

## Derwent Valley (United Kingdom)

No 1030

### Identification

*Nomination* Derwent Valley Mills

*Location* Derbyshire, England

*State Party* United Kingdom

*Date* 26 June 2000

### Justification by State Party

The nominated site relates to developments in technology in the 18th century that introduced the mechanically powered factory system within the textile industry. It began with the construction of the Silk Mill in Derby in 1727 for the brothers John and Thomas Lombe, which housed machinery for throwing silk, based on an Italian design. The scale, output, and numbers of workers employed were without precedent. However, it was not until Richard Arkwright constructed a water-powered spinning mill at Cromford in 1771, and a second, larger mill in 1776–77 using power from a tributary of the river Derwent to operate his machinery, that the "Arkwright System" was truly established. Arkwright's mills were so efficient and profitable that they were replicated hundreds of times before the end of the century and the textile mill became the archetypal factory of the Industrial Revolution. Factory production came to dominate the manufacturing economy not only of Britain but also of much of the world for most of the next two centuries.

#### Criterion ii

The advent of the factory system, which developed in the textile mills of the Derwent valley, but which spread rapidly to other locations and to other industries, created a new cultural tradition. It was one in which people, often unskilled or semi-skilled, worked on a regular shift system in large buildings and lived in nearby dependent communities. These mill villages, many of which evolved into factory towns, grew rapidly in number during the 19th century. From Britain these developments moved across continental Europe and North America and spread to much of the rest of the world.

The factory, as it grew in the hands of the Derwent valley mill owners at Cromford, Belper, Milford, and Darley Abbey, brought with it a degree of social enlightenment which included a concern for the quality of life of their workforce and their workers' families and led to the provision of decent housing and other amenities.

#### Criterion iii

A large proportion of the textile mills of the Derwent valley, including some of the earliest examples known to have been built in the world, are still standing. Apart from the buildings themselves, important elements of the supporting infrastructure have survived, including the engineering structures which carried the water-power systems from the river Derwent and its tributaries and the transport infrastructure, including toll roads, tramways, and canals. Furthermore, the factory settlements that were constructed at Cromford, Belper, Milford, and Darley are almost completely preserved, including in Cromford and Milford the factory masters' own residences and, notably in Belper and Cromford, farms and estate buildings.

The overall result is an ensemble of buildings, structures, and settlements, all grouped within a distinctive landscape dominated by the river that attracted the initial investment in the area. The integrity of the scene remains evocative of the period in the late 18th and early 19th centuries when, in this hitherto obscure Derbyshire valley, the factory system was born. **Criterion iv**

### Category of property

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *site*. It is a *cultural landscape* as defined in paragraph 39 of the *Operational Guidelines for the Implementation of the World Heritage Convention*.

### History and Description

#### History

The construction in 1721 at Derby in the English East Midlands of a water-driven mill to manufacture silk thread was a very significant event in the Industrial Revolution. The large mill building was five storeys high and housed machines driven from a common power source, thus laying the foundations of the modern factory.

This was the work of Richard Arkwright (1732–92), who in the 1760s successfully developed a machine for spinning cotton. His search for backers to finance a patent and further develop his machine brought him to the Derby area, where he formed a partnership with silk manufacturer Jedediah Strutt (1726–97) and his partner Samuel Need.

They selected Cromford, a village upstream of the river Derwent from Derby, for their first mill, work on which began in 1772. Between 1772 and 1775 much of Arkwright's time (and hence the work of the mill) was devoted to experimentation, as a result of which he was able in 1775 to file his second patent, which was devoted primarily to mechanization of the pre-spinning processes.

This was put into operation in the second Cromford Mill, built in 1776–77 and financed by local lead merchant Peter Nightingale, who purchased the Cromford Estate on which the mill and a residence for Arkwright were built. Arkwright also made provision for his workforce, mostly children. In order to attract them and their parents, he developed the village of Cromford. Weavers were invited to live in the houses that he built, their children working in the spinning mills and the parents weaving calico from Arkwright's cotton

on the topmost floors. This ingenious method of recruiting labour was adopted by the Derwent valley factory owners.

Once the second Cromford Mill was in operation a period of intensive activity began. Mills were built by Arkwright and his family and by Strutt in other parts of Derbyshire between 1777 and 1783. Royalty agreements licensing the use of the Arkwright machinery and process led to similar mills springing up in other parts of the country and overseas. Meanwhile, the Cromford operation expanded, and it was joined by another large installation, the Masson Mill at Matlock Bath, which was in operation by the mid 1780s.

Jedediah Strutt and his brothers established their mills further down the Derwent Valley. His first mill was built around 1776/7 in Belper. The destruction of this and a second one on the same site by fire led to the building of the fireproof North Mill in 1804. From 1781 onwards work went ahead on a second group of Strutt mills, this time at Milford, further down the river. Like Arkwright in Cromford, the Strutts created housing and other facilities for their workers in Belper and Milford. The Strutt business prospered during the first quarter of the 19th century, when it was the largest cotton factory enterprise in England, but thereafter it declined as the centre of the cotton industry moved to Lancashire.

The Evans brothers (Thomas, Edward, and William) began building a cotton mill at Darley Abbey, just north of Derby, in 1782, in the beginning possibly in partnership with Richard Arkwright. It was completed around 1786, but burned down two years later. Its replacement was constructed immediately and was considerably enlarged between 1796 and 1805 and again between 1818 and 1821. The company diversified its production, eventually giving up spinning, under the Evans family until 1903, then under two successive owners until 1969, when the mill was sold for other uses. It is now the home for a number of small businesses.

Like Arkwright and the Strutt brothers, the Evans family provided a community for their workers. Sir Richard Arkwright died in 1792 and the business passed to his son, Richard Arkwright junior, who sold all its holdings apart from the Cromford and Masson Mills. The late 1820s saw the beginning of a progressive decline in the fortunes of both mills. Cotton manufacture came to an end on the Cromford site in the 1870s: parts of it continued in use for other industrial purposes, but even these came to an end in 1979, by which time it had suffered two fires and much alteration. It is now home to a range of small businesses, as well as a popular heritage attraction. The Masson Mill, by contrast, was modernized in the late 1880s and was in continuous operation until 1992.

#### *Description*

The nominated property consists of a continuous strip 24km in length, from the edge of Matlock Bath in the north nearly to the centre of Derby in the south. It includes four industrial settlements (Cromford, Belper, Milford, and Darley Abbey), which are articulated by the river Derwent, the waters of which provided the power to drive the cotton mills. Much of the landscape setting of the mills and the industrial communities, which was much admired in the 18th and early 19th centuries, has survived.

In what follows only the more exceptional buildings and features will be described. These are treated in groups, sequentially from north to south.

#### - Cromford and Matlock Bath

*Masson Mill* was originally a 21-bay five-storey building 43m long and 8.4m wide built of brick on a gritstone base. The staircase and ancillary services are housed in a three-bay central projection, leaving the main floors uncluttered: its facade has a decorative architectural treatment. The original single waterwheel had another added in 1801, and both were replaced by turbines in 1928. It should be noted that there was no workers' housing provided by Arkwright at Matlock Bath.

The earliest industrial building of the *Cromford Mill Complex* was the Upper Mill (1771). It was originally a building of eleven bays 28.5m long by 7.9m wide and five storeys high. It was built of coursed gritstone lined with a skin of brick. The construction was entirely traditional, with timber beams and roof members and sash windows. It was a simple functional building with no concessions to architectural design apart from the original main entrance. The upper two storeys were removed by a fire in 1929 and it was reroofed in asbestos sheet. Power came from a single overshot wheel.

The Lower Mill of 1776 (sixteen bays, six storeys high, 36m x 8m) was built to house Arkwright's complete cotton spinning mechanism. It has now disappeared completely, but archaeological excavation has revealed its ground plan and internal details. The four-storey annexe still survives. Of particular interest is the complete hot-air system built within the separate service tower.

A large five-storey mill/warehouse of 1785–90, which survives in excellent condition, has an unusual apsidal end containing the staircase and services, freeing the entire interior for production. An internal lavatory column at the other end contains a heating system similar to that in the annex described above.

There is a number of other industrial buildings within the complex with various original functions – warehouses, workshops, a loom shop, mill managers' houses, etc.

Construction of the *industrial settlement* took place over a period of twenty years from 1776 onwards. In addition to the individual workers' houses (notably the fine 1776 terraces of North Street), there are some important social facilities, such as the market place, created in 1790 and dominated by the fine pedimented three-storey Greyhound Hotel. The school and schoolhouse in North Street date from 1832, when new legislation required employers to provide half-day schooling for child workers. There are many good buildings on the outskirts of the village, some antedating the establishment of the mill complex.

The *Cromford Canal*, built in the 1790s, ran 23.5km from Cromford to join the Erewash Canal, as part of a through route to Manchester. A section 10.5km long lies within the nominated area. The surviving buildings on the Cromford Wharf include two warehouses, an office or counting house, and two cottages. A number of structures survive along this stretch of the canal, including bridges, aqueducts, a tunnel, and several cottages, most of them from the end of the 18th century.

- Belper

Belper is located halfway between Cromford and Derby. The Strutts' mill complex lies to the north of the town centre, a medieval foundation, with the houses stretching up the slopes of the hills to the north and east.

*Belper North Mill* (1804) was built to replace that burned down in 1803 and incorporates the pioneer fire-resistant structure developed by Charles Bage in 1796 at the Ditherington flax mill in Shrewsbury. It is constructed in brick on a stone plinth, and the exterior retains the appearance of an "Arkwright" mill, with seventeen bays and a wing of six bays, on a T-shaped plan, with the wheel chamber in the wing. However, in the interior there are many features designed to resist or restrict combustion. The floors are of brick and tile supported by arches that spring from cast-iron beams. The beams in their turn are supported on cast-iron columns, linked together by wrought-iron ties. The floor arches in the bays above the waterwheel are filled with clay pots, thereby lessening the load in this area.

The North Mill is overshadowed by the East Mill (1912), a fortress-like seven-storey building with four corner turrets and an Italianate tower.

The *houses* built by the Strutts are built in gritstone or locally made brick and roofed with Welsh slate. They are laid out in rows, largely on an east–west alignment and in various forms as the company experimented with different designs. The Chapel and Chapel Cottage (1788) was one of the first buildings commissioned by Jedediah Strutt. It is an outstanding example of nonconformist architecture built in ashlar with a hipped slate roof. It was extended on either side in the 19th century.

- Milford

The Strutts purchased land in Milford in 1781 and immediately began building what was to become a complex of cotton mills and bleach works. Little remains of the industrial buildings following a radical clearance operation around 1960, but much of the industrial housing survives intact. The houses, many of them in rows because of the topography of the area, are in a range of styles. Some are earlier farm houses that were purchased by the company and converted into multiple dwellings. The public buildings established by the Strutts include schools, churches, and public houses.

- Darley Abbey

This settlement lies 2km north of Derby City Centre. It was an industrial hamlet, with fulling mills, corn mills, and a forge, by the middle of the 17th century, and these had grown by the early 1770s to five water-powered mills – a paper mill, a corn mill, two flint mills (for porcelain production), and a leather mill. The cotton mill development of the Evans family began in 1782 and was followed by their factory village.

The industrial structures that survive are among the most complete of any of the early cotton factory sites and are comparable with those at Cromford.

The *Long Mill* (1789) was built to replace the 1782 factory, which was destroyed by fire. It consists of five storeys plus attic and is 38.4m long and 10.1m wide. The ground floor is in masonry and those above in brick. Many of the exposed wooden members inside are sheathed in metal for increased

fire resistance (possibly the first known use of this technique). The attic floor is supported by a matrix of wooden beams, a feature not found on any of the other floors, and all are clad in sheet metal. The lower floors have structures of transverse beams with a central row of cast-iron columns.

The mill was extended in 1818 and again in 1821: these became what are known as the *East Mill* and the *West Mill*. The latter is an L-shaped extension projecting from the middle five bays of the Long Mill. It is brick-built with a masonry ground floor, but one floor lower than the Long Mill. The entire mill is fireproofed.

The *housing* built by the Evans family has survived almost intact. Only the family's own mansions, their farm, and the paper mill have been demolished. There is no discernible pattern in the distribution of these houses, built over more than four decades from *c* 1790 onwards: this can in no sense be considered to be a planned or model community. However, in the range and diversity of house types it compares favourably with Cromford and Belper.

## Management and Protection

### *Legal status*

There are thirteen Conservation Areas falling wholly or partly within the nominated area. These are designated under Article 69 of the Planning (Listed Buildings and Conservation Areas) Act (1990). Local planning authorities are responsible for their designation and periodic monitoring.

Under the provisions of the same Act, 838 buildings within the nominated area are included on the List of Buildings of Special Architectural or Historical Interest. Eighteen are Grade I (mostly at Cromford), 42 are Grade II\*, and the remainder Grade II. Authorization for demolition or alteration must be sought from the relevant local planning authority.

The nominated area contains nine Scheduled Ancient Monuments, designated under the provisions of the Ancient Monuments and Archaeological Areas Act 1979. Any works affecting these monuments must be submitted to the Secretary of State for Culture, Media and Sport for approval.

The nominated area also contains two Sites of Special Scientific Interest, designated under the Wildlife and Countryside Act (1981); one Special Area of Conservation, designated under European Union Directive 92/43/EEC on the Conservation of Natural Habitats etc; two parks on the Register of Parks and Gardens of Special Historic Interest in England; and fourteen sites on the Derbyshire Wildlife Trust's Register of Wildlife Sites.

### *Management*

Ownership of properties within the nominated area is varied. Most of the residential property is privately owned, as are some of the industrial sites and monuments. However, many of the important industrial buildings are in public ownership or owned by charitable trusts.

A comprehensive system of statutory control operates under the provisions of the Town and Country Planning Act (1990) and the Planning (Listed Buildings and Conservation Areas) Act (1990). Certain responsibilities are delegated by the two responsible government departments (Environment,

Transport and the Regions; Culture, Media and Sport) to local planning authorities. In the case of the Derwent valley, strategic planning is the responsibility of the Derbyshire County Council and Derby City Council, who jointly produce the Derby and Derbyshire Structure Plan, which has to be reviewed and revised regularly.

Direct control of development and local planning is handled by the relevant district councils: Derbyshire Dales District Council, Amber Valley Borough Council, and Erewash Borough Council. In Derby the City Council combines the functions of strategic and local planning authority. Each has produced a local plan which is implemented through its development control powers and which includes policies relating to the conservation of its heritage.

There is an Economic Development Strategy for the East Midlands for 2000–2010, and the three district councils and Derby City Council have produced, or are preparing, similar strategic documents.

It will be seen that management responsibility is shared by a number of local authorities and government agencies. A coordination mechanism was created in 1997 in the form of the Derwent Valley Mills Steering Panel, which is served by a technical working party. It has established a close working relationship between the local authorities involved in the nominated area.

This Panel has been responsible for the preparation of a draft management plan for the nominated property, which is in the consultation stage. The plan:

- Established a forum for those with ownership of, and management duties and rights over, land and buildings within the nominated site, including the occupiers of residential and commercial properties. The intention is to achieve a consensus for a strategy which is realistic and achievable, and which will be implemented in a sensitive and sustainable manner.
- Includes summaries of the description and significance of the area detailed in the nomination, as a basis for developing a management strategy to protect and enhance the nominated site, with a commitment to continued monitoring and review.
- Identifies the incidence and degree of vulnerability of the cultural heritage of the area.
- Develops proposals for the protection and enhancement of the special qualities and significance of the cultural landscape and identifies strategies for implementation.
- Identifies and reviews the effectiveness of current measures within the site that are designed to protect and enhance the area's special status and significance.
- Proposes ways of developing access to, and within, the nominated site sustainably, with regard both to the needs of individual sites and the local community.
- Proposes a mechanism for the management of the nominated site based upon a partnership of local authorities, agencies, and other bodies coordinated by Derbyshire County Council.

## **Conservation and Authenticity**

### *Conservation history*

Recognition of the historical importance of the Derwent valley mills and the need to conserve its industrial heritage began in 1971 when the Arkwright Festival took place, bringing together experts from a range of disciplines. It led to the creation of the Arkwright Society and in 1979 of a detailed study of the valley. Since that time there has been an ongoing programme of research, inventory, conservation, and rehabilitation on all the major industrial sites.

The sale of the workers' housing as the industrial companies that owned them closed down or were dispersed resulted in some inappropriate additions and alterations and loss of architectural detail, especially of the original joinery. This problem was recognized in the 1970s and 1980s and a strategy for protection and enhancement was set up by the local authorities and English Heritage involving grant-aid and technical advice for property owners.

### *Authenticity and integrity*

As a cultural landscape this stretch of the Derwent valley possesses a high degree of integrity. The relationship of the industrial installations and their dependent housing settlements to the river and its tributaries and to the topography of the surrounding rural landscape has been preserved, especially in the upper reaches of the valley, virtually intact. Similarly, the interdependence of the mills and other industrial elements, such as the canals and railway, and the workers' housing, is still plainly visible.

The industrial buildings have for the most part retained a large measure of authenticity. It has to be borne in mind that some have undergone substantial alterations and additions in order to accommodate new technological and social practices, but their original forms, building materials, and structural techniques are still intact and easy to discern. In those cases where buildings have been lost through fire or demolition, no attempt has been made to reconstruct. Restoration work on buildings that have been in a poor state of repair has been carried out following detailed research on available documentation and contemporary built architectural examples, and every effort has been made to ensure that compatible materials are used.

## **Evaluation**

### *Action by ICOMOS*

An ICOMOS-TICCIH expert mission visited the property in January 2001. ICOMOS consulted TICCIH experts on the cultural significance of this property.

### *Qualities*

This stretch of the Derwent valley is an exceptionally well preserved historic industrial landscape. It contains a number of important industrial buildings from the late 18th and 19th centuries, together with their associated workers' housing. It is especially important because it may justifiably be asserted that the modern factory owes its origins to Richard Arkwright's innovative mills at Cromford.

### *Comparative analysis*

In terms of industrial buildings the Derwent valley mills may be considered to be *sui generis* in the sense that they were the first of what was to become the model for factories throughout the world in subsequent centuries.

The provision of houses and other services for the workforce of the mills is an interesting, though by no means unique, element. This practice was adopted at New Lanark by David Dale, but it was the moral philosophy of Robert Owen that introduced a new dimension into what had been no more than a pragmatic approach to securing a workforce in a rural area. Owen's example was later followed and rationalized by Titus Salt in the mid 19th century at Saltaire, which in turn provided the model for the later Italian textile settlement of Crespi d'Adda, inscribed on the World Heritage List in 1995.

### **Brief description**

The Derwent valley in central England contains a series of 18th and 19th century cotton mills and an industrial landscape of high historical and technological significance. The modern factory owes its origins to the mills at Cromford, where Richard Arkwright's inventions were first put into industrial-scale production. The workers' housing associated with this and the other mills is intact and illustrates the socio-economic development of the area.

### **Statement of Significance**

The cultural landscape of the Derwent valley is of outstanding significance because it was here that the modern factory system was established, to accommodate the new technology for spinning cotton developed by Richard Arkwright. The insertion of industrial establishments into a rural landscape necessitated the construction of housing for the workers in the mills, and the resulting settlements created an exceptional industrial landscape that has retained its qualities over two centuries.

### **ICOMOS Recommendation**

That this property be inscribed on the World Heritage List on the basis of *criteria ii and iv*:

**Criterion ii** The Derwent Valley saw the birth of the factory system, when new types of building were erected to house the new technology for spinning cotton developed by Richard Arkwright in the early 19th century.

**Criterion iv** In the Derwent Valley for the first time there was large-scale industrial production in a hitherto rural landscape. The need to provide housing and other facilities for workers and managers resulted in the creation of the first modern industrial towns.

### **Bureau Recommendation**

That the Derwent Valley Mills be inscribed on the World Heritage List on the basis of *criteria ii and iv*.

ICOMOS, September 2001