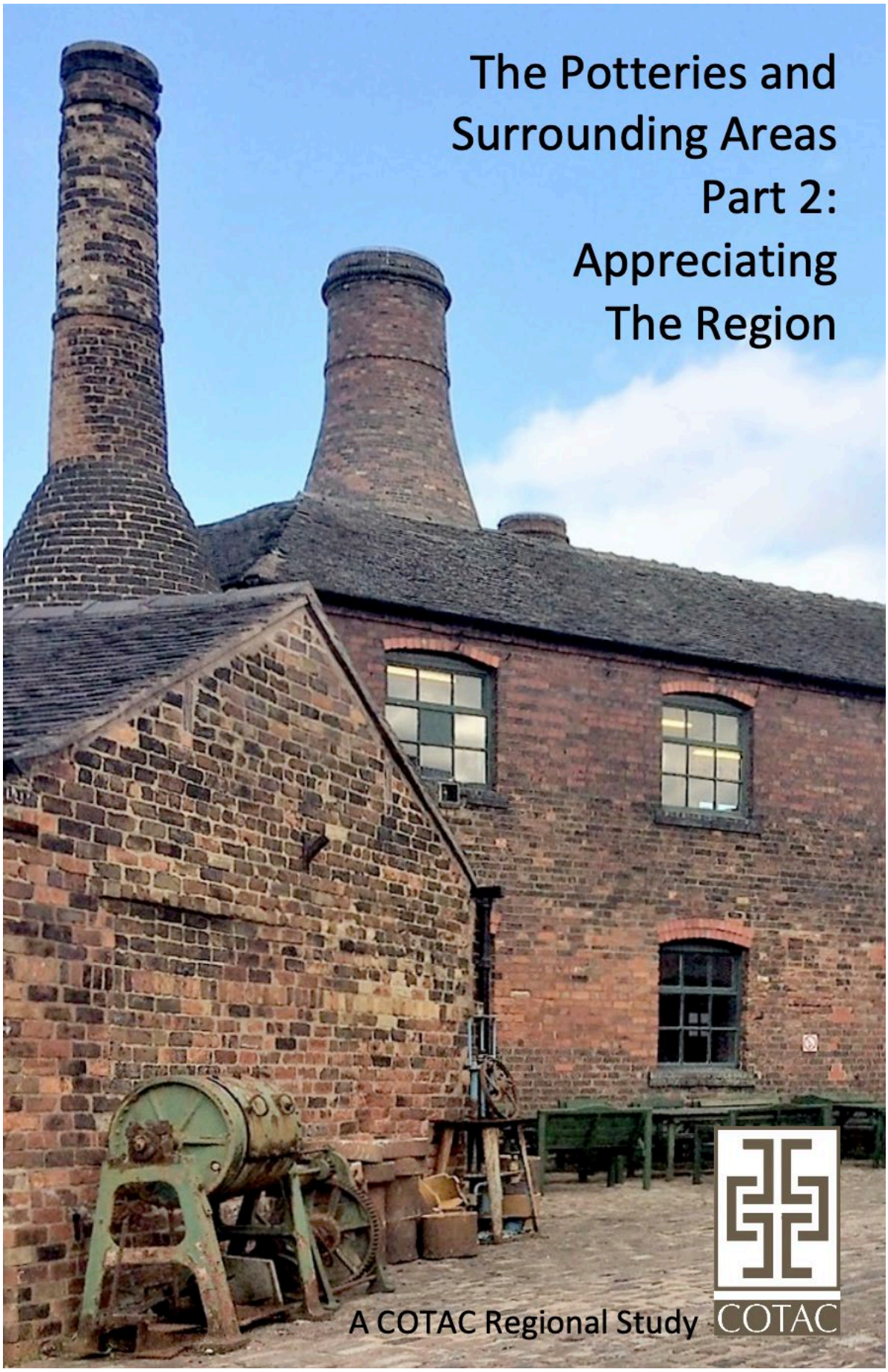


The Potteries and Surrounding Areas Part 2: Appreciating The Region

A COTAC Regional Study

COTAC

The Potteries and Surrounding Areas
Part 2: Appreciating The Region

Barry J Bridgwood and Ingval Maxwell

Information Box: Structured Approach

Supplementing the COTAC Regional Study *The Potteries and Surrounding Areas Part 1: Understanding the Region,* the following approach considers key aspects that created The Potteries and sets out to construct a deeper appreciation of them through short statements, Information Boxes and related illustrations, whilst raising some pertinent questions

Reading *Part 1: Understanding the Region* along with this *Part 2: Appreciating the Region* will provide guidance and information to help suggest answers to the questions

Various summary Information Boxes [in grey tinted inserts] are offered in each of the five sections alongside Summary Questions [in coloured inserts], whilst suggested answers are offered as an Annex to the volume

Council on Training in Architectural Conservation (COTAC)

COTAC originated in 1959 in response to the need for training resources for practitioners so they could properly specify and oversee work involved in repairing and conserving historic buildings and churches. Since its inception the Charity has persistently and influentially worked to lift standards, develop training qualifications and build networks across the UK's conservation, repair and maintenance (CRM) sector, estimated at over 40% of all construction industry activities. This has involved working partnerships with national agencies, professional and standard setting bodies, educational establishments and training interests.

This study is directed towards a general audience and those wishing to increase their knowledge of The Potteries area, and its specific form and type of buildings in addition to assisting in providing a framework for carrying out similar regional studies. As a regional case study appearing on the COTAC www.cotac.global website the approach aims to follow a methodology that reflects the comprehensive 14 ICOMOS Education and Training Guidelines.

The two-part study has been undertaken for COTAC in support of its objective to advance the education of those involved in the protection, preservation, and sustainability of the historic environment, and to provide knowledge in support of training in the art and skills required to protect and preserve it. Part 2 of the study should be read in conjunction with Part 1: Understanding The Region.

The COTAC study was researched by Barry J Bridgwood and prepared jointly with Ingval Maxwell who wish to acknowledge the support provided by Terry Woolliscroft for information on pottery processes and terminology, Tracy Holland for other image sources and from Neil Owen for help in identifying the location of bottle ovens/kilns. Thanks are also due to Jon Goodwin and Andy Perkin for reviewing the two volumes.

COTAC, London: April 2019

The Potteries and Surrounding Areas: Appreciating The Region

This Part 2 support document outlines some issues that will help those interested in gaining a fuller appreciation of The Potteries region and its challenges. It aims to do so by raising more focused issues for thought and consideration beyond those presented in the COTAC Part 1: Understanding of the Regional study. It aims to achieve this through the following five sections, addressing:

1. What is special and why?
2. Is appearance and appeal important?
3. How does a building work?
4. What needs to be thought about?
5. How does what we do affect the heritage?

The Location of the Six Towns of The Potteries of Stoke-on-Trent © Google Earth 2018

Information Box: General Considerations

In the intended process of gaining a greater appreciation of The Potteries through this publication, the undernoted general issues might well arise for individuals to consider as they read the document:

- What is it about my local built environment heritage that bears on how it is perceived and valued?
- How has my area developed and how might I assist in its protection?
- What has been the most significant effects on my area, how it looks and has changed?
- Where might I find out more about my area?
- In what ways have my local buildings and their locations changed over time?
- How might I appreciate how these changes have affected my heritage's long-term future?
- Where might I find information that shows the changes that have taken place?
- What wider national and international factors might have had an impact on my local heritage?
- How might I ensure that what I do offers security for the long-term future of my local heritage?
- Where might I find and gain relevant advice about how to help protect my local heritage?
- Where might I find relevant know-how to help protect my local heritage?
- What sources of information might be available to me?
- Who else might help in the protection/security of my local heritage?
- How might I and my local interest groups be able to assist and how might I contact them?

Fig.1.0 Hanley in an era before mechanised public transport 1910

Contents

1: What is Special and why?

The Historic Eureka Moment and Emerging Reality

The Potteries is the only UK area known by the name of its principle manufacturing process. But it was also a centre for coal mining, iron and steel production, brick making, tile making and tyre manufacture.

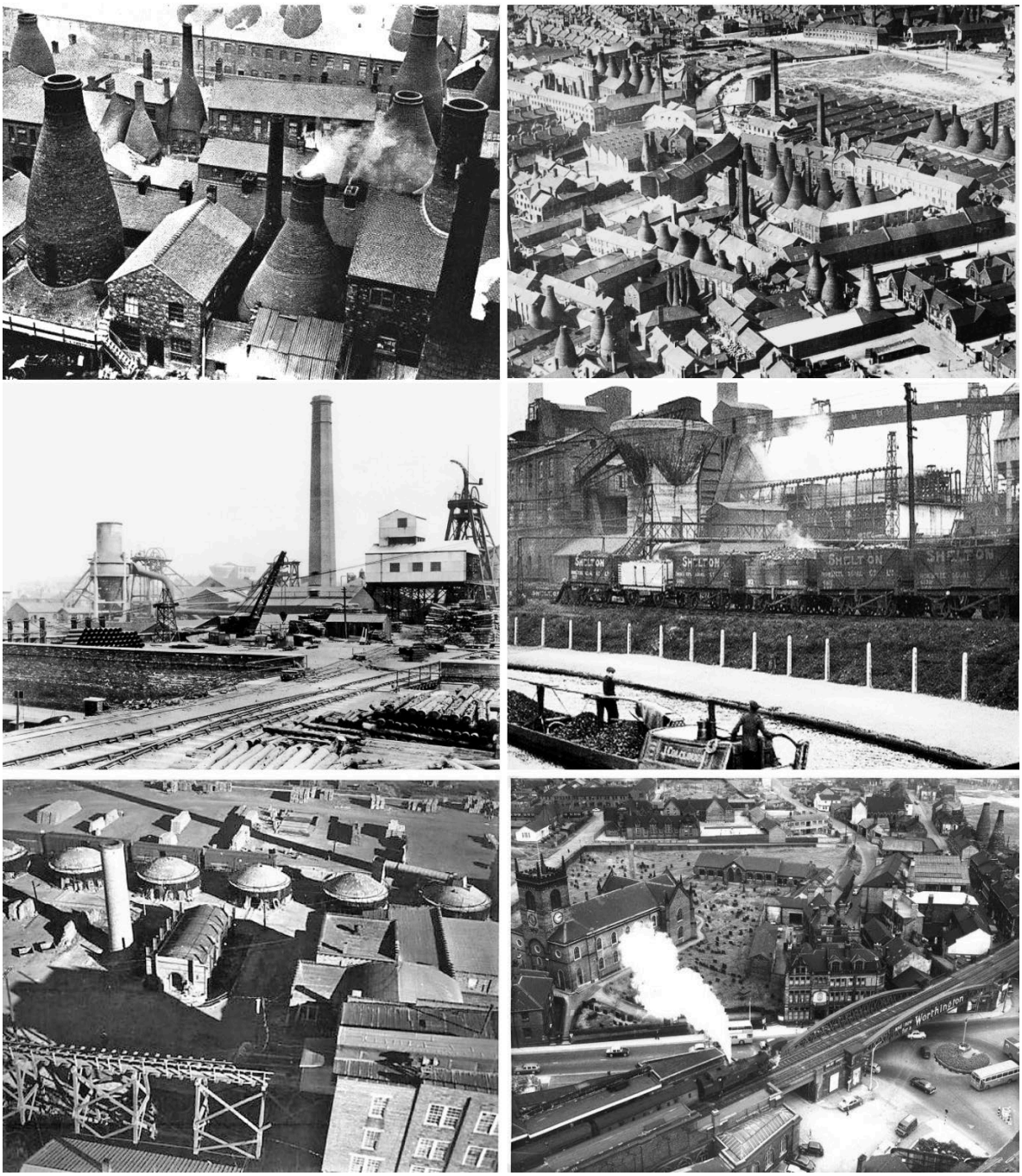


Fig.1.1 An industrial compilation - although the above images might appear to some eyes to be challenging, the combined illustrations are, nonetheless, important in succinctly reflecting upon the history, identity and cultural significance of the integrated Six Towns of The Potteries

It is important to recognise that the proud industrial heritage of The Potteries, even if it no longer exists to the extent that it once did, contributed significantly to the nations' wealth, the regions' identity and the character of its people. But this heritage is at risk of slipping away from a current consciousness of its value. As Osbert Lancaster wrote in 1976:

> *"Let us always beware of the uncertainty of private judgement, remembering that what to us may be without merit may well prove to posterity, who can view it in perspective, of considerable value."*

It is the industrial and historical essence of The Potteries that needs to be clarified and understood if an increasingly rapid loss of its tangible and intangible heritage is not to totally disappear. Clarification of why an area, such as The Potteries, is important helps us to ensure that its historic progression is recorded, protected and conserved.

In 1991 the Royal Commission on the Historical Monuments of England undertook research and investigation into the then current state of The Potteries' historical built environment and published its findings in a report entitled: *Potworks – The Industrial Architecture of the Staffordshire Potteries.* The Foreword to the volume stated:

> *"This fruitful collaboration, dating from 1984, has underlined the Royal Commission's commitment to recording and publishing the rapidly vanishing monuments of our industrial heritage."*

That statement neatly encapsulates why it is important to recognise or at least to record heritage retained or lost; this two-part offering aims to enhance that appreciation, whilst also reflecting on what has happened in the interim.

Seeking and Finding Relevant Information

We cannot all be experts in the reasons why The Potteries developed in the way that it has so, we need to be able to find out where information is stored that will help us to interpret what influences have affected it.

This information might be found in a variety of places such as: local archives, field museums like Gladstone Pottery Museum, Middleport Pottery and Heritage Centre, and Shirley's Bone and Flint Mill (Etruria Industrial Museum). Other local public libraries and museums, records office and newspaper archive are also helpful, especially when previous publications and historic photographic archives are also available.

More importantly real, up-to-date and relevant information can be found on and in the buildings and structures themselves!

But, when investigating any building or structure on the ground, and particularly those in a deteriorated condition, care needs to be exercised to ensure that access permission is achieved in advance, and appropriate regard is paid to ensure that all health and safety requirements are observed and adhered to.

Fig.1.2 A variety of sources can offer information about historic developments and processes; even if abandoned and decayed, a study of the buildings themselves can be informative *

The Determining Underlying Geology

The geology that lies below ground essentially facilitated and supported The Potteries and its industries. The coal provided fuel to fire its kilns and furnaces and tile making, thereby providing basic building materials during the 19thC, adding to how the buildings would look. The clay created the ceramic, brick and tile industries, with limestone and ironstone providing ore for iron and steel production. Limestone kilns also produced quicklime for mortar to construct its buildings and for liming the land to improve the agriculture. The geology also determined where the mines and quarries were to be located.

Fig.1.3 Maps produced by geologists might appear complex and difficult to grasp, but a more intuitive understanding of the geology that matters to the region can often be found in local museums *

Little was wasted. The discarded clays from the coal mines provided the raw material for brick and tile making thereby providing the basic building materials for the construction of a massive factory and house building programme during the 19th C adding to how the buildings would look. Building stone was less well used by comparison.

Geography Determines Settlement and Transport Patterns

The geographic lie-of-the-land follows a north/south orientation; this has greatly influenced development throughout the history of The Potteries. This alignment of hills and valleys also influenced methods of transport from early 18th C canals to their superseding railways of the mid to late 19thC. The canals and railway networks were necessary for the movement and transportation of raw materials and produced goods. The canals also allowed the importation of kaolin clays from Cornwall to develop the production of fashionable 18th C porcelain. This advanced the reputation and influence of The Potteries across a much wider field of demand for its products.

Fig.1.4 The comprehensive development of canals and railways centred between the sources of the rivers Trent and Mersey facilitated a rapid expansion of The Potteries as an industrial hub, exporting goods throughout the country and to America and Europe by the linking canals and associated rivers and to the rest of the country by the rail network and Loop Line © E.J.D. Warrillow

Information Box: Key Issues

A number of key issues contributed to and influenced how The Potteries region developed its manufacturing, cultural and social identity, including:

- The way in which locally available raw materials were able to be sourced to support or establish its industries
- Its people, their approach and response to working in the developing industries through the manufacture of goods
- The manner and times in which the types and forms of transport developed

The Potteries manufacturing industries influenced significant developments in communications, supply routes, transport links and trading in a symbiotic manner

The Resulting Unique Physical Integration of all Factors

The distinctively combined geology, geography, and surrounding landscape produced a unique set of circumstances that allowed the region to develop its industries in the way that it did. More than 2000 miles of UK canals and navigable river systems linked the Potteries with markets across the country, including via the Thames and Severn, America and Europe.

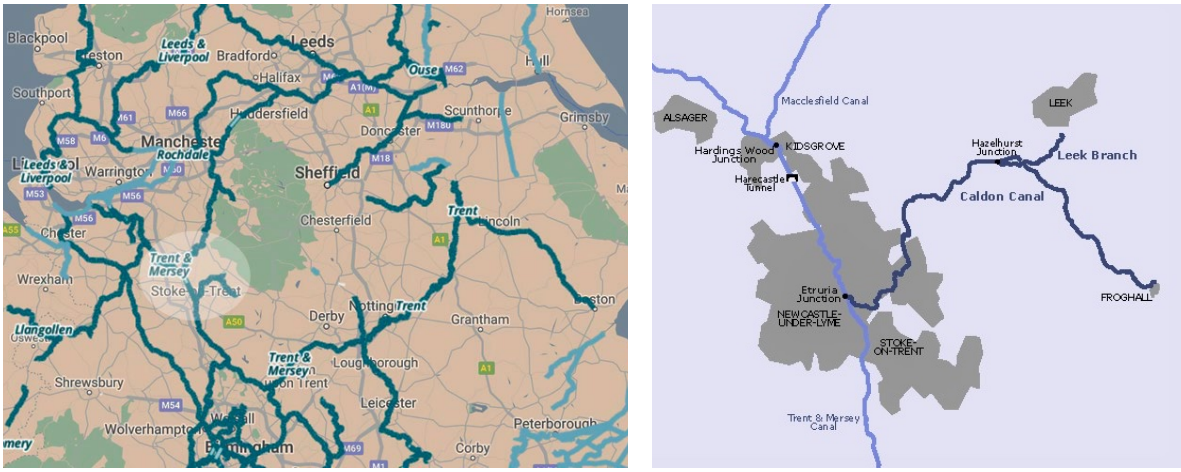


Fig.1.5 Location of The Potteries canal network, and a route map of the main Trent & Mersey and Caldon Canals around Stoke-on-Trent

Acceptance of the Resulting Buildings and their Locations

Manufacturing industries required labour to stay close to its factories during the 18th to 19th centuries. This adjacent relationship of housing and factories is a specific feature of the region with tightly packed courtyard buildings and formal street frontages.

Fig.1.6 The manufacturing processes of The Potteries led to a particularly unique townscape that closely integrated factories and housing

Importance of Resulting Products and their Quality

Whilst The Potteries were not the only UK area to produce world renowned ceramics, pottery and decorative tiles, it is still the most easily recognised.

The Potteries developed an international reputation for high quality and innovation. It became the most famous producer of fine wares during the 18th and 19th centuries. Well-known manufacturing names such as Wedgwood, Spode, Doulton, Minton and Moorcroft are recognised locally, nationally and internationally.

Fig.1.7 Moorcroft Pottery Museum display *

Fig.1.8 Moulded Victorian tile panel *

Pulling it all Together

Understanding why The Potteries region is important is because it helps to ensure that its historic development is appreciated and can influence the processes of conservation and protection.

This information should be carefully sourced and is needed in order to interact with the correct processes in a manner that is relevant, respectful of the areas' previous history and significance, both socially and architecturally.

Fig.1.9 Gladstone Pottery Museum Mould Store *

Topic 1 Questions

Q. 1.1. List at least four sources for discovering information about the history and development of the area

Q. 1.2. List at least four locally obtained minerals that have had an effect on the area

Q. 1.3. What is the main type of building material used in the area?

Q. 1.4. Which two forms of transport had the greatest influence on the area?

Q. 1.5. Which international markets were opened up through the construction and use of canals and local river systems, and which key rivers were interconnected by the canal system?

Q. 1.6. What was the important relationship between housing and factory that influenced urban development in the area during the 19th C?

Q. 1.7. What was the most iconic shape of pottery factory structures that helped to define the urban landscape of The Potteries during the 19th and 20th centuries?

Q. 1.8. Which two architectural features of the pottery production process are most readily identified?

Q. 1.9. Name at least five internationally recognized names of pottery manufacturers that are most easily identified as working in The Potteries

2: Is Appearance and Appeal Important?

The Creation of a Distinct Regional Identity

In The Potteries a specific architectural style of buildings and structures was established over a period of some 200 years resulting in the distinctive shape of its sinuous bottle kilns, courtyard factories with their formal front and the utilitarian shapes of many industrial buildings alongside the infrastructure of canals and railways. It is the recognition and importance of the buildings created by industry and society that provides both regional character and adds to the identity and associations in the area where a distinct pattern of communication links by rail and water were essential to a developing identity.

Fig.2.1 Longport narrow boat repair yard *

Enthusiasm for the Place in Context

Linking architecture and social identity can create an enthusiasm which, in turn, can help develop an understanding of the need to protect remaining buildings. This might be considered appreciating the regions' cultural significance where environment and society are linked through local identity and its historic purpose. People, past and present, are inevitably at the heart of this understanding.

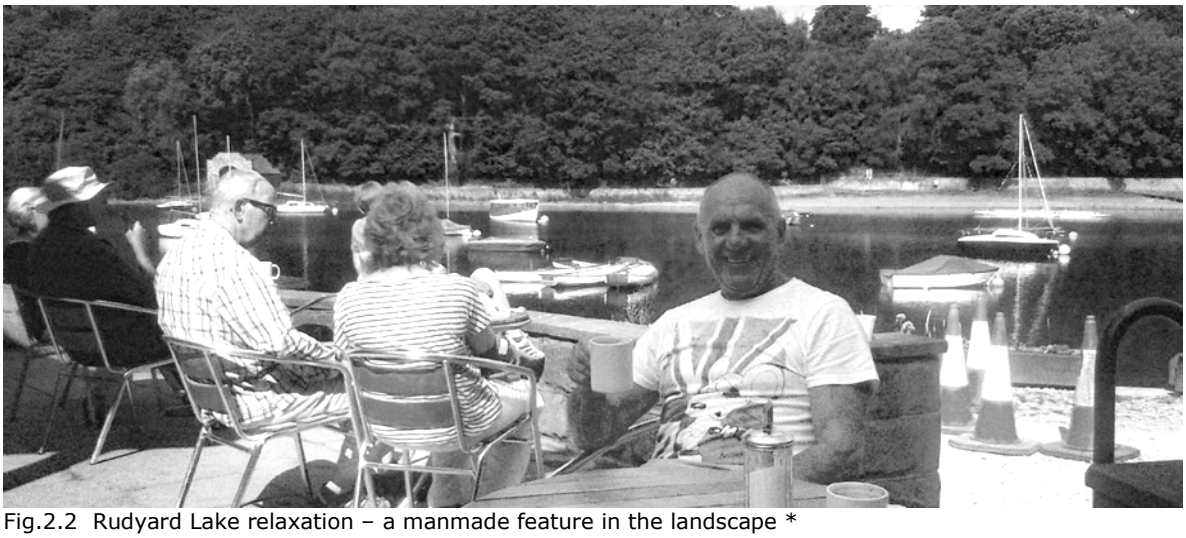


Fig.2.2 Rudyard Lake relaxation – a manmade feature in the landscape *

Factory Layouts to Process Materials

The pottery processes created industrial factories that were built within enclosed courtyards with great attention paid in early developments, to how the external street facades appeared. This original approach was adopted by Wedgwood in the late 18th C at Etruria and by numerous manufacturers thereafter.

The layout appears to stem from the manufacturers' need to maintain secrecy to protect their processes particularly as regards the preparation of glazes.

During the early years this need for secrecy even extended to creating separated workshops within the factory so that the individual processes were isolated from each other. Only the minimal amount of cross-working by the factory workers involved in the different processes was allowed.

At the Gladstone Pottery Museum the tightly packed, but separate, workshops and kilns in the courtyard layout can be clearly seen and experienced. The Potteries is one of the few places left where visitors can encounter and appreciate the essential working and closely integrated relationship of the various original manufacturing processes that were involved.

Fig.2.3 Gladstone Pottery Museum aerial view

Integrated Housing and their Layout

There being no local public transport during early years the factories required their workers to be housed nearby. This close relationship can be seen in many of the early photographs.

Fig.2.4 Spode Factory, Stoke aerial view. Housing and factories were so closely linked it can be difficult to determine which belonged to which in many areas of the Potteries

Civic Capability, Pride and Architecture

Each with its own market and/or Town Hall, the Six Towns of The Potteries of Stoke-on-Trent: Burslem (considered the Mother Town), Tunstall, Hanley, Fenton, Stoke-Upon-Trent and Longton, established identities that were both independent and cohesive that are just as strong today. In consequence, there is a positive legacy in the quality and grandeur of the civic and other institutional buildings from earlier times across the region, partly offset by the challenge of keeping them alive and in beneficial community use.

Fig.2.5 Former Stoke-Upon-Trent Free Library and adjacent former Art School (Herbert Minton Building) by Charles Lynam, mid 19th C *

Fig.2.6 Wedgwood Institute, Burslem as a seat of learning, 1863. Previous renovation work led by The Prince's Trust and funded by European Regional Development Fund, HLF and City of Stoke-on-Trent Council *

The sister town of Newcastle-Under-Lyme was and remains a separate settlement outside the original Borough of Stoke-on-Trent. The adjacent settlements of Leek, Uttoxeter and Froghall although not considered as part of The Potteries had a contribution to make to the history of the area.

The Retreat into Ecclesiastical Architecture

The Potteries and its neighbouring Principality Wales was the principal areas in the formation of the Non-Conformist Dissenter chapel movements away from strict Anglicanism. In combination with the established church this resulted in the construction of numerous religious buildings during the 19th C.

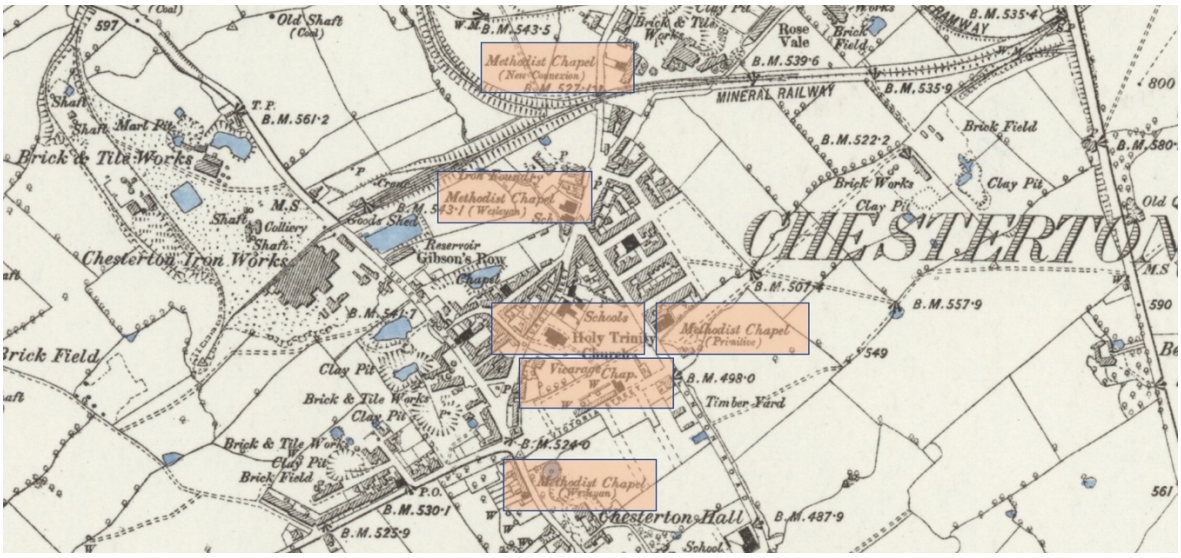


Fig.2.7 Chesterton Village in 1877, where, amongst the numerous industrial activities, no fewer than six religious buildings existed: Holy Trinity Church, a nearby Chapel, and 4 Methodist Chapels: 2 Wesleyan, 1 Primitive, and 1 New Connexion. Extract from OS 6-inch map Staffordshire XI.SE Surveyed 1877-1878 Reproduced with the permission of the National Library of Scotland

Due to a growing congregation St Peter's Church in Stoke was rebuilt and consecrated in 1830. The graves of Josiah Wedgwood (1730-1795) and Josiah Spode (1733-1797) and his antecedents are in its churchyard. John Wesley was a regular orator in Hanley. Here, one of the largest chapels in the UK, Bethesda Chapel, known as the Cathedral of The Potteries, was built in 1887 to accommodate up to 3,000 congregants.

Fig.2.8 St Peter's Church, Stoke 1830 exterior * + Bethesda Chapel, Hanley 1887, interior in use

A Growing Appreciation of What has been Lost

In The Potteries the two aspects of people and place are inextricably linked. The public are increasingly looking back at their history and previous industries; not least because that awareness helps establish and reinforce who they are and how they became what they are. Without this, many can feel they lack roots and identity. Therefore, this creates an essential need to maintain an areas' identity that, in turn, provides a greater understanding of place and self.

But, over time, a place has had its origins threatened, leading to a loss of identity for its people. Loss through redevelopment can be slow and insidious; risking only being identified as a threat when it has gone too far. It is the skill and art of conservation to identify this and other threats and to reduce their effect as far as possible. For an example of how loss can have an impact on heritage, the former Wedgwood Factory at Etruria is a case in point.

Information Box: Etruria

All that remains as a reminder of the importance of the Etruria Factory is a small round building known as the Roundhouse, situated adjacent to the Trent & Mersey Canal

The Etruria Factory opened in 1769 and was:

- Instrumental in establishing a form of pottery works that was copied and became the accepted norm across most of the area and its pottery factories. Excepting the Roundhouse, the factory was demolished in 1966
- The site was redeveloped although, latterly, it was subjected to mining subsidence

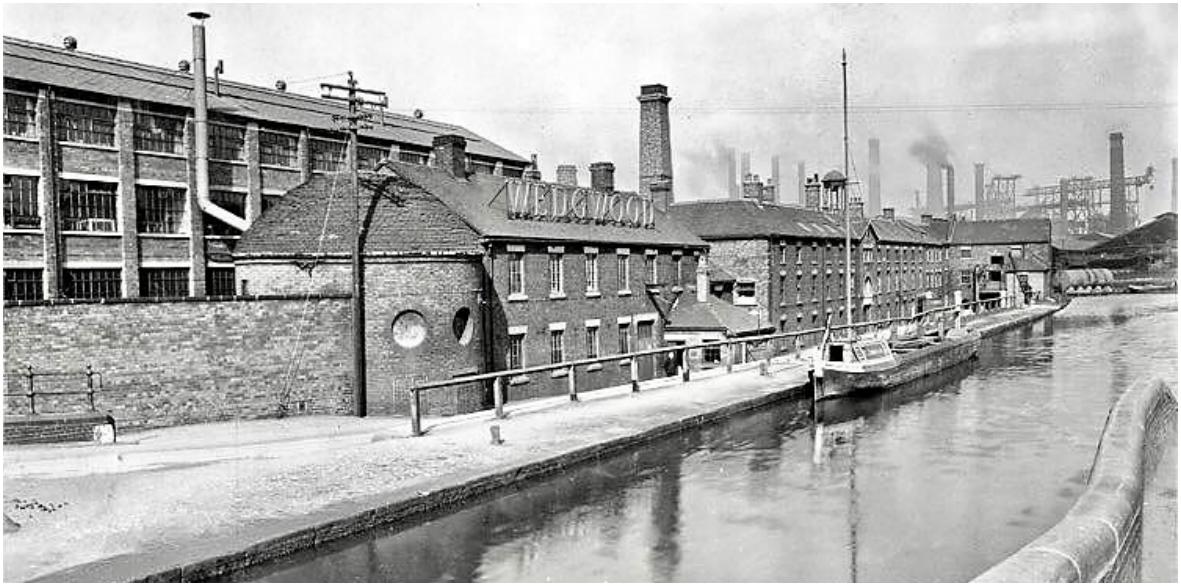


Fig.2.9 The original Wedgwood Factory at Etruria with its Roundhouse adjacent to the Trent & Mersey Canal. The Shelton Bar steelworks is in the background

Changes Viewed through Historic Records

From generation to generation unless a form of record or conservation work has been maintained, historic buildings and their contained information can quickly become lost as time passes. Buildings decay at an alarming rate if nothing is done to stabilise and maintain them.

Fig.2.10 Former Caldon Canal Wharf Building given a new use as a tea rooms and cafe, providing refreshments for canal walkers and tourists at Froghall *

It is not only the maintenance of the buildings that offers a visual record of history, finding and creating associated records of development and use can be equally rewarding. If we do not record our history, in whatever means are available to us, then that historical record runs the risk of being lost or misinterpreted.

Information Box: Records

The ability to trace how and why heritage came about is just as important as the building itself because:

- The records (or intangible heritage) offer a way of comprehending its associations and progression through time
- The provision of a written record can illustrate why it became necessary to conserve and preserve it
- A record of how the work was undertaken provides future generations with a clear understanding as to why and how the work was done
- Such records need to be made available in publicly accessible archives for future ease of access

Holding on to What Remains

The conservation process has to filter a variety of elements of the built environment in order to better appreciate it where a greater emphasis is placed on experiential tourism offered and presented with an appreciation of the past, both historic and recent.

Fig.2.11 Post WW2 pre-fabricated housing and earlier hovel ovens

Information Box: Appreciating the Past

The process of historical progress and change could be recognised and appreciated by, for example, a study of photographic archives such as to be aware of:

- Demonstrating civic pride
- Being reflective of previous industrial development
- Recording historical progression and change
- Recording important architecture
- Recording the work of a particular architect
- Reflecting on physical changes
- Recording social trends

Fig.2.12 Hazelhurst Aqueduct, 1841, on the Leek Branch and its crossing over the Caldon Canal is a Grade II Listed Building *

Information Box: Integration and Identity

The most iconic forms of building and infra-structure identifying The Potteries are the:

- Bottle ovens and kilns
- Courtyard factories
- Canals and associated structures

The main canals of The Potteries are the:

- Trent & Mersey Canal
- Caldon Canal and its branch to Leek

The provision of housing in the urban centres of The Potteries was to:

- Encourage people to group together within a manufacturing community
- Provide for easy access to work in the pottery factories
- Ensure that workers appeared on-time for their work
- Allow factory owners to control their work force and encourage loyalty

Topic 2 Questions

Q. 2.1. The particular form of the pottery factory might be associated with its need for process secrecy, what form did this take in most of the 19th C?

Q. 2.2. In response to Q. 2.1, define how that factory layout had an impact on communication between workers?

Q. 2.3. What was absent during the 19th C that resulted in the need for housing and factory to be closely related?

Q. 2.4. In many Arnold Bennett novels describing life in The Potteries he defines only five towns – which settlement or town is not described by him?

Q. 2.5. Which religious movement had a great influence on The Potteries during the 19th C and which orator was a regular visitor and speaker?

Q. 2.6. The original Wedgwood Factory at Etruria was demolished during the 20th C. Its loss is important because it?

1. Was the first of its type in the area
2. Had a close relationship with a form of transport
3. Was a historical icon of Potteries development
4. Proved to be less important later
5. Was originally constructed by an important and historical local family
6. Did not influence the architectural form of factories to follow
7. Recorded social change through time

Fig.2.13 Advanced state of decline and decay of former Price's Teapot Factory at Longport on the Trent & Mersey Canal *

Q. 2.7. What are the main factors that influence a building's decay, is it?

1. Weathering and dampness
2. Lack of maintenance
3. Lack of recognition of importance due to familiarity
4. Lack of funds

Q. 2.8. Why is it important to make records of what works were undertaken to an historical asset and why it was undertaken in the first place?

1. Because it is a piece of bureaucracy that can get in the way of re-development
2. Because it is important to let future generation know what, why and how work was carried out
3. To record how and why a building or asset is important
4. To inform the refurbishment and repair process by recognition of what is significant and why, what to keep and what might be damaging to significance such as later accretions
5. Do all the above apply or, if only some, how many are important?

Fig.2.14 Tramway foundation base illustrating tangible remains *

Q. 2.9. What is meant by intangible heritage?

Q. 2.10. What elements have an impact on whether a building or asset is important?

1. Because it offers a record of historical change and development
2. Because it does not record an important architectural development that embodies local change and development
3. Because it reflects how an area has recognised its identity
4. Because it offers future generations a record of their past and how it developed

Q. 2.11. What elements of change can be revealed by photographic archives regarding?

1. Social change
2. Working patterns
3. Developmental change
4. Physical change
5. Deterioration

Fig.2.15 Hanley Marsh Street, Jovial Foresters Inn. Decline can often follow the lack of maintenance *

3: How does a Building work?

The Shape and Use of Different Buildings and Structures

The shape of a building is often a direct result of what it was intended to do. At the end of the 19th C the architectural phrase *form follows function* was coined to explain this approach in simple terms. The phrase neatly encapsulates why the iconic shapes of The Potteries bottle ovens and kilns exist as they do. It also applies to the introverted courtyard factory layouts with their integrated, workshops and adjacent workers housing. But a contradiction emerges regarding the formal factory facades. Here, the street-facing buildings frequently promoted the factory owner's fashionable views by including additional architectural features that aimed to publicly enhance the appearance of their factory building. Later, in the 20th C, this earlier approach became less frequent as a greater requirement for economy and utility became the norm.

It was not until the late 19th C that improved housing, to create a healthier workforce, began to be constructed along with significant developments in public transport. And, with an increase in wealth from its industries there evolved and developed a sense of local civic pride. This self-esteem influenced its late 19th and early 20th centuries civic buildings such as the Wedgwood Institute, Fenton Library, Police Station and Town Hall and, the Burslem School of Art and the Stoke-Upon-Trent Free Library. Reflecting this change other commercial buildings also responded although, currently, modern shopfronts do not always respect original intentions, and unfortunately often fall into disuse.

Fig.3.1 The proximity of original housing and factory working

Fig.3.2 Commercial redundancy in difficult economic times. Former hotel, Burslem *

But the buildings of The Potteries are not limited to that of the pottery factories and their housing alone. The more utilitarian and engineering requirements of steel plants and coal mines out of necessity adopted a very different approach and are equally as much a part of The Potteries industrial landscape.

Looking at What Buildings are Made of

During the late 18th C and for most of the 19th C the industries of The Potteries expanded rapidly, more so from the mid 19th to the early 20th centuries. The region's population also grew exponentially. All of this generated an increasing demand for the supply of building materials and craft skills.

Given the ready source of coal and clays, both quarried and from waste generated by mining, bricks and clay tiles were easily and cheaply manufactured to become the basic materials of choice for building purposes.

Fig.3.3 Bricks and Tiles displays: A wide range, type and colour pallet of bricks and roofing tiles were produced in the North Staffordshire area - from dark blue engineering bricks to lighter yellows, reds and browns for general-purpose bricks *

Building mortar was also required. Fortunately, there was an easily accessible source of limestone from quarries such as that at Caldon Low. But, limestone itself cannot be used without being processed into quicklime for eventual conversion through being slaked to produce lime mortars. Sharp sand was also required to mix with the slaked lime to create mortar and the North Staffordshire geology provided an abundant source. To bring all this together, an integrated transport system was required, with the canal system and, later, the developing railway network responding to the need.

Information Box: Building Materials

The main locally sourced and manufactured historic building materials adopted in The Potteries are:

- Bricks
- Tiles
- Lime mortar
- Stone
- Clay
- Timber
- Iron
- Salt glazed stoneware drainage products

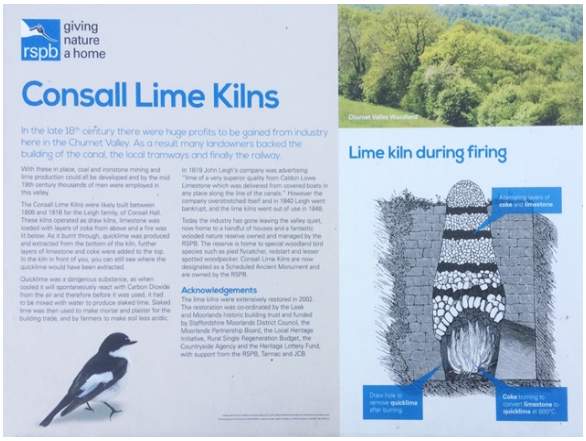
Bricks used in the hot areas of ovens/kilns were often imported from Scotland and South Staffordshire as they were more able to handle the heat

What do Limekilns do to Process the Raw Material

Lime for mortars was produced by burning or calcining raw limestone ore in kilns such as those at Froghall and Consall. This involved filling the kiln with alternating layers of quarried limestone with coal and allowing it to be burnt at high temperatures to produce a supply of quicklime that dropped to the bottom of the kiln from where it is manually raked out. It is this quicklime that is slaked in pits with water to create a putty that was used to make up building mortar and plaster.

Fig.3.4 Consall (top) and Froghall Lime Kilns, which are lime mortar built *

Fig.3.5 Consall Lime Kiln drawing eye: one of a bank of four dry-stone constructed kilns *



giving nature a home

Consall Lime Kilns

In the late 18th century there were huge profits to be gained from industry here in the Churnet Valley. As a result many landowners backed the building of the canal, the local tramways and finally the railway.

With these in place, coal and ironstone mining and lime production could all be developed and by the mid 19th century thousands of men were employed in this valley.

The Consall Lime Kilns were likely built between 1806 and 1816 for the Leigh family, of Consall Hall. These kilns operated as draw kilns, limestone was loaded with layers of coke from above and a fire was lit below. As it burnt through, quicklime was produced and extracted from the bottom of the kiln, further layers of limestone and coke were added to the top. In the kiln in front of you, you can still see where the quicklime would have been extracted.

Quicklime was a dangerous substance, as when cooled it will spontaneously react with Carbon Dioxide from the air and therefore before it was used, it had to be mixed with water to produce slaked lime. Slaked lime was then used to make mortar and plaster for the building trade, and by farmers to make soil less acidic.

In 1819 John Leigh's company was advertising "lime of a very superior quality from Caldon Lowe. Limestone which was delivered from covered boats in any place along the line of the canals." However the company overstretched itself and in 1840 Leigh went bankrupt, and the lime kilns went out of use in 1848.

Today the industry has gone leaving the valley quiet, now home to a handful of houses and a fantastic wooded nature reserve owned and managed by the RSPB. The reserve is home to special woodland bird species such as pied flycatcher, redstart and lesser spotted woodpecker. Consall Lime Kilns are now designated as a Scheduled Ancient Monument and are owned by the RSPB.

Acknowledgements

The lime kilns were extensively restored in 2002. The restoration was co-ordinated by the Leek and Moorlands historic building trust and funded by Staffordshire Moorlands District Council, the Moorlands Partnership Board, the Local Heritage Initiative, Rural Single Regeneration Budget, the Countryside Agency and the Heritage Lottery Fund, with support from the RSPB, Tarmac and JCB.

Lime kiln during firing

Alternating layers of coke and limestone

Draw hole to remove quicklime after burning

Coke burning to convert limestone to quicklime at 900°C

Fig.3.6 Consall Lime Kilns information Board *

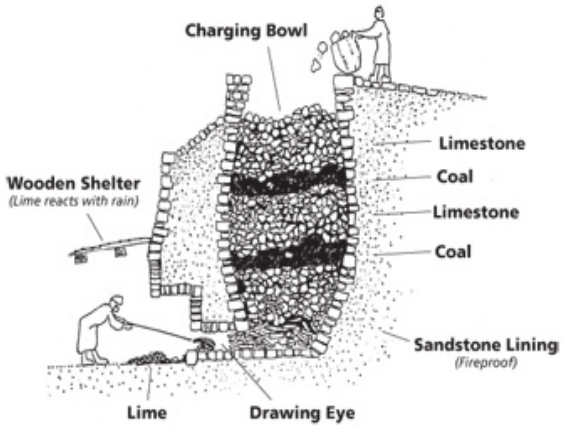


Fig.3.7 Diagrammatic section of a lime kiln in operation © National Stone Centre

Information Box: Working with Limestone

The following steps were required to create quicklime to make building mortar, and plaster (Also to create dry hydrate to improve agricultural yields, and flux for iron and steel manufacturing):

- Quarrying limestone and coal
- Transporting materials to lime kilns
- Alternate loading and layering of limestone and coal in the kilns
- Firing at temperatures of 900-1200° C to burn-off carbon dioxide from the limestone to create quicklime
- Drawing, extracting and transporting quicklime
- Slaking with water to produce putty lime for building purposes
- Storing to mature putty lime under water in lime pits to avoid carbonation through the take-up of carbon dioxide from the atmosphere
- Options for using lime in building activities:
    - Mixing with sharp sand to make mortar for building brick and stone work
    - Mixing with hair to create wall plaster
    - Mixing with water to create lime wash
    - Moulded architectural plasterwork details

What do Brick Kilns do to Process the Raw Material

Many local mines also incorporated their own brickworks, although independent brick yards were also set up. At the height of production across the region there were up to 40 different yards each supplying the demand for bricks, using beehive kilns and, latterly, tunnel kilns for firing purposes. Early detailed maps of the region, surveyed during the mid to late 19th C, clearly illustrate the scale and diversity of locally produced brick across the area.

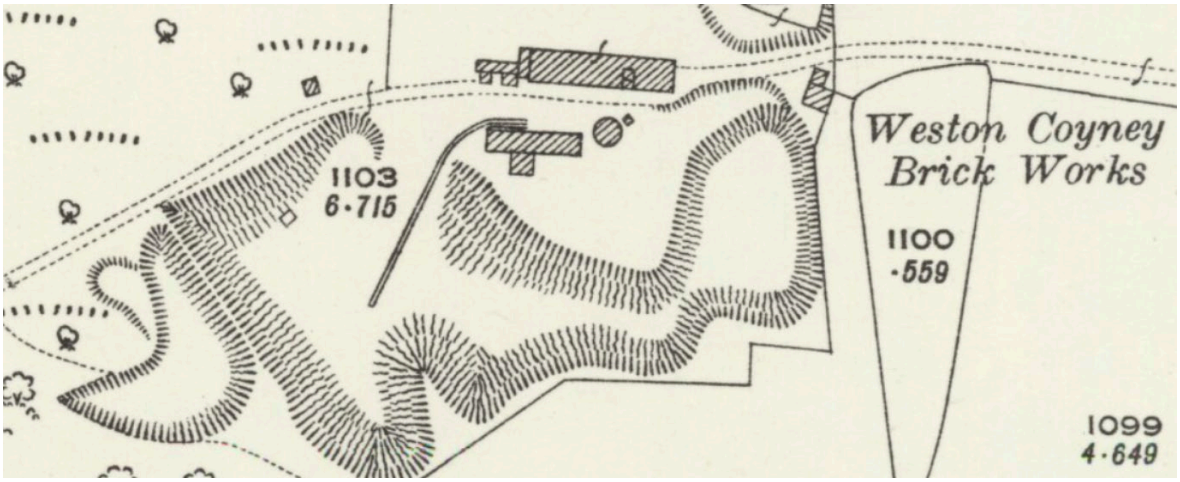


Fig.3.8 Weston Coyney Brick Works Map extract from OS 25-inch Staffordshire XVIII.11 (Caverswall; Stoke on Trent) Revised: 1922 Published: 1924 illustrating the extent of the Marl hole, inclined tramway, brick production workshop, single circular beehive kiln and associated structures of a small-scale brick works Reproduced with the permission of the National Library of Scotland

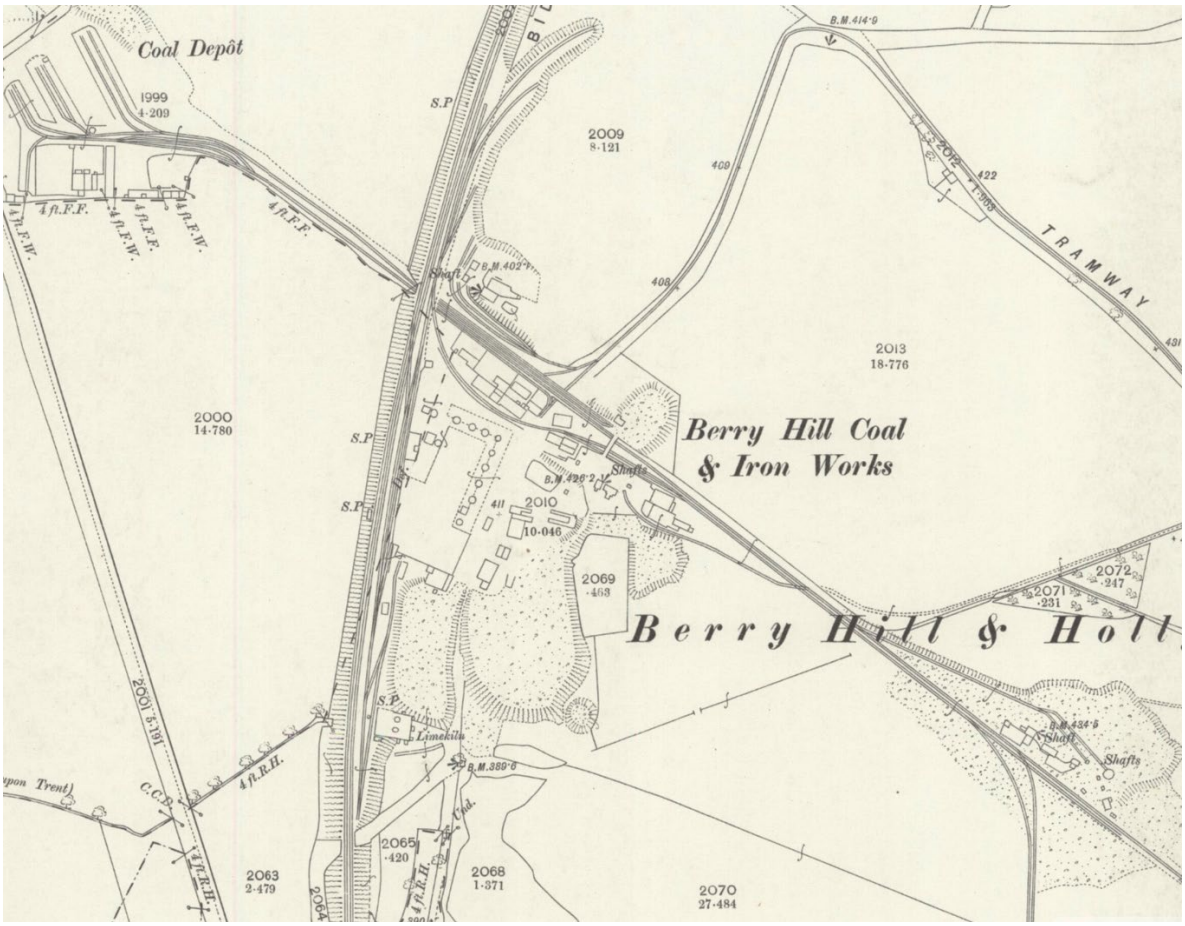


Fig.3.9 Berry Hill Map extract from OS 25-inch Staffordshire XVIII.2 (Stoke on Trent) Revised 1865 to 1876 Published: 1879 illustrating the complex coal, iron, rail and tramway industrial landscape of Berry Hill, lying south-east of Hanley, including a large-scale bank of 9 beehive brick kilns (centre of image) and 2 Limekilns (bottom centre of image) Reproduced with the permission of the National Library of Scotland

Fig.3.10 Typical brick Beehive Kiln with intermittent support buttressing to secure the dome structure in addition to the surrounding iron banding. Otherwise, the dome would be prone to collapse (See YouTube video clip at https://www.youtube.com/watch?v=SMA66ZDElqY for when the constraining iron band is cut through unthinkingly)

Fig.3.11 Hand-made brick-making mould, metal lined for durability in use. The internal dimensions are oversized to allow for shrinkage when drying and firing *

Fig.3.12 Longton Hall brick recessed frog, used to secure construction when mortar filled

Information Box: Brick Production

At the height of The Potteries brick production over 100 manufacturing yards were thought to have been in operation. Bricks and clay tiles readily became the building materials of choice; being used to construct and roof many structures:

- The raw material, clay, was readily available and cheap to source
- In the autumn excavate, transport and store suitable natural clay supplies
- Allow to weather for as long as possible over winter within a *heap* to allow evaporation
- Soak clay in water to allow even up-take of moisture
- Mix clay in a pugging mill to produce a consistency approximating butter
- *Pugs* of clay transported to maker's table for hand throwing into sanded moulds, the base of which is shaped to form the brick *frog*
- Sanding the mould aids the release of the brick
- Moulds were oversized to allow for shrinkage during drying and firing
- Moulded bricks are placed, as a single layer, on a long flat barrow for transporting to roofed-over open sided drying sheds
- Un-fired bricks are arranged in straight open layers up to six or seven courses high for first phase drying
- Once hardened, bricks placed in an open herringbone formation (*skintles*) six to seven bricks high to dry through air circulation
- Drying takes between three to four weeks dependent upon weather conditions.
- Drying sheds are usually oriented North/South to allow for even drying
- Air dried bricks taken to beehive kilns and fired at around 1100°C
- Loading, firing, cooling and unloading of the kilns takes about 2 weeks

What do Hovel Ovens and Kilns do to Process the Raw Material

Fig.3.13 A bank of five unusually large brick hovel ovens at the Twyford's Cliffe Vale factory accommodated the firing of large sanitary ware products. Their complex structural shape is more easily created using bricks, requiring considerable brick-laying skills to accomplish with both the curved inner and outer faces inclined inwardly through progressive corbelling (or projecting) of each successive course over the next

Building hovel ovens required specialist bricklaying skills and specially manufactured bricks. Most hovels were built on the experience and skill of the bricklayers where the inside and bottom brick courses of the inner firing chamber were laid using clay not mortar. As a result, virtually all were unique, built to the pottery owners' requirements, or as the builders could create. The outer appearance is simply a shell for ventilating the firing process smoke and fumes. The inner chamber was where the actual pottery firing took place.

> *"Wares being fired would be placed within saggars to protect them from contamination by combustion gases and flames of the firing process. The clay used to make the saggars was known as saggar marl, it is a form of fireclay. Saggars would have been fired previously so that they are ready for use during firing"* From and based on: *Bottle Ovens and the Story of the Final Firing*. Woolliscroft T and P.

For this process description the term *firing chamber* is used and the outer (bottle shaped) brick shell is referred to as the *hovel.* Placing an individual stack of saggars (*bung*) within

the firing chamber was a skilled operation as internal temperatures during firing could vary from one area to another. Consequently, placement was critical to the type of wares being placed within the bung.

Fig.3.14 Two different types of bottle shapes: calcining kiln (left) and skeleton updraught oven (right) *

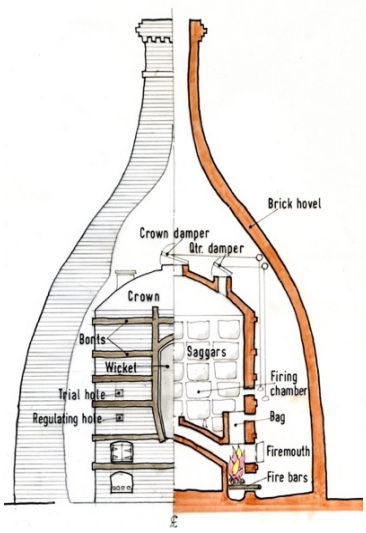


Fig.3.15 Cut-away drawing of an updraught bottle oven *

The Skill and Role of the Workers

Whilst the pottery production process required a range of workers with very different skills, all of them contributed to the production of the ceramics. Perhaps, the most essential were the hovel oven firemen who worked in extremely hot conditions to feed and control the firing process by eye and experience. Supporting them, their co-workers, the saggar makers and saggar placers prepared the pottery for firing. Saggars are made from a specific form of fireclay known as saggar *marl*. These containers hold the pottery wares during firing within the inner chamber.

Fig.3.16 Saggar placement in a firing chamber

Fig.3.17 Saggar Makers' working conditions

Information Box: Hovel Oven Firing Processes

- The saggars were filled with the wares to be fired; their first row was carefully sited by a team of *Placers* to accommodate the firing chamber's domed floor
- Clay *wads* (used in glaze firing only) were made and used as sealing gaskets between every saggar in each individual *bung* (stack) set around the chamber, normally taking about two days to complete a firing *placement*
- A pipe *bung* was placed over the chamber's domed-floor central well-hole to direct heat from the fire-mouths vertically from under-floor flues
- An average of 12 - 15 tons of coal would be used in a firing and this had to be delivered prior to and during firing
- As the *placement* neared completion each of the [usually] eight fire-mouths round the inner chamber were *kindled* using paper and small sticks
- Once the *placement* was complete the inner firing chamber access doorway, known as a *wicket* was sealed with old bricks and clay mixed with sand: known as *clammins*
- Once the fire-mouth kindling's were well alight coal or *lump* [*lumping*] was placed in the fire-mouths
- The initial *lumping* was controlled to ensure that heat increased slowly to drive off any moisture in the chamber and to avoid cracking or bursting the wares
- The heat and draught controlling dampers, fire-mouth doors and sliding regulator holes were adjusted to control the entering volume of cold air - a skilled process to ensure that the correct temperature was maintained in the firing chamber
- The type of coal was critical as some types were subject to *coking* and had to be raked out to break it up. Different types of coal had various burning qualities so ensuring regular supplies of *known* coal was a Fireman's requirement
- Coal was continually *baited* into the fire-mouths as firing progressed; each *baiting* being supervised by the Fireman to ensure even heating in the chamber
- *Bullers* (Rings) were used to evaluate the heat during the firing process. These were specifically sized rings of clay measured by a gauge on extraction from the chamber to evaluate the generated heat and the firing progress
- The various regulating holes, fire-mouth doors and dampers were opened and closed to control heat
- Once satisfied the firing was complete, dampers were opened on the Fireman's orders and no more *baitings* occurred and the chamber cooled
- After the initial cooling the *clammins* that sealed the *wicket* were broken down and the exposed inner chamber and its contents cooled
- On average, a firing could take 8-10 days and on cooling to a reasonable temperature, *drawing* or emptying the chamber started.

The Integrated Supply and Distribution Processes

The historic and feverish industrial activity within the region involving pottery production, coal mining, iron, steel, brick and tile manufacturing had to be served by an adequate transport network and structure. Initially the area relied on packhorse transportation, followed by the construction of toll and turnpike roads. But neither adequately addressed

the increasing production of the areas' industries. In the late 18th C canals started to be constructed to speed up and reduce the cost of transport which, in turn, was augmented by the railways leading to significant reduction in canal use. The greatly increased markets for pottery ware to Europe was serviced via canals to Hull and to America via Liverpool. The canal network also allowed the importation of materials such as kaolin clay from Cornwall and ball clay from Devon and Dorset for production of porcelain.

Information Box: Communications and Distribution

Each with their own accommodation needs, the following modes and methods of carriage are listed in their broad chronological sequence to service and transport and distribute the produced goods in The Potteries:

- Lines of packhorses and stabling
- Horse drawn waggons and cover protection
- Toll roads, Turnpikes and Toll houses
- Localised Tramways with fixed tracks and termini
- The Canal network and narrow boats with locks
- The main Railway network and the Loop Line with stations and halt structures
- Sailing and steam ships and dockyards with warehouse
- The modern road network with storage and garaging needs

The Canal and Railway Network Architecture

Although routes are pre-determined in greater part by the natural geography and ground levels, both the canal system and the later railway network had a fundamental limited choice of directions they could take. Both have left significant marks on the landscape with alignment of routes and the architecture of both systems remaining. The canal system was particularly determined by the need for flat level stretches, interspersed with locks, towpaths, bridges, warehouses, lock-keepers' cottages, mile-posts, and infrastructure.

Fig.3.18 Canal features: masonry linings, lock gates, mile posts, towpaths and bridges are part of the network *

As a result of the topography the West Coast Main Line railway was routed to the west beyond most of Potteries towns. But a mid 19th C linking Loop Line was constructed to connect with it in the south at Stoke and in the north at Kidsgrove. Initially transporting raw materials it provided passenger transport in 1862, eventually closing under the Beeching cuts of 1963. The North Staffordshire Railway linking Derby with Stoke-Upon-

Trent provided both goods and passenger transport. It was and remains a necessary east to west link with the West Coast Main Line but with a much-reduced service. As part of the North Staffordshire Railway, the Churnet Valley line was once a significant part of the system. It linked the Bolton Copper Works at Froghall and the lime kilns at Froghall and Consall with Leek, Cheddleton and Stoke, and there with the main West Coast line. Navigating the local geography and topography, the former internal Potteries Loop Line railway was notorious for its steep gradients and tight curves. Combined, the interlinked canal and railway network provided the industrial arteries of the region.

Fig.3.19 North Staffordshire Railway linking Derby and Stoke: Meir Station cutting

The canal system is now solely used for pleasure purposes, as is the residual Churnet Valley railway running between Cheddleton and Froghall. Both offer valuable tourist attractions.

Fig.3.20 Trent & Mersey Canal narrow boat repair yard, Stone *

Topic 3 Questions

Q. 3.1. What were the raw material needed to produce mortars for building: how was it produced, transported and prepared? Where was the raw ore quarried? What particular type of sand was used/needed to produce the best early mortars?

Q. 3.2. What was the purpose of the outer shell in hovel ovens?

Q. 3.3. What were the iron straps called that helped to reinforce the brickwork of ovens and kilns against the effects of rapid heating and cooling during the firing process?

Q. 3.4. What were calcining kilns used for?

Q. 3.5. What was the main purpose of the primary transport systems of The Potteries in the 18th and 19th centuries?

1. To provide a system of pleasure transport to be enjoyed by local people during days off
2. To provide an effective and efficient means of transportation of the necessary raw materials both locally produced and from away
3. To provide a means of movement of locally produced goods to national and international markets
4. How was the local distribution railway system known that connected the south and north of the area with the West Coast Main Line and where were its two terminals sited
5. This local railway was formed around the topography of The Potteries and resulted in the line becoming known for what two features

Q. 3.6. Since the decline in use of canals and local railway systems what alternative use might be made of their networks if they are to be resurrected from a state of non-use?

Q. 3.7. What diminishing and destructive effects does decay and lack of maintenance have on historic assets?

Q. 3.8. What major factor as regards markets for their product affected The Potteries?

1. Foreign imports
2. Rising costs and availability of raw materials
3. Both the above or only one as a major factor

Q. 3.9. List the major factors that influenced the decline of The Potteries (as a whole) during the mid 20th C

Q. 3.10. Which transport feature and surrounding area now provide leisure facilities for the people of The Potteries?

4: What Needs to be Thought About?

The Residual Consequences of Industrial Pollution

Before the introduction of the Clean Air Act in 1956 The Potteries used coal as its fuel to fire its bottle ovens and kilns. As a result, the sulphurous fumes polluted the area. This had a dramatic and negative visual effect on the appearance of its buildings, contaminating and blackening them as the airborne pollution affected the surface of the local brick and, where used, stonework in addition to creating a health hazard for the population.

The Clean Air Act of 1956 led to the abandonment and demolition of polluting brick-built oven and kilns: by 1963 coal firing was completely forbidden. Factories were also closing under a flood of cheap foreign imports by the 1980s. By the 1970s iron and steel production at Shelton Bar was closing down, with the last rolled-steel production line closing in 2000.

Fig.4.1 The Potteries industrial atmosphere

Fig.4.2 Hanley Loop Line Station: in action and abandoned in 1977 © Ken Cubley

The Beeching cuts of 1963 decimated the railway network and the miners' strikes of the early 1970s resulted in closure of many pits. A perfect storm of decline hit The Potteries.

Following such a dramatic physical and psychological impact, the area fell into decline and decay, with little immediate incentive to make any successful attempts at regeneration. In consequence the local forms of building and access ways were destined to be changed.

Changing Attitudes, Economics and Fashions

During the 19th and early 20th centuries output from The Potteries was labour intensive. At the height of production it is estimated that up to 10,000 were employed in the iron and steel industry, with the pottery factories employing a further 20,000. A considerable number were also employed in mining and operating the railway and canal systems. By the mid/late 20th C employment in all areas was in rapid free fall, with the result that workers' income fell dramatically, coupled with increased unemployment.

The porcelain and ceramics industry of The Potteries took its earliest influence from the pottery produced in, and imported from, the Far East. It developed its own production during the late 18th and into the 19th centuries to the point where it became pre-eminent in this field. But, by the mid 20th C with its primary industry already in rapid decline, in an ironic twist, it was further affected by cheap Far-Eastern imports that it had, in its early days, sought to out compete. The result was the local built environment inevitably took second place to more pressing social concerns. What structures had been visually familiar rapidly fell into disrepair, subject to demolition and clearance: but nothing emerged to replace the lost industrial base. What had taken two hundred years to establish fell away rapidly, and The Potteries generally suffered a terminal decline and an inevitable air of despondency. There was an inevitable return to greater austerity, compounded by the consequences of the two World Wars. But, in the period 1920-1935, The Potteries was still productive with well-known names like Clarice Cliff adding to its profile.

Fig.4.3 Chimney in process of demolition

Fig.4.4 Hovel oven manual demolition, working from the top courses down using cherry picker crane access for safety c1969

Demolition of a perfectly re-useable feature such as an abandoned building discounts the embodied energy that it contains just by the action of remaining and being there. The bricks and mortar has already consumed energy having being previously manufactured

and this is wasted if the building is discarded and demolished, in addition to wasting the effort and manual energy of workers who made it in the first place. Then there is the issue of adding to waste disposal problems. A new supply of energy and effort is required to make and manufacture all the components of new constructions, effectively and un-necessarily doubling or tripling the amount of energy that is used if the old is not found and appropriate alternative use! It is appreciated that not all buildings can be sensibly re-used. However, arguments to consider appropriate levels of re-use are so often forgotten in the deliberations to build a-new. But, encouragingly, in a society that has become increasingly aware of the hazards of a throw-away culture there has developed a growing need to repair, restore and recycle. This is reassuring.

Fig.4.5 The Broadway Cinema 1936, Meir, subsequently demolished in 1973

Fig.4.6 The Odeon, Hanley 1959 © Bert Bentley

From the 1920's and into the 1930's an improvement in social provision, whilst offering a form of escapism, was triggered by the provision of entertainment and leisure needs through newly built cinemas, open air swimming pools and lidos. Constructed in the flourishing international Art Deco and Modernist styles, these buildings often combined sleek design, curves and geometric influences. But these too have not always survived. For example, the Broadway Cinema in Meir was demolished in 1973 and, whilst the Odeon in Hanley is still there, it is now a bar and club.

Physical Decay Affecting the Situation

An inevitable product of physical decay is a loss of interest and perceived importance. Once the maintenance of buildings cannot be afforded and is unable to be upheld, decay, dereliction and demolition can closely follow - diminishing value and destroying worth. Losing that touch-stone and commitment can no longer ensure that heritage remains protected. Its value to society is gone, its original purpose lost, and its memory rapidly fades into oblivion. Nature can quickly take over

Conversely, the well-maintained and presented historical heritage can create a sense of pride and encourage active involvement, whilst offering respect and recognition of the value that has been handed down to the present from the past.

Fig.4.7 Abandoned twin bottle ovens at the former Falcon Works, Stoke illustrating how vegetation can readily take hold on the upper edges of the inclined brick courses *

Fig.4.8 An abandoned bottle oven with nature invading *

Consequential Decline and Recovery

Such a historically heavily-used and abused environment has left The Potteries with a significant legacy of physical scars - ranging from ruinous buildings, cleared factory sites, open cast clay mines, coal pits, slag heaps, spoil tips, and abandoned railway tracks amongst other impacts. As a result, the region has a considerable and challenging amount of recovery work to deal with.

Through significant local, regional and national effort and commitment, much needed beneficial remedial work is underway However, the wholesale eradication and consequences of this approach can also lead to a substantial loss of knowledge and understanding of what the previous historical industrial impact amounted to.

Fig.4.9 Berry Hill, (Fenton Low) in 1960 aerial view © cambridgeairphotos.com/data/thumbnails/640/aba17 CUCAP aba 17

Fig.4.10 Berry Hill Industrial site in 2003, in a similar view from the south-east illustrating the significant degree of back-filling of the former marl pit © Google Earth

In recent years creative projects have removed or sculpted many old mining waste tips and factory sites to reduce their visual impact. There remains a daunting amount of work

still to do! But, building upon what the region historically contributed to the wealth of the nation, completed initiatives are creating a more positive outlook as modern-day photographs can well illustrate.

Emerging from the air of general despondency one of the earliest and extensive essential historic developments, the canal network, is enjoying a resurrected and sensitive new life, bringing the tranquillity of the natural environment back through the heart of the previous industrial core.

The present approach to the replacement of old buildings and structures by new ones often carries a risk of throwing the baby out with the bath water. All too often the new is seen as the solution emboldened by fashionable regeneration plans. These ideas can omit to consider the true value of previous historical developments, the way traditional materials have been used to create the buildings, and their capability for sensitive reuse.

Information Box: Recognising the Past

The local population can help to protect and conserve their local identity by:

- Recognizing what is of value and why
- Resisting the impulse to demolish and redevelop without first assessing the value of the historic and existing built environment
- Showing respect and recognition for the embodied energy that is contained within the existing and historic buildings and those who created it
- Recognizing and valuing the social history and record that the historic environment provides not only for the present generation but also for future generations
- Finding appropriate and minimally damaging alternative uses for redundant heritage
- Recognizing that the development of a place, its history and social changes establishes who and what its peoples are, how they have developed and changed
- Recognizing how its industries have established and contributed to its history
- How all these factors have contributed to a Sense of Place that establishes an areas identity and value to its people

Dealing with Redundant Buildings

Historic features in the landscape such as abandoned factory sites, the canal system and redundant railways are reminiscent of a former age that defined what The Potteries was, and still is. To appreciate how important heritage structures can be, there is a need to take a step back in time to try to recognise how that heritage contributed to a sense of place, local pride and identity. This might be achieved by a process of recognizing what was previously important and by considering how to find suitable alternative uses that occasions minimal damage to the embedded historical record that the site or structure might include.

But there is a real risk that familiarity can breed contempt regarding a decaying structure. Often such buildings and sites can become so common-place in their crumbling state that there is a tendency to ignore them. Familiarity can compound the physical loss through tacit acceptance of the lack of maintenance, structural abuse, vandalism, and graffiti in addition to other socially based problems resulting from a lack of finance and willingness to commit.

Successful examples of overcoming these dilemmas are the Gladstone Pottery Museum, Middleport Pottery and Heritage Centre, and Shirley's Flint Mill at Etruria, amongst others. The once derelict and about to be demolished Gladstone Pottery factory was saved from destruction by a group of enthusiastic pottery factory owners in the Spring of 1971. It was completely refurbished and repaired and is now a superb museum facility run by the City of Stoke-on-Trent Museum Service.

Significantly, it has extensive displays of both active and historical processes involved in the pottery industry. It is well-used by local schools and the general public wanting to gain a greater knowledge and understanding of the industry.

Fig.4.11 The former Enson Pottery buildings and hovel ovens have been repaired, restored and converted into a conference and training centre, open to the public by request © Anthony Williams + *

Retaining Regional Identity

A recognition of place can foster a sense of belonging. Destroying that runs the risk of losing its identity - once lost, this is difficult to regain. The local built environment provides a reference and touch-stone to reflect on the past, who it was for, and how it emerged and developed. An essential element of caring for it is to be able to recognise the identity of a place by understanding its progression through time.

How to transmit and apply that understanding and knowledge is an important aspect of caring for the past. But this is not just the responsibility of experts it is also a preferred requirement of a population. They too can take responsibility and show respect for what is important by recognising what creates local and regional identity and, what offers cohesion and social balance.

Fig.4.12 Fenton terraced housing *

Respecting the built environment is a major element in that equation. Recognition that this is important and can be achieved through inter-generational education and reinforcement – the established teaching the new! The provision and maintenance of museum and heritage centres can help in this regard. The perceived need for shiny and new doesn't always provide that balanced view. On the other hand, appropriate re-use of what has come to the present from the past helps society retain those elements that were, historically, instrumental in establishing a sense of place.

Topic 4 Questions

Q. 4.1. Which national festival was held at a once active heavy industrial site in the late 20th C?

Q. 4.2. Why are local heritage museums and process museums important?

Q. 4.3. The industrial pollution generated by The Potteries had a major effect on its buildings. What was this effect and how did it transform the buildings?

Q. 4.4. Why is recognition of embodied energy important?

Q. 4.5. What current sociological changes have raised the importance of the leisure industry?

Q. 4.6. How might the historic but redundant built environment respond to an increase in the need for leisure activities?

5: How Does What we do Affect the Heritage?

Concerns over Health and Safety

With the introduction of early model factories and their labour-intensive industrial processes a need was created for the workers to be housed close to their work-place; however, this resulted in poor working and living conditions. The initial Factories Act of 1819 was a poor attempt aimed at improving working conditions, generally seen as secondary to production efficiency. A later act of 1833 took a tougher stand against the exploitation of children and adults, but it was not until the 1864 Factory Act Extension Act which identified pottery factories as a specific health risk that general improvements in working condition took positive effect. At that time life expectancy of male workers within the industry was 47 years whereas the average UK male life expectancy was 57. The main reason for this was the result of a lung disease caused by inhaling silica-based materials used in pottery manufacture. Silicosis or *Potters' rot* was a main cause of death during the late 19th and early 20th centuries.

Fig.5.1 Child labour in a pottery factory

The 1864 Act also addressed the issue of child labour, limiting the maximum working hours per day to ten, and requiring no child under the age of eight to be allowed to work in the factories. The Act also made it obligatory that children under thirteen should have a minimum of half-day schooling for each half-day spent in the factory. It also called for improvements in sanitary and welfare conditions, and that factories should be kept clean with improvements in ventilation against the airborne effects of breathing pollution.

A significant piece of legislation that heralded the final demise of the once proud history of The Potteries and its supporting coal mining was the introduction of the Clean Air Act in 1956. It has been variously considered that between 1500-2000 bottle ovens and kilns that had defined the region's skyline also contributed significantly, amongst other sources, to poor air quality. Subsequently, these iconic structures became redundant and were progressively demolished. The demise of the iron and steel industry followed a similar path.

The heavily polluting atmospheric yellow/brown smogs of the period disappeared rapidly, as did the skills of the earlier working techniques, along with the crafts people who provided it. A significant consequence was the fact that the health of the population of The Potteries started to show considerable improvements.

Heritage Legislation

Despite the high levels of demolition and loss of industrial buildings over the years, the City of Stoke-on-Trent has over 200 listed building entries (at 2018). With some list entries involving a number of buildings, over 240 structures can be protected, including Grade 1 1808 Trentham Mausoleum of the Dukes of Sutherland. In addition where a local authority also feels that there is a local heritage asset that is of specific interest and importance to its local area, they may form a local list identifying such assets but without the specifically rigid system of the Listed Building Acts.

> *"As a society, understanding our heritage helps make sense of our place in the world. It helps create a sense of familiarity and belonging, bringing communities together and connecting us to our shared past, in all its diversity".* Heritage and Society 2018 Report by Historic England

The quality of the built environment can positively affect an area's attractiveness as a place to live, work and enjoy leisure time in. Consequently it is important to conserve the aspects of the historic areas not just for heritage value, but because they can be beneficial for the local economy through investment, and greatly add to the quality of life.

Historic Buildings and Areas – Benefits to Stoke-on-Trent

Stoke-on-Trent has benefited greatly from its listed buildings and conservation areas over the past few decades.

The designation of a conservation area has sometimes been an effective way of making improvements and triggering regeneration and investment. Some conservation areas have attracted grant schemes, funded by English Heritage, the Heritage Lottery Fund and others.

For example, in Burslem, grant schemes have helped to create new affordable housing and new units for small businesses, creative industries and charitable organisations. At the same time, the historic character of the town has been conserved. However, there is still much to do in Burslem.

Grant schemes and other funding have also helped to improve the Trent and Mersey Canal, The Caldon Canal, The Villas, Hanley Park, Short Street in Longton and St Peter's Churchyard.

Residential conservation areas help to conserve local character and add to the choice and quality of housing on offer within the City boundary. These include The Villas, St Christopher's Avenue, Hartshill, and Victoria Place in Fenton.

Some conservation areas, such as those based around the canals, are a focus for dramatic change and regeneration.

Similarly, listed buildings accommodate a range of uses and have sometimes accommodated projects that have delivered substantial benefits to Stoke-on-Trent.

Fig.5.2 Website extract - https://www.potteries.org.uk/historic-buildings-and-areas-benefits-stoke-trent Accessed 14 December 2018

A key mechanism for achieving this is through the controls exercised by national heritage legislation, supplemented by financial support through various grant-aid schemes.

Within the Town and Country Planning Acts, and its associated Listed Building Act, a structured system of listing and protection for heritage is defined in simple terms as follows:

1. A system of evaluation and assessment is needed
2. A system of control for approval or refusal of consent
3. A system of control for non-compliance

Information Box: Listed Buildings

The protection of a Listed Building applies to both external and internal changes.
Listed building consent is:

- Always required for demolition
- Normally be required for
    - extensions and
    - significant alterations.

Consent may also be required for:

- Minor alterations and possibly,
- Painting in some instances.

Listed building consent takes precedence over controls on conservation areas

Listed building consent may also be required for alterations or extensions to a listed building, or how they would affect the building's architectural and historic character.

Works to alter the exterior of a building, or to change its use, may also require planning permission.

Routine maintenance work using authentic materials and craft techniques on a like-for-like basis do not normally require listed building consent.

To establish if any proposed works require listed building consent advice should be sought from the Local Authority Conservation Officer

An additional form of control via a system of application and consent to afford protection is within a Conservation Area; an example of which within the City of Stoke-on-Trent are The Villas of Stoke-Upon-Trent.

Conservation Areas in Stoke-on-Trent also include town centres, housing areas, parks, canals, traditional industrial areas, church yards, public spaces, streets, landscaped areas and waterways and vary in the protection they offer.

There is an intention that a Heritage Action Zone (HAZ) covering Longton High Street and the remaining bottle ovens and kilns will be reformed during 2019. This aims to manage growth by grouping together projects with an overall vision, delivered in partnership by Historic England, the Local Authority and other relevant organisations.

Information Box: Conservation Areas

All Conservation Areas have certain kinds of protection that are common:

- Conservation Area consent is required for the demolition of most buildings (with some exceptions where very small recent buildings are concerned).
- The local authority must be notified if it is intended to cut down or have work done on trees.
- The local authority has special duties to consider the impact of proposed new development on the character and appearance of the Conservation Area.
- Properties in a Conservation Area have different permitted development rights

Permitted development is a term used for some kinds of alterations or extensions that can be carried out without the need to apply for planning permission. For residential properties, permitted development can allow small extensions and minor alterations. If the proposed works are not covered by permitted development, there will be a need to submit a planning application to gain permission.

In some conservation areas, additional protection is provided by what is called an Article 4 Direction: this, usually, involves removal of what otherwise might be permitted development rights.

Information Box: The Stoke-on-Trent Ceramic Heritage Action Zone

The Stoke-on-Trent Ceramic Heritage Action Zone will:

- *Promote and enhance the heritage value of Longton High Street Conservation Area and ensure the sensitive use and preservation of its historic fabric*
- *Regenerate the high street and enhance the local housing offer by supporting the repair and reuse of buildings, reinstating street access and historic shop-fronts*
- *Unlock the heritage needs of the bottle ovens: Stoke-on-Trent's largest and best-known group of buildings at risk*
- *Be a focus for social and economic community activities, enhance understanding of the historic environment through public participation, and, most importantly, provide a visible strategic purpose that increases the possibility of similar heritage-led investment*
- *Raise the profile of the area and provide support for archaeological and other heritage initiatives*
- *Strengthen existing partnerships with both local universities, providing a legacy of improved understanding and appreciation of our heritage and enable the key aims and objectives of the Stoke-on-Trent Heritage Commission to be delivered.*

See: https://historicengland.org.uk/services-skills/heritage-action-zones/stoke-on-trent-ceramic/

The Emergence of the Leisure Society

With an ageing population bolstered by those taking early retirement a new and expanding industry catering for increased leisure activities has developed. Many existing redundant buildings and structures can be converted sympathetically to a form of alternative re-use and can offer a range of useful options to demolition. The challenge is to recognise that there are very few redundant buildings that cannot be found an alternative use.

Fig.5.3 A former Leek mill building now used as a bar and restaurant*

Fig.5.4 Former Leek stables now a shopping arcade *

Information Box: Supporting the Leisure Industry

Across the Region, various supporting interests can be engaged with, including:

- The canal network
- The railway heritage
- Ancient Monuments
- Listed Buildings
- Conservation Areas
- World Heritage Sites
- Industrial monuments
- Heritage centres
- Heritage museums
- Regional and local museums
- Grand houses
- Remnant country-craft skills
- Vocational craft skills
- Historic Societies
- Special interest Groups
- Archive centres
- Mining museums
- Historic graveyards etc.

Fig.5.5 Trentham Mausoleum, 1808 Grade I *

Fig.5.6 Josiah Wedgwood's grave in St Peter's Minster Cemetery, Stoke *

The Role of the Heritage Museum

Heritage museums provide an essential cross-generation link to offer a reminder of the past to the present. To many they are a superb educational tool for those who want to gain a better understanding of what existed in the past, how things worked and how they developed.

Information Box: Caring About the Past for the Future

Many heritage buildings can be converted to an alternative re-use if adequate finances are secured, permissions are obtained and the will to do so is there.

Prior to any intervention or conversion work being initiated a thoughtful programme of assessment and evaluation of what can and cannot be accommodated should be carried out. The process might consider this to be essential to:

- Determine and evaluate the cultural significance of what is being considered
- Evaluate what physical state or condition the structure is in
- Determine what might be done without loss of its original and/or developed significance and historic value
- Undertake a detailed evaluation of what options or alternative uses there might be and how these might impact on significance and then adopt the least damaging option
- Evaluate what damage might be done to the historic fabric if works are to be undertaken
- Undertake a complete record, both photographically and by documentation, of current state.
- Place all documented records of pre and post-works activity in a publicly accessible archive to offer a record for future reference regarding why and what work was done

Checklists and guidance is readily available from a variety of sources to help in this process such as that from:

- Historic England and English Heritage
- LA Conservation Officers
- Published materials
- The Internet

Fig.5.7 Dudson Centre *

Fig.5.8 Leek Branch Canal weir overflow, sluice and drain near Longsdon *

Fortunately, in addition to remaining original internal and external infrastructure, several heritage and process museums and demonstration facilities exist and prosper in The Potteries including Gladstone Pottery Museum, Middleport Pottery and Heritage Centre, Shirley's Bone and Flint Mill (Etruria Industrial Museum), Cheddleton Flint Mill, and the Chatterley Whitfield and the Apedale Mining Museums.

Fig.5.9 Trent & Mersey Canal infrastructure at Stone *

Fig.5.10 Shirley's Mill drive shaft of Grinding Room *

Topic 5 Questions

Q 5.1. What was the average life expectancy for men in the pottery industries during the mid to late 19th C? And, what was the material that caused Potters' Rot?

Q 5.2. What was the date of the Factory Act that had the greatest effect on the Potteries and its children's education?

Q 5.3. Which Act of Parliament had the most impact on the landscape and industrial architecture of The Potteries?

Q 5.4. Approximately how many listed building entries are identified in The Potteries?

Q 5.5. Name one Grade 1 listed structure in The Potteries. And, name one conservation area in each of the following Stoke-Upon-Trent and Longton.

Q 5.6. Name one Scheduled Ancient Monument in Etruria.

Q 5.7. What three key mechanisms need to be considered in heritage legislation?

Q 5.8. What type of building work always requires listed building consent and, similarly, within Conservation Areas?

Q 5.9. From whom, within the local authority system, might advice be sought when works are being considered to heritage?

Q 5.10. What is a HAZ?

Q 5.11. From which 4 sources might help and advice be sought when contemplating work to heritage?

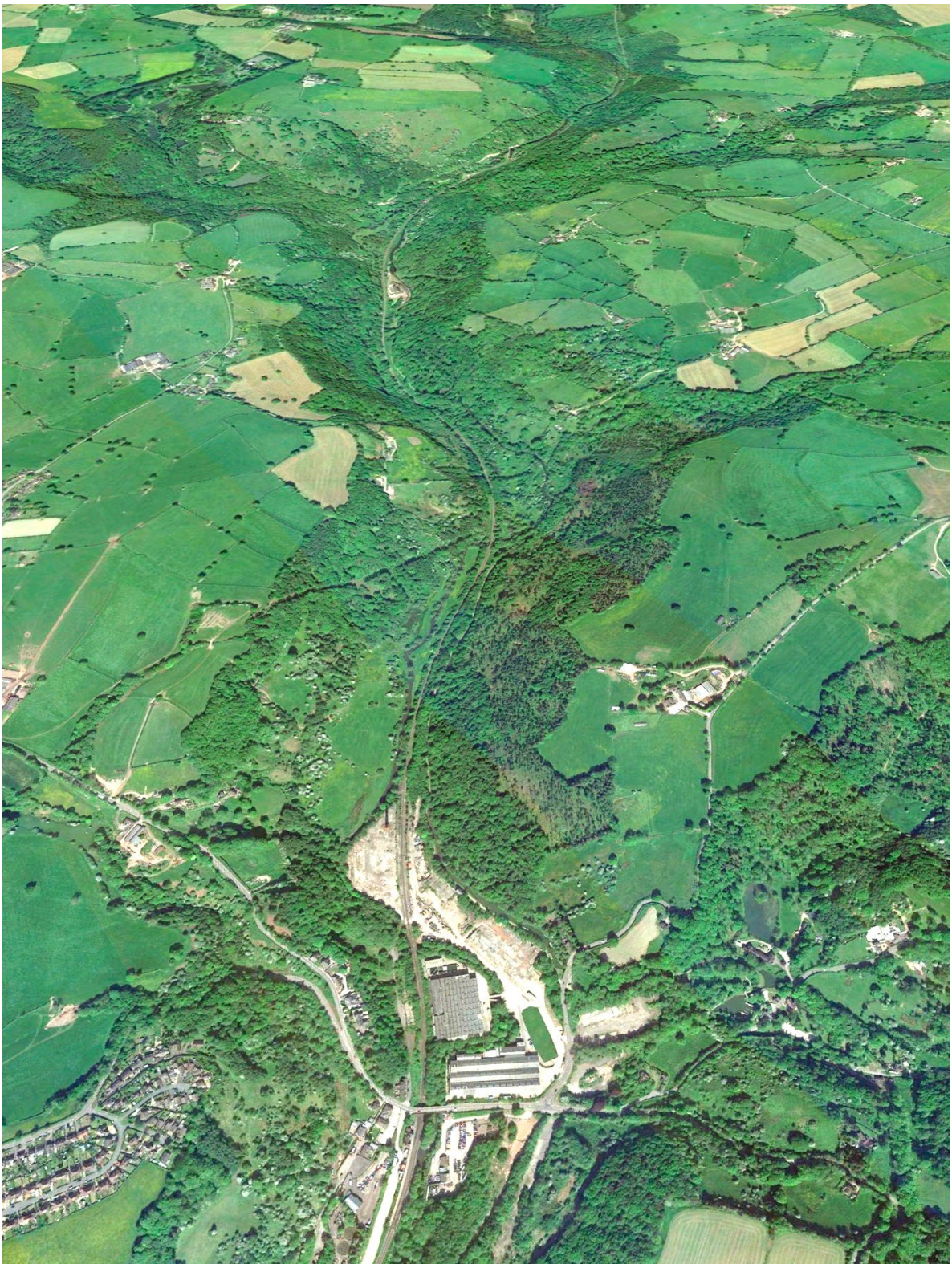


Fig.5.11 View to the north-west from the partially cleared Froghall industrial complex, and clearly indicating the winding route of the Churnet Valley Railway and Caldon Canal following the contours and meanders of the River Churnet valley floor © Google Earth 2017

Annex: The Potteries and Surrounding Areas: Topic Suggested Answers

The previous sets of Topic Questions stem from information contained in both the *Part 1: Understanding the Region* and *Part 2 Appreciating the Region* document texts. Users are encouraged to read and assimilate both study Parts.

In offering the undernoted suggested Answers the aim has been to accommodate and enhance a general level of awareness and understanding that might be anticipated by readers who wish to gain a greater awareness of The Potteries and Surrounding Areas, how it functioned in the past and how it is responding to present day needs.

Topic 1 Suggested Answers

Question 1.1

1. Local field and process museums
2. Local libraries – especially local history volumes
3. Local museums
4. Local Authority Conservation Departments
5. Local Authority Building Control Departments
6. Local records offices
7. National Records Offices
8. Buildings and structures themselves
9. Land Registry
10. Local newspaper archive
11. Local photographic archives
12. Historical Ordnance Survey maps
13. Historic England
14. English Heritage
15. Local History Societies such as those adopting Civic Voice criteria

Question 1.2

1. Coal
2. Iron ore
3. Clay
4. Limestone
5. Gravel and sand quarries
6. Stone quarries (Hollington stone)

Question 1.3

1. Bricks with lime-based mortars

Question 1.4

1. Canals
2. Railways

Question 1.5

1. Europe and America
2. Rivers Trent and Mersey
3. Rivers Churnet and Weaver
4. Rivers Thames and Severn

Question 1.6

1. The need to house workers close to their factory – this in the absence of established public transport systems

Question 1.7

1. Brick constructed bottle ovens and kilns

Question 1.8

1. Formal fronted courtyard factories
2. Separated workshops within internal courtyards

Question 1.9

1. Armitage Shanks
2. Aynsley
3. Beswick
4. Bridgewater
5. Burleigh
6. Carlton
7. Copeland
8. Davenport
9. Dudson
10. Enoch Wood
11. Johnson
12. Meakin
13. Minton
14. Moorcroft
15. Paragon
16. Portmerion
17. Ridgway
18. Royal Doulton
19. Spode
20. Staffordshire Potteries
21. Steelite
22. Twyford
23. Wade
24. Wedgwood

Topic 2 Suggested Answers

Question 2.1
1. Courtyard plan for factories
2. Separated workshops of the various manufacturing processes

Question 2.2
1. It reduced or limited intercommunication between worker in order to maintain process secrecy

Question 2.3
1. Reliable public transport

Question 2.4
1. Fenton

Question 2.5
1. Non-conformism Dissenters such as Congregationalists, Methodists, Unitarians, Quakers, Baptists, Wesleyans, Primitive, and New Connextion in their chapel-based worship
2. John Wesley

Question 2.6
1. Responses 1, 2, 3, 5 & 7 are correct

Question 2.7
1. All four points are correct

Question 2.8
1. Responses 2, 3 & 4 are correct, others are wrong; 3 are important

Question 2.9
1. Intangible heritage are written records, photographic records, drawing record; i.e. anything other than the physical asset itself

Question 10
1. Responses 1, 3 & 4 are correct, 2 is incorrect

Question 11
1. All 5 responses are correct

Topic 3 Suggested Answers

Question 3.1
1. Limestone ore from the Caldon Low quarries via tramways to Froghall
2. Burnt in lime kilns with coal to produce quicklime
3. Transported via canals and railways
4. Sharp sand (coarse not builders' sand which is too fine)

Question 3.2
1. To vent the fumes and smoke from the firing process

Question 3.3
1. Bonts or Bontings

Question 3.4
1. To burn flint and bone to make those materials easier to crush. Also used to burn limestone ore to produce quicklime

Question 3.5
1. Response 1 is incorrect
2. Response 2 is correct
3. Response 3 is correct
4. The Potteries Loop Line
5. Steep inclines and sharp curves

Question 3.6
1. To provide narrow boat holidays and leisure activities, housing and heritage steam train excursions. Basically tourist attractions

Question 3.7
1. Diminishes value and record of history/development alongside a general reduction in perceived worth by the local population. It also detracts from a sense of local pride in a place

Question 3.8
1. An increase in foreign imports

Question 3.9
1. Impact of foreign imports
2. The introduction of the Clean Air Act of 1956
3. Cuts to rail services under the impact of the Beeching Report
4. The coal mining strikes and pit closures of the 1970s and 1980s
5. Closure of the Shelton Bar Iron and steel works

Question 3.10
1. Canals
2. Heritage steam railways

Topic 4 Suggested Answers	
Question 4.1 1. The National Garden Festival held on the cleared Shelton Bar steelworks site **Question 4.2** 1. To maintain knowledge and understanding of industries that had an influence on the character and landscape of an area **Question 4.3** 1. The buildings became blackened by the pollution generated by the coal fired principle industries of the area	**Question 4.4** 1. In today's throw-away society it is important to recognise that materials and the efforts of previous workers have a value that is all too easy to discard **Question 4.5** 1. Early retirement and an ageing population **Question 4.6** 1. By finding appropriate alternative uses that retains the cultural significance of an historic asset

Topic 5 Suggested Answers	
Question 5.1 1. 47 years 2. Silica based materials used in the pottery industries **Question 5.2** 1. 1864 **Question 5.3** 1. The 1956 Clean Air Act **Question 5.4** 1. Over 200 list entries, some containing multiple buildings, suggest more than 240 structures – as at 2018 **Question 5.5** 1. Trentham Mausoleum – final resting place of the Dukes of Sutherland 2. The Villas, London Road, Stoke-Upon-Trent 3. Longton High Street **Question 5.6** 1. Shirley's Bone and Flint Mill (Etruria Industrial Museum)	**Question 5.7** 1. A system of evaluation and assessment is needed 2. A system of control – approval or refusal of consent 3. A system control for non-compliance **Question 5.8** 1. Demolition **Question 5.9** 1. The local Conservation Officer/Department **Question 5.10** 1. HAZ stands for Heritage Action Zone, an initiative by Historic England to help regenerate an area **Question 5.11** 1. Historic England and English Heritage 2. LA Conservation Officers 3. Published materials 4. The Internet