CHAPTER 11. INDUSTRY

Industry had a major role in shaping parts of the landscape of the Lake District from prehistory. The extensive Neolithic stone axe production sites of the central Cumbrian Fells form the earliest industrial landscape in Cumbria, but most early industries were limited in scale and direct landscape impact. In the medieval period, the Lake District's abundant supplies of minerals, water and woodland were exploited by manorial lords and provided by-employment for their tenant farmers. Many of these industries, which carried on into the post medieval period were small-scale,

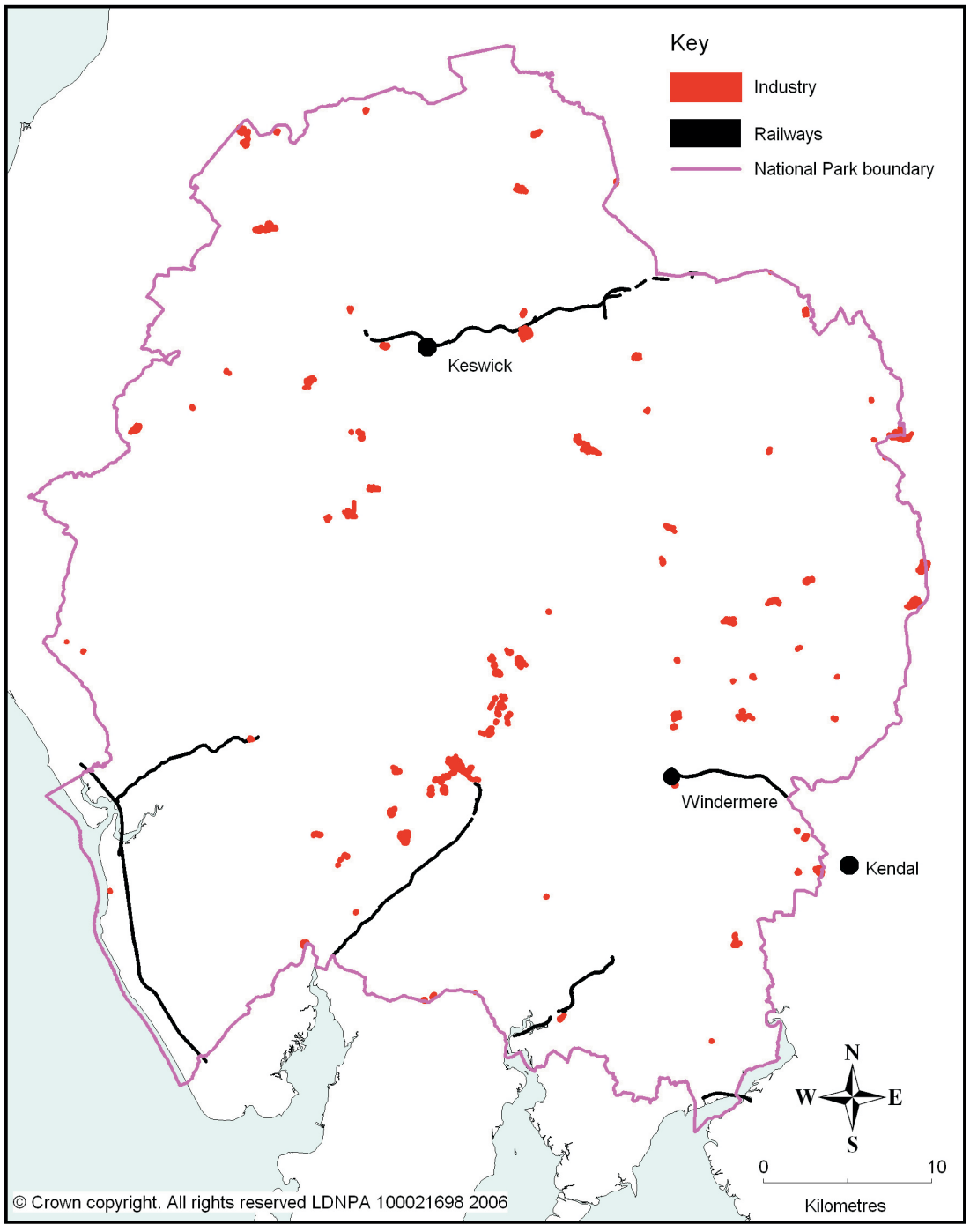

Figure 33: The distribution of industrial sites in the Lake District National Park

individual enterprises and as such, they tended to take place within existing settlements or in woodland at little, discrete sites. Such enterprises were too small in scale to be mapped by the HLC. Later in the post-medieval period when some industries, such as paper making and bobbin production, were undertaken on a larger, commercial basis, most industrial sites remained too limited to be mappable under HLC. Even gunpowder manufacture, which usually occupied extensive areas for safety reasons, was not mapped by HLC, as the industry comprised individual sites spread across areas of woodland. Gunpowder and other woodland-influenced industries, plus the water-powered industries, are covered in more detail in the chapter on Woodland and Water. A summary of the key industries undertaken within the area of the Lake District National Park is contained in Table 2, below.

Many of the Lake District's most historically important industries were already widespread in the medieval period, and the production of woollen cloth is well-documented, with spinning and weaving undertaken as a cottage industry in many homes, and serviced by a number of water-powered fulling mills from the thirteenth century.[1] Potash manufacture was also common at this time, as it was used to make soap to cleanse the cloth in the fulling process. All the woodland industries were certainly well developed in the medieval period, even though the products would have been for local use only. Iron mining and processing is also known to have taken place from the medieval period, though largely in Low Furness outside the Lake District National Park. Exploitation of the main Lake District iron deposits was in Eskdale, with smaller deposits in the central fells around Langdale and Coniston, and in Ennerdale, although archaeological evidence for mining is

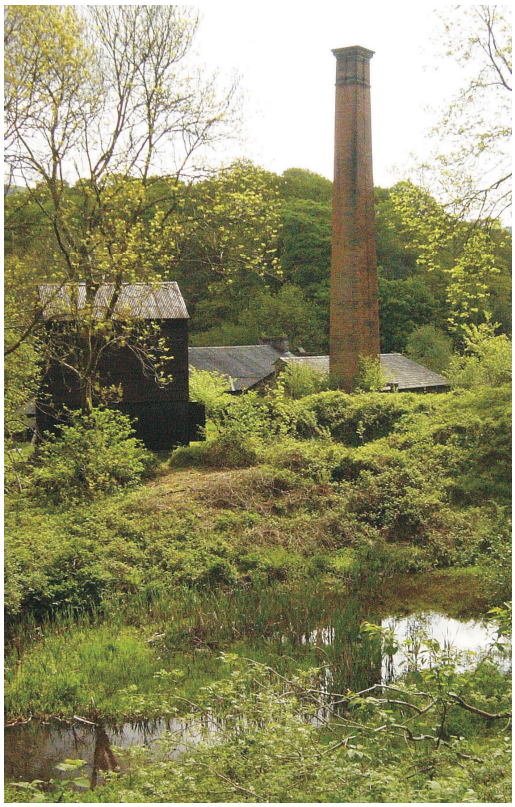

Plate 71: Stott Park Bobbin Mill. Although woodland-based industries such as this mill worked on a large scale, their impact upon the landscape remained limited for HLC mapping purposes. Its main mappable attribute was on the area of woodland needed to supply the mill, rather than the industrial buildings themselves (© English Heritage)

slight. Much of the early extraction is thought to have been through the exploitation of surface outcroppings, and amongst the nineteenth century workings of Nab Gill mine, at Boot in Eskdale, are narrow grooves representing earlier workings where ore was picked from surface veins.[2] Unlike the large-scale iron mines and processing sites of Low Furness, however, iron mining in the Lake District has had little direct physical impact on the landscape. Even the largest mine, Nab Gill, does not have sufficient surface remains to be mapped by the HLC, although nearby disused quarries are visible. Nab Gill mine had five adits, linked to mine buildings in Boot by three inclined

[1] Winchester 1987, 117-19

[2] Bowden 2000, 6, 12

planes and a track system, extending up the fellside with spoilheaps along Whillan Beck.[3] Even so, the rock-fast nature of the fellside, and the restriction of remains to the valley sides, means that very few of the mining remains are visible on modern Ordnance Survey maps. Although little is known about the early extraction of iron ore, there are a large number of known bloomery (smelting) sites in the Lake District National Park.

Table 2: Lake District Industries

Mining
Copper
Lead
Iron
Graphite
Tungsten etc
Metal processing
Bloomeries
Bloom smithies
Blast furnaces
Forges
Quarrying
Limestone
Slate
Granite
Woodland crafts
Hoop making
Cooperage
Tools
Swill baskets
Brushes
Other woodland industry
Bark peeling (for tanning)
Potash manufacture
Charcoal production
Water-powered industry
Bobbins
Gunpowder
Flax retting
Fulling
Paper
Corn
Textile production (Cotton, wool and linen)
Spinning
Weaving
Dyeing
Water Industry
Reservoirs

The extensive woodlands of High Furness provided plentiful material for charcoal, which fuelled the bloomeries. The large quantities required meant it was more efficient to transport the ore than the charcoal, thus the bloomeries were located in woodlands close to the fuel supply. Radiocarbon dates recently acquired from a number of bloomery sites have provided date ranges from across the medieval period up to the seventeenth century.[4]

The only industries to be physically large enough to be mapped by the HLC were the extractive industries. The earliest such industry to have a major impact on the landscape was the prehistoric stone axe industry of the central fells. Even though this has left behind extensive scree slopes of debitage, these have never been plotted by the Ordnance Survey and were thus unmappable by the HLC. It would be possible to map the extent of remains, however, from the detailed survey was undertaken for the National Trust and English Heritage in the 1980s.[5] The HLC did record post medieval and modern industrial waste products and extraction pits, where they have been mapped by the Ordnance Survey, and these are shown to have had considerable local impact. In particular, quarrying and the mining of lead and copper had a substantial influence on large areas of the high fells in the post medieval period. The origins of the extractive industries lay in the medieval period, in particular lead and copper mining. Lead was being mined from the Derwentfells area, near Keswick, from the mid-thirteenth century, organised on a manorial basis.[6] Copper, too, was mined from the early thirteenth century at Goldscope, in the Newlands Valley, where lead deposits were later discovered.[7] The scale of the industry

[3] Bowden 2000, 16-18

[4] John Hodgson pers comm
[5] Claris and Quartermaine 1989
[6] Winchester 1987, 120
[7] Millward and Robinson 1970, 225; Cameron 2000, 73

remained small, however, until major investment through the establishment of the Company of Mines Royal in the sixteenth century, when prospecting and extraction of copper by German miners was undertaken. They were the most proficient and technologically advanced miners in Europe. Mines were opened in several sites across the northern fells, at Goldscope, Buttermere, Borrowdale, and around the Caldbeck Fells, as well as at Coniston, and a large smelt mill was built at Brigham on the River Greta near Keswick.[8] The Company was not profitable, and the mining enterprises suffered further during the Civil War in the seventeenth century, but mining resumed on a large scale at the end of that century, including the extraction of lead,[9] for example at Roughtongill on the Caldbeck Fells.[10] Lead mining in Cumbria had been dominated by the mines on Alston Moor, but in the eighteenth century, large lead mines were opened in the Lake District. In the eighteenth and nineteenth centuries, the mining of lead and copper in particular was undertaken on a vast scale exploiting the numerous veins of ore first located by the Mines Royal.[11]

Plate 72: Lead mine and ore works at Greenhead Gill, Grasmere. The mine was opened and worked by German Miners for the Company of Mines Royal in the sixteenth century (© English Heritage)

Post medieval mining remains, though relatively localised, greatly influence the form and appearance of the landscape in some localities and are sufficiently extensive to be mapped in the HLC. The most northerly mines are around the Caldbeck Fells, where they exploited a particularly rich group of minerals, mainly lead but also some copper and, from the beginning of the twentieth century, tungsten ore.[12] Further south is one of the Lake District's most important lead mines, Greenside near Glenridding.[13] Although it is thought that mining may have begun here in the seventeenth century, the first properly documented record of lead mining dates to 1799. Large scale exploitation began in the High Horse Level in the early nineteenth century, and in the 1820s, a smelt mill was built there to allow the ore to be processed on site.[14] Further levels were opened throughout the nineteenth century, and it was the first mine in Britain to use electrical winding and underground haulage, powered by water turbines, and was later powered by a hydro-electric plant.[15] Other important lead mines were at Goldscope, where lead was discovered in the mid-nineteenth century and at Force Crag mine, where lead mining was succeeded by barytes extraction. Force Crag was the last working mine in the Lake District, finally closing in 1990.[16]

[8] Tyler 2001, 9
[9] Matheson and Jones 2000, 158
[10] Davies-Shiel and Marshall 1969, 138-9; Jecock *et al* 2000
[11] Tyler 2001, 9
[12] Davies-Shiel and Marshall 1969, 139; Tyler 2001, 183
[13] RCHME 1993
[14] Murphy 1996
[15] Matheson and Jones 2000, 160
[16] McFadzean and Tyler 2000, 115; Oswald 1999

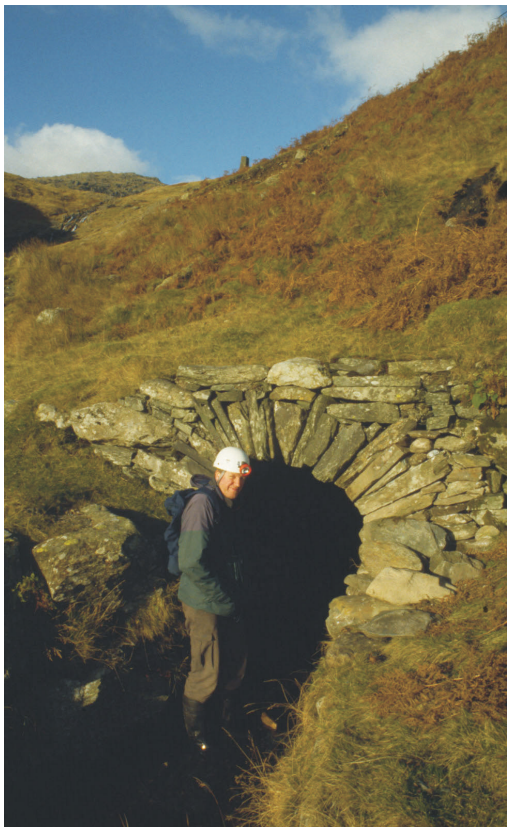

Plate 73: A mine adit at Coniston copper mines (© LDNPA)

The largest copper mines were around Coniston, which were opened by the Company of Mines Royal around the end of the sixteenth century. Nearby, Greenburn mine in the Langdale valley was also mined for copper from the seventeenth century.[17] Coniston continued in operation until the early twentieth century, and the remains are some of the most extensive in the Lake District National Park, covering around 46 hectares of fell between Levers Water and Coppermines Valley, where many of the associated mine buildings still survive. Considerable extents of this mining landscape and many others in the Lake District, such as 54 hectares of Greenside lead mines, 36 hectares of Force Crag lead and barytes mines, 11 hectares of Carrock Fell tungsten, lead, copper, and arsenic mines, and 8 hectares of Goldscope lead and copper mines, amongst others are considered to be of national importance and their remains have been scheduled as ancient monuments. Aside from Coniston copper mines, most of these mining remains appear insignificant as a landscape type on the HLC map of the Lake District. In the case of Greenside, Goldscope and Force Crag, the HLC could only map a fraction of the total physical remains, relating mostly to the extensive spoil heaps. It could not pick up the many associated features, such as tramways and processing areas, particularly where buildings have been levelled. At Carrock Fell, HLC mapped 10.5 hectares of the 11 hectare scheduled area, and at Coniston, 45 hectares of the 46 hectare scheduled area. On the ground, however, the three dimensional nature of these mining landscapes, emphasised by vast spoil heaps, make a dramatic impact on the fell sides, along with the surviving mine buildings, processing areas, and associated works such as reservoirs, leats, tramroads and adits.

The other key extractive industry in the Lake District was quarrying, in particular slate for both walls and roofing material. There are numerous small quarries which were exploited for local use in field walls and local farms, but it was only the large commercial quarries that were of sufficient scale to be mapped in the HLC, as spoil heaps were not always mapped by the OS. By the end of the nineteenth century, it was one of the most important industries in the Lake District, by which time it had diversified to include granite working, the polishing of marble from limestone and the production of concrete, in addition to the famous slate quarries.[18] Granite was first quarried commercially from Shap and Threlkeld in the mid-nineteenth century. Stone from the latter quarry was used for structures on the Penrith to Keswick railway in 1862, and by the end of the nineteenth

[17] Fleming 2000, 90; RCHME 1997a; Oswald *et al* 2001

[18] Davies-Shiel and Marshall 1969, 156

century the construction of the Thirlmere reservoir required vast quantities of stone.[19] The Shap quarries, on the eastern edge of the Lake District National Park, not only produced road chippings and ballast, but also fine stone facings for buildings, pavement flags and headstones, whilst the large Threlkeld quarry made stone setts for Manchester and other major towns both here and in South America, and later specialised in read stone and concrete products.[20]

The main quarry product was slate, which was known to have been worked as early as the thirteenth century at Sadgill in Longsleddale.[21] Slate quarries in this area, and around Kentmere, continued in production until the early twentieth century, and the disused quarries on the valley sides and in the surrounding fells are often still distinguishable on modern maps, even though many were operated as mines rather than open quarries. The main areas of slate production were concentrated in two areas; around Coniston/Langdale and Honister/Buttermere,[22] but large-scale production in these areas remained problematic until the mid-nineteenth century when transport problems were solved by rail. Around Coniston and Langdale, the main quarries were at Tilberthwaite, Coniston Old Man and Walna Scar above Dunnerdale. Before the railway was built to Coniston, slate was taken either down the Duddon Valley to the coast at Angerton, or to Coniston village where it was transhipped in boats to Nibthwaite and then by cart to Greenodd. Many of the quarries around Coniston closed in the 1920s, although it was around this time that a large deposit of green slate was discovered that became the still active Broughton Moor Quarry. Most of the quarries and mines closed in the second half of the twentieth century, but more recently, small-scale manufacturers have reopened quarries around Coniston and Langdale, as well as at Honister. Honister is being worked by traditional methods.[23] Consequently it has some tourism potential as a visitor attraction, but the reprocessing of waste material is also resulting in a loss of historic features.

The Changing Countryside

Traditional industrial processes have left their mark on the Lake District landscape, either as active or relict sites or through the growth of settlements, reservoirs and railways. Many of these sites are now recognised as being nationally important archaeological sites and can also be home to a number of rare plant species such as metallophytes (metal tolerant plants) including leadwort which is are able to grow on the poisonous remains of lead mining sites. Disused mine shafts also provide a habitat for bats. Such traditional industries are still a valuable part of the Lake District economy with active slate quarries at Elterwater, Broughton Moor, Kirkstone, Honister and intermittent work at Bursting Stone, Brandy Crag and some additional small workings. It is important for the future maintenance of historic buildings within the National Park that traditional building materials, such as slate, remain accessible. The loss of slate quarries could ultimately lead to a loss of local distinctiveness within settlements. Most of the existing quarries pre-date the planning process and so environmental controls and restoration schemes may not be to the level required by new permissions, however these can be reviewed under the Minerals Review process. The process of assessing the impact of proposals is well established and accepted by the minerals industry, but future

[19] Davies-Shiel and Marshall 1969, 157
[20] Tyler 2001, 168
[21] Cameron 2000, 41
[22] RCHME 1997b
[23] Cameron 2000, 46-7

environmental assessments should also make full use of HLC data in order to assess the impact of proposals on the wider historic landscape. The screening of industrial sites, often required as part of the planning process, can result in a change of landscape character. Proposals to screen such sites should be assessed against the wider historic landscape character using HLC. Restoration proposals should use the HLC data to create a new landscape character which sits well within the existing historic landscape.

Industrial landscapes are vulnerable to change through neglect and regeneration, and the National Park Authority Local Plan[24] encourages the reuse of such derelict land. Former industrial landscapes are also often targeted for new tree planting and with the Forestry Commission's recent target to increase native woodland planting[25] and biodiversity targets for increased woodland cover, this threat to former industrial sites may increase. This can be a particular problem for small mining sites located in gills in the fells. Former quarries are also often identified as potential landfill sites, although the Lake District National Park Local Plan takes the view that landfill sites (with the exception of the existing site at Kendal Fell) are better outside the National Park.[26] Industrial landscapes need to be recognised as historic landscapes rather than places to be cleaned up and reclaimed. This does not preclude future change, but requires that any proposals for a change of use should follow established procedures for other historic landscapes ie, a process of pre-determination assessment exploring the impact of the proposals on the historic landscape and any buried remains. Such procedures should also be followed for land use change outside the planning system such as woodland planting.

Industrial sites dating from the twentieth century are often associated with related buildings such as workers'

Plate 74: The Honister slate quarries, reopened in recent years, and being worked by traditional methods (© LDNPA)

[24] LDNPA 1998, Policy 28
[25] Forestry Commission and DEFRA 2005
[26] LDNPA 1998, 130

housing. These associated remains provide an historic context for the industrial sites and while the industrial expansion of settlement is far less in the Lake District than other northern settlements, it is still possible to tie the success of neighbouring industries into increased wealth within the communities. Proposals which may result in changes to industrial sites or their associated remains need to be assessed against the overall impact to both the industrial site and its wider historic setting.

Plate 75: Industrial worker' housing in Staveley (© Egerton Lea Consultancy Ltd)

Relatively recent industrial sites, while often important in themselves, also have the potential to contain remains relating to the early development of the industrial process, even in areas where the landscape appears to have undergone major changes. Where there is a proposal to develop such sites, a full desk top assessment using historic mapping and other historic sources can shed light on the time depth of apparently modern sites. The potential importance of such modern sites also needs to be recognised. For example, Force Crag has recently been scheduled as an ancient monument because of the preservation of the processing plant which remained in use until 1990.

Abandoned workings have often become an accepted part of the Lake District landscape as they are slowly recolonised by nature. The National Park Local Plan[27] recognises the important role such sites can play in education and therefore proposals to reclaim relict sites will be weighed against the conservation and health and safety interests.

While many industries have been mapped and included on the HER, a number of earlier and smaller industries are not represented on either the HLC or the HER. Small cottage industries, such as those associated with textile making and weaving, are often only represented by a particular type of housing and unless the building is listed, it may not appear on the HER. Similarly, many woodland industries are only identifiable through evidence of pollarding or coppicing and not all sites have yet been recorded on the HER or in HLC.[28] More detailed landscape surveys will be required over time to collate data on these industries. On a much larger scale, the axe factory site at Langdale is represented on the HER, but the extent of the workings could not be mapped by HLC. Future enhancement of the HLC or HER data should also include smaller cottage industries. Only by combining both data sets will it be possible to get a full picture of the extent of industrial activity in the National Park. The broad brush approach of HLC has also resulted in only a selective area of some of the larger extractive industries being mapped and this has resulted in some scheduled areas (and therefore nationally important) being excluded from HLC. Future enhancement should revisit the mapped industrial areas in order to more accurately reflect the true extent of the industries.

[27] LDNPA 1998, 125
[28] Hodgson 2000, 83-3

Shaping the Future: Recommendations

- Future environmental assessments, required as part of a planning application for industrial activity, should make full use of HLC as well as the HER in order to assess the impact of proposals, including screening and restoration, on the wider historic landscape character.
- The surrounding buildings and structures of modern industrial sites, especially the wider social fabric such as housing, should be given due consideration in relation to any development proposals or change of use which may impinge upon them. Environment assessments commissioned to assess the impact of the proposal should also include these related structures.
- Proposals for tree planting or reclamation of former industrial sites should be assessed against the impact on the historic landscape character as well as the impact on buried remains.
- Where health and safety permits, relict industrial sites may be retained to become archaeological remains with an educational function. Such sites often become valuable wildlife habitats.
- Smaller industrial sites not recorded on the early Ordnance Survey maps should be added to the HER. Thematic surveys of particular small industries such as textile making should be carried out to complement existing surveys in Cheshire, Greater Manchester and West Yorkshire.[29] The mapping of a number of the larger industries should be revisited in order to ensure that it reflects more accurately the true extent of the industries.
- Small industrial woodland features such as pitsteads should be mapped as part of the ongoing enhancement of HLC (see also the chapter on Woodland).

[29] Newman and McNeil 2007