

Broad Character: Industry
Character Type: Processing Industry
National Perspective

INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES

The Character Type Processing Industry includes the following Sub-types:

- Chemical works
- Iron and steel works
- Industrial production (unspecified)
- Sewage works
- Nuclear reprocessing
- Spoil and waste dumping
- Lime production
- Salt production

The Processing Industry Character Type covers a broad range of processing and production industries which have a particular relevance for HSC due to their distinctively coastal and/or maritime expression and occurrence.

Chemical works refer to an industrial complex involved in the production of chemicals (<http://thesaurus.english-heritage.org.uk>). Likewise, 'iron and steel works' refers to an industrial complex for large-scale production of iron and/or steel in the 19th and 20th centuries. Both chemical works and iron and steel works are often located on the coast and in or near ports to take advantage of imported raw materials and for the distribution and export of finished products.

Industrial production (unspecified) refers to an area of facilities relating to industrial production but whose chief product is not specified in sources available to the HSC assessor. The areas included here will have aspects giving them a distinctively maritime character.

Sewage works refers to an area in which sewage is filtered and purified in large rectangular or circular tanks (<http://thesaurus.english-heritage.org.uk>). This includes associated outfalls, pipelines and diffusers.

Nuclear reprocessing refers to an industrial area for the decommissioning of structures associated with the nuclear industry, reprocessing of nuclear materials, nuclear waste management and/or nuclear fuel manufacturing activities take place.

'Spoil and waste dumping' refers to marine areas regularly used and licensed for the disposal of domestic and/or industrial waste. Material deposited may include dredging spoil, drilling waste, treated sewage, domestic refuse and other land waste.

'Lime production' covers areas associated primarily with the transport and production of burnt lime from limestone, largely for agricultural use but also for lime mortar. It includes lime kilns and contiguous associated infrastructure such as quays, jetties and loading ramps.

Salt production refers to coastal and areas concerned with the production of salt for use primarily in food preparation and the preservation of foodstuffs, notably fish and meat. Area dominated by rock salt mining are discussed separately under the Character Type text for 'Extractive Industry'.

'Processing Industry' is directly related to the production and manufacture and, indirectly, to the consumption of goods. For example, iron is the most widely used of all the metals. Its low cost and high strength make it indispensable in engineering

applications such as the construction of machinery and machine tools, automobiles, the hulls of large ships, and structural components for buildings. Since pure iron is quite soft, it is most commonly used in the form of steel (<http://en.wikipedia.org/wiki/Iron>). Timber has been mainly used for shipping and building industries, as well as fuel. Brick, tile and clay have been generally used in the building industry as well as the production of pottery. When different types of clay are used in combination with different minerals and firing conditions, earthenware, stoneware, and porcelain can be produced, which have been shipped and distributed commercially at a global scale for several hundred of years. Typical examples are tin-glazed earthenware, the first white pottery (often painted) manufactured in England during the 17th century. In the 18th century, industrial and technological developments enabled standardised productions and mould-made sets, amongst others (e.g. creamware and saltglaze types) (see Draper 1984; Gaimster 1997; Gesner 2000). Sugar refining was a significant production industry in the centre of Liverpool in the post medieval period, and a number of sugar houses are known. Large quantities were imported through the docks from the West Indies, on the final leg of the triangular slave trade.

Areas occupied by processing industries developed considerably through time, usually leaving traces of earlier technologies, either materially or as influences on later plant layouts. Sometimes in production areas, earlier industrial features could be partially impacted by later workings while traces of earlier non-processing features could also be identified, such as remains of settlements and fields pre-dating the industrial complexes.

HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY

Typical components of Processing Industry include:

- chemical works
- iron and steel works
- timber yards
- brick, tile and clay works
- potteries
- glassworks
- mills
- lime kilns
- cement works
- roperies
- warehouses
- engine and boiler works
- sewage treatment works
- water treatment works
- sewage pipelines
- diffusers
- outfalls
- pumping stations
- reservoirs
- saltworks

English society experienced a period of transformation during the 18th century, especially between 1750 and 1800, when industrial developments, inventions and new scientific discoveries were taking place within the context of a growing capitalist system. This period contained complex social dynamics that had profound impacts on local, regional, national and international scales. These changes were expressed in this first phase of Britain's industrialisation from about 1750, in which economic growth accelerated rapidly, creating a cycle of positive feedback where that growth was both a

cause and a product of the economic and social transformations occurring at that time (Hobsbawm 1999: 12).

Patterns of production and consumption were transforming at the end of the 18th century, and English society demanded much greater quantities of certain goods while maintaining quality standards. Industrial and technological developments responded with more standardised productions and mould-made sets, amongst others changes. The industrialisation process also stimulated changes in cultural attitudes, ideas, world-views, work practices and life styles in different areas of England, impacting hugely on the character of past and present societies.

The iron and steel industries were particularly significant both during this early phase of industrialisation and in its later development and expansion during the 19th century. These industries were used in the production of machinery, tools, ships, weapons and buildings. Iron and especially steel allowed the development of more precision machine requirements as needed in the manufacture of efficient steam engines and eventually enabling the construction of, for example, railways (Appleton 1929); steam-powered shipping; cranes for loading goods at wharves and quays; rifled military guns for longer range coastal defence, and a diversity of later 19th century coastal recreation facilities such as the large piers projecting into the sea on steel supports.

From a maritime perspective timber yards and roperies were particularly important suppliers for shipbuilding. The second half of the 17th century experienced a great demand for timber, especially within the growth of the shipping and house building industries.

Warehouses are intimately linked to the processing industries and are used by manufacturers, importers, exporters, wholesalers, transport, businesses, and customs amongst many others. Historically, warehouses load and unload goods, sometimes directly from railways or seaports. For example, the complex of dock buildings and warehouses at Albert Dock (Liverpool), opened in 1846, and were the first warehouse structures in England to be built from cast iron, brick and stone, with no structural wood. As a result, it was the first fully non-combustible warehouse system in the world, a major advance on the earlier fireproofing of timber structural supports in mills and warehouses. At the time of its construction, the Albert Dock was considered a revolutionary docking system because ships were loaded and unloaded directly from the warehouses.

Brick and tile works are generally poorly documented but there is evidence of the industry dating as far back as the Romano-British period, with indications that it was introduced to England by the Romans (Rowe 2000). In the later medieval and early post medieval periods, the brick industry was given a stimulus from bricks imported to coastal ports as ballast in shipping from continental ports where brick usage was already prevalent.

Regarding sewage, there was no controlled method for the disposal of liquid waste effluent until Victorian times. Before then, rivers, streams, tidal estuaries and the sea provided the means for carrying away waste. By the early 19th century, the rapid growth of towns and cities and the development of industry created major problems concerning waste disposal whose significance as a cause of mass disease outbreaks, notably the spread of cholera and typhoid fever, was only recognised in the 1850s. London responded by constructing enclosed interceptor sewers whose contents were pumped into the Thames downstream. Treatment at extensive sewage farms was also taking place in some towns. By the end of the 19th century, sewage farms became overloaded due to the continuing growth in population. As a result, more intensive handling methods were devised, the infrastructure of which still required large areas of land.

These methods were gradually replaced by the more space-efficient activated sludge technique (developed in the 1910s). By World War II, much land previously occupied by sewage farms had become redundant and was subsequently used for housing, leisure facilities and industry (Department for the Environment Industry Profile 1995).

Lime production began in Britain in the Roman period to supply demands for lime mortar and plaster for the construction of stone buildings. Kilns from this period are found throughout much of England but with a concentration in the south. The advent of medieval castle and church building saw a revival in the use of lime as a building material. However from the 16th century, it was the recognition that burning lime produces material that lowers soil acidity and increases soil fertility that led to the construction of large numbers of lime kilns, often, in lime-deficient areas, with a particular bias towards coastal locations to where the raw materials, limestone and coal, could be imported. Rising populations to feed and wars with France in the 18th century saw a rapid growth in the demand for lime: kilns were built alongside nearly every creek and landing point in some parts of the country, particularly in those areas lacking in shelly beach sand which could be used for the same purpose. Since the south-west of the country possessed little limestone of its own, and had predominately acidic soils, most lime and the fuel coal was imported, from South Wales but also nearer to hand from Plymouth and Dorset along the south coast (Isham 2000). The construction of lime kilns often necessitated purpose-built quays or rock-cut landing places.

Before the 18th century, almost all salt used in England was produced by various methods of boiling brine, most derived directly or indirectly from seawater but some was supplemented by inland brine wells in Cheshire and around Droitwich, Worcs. The resulting coastal bias in salt production was enhanced from the medieval period by extensive use of salt for preserving fish for inland markets or for export. Coastal evidence for early salt production, dating back in Somerset to the Middle Bronze Age, comprises finds of coarse pottery (briquetage) from boiling vessels, trays and pedestals, often accompanied by hearth debris. By the later Iron Age and Roman periods this leaves some extensive surviving landscape features, notably the debris mounds known as 'red hills' beside present and former coastlines of Essex and Suffolk, but extensive Roman salt production has left similar debris along the south and south west coasts. Documented medieval coastal salt-making was widespread; field evidence from Cumbria and Lincolnshire includes saltworks boiling concentrated brine extracted from salt-encrusted silts, a process called 'sleeching', associated with extant mounds of waste and filter pits. From the late medieval period, coal-fuelled direct boiling of seawater dominated: associated coastal features include rock-cut cisterns, embanked 'saltpans' to trap quantities of seawater, especially along the Cumbria, Northumberland and Durham coasts using adjacent coal deposits, and workers' cottages. Mined Cheshire rock salt and cheap sea-salt imports from Brittany rendered most English coastal sea-salt production uneconomic in the 18th century except along the Hampshire coast: Portsmouth's naval victualling needs supported extensive salt-making on Lymington marshes until 1865: large embanked evaporation ponds survive there with traces of the salthouses. At Teesside, salt was refined from brine pumped from underground deposits from 1863 to 2002.

The chemical industry is a significant coastal industry, particularly in the north of England where it developed in relation to other industries from the late 18th century. In Alkali production was centred on Tyneside in the north-east, and on Merseyside and Deeside in the north-west. When mixed with fat, alkali was used to make soap, and the industry grew and developed with the introduction of industrial-scale cloth production. When mixed with lime and sand, alkali was used to make glass, and industrial-scale glass production became important industries on Tyneside and Merseyside. Chemical products like soap, dyes and bleach were increasingly in demand and the need for glass also encouraged the industry. Such works also produced soda, alum and Epsom salts.

One of the biggest problems associated with the alkali works was pollution, mainly from emissions of hydrochloric acid fumes which devastated the neighbouring countryside. One solution was to build tall chimneys to drive the fumes further away, creating a visual impact which changed the character of the landscape and seascape of the area.

VALUES AND PERCEPTIONS

The processing industries generate a range of often contrasting views and perceptions. For some, they represent places of work or future employment where people can earn a living or more broadly putting money into the local economy which will support the breadth of shops and other service infrastructure. Many people working in the industries or living in the towns where they are located, are also proud of the goods and products which these industries create, many of which are eagerly consumed by wider society.

Some processing plants, such as sewage works, are clearly essential public amenities, though few want them in their immediate neighbourhood for aesthetic, environmental and local character reasons. However, others may perceive the material presence of processing industries as more generally unattractive and a cause or risk of various forms of pollution, whether sensory, physical or both.

Conservationists often oppose the construction of reservoirs for their potential impact on local flora and fauna, however among the wider public, reservoirs can be highly valued for the space they offer for recreation, tourism and leisure activities, often providing water sport facilities for wind surfers, canoeists, water skiers, anglers and yachtsmen.

RESEARCH, AMENITY AND EDUCATION

The past and ongoing reliance of many processing industries on the coast and sea for their materials supply and products distribution networks have often been overlooked, yet this dependence has led to many traces of these industries now forming highly distinctive parts of the coastal landscape and seascape for much of the country.

As they make such a contribution to their areas' distinctiveness, some features in this Character Type, such as mills, salterns and limekilns, may well be appropriate for wider public presentation in local visitor and tourist information resources as foci for raising awareness about local character and its development to the present.

The amenity potential of coastally-situated reservoirs is also extensive for fishing and water sports as well as areas of natural beauty and wildlife havens.

CONDITION AND FORCES FOR CHANGE

The condition of coastal processing industrial remains varies considerably from almost total destruction to excellent preservation. Where modern processing plants become redundant, they are generally quickly cleared and re-presented as areas ripe for new development. Historic coastal remains from these industries are prime targets for public-awareness initiatives in the context of the forthcoming coastal access requirements from the Marine and Coastal Access Act 2009. This access will need care in its routing to avoid increasing visitor erosion on surviving features.

Former processing industrial sites are often classed as 'derelict land' if remains are still present or, if recently cleared as noted above, as 'development land'. In either case, it is usually subject to expanding housing and industrial developments, though liaison with the relevant heritage planning advisers is needed to conserve and/or record earlier features where they still survive.

RARITY AND VULNERABILITY

In terms of rarity, processing industries exist, of course, where their necessary resource supplies exist: for many such industries, that supply is ship-borne and their distribution is therefore coastal. In some cases that distribution may be further skewed by proximity to the land-based resources most costly to transport or to the chief market which the industries supply, hence for example the concentrations of large complexes of processing industries along the Thames and Mersey estuaries near their markets in greater London and in the Merseyside and Manchester conurbations.

In terms of vulnerability, raising awareness of the roles and unique values of our coastal industrial processing remains in England can make them better understood as an integral part of the cultural legibility of their land and seascapes, a legibility which can be handed on to future generations.

PUBLISHED SOURCES

- Appleton J. 1929. Iron and Steel Industry of the Cleveland District. *Economic Geography* 5: 308-19
- Ashmore O. 1982. *The Industrial Archaeology of North-West England*. Manchester: Manchester University Press
- Baker J. 1984. *Sunderland Pottery*. Wiltshire: Thomas Reed Publications
- Department for the Environment Industry Profile. 1995. *Sewage Works and Sewage Farms*. Ruislip: Department for the Environment Industry Profile
- Draper J. 1984. *Post-Medieval Pottery 1650-1800*. Buckinghamshire: Shire Publications Ltd
- Frank S. 1982. *Glass and Archaeology*. London: Academic Press
- Gaimster D. 1997. *German Stoneware 1200-1900. Archaeology and Culture History*. London: British Museum Press. 430 pp.
- Gesner P. 2000. *Memoirs of the Queensland Museum. Cultural Heritage Series*. Brisbane, Australia: Queensland Museum. 159 pp.
- Hobsbawm E. 1999. *Industry and Empire*. London: Penguin Books.
- Isham, K, 2000. *Limekilns and limeburners in Cornwall*, Cornish Hillside Publications, St Austell
- Rowe P. 2000. *Industrial Archaeology in Hartlepool: Tees Archaeology*

WEBSITES

<http://www.nwl.co.uk/>

<http://www.nationalglasscentre.com/>

<http://www.englandsnortheast.co.uk/>