printing technique in the 1840s and 1850s, and these provide particularly fine detail of the coastal topography, architecture and shoreline, which can be interrogated very effectively by those seeking information on change within coastal zones. In terms of architecture, historical imagery, such as the views of Conwy Castle, may illustrate the nature of construction and the history of alterations since the mid-eighteenth century, whilst the magnificent lithographs of Llandudno show the original layout of this prominent coastal resort, as well as depicting the relationship between seafront properties and the beach.

The early twentieth century artworks by Alfred Robert Quinton often illustrate Victorian piers, such as the Grade II pier at Llandudno, which opened in 1878. Many piers have been lost or altered over time, and these artworks may provide the only record of the original design and later alteration of these often ornate structures.

### 5. Key issues that can be learnt from this site.

The images selected for this case study illustrate the condition of heritage features, the shoreline and aspects of the natural environment between the late eighteenth century and 1920. The information provided is likely to be of interest to historians and heritage organisations, conservation area managers and coastal planners, as well as coastal engineers. The views of the Great Orme provide illustrations of the natural environment here in the 1920s. There are numerous such views of the Great Orme, which can provide additional information for the preparation of Areas of Outstanding Natural Beauty Plans, SSSI designations and for countryside management more widely.

## 6. References

1. Royal Haskoning, 2011. *'West of Wales Shoreline Management Plan 2, Section 4, Coastal Area F'*.
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3. Daniell, W. & Ayton, R., 1814-1825. *'A Voyage Round Great Britain'*. Longman & Co. London.



**Fig. CS7.4.1.** *'Great Orme's Head near Llandudno'* by T. Lindsay (1793-1861). A detailed watercolour of the natural landscape of this unique location.

Image courtesy of Derek Newman Fine Art.





**Fig. CS7.4.2. (top)** Between 1283-1500 the impressive Conwy Castle was constructed in a picturesque, strategic location overlooking Conwy Bay. The Castle was a favoured subject for many artists since the 1770s, including the leading watercolourist, Paul Sandby, who produced this very detailed view in that year (left).

The prolific watercolourist, A. R. Quinton, painted this view of the Castle in c.1920 (**Fig. CS7.4.3. middle**) which shows Thomas Telford's suspension bridge, which was built in the 1820s. The potential of such detailed images to inform the management of important heritage assets in coastal zones has been described elsewhere (McInnes, 2016<sup>2</sup>).



Such images of historic buildings, illustrated in full colour, have now been recognised as a valuable yet often under-used resource than can inform their management, as well as supporting Conservation Area planning.

**Fig. CS7.4.4. (bottom)** shows the Castle was painted by David Addey from near Llandudno Junction and Deganwy, a site chosen also by William Daniell some 180 years before (Daniell & Ayton, 1814-1825<sup>3</sup>).



Images courtesy of Fig. CS7.4.2. Guy Peppiatt Fine Art; Fig. CS7.4.3. Salmon's; Fig. CS7.4.4. David Addey.





**Fig. CS7.4.5. (above)** A mid-nineteenth century hand-coloured lithograph of Llandudno on the coast of North Wales. This detailed view provides a wealth of information about conditions in the expanding seaside resort at that time. The nature and form of the beach and coastal geology are carefully depicted, as are the extent of coastal developments, which form the impressive promenade. By this time printmakers were producing works of very high quality, which were purchased by visitors as souvenirs before the days of photography. A succession of such works over time can provide a chronology of physical, environmental and social change over the last one hundred and fifty years. **Fig. CS7.4.6.** The present day view is provided below. The lithograph also illustrates how the original town was confined almost entirely to areas that were not at risk of flooding. Natural beach levels appear to have declined, particularly at the northern end of the bay. A system of groynes now helps to control the beach.







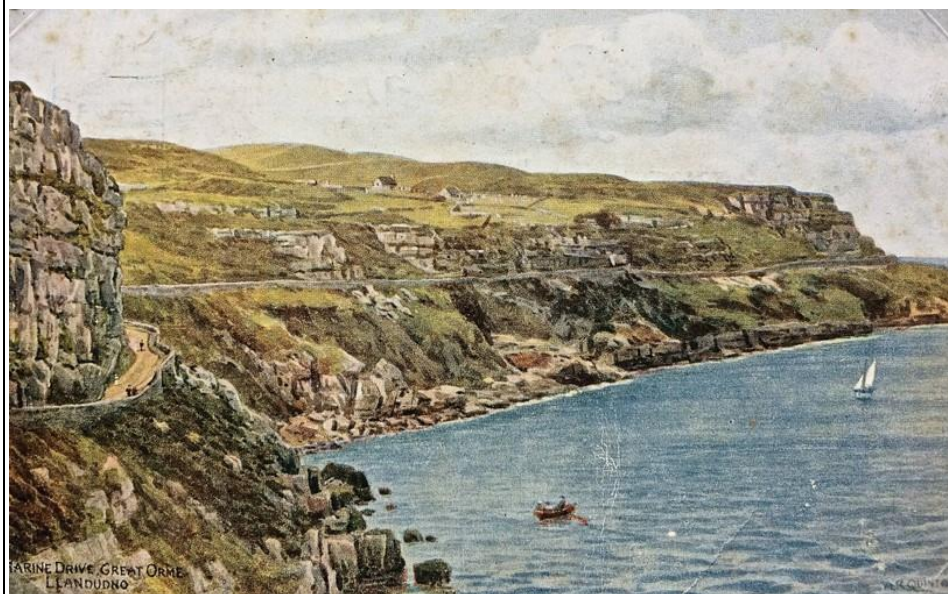
**Fig. CS7.4.7. (above)** is another very fine lithograph of Llandudno taken from the shore and looking north-west towards the Great Orme. The extensive beach provides an element of coastal protection together with the seawall behind, although no groynes are in place at this time (c.1850).

**Fig. CS7.4.8. (below)** was painted by A. R. Quinton from above the town, again looking towards Great Orme. By the time this view was painted (c.1925) the town had expanded significantly behind the elegant seafront hotels and villas shown in Fig. CS7.4.5.

Images courtesy of Salmon's.



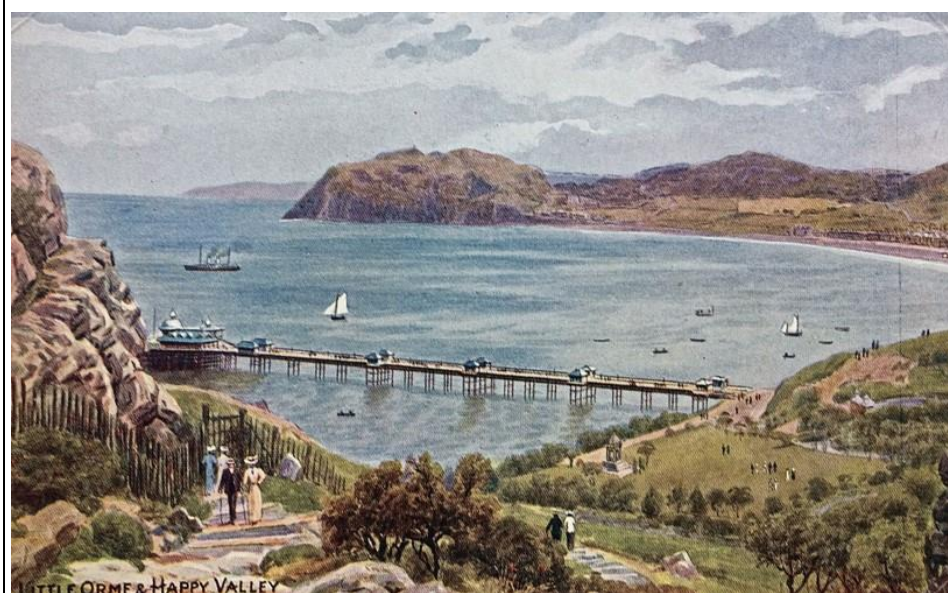




**Fig. CS7.4.9. (left) and CS7.4.10. (middle)** are two of at least seven watercolours of Great Orme painted by A. R. Quinton between 1900-1925. They show the nature of the undeveloped limestone headland, which reaches a height of 207m. Part of Great Orme is a nature reserve as well as a Site of Special Scientific Interest (SSSI); the coastline is designated as Heritage Coast. In 2015 the National Trust acquired Parc Farm on the summit where sustainable land management is practised.



There are numerous coastal views which give an insight to the nature of past environments, often depicting flowering plant, shrub and tree species, yet such imagery represents an under-used resource that could inform environmental management. Watercolour World project ([www.watercolourworld.org/](http://www.watercolourworld.org/)) will provide an online album that will include thousands of unseen or rarely seen views that could be used for such research and for land management.



**Fig. CS7.4.11. (bottom)** is a view of Llandudno Pier, the longest in Wales, that was opened in 1877. Many piers around the British coast have been lost or substantially altered over time and images such as this may provide the only record of their original form in full colour.

Images courtesy of Salmon's.