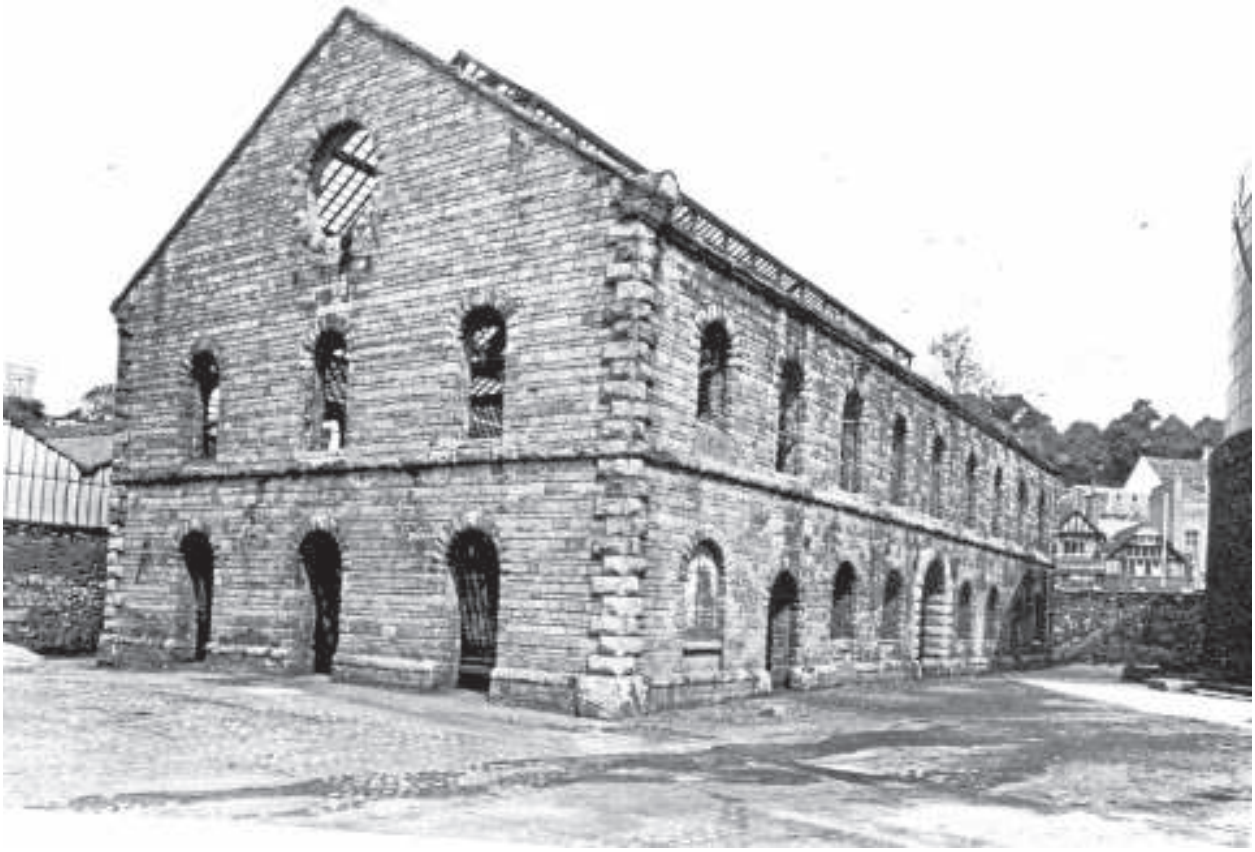

Plate 1 West purifier, Canon's Marsh Gasworks, August 1970 **BB70/7270 Crown copyright NMR**

Plate 2 Retort house (south-east block), Canon's Marsh Gasworks, August 1970

BB70/7275 Crown copyright NMR

Canon's Marsh Gas Works, Bristol

Development, Recording and Archaeological Assessment

Richard Croft

RemedX Ltd was retained by Lattice Property (formerly British Gas plc Property Division) to undertake recording of the standing buildings and conduct an initial archaeological assessment of the Canon's Marsh gasworks site (Fig 2) as part of the regeneration of the 'harbourside' area in central Bristol. Some notes on the site were published in *BIAS Journal 26* (1993).

The following is mainly taken from the interim report, July 1998, prepared in agreement with the City Archaeologist for planning purposes. The full report contains no changes to these findings, but provides a much greater depth of interpretation of the development of the site, its manufacturing methods and equipment, and includes a discussion on the archaeological recording and interpretation of the standing structures. A detailed history of gasmaking in Bristol and the ownership history of the Canon's Marsh Works is not included, having already been addressed by the sources used in this study, quoted below,[1, 2, 3, 4] A copy of the final report has been deposited with the City Archaeologist, Bob Jones, as part of the Urban Archaeological Database (BUAD 3339).

Outline of the History of Gas Manufacture at Canon's Marsh

The Bristol and Clifton Oil Gas Company was formed by Act of Parliament in 1823 and the company secured premises at Hipsley's Barton in 1824, adjacent to the Limekiln Lane glasshouse on Canon's Marsh. Oil gas could be manufactured from any organic oil, but it was generally whale oils or spermaceti that were used.[5] The oil gas

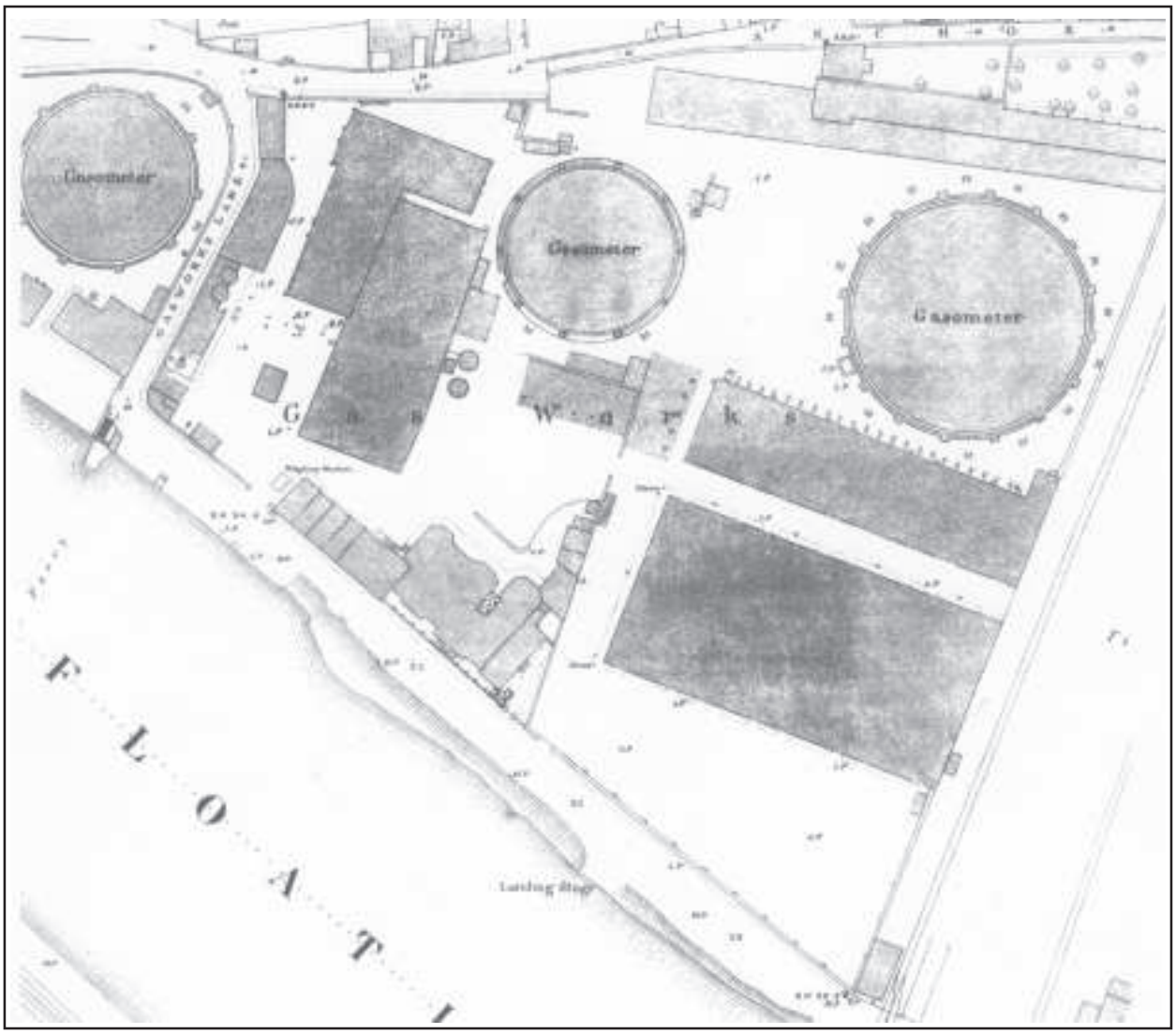

Fig. 1 Gas Works in 1884

works operated in competition with the Bristol Gas Light Company, formed in 1816, which manufactured gas from coal.

In 1836 the Bristol and Clifton Oil Gas Company was granted permission by Parliament to begin manufacturing gas from coal, after it became uneconomic to make gas from oil. The company changed its name to remove the reference to oil gas and eventually amalgamated with its competitor to form the Bristol United Gas Company in 1853. The works at Canon's Marsh were expanded in several stages. By the 1880s the works occupied much of the current site. The final expansion, in the first half of the 20th century, was to the east and the works continued manufacturing gas until the 1950s or 1960s. By 1970 the works were derelict and by 1972 the buildings had been demolished to their present size.

The Development of the Gas Works at the site

The gas manufacturing works at Canon's Marsh developed over a period of 150 years. The history of gas manufacture at the site reflects the technical and social changes within British industry. Small-scale, labour-intensive, inefficient and environmentally-damaging practices were gradually superseded by increasingly efficient equipment and methods.

The stages of the site development have been assigned phases for purposes of description and assessment. These phases are related to the acquisition of land during successive expansions, as shown in Fig 2.

Phase 1 (1824-1836) - The Oil Gas Works

Little is known of the activities of the Bristol and Clifton Oil Gas Company or the equipment it employed. The early evidence for the layout of the works is from maps of Bristol dating from the 1820s and a general understanding of the method of making gas from oil.[6,7] A retort house, gasometer house and three ranges of outbuildings were associated with these works. The retort house was distinctive with a buttressed front elevation. The gasometer house was even more distinctive, being circular with a domed roof. The gasometer house contained a gasholder whose tank may have been above, below or partly below-ground (gasholder 'A'). The floor level of the retort house was elevated above the general ground level, although probably only by about one metre.

Phase 2 - The Oil Gas Works Converted to Coal Gas Works (1836-1841)

The coal gas works occupied the same site as the oil gas works and the same buildings were used, with some modifications. The retort house continued in use, with the replacement of the oil retorts and their settings with those for coal. A coal store was added and lime purifiers installed in a range thought to already exist at this time, now called the purifying house. A condenser was installed and a tar and liquor tank either installed or adapted from the oil gas process. This tar and liquor tank was of

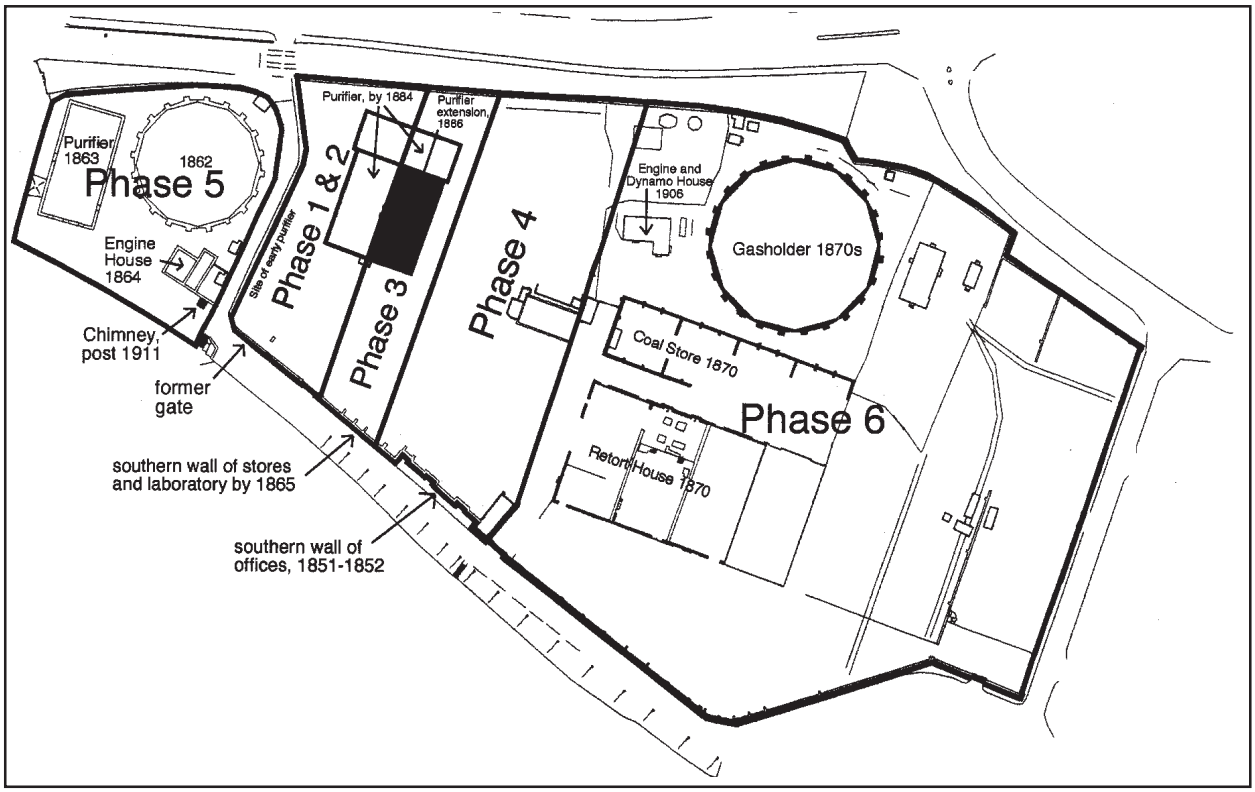

Fig. 2 Existing site, 1998, showing land acquisitions and standing structures

iron construction and was located within the retort house at, or beneath, the floor level. A second gasholder (gasholder 'B') was in existence during this phase, but it is not known if it dated from the later years of oil gas production (Phase 1). It is believed that gasholder 'B' had a below-ground tank (or possibly partly below-ground), with the holder superstructure being counterbalanced with weights from a surrounding frame.

This phase was generally a period where the gasworks was poorly managed on a shoestring budget. As the conversion to coal gas production was forced upon the Company due to the escalating price of oil, it appears that the adoption of a different manufacturing process was undertaken by adapting what was at hand as much as possible. Understanding of the new process seemed lacking, as basic design faults in the retort settings were only discovered after nine years of operation. The employees' working conditions were appalling.[8]

Phase 3 - Expansion to the East (1841-1848)

The 1840s saw the works undergo a dramatic period of rationalisation, modernisation and steady expansion. The old oil gas works site was too small to allow any further development of the gas works. A strip of land, formerly a rope walk, was acquired in 1841. Almost immediately a third gasholder (gasholder 'C') was constructed with a brick-lined masonry underground tank. The gasholder had a frame surrounding it which supported guide rails for rollers fixed to the top of the gasholder superstructure. The new strip of land, known as the 'New Yard', was raised in level by the spreading of fill materials. The poor compaction of this material caused the collapse of the new boundary wall soon after its completion.[9]

The management of the company sought outside advice to improve their works and a series of four reports were prepared during 1843 and 1844 by William Herapath, a Bristol chemist and, George Lowe, the engineer of the London-based Chartered Gas Company.[10] In response to these reports, dramatic improvements were made in terms of efficiency and, as a result, the conditions of those who worked there. The number of retorts in operation was not substantially increased, but their effectiveness and flexibility of operation were.

These improvements, steadily undertaken through the mid-1840s, included a new, large, underground tar and liquor tank constructed of masonry covered with masonry arches. Also a much larger coal store was built on the 'new' land behind the retort house, allowing all coal to be kept dry and brought directly into the retort house. This structure too began to subside within two months of completion, due either to poor compaction of the fill used to raise the site level, or poor foundations. A new landing place was constructed on

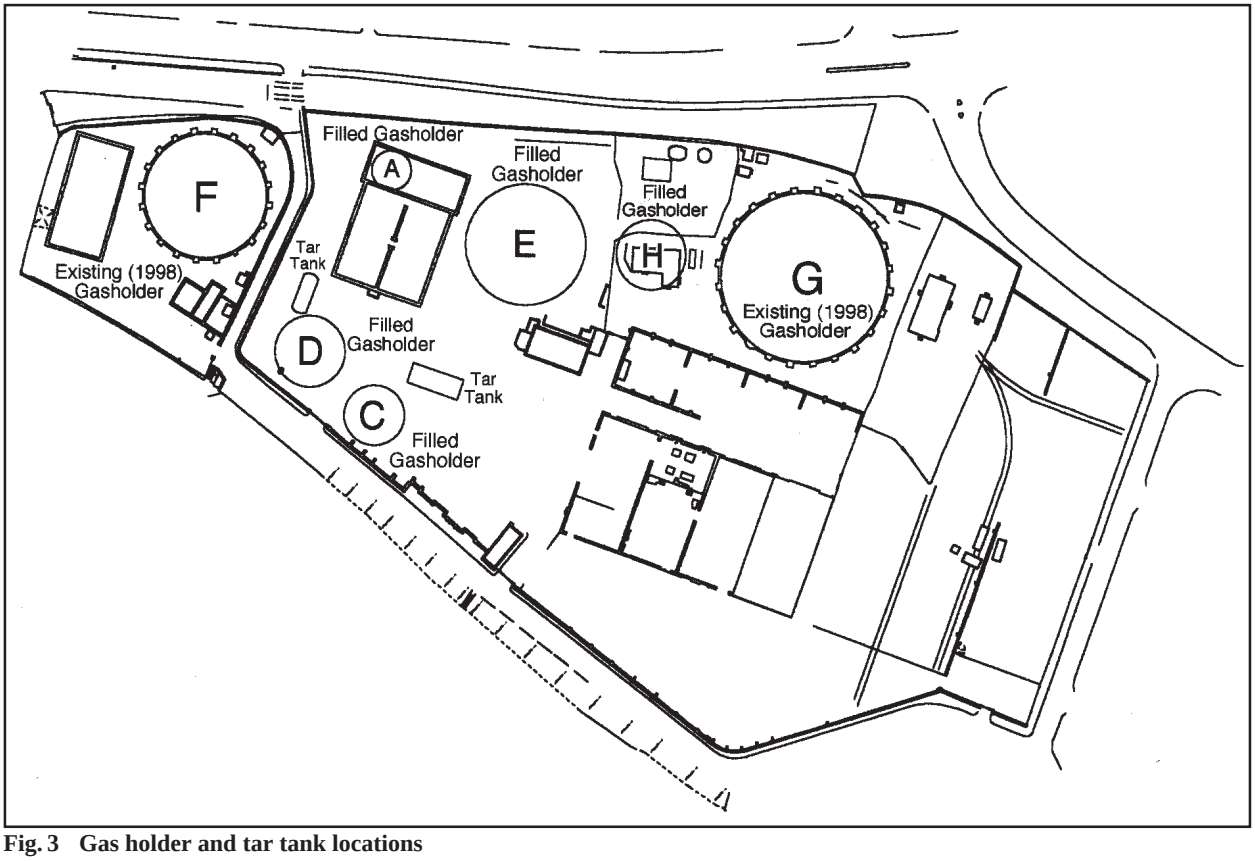

Fig. 3 Gas holder and tar tank locations

the wharf adjacent to the 'New Yard' for unloading coal directly into the new coal store, and the weighbridge relocated to the 'New Yard'. Gasholder 'B' was demolished and replaced with a new telescopic gasholder (gasholder 'D') with a below-ground cast iron tank. An exhauster and steam engine to power it were installed in a new building and new governors were installed to control the gas distribution pressures. New lime purifiers and a Croll's patented purifier were installed in the purifier house.

Towards the end of this phase a second retort house was built to the north of the new coal store, with the addition of a chimney. This increased the number of retorts available at the works.

Phase 4 - Further Expansion to the East and an Increase in Retorts (1848-1860)

A further acre of land was acquired adjacent to the east boundary of the works. Within two years of acquiring this land, during which time its level was probably raised, development began. New offices were designed and constructed facing the Floating Harbour, extended later towards the end of this phase after the Bristol United Gas Company was formed in 1853. Gasholder 'E' was constructed in the north of this new land, with a below-ground tank, and a washer and three scrubbers installed for the removal of ammonia prior to passing the gas through the lime purifiers.

A new engine house with new exhausters was also installed, and the old gasometer house converted into a purifier house with four additional lime purifiers. The coal store built in *Phase 3* was converted to a retort house, and a new coal store constructed on the newly acquired land, south of gasholder 'E'.

Phase 5 - Expansion to the West (1860-1870)

By 1860 the works had expanded to fill the available space and Brandon's Wharf site was acquired. Another gasholder (Gasholder 'F', still existing in 1998 with replaced superstructure), a large purifier house (the West Purifier House, still existing in 1998) and an Engine and Exhauster House (still existing in 1998) were constructed on this site by 1864. This new gasholder capacity replaced that of gasholder 'D', which was demolished, and the tank void was filled in.

During this phase the old retort house and gasometer house (both from *Phase 1*) were demolished, leaving the *Phase 3* coal store (later *Phase 4* retort house) as a single structure running north-south. This retort house was then extended to the south to accommodate an additional bench of retort settings. Gasholder 'C' was also demolished and the masonry underground tank roofed over with brick arches to form a new underground tar and liquor tank. The new purifier capacity in the West Purifier House on the Brandon's Wharf site replaced the purifier capacity in the old purifier house in use since *Phase 2*. This old purifier house was demolished and became the site of two new scrubbers and new condenser.

Also built, adjacent to the west side of the offices, was a new stores building and laboratory.

Phase 6 - Expansion Eastwards and Extensive Remodelling of the Works (1870-1949)

Finally, the timber yard adjacent to the eastern boundary of the works, known as Germaine's, was purchased in 1870. Work commenced almost immediately on a new Retort House (still existing in 1998), to prepare for the winter demand for gas. The remodelled works that took shape early in this phase included; a new gasholder (Gasholder 'G', still existing in 1998 with replaced superstructure) in the north-east corner of the site; a new coal store (still partly extant in 1998) adjacent to the new retort house; and a new purifier building (the East Purifier House still extant in 1998). This purifier building was designed and built in two stages. In the first stage, it was L-shaped and built on the site of the *Phase 1* retort house and over the site of the then demolished *Phase 3* second retort house, adjoining the then still standing Phase 5 retort house. The second stage was completed in 1886, once the *Phase 5* retort house had been demolished. An additional three scrubbers, larger than the previous structures, were added in the 1870s and the completion of the East Purifier House added a further three lime purifiers to the works.

From 1870 to the end of gas manufacture at the works the area of the site increased further to the east with the acquisition of land for the storage of coal. The main structures occupying the site in 1998 were the same as those in existence in 1886, with the exception of gasholder 'E', which was demolished between the 1920s and 1950s. It is possible that this was the gasholder destroyed by enemy action in 1941, and was not rebuilt.

Further additions to the gasmaking process were made during the twentieth century, including the installation of a carburetted water gas plant, with its own tar separators condensers and gasholder

(Gasholder 'H'). Two large above ground fuel tanks to hold feedstock oil and another underground tar and ammoniacal liquor tank were constructed.

Other equipment brought into use at the works were; a concentrated liquor plant (for treating the ammoniacal liquor), a benzole plant (for extracting hydrocarbon fuels from tar), naphthalene washers, a Telpher overhead rail system (for coke and coal transport) and a new jetty for the unloading of coal from the Floating Harbour. The documented dates for the development of the works are listed below.

Reassessment of the Development of the Site

The above analysis of the development of the gasworks differs from that previously assessed.[11] Further information has since been gathered that has allowed a detailed assessment of how the works developed. The main changes in the understanding of the development of the site are:

- The first major expansion of the works was to the east, not to the west (the site of the glass house). Brandon's Yard, formerly known as Brandon's Wharf, was not acquired until 1860.[12]
- There is no evidence for the second dome (gasometer building) to the south of the original *Phase 1* retort house except that shown on Donne's map of 1826. If it did exist, it had been replaced by a rectangular coal store by 1836.[13]
- The 1845 telescopic gasholder construction (gasholder 'C') was not on the glasshouse site, but on the *Phase 1 and 2* site, in place of a previous gasholder (gasholder 'B').[14]
- The pennant stone perimeter wall west of Gas Ferry Road dates from after 1864, rather than after 1845.[15]

The 'landing place' constructed in 1844 was not the 'Gasferry' landing place at the end of Gas Ferry Road, but was located further to the east and was used for unloading coal during *Phase 3* of the works.[16]

The Standing Buildings in Sequence

Kirsty Rodwell examined, interpreted and recorded the standing wall on the gasworks site. She presents the following sequence of development, described in relation to the overall site phasing derived from the documentary sources. Knowledge of the standing structures is augmented by a series of some 30 photographs in the National Monuments Record taken in 1970 and 1972, which show several buildings prior to demolition. The chronology of the standing structures is shown in Fig 2.

Phases 1 and 2
The earliest surviving walling is on the south-east side of Gas Ferry Road extending a short way round the corner onto the dockside. Both ends of the wall finish in rubble quoins, against which later walling is butted. The north end is particularly clear internally, and the faced-off return wall can be seen. The top of the wall has been heightened along its whole length at a later period. The dimensions of this wall correspond with those of the building used as a purifier on a plan of 1857, and the development plan of 1868 shows this block unaltered from 1836. It is possible that it dates back to 1823.

Phase 3
Two lengths of wall appear to belong to this phase, both within the boundaries of the original site. In Gas Ferry Road this comprises the length of wall running north from the butt joint at the corner of the *Phase 1* building to a point at the turn of the lane where a break in the build indicates a later reconstruction. There is a second length on the south (dock) side, detached from the south east corner of the *Phase 1* building by an infilled gateway, and truncated to the east by a *Phase 5* wall. This wall includes a quantity of brick and is of a different construction to the first section. It may be the 'front' boundary wall rebuilt in 1841 after settlement.

Phase 4
Surviving from this phase is the facade of the offices of 1851-2, incorporated in the south boundary wall. This is in the style of an Italianate villa, faced in limestone ashlar; it has been reduced to a single storey and the portico removed. Photographs in the NMR (front, side and rear views) show this building when it was still standing in August 1970. Further views taken in July 1972 show it reduced to its present size.

Phase 5
In this phase the works were extended west of Gas Ferry Road. Surviving structures include an engine house, the gas holder of 1862, and a purifier of 1863. A NMR photo of 1972 records the wooden roof structure of this building. The boundary wall appears to have been rebuilt at the same time: a plan dated 1864 shows proposals for alterations to the north-east corner, and the wall is of a unified construction.[17] It includes a raised section intended to support an overhead gaspipe.

A corresponding support forms part of a general heightening of the earlier wall on the opposite side of the lane.

On the main part of the site, stores and a new gateway constructed west of the offices survive as part of the south boundary wall. The stores have been reduced to a single storey; a NMR photo of 1970 shows the building standing to its full height. The original gate close to the south-west corner was reduced in size.

Phase 6

After 1870 the site was extended eastwards. Surviving buildings on the new land include the retort house and coal store, both now reduced to a single storey. In 1970 these stood to their full height of three storeys, although they were already roofless (NMR). The south boundary wall and gateway to this extension are extant, and there are design drawings dated 1871.[18]

On the older part of the site a new purifier was constructed over earlier buildings. The central spine wall is on the line of the 1836 eastern plot boundary, but does not appear to incorporate any earlier fabric as its construction techniques are the same as those used elsewhere in the building.

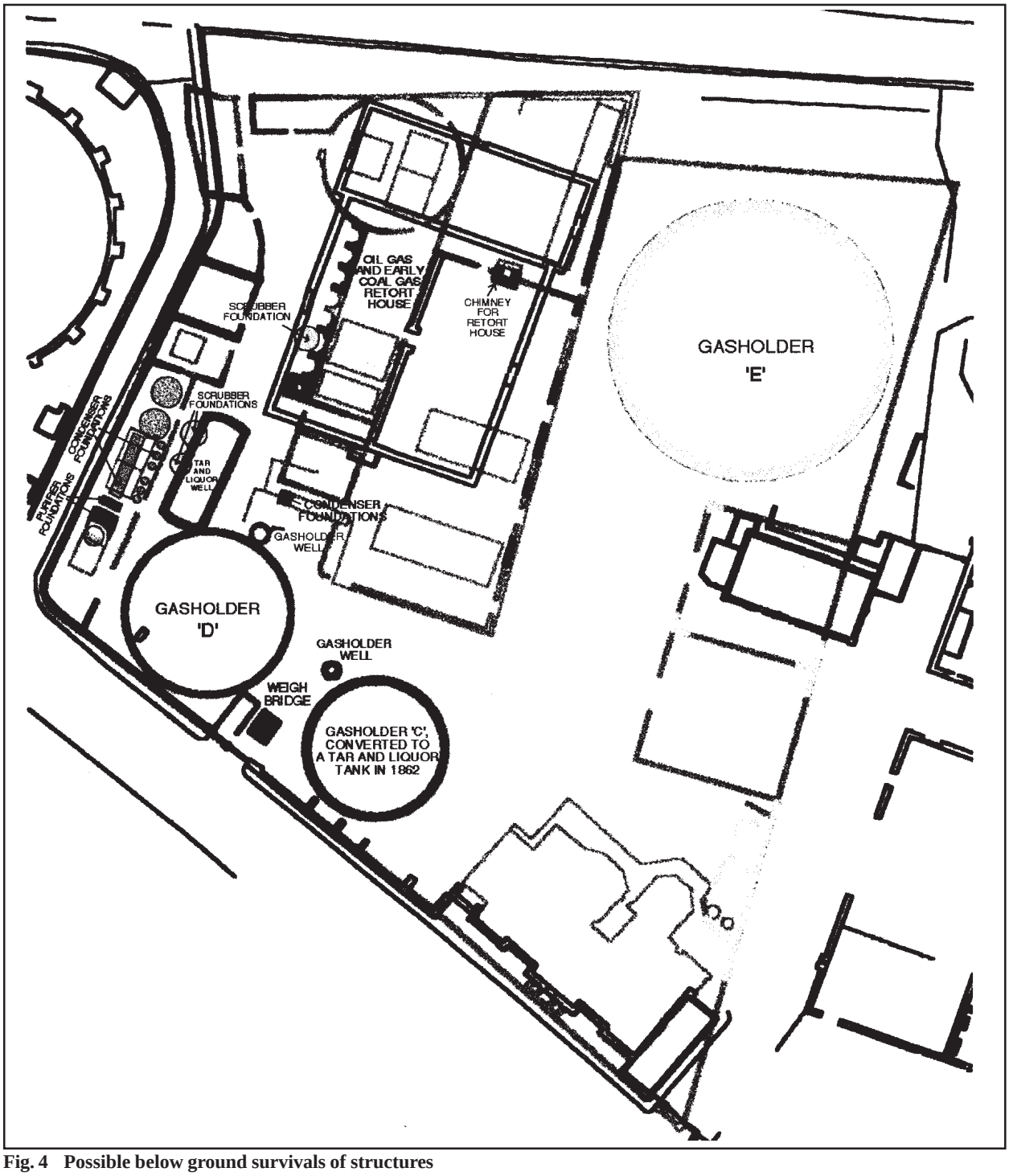

Fig. 4 Possible below ground survivals of structures

Although architecturally this building has a unified exterior, it is known to have been constructed in two stages, for the 1884 OS plan shows it as L-shaped in plan and built against an earlier retort house. The building was completed in 1886 and the spine wall was probably rebuilt at this date.

All the buildings of this period are built in the same massive style of coursed, squared pennant rubble with rock-faced dressings. Minor works to the existing boundary walls include the blocking of the gate close to the south-west corner and the realigning of the east wall of Gas Ferry Road at the north end.

Survival of Gasworks Structures below Ground

An assessment of the likely survival of the earlier phases of the gas manufacturing structures below-ground has been made in the areas of the works occupied up to and including *Phase 3* by considering the likely soil disturbances at the works during the last phase of operation (1870-1998).[19] The main causes of soil disturbance are; laying of building foundations; laying of gas mains and other cables/pipework and drainage; laying of equipment foundations; and construction of underground structures.

Where there is sufficient evidence that these activities have occurred on the site, their locations were plotted over a scaled base plan showing all the known historical structures and equipment at the site. It has been assumed that where building foundations and gas main laying has occurred, any previously surviving trace of former structures below-ground has been destroyed.

Where soil disturbances are not shown, there is a chance of below-ground survival of former equipment bases and wall footings. From this analysis the potential below-ground survival is shown in Fig 4. The potential survival represented is a 'best case', as only the known soil disturbances have been used in the analysis. It is likely that other soil disturbance has taken place which have caused further destruction of below-ground remains. The potential below-ground survivals are:

Phase 1
The East Purifier Building and its associated gas mains are likely to have caused widespread destruction of the main buildings of the *Phase 1* oil gas works. There is likely to be little, or none, of the gasometer house remaining. Part of the front façade of the oil gas retort house and the base of its chimney may survive within the East Purifier Building.

Fragments of the range of buildings occupying the north of the *Phase 1* site may survive, partly beneath Gas Ferry Road.

Phase 2
The *Phase 2* purifier house inner wall (which may belong to *Phase 1*) may partly survive at its southern end. Fragments of the *Phase 2* coal store may also survive, although gas main trenching and the

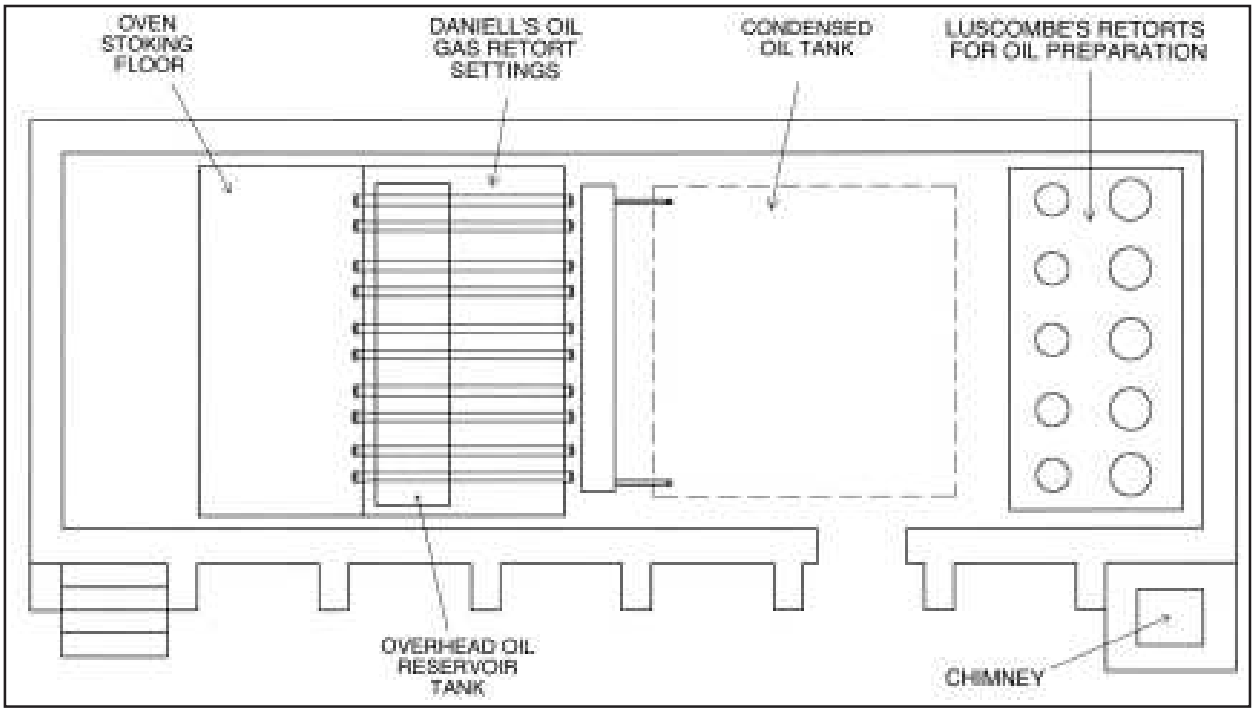

Fig. 5 Reconstruction of the oil gas retort house c1829

concentrated liquor plant are likely to have disrupted this area.

The tank of gasholder 'B' was probably removed during the later construction of Gasholder 'D'.

Phase 3
The coal store of 1844 and the extension to the north of it, which was used as a second retort house, are likely to have been disturbed by the East Purifier House foundations and the pipework servicing the purifiers. Fragments of the eastern wall of the coal store may survive below-ground. The underground brick lined masonry tank of gasholder 'C', constructed in 1841, is likely to still exist in part as it was modified for use as a tar and liquor tank in 1862.

It is possible that the underground tank of gasholder 'D' was constructed of cast iron (as recommended by George Lowe in his report). It is likely that this gasholder tank still exists, although the upper sections of it may have been salvaged if it were made of cast iron. This gasholder was dismantled and the tank filled in during *Phase 5*. During dismantling the water from within the holder was likely to have been pumped away, but the sludge which accumulates within gasholder tanks, is likely to have been left in place. This sludge usually contains organic compounds including polycyclic aromatic hydrocarbons.

The 1843 tar and liquor tank, constructed on Herepath's recommendation, is likely to survive in part. When abandoning such tanks it was usual to pump out the tar using the installed pumps. This would leave the tar below the pump inlet, which could be in the order of 0.5 metre in depth. The arched roof would then be demolished and the tank would then be filled with building debris. If this procedure was followed, then the tar tank walls are likely to be intact, containing a mixture of tar and rubble.

Phase 4
The below-ground remains of the company's offices are likely to be restricted to foundations. The offices were demolished in the early 1970s and it appears from visual inspection that the demolition included the removal of all floor slabs. The southern façade of the office building survives above ground as part of the site boundary wall.

The below-ground tank of gasholder 'E', constructed in 1852, is likely to survive mostly intact, although the upper part is likely to have been removed when the gasholder was dismantled and the tank filled in during the 1940s or 1950s. The material used for the tank construction is not known, but could have been cast iron or masonry.

It is possible that the remains of outbuildings along the inside of the boundary wall within the 'Old Yard' may survive. These buildings housed the station meter and workshops.

Phase 5
The main structures associated with this phase either still survive, or were demolished (with floor slab removal) during the 1970s.

The underground structure surviving is the tar and liquor well that was formed by covering the tank of gasholder 'C' with a brick arched roof. It is likely that the walls of the gasholder still survive and that the brick arched roof has been broken to allow the filling of the tank void with rubble. There is however the possibility that the arched roof is intact or partly intact.

The *Phase 5* scrubbers and condenser, built on the site of the old *Phase 2* purifier house, are likely to have had large foundations. It is likely that these foundations are still present below-ground. The placing of these foundations is likely to have resulted in the removal of any traces of the earlier purifiers in this area. It is possible that some trace of the earlier purifier foundations exist in the southern part of the *Phase 2* purifier house, although these are likely to be fragmentary.

Phase 6
Below-ground survivals of structures and equipment from this phase of the site development are likely to be restricted to foundation slabs and underground storage tanks. In the area that this report has concentrated on (the area occupied by the works up to 1859) *Phase 6* saw the construction of five gas purifying plants and associated equipment:

To the south of the East Purifier House, constructed during this phase, a large area was occupied by a 'Test Works' later converted into a concentrated liquor plant for the treatment of ammoniacal liquor into a saleable product. This plant is likely to have had substantial concrete foundations, resulting in the disturbance of the southern end of the *Phase 5* retort house.

To the south-east of the East Purifier House, two new scrubbers and washers were constructed (early 1880s). The two scrubber towers would have had massive foundations, which probably survive. To the north of the company's offices, two large above-ground fuel oil storage tanks were constructed. The concrete pad foundations of these are likely to have resulted in the destruction of the southern half of the *Phase 4* coal store. Immediately to the north of these tanks, the Electrical Power House (which still stands) was constructed alongside new tar separating plant. This is likely to have removed any remains of the northern half of the *Phase 4* coal store.

Naphthalene washers were installed in the north-west corner of the site, in the area of the *Phase 2* dwelling house. The pad foundations of this equipment are likely to still exist.

A new below-ground tar and liquor tank was also constructed to the south of the 1880s scrubbers. This tank is likely to exist in a similar condition to the others described above, without a roof and filled with demolition rubble and tar.

From the above analysis, it is evident that the site was used intensively over its entire lifetime. Equipment and buildings were demolished and new ones constructed in their place due to the limited space available. This has resulted in repeated disturbances of the subsurface, which has generally reduced the likelihood of remains of earlier structures surviving intact. Where survivals do occur, they are likely to be fragmentary.

Contents of Backfilled Tar Tanks and Gasholder Tanks

The development of the works has resulted in a number of voids from abandoned underground tanks being filled in. It is not known when the tar and liquor wells were abandoned, or even if they have been filled, but an estimate can be made as to when gasholder tanks were filled in. The locations of the gasholder tanks are shown in Fig 3. These tanks were large voids and required a considerable amount of material to fill them. The filling operation presented a great opportunity to the works managers to dispose of their waste materials. This waste was likely to be:

Foul lime
Spent oxide
Tar sludge

The deposits within these gasholder tanks can thus represent an archaeological resource that is clearly dateable. The fill materials within the tank of gasholder 'D' could offer an in-sight into the works prior to *Phase 5*.

The following is a schedule of the filled gasholder tanks likely to be surviving at the site and their date of filling:

Gasholder Reference	Date of Construction	Date of Tank Filling	Comments
'A'	1824	1850s	It is not known whether this tank was below-ground, partly below-ground, or above ground.
'C'	1841	Unknown	This gasholder tank was converted to a tar and liquor tank. It could have been in use into the 1950s.
'D'	1844	1860s	
'E'	1852	Probably 1940-50	
'H'	Probably 1911	Probably 1960s	

Documented dates for the development of the works

Phase	Date	Documented Event
	Jun 1823	The Bristol and Clifton Oil Gas Company formed.
1	Jan 1824	Hipsleys Barton site acquired.
2	Apr 1836	Permission to make gas from coal.
	May 836	Lease of land by the Dean and Chapter.
	Mar 1837	Land acquired from John Nicholas and Henry Taylor.
3	Jun 1841	Land acquired from Sidenham Teast.
	Aug 1841	New length of boundary wall constructed on new land, 100 feet long including a new gate.
	Aug-Oct 1841	Construction of gasholder C, on new land acquired.
	Sep 1841	Number of retorts had been increased.
	Oct 1841	Rebuilding of the 'front' boundary wall due to settlement of the new made ground. Rebuilding and facing with brick, of the new gasholder tank wall (due to collapse during construction). Also excavation and puddling (placing of clay) around the 'old tank' (gasholder B) where it leaked adjacent to the 'old wall' against the Rope Walk.

Documented dates for the development of the works - continued

Phase	Date	Documented Event
	Apr 1843	Herapath's first report.
	Apr-Jul 1843	New tar tank constructed (Herapath recommended the location to be in the yard).
	Jul 1843	Settlement in the retort house roof. The 'end walls behind the chimney' were raised to the level of the ridge. Leak of tar to the Floating Harbour - blamed on old 'common sewer' that ran 'through the yard, beneath the retort house and old gasometer house'. 'Refuse lime' (foul lime) was accumulating in the yard and stank.
	Feb 1844	Herapath's second report recommended: Extension of the retort house to the south, over existing condenser site. (Implying no extension had recently occurred). Lowering the level of the retorts in the 'first retort house' to the level of the proposed retort house. All retort beds should run 'across the building'. The original tar tank in the retort to be removed and used as a bath for the condenser (implying this tank is of iron construction and above ground, therefore moveable and accessible). A new coal store be built 'on the new land' with entrances made through the existing retort house wall.
	Mar 1844	Lowe's first report. Yard described as wretched. The yard being choked up with coke breeze. Coal and coke was wet when used. Urgent need for a new coal store as the existing was one tenth the size needed.
	Apr 1844	Plans drawn up for a new coal store of 800 - 1000 tons capacity.
	May 1844	Lowe's second report. The retort house considered as one entity by his report. 43 iron retorts in operation (each a York D cast iron retort of 20" width, set 5 to a fire with a total setting width of 5.5 feet). Settings were poor. In discussing retorts, 'No. 1 house' is mentioned (having three ovens of 15 retorts).
	Apr 1844	In response to Lowe's report the iron tar tank in the Retort House is removed and used to form iron stoking floors. An excavation within the Retort House is begun to construct a coke cellar. Two new governors are purchased with pressure recorders and tell tale recorders for the station meter.
	Jun-Jul 1844	Croll's patent purifier installed. This used sulphuric acid for removal of ammonia from the gas prior to the gas entering the lime purifiers. An exhauster and a small steam engine to power it were purchased, with buildings being specially constructed for them. Water supply to the engine house is now taken from the Floating Harbour by installation of a pipe.
	Aug 1844	New coal store built. The 'New Yard' paved with pitch and the weighbridge moved to the new entrance between the coal store and the wharf.
	Sep 1844	Landing place built on the floating harbour. Not the Gas Ferry.
	Oct 1844	Clay retorts set along with iron retorts. Clay retorts shatter during use.
	Nov 1844	New coal store subsides on one corner requiring remedial building work.
	1845	Gasholder D (65.5 ft dia.) being built in the place of gasholder B, which was demolished. The new gasholder was designed by George Lowe and was telescopic in construction.
4	Nov 1848	Land acquired from Sidenham Teast (1 acre)
	1851-1852	Construction of the new offices.
	1852	Construction of gasholder E (110 feet dia.)
	1853	Bristol United Gas Company formed.
	1854	New engine house built.
	1857	Four new purifiers in the 'old gasometer building'.
	1856	Office Extensions.
5	1860	Brandon Wharf (Brandon's Yard) leased.
	1862	Construction of gasholder F (112 ft. dia.) in Brandon's Yard.
	1863	Construction of a new purifier house (West Purifier) in Brandon's Yard.
6	1870	Acquisition of land to the east (Germaine's land).
	1870	Construction of new retort house on the Germaine's land.
	1871	Large stretch of southern boundary wall constructed.
	Aug 1876	Two new tower scrubbers constructed.
	1886	The 1844 coal store (later retort house) demolished and the East Purifier extended to its current size. New tower scrubber constructed 18 ft. dia. and 30 ft. high.
	1911	Carburetted water gas plant installed.
	1929	Installation of the Telpher overhead rail system for moving coal from the new jetty to the coal stores.
	1932	Gasholder F (Brandon's Yard) superstructure replaced.
	1940-1941	Extensive damage to the offices by bombing. Gasholder destroyed by bombing.

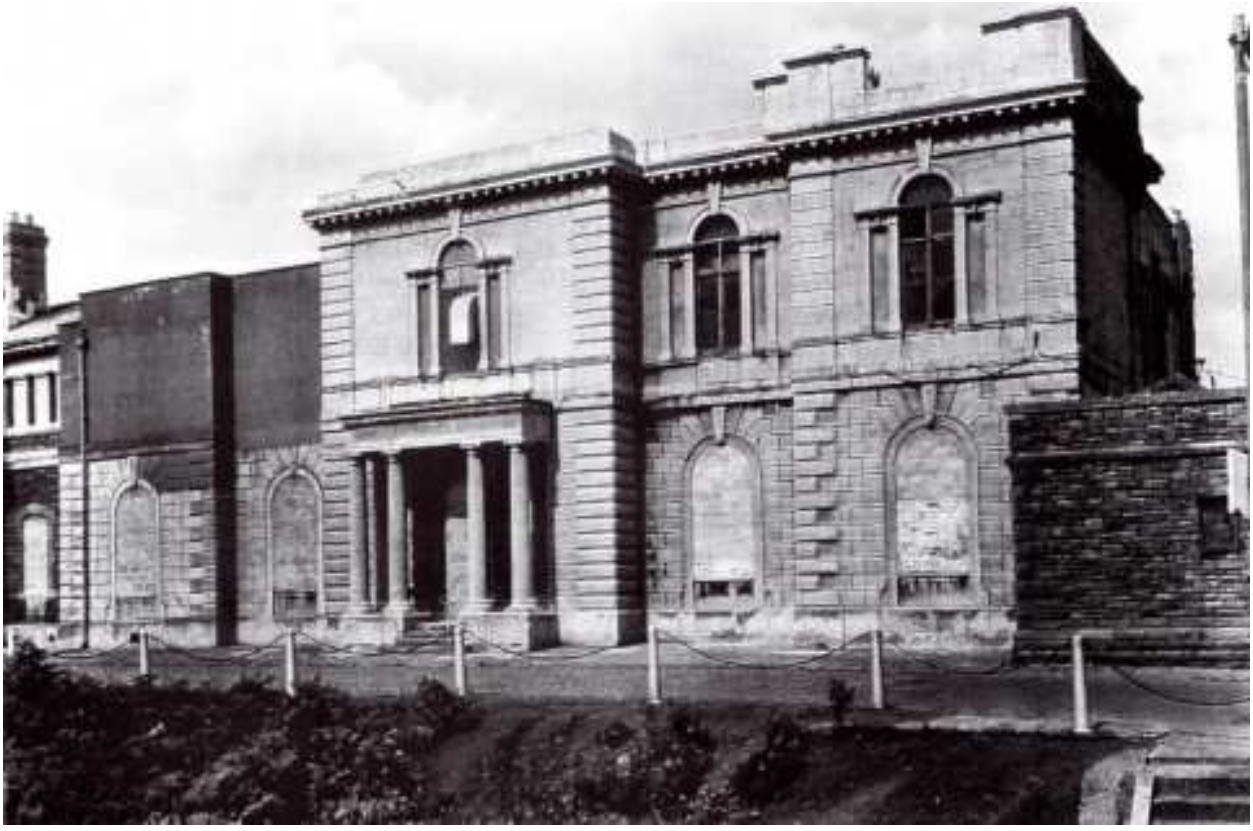

Plate 3 View of offices with upper storey intact, August 1970 **BB70/7267 Crown copyright NMR**

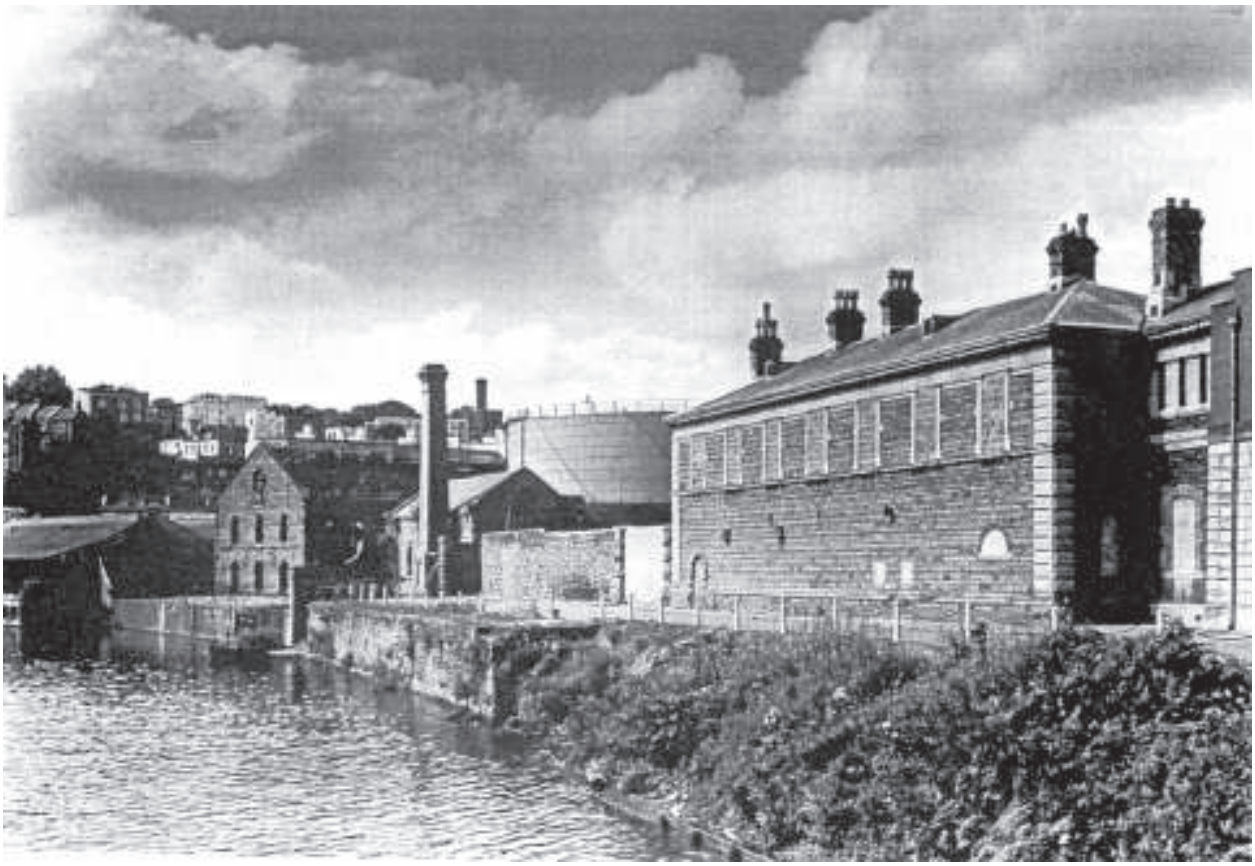

Plate 4 The laboratory with upper storey still intact, August 1970 **BB70/7257 Crown copyright NMR**

Conclusions

The standing buildings at the Canon's Marsh site are from the later phases of site development. There is some standing survival of structures from earlier phases within the site boundary wall. Underground survivals are likely to be limited to fragments of earlier structures and underground gasholder tanks and tar and liquor tanks.

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11. Note 4
12. Plan of Canon's Marsh Station, Stages of its Development, 1868
    Drawing of a 51 feet gas holder tank converted into tar and ammonia tanks, 1862 (BGAP)
13. Note 4. Donne's map of Bristol, 1826
14. Note 8
15. Plan of proposed alteration of boundary wall, BUGLC, Brandon's Wharf, 1864 (BGAP)
16. Note 8
17. Note 15
18. Drawing of boundary wall - late Germaine, BUGLC, Canon's Marsh, 1871 (BGAP)
19. Untitled plan of Canon's Marsh Gas Works, 1857
    Plan of Canon's Marsh Station, 1868.
    General plans of Canon's Marsh Gas Works, 1949 and 1950. (BGAP)
    General site plan, Canon's Marsh Gas Works (BRO 28777/U/E/5/6)