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United Nations
Educational, Scientific and
Cultural Organization



**Cornwall and West Devon
Mining Landscape**

inscribed on the World Heritage List in 2006

The sites and monuments which define the 'Cornish Mining' landscapes

The Serial World Heritage Site known as the Cornwall and West Devon Mining Landscape, or 'Cornish Mining', is an example of dispersed industrialisation. The ten Areas which together comprise the World Heritage Site are necessary to ensure that the geographical coverage and the overall size are sufficiently large to provide a complete representation of all the significant elements which express 'Outstanding Universal Value', i.e. international significance. The survival of such integrated, coherent cultural landscapes within Cornwall and west Devon is exceptional; it is testament to the culture which created them.

The sites and monuments (or 'attributes') identified below, together define the distinctive character of the 'Cornish Mining' landscape. Though the evidence of industrialisation is dispersed across a wide area, the attributes are not evenly spread. Although each Area possesses a different mix of attributes a holistic understanding of the 'Cornish Mining' landscape can only be gained through an appreciation of the sum of the Areas, rather than through any individual Area. Only by looking at the collective can the relationship between the attributes/Areas be appreciated, and an understanding of the 'Cornish Mining' landscape achieved.

The attributes themselves have satisfied the World Heritage Site nomination selection criteria, set out below.

Primary criteria

- A significant component of the Cornwall and west Devon mining landscape of the period 1700-1914.
- Survival and condition: sites that do not survive above ground will not normally be considered. Sites where below-ground remains are both demonstrably important and accessible may however be included.
- Authenticity of remains: structures or sites that have been largely or wholly reconstructed will not normally be eligible for inclusion.

Secondary criteria

- Rarity: if a site or component is rare either in terms of its type, or its survival, it will have a higher likelihood of being included.
- Documentation: if there is historical documentation that supports the connection with Cornish mining.
- Association: where a number of Cornish mining components survive within the same landscape, there is a higher likelihood that those sites and landscape will be included.

The Cornish Mining World Heritage Site is rich in the principal attributes that impart the singular character of the Cornish mining landscape. These attributes have been grouped under the following categories

Mine sites, including ore dressing sites

Mine transportation

Ancillary industries

Mining settlements and social infrastructure

Mineworkers' smallholdings

Great houses, estates and gardens

Mineralogical (and other related) sites of particular scientific importance

Mine sites, including ore dressing sites

The location of mineral resources and the natural topography are the principal factors that dictate the location of former mining and ore-processing (dressing) activities.

Mining (primary extraction)

The typical sub-vertical inclination of Cornish lodes limited output to what could be achieved by the drainage technology available at the time. (It was limited too by mining methods and ore-processing technology). Steam pumps were introduced in the early eighteenth century and this technology culminated in the development of the Cornish high-pressure steam-pumping engine in the nineteenth century. The engine houses that once contained these engines stand close to the principal shafts and are the distinctive outward visible manifestation of the industrial archaeology of steam power.

Ore dressing (processing) and its expression in the landscape

The surface structures associated with ore-dressing is the best indicator of the particular metal produced by a particular mine. Tin ore was initially crushed and concentrated at the mine. During the eighteenth century much of this was done by hand and water-powered stamps (crushers). From the early nineteenth century it became a mechanically-intensive process that required increasingly larger areas of land with a suitable gradient and a water supply (water and gravity separation methods give rise to 'stepped' structural remains). The product (black tin) was smelted locally until the twentieth century (the last Cornish smelter closed in 1931). Copper ores were commonly sorted and crushed by hand, though copper crushers became more widespread during the nineteenth century on larger mines. Huge tonnages were then sent for smelting - mostly by sea to south Wales. This led to the development of a massive infrastructure of railways and ports. Arsenic was refined either at the mine or in special refineries built in the arsenic-producing districts. The form of ore-processing determined the nature and extent of built structures. Innovation often led to new structures though these did not necessarily wholly replace earlier technological elements. For example, small-scale tin streaming coexisted with large-scale, capital-intensive, steam-powered tin mining and ore-processing (in fact secondary tin streaming, recovering the fine tin lost from the mills of the still operational mines, continued until late in the twentieth century). Nevertheless the period when they were in operation naturally had an impact upon the degree of their survival. The archaeology of late eighteenth and early-nineteenth century copper ore tramways, railways, canals and ports, together with the monumental archaeology of nineteenth- and early twentieth-century tin and arsenic processing has resulted in an outstanding integrated landscape.

Mine transportation

Transport infrastructure was a crucial component of the Cornish mining industry. The region is peninsular; nowhere within the World Heritage Site is much more than 20 kilometres from the sea. Proximity to the coast counterbalanced the industry's geographically peripheral position in the far south-west of Britain.

Supplies, such as coal and timber, had to be imported and minerals - particularly copper ore - had to be moved from the mines to the new purpose-built quays, harbours and ports. From here, fleets of schooners shipped the region's copper ore to the smelters in South Wales and brought back the coal needed to fire the mines' steam engines. Timber was brought in from Scandinavia and Canada.

A substantially intact group of late eighteenth and early nineteenth century industrial harbours survives on rivers, in estuaries and on the coastline within the World Heritage Site. During the eighteenth and early nineteenth centuries, a large network of mule tracks developed as a direct consequence of the growing import and export of coal and copper ore. These tracks were not built but simply brought into existence by the constant use of mule trains. They were engineered or metalled only where conditions were particularly difficult, such as along a cliff-side, across marshy terrain or down a steep slope to some creek-side quay.

There are also a number of pedestrian tracks between nearby settlements and the mines, and at surface level in the mines themselves (particularly the larger ones). Steep 'adit pathways' cut into the face of the cliffs are ubiquitous in coastal mining districts. Some tracks survive as recreational footpaths or as tarmac public roads. Many mule tracks were abandoned by the industry when they were replaced by higher-capacity mineral tramways, railways and (occasionally) canals. The aim was to capture as much trade as possible from the mines and to provide a link with the nearest port, though in each case the route was governed by topography and its length by economic limitations. Remains of this early nineteenth century development occur right across the World Heritage Site. They include extensive tramway and railway track beds and bridges. Two canals also survive in good condition, including their watercourses, towpaths for the horses, embankments, cuttings and in one case an exceptional tunnel and its associated air shafts.

Ancillary industries

The mines created a demand which led to the establishment of local ancillary industries. There were: smelters (tin, copper and silver-lead); foundries and engineering works (to make steam engines, rock drills and other mining equipment); gunpowder, explosives and fuse works (to manufacture safety fuse for blasting). Tin ore was smelted locally. An exceptional reverberatory tin smelting site (together with silver-lead smelters) survives within the World Heritage Site. Several other smelters survive outside it.

There are substantial remains of a number of foundries and engineering works within the World Heritage Site, all characterised by distinctive industrial architecture. This is an internationally significant group, symbolic of the importance of nineteenth century iron-founding, particularly in the creation of steam pumping engines and other mining equipment. A single well-preserved water-powered gunpowder works is included within the Site. All its important buildings survive and clearly demonstrate the manufacturing process. There are several fuse works within the Site, together with the partial remains of an explosives works.

Following the decline of Cornish mining, some of these ancillary industries continued to thrive in the export market. Their extended life (and sometimes adaptive re-use) has, in several cases, helped to preserve their original structures.

Mining settlements and social infrastructure

Large-scale industrial development in the mining industry created employment opportunities which led to rapid population growth and the consequent emergence of new settlement patterns. Housing was built to accommodate an entirely new industrial population. It was built within existing market towns and villages in the mining districts, as well as in the ports, and in other settlements where the ancillary industries were situated. But entirely new villages and towns were developed too. Urban expansion accounted for more than 2,500 hectares. A new type of industrial housing was introduced to the region - rows of terraces - and these stood alongside the institutes and other public buildings which reflected the new-found confidence and industrial prowess. A number of these industrial settlements - from towns to small villages - are included within the Site.

Methodist chapels were a conspicuous component of these developments. They remain a highly visible manifestation of nineteenth-century industrial society and both their character and distribution are often closely related to the development of mining in the region. The nineteenth century also saw the building of new Church of England churches in the mining areas, such as those at Charlestown and St Day. The magnificent architecture of Truro Cathedral, built at the end of the nineteenth and beginning of the twentieth century, relates very substantially to the prosperity derived from tin mining and to the benevolence of a prominent mineral lord.

Mineworkers' smallholdings

Small farms were developed in the mining districts on formerly unenclosed heathland during the eighteenth and early nineteenth centuries by mineworkers to sustain themselves and their families. More than 50,000 hectares were enclosed during this time with the smallholdings, usually no bigger than 3 to 5 acres (1 to 2 hectares), consisting principally of self-built cottages on holdings leased from the landowner, together with a pig-and-potato subsistence husbandry that brought a degree of self-sufficiency.

Some have subsequently been amalgamated into larger farms but the survival of large areas of small fields, with their associated hedge banks and scattered cottages, is a reminder of the historical and cultural significance of the smallholding within the mining landscape.

Great houses, estates and gardens

Great houses and estates were created and embellished by revenue from the mining industry. Good examples of these houses and parkland which once belonged to mineral lords, or to the industrial nouveau riche, still survive. There is also an internationally important group of gardens that were developed during the nineteenth and early twentieth century although most of them are outside the World Heritage Site. They were financed by industrial wealth. Several of the families involved with the mining industry became notable horticulturalists. Villas and architecturally-embellished town houses were built within the burgeoning towns of the region, indicating the increasing sophistication of this new entrepreneurial class.

Mineralogical (and other related) sites of particular scientific importance

Mineralogy, geology, and their practical application to the mining and mineral processing industries, were both studied extensively throughout the World Heritage Site. The development by deep mining of one of the world's most mineralogically diverse orefields resulted in numerous important discoveries from the mid-eighteenth century onwards. These inspired some of the earliest British geological and mineralogical literature, together with internationally important mineral collections, such as the Rashleigh Collection now in the Royal Cornwall Museum (Truro). They are notable manifestations of a crucial and formative contribution to science.

Key mineralogical sites include the discovery sites of new species, the sources of world-class specimens and important exposures. They are all important components of the mining districts included within the World Heritage Site. In addition there are sites of great ecological value which owe their existence to mining activity. They represent habitats for nationally and internationally important species.

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