6. REGIONALITY

- 61 The gas industry has an essentially national and international setting in terms of the development of its technology, so regional variation is less pronounced than for other industries Nevertheless, some discussion of 'region' is important as the organisation and application of that technology, prior to nationalisation, did have some regional variation
- 6 2 The nature of the early industry m providing lighting, meant that gas production was concentrated on towns and industrial areas. Beyond this the very early industry saw a division between private supplies (particularly in the North and the Midlands) and central stations (initially in London). To a certain extent this division lasted until the First World War For the central station system, there was a further division between large statutory undertakings serving towns and the many small undertakings for small towns and villages (with markedly different scale of plant and production) Within this the importance and scale of the London Companies stood out Municipal undertakings played a smaller role than was the case with the electricity industry The Manchester municipal undertaking of the 1840s was an important early exception and the 1871 Act did lead to the emergence of a significant Municipal element to the industry (accounting for about one third of the statutory undertakings), again concentrated in the North and the Midlands

7. COMPONENTS

Surviving <u>components</u> are grouped into three classes. Components are listed alphabetically within each class. Terms used are defined for MPP purposes, but have been chosen in an attempt to reflect the terminology used in the industry. The general importance of each component in isolation is given, the importance of a particular example depending on its date, condition and typological/regional variation. Plant is especially important within the electricity industry and major items have been included in the list. They are distinguished from structure and feature components by the use of *italics*. Early plant, as a general rule, rarely survives other than as museum pieces, and therefore *in situ* examples are rated high. The value of any component containing original or notable plant would be enhanced over and above the ratings given here

7.1 GASWORKS

7 1 1 This term is used to cover any site associated with the production of manufactured gas irrespective of the fuel used or the use to which the gas is put

RAW MATERIALS AND TRANSPORT

<u>Canal</u>	An artificial cut for the transportation of materials by water Only included where specifically part of a gasworks
Date range	1800s
Importance.	Individually low
<u>Coal handling plant</u>	Plant for conveying coal from coal store to retort house
Date range [.]	MC19 - 1960s
Importance	Early examples are high
<u>Coal jetty</u>	River or canal berthing for receiving coal deliveries from ships and barges
Date range	1800 - present.
Importance	Early examples are high
<u>Coal store</u>	Area (yard or building) for storage of coal.
Date range	1800 - 1960s
Importance	Individually low
Coke handling plant	Plant for conveying coke from retort house to coke store
Date range:	MC19 - 1960s
Importance:	Early examples are high
<u>Coke store</u>	Area (yard or building) for storage of coke
Date range	1800 - 1960s
Importance	Individually low
-	-

<u>Lime shed</u> Date range: Importance	Covered shed for storing lime prior to use in <u>purifiers</u> 1840s - 1960s Individually low
Oxide shed	Covered shed for storing iron oxide during revivifying process and prior to use in purifiers
Date range Importance	1840s - 1960s Individually low
<u>Railway sidings</u> Date range: Importance	Part of iron rail system used to bring fuel to a gasworks Used in relation to gasworks from 1840s - present. Low individual importance, unless as part of early site.
<u>Refuse lime heap</u> Date range [.] Importance	Covered shed or open yard for storing spent lime. 1800s - 1960s Individually low
Weighbridge	Plant for weighing incoming fuel. may be located on railway tracks or roadway
Date range [.]	1800s - present.
Importance	Early examples are moderate
CARBONIZATION	
<u>Foul main</u>	Pipework which carried and cooled the gas on the way from the hydraulic main to the first of various purification plant.
Date range [.]	1811 - 1960s
Importance	Any surviving examples important
<u>Hydraulic main</u>	A large closed trough half filled with water, into which gas rose from each retort via an <i>ascension pipe</i>
Date range [.]	1811 - 1960s
Importance	Any surviving examples important
<u>Producer gas plant</u>	Plant for manufacturing producer gas (used to fuel retort furnaces) by passing air over red hot coke Devised 1861 by Siemens and subsequently adopted on large gasworks.
Date range	1861 - 1960s
Importance.	Any surviving examples important.
<u>Retort bench</u>	Bank of <i>retorts</i> and <i>furnace</i> Several retorts heated by the same furnace were known as an <i>oven</i> The pattern of retorts and furnaces was known as the <i>setting</i> .
Date range	1800s - present Essential development from <i>horizontal cast</i> iron retort to the fireclay retort of the mid-nineteenth century to inclined and vertical retorts of the late nineteenth and early twentieth centuries.
Turner and a second	Any surviving examples important.

<u>Retort house</u>	Core of a gasworks, housing the <u>retort bench</u> and incorporating a chimney for the furnace exhaust Early horizontal retorts, meant characteristically low profiles, later vertical retorts saw tall buildings with characteristic wall							
Date range Importance	1800s - 1960s Any surviving examples important, particularly with survivi plant							
<u>Tar tower</u>	Pipework tbr conveying tar condensed out in the foul main to a tar well							
Date range. Importance	1811 - 1960s Any surviving examples important.							
GASIFICATION								
<u>Carburetted water ga</u>	<u>s plant</u> - used to generate carburetted water gas, a mixture of gases from two processes - water gas from passing steam over hot coke, and oil gas from cracking of oil on hot coke or brick.							
Date range	1890s - 1960s							
Importance	Any surviving examples important							
PURIFICATION								
<u>Benzole plant</u>	Plant for removing Benzole from town gas, used from the first world war, either by washing with gas oil or by passing gas through chambers with carbon pellets							
Date range.	1914 - 1960s							
Importance:	Any surviving examples important.							
<u>Condenser</u>	Device for condensing tar and ammonia out of town gas, devised by Murdoch, with numerous subsequent designs, particularly after 1860							
Date range:	1800s - 1960s							
Importance:	Any surviving examples important.							
<u>Cyanogen plant</u>	Plant for removing Cyanogen from town gas, employed on some large sites between 1885 and 1922, the liquor being of use in printing and dyeing.							
Date range	1885 - 1922							
Importance:	Any surviving examples important							
<u>Electro-detarrers</u>	Plant for de-tarring town gas. introduced in the twentieth century, placed after the condenser.							
Date range								
importance:	Any surviving examples important							

<u>Gas drying plant</u>	Plant for reducing water vapour in town gas, so reducing problem of water deposition in mains, from 1930					
Date range:	1930 - 1960s					
Importance	Any surviving examples important.					
Lime washers	Plant for purifying town gas using <i>wet process</i>					
Date range						
Importance:	Any surviving examples important					
Liquor tank	Pit for collecting ammoniacal liquor condensed out of the gas					
Date ra::ge	1800s - 1960s					
Importance	Individually low					
<u>Naphthalene plant</u> Date range:	Plant for removing naphthalene from town gas, from c1912.					
Importance	Any surviving examples important					
Importance	Any surviving examples important					
<u>Purifier</u>	Plant for dry purification of town gas, a large cast iron box, holding trays of dry lime or iron oxide, always in groups with piping and valves to control the cycle of use of the boxes From 1921 some sites used reinforced concrete instead of cast iron					
Date range	1817 - 1960s					
Date range	Any curvit ing examples important					
Importance	Any surviving examples important					
<u>Rotary washer</u>	Device to remove the ammonia from town gas, devised by Hills in 1848, sprayed water onto brushwood in a rotating cylinder.					
Date range	1848 - 1960s					
Importance	Any surviving examples important					
Tar pit	Pit for collecting tar that had been condensed out of town gas					
Date range	1800s - 1960s					
Importance	Individually low					
<u>Tower scrubber</u>	Device to remove the ammonia from town gas, devised by George Lowe in 1846, employed shelving and a water spray from the summit of the tower Improved by Mann and Walker m 1871					
Date range:	1846 - 1960s					
Importance	Any surviving examples important					
Importance	Any surviving examples important					
<u>Tower purifier</u>	Device to remove Hydrogen sulphide from town gas, introduced from Gemiany in 1930, utilised trays operated by crane, and became popular for large sites					
Date range	1930 - 1960s					
Importance	Any surviving examples important.					

<u>Washer</u>	Device to remove tar from town gas, devised by Wilson in 1817, consisted of a gas-tight box in which gas was passed through perforated wooden boards running with water Improved by Cathels (1868). Livesey (1870) and Walker (1872)
Date range	1817 - 1960s
Importance	Any surviving examples important
PUMPING	
<u>Electric pump</u> Date range	Type of <u>exhauster</u> C20
Importance	Any surviving examples important.
Engine house	Building housing prime mover, with <i>boiler</i> and <i>climney</i> , used on gasworks in relation to exhauster and booster
Date range.	EC19 - 1960s
Importance	Any surviving examples important.
<u>Exhauster</u>	Pump for drawing town gas through purifying processes, devised by Broadmeadow in 1825, but only widespread from 1850s Many developments Small governor alongside controlled 'pull'
Date range	1825 - 1960s
Importance:	Any surviving examples important
Exhauster house	Building housing exhauster
Date range	EC19 - 1900s
Importance	Any surviving examples important.
<u>Gas engine</u>	Prime mover based on internal combustion, drove <i>exhauster</i> , usually with line shafting
Date range:	LC19 - 1960s
Importance.	Any surviving examples important
Power house	Building housing electric power generating plant
Date range	C20
Importance.	Any surviving examples important.
<u>Steam engine</u>	Prime mover used to drive <u>exhauster</u> , common practice was for each pump to be driven by its own steam engine, but line shafting was also employed.
Date range.	EC19 - 1960s
importance.	Any surviving examples important
<u>Steam turbine</u>	Prime mover used to drive exhauster
Date range	EC20 - 1960s
Importance.	Any surviving examples important

STORAGE							
<u>Gasholder</u>	Structures used to store gas (town gas, waste gas or natural gas) Specific type is important (single lift, telescopic cable- guided, spirally guided, dry, or pressure)						
Date range Importance	1800s - present. Good examples of the different types will be high Otherw moderate						
<u>Gasholder house</u> Date range. Importance	Building housing gasholder, commonly used in early industry EC19. Any examples likely to be important						
Metering and Press	- RE						
<u>Meter house</u>	Building housing station meter and station govemor (latter could be located in valve house)						
Date range	EC19 - 1960s						
Importance	Any examples likely to be important.						
portaneo							
Station governor	Device for maintaining constant pressure into the gas mams						
Date range	1815 - 1960s						
Importance	Any examples likely to be important						
portaneo							
Station meter	Device to allow town gas production to be monitored						
Date range	1817 - 1960s						
Importance	Any examples likely to be important						
1	• • • •						
Valve house	Building housing valves controlling gas flow mto and out of gasholders, may also house station governor.						
Date range	EC19 - 1960s						
Importance	Any examples likely to be important.						
ADMINISTRATION							
Administrative block	Staff offices, canteen toilet etc. of a gasworks.						
Date range	LCI9 - present.						
Importance	Low technological importance, but may be significant as part of a site.						
<u>Boundary wall</u>	Property marker around a gasworks compound						
Date range	EC19 - present						
Importance	Moderate within complete sites						
<u>Car park</u>	Motor vehicle parking area for gasworks employees and						
Date range	C20						
Importance	Low unless part of complete site						
mponance	Low, unless part of complete site						

<u>Entrance gate</u>	Entranceway to gasworks compound.						
Date range [.]	EC - present						
Importance	Moderate within complete sites						
<u>Gas showroom</u>	Building forming retail outlet for gas appliances						
Date range	C19 - 1960s						
Importance.	Moderate within complete sites.						
<u>Laboratory</u>	For period to c1805 a place for experimentation concerning the nature and use of gas Subsequently a component of a gasworks where on site tests and checks could be made						
Date range Importance	C18 - present. Any examples of experimentation laboratories are high. Gasworks laboratories vary.						
<u>Manager's house</u>	Accommodation for gasworks manager/engineer						
Date range.	C19 - EC20						
Importance	Moderate within complete sites						
<u>Office</u>	Building used for administrative purposes.						
Date range	C19 - present						
Importance	Moderate except as part of complete site.						
<u>Smithv</u>	Building housing blacksmith's workshop for running repairs						
Date range:	EC19 - 1960s						
Importance	Moderate within complete sites.						
<u>Stable</u>	Building for horses						
Date range	EC19 - C20						
Importance	Moderate within complete sites.						
<u>Stores</u>	Area for storage.						
Date range [.]	1800s - present.						
Importance.	Moderate within complete sites						
<u>Workshops</u>	Area for carrying out on-site repairs.						
Date range	1800s - present						
Importance:	Moderate within complete sites						

7.2 DISTRIBUTION

7 2 1 This term is used to cover any site associated with the distribution of gas, irrespective of scale or system

Boosters Pumps to boost pressure at times of low gasholder levels or during heavy demand. Situated in a <u>booster house</u> driven

	either by steam, gas engine or electric motor. Turbine-dnven fan-type boosters common in twentieth century				
Date range [.]	C19 to present				
Importance	In situ example high				
Booster house	Housed <i>boosters</i> Located at gasworks or gasholder stations				
Date range	C19 to present				
Importance	Potentially high.				
Gasholder stations	Located to maintain even pressure in <u>mains</u> Receive gas via <i>medium pressure network</i> and feed into <i>low pressure network</i>				
	via governors				
Date range	C19 to present				
Importance	Potentially high				
<u>Mains</u>	Pipework for transmitting gas over distances May be part of <i>Low, Medium</i> or <i>High pressure network.</i> Matenal of manufacture should be noted				
Date range	1800 to present				
Importance.	Isolated examples low, may be high if associated with surviving gasworks				

7.3 NATURAL GAS INSTALLATION

7 3 1 This term is used to cover any site associated with the refining of natural gas

Shore terminal	Alternatively known as beach or reception terminal Large
	complex site where natural gas is brought in by tanker or
	pipeline refined and stored before being passed into the
	transmission system refined
Date range	C20
Importance	In tenns of the MPP it is the teminal as a whole that is of
-	interest

7.4 ADMINISTRATIVE SITE

741 This term is used to cover any site associated with the central administration of gas supply, by gas company, municipal authority or nationalised industry

<u>Company office</u>	Building used for administrative purposes of a gas undertaking
Date range. Importance	1880s on Early examples may be high Later examples depends on historical associations and architectural considerations
Gas showroom	Building or rooms used by a gas undertaking to present information about its services to the public.

Date range	C20								
Importance	Early	examples	may	be	hıgh	Later	examples	depends	on
	histori	ical associa	tions	and	archite	ectural	considerati	ions	

8. SOURCES OF INFORMATION

The bibliography has been arranged to reflect the varying types of sources described m this section. Contacts and consultees for compiling the step 2 shortlist are given as an appendix. Whilst it is not possible to be comprehensive within the time limits of a study such as this, it is hoped that the material described gives a representative picture of the available sources

8.1 PUBLISHED WORKS

- There is a very considerable, but widely distributed literature for the gas industry, and 8.11 this material tends to focus on technological and business history with less on field remains Several general textbooks include sections on gas, and give a useful introduction to the subject These include Bracegirdle (1973). Cossons (1987), and Elton (1958). Specific histories include Chandler (1947), Chandler and Lacy (1949), Everard (1949), and Williams (1981) Trinder (1992) includes many useful entries relating to the industry (including Biggar, coal gas, Fakenham, gas, gas engine, gasholder. gasworks, town gas, natural gas, producer gas. Warwick, and water gas) The more recent history and the conversion to natural gas is covered by Elliot (1980), Williams (1981, 1982, 30-35), and Wilson (1974). Cotterill (1976) has given a summary of the Scottish industry (and Hassan 1978 has discussed its development in relation to the coal and oil industries) Possibly the most useful historical and technical accounts are those of Stewart (1958) and Wilson (1976) A good, simple explanation of the technical side of the industry is the Gas Council's undated 'Notes for Teachers on Gas' Architectural and historic studies include Chantler (1939), Chick (1995), Falkus (1967 & 1982), Jones (1985, 69-72, 139), Matthews (1985, 1986 & 1988), and Millward & Ward (1991), together with entries in the many volumes in the Pevsner 'Buildings of England' series
- 8 1 2 Many aspects of the industry, whilst dealt with in general works, are also covered by more specific studies. These include: anon (1849), on gas meters. Sturt (1980) on gas holders, and Watkins (1978) on engines and pumps Works which focus on the history of gas lighting include Gledhill (1981) and O'Dea (1958) The lives and work of individual engineers and industrialists are examined by. for example, Mills (1989) on Livesey, Clow (1941) on Dundonald, Stewart (1962) on Clegg; Cullen (1943), McCash (1966) and Griffiths (1992) on Murdoch, and Miele (1996, 15) on Aird. Gas in relation to other industries is also covered by Kelley (1986) and Mott (1936), on wood gasification; Mott (1936) & Trinder (1992 coke entry). on the coking industry, and Campbell (1971) and Gardner (1915) on the coal tar and chemical industry.
- 8 1.3 A further useful recent source is the *Historic Gas Times*, produced since 1994 as the newsletter of the IGE's Panel for the History of the Gas Industry

8.2 **REGIONAL WORKS**

8 2 1 The series of *Bibliographies of Industrial Archaeology and Industrial History* by Greenwood (1985, 1987, 1988, 1990) provide the quickest inroad to what had, by the

date of each volume, been published for North England (1985), the Midlands (1987), London (1988), and the South East (1990).

- 8 2 2 Regional and local histories are numerous, those encountered from the literature search are given in the bibliography Whilst possibly unfair to highlight particular examples, a notable group is the series of booklets on Midlands undertakings by Roberts (1975 to 1983) Historical accounts are distinguished from the many accounts of local industries included m the industrial archaeology guides published by David & Charles and others
- 8 2 3 Libraries with useful collections of secondary material include the Science Museum in London, the Birmingham reference Library, ICE library, IGE library

8.3 CONTEMPORARY WORKS

- 8 3.1 A large number of works have been written by gas industry practitioners These constitute a valuable group of historical sources, and frequently contain information about specific sites. Some of the more obvious early general works including anon (1842), Accum (1819), Clegg (1841), Jones & Clegg (1847), Meade (1934), Newbigging (1870), Newbigging & Fewtrell (1878). Peckston (1819), Rees (1819-20, available as Cossons 1972); and Woodall (1908) A useful index to early published works is Chester (1892) The PEP (1939) report is also a valuable source on the history of the industry and m particular its condition in the inter-war period. More modem general textbooks are those of Anderson (1984), and BP (1972 & 1977)
- 832 Various academic and trade journals contain a great deal of useful historical information, much of it with regard to specific sites. These journals include: The Builder, Engineer, Engineering, Gas Engineer's Compendium (from 1924), Gas World (from 1884), The Illuminating Engineer, Journal of Gas Lighting (from 1849, later renamed the Gas Journal), Mechanics Magazine, Philosophical Transactions of the Royal Society, and Transactions of the Institute of Gas Engineers.
- 8 3 3 A further, very important source are the centenary publications produced by many gas undertakings, and available at the BG archives office at Partington and in local record offices.

8,4 PRIMARY RECORDS AND LIBRARY COLLECTIONS

8 4 1 The National Gas Archive, at Partington in Manchester, is the central company archive for BG pic. formed in 1995 it includes corporate records of BG pic and its predecessors, together with records of former Regions of the nationalised industry (excluding Southern and West Midlands) and the individual gas undertakings absorbed by nationalisation In addition a great deal of material is held in local record offices especially for the pre 1945 industry; for example in the 1960s all minute books which survived into nationalisation were deposited with Record Offices in East & West Sussex, Surrey, Kent and London (Sturt pers comm) For archives relating to London and for sites in London see Sturt (1989) and Stewart (1957).

- 8 4 2 The Institution of Gas Engineers library also has an important collection of published works and primary records The origins of the IGE are the 1863 formation of the Bntish Association of Gas Managers In 1881 this association change its name to the Incorporated Gas Institute, at the same time a conflict between members led to the formation of the separate Institution of Gas Engineers These two bodies were re-united in 1903 as the Incorporated Institution of Gas Engineers, becoming the Chartered Institution of Gas Engineers in 1929 (Williams 1981, 45, 66)
- 8 4 3 Other gas industry bodies are listed below Historical material in relation to these bodies has not been investigated.
 - Gas Companies Protection Association, formed in 1898.
 - Society of Bntish Gas Industnes, fonned in 1905 (to represent makers of plant and apparatus)
 - Bntish Commercial Gas Association formed m 1912 (a publicity agency for industry)
 - National Gas Council of Great Britain and Ireland, formed m 1916
 - Federation of Gas Employers was formed, formed in 1919
 - Bntish Gas Federation was set up to represent five existing bodies, formed m 1934
 - Gas Research Board. fonned in 1939 (under the IGE and the Society of Britsh Gas Industries, to conduct co-operative research for industry).
- 844 Other important sources for the industry are the Boulton and Watt collection at Birmingham Reference Library; numerous Bntish Patents; Parliamentary select committee reports, and the records of gas plant manufacturers, for example those of Newton Chambers & Co of Sheffield, who sold plant all over the country, have been highlighted by the work of Falkus (1967, 495)

8.5 MUSEUMS, MUSEUM COLLECTIONS AND HISTORICAL SOCIETIES

- 8 5.1 In England, there are museums in former gasworks buildings at Fakenham Gas Works in Norfolk (a hugely important and more or less complete small gasworks of the midnineteenth century), Leicester Gas Museum (mainly displaying appliances) and Bromley by Bow (currently closed to public) In Scotland there is a preserved gasworks at Biggar, Lanarkshire. Other important collections are held by the Science Museum in London, Manchester Museum of Science and Industry (Gas Gallery): and the Leeds Gas Heritage Collection at Tingley)
- 8 5.2 IGE's Panel for the History of the Gas Industry, with wide contacts for history of the industry. Gas Industry genealogical Index being compiled by members David Loverseed and Terry Mitchell Society has also proposed compilation of a Gasworks Index, currently underway. Gas Historical Societies exist for the North West, South West and Wales.

8.6 SOURCES FOR STEP 2 DATA AND CONSULTATION

- 8 6 1 The following categories of source material should be consulted in compiling a step 2 shortlist published works suggesting historically important sites, published works covering specific sites (including Pevsner volumes, and local industrial archaeology guides such as those published by the AIA. David & Charles, and others), archaeological databases (the NMR and SMR, English Heritage's listed buildings database and Scheduled Monuments databases, PHEW, and the AIA's IRIS database); correspondents (to include the IGE and its Panel for the History of the Gas Industry, the several gas historical societies, AIA societies and identified individuals beyond the constant list of consultees) The latter are given in the address list.
- 8 6 2 During the course of the step 1 work, a questionnaire was circulated to <u>County Sites and Monuments Records</u> and <u>National Park Officers</u> and to <u>AIA affiliated societies</u> All responses were helpful and the majority gave useful information. All expressed willingness to provide further information for the step 2 work. The *RCHME* Threatened Buildings Section (Swindon Office) recorded the Birmingham Gas Street works; recording work by the section is ongoing and is the responsibility of <u>Mike Williams Dr Peter Wakelin</u> (Cadw) and <u>Dr Miles Oglethome</u> (RCAHMS) should be consulted for comparative information in Wales and Scotland

9.1 IMPORTANCE

- 9 I 1 The history of the gas industry in England is a topic of international importance in terms both of scientific and technological development and m social and economic history Any remains of Britain's industry for the period up to the conversion to natural gas in the 1960s have the potential to contribute to our knowledge of these fields and are therefore of significance. For example, the very early industry was dominated by technological developments taking place m England and the British gas industry of the nineteenth century is a classic example of the balances stmck between 'lassez faire' and public controls, both through legislation and later by municipalisation In addition, the late nineteenth century saw the building of gasworks that gave grandiose displays of Victorian industrial architecture. The period of, and after, conversion to natural gas is of lesser technological importance, although the fact of this change and the establishment of the National Transmission System obviously had national significance The nationalised industry, and in particular the natural gas industry, was dominated by increases of scale and efficiency, and sites of this era would be difficult to preserve
- 912 The essence of a gasworks is its plant, little of which will survive in the field However, this report has specifically attempted to summarise the technical complexities of gasworks as they developed through the history of the industry, on the basis that a sound understanding of process must lie behind assessment of the archaeological worth of surviving fabric.

9.2 RARITY

- 921 The level of survival of town gasworks is low, largely because the conversion to natural gas led to their redundancy and steady dismantling The museums at Fakenham and Biggar are exceptional survivals However, as demonstrated in Birmingham in 1993-4, substantial remains may still be identified (Demidowicz 1993 and LUAU 1994b)
- 9 2 2 Currently there are three gas industry sites in England with Scheduled Monument status The Fakenham gasworks in Norfolk is a typical compact small gasworks dating from 1852 The Shaw Lodge Mills gas plant in West Yorkshire was a private gas plant for a textile mill, dating from 1860-90. The Lavenham gasworks site in Suffolk retains an 1862 iron gasholder, but there are no remains of the retort house or other features. In addition to this there are 58 buildings and structures associated with the gas industry which currently hold listed building status. These include the Warwick gasholder house of 1822, and seven other gasholder sites such as the Fulham no 2 holder of c1830 and the St Pancras gasholders of the 1880s The Bimiingham Gas Street retort house of 1822 is listed, as are elements of the Canons Marsh gasworks in Bristol (possibly dating to the 1870s), and a range of other structures.

9.3 **RECOMMENDATIONS**

- 931 The following general criteria should be applied m selecting sites for protection.
 - The aim should be a balanced sample of sites covering the chronological, regional, and typological range of the industry
 - Sites may be important as representing technical advances and, equally, as demonstrating common practices.
 - In general terms, gasworks are sufficiently rare that any above-ground remains are likely to be of archaeological importance. It is unlikely that further complete sites survive to any level approaching their original condition. Plant in particular is unlikely to survive. As such, whilst complete sites would be of major significance, the reasonable survival of portions of gasworks will also be significant.
 - Where buildings have survived, they should be assessed in terms of their architectural merit, the potential for archaeological investigation of standing fabric, and the potential survival of buried remains Both standing fabric and buried remains may contain evidence for the particular utilisation of gas technology on a given site, over and above information available from documentary sources.
 - The survival of gasholders is generally a consequence of their re-use value for the natural gas industry. Their significance will depend on their technological and architectural value.
 - Distribution sites will generally be underground and virtually impossible to identify without ground disturbance. Museum preservation of a representative sample of the types of piping used is likely to be the most practical conservation policy, and should be combined with archaeological recording through the planning system for any remains that are encountered
 - The Natural Gas industry is dominated by large scale plant. extensive pipelines and storage facilities. A policy of seeking the preservation *in situ* of elements of this post-1967 industry is unlikely to be either practical or desirable. It is recommended however that a policy should be pursued of carrying out selective recording and the preservation of documentary records.
- 9 3.2 Finally, in view of the nature of the purification processes used on town gasworks, and the presence of toxic metals and compounds associated with them, it is likely that land contamination will be a major factor in considerations of their conservation

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APPENDIX 1 - ILLUSTRATIONS



Figure 1 Diagram showing principal parts of a gasworks (Gas Council - undated)





Figure 3. plan of Rome Street Gasworks in 1922 (City of Carlisle Gas Undertaking Rome St Gasworks official inauguration plant) .



Figure 4. Horizontal gas retort bench, cut away diagram (Cossons 1987, 221)



Figure 5 Cross-section of a Glover-West vertical retort bench with coal and coke handling plant (City of Carlisle Gas Undertaking Rome St Gasworks official inauguration plant)



Figure 6. Diagram of coke oven plant (Gas Council - undated) Q



Figure 7: Diagram of Fulham Station Carburetted Water Gas Plant (Fulham Station booklet)

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Figure 9 Diagrams of exhausters, condensers and washers at Fulham (Fulham Station booklet)



Figure 10 Benzole plant and gasholders at Fulham (Fulham Station booklet)



Figure 11. Diagram of Natural Gas Shore terminal (Wilson 1974, 32-3)



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