

Nomination of the
BLAENAVON
INDUSTRIAL LANDSCAPE
for inclusion in the
WORLD HERITAGE LIST



**WORLD HERITAGE SITE
MANAGEMENT PLAN**

Management Plan

for the Nominated World Heritage Site of

BLAENAVON INDUSTRIAL LANDSCAPE

Version 1.2
October 1999

Prepared by

THE BLAENAVON PARTNERSHIP



Torfaen County Borough Council



Wales Tourist Board



CADW



Royal Commission on the Ancient & Historical Monuments of Wales



Blaenau Gwent County Borough Council



Monmouthshire County Council



British Waterways Board



Countryside Council for Wales



National Trust



Brecon Beacons National Park



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National Museums & Galleries of Wales



Welsh Development Agency



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We as representatives of the Blaenavon Partnership append our signatures as confirmation of our support for the Blaenavon Industrial Landscape Management Plan



8 OCTOBER 1999

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Preface

This Management Plan has been prepared for the Blaenavon Industrial Landscape, Wales, United Kingdom, which has been nominated for inscription on the World Heritage List, under the Convention Concerning the Protection of the World Cultural and Natural Heritage, adopted by the General Conference UNESCO in 1972.

The Blaenavon Industrial Landscape extends to 32.9 square kilometres, much of it is open mountain land. The major features are, the Blaenavon Ironworks (1789) the Big Pit Mine (1860) and the town of Blaenavon, present population 6,000. These are part of an extensive relict industrial landscape bearing witness to early mineral extraction, manufacture, transportation systems and the management of water resources.

The Plan has been prepared on behalf of the Blaenavon Partnership, a co-ordinated group of authorities and agencies established in August 1997 to enhance conservation of heritage and regeneration within the Blaenavon Industrial Landscape. The Partnership includes the Local Planning Authorities, several relevant Government agencies and the National Trust Wales. The Plan has been developed as a result of extensive research and consultation with public bodies, private owners and the local communities.

The Plan addresses the main issues affecting the conservation of the Blaenavon Industrial Landscape and identifies objectives for effective management of the area. The plan sets out proposals for the short and longer term. It has been prepared in accordance with the Management Guidelines for World Cultural Heritage Sites by Bernard M Feilden and Jukka Jokilehto (2nd edition 1998). As advised in these guidelines, the Plan is in loose leaf form and is subject to continuous review. Refinements and revisions may be made to the plan while UNESCO is considering the nomination and these will be forwarded immediately to the World Heritage Centre, UNESCO Paris.

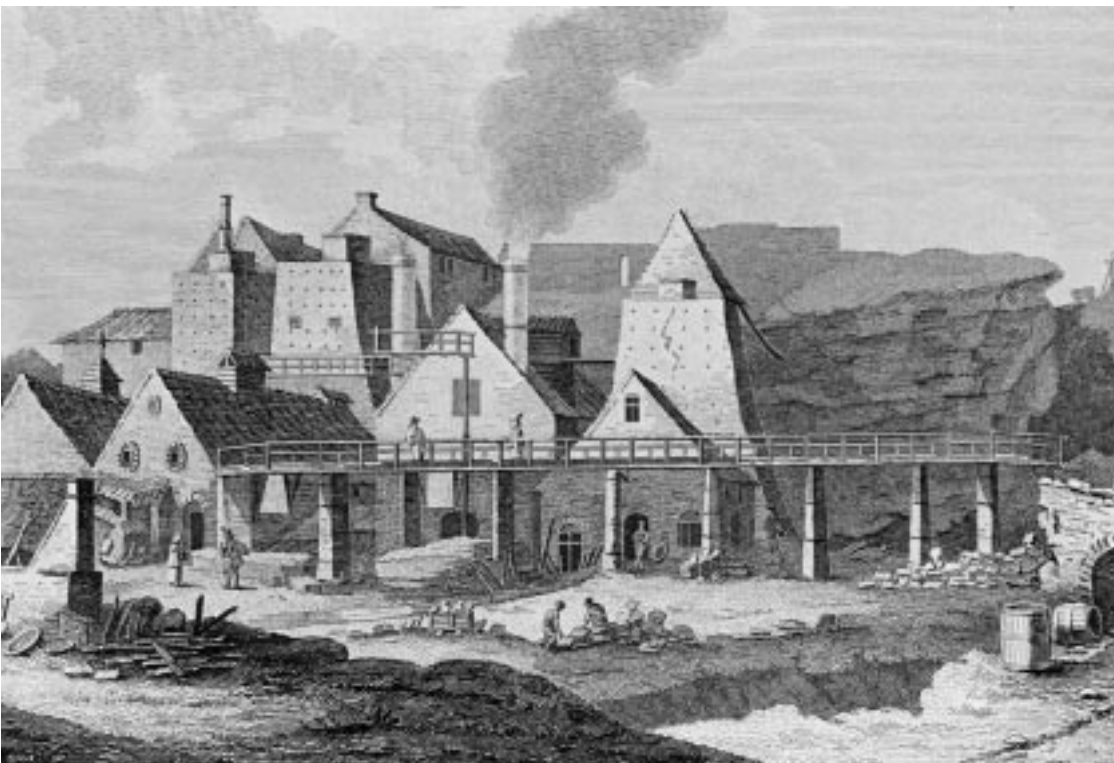
The Management Plan incorporates a variety of phased proposals and projects for the Blaenavon Partnership members to implement, and sets out how the various member bodies will contribute to the overall protection, conservation, repair, restoration and interpretation of the Blaenavon Industrial Landscape. It also shows how support funding will be sought from appropriate sources to augment Partnership funding. Each member organisation will approve and implement projects, using their own individual powers and resources within the integrated strategy approved by the Blaenavon Partnership.

"The Blaenavon Industrial Landscape presents a large number of individual monuments of outstanding value within the context of a rich and continuous relict landscape, powerfully evocative of the Industrial Revolution. It is one of the prime areas in the world where the full social, economic and technological process of industrialisation through iron and coal production can be studied and understood."

Extract from World Heritage Sites: The Tentative List of The United Kingdom of Great Britain and Northern Ireland. Published by the Department for Culture, Media and Sport June 1999.

"The prime aim of the Blaenavon Partnership is to protect and conserve this landscape so that future generations may understand the contribution South Wales made to the Industrial Revolution. By the presentation and promotion of the Blaenavon Industrial Landscape it is intended to increase cultural tourism and assist the economic regeneration of the area."

Extract from the Blaenavon Industrial Landscape: Nomination Document June 1999.



Blaenavon Ironworks in August 1798. The engraving was made from a drawing by Sir Richard Colt Hoare and appeared in Coxe's 'An Historical Tour of Monmouthshire', published in 1801.

©Cadw

Part 1
Introduction and Description
of the site



View from west, looking towards Blaenavon
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PART ONE: INTRODUCTION AND DESCRIPTION OF THE SITE

This part of the Management Plan is concerned with describing the nominated World Heritage Site and assessing its cultural significance in order to set the context for the evaluation of management issues in Part Two.

Section 1.1 provides a brief description of the landscape and its development; with maps to show the main features of the site. Section 1.2 offers statements of significance for the landscape; section 1.3 sets out the current context of ownership, management responsibilities and conservation status; and section 1.4 sets out the needs for, and aims of, the Management Plan.

1.1 Introduction to the Blaenavon Industrial Landscape

1.1.1 The Nominated World Heritage Site

The area around Blaenavon is one of the finest surviving examples in the world of a landscape created by coal mining and ironmaking in the late eighteenth and nineteenth centuries. The parallel development of these industries was one of the key dynamic forces of the world's first Industrial Revolution, and South Wales was among its leading centres. For over a century, the natural landscape of Blaenavon was changed and scarred by ironmaking, coal extraction, settlement and related activities as the entire area of the nominated World Heritage Site was turned to the demands of a single new industrial enterprise and the radical transformation of land and society which followed in its wake. There are two major preserved sites: Blaenavon Ironworks, which is a Scheduled Ancient Monument in state care, and Big Pit, an historic coal mine and museum in the care of the National Museums and Galleries of Wales. These sites are set in a relict or fossil landscape of inter-dependent mineral extraction, manufacturing, transport and settlement. The historic industrial town of Blaenavon also lies within the Nominated site. The total landscape includes a range of Scheduled Ancient Monuments of National Importance, many Listed Buildings of Special Architectural or Historic Interest and the Blaenavon and Cwmavon Conservation Areas. There are also four Sites of Special Scientific Interest, declared because of their ecological significance.

1.1.2 Location

The Blaenavon Industrial Landscape lies on the north eastern rim of the South Wales Coalfield in the United Kingdom 40 km north east of Cardiff, the capital city of Wales. The site takes its name from the town of Blaenavon, the main settlement within the heritage landscape. The central historical component of the site, Blaenavon Ironworks, lies at National Grid Reference SO 249 093 (Latitude 51(46' 35" and Longitude 3(5' 17"). The site falls within the boundaries of two Unitary Councils: Torfaen County Borough Council (1804 ha) and Monmouthshire County Council (1486 ha). 1458.5 ha within Monmouthshire also falls within the Brecon Beacons National Park.

1.1.3 Area

The site measures approximately 8 km from north to south and 6 km from east to west. Its area is 32.9 sq km. The site includes extensive areas of mountain land together with adjacent valleys

and lies between the altitudes of 70 m and 581 m. Geologically, the site lies at the north east corner of the South Wales Coalfield, and extends from the Coal Measures across the Carboniferous Limestone to the Old Red Sandstone. All of the essential raw materials for ironmaking were available within this geological sequence.

1.1.4 Boundaries

The boundaries of the site represent the full extent of the historic landscape associated with Blaenavon Ironworks. This is defined principally by the boundaries of land historically leased or purchased to provide the minerals, energy and infrastructure for the Ironworks, and by additional land used in direct association with the Ironworks or its communities. The boundary has been modified where appropriate to conform to identifiable landscape features or to exclude areas of land which have suffered loss of authentic features or were not utilised by the Ironworks. This fulfils the boundary criteria for a cultural landscape to be included on the World Heritage List, that its extent should be large enough to represent the totality of the cultural landscape that it illustrates. As this is a large landscape in which all main features can be viewed in context, no additional buffer zones are proposed. The leasehold and freehold boundaries of the Ironworks' properties are followed on the east of the site from Cwmavon to the Bloreng, with the addition of a narrow incursion at Carn-y-gorfydd. At the north-east the site extends to include the Brecknock and Abergavenny Canal, on which the Ironworks leased two wharves for the transportation of its goods, at Llanfoist and Govilon. The canal bank, and then the road from Govilon across Cwm Llanwenarth, form the northern boundary, rising to meet the northern extent of land leased by the company at Gilwern Hill. At the west the boundary continues southwards following the historic lease boundary then an access road to exclude Ryan's tip, which has been subject to recent re-working. From here, the boundary follows the track past the Whistle Inn which was traditionally regarded as the normal working limits of the Blaenavon enterprise. At the south-west, the boundary is the ridge-top of Coity Mountain, beyond which land leased by the company was not exploited for Blaenavon Ironworks.

1.1.5 Historical development

From at least 1675, and probably earlier, iron ore was extracted on the mountains of Blaenavon. The mineral rights over the common lands of the lordship of Abergavenny were exercised by the Hanbury family, ironmasters and tinsplate manufacturers of Pontypool, to supply their charcoal fired furnaces. However, the area was virtually unsettled and used only for small scale iron mining and grazing.

In 1788 Lord Abergavenny leased the common lands, 'Lord Abergavenny's Hills', to Thomas Hill, Thomas Hopkins and Benjamin Pratt. These three entrepreneurs saw the opportunity to build a major new ironworks at Blaenavon, putting into practice the latest technology and organisation of the Industrial Revolution in a new and resource-rich setting. By 1789 the Ironworks consisted of three blast furnaces utilising steam power. It was immediately the second largest ironworks in Wales and one of the largest in the world. From within the company's own mineral properties were drawn iron ores, fireclay, coal and limestone. By 1796 the furnaces were producing 5,400 tons of iron a year. Houses were built beside the company's ironworks, mines and quarries for key workers, and a dense network of primitive railways was created to carry raw materials to the works and products towards markets. Population grew rapidly through the migration of

workers from rural areas of Wales, from the industrial Midlands, Ireland, Scotland and rural England. A rapidly created industrial landscape grew up of iron ore patches, coal mines, limestone quarries, iron forges, brickworks, tramroads, watercourses, and workers' houses, all controlled by the Blaenavon iron company.

By 1812 there were five furnaces capable of making 14,000 tons of iron a year. New primitive railway connections were made with the Brecknock and Abergavenny Canal through the 2.4 km long Pwll-Du tunnel, the longest ever built on a horse drawn railway. The Garn-Ddyrys Forge to convert pig iron to wrought iron was built on the mountain north of Blaenavon in 1817. Adit mining for iron ore and coal developed on a larger scale, replacing surface scouring, and shaft mines were introduced, with sophisticated drainage, haulage and ventilation arrangements. New sources of limestone were explored and larger quarries opened. During the 1840s and 1850s the scattered housing of the workers and the works' school, church and chapels were complemented by the evolution, on land outside the company's ownership, of a town with a variety of urban functions.

In the 1860s, the Company brought into production a new steelworks across the valley at Forgeside, making the old ironworks increasingly redundant and protecting it from redevelopment. In 1878, Sidney Gilchrist Thomas and Percy Gilchrist invented at Blaenavon the 'Basic' or 'Thomas' process, which was of world-wide importance in permitting phosphoric iron ores to be used in bulk steelmaking. The scale of production expanded, with consequent growth throughout the mineral operations of the company, and the iron products of Blaenavon and the skills of its workforce continued to be exported throughout the world. Big Pit was sunk to serve the new works, and the new settlement of Forgeside was built by the company. Blaenavon parish had a population of 11,452 in 1891, which had grown from almost nothing since the Ironworks was constructed. The social development of the area had by now created a thriving urban culture with many chapels, schools, pubs, and tradesmen, and a Workmen's Hall and Institute was built in 1895 to provide social and educational facilities.

Relative decline of steelmaking from around the turn of the century permitted the growth of coal production for export. Demand for the high quality steam coals of South Wales continued to grow, and the industry reached a peak in 1913, at which time coal mining employed directly 250,000 people in Wales, or one in four of the adult male population. Big Pit was enlarged, and after the Nationalisation of the British coal industry in 1947 it was further expanded.

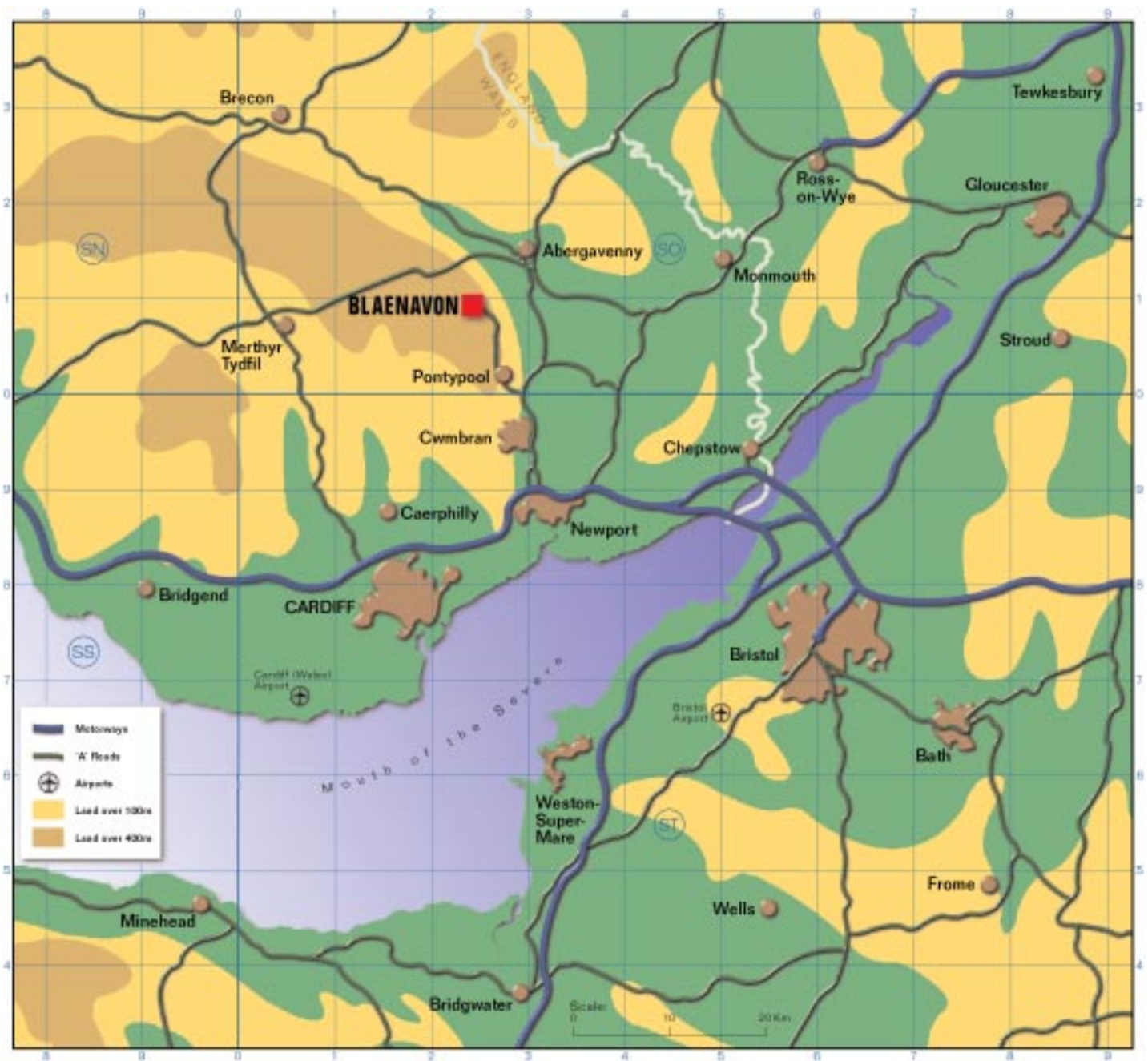
Nevertheless, employment in the area was falling, and the population has declined continuously since its peak in 1921 of 12,500. There are now 6,000 inhabitants. Steel production ceased in 1938, and Big Pit, the last substantial working colliery, closed in 1980.

Economic and social decline has meant that much of the fabric of the town is in need of investment, but the development of new industries, the opening of Big Pit as a Mining Museum in 1983 and the conservation of Blaenavon Ironworks have contributed to economic regeneration. The town and the surrounding landscape have survived little altered to represent the story of their past. The recently formed Blaenavon Partnership is implementing a Heritage and Regeneration Strategy which will both conserve the historic assets of the Blaenavon Industrial Landscape and contribute to its continued economic and social revival.

1.16 List of maps on the following pages

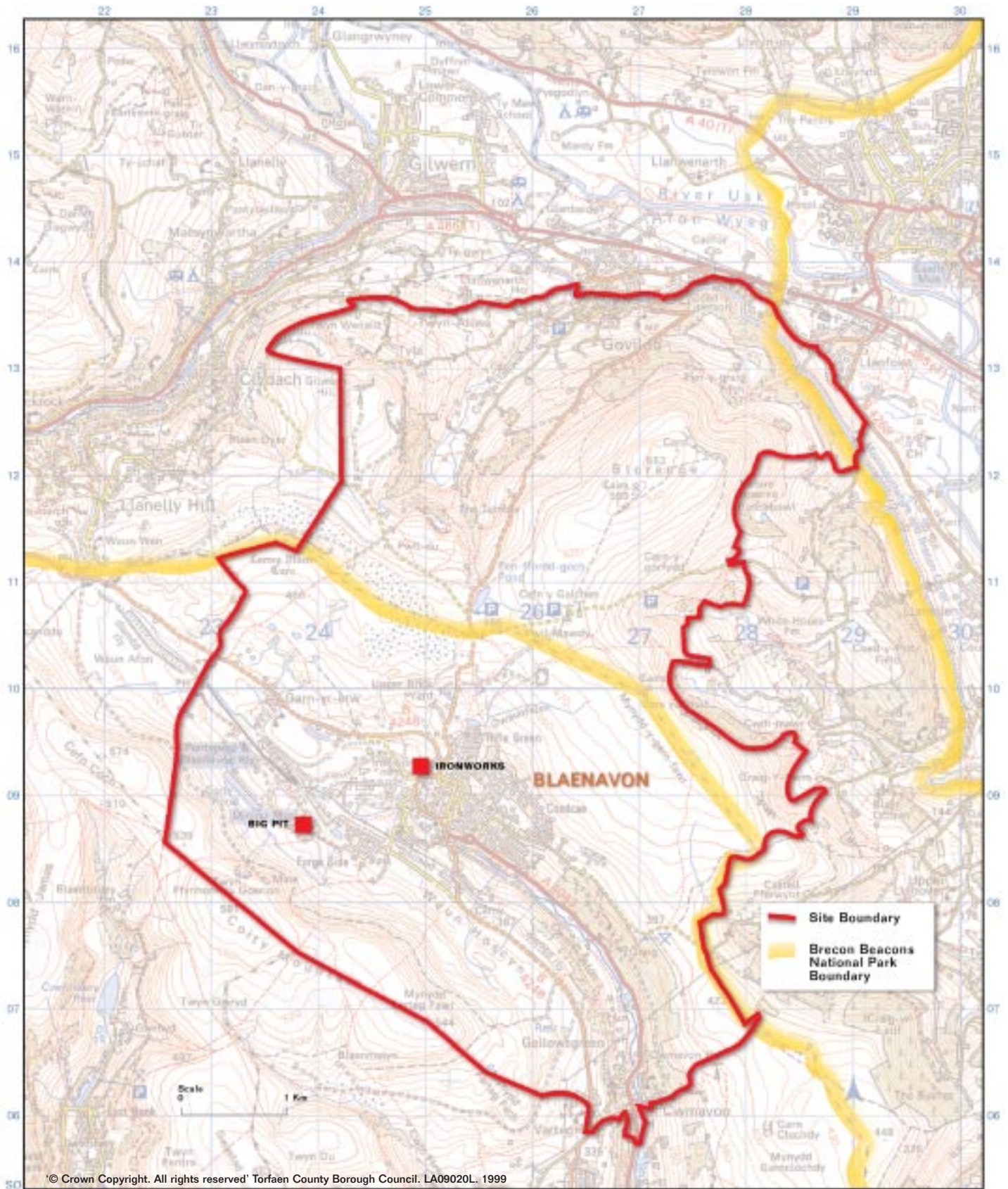
1. Regional setting
2. Proposed World Heritage Site boundary
3. Plan showing proposed World Heritage Site boundary in relation to historic land holdings of the Blaenavon Company
4. Locations of selected features of the Blaenavon Industrial Landscape
5. Scheduled Ancient Monuments of national importance
6. Conservation Areas and Listed Buildings of special architectural or historic interest
7. Sites of Special Scientific Interest (SSSI)
8. Major land ownerships the World Heritage Site
9. Common land the World Heritage Site

Blaenavon Industrial Landscape



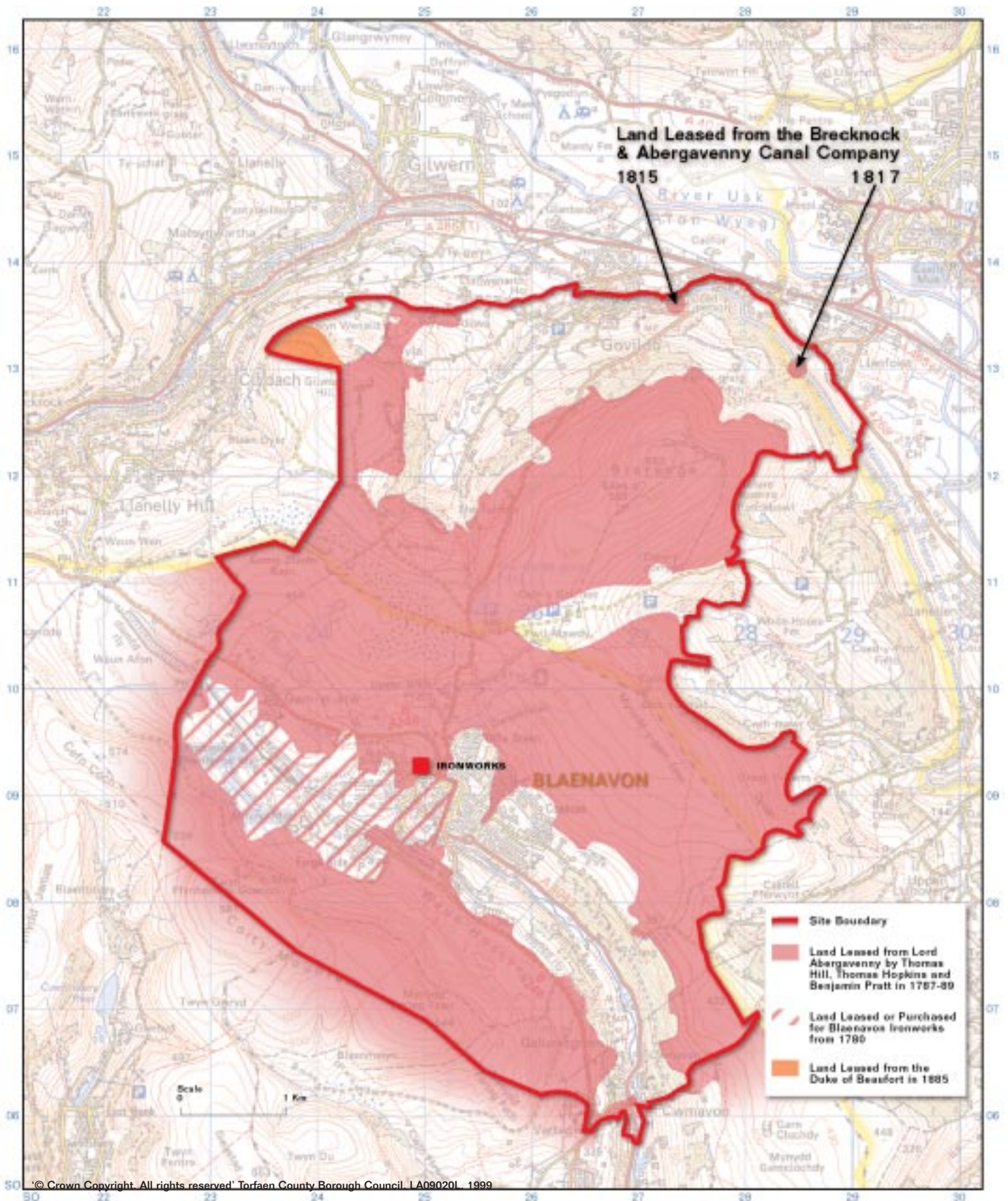
Blaenavon in regional context

Blaenavon Industrial Landscape



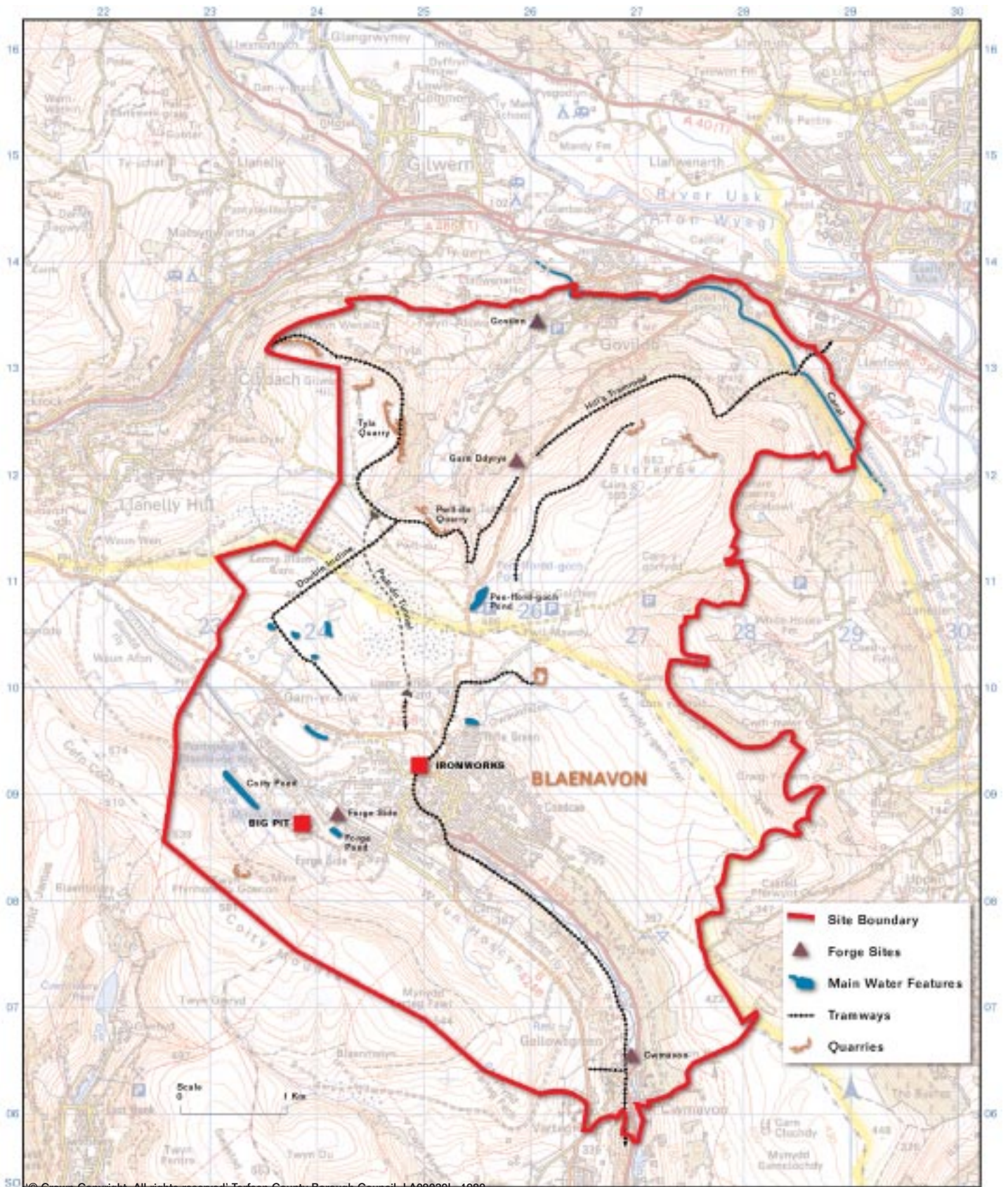
Proposed World Heritage Site Boundary

Blaenavon Industrial Landscape



Plan showing nominated site boundary in relation to the historic land holdings of the Blaenavon Company. The Ironworks is the focus of the Blaenavon Industrial Landscape

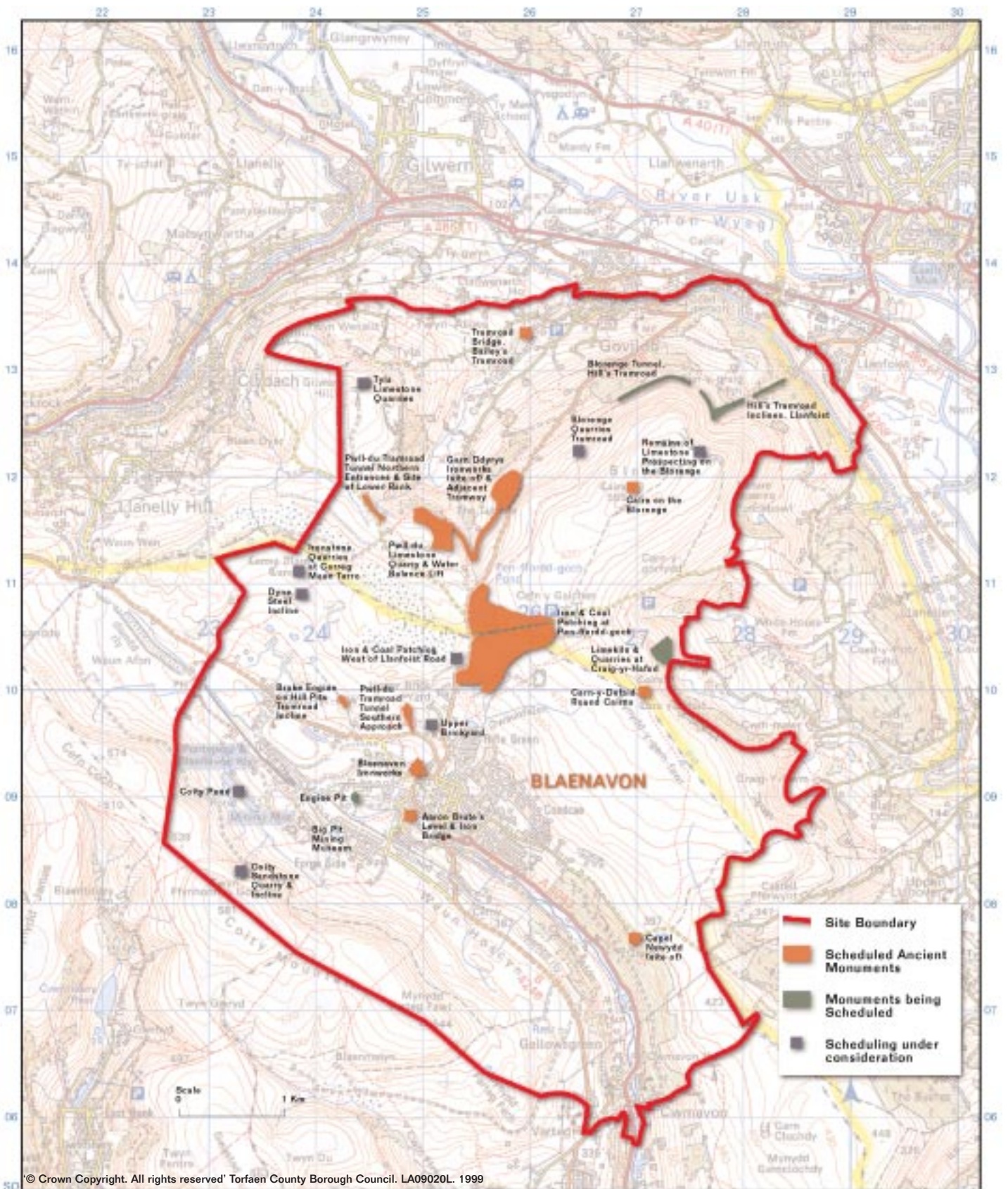
Blaenavon Industrial Landscape



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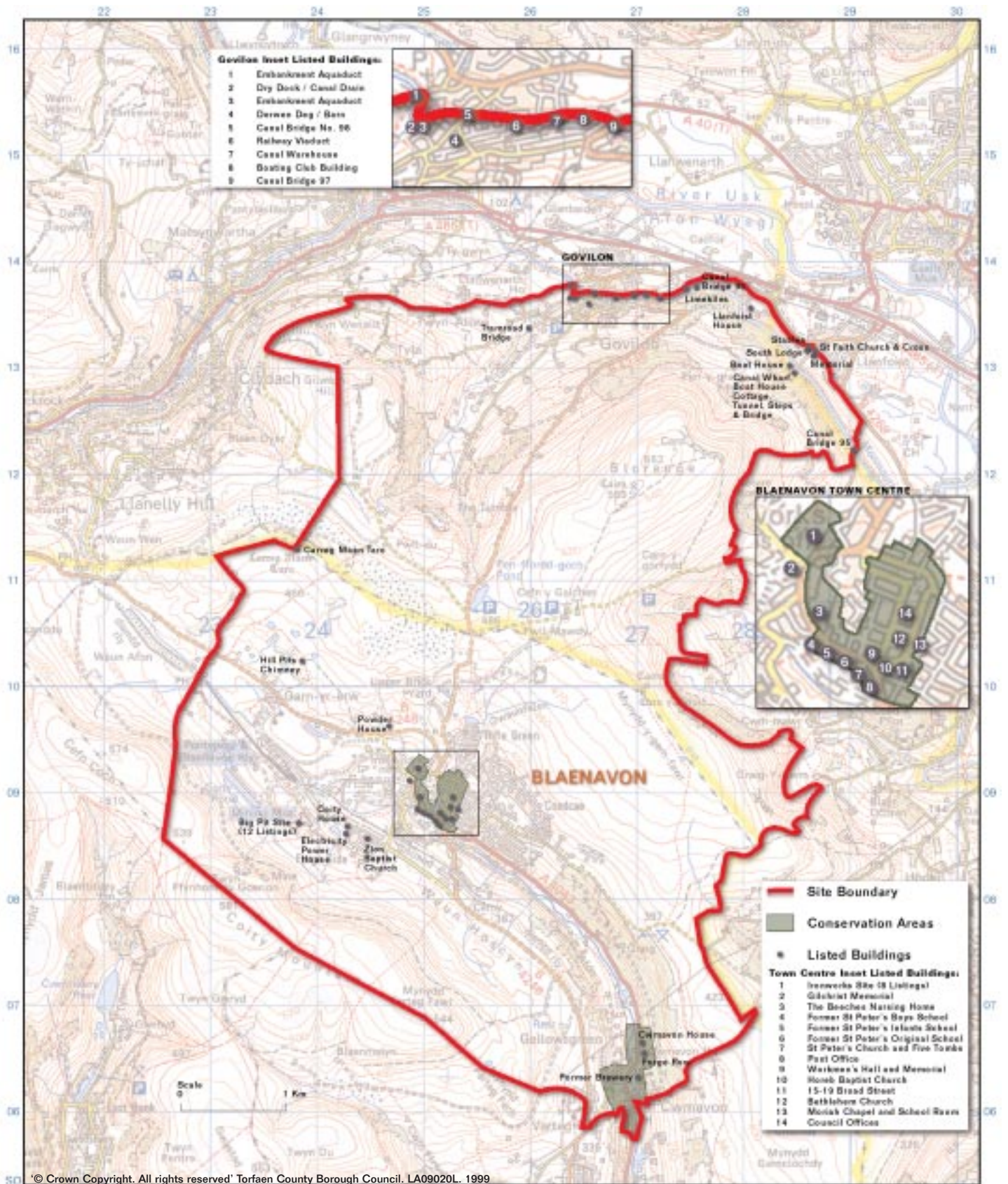
Locations of selected features of the Blaenavon Industrial landscape

Blaenavon Industrial Landscape



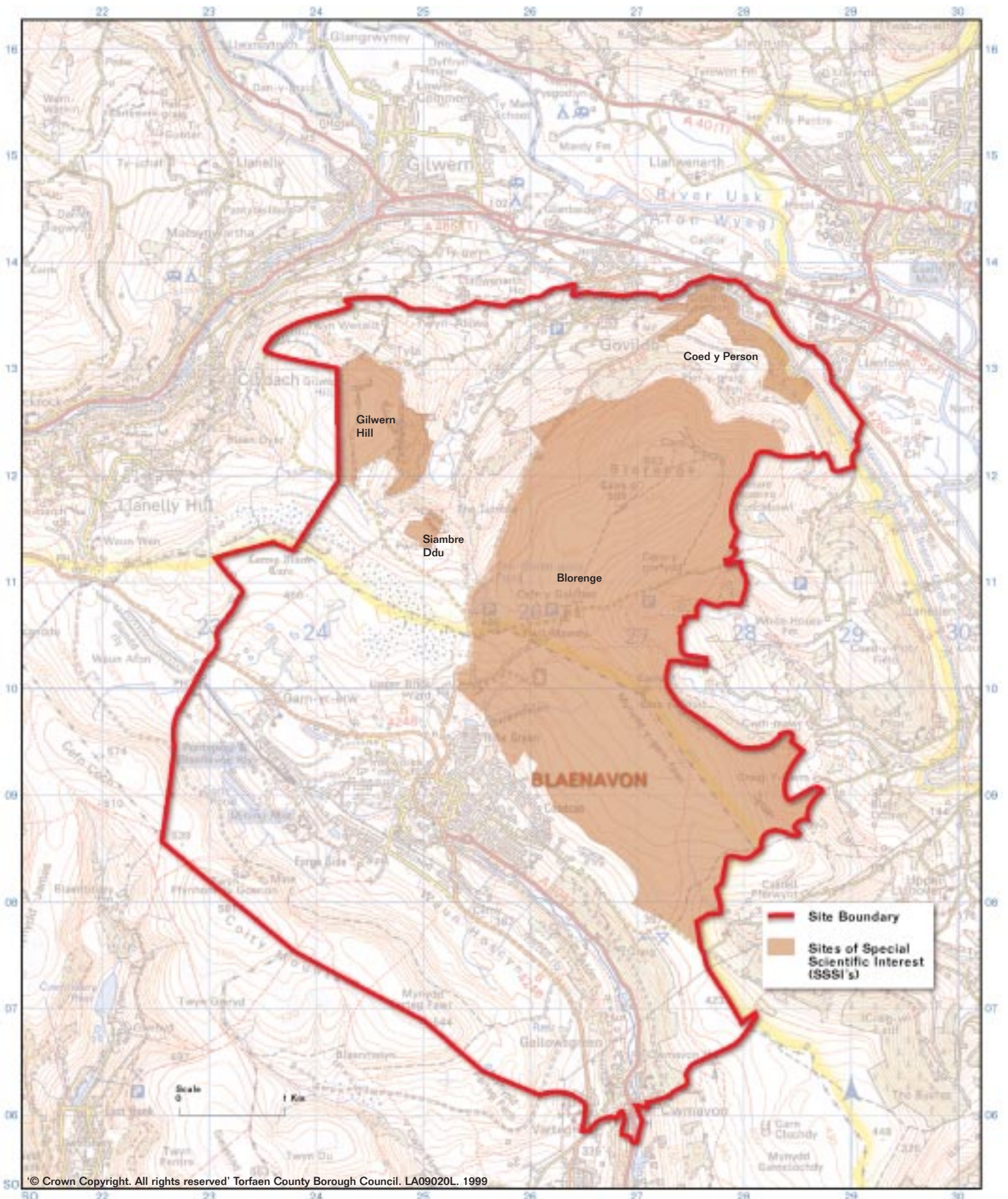
Scheduled Ancient Monuments of national importance within the nominated site

Blaenavon Industrial Landscape



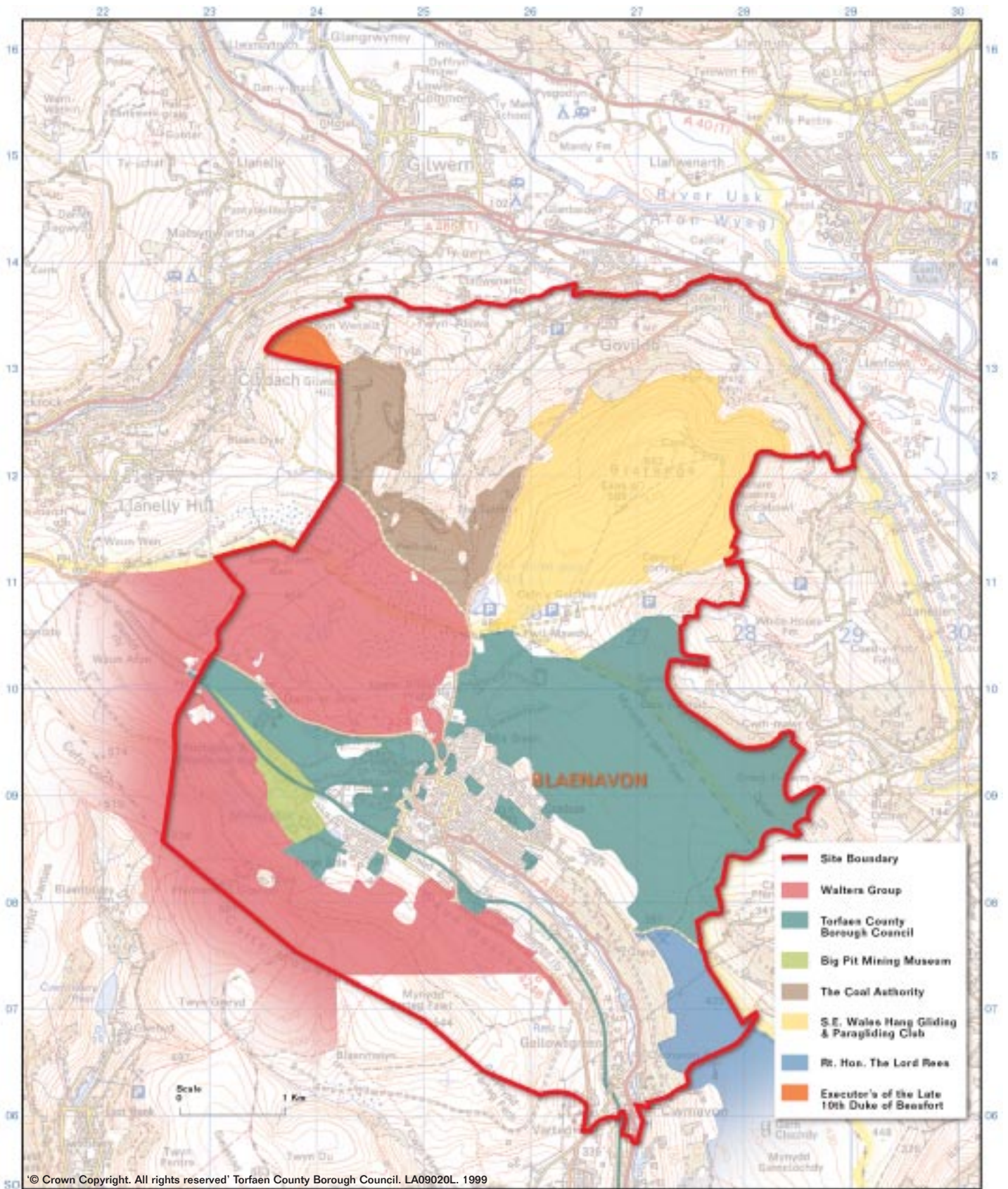
Conservation Areas and Listed Buildings of special architectural or historic interest within the nominated site

Blaenavon Industrial Landscape



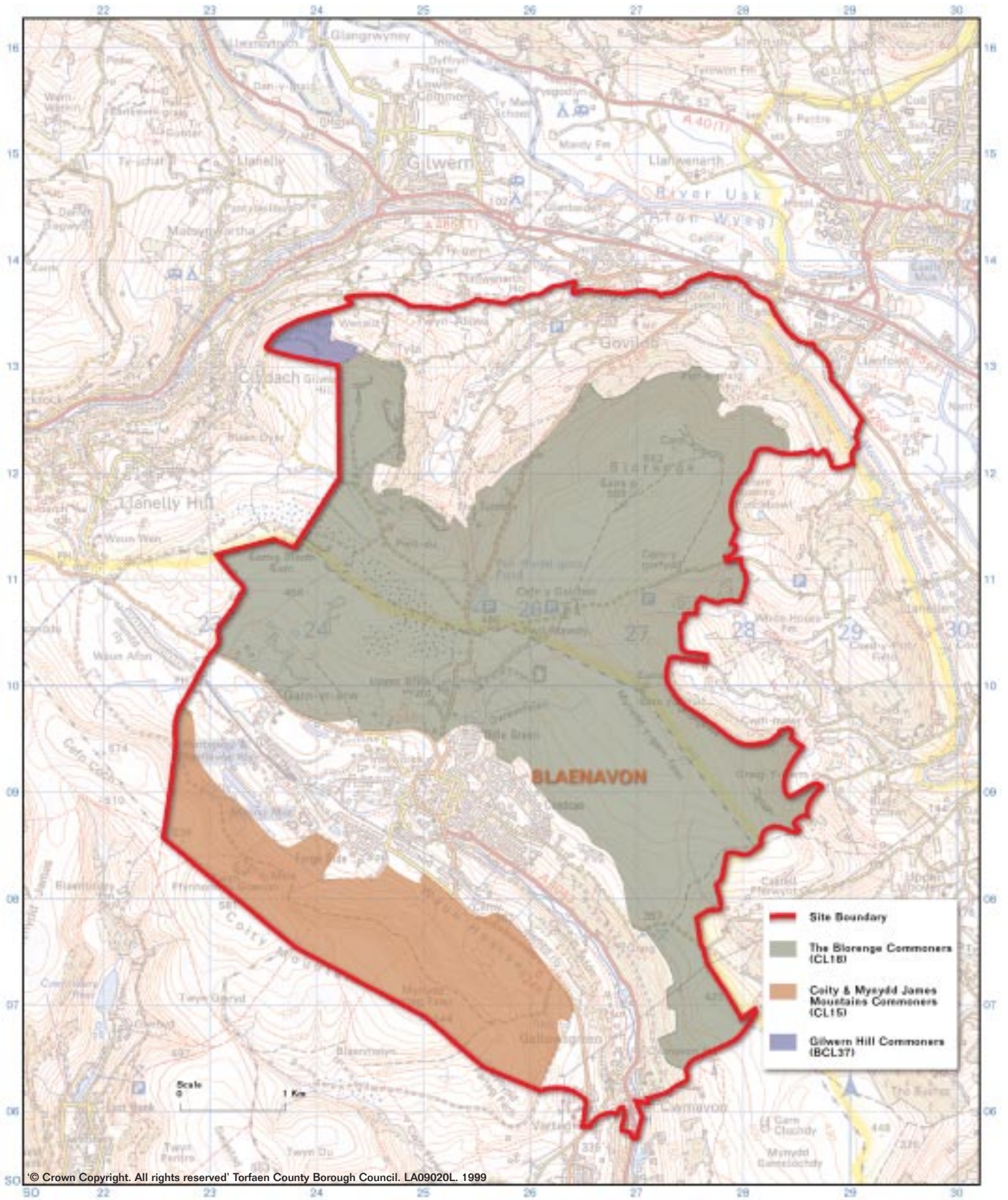
Sites of Special Scientific Interest (SSSI's) within the nominated site

Blaenavon Industrial Landscape



Major land ownership within the nominated site

Blaenavon Industrial Landscape



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Common land within the nominated site

1.2 The Significance of the Blaenavon Industrial Landscape

This section identifies the criteria of outstanding universal value under which the site has been nominated for World Heritage status and the attributes which make the Blaenavon Industrial Landscape of value to society today. These judgements underpin the whole Management Plan so as to ensure that the values that make the Blaenavon Industrial Landscape important are not diminished. Sites and monuments may be culturally significant at different levels, from international status to regional or local importance.

1.2.1 Assessment of Cultural Significance

Iron and Coal were characteristic materials of the Industrial Revolution, and the principal products of the South Wales Valleys, where many settlements came into being with the establishment of mines, ironworks, canals and railways in the eighteenth and nineteenth centuries. The collieries and ironworks of South Wales were for more than 150 years of prime international significance. Through the establishment of a series of carefully planned new ironworks in the late eighteenth and early nineteenth centuries, South Wales became the largest single iron producing region in Britain. The output of pig iron grew from 39,600 tons in 1796 to 666,000 tons in 1852. Iron from Welsh furnaces and forges was employed on railways and for countless other purposes in five continents, while Welsh coal was loaded on to steamships as fuel in numerous distant ports. Skilled migrants took their knowledge and expertise of mining and iron working technology all over the world, together with aspects of the distinctive culture which had evolved in the valleys.

The area around Blaenavon is one of the best examples in the world of a landscape created by coal mining and ironmaking in the late eighteenth century and the early nineteenth century. The parallel development of these industries was one of the principal dynamic forces of the Industrial Revolution. In the major preserved sites of Blaenavon Ironworks and Big Pit, together with the outstanding relict landscape of mineral exploitation, manufacturing, transport, and settlement which surrounds them, can be seen evidence of all the crucial elements of the industrialisation process. These include continued technological advance, the conversion from organic to mineral materials, sustained growth in output, increasing capitalisation of production, regional specialisation, urbanisation, and changing social relations.

The main focus of the area is Blaenavon Ironworks, a site in state care, where there are remains of a works with six blast furnaces in which, from 1789 until 1902, ore was smelted to produce pig iron. When the works was established, it was decided confidently to put into practice the latest technology and industrial organisation. Unlike almost all previous ironworks it was built with three blast furnaces from the start, operated with steam power. It was immediately one of the largest ironworks in the world. With its exceptional range of surviving structures, Blaenavon Ironworks is the best preserved blast furnace complex of its period and type in the world.

The entrepreneurs who established Blaenavon Ironworks in 1789 controlled and exploited an extensive landscape in order to provide the minerals, energy and infrastructure needed for a new ironmaking enterprise which would put into practice the latest methods of the Industrial Revolution. Within a short distance of the Ironworks can be seen evidence of the sources of all its raw materials. Big Pit, also in state care, is a coal mine sunk by the Blaenavon Company

about 1860 which operated until 1980. It is one of only two coal mines in Britain where it is possible for visitors to see authentic underground workings. On the hills north of Blaenavon, extensive evidence can be seen of the methods used to extract iron ore and coal during the first decades of the operation of the ironworks, together with the monumental quarry faces from which the owners of the ironworks obtained limestone. Linking the Ironworks, the ore workings, the quarries and wharves on the Brecknock and Abergavenny Canal is a network of daringly engineered primitive railways, constructed at a time of imaginative innovation in railway technology, which includes Pwll-Du tunnel (2400m long), completed about 1817, the longest railway tunnel built at that date. The area includes the sites of three forges, at Garn-Ddyrys, Cwmavon and Forgeside, at which pig iron from the Blaenavon works was converted to wrought iron. Blaenavon's principal contribution to ironworking technology came in the late 1870s when Percy Gilchrist and Sidney Gilchrist Thomas perfected there a process for making mild steel from pig iron smelted from phosphoric ores.

There was no extensive settlement in the area before the establishment of the Ironworks in 1789. In the town of Blaenavon, south of the Ironworks, there remain many buildings which are eloquent evidence of the area's industrial past. To be found are the homes of ironmasters and the working community, a church and a school built by the owners of the Ironworks, chapels founded by English-speaking and Welsh-speaking congregations, shops, public houses, and the impressive Workmen's Hall and Institute built in 1894, financed by a levy on the wages of miners and ironworkers. Blaenavon is no longer shrouded in smoke and illuminated by flames and molten metal, but its landscape continues to reflect the whole human experience of industrialisation - capitalist enterprise, philanthropy and exploitation, technological innovation, the drudgery of labour, the determination of workers to establish trades unions, political parties, religious congregations, choirs and sports clubs. Local people appreciate the importance of their history and are involved in its recording, protection and presentation.

Blaenavon's historic landscapes and features are extensively protected by statutory means and are actively conserved and interpreted. There is no better place in the world for understanding the social, economic and technological process of industrialisation.

Blaenavon's historical significance is demonstrated by the wide range of published studies of its industrial past (listed in the Bibliography), some written by local authors for local people, and some by distinguished academic scholars from Wales and elsewhere. The popular writer Alexander Cordell (1915-1997) drew inspiration from this area and its iron and coal communities. This socialist novelist, who wrote so passionately about the struggles of Welsh working families, was born into an English colonial family in Sri Lanka. His most famous novel *The Rape of the Fair Country* is set in the Blaenavon landscape and describes the life of an early nineteenth century iron making family during times of social upheaval which culminated in the Chartist uprising in 1839.

Blaenavon's archaeological heritage has received international recognition. In December 1994 it was one of 27 industrial archaeological sites recommended to the World Heritage Assembly by the experts on the Board of TICCIH (The International Committee for the Conservation of the Industrial Heritage), and the integrated industrial area and its canal warehouses have both been included on lists of sites of international importance drawn up by panels of experts on behalf of TICCIH and ICOMOS in order to make recommendations to the World Heritage Committee.

Blaenavon's importance is therefore widely recognised, by local people, by the statutory authorities in Wales, by writers of fiction, by historians and archaeologists, and by the international body that concerns itself with the industrial heritage.

1.2.2 World Heritage Values

In 1972 the United Nations Educational, Scientific and Cultural Organisation (UNESCO) adopted 'a special convention concerning the protection of the world cultural and natural heritage' in order to provide international support and protection for important sites. The Convention aims to protect heritage sites which are of such universal value that their conservation is of concern for all people. The United Kingdom is a strong supporter of its aims and the Government has an international obligation to protect and conserve the World Heritage values (see appendix). Under the Convention, sites are inscribed onto the World Heritage List, the highest standard of international recognition. Sites on the List are distinguished for the outstanding universal value. It is important that decisions related to the management of these sites must consider the objectives of the Convention as a priority.

1.2.3 Criteria for Nomination

Operational Guidelines for the Implementation of the World Heritage Convention paragraph 24 states that a site which is nominated for inclusion on the World Heritage List will be considered to be of outstanding universal value if it meets one or more of the six criteria set out. It is considered that the Blaenavon Industrial Landscape satisfies four of the criteria:

Criterion (ii): The site should exhibit an important interchange of human values, over a span of time or within a cultural area of the world on developments in architecture or technology, monumental arts, town planning or landscape design. The pattern of community at Blaenavon provides valuable evidence of the beginnings of a kind of human experience which can be seen in industrial regions in all five continents. The technology of the multi-furnace coke-fuelled ironworks, of steam-powered blowing engines, deep mines, and primitive railways, were among many developments put into practice at Blaenavon which became characteristic of the Industrial Revolution and were exchanged with regions in many parts of the world. Blaenavon was associated with the discovery in the 1870s by Percy Gilchrist and Sidney Gilchrist Thomas of the means of making mild steel from pig iron smelted from phosphoric ores, a technique subsequently adopted in many countries. The rapid growth of population at Blaenavon produced new settlement and land use patterns which contrasted sharply with the existing rural settlement structure and were characteristic of rapidly industrialised communities in many countries.

Criterion (iii): The site should bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or which has disappeared. Blaenavon is a monument to the working class culture which emerged from the Industrial Revolution in the South Wales valleys, and flourished in the later decades of the nineteenth century and early twentieth century. It has many points of contact with the culture of such industrial areas as the Ruhrgebiet, the coal fields of northern France or the cities of northern Italy, and mining and metalworking settlements throughout the world. The tensions between employer and employee, the Established Church and Dissent, the Welsh speaker and English speaker, can be observed in many features of the site. The wide extent and unusually complete survival of the landscape of work and society created at Blaenavon provide an exceptional testimony to early

industrialised culture.

Criterion (iv): The site should be an outstanding example of a type of building or architectural or technological ensemble or landscape which illustrates a significant stage(s) in human history.

Blaenavon illustrates with clarity the early formative stages of the Industrial Revolution with respect to the crucial developments which took place in ironmaking and coal mining in the late eighteenth and early nineteenth centuries. The value of technological monuments, like the blast furnaces, the lift tower and the coal mine (Big Pit) is vastly enhanced by the survival in the surrounding landscape of evidence of the exploitation of resources and the creation of an infrastructure for industrialisation which included transport systems, mineral extraction, and developing industrial and urban communities. All of the crucial elements of the Industrial Revolution can be observed, including continuing technological advance, the conversion from organic to mineral materials, sustained growth in output, increasing capitalisation of production, regional specialisation, urbanisation and changing social relations.

Criterion (v): The site should be an outstanding example of a traditional human settlement or land use which is representative of a culture (or cultures) especially when it has become vulnerable under the impact of irreversible change. The Blaenavon landscape was the product of the human creativity of many individuals, entrepreneurs, technologists, engineers and workers, over several generations. It is an outstanding example of characteristic forms of human settlement and the exploitation of mineral and energy resources associated with the coal and iron industries in the first phases of the Industrial Revolution. With de-industrialisation and new patterns of development, land use, and living standards in the twentieth century, similar landscapes elsewhere have proved both fragile and vulnerable to the pressures of land reclamation, redevelopment and decay. The high degree of survival of land use and settlement patterns at Blaenavon is now complemented by appropriate means taken to afford their protection and conservation for the future.

Blaenavon as a cultural landscape. *The Operational Guidelines for the Implementation of the World Heritage Convention* set out guidelines in paragraph 35 in respect of cultural landscapes. Blaenavon conforms to criteria laid down by UNESCO and ICOMOS for cultural landscapes. The Ironworks, in their bleak mountain setting, and their associated transport systems and settlements, certainly represent a *combined work of nature and man*. The development of the landscape historically was specifically in response to the geological conditions and resources available and the constraints of the isolated upland environment. The patterns of exploitation still visible provide exceptional evidence of *the evolution of human society and settlement over time, under the influence of the physical constraints and /or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal*. The landscape of Blaenavon falls into category (ii) of cultural landscapes: *organically evolved landscape* which result from an *initial social and economic imperative and have developed their present form by association with and in response to the natural environment*. It combines elements of both a *relict or fossil* landscape in which the evolutionary process of industrialisation came to an end leaving significant distinguishing features visible in material form, and a *continuing landscape* with significant evidence of its evolution over time.

1.2.4 Authenticity and Integrity

Blaenavon fulfils all the criteria for authenticity in relation to World Heritage Sites set out in the declaration of the conference organised by UNESCO, ICCROM and ICOMOS at Nara, Japan, in 1994. Its landscape represents powerfully a particular stage of human development, the large scale industrialisation of the late eighteenth century and the early nineteenth century, the human achievements and sufferings of that period, and the cultural values which were developed as communities evolved. The paper on 'Authenticity in the Industrial Heritage' at the Nara Conference argues that the essence of the industrial landscape is the co-existence within it of heroic and mundane structures, which is precisely what can be observed at Blaenavon.

The Blaenavon Industrial Landscape is a relict landscape in which exceptional evidence of past activities survives. All of the key components within the landscape benefit from statutory protection as Scheduled Ancient Monuments, Listed Buildings or Conservation Areas, and the whole of the area is protected by specific planning policies. Nearly half the site lies within the Brecon Beacons National Park. The two most important individual assets, Blaenavon Ironworks and Big Pit, have been actively conserved for more than two decades. Value has been placed on authenticity, and best practices of conservation have been followed. No reconstruction has been carried out except where necessary for the structural integrity of monuments and where appropriate conservation standards can be applied. None of the important features of the Blaenavon Industrial Landscape are replicas. As a living landscape, some areas have experienced new development and some buildings have been adapted for continued use. Thorough documentation of the features within the landscape, by aerial mapping, measured survey, photogrammetry, and written records, enables the condition of all aspects of the landscape to be monitored and informs conservation strategies.

1.2.5 Archaeological Values

The outstanding universal value of the archaeological monuments and relict landscape within the site has been set out above. The site has been extensively studied by archaeologists, landscape historians and others, and its archaeological potential has been clearly demonstrated. The development of a thorough database of monuments within the site as part of the Plan has identified the large number of features of importance which remain. Some 12 of these are Scheduled Ancient Monuments and others are under consideration for such designation. The archaeological integrity of the landscape is high, and disturbance of the archaeology is mainly restricted to a few areas of ongoing development. The archaeology of the site offers many opportunities to develop understanding and appreciation of the industrialisation process, past technology, living conditions, and the development of the industries of the region in a crucial historical period. The importance of the interrelations of the many components of the site into an archaeological palimpsest is recognised in its inclusion on the Register of Landscapes of Outstanding Historic Interest in Wales, published by the Cadw, the Countryside Council for Wales and ICOMOS UK.

1.2.6 Historical and Cultural Values

The outstanding universal value of the site in illustrating the early stages of the process of industrialisation and the development of industrial culture has been set out in the criteria above. The site is looked to as an important surviving landscape representative of these processes and

of the exchange of human values connected with industrialisation. Historical research has been undertaken which has drawn upon the documentary and physical remains of the site as primary sources for subjects such as technological and organisational development, living conditions, social history and the development of industrial culture. Monuments such as the Working Men's Hall and Institute, the housing at Stack Square, and the urban layout of Blaenavon have considerable cultural value in their own right, and are of continuing cultural relevance, while the broader landscape demonstrates important aspects of cultural relations and attitudes towards the environment.

1.2.7 Aesthetic and Visual Value

The visual conjunction of agrarian countryside, townscapes and areas of mineral exploitation at Blaenavon is a rare and important resource. In particular, unrestored areas of historic mining and quarrying are becoming rare, and they are increasingly being seen as having striking aesthetic qualities. The landscape has been an inspiration to many artists, from Sir Richard Colt Hoare in the eighteenth century to international modern artists such as Graham Sutherland and several contemporary Welsh painters who have found the disturbed character of the land around Blaenavon to be an evocative and formally stimulating subject. The aesthetic value of functional architecture has been increasingly appreciated since the 1950s, and structures such as the Ironworks Balance Tower and the Big Pit headgear are seen as important symbols of industrial achievement. The public and domestic buildings within the townscapes are also increasingly seen as providing a visual resource for understanding the development of industrial communities. The site contains 82 Listed Buildings and two Conservation Areas.

1.2.8 Ecological and Nature Conservation Values

The importance of the site in ecological terms has been recognised by the designation within the area of four Sites of Special Scientific Interest. The Countryside Council for Wales considers the entire area of open moor within the area to be of considerable conservation interest. The area contains a diverse flora and fauna owing to its great variety of habitats, from dense deciduous woodland to moorland, areas of open water and mines, caves and quarries. There is special interest in the ecological regeneration of the landscape which has continued to take place following the exploitation and despoliation of the past, for which the site offers unique resources.

1.2.9 Amenity Values

The area is perceived as having considerable amenity value, containing open countryside and designated common within reach of many urban settlements, including Blaenavon itself, and lying on the edge of the Brecon Beacons National Park. Access throughout a large proportion of the relict landscape is provided by public rights of way. The Brecknock and Abergavenny Canal is well used for boating and walking, and the upland areas of the site are regularly used by walkers, cavers, hanggliders, cyclists and others. While the area is not as fully used as some other parts of the National Park, it is anticipated that use of the area for informal recreation will continue to grow. The town and surrounding countryside contain a number of cafes, shops and public houses which also comprise amenity value.

1.2.10 Local Community Values

The Blaenavon Industrial Landscape is a working landscape containing living communities. Blaenavon itself retain a strong community committed to the town despite the economic decline of recent decades, and outlying areas such as Llanfoist, Cwmavon and Govilon contain many people strongly motivated towards the maintenance of their communities. The symbiosis of these communities with the historic environment and open countryside is one of their most attractive qualities. Understanding and responsiveness to the interests and wishes of local communities, who are among the chief custodians of the heritage resource, are important aspects of the Management Plan.

1.2.11 Agricultural Values

The majority of the site is in agricultural use for grazing, mainly of sheep with some horses and cattle. The value of enclosed land in the valleys is relatively high, while the potential of the common land which comprises most of the upland within the site is relatively low. The interests of the private landowners and commoners in maintaining reasonable grazing must be accommodated within the Management Plan.

1.2.12 Mineral Values

There is deemed to be an economic value for residual coal recovery in some parts of the site, although there are no proposals for new mining within the site, and it is highly improbable that open cast coal extraction would be permitted given the competing environmental interests and the designations and planning policies affecting the site. One existing drift mine is still operating within the site, and is able to continue without damage of any kind to archaeological or historic features.

1.2.13 Tourism Values

Tourism is recognised as an important factor in the local economy and the value of expansion of tourism in future needs to be considered within the Plan. The main tourist attraction within the site is Big Pit, which has around 100,000 visitors a year. Lesser numbers of visitors enjoy the town, the Ironworks and the Brecknock and Abergavenny Canal. It is anticipated that visitor numbers will increase in future and that the tourism value of the site will be enhanced. This contributes directly to the local economy, and is an important force for enhancing general perceptions of the area.

1.2.14 Research and Educational Values

The unique nature of the educational and research resources of the site encompasses many subjects: including ecology, geology, history, archaeology, geography, architecture, technology and landscape management. The educational importance of the area is reflected in its regular use by educational groups from primary and secondary schools and further and higher education institutions, both locally based and using nearby field studies centres. Many educational visits are made each year to the preserved and interpreted sites of Big Pit and Blaenavon Ironworks, and a number of institutions regularly undertake field studies exercises within the area. The site offers considerable potential for primary research, and significant studies at doctoral or post doctoral level have been undertaken in recent years of subjects as

diverse as soil erosion on tips, vegetation successions, the technology of primitive railways, and the development of the historic landscape. Given the cultural importance and unique resources of the Blaenavon Industrial Landscape, it offers the potential for further advanced study which will contribute to international academic debates.

1.3 Current Interests and Management Context

1.3.1 Interests and Ownerships

The Blaenavon Industrial Landscape extends to 3,290 hectares within the nominated site boundary. Due to the nature of the site the ownerships are numerous and diverse in size and character. There is a plethora of interests within the town of Blaenavon, in contrast with the large areas of open land in a few ownerships in the relict industrial landscape. As well as owners, there are significant other users of the buildings and the open landscape, notably Commoners, whose interests have to be considered. The owners of all the key areas and buildings within the site have been identified and discussions have taken place with them. Positive progress has been made in the context of the Management Plan to ensure agreement on the principle of effective protection, conservation, and increased public access to the site. Many of the key assets are held safely within responsible public ownership and managed in the interests of conservation.

Blaenavon Ironworks extends to 1.75 hectares. Cadw, on behalf of the Secretary of State for Wales, is the owner and guardian of this site with statutory responsibility for care and maintenance under the provisions of the Ancient Monuments and Archaeological Areas Act 1979.

The Big Pit site extends to 22 hectares plus railway sidings of 5.6 hectares. The site is owned by a charitable trust. It is proposed that the site will be taken over by the National Museums & Galleries of Wales who have responsibilities for care and maintenance of cultural features and the encouragement of public access and education under the provisions of their Royal Charter.

The town of Blaenavon contains hundreds of separate owners and tenants of residential, commercial and other properties, including churches and chapels. Several key Listed Buildings such as the Workmen's Hall and Institute, St Peter's School and the former Town Council Offices are in the ownership of Torfaen County Borough Council.

The Relict Landscape is an open area of former mineral workings in the ownership of a few parties. Much of the nominated site is 'urban common', which means the area is unfenced and used by the Commoners for grazing sheep. The common land is also available to the public with free rights of access on foot for air and exercise. Substantial parts of the open landscape are already owned by local authorities. The Partnership has received confirmation from Walters Group, South Wales, the owner of the largest areas of mineral landscape, that the Company will not seek to extract coal from within the nominated site boundary. The Walters Group is willing to co-operate in the protection of the relict industrial landscape and in increasing public access to the area.

The Brecknock & Abergavenny Canal is in the ownership of British Waterways, a public body responsible for the conservation and management of the waterways network.

1.3.2 Management Responsibility

There are a number of local authorities and Government agencies with management responsibilities for, or interests in, the nominated site. In order that a co-ordinated approach to management of the heritage resource could be achieved the Blaenavon Partnership was established in August 1997. The Partnership has been formalised and comprises Torfaen

County Borough Council, Monmouthshire County Council and the Brecon Beacons National Park Authority which have direct management responsibilities, and Blaenau Gwent County Borough Council which lies just outside the nominated site boundary. The Blaenavon Town Council is also a member. The Government agencies within the Partnership are Cadw, the Royal Commission on the Ancient and Historical Monuments of Wales, the National Museums & Galleries of Wales, the Countryside Council for Wales, the Wales Tourist Board, the Welsh Development Agency and British Waterways. The Partnership also includes the National Trust, which is the premier non-governmental agency concerned with heritage sites in the United Kingdom.

Within the framework of the Blaenavon Partnership the Blaenavon Industrial Landscape Management Committee has been established to agree an overall management strategy and recommend policies, plans and projects for implementation by the various partners acting within their own constitutional framework and using their individual executive powers and individual budgets. This advisory Committee meets twice per year. The executive management for the Partnership is carried out by the Blaenavon Industrial Landscape Project Board, chaired by the Chief Executive of Torfaen County Borough Council. The Project Board includes other chief officers of Torfaen County Borough Council and senior officers representing Cadw and the National Museums & Galleries of Wales. The Countryside Council for Wales and the National Trust and other parties attend from time to time. There are three working groups to deal with specific subjects, which meet as and when required and report back to the main Project Board.

Since 1997 the Partnership has maintained contact with community councils and groups including business leaders, residents and the local tourist association. The Partnership has also maintained contact with major landowners in the area and commoners associations who have a direct interest in much of the landscape. In implementing the management plan for the proposed World Heritage Site, these contacts will be maintained and a formal meeting will be called annually.

The Project Board is serviced by the Co-ordinating Officer, who is also charged with ensuring co-ordination and continuity of action between the various partners. There is a small budget available to the Project Co-ordinator for day to day management. However, the main expenditure is made by the authorities, agencies and other partners within the Blaenavon Partnership through allocations in their individual budgets to specific projects.

The following list describes the partners and their interests in the nominated site:-

- Monmouthshire County Council (MCC) covers just under 50% of the nominated site. MCC is a unitary authority with full local government powers. However, planning responsibility for nearly all of this area resides with Brecon Beacons National Park Authority.
- Brecon Beacons National Park (BBNP): about 45% of the Blaenavon Industrial Landscape falls within the Brecon Beacons National Park. The purposes of the National Park designation, as amended under the Environment Act 1995, are to conserve and enhance the natural beauty, wildlife and cultural heritage of the area and to promote the understanding and enjoyment of its special qualities. Account must be taken of the economic and social interest of residents. The National Park is the local planning

authority for the area within its boundary.

- Blaenau Gwent County Borough Council (BGCBC): None of the nominated site falls within the Blaenau Gwent County Borough Council administrative area. However, as a near neighbour BGCBC has a close interest in the designation and management of the proposed World Heritage Site.
- Blaenavon Town Council (BTC) is the local council for the town of Blaenavon which is the main settlement within the nominated site.
- Cadw: Welsh Historic Monuments is an Executive Agency within the Welsh Office. Its general duties are : to secure the preservation of ancient monuments and historic buildings; to promote the preservation and enhancement of the character and appearance of Conservation Areas, and to promote the public's enjoyment of, and advance knowledge about, ancient monuments and historic buildings and their preservation. Cadw also has direct responsibility as the guardian of Blaenavon Ironworks.
- Royal Commission on the Ancient & Historical Monuments of Wales (RCAHMW) is the national body of survey and record. Its aim is to compile and make available an archive of Wales' historic buildings and ancient monuments for use by individuals and bodies concerned with understanding, conserving and managing the built environment.
- The National Museums & Galleries of Wales (NMGW) exists to preserve and promote the heritage and culture of Wales, within a world context. NMGW has a requirement from its Royal Charter to 'promote understanding and knowledge of the special industries of Wales through the collection and conservation of artefacts and their research, interpretation and display'. NMGW will have specific responsibility for the management of the Big Pit Mining Museum. Its special expertise in conservation and management is available on a day-to-day basis to the Blaenavon Partnership.
- The Countryside Council for Wales (CCW) is accountable to the Secretary of State for Wales and is the Government's Statutory adviser on wildlife, countryside, and maritime conservation matters in Wales. It is the executive authority for the conservation of habitats and wildlife. Through partnerships, as at Blaenavon, it promotes the protection of landscape, opportunities for employment and the support of those who live in, work in and manage the countryside. It has enabled the Blaenavon Partnership to pursue countryside management projects through grant aid and can assist with the management cost of the Sites of Special Scientific Interest. CCW were jointly responsible, with Cadw and ICOMOS UK, for the preparation of the Register of Landscapes of Outstanding Historic Interest in Wales.
- The Wales Tourist Board (WTB) seeks to develop and market tourism in ways which will yield the optimum economic and social benefit to the people of Wales.
- The Welsh Development Agency (WDA) has responsibility to the Secretary of State for Wales for promoting and enabling economic development in Wales and dealing with issues related to land reclamation.
- British Waterways (BW) has responsibility for management and maintenance of British

Waterways Canals, including the Brecknock and Abergavenny Canal. One of the principal remits of the board is to respect industrial heritage.

- The National Trust (NT), as the principal United Kingdom non-governmental organisation with experience in heritage management, is able to offer valuable management advice and assistance.

1.3.3 Conservation Status

Nearly half of the proposed World Heritage Site is within the Brecon Beacons National Park and therefore has the highest level of landscape protection.

Within the proposed World Heritage Site there are 12 Scheduled Ancient Monuments of national importance afforded protection under Section 1 of the Ancient Monuments and Archaeological Areas Act 1979. The site continues to be studied to consider whether further areas or monuments should be scheduled. The Secretary of State for Wales is required to compile a schedule of ancient monuments of national importance. The work is undertaken by Cadw: Welsh Historic Monuments. Damaging or carrying out unauthorised work to any of these is a criminal offence which may be punishable by a fine or period of imprisonment.

Cwmavon and the town centre of Blaenavon were declared Conservation Areas in 1984 under Section 277 of the Town and Country Planning Act, 1971, now replaced by the Planning (Listed Buildings and Conservation Areas) Act, 1990.

There are 82 buildings within the Proposed World Heritage Site listed by the Welsh Office under the provisions of Section 1 of the Planning (Listed Buildings and Conservation Areas) Act, 1990, as being of special architectural or historic interest. In and around the town of Blaenavon 54 buildings have been listed as being of special architectural or historic merit. There are also 28 Listed Buildings near the Brecknock and Abergavenny Canal. The Secretary of State for Wales is required to compile lists of buildings of special architectural or historic interest. The work is undertaken by Cadw: Welsh Historic Monuments. Damaging or carrying out unauthorised work to any of these is a criminal offence which may be punishable by a fine or period of imprisonment.

Within the nominated site there are four Sites of Special Scientific Interest (SSSIs). These have been declared by the Countryside Council for Wales (CCW), under Section 28 of the Wildlife and Countryside Act 1981, as amended. The CCW monitor these sites and have powers to ensure that their special conservation interest is being properly managed. CCW work with owners and other interested parties to ensure effective protection and management of these sites of geological or ecological significance. CCW has legal powers to enforce proper care. Damaging SSSIs is a criminal offence which may be punishable by a fine.

Almost the whole of the site is included on the Register of Landscapes of Outstanding Historic Interest in Wales, published jointly by the Countryside Council for Wales, Cadw, and ICOMOS UK. While the Register does not entail any statutory controls over development within the site, it is anticipated that it will be taken into account in the Development Plan process, and in the case of Blaenavon will be incorporated as a 'material consideration' in the development control process.

1.3.4 Planning Background

The nominated site enjoys protection through planning policies set out in development plans, including the Gwent Structure Plan, the Torfaen Local Plan, the Monmouth Borough-Wide Local Plan and the Brecon Beacons National Park Plan. The United Kingdom planning system operates on the basis of regulating the development and use of land in the public interest and protecting interests of acknowledged importance.

The Town and Country Planning Act 1990 requires that planning permission is generally required for any development in the town or open landscape. Planning applications are determined by the relevant Local Planning Authorities. Determination of applications will be considered in the light of government guidance and development plan policies. To back up these powers of development control, the Planning Authorities can take enforcement action against development which proceeds without planning permission. Enforcement action can be initiated against unauthorised development through legal proceedings with financial penalties against offenders where Enforcement Notices are upheld.

The placing of the Blaenavon Industrial Landscape on the United Kingdom's World Heritage Sites Tentative List clearly recognises the site's importance. If included, Blaenavon will be covered by Welsh Office (Planning Guidance/Wales: Planning Policy - First Revision April 1999, paragraph 5.6.11) which states that: 'No additional statutory controls follow from the inclusion of a site in the World Heritage List although the inclusion of a site highlights the outstanding international importance of the site as a key material consideration to be taken into account by local planning authorities in determining planning applications and Listed Building Consent applications, and by the Secretary of State in determining cases on appeal and following call in.'

1.4 The Management Plan

1.4.1 The Aims of the Management Plan

This Plan aims to achieve a broad vision of the quality, significance, condition and potential of the site and to ensure that this vision is widely accepted and acted upon to enhance the understanding and preservation of the values of the site. It has been drafted by the Blaenavon Partnership and will continue to be kept under review by the Partnership and its members. The Plan is advisory in nature, aiming to set the framework for management and to help co-ordinate the actions of all involved. The Plan presents a set of management objectives based on a strategic view over the next 30 years, together with medium term objectives for up to five years, as recommended by the International Council on Monuments and Sites (ICOMOS). Specific projects are identified, together with likely phasing and sources of funding. The Plan aims to ensure that these objectives apply the principles of sustainability to all aspects of the nominated World Heritage Site.

1.4.2 The Need for the Plan

A Management Plan is needed in order to satisfy the United Kingdom's obligations under the World Heritage Convention. The Government is committed to making Plans for all inscribed sites. The land within the nominated site is subject to a range of pressures from development, agriculture, natural decay, vandalism and other factors. If these pressures are not checked or managed, they may irreversibly damage the archaeological monuments, historic buildings and landscape setting of Blaenavon. There is a particular need for co-ordination between agencies and owners by way of a set of principles and policies to ensure continuity in the long term management of the area. The Plan relates to a dynamic, living landscape which contains many legitimate competing interests and values, and it is important that it should preserve and enhance the archaeological and cultural values of the landscape while respecting the interests of all those who have interests in or live within the area.

1.4.3 The Scope and Status of the Plan

The Management Plan offers an overall framework of objectives, but is not a statutory document. It introduces no new powers, nor does it diminish the responsibility of any agency or individual. In advising and informing, the Plan will act as a catalyst for various management initiatives to be implemented. The Plan will continue to be enhanced, and will inform other policies and management proposals relating to the area.

1.4.4 Methodology and Data Sources

This Plan has been based on work carried out during the past twenty years by several different bodies, and drawn together within the Blaenavon Partnership since 1997. Consultations with public and private bodies and with the general public have taken place at various stages throughout the development of the project, and the Plan is kept under regular review by the Blaenavon Partnership. The many sources of data for the Plan are listed in the Bibliography; however the following have been particularly important:

Blaenavon Heritage and Regeneration Study (1998): a major report commissioned by the Blaenavon Partnership from DTZ Piedad Consulting. The purpose of the study was 'to provide

and integrated strategic vision, action and management plan, based on the heritage potential for stimulating economic regeneration in the area'. It covers issues such as the socio economic profile of the area, its heritage value, the planning context, the tourism and property markets, and landscape quality, and it includes a management and action plan.

The Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) is the national body of authorised survey and record in Wales. Its aim is to compile and make available a comprehensive archive and a national database of ancient monuments and historic buildings in Wales. RCAHMW has recently completed the computerised mapping of the entire contents of the first Blaenavon Landscape Survey carried out by Cadw in 1979. This is being supplemented with archaeological information about the whole area of the nominated site. The survey incorporates information shared with other recently completed surveys listed below. It provides a high quality, comprehensive landscape survey of heritage assets which is at present unparalleled in any other part of Britain. RCAHMW has also compiled extensive photographic and aerial survey records of the Blaenavon Industrial Landscape and carried out a fresh aerial survey over the period July 1998 to April 1999. Its trial air photo mapping survey in 1998 of part of the Blaenavon site has been a research project to map a trial section of the Blaenavon Industrial Landscape 'to test the application of air photo mapping for the recovery of detailed first level plans of this type of area'. The trial site is two sq km at Pen-fford-goch which represents some of the earliest mining activity at Blaenavon. The site encompasses a range of archaeological features found in the wider Blaenavon Landscape including bell pits, hushes, dams, water systems and extensive spoil tips. The resultant computerised maps permit the analysis of the phasing of features in this complex landscape.

Pwll-Du, Gwent, An Archaeological Desk Top Assessment: An archaeological assessment of key parts of the mountain area at Blaenavon was carried out by the Ironbridge Gorge Museum Trust Archaeological Unit for Gwent County Council in January 1994. This comprehensive study covered approximately 7.5 sq km of mountain land containing much of the early iron extraction areas and spoil tips as well as the 1940s open cast sites. It identified the principal archaeological sites and assessed their vulnerability and importance.

The Schedule of Ancient Monuments of National Importance: Cadw maintains descriptive and photographic records of all scheduled sites, and a regular programme of monitoring is undertaken including oblique aerial photography.

Listed Buildings: Listing of buildings in Blaenavon was comprehensively reviewed in 1995, and at Llanfoist in 1997, by Cadw on behalf of the Secretary of State, and the list is now considered to be up to date. Photographs and written descriptions of each building at the time of listing are maintained by Cadw, and further monitoring is carried out by each of the relevant local authorities and the Brecon Beacons National Park.

A Conservation Plan and Study of Big Pit by the Brooke Millar Partnership, completed in 1999, was accompanied by an Archaeological Desk Study of Big Pit by Archaeamedia. These studies provide an up to date base of information about the site including full condition surveys of all structures, drawn and photographic records, and an evaluation of archaeological sensitivity. The studies were undertaken to ensure that the Development Plan being prepared for the Big Pit Mining Museum on behalf of the National Museums and Galleries of Wales fully took into account the industrial heritage of the site. This Development Plan is to be submitted

to the Heritage Lottery Fund to secure capital funding for the Big Pit complex over the next three years.

The Glamorgan Gwent Archaeological Trust maintains an up to date Sites and Monuments Record of all archaeological sites in the area and acts as advisor to Torfaen County Borough Council on archaeological matters relating to development proposals. The Record shares information electronically with both Cadw and the RCAHMW.

A Preliminary Heritage Survey of the Brecknock and Abergavenny Canal was carried out by John van Laun Archaeologists of Hereford in December 1997, commissioned by the owners, British Waterways. This survey is an inventory of the main features of historical importance and will ensure appropriate protection of these features in the management of the canal as a navigable waterway.

Part 2
Evaluation and Identification
of Key Management Issues



Blaenavon Ironworks, aerial view 1992
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PART TWO: EVALUATION AND IDENTIFICATION OF KEY MANAGEMENT ISSUES

The Blaenavon Industrial Landscape covers a large area, 3,290 hectares, containing the town of Blaenavon and other village settlements and individual buildings. It is a living landscape within which consideration must be given to ongoing economic and social change. However, there is no pressure for substantial new development in the area, and all development is carefully controlled by the planning process and statutory procedures.

The main potential pressures affecting the site are:

- The protection and conservation of the key monuments
- Continuing economic decline in the area
- The use of the relict landscape for recreational and agricultural purposes
- The presence of residual coal reserves and interest in further coal recovery by opencasting

In addition, other aspects of the site which present key management issues are:

- The planning and policy framework
- The need for and desirability of public access and enjoyment
- The opportunities for further research into the values and management of the site

2.1 Protection and Conservation of Key Monuments

2.1.1 The protection of heritage assets through their identification and statutory designation is an important part of the overall strategy to ensure that assets of the site are not lost to future generations through development pressures or natural decay. Such identification and designation within the Blaenavon Industrial Landscape has advanced considerably in recent years through a variety of initiatives. However, continuing review of the database of known sites and the designations of the most important monuments and buildings remains an important requirement of good management.

2.1.2 Many of the key monuments within the site require consolidation and repair works to prevent damaging decay. While there are no extreme natural environmental pressures on the Blaenavon Industrial Landscape, the area is exposed mountain top land and is subject to heavy frosts and substantial rainfall which creates rapid run off. At Blaenavon Ironworks, a programme of first-time conservation of masonry features is advancing, and requires to be completed. Repair of structures above and below ground at Big Pit is vital to the survival and continued operation of the site. Within the relict landscape, run off in particular can cause erosion of tips, embankments and retaining walls. Considerable work has been carried out, particularly by Dr Philip Putwain of the Environmental Advisory Unit, University of Liverpool, regarding encouragement of natural revegetation to prevent further erosion, and a programme of works is required to put these solutions into practice.

2.1.3 Much of the private building stock of Blaenavon is in a poor condition, and new investment is required to ensure continued use of and care for the town and its outlying areas.

2.2 Economic Decline

2.2.1 There has been a continuing decline in the population of Blaenavon since the early 1920s. This reflects the irreversible decline in the coal and steel industries. The town has suffered economic and social difficulties with resultant deterioration in the fabric of historic buildings and infrastructure. This matter is being addressed by the local authority and others in the context of a Heritage and Regeneration Study carried out by DTZ/Pieda Consulting, which was commissioned by the Blaenavon Partnership and completed in October 1998. In summary, proposals include:

2.2.2 Improvement in the fabric of the town centre

This is being addressed in conservation terms through a bid made to the Heritage Lottery Fund under the Townscape Heritage Initiative to improve key listed buildings in the town. If successful, this will generate about £1m of conservation work in the town centre. Torfaen County Borough Council is also committed to the change in use of the former Town Council Offices to a Town Library and Heritage Centre at a cost of £350,000. This project will commence in June 1999.

2.2.3 Establishing a Blaenavon Building Preservation Trust

This will be a locally based voluntary organisation. Support funding will be sought from the Architectural Heritage Fund to restore buildings in the town. The Trust has a start up fund of £15,000.

2.2.4 Traffic Management and Parking proposals

The present traffic management system discourages access to the town by visitors and this has been reviewed in a study completed in April 1999. The study suggests improvements in access and the arrangement and quality of design of town centre parking areas. Expenditure on these measures is likely to total about £120,000 over five years.

2.2.5 A Housing Renewal Study

This study by Architects Killick, McAdam & Urquhart for the Welsh Office has identified the need to improve the older housing stock through an Area Renewal Programme (Housing Act 1940). A programme of housing area improvement will be implemented over five years valued at £500,000 per annum. The heritage quality of the town will be taken closely into account in implementing this programme. Cadw will advise on details of conservation.

2.3 Use of the Relict Landscape

2.3.1 Most of the relict landscape surrounding Blaenavon town is urban common. The public has the right of access to the area for air and exercise on foot, under Section 193 of the Law and Property Act 1925. The commoners have the right to graze stock within specified limits, without disturbance, under the Commons Registration Act 1965. The commons are unfenced and are accessed from several country roads and tracks, and are crossed by registered footpaths. The resultant pressures upon the landscape are as follows:

2.3.2 The old tips are subject to motorbike scrambling, which is illegal and can lead to erosion by

exposing the tip material to weathering. Less steep areas are also subject to use by four wheel drive vehicles as an illegal leisure activity.

- 2.3.3 Due to absence of fencing, grazing is uncontrolled and over grazing by sheep can prevent the old tips and mine areas being naturally revegetated. Revegetation is the best protection of the disturbed landforms from erosion. However, grazing by sheep has helped prevent the area being entirely overgrown and produced several attractive turf tracks for access through the site.
- 2.3.4 There are several identified walks in the area. With increased recognition of the area there will be more access to potentially hazardous areas which will require safety work. Walls and embankments will eventually need to be consolidated/restored. Likewise, access adjacent to the disused limestone quarries, at Pwll-Du for example, will require some work to ensure public safety.

2.4 Residual Coal Recovery

2.4.1 There has been some continuing interest in recovering residual coal deposits from the area by open-cast coal extraction. However, the areas of land within the nominated site which contain coal reserves are in the ownership of the Walters Group who have given an assurance that they have no intention of extracting coal from within the nominated site boundary.

2.4.2 Notwithstanding this assurance, it is highly improbable that coal extraction would be permitted given the following:

As recently as 14 January 1993 The Secretary of State for Wales turned down a proposal for opencast coal extraction in the area following a 33 day Public Inquiry.

There has been a significant growth of interest in, and support for, the industrial heritage of Blaenavon since about 1993.

Torfaen County Borough Council's Deposit Local Plan, Policy H7, states that development which would prejudice the area's unique heritage will not be permitted.

Brecon Beacons National Park planning policy is opposed to opencast coal extraction.

The area was included in the Register of Landscapes of Outstanding Historic Interest in Wales published by Cadw, CCW and ICOMOS UK in January 1998.

Several sites within the area have been scheduled as ancient monuments of national importance.

Any application for opencast coal extraction in this area would be likely to be 'called in' for determination by the Secretary of State for Wales.

2.5 Planning and Policy Framework

2.5.1 The Planning and Policy framework for the management of the nominated World Heritage Site is already effective, and has been revised in some important respects with a view to nomination. The general planning framework which applies has already been described above, and the conservation status of elements within the site has been referred to. The following section outlines the detailed policy framework currently in force.

2.5.2 The United Kingdom has a comprehensive system of legislation to ensure the effective use of land, control of development and protection of the environment. This is exercised by local planning authorities and other agencies. From central government and supporting agencies to local government, policies and plans are in place which have relevance to the site and effectively legislate for the protection of the area's unique industrial heritage. The development plans referred to have involved the community through public participation in the planning process.

2.5.3 Central Government Policy and Guidance

In Wales, control of development and protection of the environment is ultimately the responsibility of the Secretary of State for Wales. Planning Policy is set out in Planning Guidance (Wales) Planning Policy - First Revision April 1999. This guidance sets out the Government's land-use planning policies as they apply in Wales. The primary legislation related to land-use planning is contained in :

- The Town and Country Planning Act 1990
- The Planning (Listed Buildings and Conservation Areas) Act 1990
- The Planning (Hazardous Substances) Act 1990

Planning Guidance (Wales) together with relevant Welsh Office Circulars provides detailed guidance in preparing development plans and exercising development control for the nominated site including:-

NATIONAL PARKS:

Where there is irreconcilable conflict between the conservation and enhancement of the natural beauty, wildlife or cultural heritage of a National Park and promotion of opportunities for the public understanding and enjoyment of the special qualities of the park, conservation must take precedence.

HISTORIC ENVIRONMENT:

The historic environment which encompasses ancient monuments, Listed Buildings, Conservation Areas, and historic landscapes, parks, and gardens, should be protected. Local authorities should maintain and strengthen their crucial role in securing its conservation. Detailed planning guidance is provided in Welsh Office Circulars 60/96, 61/96 and 1/98.

LISTED BUILDING:

Once a building is listed (or is the subject of a Building Preservation Notice) consent is normally

required for its demolition, in whole or in part, and for any work of alteration or extension which would affect its character as a building of special architectural or historic interest

CONSERVATION AREAS:

Local Planning Authorities must designate as a Conservation Area 'any area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance'. Conservation Area designation introduces a general control over the demolition of buildings and it is the main instrument available to authorities to give effect to conservation policies for a particular neighbourhood or area. Local planning authorities are required to formulate and publish proposals for the preservation and enhancement of Conservation Areas. Policies will normally be needed which clearly identify why the character or appearance of an area should be preserved or enhanced.

ARCHAEOLOGY:

Where nationally important archaeological remains, whether scheduled or not, or their settings, are affected by proposed development, there should be a presumption in favour of physical preservation. Any proposal to carry out works to a Scheduled Ancient Monument must be the subject of an application for Scheduled Monument Consent.

2.5.4 Local Authority Development Plans

Although Gwent County Council is no longer in existence, the Gwent Structure Plan 19912006 remains the adopted plan as regards strategic policy, in particular for the control of mineral development. Just over half of the nominated site falls within Torfaen County Borough Council's administrative area, for which a Local Plan has been prepared. At the time of writing, the deposit version and subsequent amendments have been to public inquiry and the Inspector's recommendations have been received. Shortly, a Unitary Development Plan will be prepared for Torfaen which will supersede the Structure Plan and Local Plan. The Brecon Beacons National Park Plan, Third Edition 1993-98, and the Brecon Beacons National Park Local Plan, are the relevant planning policy and management documents for the National Park. The Monmouthshire Wide Local Plan is the development plan for less than 5% of the nominated site area. It provides the basis of development control for the village of Llanfoist and prevents development in the open countryside outside the village boundary. This section focuses on main planning issues influencing the nominated site.

2.5.5 Gwent Structure Plan (Adopted 1 March 1996)

The Gwent Structure Plan has policies on landscape, derelict land and minerals which are important in considering any development proposals within the Torfaen area of the

POLICY C6: LANDSCAPE

Development which would have a significant adverse effect on landscapes of historic importance will not normally be permitted, and the enhancement or restoration of such landscapes will be encouraged.

POLICY M1: MINERAL DEVELOPMENT

Proposals for mineral development will be considered against twelve criteria including criterion (vii), the effect on archaeological interests in the area in both the near and long term.

2.5.6 The Torfaen Deposit Local Plan

The main policy with relevance to the control of development within the nominated site is Policy H7 relating to heritage.

POLICY H7: HERITAGE

Development proposals which are of such scale that they would adversely affect or visually impinge upon the overall integrity of the 'Landscape of Outstanding Historic Interest' at Blaenavon will not be permitted.

Reasoned Justification:

The area shown on the Proposals Map has been included in the *Register of Landscapes of Outstanding Historic Interest in Wales*. The area around Blaenavon is considered to be one of the best preserved industrial landscapes in Wales. It contains extensive remains of early mineral works and processing, as well as the remains of the later commercial production of coal, iron and steel. These elements together with the town of Blaenavon, which is one of the best examples in Wales of a valley head industrial community, are considered to form one of the most complete and best surviving historic landscapes in Wales. This landscape is of such importance that it may be accorded World Heritage Site status.

Development in this area will only be allowed where it is in the national interest and where no alternative site is available. There are, however, areas within the defined Historic Landscape allocation which overlap with other policy designations, particularly within the existing built up areas. In these instances the presumption in favour of development accorded by a development proposal's location within the built up areas as defined by logical or designated settlement boundaries, or by its specific allocation in the Local Plan, is not overridden. The only exception relates to land allocated under policy E3/3 where this policy has precedence in terms of landscape improvement areas.

POLICY H1 : CONSERVATION AREAS

Development within a Conservation Area will only be permitted where the proposal satisfies all of the following criteria:-

- A the proposal enhances the visual, architectural and historic character of the area.
- B the proposal respects the scale and character of both the surrounding buildings and the Conservation Area.
- C the provision of open space between and around buildings reflects the scale, layout and character of the Conservation Area.

There are also policies which presume against the demolition of Listed Buildings.

POLICY H5 : SCHEDULED ANCIENT MONUMENTS

Development on or adjoining a Scheduled Ancient Monument will only be permitted where the proposal would not have an adverse impact upon its setting and character.

POLICY ED9 : TOURISM

The following sites within the nominated area are identified for tourism related development:

ED9/1 Big Pit Mining Museum

ED9/2 Blaenavon Ironworks

ED9/6 Garn Lakes

2.5.7 Brecon Beacon National Park Management Plan Third Edition 1993-98 (Approved January 1993)

By designating the area as a National Park, Parliament has endorsed the national significance of the Brecon Beacons area. Designation carries a two-fold purpose: to conserve and enhance natural beauty, and to promote the enjoyment of the Park by the public, and a third requirement: to seek to foster the social and economic well being of the local communities.

The following policies in the approved plan have particular significance to the nominated site. The BBNP Management Plan is currently being reviewed but these policies are likely to remain substantially unchanged.

POLICY LN17: EYESORES

The National Park Authority (NPA) will use all available methods to abate and remove eyesores and litter in the Park. The NPA acts directly to deal with these problems caused by local people and visitors through its Warden service and volunteers.

POLICY AA5: PUBLIC AWARENESS

The NPA will seek to protect all areas, sites and features of historical and architectural interest and importance and their settings. This policy covers all archaeological sites and monuments, areas of known or potential archaeological importance, and historic landscapes.

POLICY AA2: ARCHAEOLOGY, ARCHITECTURAL & HISTORICAL FEATURES

The NPA will encourage the conservation and management of all areas, sites and features of historical and architectural importance and their settings.

Policy AA5: Public awareness

The NPA will promote a better appreciation of the historic landscapes, archaeology and vernacular building traditions of the Park and of the need to protect this heritage.

POLICY R1: RECREATION

The NPA will encourage recreational activities which involve the quiet enjoyment of the Park where there is no irreconcilable conflict with conservation, in accordance with the strategy for enjoyment and other policies.

POLICY T2: TOURISM

All visitor development should avoid damage to 'pressure' or 'vulnerable areas', should be well related to the Park road hierarchy, and should conform with the NPA's development control policies.

POLICY IN1: INFORMATION AND INTERPRETATION

The NPA will encourage visitors and those living within or near the Park to understand the value of the Park's special qualities and the way of life in its communities.

POLICY M1: MINERALS

Mineral extraction is inappropriate in a National Park. This has been emphasised repeatedly by the Government since the Park was designated. New or extended mineral working will not be approved unless a case of compelling national necessity can be proved and there are no detrimental effects on the National Park designation, in that:

- the exploitation and proposed use of the resource is vital to the national interests;
- there is no alternative source of supply which is both outside the Park and not visible from within it;
- full consideration has been given to conserving the natural beauty of the Park, and areas visible from it;
- the impact on local communities, recreation resources and surrounding land users, water resources and services has been weighed.

2.6 Public Access and Enjoyment

2.6.1 Unlike many smaller and more environmentally sensitive World Heritage Sites, there is not likely to be any significant problem of erosion or sustainability created by anticipated levels of visitor activity. In considering the capacity of the site to absorb current and likely visitors, the very different characteristics of the four elements listed above require to be taken into account. Conversely, the best hope for the protection and conservation of the area lies in the benefits that can flow from an increase in tourism. The six main features within the Nominated Site likely to attract visitors are dealt with separately below:

2.6.2 Blaenavon Ironworks

Present visitor levels to the Ironworks are low, 2,445 last year, and the projected increase in visitors to 30,000 per annum in the near future can be readily accommodated given careful controls. Cadw has extensive experience at other sites under its guardianship of dealing with large visitor numbers.

2.6.3 Big Pit Mining Museum

Big Pit is in the process of being taken over by the National Museums & Galleries of Wales, a body with considerable experience in balancing the issues of effective conservation with attracting visitors. NMGW intend to enhance Big Pit as a mining museum of international status and incorporate the experience offered within their overall industrial strategy for Wales. The Development Plan for Big Pit has recently been completed and this study is founded on principles set out in a detailed Conservation Plan.

The visitor numbers are projected to increase to 120,000 per annum, which is no greater than those achieved in 1992, the year of the National Garden Festival at Ebbw Vale nearby, when visitors were accommodated successfully.

2.6.4 Pontypool and Blaenavon Railway

The railway is capable of accommodating an increase in tourists without detriment to the heritage, bearing in mind the line was used intensively for passenger and freight traffic in the past.

2.6.5 Town of Blaenavon

Given the town's economic decline the problem is not how to accommodate visitors but how to attract them. More visitors would make the town more viable and generate effective uses for many historic town centre buildings in need of repair. The key historic buildings can attract substantial numbers of visitors without detriment to their structural integrity.

2.6.6 Relict Landscape

Present use of the landscape is informal. Most visitors come by car, but there is also use by cyclists and by local residents who enter the area on foot. The problem of motorcyclists and four wheel drive vehicles using the old tips is addressed in the Management Plan. No other access is likely to pose problems to conservation. A study is underway to develop ideas originally contained in the DTZ Pleda Regeneration Study to encourage further access to the relict industrial landscape by car, cycle and walking, all of which are expected to increase

substantially. The landscape is capable of absorbing these anticipated increases

2.6.7 The Brecknock and Abergavenny Canal

Much higher levels of use could cause some problems of erosion, but current use is far short of this threshold.

2.7 Research

2.7.1 A substantial area of research is concerned with identification and recording of heritage assets, which has already been dealt with in the first part of this section. Research based on documentary sources and investigating broader historical and archaeological themes is also of the utmost importance in the explanation and investigation of the universal value of the Blaenavon Industrial Landscape.

2.7.2 Research is recognised as making a significant contribution to ensuring that authenticity is protected within conservation works and must therefore be regarded as central to management strategies for the nominated World Heritage Site.

Part 3
Management Objectives
and Strategies



*Aerial view of Big Pit Mining Museum
head baths and canteen in foreground
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PART THREE:MANAGEMENT OBJECTIVES AND STRATEGIES

Having described and evaluated the proposed World Heritage Site and its importance in sections 1 and 2, this section identifies objectives to be met to achieve the effective management of the site as a whole.

The prime aim of The Blaenavon Partnership is protect and conserve this landscape so that future generations may understand the contribution that South Wales made to the Industrial Revolution. By the presentation and promotion of the Blaenavon Industrial Landscape it is intended to increase cultural tourism and assist the economic regeneration of the area.

The stated objectives are realisable. They aim to address the complex nature of the Blaenavon Industrial landscape and the main identified issues in a practical and effective way.

The Blaenavon Partnership will work together to meet these objectives, using the range of powers and resources available to it, in the context of existing European, National and Local Government legislation. The Partnership will seek to achieve full community support for, and involvement in, the delivery of these management objectives.

3.00 Management Objectives

3.1 General

- To provide a Management document for achieving the conservation of the cultural heritage assets of the nominated World Heritage Site, deriving its legitimacy from the collective agreement of those bodies which constitute the Blaenavon Partnership.
- To promote the conservation and regeneration of the site by establishing and maintaining an ongoing programme of objectives and actions which will identify, protect, maintain and enhance its cultural heritage assets.
- To present the importance of the Blaenavon Industrial Landscape to the widest audience and to use its assets as resources for education and cultural enrichment of those living in and visiting the site.
- To develop policies and proposals and take actions and decisions within the nominated World Heritage Site which are based on principles of environmental sustainability.
- To obtain community support for, and involvement in management proposals and projects

3.2 Administration

- To devise and put in place ongoing administrative arrangements for the management of the nominated World Heritage Site.

3.3 Protection and Conservation of Cultural Assets

- To develop and maintain an effective record of cultural assets within the site.
- To maintain appropriate protection by designations of heritage assets, and to keep such designations under review in order to ensure that the highest levels of statutory and planning protection are in place for the preservation of the cultural assets of the nominated World Heritage Site.
- To monitor the condition of all heritage assets within the nominated World Heritage Site. Special attention should be paid to those sites and monuments protected by designation, but the whole landscape should be monitored to ensure that change is understood and controlled. Monitoring is essential in order to control and combat natural decay and to identify where unauthorised works may have been undertaken.
- To undertake positive conservation programmes for the key buildings and monuments within the site and where appropriate to develop detailed Conservation Plans for the most important heritage assets.
- To encourage owners and other users to ensure that maintenance, repair and restoration of property is carried out sympathetically and to a high standard.
- To liaise with the registered Graziers in order to protect their legitimate interests, without compromising conservation objectives.

3.4 To Address Identified Issues

- To combat economic decline create a sustainable economy based upon the sensitive exploitation and management of a cultural resource of world significance. The site will be an area where people want to live, work, visit and invest, attracted by the quality and character of an historic town set in a unique landscape with access to a wide range of employment and leisure opportunities.
- To enhance access to the relict landscape. Access to the relict landscape is currently inhibited by the lack of waymarked routes, inadequate parking, and perceived safety hazards.
- To develop consolidation methods for features and landforms within the relict landscape, to carry out consolidation works and to promote its beneficial management.
- To ensure that heritage takes precedence over the exploitation of coal reserves, in accordance with stated planning policies.

3.5 Planning and Policy Framework

- To ensure that the appropriate planning policy and frameworks already developed are kept up to date for benefit of the site and that planning policies for protection are followed through in management terms.

3.6 Public Access and Enjoyment

- To enhance visitor facilities and interpretation resources at the main attractions within the site and to develop joint marketing arrangements for their promotion.

3.7 Research

- To promote and undertake research into the historical, archaeological and other values of the nominated World Heritage Site and its component parts, for the better understanding of the site and its outstanding universal value.

Part 4
Preparation for
Overall Site Management



aerial view of Blaenavon town centre from the east. The main street crosses the centre of the picture from left to right. The church, works school and ironmaster's house lie at the top left.

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PART FOUR: PRESCRIPTION FOR OVERALL SITE MANAGEMENT

The objectives set out in Part Three will be achieved by the implementation of a wide range of projects, carried out by a variety of agencies. Some will require collective action, while others will fall to a single body to implement, but this Management Plan aims to ensure that all fall within its overall framework. Although projects may stand alone, each should contribute to the underpinning of the primary aims of the conservation of the nominated World Heritage Site and the regeneration of the area. Projects will be monitored and where appropriate managed by the Blaenavon Partnership to ensure consistency with the objectives of the Management Plan.

The Blaenavon Partnership provides a forum for ensuring that the activities of all its members are effectively co-ordinated, and all of their relevant proposed projects have been included in the Register set out in 4.1 below. The main executive body is the Project Board comprising of officer representation of all the bodies in the Partnership. The Project Board meets at least every two months when progress and projects are reviewed. The Project Board is serviced by the Co-Ordinating Officer. Each party has its own responsibility in for the delivery of these projects and acts according to its own performance measures and internal requirements of management and funding. The major organisations with direct management responsibility for key projects within the site are Cadw, the Big Pit Trust (in collaboration with the National Museums and Galleries of Wales), Torfaen County Borough Council, the Brecon Beacons National Park, the Royal Commission on the Ancient and Historical Monuments of Wales and British Waterways.

Projects are related to the groups of objectives set out in Part Three. Some objectives are not served by specific projects but by the Management Plan as a whole, by statutory planning and other duties and by ongoing day to day actions by the Blaenavon Partnership. These therefore do not appear explicitly in the Register of Projects below.

Paragraph 4.2 is an extended schedule of the identified projects. Each project is set out on an individual job sheet (coloured yellow). The job sheet describes the project, sets out accountability for delivery, describes the cost and anticipated funding sources, provides a description of intended phasing where necessary and registers progress. It is intended that this schedule will be the subject of regular review by the Project Board. A summary of amendments to the project sheets will be summarised in the Amendment Sheet Paragraph 4.4.

4.1 Register of Projects

ADMINISTRATION OBJECTIVES

No	Project	Lead Agency	Proposed Funding	Timescale	Progress
AM1	Formalisation of the Blaenavon Partnership and Management Support	TCBC	TCBC	1999	Completed
AM2	Establishment of Blaenavon Building Preservation Trust	TCBC	TCBC/Cadw/AHF	1999-2004	Commenced
AM3	Blaenavon Community Strategy Co-ordinator	TCBC/GAVO	TCBC/GAVO	1999-2004	Commenced

PROTECTION AND CONSERVATION OBJECTIVES

No	Project	Lead Agency	Proposed Funding	Timescale	Progress
PC1	Enhancement and GIS development of Sites and Monuments Records	RCAHMW	RCAHMW	1999	Commenced
PC2	Review and enhancement of statutory designations	Cadw	Cadw	1999-2029	Ongoing
PC3	Monitoring programme for Scheduled Ancient Monuments	Cadw	Cadw	1999-2029	Ongoing
PC4	Monitoring programme for Listed Buildings and Conservation Areas	TCBC/MCC/BBNP	TCBC/MCC/BBNP	1999-2029	Ongoing
PC5	Conservation programme for selected Scheduled Ancient Monuments	TCBC	Cadw/TCBC/HLF	1999-2004	
PC6	Big Pit survey and Conservation Plan	NMGW	NMGW/HLF/TCBC/WO	1999	Completed
PC7	Big Pit emergency consolidation works	NMGW	NMGW/HLF/WO/TCBC	1999	Commenced
PC8	Blaenavon Ironworks major conservation works	Cadw	Cadw	1999-2004	Ongoing
PC9	Blaenavon Ironworks archaeological and building survey	Cadw	Cadw	1999-2004	Ongoing
PC10	Former Council Offices conversion to public library	TCBC	TCBC/WDA	1999-2004	Commenced
PC11	Church Road environmental improvements	TCBC	TCBC/WDA/EU	1999-2004	
PC12	St Peter's Church repair and conservation	Church	Church/Cadw/HLF	1999	Commenced
PC13	St Peter's School conservation and adaptive re-use	TCBC	TCBC/HLF/Cadw	1999-2004	Commenced
PC14	St Peter's Boys School (Ramfield Centre)	Ramfield School	Cadw/other	1999-2004	Commenced
PC15	Repair of Listed Buildings Nos 15-19 Broad Street conservation and repair	TCBC	TCBC/HLF/Cadw	1999-2004	Commenced
PC16	Pwll-Du tunnel exploration and conservation	Pwll Du Tunnel Research Group	Cadw	1999-2004	Commenced
PC17	Streetscape enhancements, Lower Broad Street	TCBC	TCBC/WDA/EU	1999-2004	Commenced
PC18	Brecknock and Abergavenny Canal ongoing maintenance	British Waterways	British Waterways	1999-2020	Ongoing
PC19	Uplands Initiative ground Survey	RCAHMW	RCAHMW	1999-2004	Commenced

ECONOMIC REGENERATION OBJECTIVES

No	Project	Lead Agency	Proposed Funding	Timescale	Progress
EC1	Blaenavon Regeneration & Heritage Conference (October 1999)	TCBC	TCBC	1999	Commenced
EC2	Town centre traffic and access improvements	TCBC	TCBC/WO	1999-2004	Commenced
EC3	Improvement of northern approaches to Blaenavon town centre	TCBC	TCBC/WDA/EU	1999-2004	
EC4	Improvements to southern approaches to Blaenavon town centre	TCBC	TCBC/WDA	1999-2004	Ongoing
EC5	Upper Broad Street streetscape improvements	TCBC	TCBC/EU	1999-2029	
EC6	Housing renewal, conservation and repair in Blaenavon town centre	TCBC	TCBC/WO	1999-2004	Commenced
EC7	Forgehammer car park landscaping scheme	TCBC	TCBC/WDA	1999	Completed
EC8	Council property on Broad Street	TCBC	TCBC	1999-2004	Ongoing
EC9	Privately owned properties on Broad Street	TCBC	TCBC/WO/WDA/ Private	1999-2004	
EC10	Landscaping of industrial estates	TCBC	TCBC/WDA/EU	2000	Ongoing
EC11	Industrial premises	TCBC	TCBC/WDA	1999-2004	Ongoing
EC12	Establishment of local community heritage group	TCBC	TCBC	1999-2004	Commenced

USE OF RELICT LANDSCAPE OBJECTIVES

No	Project	Lead Agency	Proposed Funding	Timescale	Progress
US1	Land acquisitions in parts of the relict landscape	TCBC	TCBC/CCW/MCC	1999-2004	Commenced
US2	Provision of extended countryside warden services	TCBC/BBNP	TCBC/BBNP	1999-2029	Ongoing
US3	Programme of revegetation to prevent erosion to exposed landforms	TCBC/BBNP	TCBC/WDA/BBNP/ CCW	1999-2029	
US4	Safety and drainage works in the relict landscape	TCBC	TCBC/WDA	1999-2004	Commenced
US5	Improved access and interpretation of the relict landscape	TCBC	MCC/BBNP/CCW/ TCBC	1999-2004	Commenced
US6	Restriction of inappropriate access to relict landscape	TCBC/BBNP	TCBC/BBNP/MCC/ CCW	1999-2004	Commenced

RESEARCH OBJECTIVES

No	Project	Lead Agency	Proposed Funding	Timescale	Progress
RE1	Research Reports on specific heritage assets	TCBC/Cadw	TCBC/Cadw	1999-2004	Commenced

PUBLIC ACCESS AND ENJOYMENT OBJECTIVES

No	Project	Lead Agency	Proposed Funding	Timescale	Progress
PA1	Big Pit major conservation and improvement of visitor facilities	NMGW	NMGW/HLF/WO/TCBC	1999-2004	
PA2	Big Pit access road landscaping and traffic management improvements	TCBC	TCBC/WDA	1999-2004	Commenced
PA3	Blaenavon Ironworks ongoing development programme	Cadw	Cadw	1999-2004	Ongoing
PA4	Blaenavon Ironworks interpretation models	Cadw	Cadw	1999-2000	Commenced
PA5	Blaenavon Ironworks improvements to access and setting	Cadw/TCBC	TCBC/WDA/WTB	1999-2004	
PA6	Development of circular walks interpretive trails	TCBC	TCBC/BBNP/MCC	1999-2004	Commenced
PA7	Development of Cycle Routes	TCBC	TCBC/WTB/MCC/Sustrans	1999-2004	
PA8	Development of town centre interpretive trail	TCBC	TCBC	1999-2004	
PA9	Access agreements with countryside landowners	TCBC/BBNP	TCBC/BBNP	1999-2004	Ongoing
PA10	Lion Street public convenience improvements	TCBC	TCBC/WDA/WTB	1999-2004	
PA11	Tourist Information Centre provision at Blaenavon Ironworks	Cadw	Cadw/TCBC/WTB	1999	Commenced
PA12	Pontypool and Blaenavon Railway improvements and route extension	P&BR	P&BR/WDA/TCBC/EU	1999-2029	
PA13	Development of programme of visitor events	NMGW/Cadw/TCBC	NMGW/Cadw/TCBC/WTB	1999-2004	
PA14	Development of combined marketing programme for visitor attractions	NMGW/Cadw/BBNP/WTB	NMGW/Cadw/TCBC/WTB	1999-2004	
PA15	Ironworks live interpretation	TCBC	TCBC/EU	1999-2004	Commenced
PA16	Cordell Heritage Drive	TCBC	TCBC/MCC/BGCBC/CCBC/RCTCBC/NPTCBC/MTCBC/EU	1999-2004	Commenced
PA17	Forgeside Community Wood	TCBC	Coal Authority/TCBC/CCW/WTB	1999-2004	Commenced
PA18	Community/Education initiatives	TCBC	TCBC	1999-2004	

4.4 Sources and Levels of Finance

This section describes briefly the generalised level of expenditure anticipated over the next 5 years and the main area of expenditure since the Blaenavon Partnership was established in August 1997, considerable financial resources and professional time have been invested in developing a comprehensive approach to the management of the Blaenavon Industrial Landscape and setting specific projects in motion. A heritage and regeneration study was prepared for the Partnership by DTZ Piedad Consulting in 1998 and other consultants have provided advice on matters including land acquisition, site appraisals, landscape assessments, building conservation studies and archaeological assessments, which includes initial costing estimates and proposed funding sources.

Funding levels and sources are currently being developed further for all the projects listed above, and these will be incorporated in revisions of the Management Plan.

The following major projects can be detailed at this stage. The costs are indicative at this point in time and subject to confirmation by various parties.

It is anticipated that in the order of £10 million will be expended within the Blaenavon Industrial Landscape during the next five years on protection, conservation and interpretation of the industrial heritage and improvement of facilities for visitors to the area.

SUMMARY TABLE OF PLANNED EXPENDITURE ON MAJOR PROJECTS

Major Project	Cost over five years 1999-2004		Funding Sources
Blaenavon Ironworks			
Ongoing recording and excavation			Cadw
Conservation of Furnaces 2 and 5 and Balance Tower			
Development of ticket office			
Revised interpretation		Total: £780,000	
Big Pit Mining Museum			
Emergency repairs			NMGW/HLF/ Welsh Office/Cadw/ WDA/EU/WTB
Major conservation			
Improvement of visitor facilities			
Additional interpretation			
Collection facilities for National Coal Mining Collection		Total: £6,830,000	
Town of Blaenavon			
Repairs and conservation of Listed Buildings	£1,100,000		TCBC/HLF/EU/ Welsh Office/Cadw/ WTB/WDA
Conservation works additional to housing renewal	£120,000		
Townscape improvements including visitor access	£200,000		
Interpretation, St Peter's School	£50,000	Total: £1,470,000	
Relict Landscape			
Acquisition	£25,000		TCBC/MCC/BBNP/CCW/ WDA/Cadw
Improved access	£30,000		
Improved safety	£25,000		
Conservation and interpretation of monuments	£25,000	Total: £105,000	

Part 5
Bibliography



*Blaenavon Ironworks, view of furnace No.2 from
interior of Cast House*
© Cadw

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Part 6
Appendices



View from north west, looking towards Blaenavon
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List of Appendices

- The Blaenavon Partnership Management structure
- World Heritage Criteria and Obligations
- Detailed Description of the Blaenavon Industrial Landscape

APPENDIX 1

Since 1997 the Partnership has maintained contact with community councils and groups including business leaders, residents and the local tourism association. The Partnership has also maintained contact with major landowners in the area and commoners associations who have a direct interest in much of the landscape. In implementing the management plan for the proposed World Heritage Site, these contacts will be maintained and a formal meeting will be called annually.

The Project Board is serviced by the Co-ordinating Officer, who is also charged with ensuring co-ordination and continuity of action between the various partners. There is a small budget available to the Project Co-ordinator for day to day management. However, the main expenditure is made by the authorities, agencies and other partners within the Blaenavon Partnership through allocations in their individual budgets to specific projects.

The following list describes the partners and their interests in the nominated site:-

Torfaen County Borough Council (TCBC)

Torfaen County Borough Council is the lead authority in the Blaenavon Partnership. TCBC is the unitary authority for over 50% of the nominated site (including the town of Blaenavon). and has full local government powers and duties including Town and Country Planning and other environmental matters.

Monmouthshire County Council (MCC)

Just under 50% of the nominated site lies within Monmouthshire, which is a unitary authority with full local government powers. However, planning responsibility for nearly all this area resides with Brecon Beacons National Park Authority.

Brecon Beacons National Park (BBNP)

About 45% of the Blaenavon Industrial Landscape falls within the Brecon Beacons National Park. The purposes of the National Park designation, as amended under the Environment Act 1995, are to conserve and enhance the natural beauty, wildlife and cultural heritage of the area and to promote the understanding and enjoyment of its special qualities. Account must be taken of the economic and social interest of residents. The National Park is the local planning authority for the area within its boundary.

Blaenau Gwent County Borough (BGCBC)

None of the nominated site falls within the Blaenau Gwent County Council administrative area. However, as a near neighbour BGCBC has a close interest in the designation and management of the proposed World Heritage Site.

Blaenavon Town Council (BTC)

This is the local council for the town of Blaenavon which is the main settlement within the nominated site.

Cadw: Welsh Historic Monuments

Cadw is an Executive Agency within the Welsh Office. Its general duties are :

- to secure the preservation of ancient monuments and historic buildings
- to promote the preservation and enhancement of the character and appearance of Conservation Areas, and
- to promote the public's enjoyment of, and advance knowledge about, ancient monuments and historic buildings and their preservation.
- Cadw also has direct responsibility as the guardian of Blaenavon Ironworks.

Royal Commission on the Ancient & Historical Monuments of Wales (RCAHMW)

The RCAHMW is the national body of survey and record. Its aim is to compile and make available an archive understanding, conserving and managing the built environment.

National Museums and Galleries of Wales (NMGW)

The NMGW exists to preserve and promote the heritage and culture of Wales, within a world context. NMGW has a requirement from its Royal Charter to 'promote understanding and knowledge of the special industries of Wales through the collection and conservation of artifacts and their research, interpretation and display'. NMGW will have specific responsibility for the management of the Big Pit Mining Museum. Its special expertise in conservation and management is available on a day-to-day basis to the Blaenavon Partnership.

Countryside Council for Wales (CCW)

CCW is accountable to the Secretary of State for Wales and is the Government's Statutory adviser on wildlife, countryside, and maritime conservation matters in Wales. It is the executive authority for the conservation of habitats and wildlife. Through partnerships, as at Blaenavon, it promotes the protection of landscape, opportunities for employment and the support of those who live in, work in and manage the countryside. It has enabled the Blaenavon Partnership to pursue countryside management projects through grant aid and can assist with the management cost of the Sites of Special Scientific Interest. CCW were jointly responsible, with Cadw and ICOMOS UK, for the preparation of the Register of Landscapes of Outstanding Historic Interest in Wales, published in January 1998.

Wales Tourist Board (WTB)

The Wales Tourist Board seeks to develop and market tourism in ways which will yield the optimum economic and social benefit to the people of Wales.

Welsh Development Agency (WDA)

The Welsh Development Agency has responsibility to the Secretary of State for Wales for promoting and enabling economic development in Wales and dealing with issues related to land reclamation.

British Waterways

British Waterways has responsibility for management and maintenance of British waterways Canals, including the Brecknock and Abergavenny canal. One of the principal remits of the board is to respect industrial heritage.

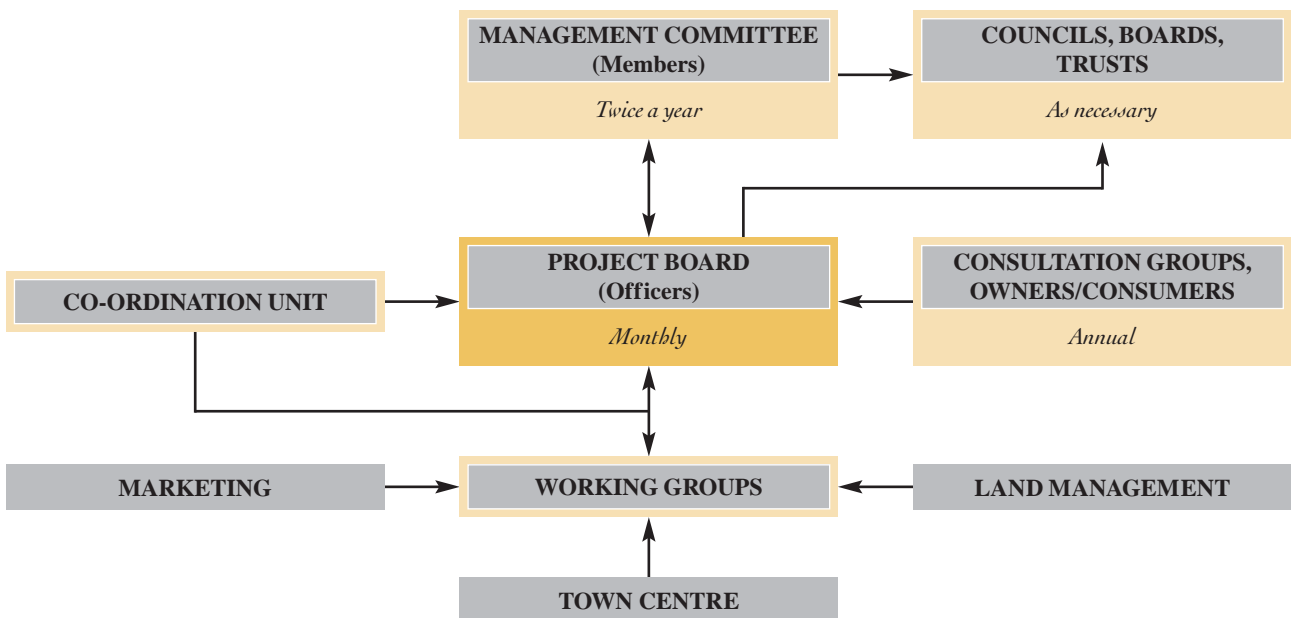
National Trust (NT)

The National Trust, as the principal United Kingdom non-governmental organisation with experience in heritage management, is able to offer valuable management advice and assistance.

Level at Which Management is Exercised

The lead authority in the Blaenavon Partnership, Torfaen county Borough Council, has adopted management of the Blaenavon Industrial Landscape at the highest level (the Chief Executive, the Director of Development, and the Director of Finance). All other partners have also ensured that senior staff have been allocated to the project and will represent them on the Project Board and working groups. The representatives on the Blaenavon Project Board are listed on the following table which also sets out their level of responsibility within their organisation.

Blaenavon Partnership Management Structure



Blaenavon Partnership: Project Board

Dr Clive Grace	Chairman of Project Board, Chief Executive, Torfaen County Borough Council.
Mr Andrew Fretter	Director of Development (Planning and Economic Development), Torfaen County Borough Council.
Mr Michael McLoughlin	Head of Projects Planning and Economic Development Department, Monmouthshire County Council.
Mr Peter Slater	Director of Development and Environment, Blaenau Gwent County Borough Council.
Mr Chris Ledbury	Assistant National Park Officer (Head of Park Management), Brecon Beacons National Park.
Dr Peter Wakelin	Inspector of Ancient Monuments and Historic Buildings (Industrial), Cadw: Welsh Historic Monuments.
Mr Steven Hughes	Head of Survey, The Royal Commission on the Ancient & Historical Monuments of Wales.
Dr Eurwyn Wiliam	Assistant Director (Collections), National Museums and Galleries of Wales.
Mr Peter Walker	Director/Manager, Big Pit Mining Museum.
Mr Stuart Reid	District Officer, Countryside Council for Wales.
Mr Nigel Adams	Head of Development Planning, Wales Tourist Board.
Mr Stephen Roscoe	Senior Project Manager, Welsh Development Agency.
Ms Cathy McLean	Urban Regeneration Officer, Welsh Development Agency.
Mr Richard Dommett	Manager, British Waterways.
Mr Richard Keen	Welsh Culture and Landscapes Advisor, National Trust, and Industrial Archaeological Advisor for the National Trust, Wales, England and Northern Ireland.
Mr John Rodger	Co-ordinating Officer Blaenavon Partnership

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APPENDIX 2

World Heritage Criteria and Obligations

The criteria used in compiling the World Heritage List and the obligations of membership of the List are important background information to be taken into account in managing the Blaenavon Industrial Landscape.

Under the terms of the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by the General Conference of UNESCO in 1972, it was decided that a World Heritage List should be established comprising properties which are considered to have outstanding universal value.

Under Article 1 of the Convention, the following are considered as 'cultural heritage':

Monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;

Groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;

Sites: works of man or of the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view.

Criteria for inclusion of cultural properties in the World Heritage List

A monument or group of buildings or site which is nominated for inclusion in the World Heritage List is considered to be of outstanding universal value for the purpose of the Convention if it meets one or more of the following criteria and the test of authenticity. Each property nominated should therefore:

represent a masterpiece of human creative genius; or

exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in monumental arts or town planning and landscape design; or

bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or which has disappeared; or

be an outstanding example of a type of building or architectural ensemble or landscape which illustrates (a) significant stage(s) in human history; or

be an outstanding example of a traditional human settlement or land-use which is representative of a culture (or cultures) especially when it has become vulnerable under the impact of irreversible change; or

be directly or tangibly associated with events or living traditions, with ideas or beliefs, with artistic and literary works of outstanding universal significance.

World Heritage Sites in the UK and dates of inscription

1986	1.	St Kilda (natural)
1986	2.	Giant's Causeway and it's Coast (natural)
1986	3.	Durham Castle and Cathedral
1986	4.	Ironbridge Gorge
1986	5.	Fountains Abbey and Studley Royal Park
1986	6.	Stonehenge, Avebury and associated Megalithic Sites
1986	7.	Hadrian's Wall Military Zone
1987	8.	Blenheim Palace
1987	9.	City of Bath
1987	10.	Westminster Palace, Abbey and St Margaret's Church
1988	11.	The Tower of London
1988	12.	Canterbury Cathedral, St Augustine's Abbey, St Martin's Church
1988	13.	Castles and Town Walls of King Edward I in Gwynedd
1995	14.	City of Edinburgh
1997	15.	Maritime Greenwich

International Obligations

The World Heritage Committee has no powers to manage or influence management of World Heritage Sites. However, management should be in accordance with the duties and obligations of each state party to the World Heritage Convention. These are described in detail under Article 5 of the Convention.

The main management objectives which derive from the general obligations of the United Kingdom Government under the Convention are:

- To protect, conserve and present the World Heritage values of the site.
- To integrate the protection of the area into a comprehensive planning programme.
- To involve the local community in the planning and management of the site.
- To strengthen appreciation and respect for the site's World Heritage values, particularly through educational and information programmes.
- To take appropriate scientific, technical, legal, administrative and financial measures necessary for achieving the above objectives.

APPENDIX 3

Detailed Description of Blaenavon Industrial Landscape Nominated World Heritage Site

Description of Property - The Cultural Resource

The Blaenavon Industrial Landscape, which is located at the head of the Avon Llwyd and also on the southern flank of the Usk Valley, lies at an altitude of between 70 m and 581 m above sea level. The site is about 24km from the sea at Newport, which is visible in fine weather from several parts of the nominated area, and about 40km from Cardiff, the Welsh capital. Blaenavon is at the north-eastern corner of the South Wales Valleys, at a point of abrupt landscape change. The traveller approaching Blaenavon from the east passes from the patchwork of fields and farmsteads which comprise lowland Monmouthshire to a dramatic landscape shaped by ironworking and coal mining. Memories of the journey from rural mid-Wales to the industrial Valleys remain in the collective memories of families whose ancestors migrated southwards in search of employment in the nineteenth century. 'There was smoke for miles' was a phrase repeated from generation to generation of one family. The Blaenavon area was only sparsely settled before the 1780s, although some minerals were worked on a modest scale by the Hanbury family of nearby Pontypool in the seventeenth century and the eighteenth century. The structures, sites and landscapes which justify the importance accorded to the area all date from the period after land was leased for a wholly new scale of industrial development between 1787 and 1789.

Blaenavon Ironworks

The Ironworks is the focus of the industrial landscape of Blaenavon and the *raison d'être* of the mineral workings and settlement.

In 1787-89 an extensive area of land for an ironworks, with all its necessary sources of raw materials, was leased from Lord Abergavenny by Thomas Hill, Thomas Hopkins and Benjamin Pratt, the first partners in the Blaenavon Company. The partners proceeded to construct three blast furnaces, with casting sheds and a blowing engine built by Boulton and Watt. They followed the most up-to-date practice of the time, in that they used steam power rather than water power to operate the furnace bellows. The first works in the world to do this, at Snedshill in Shropshire, had been built only a decade previously. The partners were confident enough of the new technology to locate in a mineral rich hillside site where only steam power could practically be used. They also had sufficient confidence in their ability to provide coke, iron ore and limestone to construct three furnaces at one works. Few contemporary works had as many, and these had grown from an initial single furnace. By 1796 the works was producing 5,400 tons of iron a year making it already one of the largest in the world. By 1812 there were five furnaces capable of smelting 14,000 tons of iron a year.

The establishment of Blaenavon Ironworks represented the comprehensive application of several generations of developments in the British iron industry. Hill, Hopkins and Pratt came from the English Midlands, where techniques of working iron with coal rather than charcoal had been introduced during the eighteenth century. In order for the new methods of the Industrial

Revolution to be applied to their true revolutionary effect they required a new location rich in all the sources of raw materials. The realisation of this potential by ironmasters, at Blaenavon and elsewhere in South Wales, was crucial to the achievement of the phenomenal growth in output of iron which took place in the following years.

In 1709 the first Abraham Darby had successfully smelted iron ore with coke made from mineral coal. In the 1750s his son, also Abraham Darby, developed means of smelting with coke which produced pig iron suitable for forging into wrought iron, and established a pattern of vertical integration in the industry. This involved forges as well as furnaces, mining and quarrying, the sale of lime and domestic coal, brickmaking, mechanical engineering and even farming. In 1776 John Wilkinson used a steam engine directly to power a blast furnace, thus enabling furnaces to be built away from sources of water power. Richard Wright and Richard Jesson in 1772, and Henry Cort in 1784, demonstrated that coal could be used in forging wrought iron from pig iron. By a process of symbiosis the technology of mining was developed alongside that of ironmaking. Steam engines, whose essential parts were made at ironworks, were applied to drain mines of water, and to operate winding mechanisms by which minerals were raised from, and miners given access to, underground workings. This range of technology, and these distinctive patterns of company operation were brought by Hill, Hopkins and Pratt to the head of the valley of the Afon Lwyd.

In about 1810 two more furnaces were added, with a second engine house. The first five furnaces were constructed of stone and brick, on a square plan. One was converted to hot blast operation about 1852. A sixth furnace was built in 1860 following the characteristic form of that time with a masonry base, above which was a circular structure of firebrick.

All the furnaces were built against a high stone-walled bank cut out of the hillside in the characteristic manner of South Wales. No 2 furnace, which is one of the original structures dating from 1789, is largely intact. It was kept in operation until 1902 making high grade cold blast iron. Furnaces 4 and 5, added in 1810, are substantially intact. The lower section of furnace 6, the circular furnace of 1860, represents a very rare survival of this evolutionary form of furnace. Furnace 4 and 5 were altered in 1881 to cast ingots which were used in steelmaking at the Company's Forgeside Works. The rail tracks leading to the furnaces remain in situ, and ingot moulds found during excavations are displayed nearby.

The furnaces, in their completeness and diversity of form, provide a better impression of eighteenth century and nineteenth century ironmaking technology and its development than any other group in Britain. At the top of furnace 5 remains the 'throat-armouring', strips of iron which directed material tipped into the furnace towards its centre, thus protecting the firebrick lining. The removal of exterior cladding from some of the furnaces makes it possible to understand their complex structures. The ashlar gritstone of the outwork of the furnaces is of high quality. Around the furnace hearth, stone and firebrick has been reddened by fire. The cast house of furnace 2 is intact, demonstrating the characteristic arched form of such structures, to provide shelter yet permit ventilation. Foundations of the blowing engine house have not yet been excavated, but the base of its massive chimney from which Stack Square takes its name, is clearly visible, as are the cast iron pillars and brackets which carried blast pipes to the furnaces. In furnace 5 there are still water-cooled tuyères through which air passed to its fiery interior. The output of blast furnaces was substantially increased from 1828 by heating the air charged from

their bellows, the hot blast process invented in Scotland by James Neilson and adopted at Blaenavon Ironworks in the 1850s. The base of the firebrick structure of a hot blast stove in the western corner of the site can be seen, and there are many examples of the honeycomb firebricks used inside such stoves. The retaining wall behind the furnace is riddled with large ducts for hot blast air to be carried around the site.

The Blaenavon Company was reorganised as a joint stock company in 1836, when James Ashwell was appointed managing director. He came from Nottinghamshire, had been a pupil of the great engineer, Bryan Donkin, and had directed ironworks in Derbyshire and Scotland. Ashwell was responsible for an extensive programme of improvements to the company's furnaces and forges, to its transport systems and to the houses provided for its workpeople.

The most impressive monument to Ashwell's work at Blaenavon Ironworks is the water balance tower at its northern end, which was built in 1839. This form of lift technology using water to counter-balance loads was used in the mine shafts of south east Wales and at several ironworks. This site is the best preserved example. The lift tower was linked to high ground behind by a wooden bridge, which was quickly replaced by the stone bridge which remains. Its winding gear consisted of a cast iron frame with Classical detailing, on which was mounted a pulley wheel over which a chain linked a pair of lift cages, each incorporating a wrought iron water tank. By piping water in or out of the tank, wagons could be lifted or lowered as required. The stonework of the tower is of high quality, and it is topped by the remnants of the cast iron frame, which has the appearance of a ruined Classical temple. One of the lift cages and water tanks is conserved on the site. Evidence that the system could accommodate wagons of two different gauges, and some dual gauge cast iron track, survives at the foot of the lift. The lift had probably passed out of use by 1879. An adjacent building which runs into the bank was used at one stage in its history for storing chains for the lift but is believed originally to have been a pair of coke ovens.

A large building, well-ventilated by open arches, was constructed on the site of the original Boulton & Watt blowing engine house, some time after 1860. This was a foundry which eventually employed 170 people. Iron was melted in the cupola furnaces, one of which remains, and moved in ladles around the buildings by means of swivelling cranes whose anchorage points can readily be identified in the walls. The remains of two core drying kilns lie next to this, in which sand mould boxes were prepared for casting objects.

Above the furnaces is a range of ruined kilns in which iron ore was calcined, or roasted, thus separating dross which contained little iron from a concentrate that was charged to the furnaces. Other buildings remaining on the site include a pay office, a storage shed and a chimney, all of which date from before 1880. The important range of workmen's homes built in 1788 and which included an office, managers house and company shop are described in the section on the town below.

In the 1870s, experiments in ironworking technology which had world-wide repercussions took place at Blaenavon Ironworks. In 1856 Henry Bessemer had for the first time made mild steel, which combined the properties of cast iron and wrought iron, and which, unlike the latter, could be made in bulk by blowing air through a vessel containing molten iron. By chance he had used iron which was free of phosphorus, but when the process was tried using cast iron made from phosphoric ores it proved unsuccessful. In the mid-1870s the Blaenavon Ironworks chemist,

Percy Gilchrist, and his cousin Sidney Gilchrist Thomas, who had studied metallurgy at the University of London but worked as a police court clerk in London, carried out experiments at their own cost at Blaenavon, developing linings for Bessemer converters that would absorb the unwanted phosphorus. Sidney Gilchrist Thomas announced the success of the experiments in London in March 1878, and in the subsequent scientific paper paid tribute to the assistance he and his cousin had received from the Blaenavon Company. By 1882 fourteen ironworks in Great Britain, France, Belgium, Germany, Russia and the Habsburg Empire had invested in converting to the Gilchrist-Thomas process. Andrew Carnegie, the great American steelmaker paid 250,000 dollars for the right to use the process in the United States, and remarked that: 'These two young men, Thomas and Gilchrist of Blaenavon, did more for Britain's greatness than all the Kings and Queens put together. Moses struck the rock and brought forth water. They struck the useless phosphoric ore and transformed it into steel.' A pink granite memorial with a relief bust of Gilchrist Thomas, which was originally erected at the Forgeside works, now stands adjacent to Blaenavon Ironworks, while the hearths of furnaces 4 and 5, adapted to cast ingots for steel making by the Gilchrist Thomas process, and the ingot moulds displayed nearby, are evidence of Blaenavon's most significant single contribution to metallurgical technology.

Big Pit

Big Pit is a museum of coal mining of international significance. In the context of Blaenavon it provides evidence of the ways in which the coal used in smelting iron ore at the Ironworks was obtained. The supply of coal was one of the engines of the Industrial Revolution and the central element in the transfer from organic to mineral technology. Coal at Blaenavon provided fuel for roasting, smelting and forging iron, for steelmaking, for burning lime, for making bricks, for powering steam engines, and in export for fuelling locomotives and steamships. It was vital to domestic settlement in an inhospitable climate with little timber.

The first shaft at Big Pit was sunk in 1860 or before and was linked below ground to workings dating from the 1830s for iron ore and coal. It was one of several collieries operated by the Blaenavon Company, initially to produce coking coal for the blast furnaces, but later to extract coal for sale for other purposes. Big Pit was the last deep mine to work in the Blaenavon area, and the surface buildings remain almost exactly as they were when coal production ceased in 1980. They date from between the late nineteenth century and c1970 and are characteristic of the surface structures of a modest-sized South Wales colliery. They are without architectural pretension, and are exceptional in their completeness.

The winding engine house was built in 1952 as part of improvements following nationalisation of the British coal industry, when an electric winder supplied by The Uskside Engine Company from nearby Newport was installed. The stone base of a nineteenth century winding house remains visible. The present steel headgear dates from 1921 and was used until 1973 for winding coal and until 1976 for men and materials. The system by which wagons carrying coal from the underground workings were unloaded from the cages in the shaft and discharged their coal remains intact. Other surface buildings include a fan house, a compressor house, a haulage engine house which provided power for moving wagons in a drift mine, a welding and fitting shop, a smithy, a stable block, an electricians' workshop, a sawmill for pit props, the offices of the manager and under-manager and an isolated powder house. On the hillside above the main mass of the buildings are the miners' baths and canteen, opened in 1939. Like almost

all such buildings at British collieries, they are built in the International Modernist style derived from precedents in the Low Countries which was favoured by the architects of the Miners' Welfare Committee from 1924 onwards. It is the only pre-War baths building in Wales which retains its hot air lockers for drying clothes, its shower cubicles, its automated boot brushes, canteen and medical room. It is regarded as one of the best examples anywhere of this important building type.

Big Pit is one of only two mining museums in the United Kingdom where visitors can be taken underground. After depositing contraband, tobacco, matches, and any electronic devices, visitors are taken in the cage down the shaft of 1860 to a range of workings, some dating from the 1830s. It is possible to see the ventilation system used in the mine, and the kinds of ventilation door worked by children of less than ten years of age until their employment was made illegal in 1842. A large twentieth century haulage engine used for drawing wagons along the roadways, the system of communication from workings to pit bottom by means of wires, the substantial outflow of water from the mine, the nineteenth century stables for the ponies which once worked underground, and evidence of the methods of extraction used in the last years of the mine's operation can also be seen. Access is also possible for specialists to River Level, which affords emergency access to the mine from near the Afon Lwyd river, an underground steam engine house of the early nineteenth century, and other workings.

This is an exceptionally complete colliery site. It lacks the scale of a very large pit like Lady Victoria at Newton grange, and the architectural flamboyance of such mines as Zollern XII in Essen, but its compact size combines with its completeness and representativeness to make it one of the best places in the world to gain an understanding of historic mining processes and of the human experience of coal mining.

Sources of Coal, Iron Ore and Limestone: the Landscape North of the Ironworks

The landscapes to the north of Blaenavon Ironworks comprise one of the area's most precious historical monuments. It is possible within this area to gain an understanding of the ways in which all the raw materials necessary for making iron were obtained - coal, iron ore, fireclay and limestone. The areas around Garn-yr-erw, Pwll-Du and Pen-ffordd-goch appear at first sight to be wholly disordered, to be nothing more than random dumps of spoil. However, closer examination reveals evidence of the earliest periods of mining and quarrying in the area, phased relationships, and patterns of mineral extraction over several generations. Coal, fireclay and iron ore nodules were found together in the coal measures of the Afon Lwyd valley and the mountain top. Limestone was brought from the escarpment on the north side of Pwll-Du and the Bloreng.

One of the best preserved areas of coal measure workings, at Pen-ffordd-goch, is a Scheduled Ancient Monument of 40 hectares in extent. There is much evidence of hushing or scouring, the process of impounding water with dams and then releasing it to expose veins by removing overburden, or to wash piles of ore extracted from adits. This was probably carried out before the seventeenth century and expanded in the first two decades of the Blaenavon Ironworks. However, it is known that scouring ceased by 1817 when the nearby reservoir was built, thereby securely dating the surviving features to before that time. One particular scour that has been

recorded follows the southern outcrop of the coal measures south east from the Llanellen road through Cefn-y-lan to the Abergavenny Road. There are the remains of ponds at its head, and throughout its length it was fed with water from adit mines. It was probably used over a long period for washing ore from levels. Map evidence from about 1812 shows numerous adits, or horizontal mines going into the hillsides in this area, many of them named after individual miners. This individualism is characteristic of the development of coal and iron mining throughout South Wales. To the south of Pen-ffordd-goch are numerous bell pits, examples of the most primitive form of shaft mine, of which the surviving evidence is usually a saucer-shaped depression, indicating the site of the shaft, surrounded by the spoil which was dumped around it. The remnants of hushing ponds, leats which supplied them with water, crowsfoot-shaped tips of waste materials, the collapsed entrances to adits, the abandoned earthworks of primitive railways, subsidences indicating the presence of pillar-and-stall mining systems beneath, and the site of a weighing machine can also be observed in the area.

A number of sites of coal and iron mining throughout the area show the method and condition of working at primitive open cast workings, adits and shaft mines. Surface digging of the outcrops and the use of bell pits probably continued until the 1860s when A J Munby, the commentator on Working Women, wrote of the 'robust and fearless girls who work at those mountain mines'. The best-documented and most easily identified of the adit mines of the early nineteenth century which took their names from the miners who worked them is Aaron Brute's level between the Furnaces and Forgeside, which is a Scheduled Ancient Monument. The entrance to the level is known to survive, and near to it stands an iron bridge dating from before 1832 which carried the primitive railway which led from the mine to the Ironworks. The significance of the many early nineteenth century bridges carrying primitive railways in South Wales was acknowledged in the TICCIH/ICOMOS study of bridges edited by the chief of the Historic American Engineering Record and published in 1996. Aaron Brute's Level was typical of many workings in Blaenavon, but rather more is known of Aaron Brute than of most miners. He was a stone mason and building contractor, and a Calvinistic Methodist preacher. He dug the level sometime between 1812 and his death in 1818, and also constructed houses along Brute's Road, on his own freehold land. The level had ceased to produce iron ore by 1843.

Remains exist of the earliest shaft mine in Blaenavon, Engine Pit of c1806, recently scheduled as an ancient monument. The substantial remains of Hill's Pits at Garn-yr-erw, sunk between 1839 and 1844 to provide both coal and iron ore for the Ironworks and operated until 1893, provide evidence of later, more advanced mining technology. The outstanding monument is the stone chimney which survives to a height of 6m and served the boilers of the winding engine. Surrounding it are the remains of the engine house and plots of land associated with the miners' cottages. The Hill's Pits complex also includes the cast iron frame of the brake engine of a primitive railway incline, constructed at about the time the colliery came into operation, as part of a route by which coal was conveyed to the Blaenavon Ironworks. There are substantial remains of the braking gear. Inclines of this type were common in the South Wales Valleys in the nineteenth century, but this is the only example in the region which retains parts of its horizontal winding and braking mechanisms.

The area to the north of the Ironworks also provides evidence of how limestone, used as a flux in the ironmaking process, was obtained. The main quarries were at Pwll-Du at the head of

Cwm Llanwenarth, and at Tyla to the west. There were also other smaller, earlier, quarries on the Bloreng. The Pwll-Du quarry was operating in roughly its present shape by 1819, and is exceptionally well-preserved. Its principal industrial monument is the shaft of a water-balance lift system, through which wagons loaded with limestone were raised to a primitive railway at a higher level. A horizontal tunnel links the shaft to the quarry floor, and evidence remains of a system of water courses and reservoirs which supplied the lifting gear with water. Limestone from the Pwll-Du quarry was supplied to limekilns along the Brecknock & Abergavenny Canal as well as to the ironworks. Cast iron boundary markers can still be seen on the quarry floor. Extraction of limestone ceased before 1860 and the form of the quarry, its railways and its tips, reflect its use in the early nineteenth century. The Pwll-Du quarry is a Scheduled Ancient Monument. The Tyla and Bloreng quarries also have extensive and interpretable remains of quarrying from the late eighteenth to late nineteenth centuries.

The open hillsides provide much other evidence of the industrial past. There is a mid-nineteenth century rectangular powder house, where explosives for use in quarries and mines were stored. On the top of the mountain is a stone marked with a 'B' and an 'M' on the boundary between Breconshire and Monmouthshire, which was a vital marker of the limits of the Blaenavon Ironworks lease. There are also remains of brickmaking establishments on the hillside above Blaenavon, as well as countless reminders of the products of the brickmakers in the firebricks of the blast furnaces, the walls of the cottages and public buildings, and boundary walls constructed from mis-shapen bricks and other waste material. Brickmaking was the principal employment for young women in Blaenavon in the mid-nineteenth century.

In parts of the landscape, particularly near Pwll-Du, the late eighteenth and early nineteenth century workings are overlain by tips of waste from surface workings for coal of the 1940s. Open cast extraction of coal using large-scale earthmoving equipment was unknown in Britain before World War Two, although it was commonplace in Germany and the United States, and similar methods were used for quarrying iron ore in many places in the English Midlands. Surface mining began in November 1941, utilising machinery from the United States and some which had been brought from Panama. An output of 1.3 million tons was achieved in 1942, which rose to a peak of 8.65 million tons in 1944. This was almost 5% of the total output of coal in Britain, and was judged to have been a 'vital part in balancing the national coal budget during the later years of the war' as it allowed rapid supply of essential steam coals compensating for the loss of production in those coal types during the 1920s and 1930s. The early development of open cast working was considerably aided by troops of the Canadian army based in Britain who provided diamond drills and the expertise needed to work them. Some of the waste deposits at Pwll-Du are significantly known as the 'Canada Tips'. The open cast operations at Blaenavon were memorably recorded in 1943 with a series of paintings and drawings by Graham Sutherland in his role as an official War Artist. The land affected by open cast mining in the 1940s was never restored, as it would have been had it been worked after World War Two, and the crude trenches and tips are themselves evidence of that particular phase in British history. These are believed to be the only early opencast workings in Britain to survive unrestored, enabling the process of overburden removal and the contrast in scale with earlier workings to be understood.

The area north of Blaenavon Ironworks comprises a landscape of unfettered exploitation, where

men and women used crude hand tools to scratch from the earth the materials which were fed to the furnaces. The landscape of Blaenavon is a memorial to a particular phase of human history; and one from which there is much to be learned, especially applicable perhaps in those countries that are undergoing large-scale industrialisation. We can utilise the area to recreate the experiences of the first phases of large-scale ironmaking. We can admire the imaginative insights of the entrepreneurs at Blaenavon, and empathise with the suffering and stoicism of their employees.

Transport Systems: Canals and Primitive Railways

The improvement of transport systems was a key component of the Industrial Revolution and was vital to the success of the coal and iron industries with their bulky goods and requirement to exploit new regions. The development in particular of dense industrial canal networks and the evolution of integrated primitive railways were central to the Industrial Revolution in Britain, especially in the period from the 1780s to the 1830s. Much evidence remains in the landscape of the transport systems by which Blaenavon Ironworks was supplied with raw materials and its products were conveyed to the coast. These superseded a series of primitive trackways whose remains can still be seen, and continued to evolve over several generations.

The prospect of a link with the port of Newport by way of the Monmouthshire Canal was doubtless one of the factors which led Hill, Hopkins and Pratt to establish the ironworks in such a location in 1789, and within a few years the canal had been built to within 6km of the works, providing cheap bulk transportation for most of the distance to the sea. Hill was a significant investor in the canal, which was completed to Pontnewynydd in the early 1790s and was linked directly to the Ironworks by a primitive railway operated by horses in 1795. A bridge of this railway and many identifiable parts of its route survive within the area.

In 1792 the Brecknock and Abergavenny Canal was promoted with the intention of providing inland navigation to the upper parts of the Usk valley, just to the north of Blaenavon, linking with the Monmouthshire Canal at Pontymoile. Construction of the canal began in 1797, in which year the first section was completed. The canal's northern terminus at Brecon was opened for local traffic in 1800, and that west of Govilon in 1805, but it was not until 1812 that the section through Llanfoist to the junction at Pontymoile was finally completed. The canal offered a cheaper route to the sea and became an important part of the associated landscape of Blaenavon Ironworks. The Company leased land for two wharves on the section of canal which lies nearest to the Ironworks at Llanfoist and Govilon. The canal fell out of use in 1930, but has now been revived as a popular waterway for holiday cruising, although it has no connection with other parts of the inland navigation network in Britain.

The outstanding feature of the Brecknock and Abergavenny Canal within the proposed World Heritage Site is the basin at Llanfoist, situated on the side of the mountain, and approached up a steep track. It was the terminus of the primitive railway built by Thomas Hill and completed in 1817. By this means, the Blaenavon Company hoped to avoid the high tolls charged by the Monmouthshire Canal, and to reach markets for their coal in the upper Usk Valley and to the east across the English border in Herefordshire. There is a substantial warehouse for storing pig iron and wrought iron bars and blooms before they were loaded on to canal boats. The warehouse is on two stories with direct rail access from the tramroad. There is a tunnel under

the canal, some 33.6m long, to accommodate the old parish road. The canal is crossed by a bridge for Hill's Tramroad built of cast iron plates carried on cast-iron T-section girders. The wharf went out of use in the 1860s and is now a base for cruising boats. All the principal structures at the wharf are listed, and the international significance of the site in waterways history as an early example of a canal/railway interchange was acknowledged in the report on Canal Monuments prepared for the World Heritage convention by TICCIH and published in 1996.

Thomas Hill of Blaenavon also leased land on the canal for the Ironworks a few years earlier, in 1815, at Govlion where the road from Blaenavon to Abergavenny crosses the canal. He gained permission for a warehouse to be built, and a small building on the canal bank, now listed, is believed to be this structure. After Llanfoist wharf was built, Govlion wharf became the terminus of Bailey's Tramroad, a primitive railway built by the ironmaster Crawshay Bailey in 1821 to link his ironworks at Nantyglo with the canal. Bailey's three-storey rubble stone warehouse of about 1821 is listed, and it is possible to see evidence of how the railway was accommodated at the wharf with an archway into the building. In the woodland south-west of Govlion is a single-arched rubble stone bridge built to carry the railway across Cwm Llanwenarth brook, which is a Scheduled Ancient Monument. An important group of limekilns also stands next to the canal.

In addition to the buildings at the two wharves, all the principal features of the Brecknock and Abergavenny Canal within the proposed World Heritage Site are protected by listing. They include bridges (Nos 95-99), all of rubble stone and dating from the early years of the canal's existence, several sections of embanked aqueduct, a dry dock, and the remains of three limekilns.

Blaenavon Ironworks was served by a dense network of railways which developed from the 1780s onwards, carrying limestone, coal and iron ore to the works, and connecting it to the canals. South Wales played an important part in the evolution of the railway at this time, between earlier timber railed precedents and the public railways of the 1830s and later. Developments took place in civil engineering approaches, the design of track and its bedding, haulage methods and administrative organisation. Many of these are reflected in the physical survival of railways at Blaenavon.

The primitive railway built by Thomas Hill in the years after he began to manage Blaenavon Ironworks in 1812, known as Hill's Tramroad, provides many insights into an important period of technological development, as well as evidence of the history of the Blaenavon Company. Not only did the railway establish a link with the Brecknock and Abergavenny Canal, it improved the means by which ore and limestone could be conveyed to the Ironworks from the north, and enabled pig iron from the furnaces to be carried to the forge opened at Garn-Ddyrys in 1817, where it was converted to wrought iron. To follow the footpath along the course of the primitive railway, on daringly-constructed and almost level terraces on steep mountainsides, is a thrilling experience. On most stretches the stone blocks on which the rails were mounted remain in situ. The route includes connections to the limestone quarries at Pwll-Du and Tyla and to the forge at Garn-Ddyrys. A series of counter balanced inclined planes take the railway down the mountain to Llanfoist. The 2,400m long tunnel under the mountain at Pwll-Du was the longest ever constructed for a horse-operated railway in Britain. It was developed from an earlier mining level which was already about 1,000m long in 1800. The southern approach to the tunnel is known,

ironically, as Marble Arch, and is a Scheduled Ancient Monument. A Blaenavon Company cast iron boundary marker remains in situ near to one of the two northern portals which have been blocked with stone walling. It is believed that most of the tunnel survives intact below ground and an exploration and survey is planned. Most of Hill's Tramroad fell out of use in the 1850s when the main line railway links were established between Blaenavon and Newport. The significance of Hill's Tramroad was recognised by its inclusion on a list of railways of international significance drawn up as a result of a year's research at the University of York and confirmed at a meeting of experts from a variety of countries at the National Railway Museum in the spring of 1998.

There are many other remains of primitive railway systems in the Blaenavon area. Stone blocks, cast iron sleepers and wrought iron and cast iron rails can still be observed from track beds and wastetips. Many of these artefacts have been removed and conserved as important evidence of railway evolution. Bridges of stone and cast iron survive and the location of perhaps the world's first multi-arched railway viaduct, built c1790, has recently been identified. The route of many railways can be followed and the density of the network that was developed can be appreciated. The Blaenavon Company's primitive railway system was largely reorganised by the manager Richard Johnson in the 1850s. Two steam locomotives replaced sixteen of the Company's hundreds of horses, and cast iron L-shaped railways mounted on stone blocks or cast iron sleepers were replaced with rolled wrought iron rails on wooden sleepers. A steam hauled double incline was built c1850 across the mountain to replace Pwll-Du tunnel. The remaining railway network within the Blaenavon Ironworks retains much trackwork of mid-nineteenth century date, and provides valuable evidence of the railway technology of that period.

From the mid 1850s, Blaenavon, like most towns in Europe, came to rely for both passenger and freight transport on standard gauge, steam-powered railways. It is fitting that the operation of such railways is demonstrated on a short stretch of preserved line located between Blaenavon Ironworks and Big Pit.

The Management of Water Resources

The blast furnaces at Blaenavon were some of the first anywhere to be blown by steam power rather than by the action of a water wheel. However, water was essential in the operations of the Iron Company and evidence of the ways in which it was used can be seen throughout the landscape.

In an upland setting like that of Blaenavon, which lies high on the watershed, the careful management of water was vital to provide sufficient and reliable supply, even in drought, to operate water balance lifts, carry out scouring, and feed steam engines. Surface and underground drainage was also of the utmost importance for mining operations. Water courses and drains can be seen in many places on the hills above Blaenavon, often with relationships to one another which allow relative dates to be determined. Near all the mineshafts are small reservoirs for water balance and steam engine supply, fed by many kilometres of watercourses which also served to drain the surface.

Engine Pit used underground waterwheels and a steam engine to lift water to a drainage adit, thereby enabling the use of water balances at shafts higher up. The forges of Cwmavon and Garn-Ddyrys both had bellows and hammers operated by water power. The reservoir which

supplied water to Garn-Ddyrys is a prominent feature of the landscape at Pen-fford-goch. The reservoir which served Pwll-Du quarry balance lift is also clearly visible and is part of the scheduled site. Above Big Pit, on the side of Coity mountain, Coity Pool was built in 1839 as a reservoir from which the boilers for the steam engines at Forge Side were supplied with water. Water also operated the counter balance lift at Blaenavon Ironworks.

The effective management of water was clearly one of the principal achievements of those who established and maintained the industries of Blaenavon.

Vertical Integration: the Forging Side of the Iron Industry

The blast furnaces at Blaenavon Ironworks produced pig iron, a form of cast iron which has a carbon content of about 4% which can be cast in moulds, and is strong in compression but weak in tension. The principal demand in the early years of the nineteenth century was for wrought iron produced by further refining the product, a chemically pure form of the metal, which is weak in compression but strong in tension. Until the 1770s, processes for forging wrought iron from cast iron involved the use of charcoal. The first process which used only coal was the so-called 'stamping and potting' method, patented in 1772. The alternative method, puddling, by which cast iron was melted in a reverberatory furnace, then stirred and worked until it reacted violently giving off blue flames and taking on a putty like consistency, at which point it was shingled under a heavy hammer, was patented by Henry Cort of Fontley Forge in Hampshire in 1784. Cort's process was widely adopted in South Wales and was responsible for the success of the region in rapidly increasing production of wrought iron to become its leading supplier. There are substantial remains connected with three forges of varying dates in the Blaenavon area.

The forge at Garn-Ddyrys, alongside the primitive railway built by Thomas Hill to link Blaenavon with the Brecknock and Abergavenny Canal at Llanfoist Wharf, came into operation in 1817. Pig iron from the Blaenavon Ironworks was taken through the tunnel at Pwll-du to Garn-Ddyrys to be forged into wrought iron, which was taken along the railway to the canal. The forge was making about 200 tons of iron a week in the early 1850s. It was closed in the early 1860s after the establishment of the Company's Forgeside works. The forge stands on a bleak hillside at an altitude of some 400m. The principle features of the site are some extraordinarily sculptural blocks of solid ironworking waste, one of them 4m in height, remnants of the ponds which formed part of the forge's water power system, the ruins of a manager's house and workers' cottages, and traces of the primitive railway connections to the site, including an intact tunnel built to carry Hill's Tramroad underneath slag tips. An excavation by local archaeologists in 1970 uncovered the foundations of a puddling furnace and other underground remains, water wheel pits, furnaces and rolling mills, which are substantially intact. Garn-Ddyrys offers great archaeological potential to enhance understanding of the development of puddling and rolling processes in the early nineteenth century. The forge, together with a nearby section of primitive railway is a Scheduled Ancient Monument.

To the south of the town of Blaenavon is Cwmavon, where there was a forge linked with Blaenavon Ironworks, probably employing the puddling process, which operated from about 1804. Its first phase of activity appears to have been quite short, but it was revived in the 1820s, from which time it was linked with the Varteg ironworks to the west. Forge buildings were

usually insubstantial, and there are no remains above ground at Cwmavon, but the site has remained undeveloped and the remnants of the forge's water supply are intact. A terrace which originally consisted of twelve dwellings, built for the forge workers c1804, was repaired by the British Historic Buildings Trust in 1987-88, and has been described as the finest surviving terrace of early workers' housing in the South Wales Valleys. A more substantial dwelling, Cwmavon House, was built for the ironmaster who revived the forge in the 1820s. At this time the Varteg Company operated a foundry and engineering works on the site at Cwmavon capable of boring steam engine cylinders. The important beam engine displayed on the Pontypridd campus of the University of Glamorgan was made there in about 1840.

In the late 1850s the Blaenavon Company established a new ironworks on the opposite side of the valley from its original furnaces at a site which became known as Forgeside. Forges and rolling mills were moved here from Garn-Ddyrys. The new works was able to make up to 500 tons a week of iron rails, tyres for railway wagons and carriages, and plates for boilers and ships. In 1868 the first of several blast furnaces on the site was blown in, and five years after this there were at the two sites ten blast furnaces, 89 puddling furnaces and eight rolling mills. In 1880 the Company began to make mild steel by the Gilchrist Thomas process invented at Blaenavon, which the Company was in the unique position of being able to use without royalty payments. The Forgeside works continues to operate on a modest scale in new buildings and parts of the original tyre mills. Others of the early buildings remaining are Coity House, probably built between about 1840 and 1860 for the works manager, a power station of about 1920, and most of the workers' housing.

Workers' Housing

A variety of workers' housing, some from the earliest years of ironworking, remain within the landscape at Blaenavon. The Blaenavon Company had of necessity to provide housing for its workpeople in the early years of its operation, since the area was only sparsely inhabited before the 1780s. The resultant settlement patterns are typical of the accommodation of workers at the ironworks of South Wales, which were among the fastest growing settlement of the Industrial Revolution. The population of Monmouthshire doubled in just ten years after 1810, and the majority of this growth was concentrated in new ironmaking communities such as Blaenavon. The Blaenavon Company usually built dwellings very close to its ironworks, mines, quarries or transport routes. An urban centre therefore developed only gradually. Whenever possible the Company seems to have attempted to construct houses outside the parish of Llanover, in which the furnaces were situated, so that it might avoid paying excessively high poor rates in periods of unemployment. The Company chose instead to build in Llanwenarth or Llanfoist, where it had less rateable property.

Adjacent to the Ironworks stands Stack Square and Engine Row, a small group of solidly constructed stone cottages, incorporating patterns of building, notably door and window heads, characteristic of the West Midlands in England alongside more local building practices. The houses were probably erected in 1788 for the first skilled workers who operated the furnaces from the time they were built. Amongst the early inhabitants was Joseph Hampton from the Stourbridge area of Worcestershire, who was superintendent of the Ironworks for nearly 30 years before his death in 1832. The houses form a square into which a 50 metre high chimney stack for a new engine house was placed in 1860, the base of which can still be seen. The

central range of the square was originally the Company office, shop and manager's house in 1788, and was converted to dwellings in the 1860s, which were of a much smaller size than the skilled workers' homes which surrounded them. The whole square is a Scheduled Ancient Monument in the care of the state and has been carefully conserved.

The very primitive buildings which were contemporary with Stack Square, some of them single room back to back houses, no longer survive, but in most cases their locations are clearly visible and archaeologically intact. Between 1817 and 1832 the Blaenavon Company constructed about 160 single-fronted, three room, two-storey dwellings, which have been called Blaenavon Company Standard Houses. They were usually built in terraces, some with as many as 30 dwellings, but some with as few as five. The terrace at Cwmavon, probably rebuilt in the 1820s, is the best example of this type of house. The foundations, garden plots and middens of several demolished terraces are archaeologically intact, including those of the 30 dwellings which formed Lower Rank Cottages, near the northern portal of Pwll-Du tunnel, which are a Scheduled Ancient Monument and offer potential for further study of the social archaeology and living conditions of such industrial communities.

Three of the five rows of rubble stone houses built for the workers at Forgeside before 1860 and identified only by the letters 'C', 'D' and 'E' rather than street names remain, rows 'A' and 'B' having been demolished in 1977.

The Town of Blaenavon

The growth of population in the Heads of the Valleys region of South Wales, where most of the ironworks were located, was one of the most dramatic demographic movements of the late 18th and early 19th centuries. Workers were initially housed by the iron companies where their labour was required, and the company shops were the main source of goods. Gradually a number of populous towns with centralised urban services and facilities developed. The characteristic form of these towns was chaotic, dictated by the axes of trackways and railways and the availability of land. Blaenavon is among the best examples of these emerging urban centres in South Wales. The Welsh poet Idris Davies summed up building in this chaos:

The daffodils dance in gardens

Behind the grim brown rows,

Built among the slag heaps,

In a hurry long ago.

Urbanism came long after the initial growth of industry at Blaenavon. The town of Blaenavon is largely of mid nineteenth century date. Its buildings reflect powerfully the distinctive culture that had developed in ironworking and coal mining areas of the South Wales Valleys. The only significant link with pre-industrial society in the area is the site of Capel Newydd, a tiny chapel first mentioned in documents in 1577 and demolished in 1863. The turf-grown foundations remain within a rectangular enclosure. It is a Scheduled Ancient Monument.

While the town was totally dependant for its living on the Blaenavon Company, it was not a 'company town' in the usual sense of that term. It grew gradually, and did not follow a particular

plan. Indeed, much of the town appears to have been constructed on land which did not belong to the Company or to its partners. In the 1840s there were three principle clusters of buildings in the area now occupied by the town, one around the Ironworks, one along the east-west axis, now King Street, where any pre-industrial settlement was probably concentrated, and one around St Peter's Church. The spaces between the three nuclei were gradually filled with buildings which evolved into a recognisable town by the 1850s. A significant development was the naming of the streets in the 1860s.

One group of buildings is closely linked with the first generation of ironmasters - the ironmaster's mansion, church and school built alongside the Blaenavon Railway between 1800 and 1816. The mansion, a substantial stone house known as Ty Mawr, in Church Road, was built about 1800 by Samuel Hopkins, son of the first resident manager of the Ironworks, and himself a proprietor from 1798. It was used by the directors of the Blaenavon Company as a hunting lodge until 1924, when it became a hospital supported by the subscriptions of local people. Its large garden at the rear is now a wood. The house is a nursing home and a Listed Building. Coity House at the Forgeside Works and Cwmavon House have already been mentioned as forge managers' houses. Govilon House was the home of the forge proprietor John Harries in 1819 and Llanfoist House was the home of one of the most important ironmasters in South Wales, Crawshay Bailey. The contrast between the housing of the ironmasters and managers and of the employee class can be clearly observed. Many terraces of workers' housing survive intact from the mid-nineteenth century growth of population at Blaenavon. In addition to the town of Blaenavon itself, there are long rows of houses from the 1870s at Garn-yr-erw and other examples on the fringes of the town.

The church of St Peter was built in the Gothic style in 1804 by the ironmasters Thomas Hill and Samuel Hopkins. The body of the former was interred in an adjoining vault. Its interior and graveyard reflect the importance of the iron industry in Blaenavon. A cast iron font, bearing the date of the church's consecration in 1805, remains in use, while the galleries are supported by cast iron columns of the mid-nineteenth century. In the graveyard are five iron-topped chest tombs, among them those of the ironmaster Samuel Hopkins and Thomas Deakin, surveyor of the Ironworks. The first vicar of St Peter's, appointed by Hill and Hopkins, was Welsh-speaking, suggesting that many of the first generation of ironworkers had been recruited from the Welsh countryside.

Near to the church stands St Peter's School, built in 1815-16 in memory of the ironmaster Samuel Hopkins by his sister, Sarah Hopkins. A Latin inscription on the facade records its opening in 1815. It appears originally to have consisted of two large rooms, one for boys and one for girls. The adjacent Infants School was added in 1849, and St Peter's Boys' School (now the Ramfield Study Centre) dates from 1860, after which the original building was used just for girls. This is an unusually early company school building, the oldest known ironworks school in Wales. The Darbys of Coalbrookdale, the celebrated Quaker ironmasters of the Ironbridge Gorge, certainly took an interest in the education of their workpeople's children in the eighteenth century, but they did not take responsibility for constructing a school building until long after 1816.

The growth of Broad Street as a retail and service centre north of the school and church took place in the 1840s and 1850s, taking up freehold land not controlled by the Blaenavon

Company and being carried out by independent developers. Streets of new housing built by speculative landlords spread out on either side of Broad Street during the 1850s and 1860s. This building pattern can be clearly seen in the form of the town today, with its slightly more ordered pattern and slightly higher standard than the housing which had preceded it. A particularly good example of a terrace of five mid- to late-nineteenth century shops, Nos. 15-19 Broad Street, remain in good condition. Many new service and retail functions were drawn to supply the growing population of Blaenavon from the mid nineteenth century onwards.

Blaenavon's many chapels provide much evidence of the town's culture in the nineteenth century. As in most industrial communities in South Wales the chapels were important educational as well as religious institutions, providing opportunities for lifelong learning as well as instruction in reading and writing for children. Chapels could also be an expression of ethnic feeling, of the identity of Welsh-speakers working for English entrepreneurs, or of political consciousness for workers willing or unwilling to worship with their employers.

The most venerable chapel building is the Bethlehem Chapel in Broad Street, whose congregation of Welsh-speaking Independents (or Congregationalists) first met (in an earlier building) on Christmas Day 1820. The present church, in the Classical style, with a gallery supported on eight cast iron piers, was opened in 1840. The Horeb Baptist Chapel was built in 1862 to accommodate a congregation whose origins went back to 1807. A baptismal pool remains below the floorboards, and the gallery, like that at Bethlehem, is supported on cast iron pillars. Moriah Chapel in Broad Street dates from 1888, and is also in the Classical style, but it has a more ornate interior. Iron columns with gold painted spiral decoration support a gallery with pierced ironwork balustrades, reached by twin staircases from the entrance vestibule. The chapel built in 1861 by the Bible Christians, a Methodist denomination with its origins in Devon and Cornwall, is now an ambulance hall. It is powerful evidence within the landscape of the feelings of identity of migrants who had moved to the South Wales Valleys from south west England.

The use of the Welsh language in Blaenavon was largely confined to the chapels by the 1860s, and became a matter of dispute between and within congregations in the following decade. By 1900 thirteen chapels in Blaenavon were almost entirely English-speaking, as indeed was the community at large. The census of 1901 recorded a population of 10,010, of whom 857 or 8% were Welsh speakers. Ten years later the population had reached 11,087, of whom only 616 or 5% were Welsh speakers.

Some of the social and educational roles of the chapels in the South Wales Valleys were taken over in the late nineteenth century by working men's institutes. Blaenavon's Workmen's Hall and Institute is the most imposing building in the town. It was designed by E A Lansdowne of Newport. The foundation stone was laid in 1893 and the institute was opened in 1895, although the building bears the date 1894. It was constructed by a local builder, John Morgan, and cost £10,000, which was raised by a halfpenny per week levy on the wages of miners and ironworkers, who reduced the cost of construction by contributing voluntary labour. The Institute, formally established in 1880, was a successor in Blaenavon to a Reading and Mutual Improvement Society which had a membership of 110 in 1860.

Institutes became widespread in South Wales from the 1890s, and some notable examples were built in the 1920s and 30s with the assistance of the Miners' Welfare Fund. Their culture

was adult and male. The characteristic components of an institute building were:

- reference library
- lending library
- reading room for newspapers and journals
- accommodation for indoor games, chess, draughts, and billiards
- large halls with stages for lectures and concerts
- smaller rooms for classes and committee meetings

The Blaenavon Institute is in architectural terms one of the best examples in South Wales, and a link with a distinct phase of self-improving working class culture, which was expressed in the second half of the nineteenth century by numerous voluntary associations, amongst them a choral society, several brass bands, a benefit society, a volunteer rifle corps and a cricket club. The town of Blaenavon retains many other buildings which relate to its history in the nineteenth century, including a Police Station and Magistrates' Court of 1867, and a number of historic public houses, whose number the Blaenavon Company attempted to restrict.

Almost all the principal buildings in the town of Blaenavon noted above are listed, and the town is designated as a Conservation Area.

Llanfoist

Parts of the village of Llanfoist are included in the area proposed for designation. These include several buildings linked with the iron trade, which are complementary to those at Blaenavon. The graveyard of the medieval church of St Faith includes a memorial to Crawshay Bailey (1789-1872), one of the most celebrated and indeed the most notorious of South Wales ironmasters, a determined opponent of legislation designed to ensure workers' safety. Bailey spent his last years at nearby Llanfoist House.



Blaenavon Industrial Landscape

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