Gasholder Nos 1 & 2, Yarnton Way, Belvedere, London Borough of Bexley: Historic Building Recording Phase I Interim Report

AOC Project No: 23686_Y

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AOC Archaeology Group

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Gasholder Nos 1 & 2, Yarnton Way, Belvedere, London Borough of Bexley:

Historic Building Recording Phase I Interim Report

On Behalf of:	**SGN** **2 Woodstock Road** **Yarnton** **OX5 1NY**
National Grid Reference (NGR):	**GH1: TQ 549175 179365** **GH2: TQ 549285 179389**
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Summary

AOC Archaeology Group was commissioned by SGN to undertake a survey of two redundant gasholders, Gasholder Nos 1 & 2, at Yarnton Way in Belvedere in the London Borough of Bexley. The work has been undertaken as part of a wider programme involving the decommissioning and dismantling of the remaining redundant gasholders in the UK operated by SGN.

Gasholder No 1 to the west of the site is a frame-guided holder with two lifts, an above ground tank and a nominal capacity of 1,038,897ft³ (29,418m³). It is a 'Type 47' gasholder with shallow untapered fabricated standards combined with laterally stiff, horizontal-axis girders. Gasholder No 2 is also a frame-guided holder of a similar type, although with three lifts, and a nominal capacity of 1,022,000ft³ (28,940m³). Both gasholders were constructed in the mid-20th century by Clayton & Sons Ltd, as late examples of their type, and as a standalone gasholder site.

A Phase II survey is required to photograph the presently inaccessible crowns and also to inspect and survey the interior of the tank and bell of both gasholders during demolition, the results of which will be added to this report to create a final report on the gasholders and other structures on site.

1 INTRODUCTION

1.1 Project Background

1.1.1 AOC Archaeology Group was commissioned by SGN to undertake a survey of two redundant gasholders at Yarnton Way in Belvedere in the London Borough of Bexley. The work has been undertaken as part of a wider programme involving the decommissioning and dismantling of the remaining redundant gasholders in the UK operated by SGN.

1.1.2 This report comprises the results of the Phase I works undertaken prior to demolition works which consisted of archive research, measured survey, photographic survey and written record.

1.2 Site Location

1.2.1 Gasholder Nos 1 and 2 are located within a gasholder compound to the south of Yarnton Way in Belvedere. To the east of the plot is tenement housing comprising Waterfield Close, Sutherland Road and Maida Road. To the west is light industrial units and to the south is the South East and Chatham Railway (North Kent) line. Gasholder No 1 (west) is located at NGR TQ 549175 179365 and Gasholder No 2 (east) is located at NGR: TQ 549285 179389 (Figures 1 & 2).

1.3 Standards

1.3.1 The historic building recording was undertaken in accordance with current best archaeological practice and local and national standards and guidelines, including:

- Historic England – *Management of Research Projects in the Historic Environment (MoRPHE)* (HE 2015).
- Historic England – *Understanding Historic Buildings: A Guide to Good Recording Practice* (HE 2016).
- Historic England – *Gasworks and Redundant Gasholders: Guidelines for Evaluation and Recording* (2019).
- Chartered Institute for Archaeologists – *Standards and Guidance for the Archaeological Investigation and Recording of Standing Buildings and Structures* (2019a).
- Chartered Institute for Archaeologists – *Code of Conduct* (2019b).

1.4 Statutory Designations

1.4.1 The two gasholders on the site have no statutory designations.

2 OBJECTIVE

2.1 The objective of the historic building survey was to create a permanent record of the redundant gasholders, and any other structures on the site related to their former operation, prior to and during their removal through archive research, photographic, written and drawn (measured) survey.

3 METHODOLOGY

3.1 Introduction

3.1.1 The Phase I survey was carried out prior to any contractors on site and to standards agreed in the *Portfolio Heritage Appraisal* (Montagu Evans 2017). This identified that both gasholders, being of the guide-framed type, would be subject to an Enhanced Level II survey, which is broadly equivalent of a Level 3/4 historic building record as outlined in Historic England guidelines in their publication *Understanding Historic Buildings: A Guide to Good Recording Practice* (2016). This included a full photographic, written and drawn (measured survey) record.

3.2 Archive Research

3.2.1 A general map-regression exercise was undertaken to determine the general history and development of the site from its origins to the present day. All publicly accessible pre-Ordnance Survey maps and Ordnance Survey maps were viewed, and a selection have been included in this report in Section 4.

3.2.2 The following archives were consulted to identify early/original archives and drawings of the site/gasholder:

- Historic England Archives
  - No records (drawn or photographic) of the gasholder are known to exist in these archives.
- National Archives at Kew
  - No records (drawn or photographic) of the gasholder are known to exist in these archives.
- National Monuments Record (Swindon)
  - No records (drawn or photographic) of the gasholder are known to exist in these archives.
- National Gas Archive, Warrington
  - There is limited information on the gasholder site, although photographs have been located dating to 1937 which shows one of the gasholders under construction (Figure 11).

3.3 Photographic record

3.3.1 A general photographic survey was undertaken of the gasholders and associated structures in colour digital using a digital SLR camera in both JPG and RAW format to a minimum 24 megapixel resolution. Photography was carried out on 5th April 2022. In addition, detailed shots of features such as structural elements (standards and framework, pipework, etc, were also taken. A discreetly placed 1m or 2m ranging pole was placed in all shots where access and health and safety allowed for scale. A register of photographs was taken on site and can be found in Appendix 3, together with site plans showing the location and direction of each photograph (Appendix 4, Figures A1 – A5). A selection of digital photographs has also been used as plates to illustrate this report which can also be cross-referenced with the photo plans in Appendix 4 (Plates 1 – 77).

3.4 Written record

3.4.1 A written survey was undertaken of the exterior of the gasholder and related ancillary buildings using AOC *pro forma* recording sheets with comment on condition, construction, features, fixtures and fittings, modern interventions, evidence for phasing and function and anything else pertinent to the historic record.

3.5 Measured Survey

3.5.1 The measured survey was undertaken using a Trimble TX8 laser scanner on 5th April 2022. A detailed description of the measured survey methodology can be found in Appendix 5. From this data, detailed illustrations including ground plans, sections and elevations were created (Figures 12 – 18).

3.6 Limitations

3.6.1 Being above-ground gasholders, the crowns could only be accessed from the upper walkway of the guide frame, which was not possible at the time of survey due to the ladder having been removed due to health and safety concerns. It is intended that the crowns will be recorded via photography from a mobile lift once access for this can be arranged.

4 GASWORKS AND GASHOLDERS: AN INTRODUCTION

4.1 An Introduction to the History of the Gas Industry

4.1.1 Dr John Clayton was the first man in England to describe that flammable gas could be produced from coal in 1684 and he even experimented with open retorts (sealed vessels) in which to produce it (Thomas 2020a, 10). The results were later reported by his son in the early 19th century. However, William Murdoch is credited with pioneering coal gas production, a Scotsman who had started to develop experimental plants to manufacture gas from wood and coal (*ibid*, 1). He first lit his house and office in Redruth using this method in 1792 and built the first small gasworks at the Soho Factory of Messrs Boulton and Watt in Smethwick in 1798 (Thomas 2010). In 1805, Murdoch then started to develop and sell commercial gas (*ibid*). His philosophy was to build small gasworks that supported a single establishment, although as the 19th century progressed, larger gasworks were built across the UK to run lighting for multiple mills, factories, streets and eventually homes. Fredrich Winsor was key to the concept of centralised gasworks providing mains delivery to users across large areas. He established the Gas Light and Coke Company in 1812 which lit the cities of London and Westminster and the borough of Southwark. Throughout much of the early-mid 19th century, the gas industry provided lighting in homes, street and in industry. However, after the invention of the Bunsen burner in Germany, it started to also be used for heating and cooking, which was an advantage at the time over its new rival in lighting: electricity. Coal was the primary source for the creation of gas, so was also hugely influential in the development of the coal industry and gas lighting slowly improved the quality of workers' lives by the lighting of the new large textile factories (*ibid*). The gas industry also created a number of by-products which could also be used in other industries, such as fertiliser, creosote, dyes and drugs (*ibid*, 2).

4.1.2 Gasworks could be established by companies either in private, company or municipal ownership and required an Act of Parliament to supply and open streets to lay gas mains throughout towns and cities (Thomas 2020a, 2). Private gasworks were also constructed in large mills and factories in Britain until they were able to be supplied by the main town or city's larger gasworks (*ibid*, 36). By the early 20th century there were many amalgamations of companies as they grew in size and gasworks expanded significantly as populations rose on urban areas.

4.1.3 After the Second World War, the gas industry was heavily restructured and nationalised and twelve regional gas boards were created in England. By the 1950s, there was a decline in the quality and quantity of gas-making coal, which led to the adoption of piping in natural gas from abroad; soon gas fields were located in the North Sea in the late 1960s (Thomas 2020a, 4). Therefore, between 1967 – 1977, there was complete conversion from coal gas to natural gas in the UK, which led to the redundancy of nearly all coal-gas production buildings with the exception of the gasholders, which were still required to actually store the gas that was now natural gas piped into the former gasworks sites. The last coal gas gasworks to close was in Millport on the Isle of Cumbrae off the west coast of Scotland in 1981 (*ibid*, 125). Originally manned, it was not long before remote monitoring of these gasholders was put in place, further reducing the number of additional buildings on the sites. All gasholders in England have now been decommissioned.

4.2 The Process of Coal Gas and the Layout of Gasworks in the UK

4.2.1 Thomas (2010; 2020b) summarises the general running of a gasworks into several main structures as displayed in Figure 3. Gas was produced by placing coal in buildings called retort houses (sealed vessels) by heating coal in an oxygen-free environment to drive off volatile components, leaving coke as a residue. Multiple retorts (1) were built in 'retort benches' and were originally horizontal, D-shaped, cast-iron structures. They were heated via an external furnace (2) which was controlled by a team of stokers. As gas practices improved, methods in later years included inclined and vertical retorts which could be made of silica.

4.2.2 The produced gas was passed from the retorts through water in the hydraulic main (3) to remove ammonia, then cooled in the condensers (4). Three types of condensers were common: atmospheric, annular and water tube, all of which worked to remove coal tars as they cooled the gas, draining it to a tar tank or well.

4.2.3 The quality of the gas produced during the gasification of coal varied, with the highest quality produced at the start of the process and the lowest quality at the end. The exhausters (5) were gas or steam driven pumps which controlled the movement of the gas from the retorts through to storage or use. The exhausters moderated the drawing of gas at different rates to keep the gas produced at the required standard.

4.2.4 Scrubbers (6) and washers removed ammonia and phenol from the gas via two different processes. Washers passed the gas through seals, perforated plate or weirs of liquor and scrubber towers sprayed the gas with water as it moved up the tower, thereby dissolving the ammonium and phenol to form ammoniacal liquor. Combined washers and scrubbers were designed in later years. Purification of the gas to remove hydrogen sulphide and hydrogen cyanide was carried out in the purifiers (7) via the chemical process of precipitation. Originally lime was used in the process, although was superseded by iron ore which facilitated the production of iron ferricyanides and iron sulphides in the precipitation process to purify the gas. The lime and iron ore could be regenerated a couple of times before their concentrations of cyanide or sulphur were too high. After two or three uses the lime was referred to as 'foul' and was used as fertilizer; the oxide was referred to as 'spent' and was used as weedkiller. The purified gas was passed through a station meter (8) to monitor its quality and pressure before being stored in a gasholder (9). Larger gasworks had multiple gasholders which in later years held gas produced by different methods and at different pressures. Before going out to the local grid the pressure of the gas was monitored and modified via a pressure governor (10) to ensure it was at the correct pressure for users.

4.2.5 Underground tanks and wells stored tar and liquors produced in the different stages of the gasworks operations with liquor floating and tar sinking to the bottom. Solid tar was dug out when tanks were full, some stored above ground where it could be sent for refining elsewhere.

4.2.6 Other additional structures on a gasworks site included offices, workshops, dwellings, laboratories and stores as shown in Figure 4.

4.3 The Evolution, Function and Anatomy of a Gasholder

4.3.1 Gasholders were an essential element of all gasworks to store the resulting gas produced for distribution. The first holders – referred to as gasometers – were over-engineered and rectangular in shape constructed of iron and surrounded by a timber frame (Thomas 2020b, 193). However, this inefficient design was replaced by the cylindrical gasholder by the early 19th century, as they could hold a greater capacity (*ibid*). Early examples were also built within their own buildings due to safety concerns.

4.3.2 Gasholders are used to store gas to meet the daily demands of the local area. Storage capacity in the 19th century was worked out as approximately equal to the maximum consumption on a winter's day of the local area using the gas (Tucker 2000, 7).

4.3.3 The Guide-Framed Holder

The traditional guide-framed gasholder was the predominant type of holder constructed from the mid-late 19th century and into the first decades of the 20th century. As detailed by Tucker (2000, 7–8) it is comprised of three main components: the tank, the bell and the guide-frame. The tank is the open-topped cylinder that houses the bell when it is empty of gas and can be built above or below ground. It is filled with water to provide a seal to stop gas escaping and sometimes has a rest frame built within it to support the crown of the bell when the holder is empty. The bell is the open-bottomed, sheet-metal cylinder which holds the gas. It rises and falls as the gas enters and exits the holder throughout the day. To economise on the depth of the tank some holders are telescopic, meaning the bell sides are split into sections known as lifts. The joint between each lift has a cup-and-grip water seal to stop gas escaping; non-telescopic bells have only a single lift. As the bell rises and falls it is kept in place by guide rollers mounted on carriages on the top of each lift

which run against rails on the guide-frame. The guide-frame is a circular structure comprising columns (in this context called 'standards') which surround the tank. The standards are connected by horizontal girders and often with additional diagonal bracing which together secure the bell and tank from strong winds.

4.3.4 Spiral-Guided Gasholders

Whilst the first large commercial gasholders were guide-framed as described above, spiral-guided holders were a later-evolved type of gasholder first pioneered in the late 1880s, with the first being constructed in Norwich in Cheshire in 1890 (Thomas 2020a, 86). It was built by Clayton, Son & Co Ltd (as were the guide framed holders at Belvedere) and achieved rigidity when rising up and down through internal supports as opposed to an external guide frame, rising through the use of spiral rails on an angle of 45°, rotating like a corkscrew. The popularity of this type expanded due to the relatively simpler nature of its construction and, by the early-mid 20th century, overtook the guide-framed type as the principal style.

4.3.5 Flying Lifts

The 1880s also saw the emergence of 'flying lifts' which was the addition of an inner lift which, instead of running within the guide rails, could extend above the guide frame without its guide wheels being attached to them (hence the name 'flying') (Thomas 2020b, 210). These were pioneered by George and Frank Livesey, the first flying lift added at the Rotherhithe Gasworks in 1887 – 1888 (*ibid*). They exerted extra stress on the guide framing and were a particular risk in high winds, as the guide wheel needed to engage with the guide rails when deflated (*ibid*, 211).

4.3.6 Gasholders and Automation

After the change from burning coal for the production of gas to using natural gas, the use of gasholders became more automated. A set amount of gas was provisioned for each area daily, which would start entering the gasholder in the early hours of the morning. The gasholders would rise as they filled with gas until residents began using it during the morning peak period, when they would lower in height. The gasholders would then remain at relatively the same level of fullness for the entire day until the second peak period of around dinnertime when the level would drop again. The up and down movement of the bell was often controlled via an automated knock-off system. This involved a series of switches at different heights that were triggered by striker plates located on the bell top and sides. The triggering of knock-off switches either opened or closed the inlet and outlet valves of the bell to ensure that the bell never over-filled in times of low usage or completely emptied in times of high usage. The knock-off system includes a sun-stock switch which is the highest located switch. This is activated when the valves are shut, but when the sun has heated up the bell, therefore causing the gas inside to expand and the bell to rise even further. When the sun-stock is activated, the valves are opened to push some of the gas into the mains, ensuring the bell does not overfill and risk a leak or explosion.

5 HISTORICAL BACKGROUND

5.1 The *Portfolio Heritage Appraisal* by Montagu Evans (2017, 4) notes that Gasholder No 1 was constructed in 1923 and Gasholder No 2 was constructed in 1931 and that the '…tanks of the structures appear to date to 1823 and 1831 respectively.' The 20th century dates are also noted in the 'Layers of London' website (although no reference is given) and adds that Gasholder No 1 was constructed as a gasholder station in 1922 (Gasholder No 2 added later) by the South Suburban Gas Company. The South Suburban Gas Company was founded as the North Surrey Gas Company in March 1853 becoming the Crystal Palace District Gas Company in November of that year (National Archives ud). In 1912, it amalgamated with the Bromley and Crays Gas Company and the West Kent Gas Company, and also with the Dartford Gas Company in 1918 and later the Tonbridge Gas Company in 1932 (*ibid*). In 1929, they also purchased the Northfleet & Greenhithe Gas Company (*ibid*). The reasons behind all these amalgamations was to bring the capital of the company to over £1,000,000 (Gas Journal 1920). The main offices of the company were in Sydenham, and it was the Sydenham Gasworks that were their main base of operations. Thomas (2020b, 313) notes that public gaslighting was introduced to Belvedere in 1862, and the site of the gasholder compound was bought by the company in 1914 with the intention of building a new gasworks there. Indeed, the Royal Assent was given to the Bill to create the works in 1914 (Gas Journal 1920). The reason for this was due to the carbonising plants at the Sydenham, Bromley and Dartford gasworks' sites having reached the very top of their demand in 1913 (*ibid*). After the end of the First World War, public demand meant that there was 'an urgent necessity' to build the new gasworks at Belvedere, with an estimated total expenditure of £1,229,000 needed to construct the works, including an extension which they believed would be required after five years (*ibid*). However, following the armistice, the cost of coal had escalated, and the company were forced to source coal from as far away as Durham (*ibid*). The sale of coke (a by-product of the coal-gas process) was also relatively low for the local area, and thus this source of revenue was lessened (*ibid*). In conclusion, the site at Belvedere was only ever used as a gasholder station, as bulk supplies were eventually taken from the South Metropolitan Gas Company to supply the area instead (Thomas 2020b, 313).

5.2 The 1923 and 1931 dates that have been noted above appear to be contradicted by the historical map evidence. The 1897 Ordnance Survey map identifies that the land upon which the gasholders were to be constructed is open fields, with the North Kent railway line in place to the south of the site beyond which is some residential terraces (Figure 5). There becomes little change to the surrounding area until the 1938 Ordnance Survey map, which shows the developments at Sutherland Road and Maida Road progressing to the east of the future gasholder site and extensive development now occupying the area to the south of the railway line (Figure 6). The same layout of buildings can be seen in the 1940 Ordnance Survey map (Figure 7) with the gasholders still not depicted, although this may have been a conscious decision not to include them due to the Second World War and the danger of targeted raids.

5.3 The two gasholders are first depicted in the historical mapping in the 1959 Ordnance Survey map (Figure 8). They are shown to the west of Sutherland Road with a north/south roadway between them and connecting to the east and west to the south. A railway siding is also depicted swinging around the west side of Gasholder No 1 to terminate at the north end of the north/south roadway. There are some additional buildings also constructed to the south-east of the gasholders in the form of a north/south rectangular building with some smaller detached ancillary buildings to the north. A small circular building, possibly a water tank, and another rectangular tank, are also noted to the west of the main building.

5.4 Little changed on the site in the late 20th century as shown on the 1975 and 1996 Ordnance Survey maps, although by the 1996 map, two industrial estates had been established to the west and north side of the gasholder compound respectively (Figures 9 & 10).

5.5 The National Gas Archive presently hold little data on the gasholders themselves, although hold a collection of photographs showing the construction of Gasholder No 1, and are reported by the National Gas Archive to date to 1937 (Figure 11).

6 RESULTS: GASHOLDER NO 1

6.1 Introduction

6.1.1 The gasholder compound is bounded to the north by Yarnton Way by a modern security fence with a gate at the end of Sutherland Road. Both gasholders are located to the north side of the compound with Gasholder No 1 to the west side and Gasholder No 2 to the east (Figure 12). From the Sutherland Way entrance there is an east/west roadway leading up Gasholder No 1, with an additional north/south roadway between the two holders running off from this, although the entrance here (at Yarnton Way) is no longer in use. A further north/south track going southwards to the east side of the compound leads into a small area containing pipework and ancillary buildings associated with the operation of the gasholders prior to their decommissioning. The gasholders are visible from the surrounding streets and as far away as the industrial sites at Eastern Way (Plates 1 – 3).

6.1.2 Gasholder No 1 is a frame-guided holder with two lifts, an above ground tank and a nominal capacity of 1,038,897ft³ (29,418m³). It is a 'Type 47' gasholder based on Tucker's typology (2000) (Figure 13; Plates 4 – 7).

6.2 The Guide Frame & Standards

6.2.1 Gasholder No 1 has 14 shallow untapered fabricated standards combined with a guide frame of laterally stiff, horizontal-axis girders and diagonal bracing (Figures 13 – 15; Plates 8 – 11). The base of the standards are 960mm in width located around the above ground tank have flared bases set on a concrete base with riveted flange plates (Plates 12 & 13). They also feature small square plaques marking out the numbers of the standards, although due to overpainting these have become difficult to see, so the numbers have also been spray-painted to the base of the standard (Plate 14). The base of the standards are also flared to the top of the tank to support the upper walkway.

6.3 The Tank and Upper Walkway

6.3.1 The above-ground tank is 9.54m in height from ground level and comprises large rectangular steel sections riveted together painted in a tan brown with the lower set of panels unpainted (Plates 15 & 16). The upper walkway, which is now inaccessible, was originally accessed via a ladder on the north-east side of the gasholder; the base of the stairs has now been removed to prevent access due to health and safety concerns (Plate 17). The walkway is supported both by the base of the standards and an angle L-shaped steel fixing with double tubular steel handrails (Plate 18).

6.3.2 The stair to access the upper lifts (when the gasholder would have been rising to its full height) is located to the west side of standard 4 in the north side of the gasholder (Plate 19).

6.3.3 The guided rollers were not visible at the time of survey due to there being no access to the crown. However, the measured (laser scan) survey identified the partial outline of these features which are radial guided rollers (Figure 14). These will be able to be observed more closely during the Phase II works.

6.4 Other Features

6.4.1 Additional features associated with the gasholder include:

- Two small concrete blocks to support a section of now-removed pipework, located between standards 2 and 3 (Plate 20).
- A concrete base between standards 6 and 7, again with a concrete block to support a section of now-removed pipework (Plate 21).
- A section of pipework coming out of the ground between standards 7 and 8 on the east side of the gasholder (Plates 22 & 23); this has a cotter plate attached to the east side, and also features a valve wheel with a manufacturer's mark of Westwards & Wrights Limited of Brierly Hill (Plates 24 & 25).

- A section of narrow pipework running down the side of the gasholder between standards 7 and 8 and leading to a narrow tank, possibly related to the anti-freeze system (Plates 26 & 27); a small concrete base is located below and adjacent to the pipework (Plate 28).
- Another section of pipework coming out of the ground with a concrete base between standards 1 and 14 to the west side of the gasholder (Plates 29 & 30); there is a simple steel frame over the structure.

7 RESULTS: GASHOLDER NO 2

7.1 The Guide Frame & Standards

7.1.1 Gasholder No 2 is almost identical to Gasholder No 1 and also has 14 shallow untapered fabricated standards combined with a guide frame of laterally stiff, horizontal-axis girders and diagonal bracing, although this gasholder features circular ties to secure the rods (Figure 16 – 18; Plates 31 – 34). The base of the standards is almost identical in style to Gasholder No 1, although are slightly thinner at only 920mm in width (Plates 35 – 39). These are also set over a flat concrete base and there appears to be no original plaques for the standard numbers, these being spray painted on. The base of the standards, as with Gasholder No 1, are also flared to the top of the tank to support the upper walkway.

7.2 The Tank and Upper Walkway

7.2.1 The tank and upper walkway again are almost identical to Gasholder No 1, the tank formed of large rectangular steel sections riveted together painted in a tan brown with the lower set of panels above ground level unpainted (Plates 40 – 45). The walkway is supported both by the base of the standards and an angle L-shaped steel fixing with double tubular steel handrails (Plate 46). It is now inaccessible, although was originally accessed via a ladder on the SSW side of the gasholder; the base of the stairs have now been removed to prevent access due to health and safety concerns (Plate 47). The stair to access the upper lifts (when the gasholder would have been rising to and at full height) is located between standards 8 and 9 in the SSW side of the gasholder (see Plate 33).

7.2.2 The guided rollers were not visible at the time of survey due to there being no access to the crown. However, the measured (laser scan) survey identified the partial outline of these features which are radial guided rollers (Figure 17). These will be able to be observed more closely during the Phase II works.

7.3 Other Features

7.3.1 Additional features associated with the gasholder include:

- A section of narrow pipework running down the side of the gasholder between standards 3 and 4 (identical to that seen between standards 7 and 8 of Gasholder No 1) and leading to a tall tank, possibly related to the anti-freeze system (Plate 48).
- A drainage tank recently added to de-water the gasholder located between standard 5 and 6.
- A small piece of sensitive equipment set inside a glass case adjacent to standard 5 (Plate 49).
- A set of knock-off switches (Plates 50 & 51).
- A set of hoses above the access stair above standard 9 (Plate 52).
- A large section of pipework to the north side of the gasholder between standards 1 and 14 (Plates 53 & 54). This bears a manufacturer's mark, made by the same manufacturer as the pipework identified on Gasholder No 1, Westwood & Wright (Plates 55 & 56).

8 RESULTS: ADDITIONAL STRUCTURES

8.1 To the immediate SSE of Gasholder No 2, there is a small single-bay flat-roofed shed, Building A (Figure 12; Plates 57 – 60). It has a small entrance to the west side and ventilation slats on the south side.

8.2 Further to the south of Gasholder No 2 within the gasholder compound are a number of additional structures related to their operation (Figure 12; Plate 61). This includes Building B, a small flat-roofed brick workshop (Plates 62 & 63). Its main entrance is to the east side and has a number of benches around its interior walls (Plates 64 & 65). To the immediate south of this is a raised area with a number of features including rounded steel covers in disarray and concrete platforms (Plates 66 – 68). The raised area is approached on the west side via a set of concrete steps, the area very overgrown at the time of survey (Plate 69). Within this overgrowth can be identified a valve wheel to the north-west corner and a section of pipework to the south-east (Plates 70 & 71).

8.3 Building C is located to the south-west corner of the raised platform and consists of a single-storey flat-roofed brick building with a corrugated-iron roof housing electrical equipment used to monitor the gasholder station (Plates 72 – 75). Building D is located to the south of Building C and is a flat-roofed Instrument Room constructed of steel sheeting (Plates 75 – 77).

9 DISCUSSION

9.1 Gasholder No 1 to the west of the site is a frame-guided holder with two lifts, an above ground tank and a nominal capacity of 1,038,897ft³ (29,418m³). It is a 'Type 47' gasholder with shallow untapered fabricated standards combined with laterally stiff, horizontal-axis girders. In terms of date of construction, it is likely that this was the second gasholder that was erected by the South Suburban gas Company in ca. 1937 (as is depicted on the archive photographs), as a simple gasholder station, on the site of what was originally intended for a gasworks site.

9.2 Gasholder No 2 is also a frame-guided holder of a similar type, although with three lifts, and a nominal capacity of 1,022,000ft³ (28,940m³). In terms of date of construction, this gasholder pre-dates Gasholder No 1 as it is clearly already erected by the time of the 1937 archive photographs, and possibly dates to the 1920s.

10 CONCLUSIONS & ADDITIONAL WORKS

10.1 Both gasholders on the Yarnton Way in Belvedere were built in the 1920s – 1930s. The historic mapping suggests that they were constructed after 1940, although the Second World War may have necessitated not including them on mapping of the late 1930s and early-mid 1940s. The survey has identified that they were both built in a similar style with few variations, being of the 'Type 47' type with above ground tanks and shallow untapered fabricated standards combined with laterally stiff, horizontal-axis girders.

10.2 A Phase II survey is required to inspect the crown (via photography) of both gasholders once access can be arranged via a mobile platform. The interior of the tank and bell of both gasholders also requires an inspection and measured survey during demolition, the results of which will be added to this report to create a final report on the gasholders and other structures on site.

11 REFERENCES

11.1 Bibliographical references

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Thomas R 2020b*The Manufactured Gas Industry: Volume 3: Gazetteer.* Historic England Research Report Series No: 182-2020 (Volume 3), p 313

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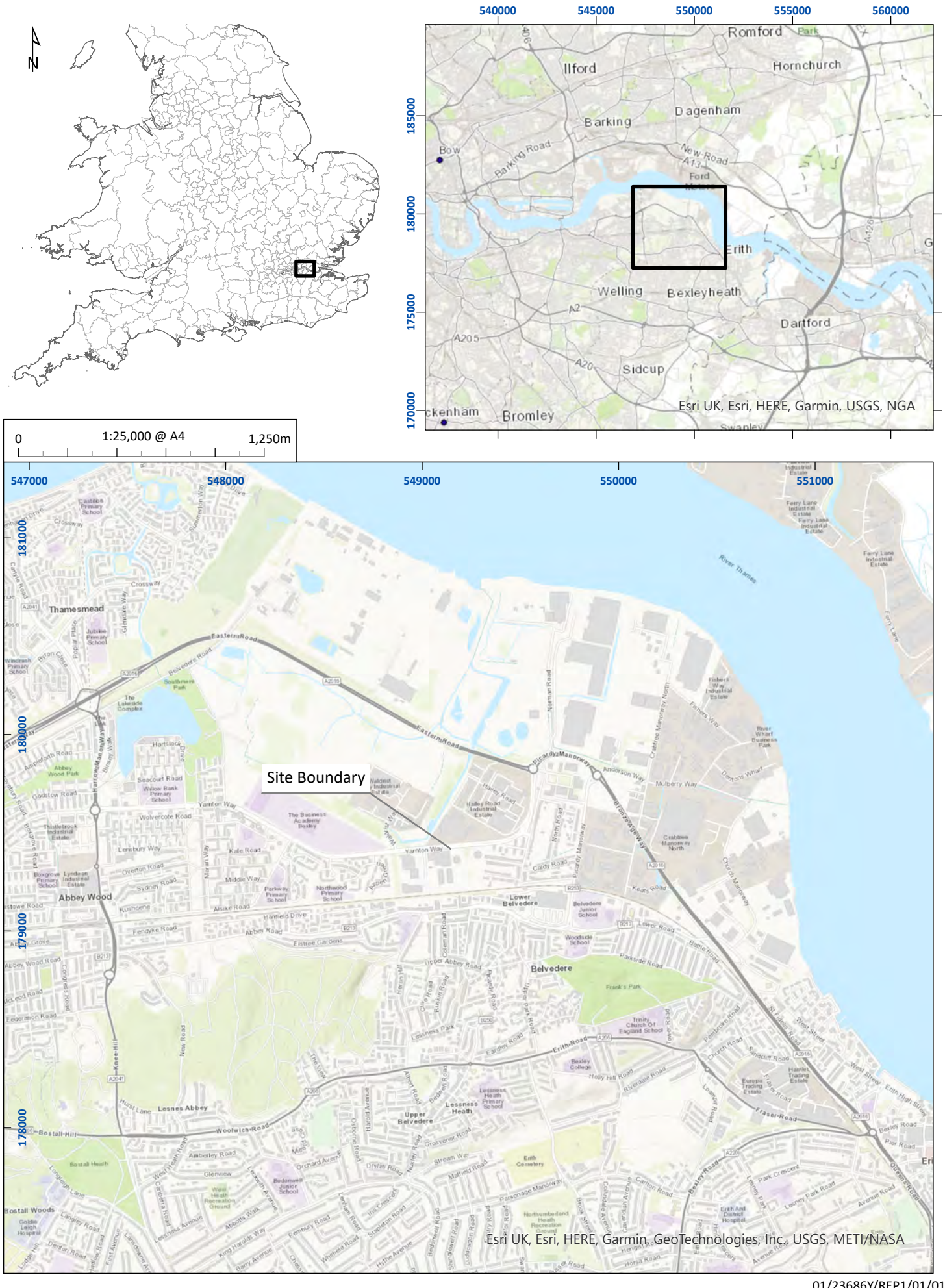
11.2 Cartographic references

Ordnance Survey (Kent):

- 1897 (1:2,500)
- 1938 (1:10,560)
- 1940 (1:10,000)
- 1959 (1:2,500)
- 1975 (1:10,000)
- 1996 (1:10,000)

APPENDIX 1: FIGURES



01/23686Y/REP1/01/01

Figure 1: Site location plan

Figure 2: Detailed site location plan showing outline of gasholder compound

01/23686Y/REP1/02/01

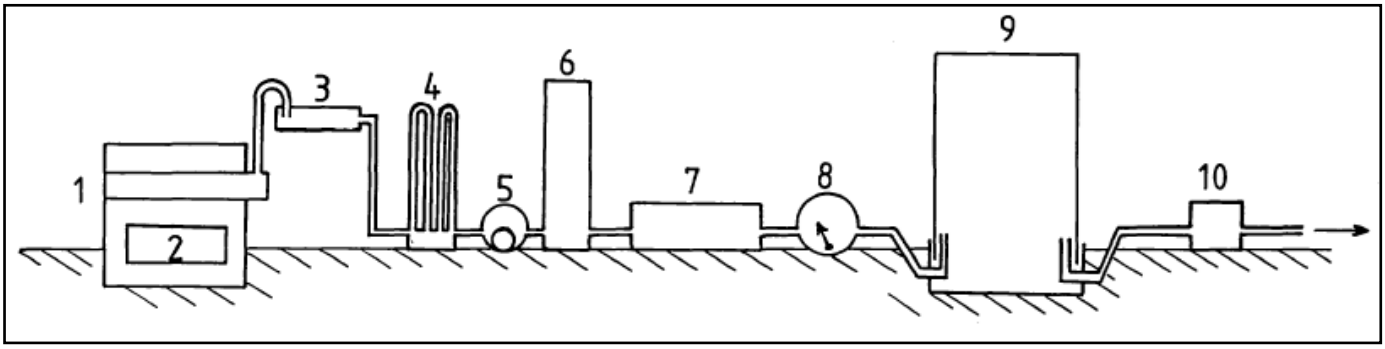


Figure 3: Schematic Layout of Gasworks, after Thomas, 2010

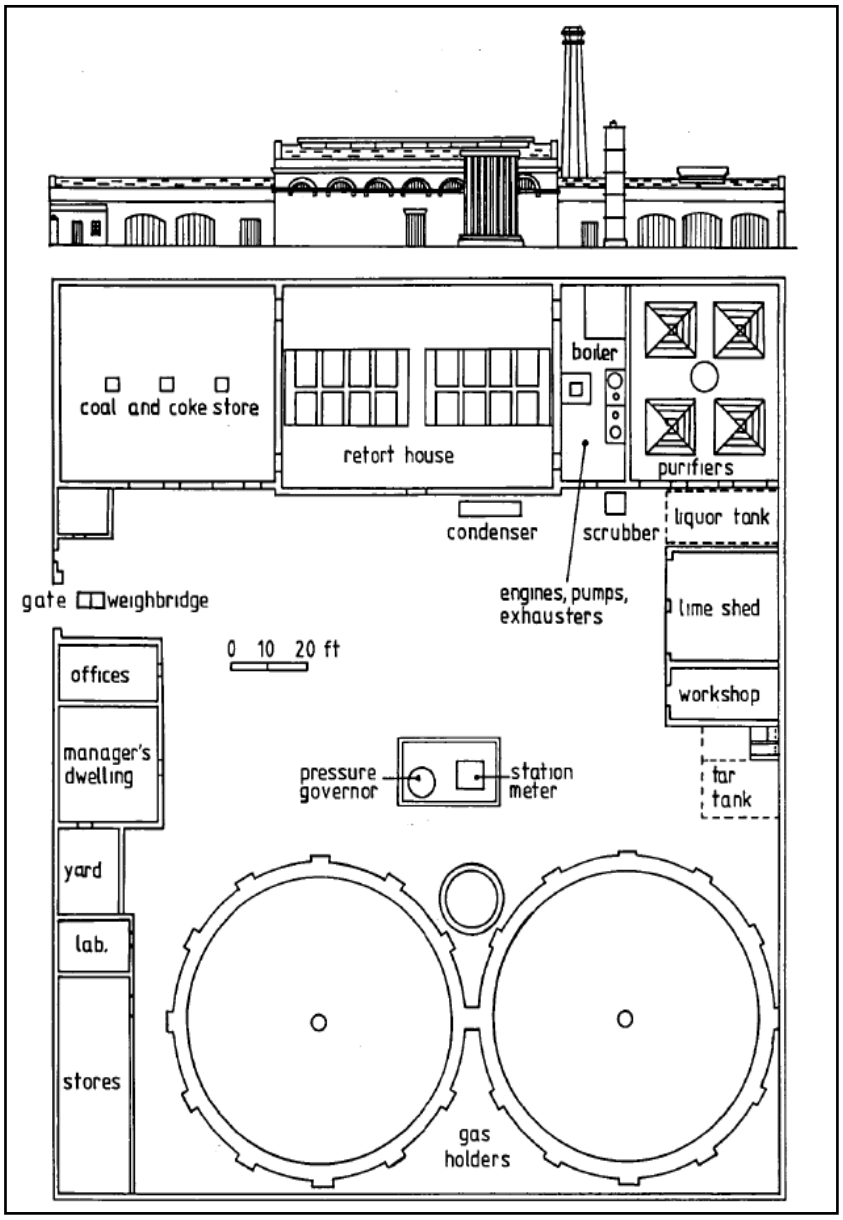
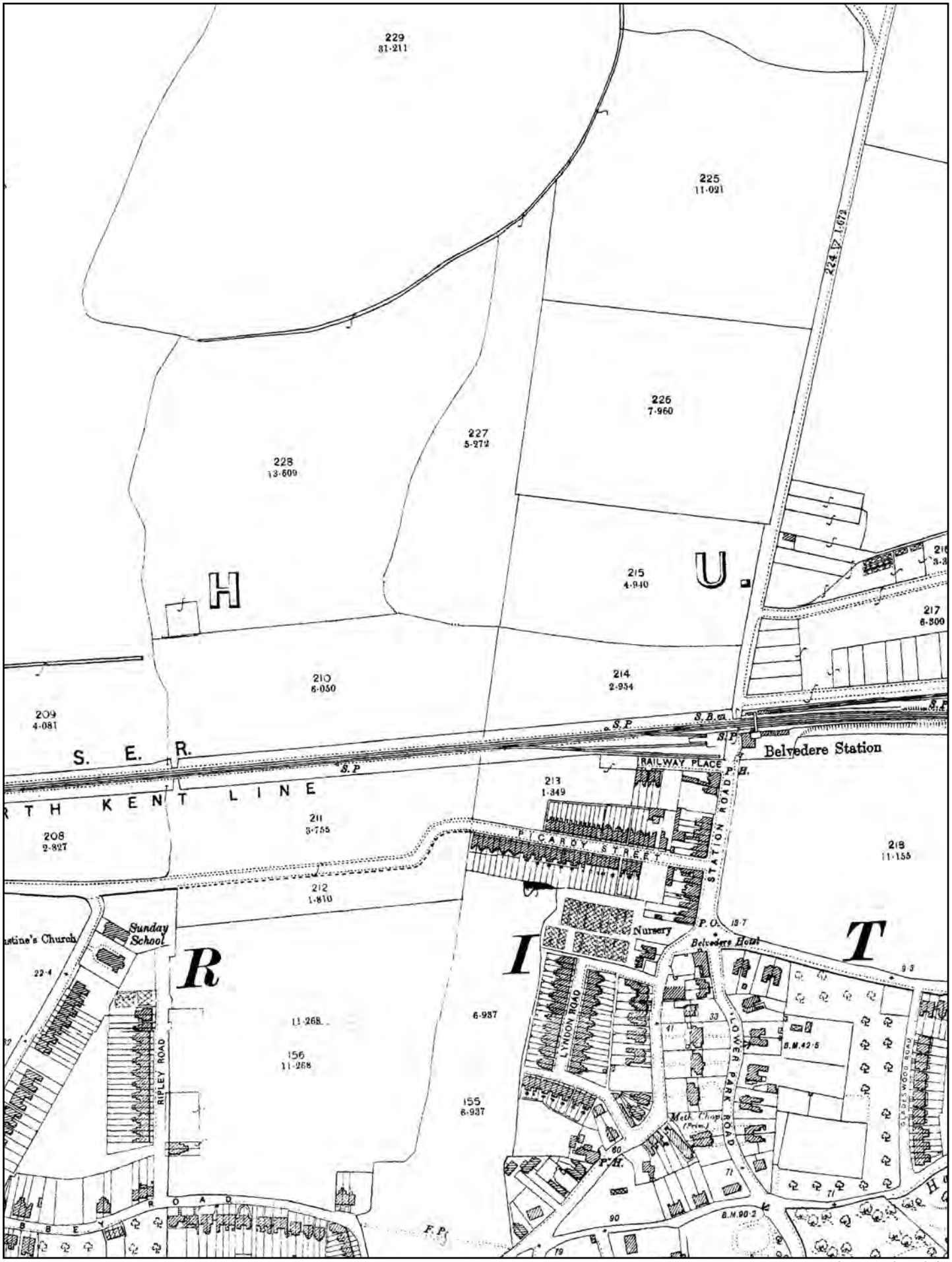


Figure 4: Typical Layout of Medium-Sized Gasworks from the 1870s, after Newbigging 1897

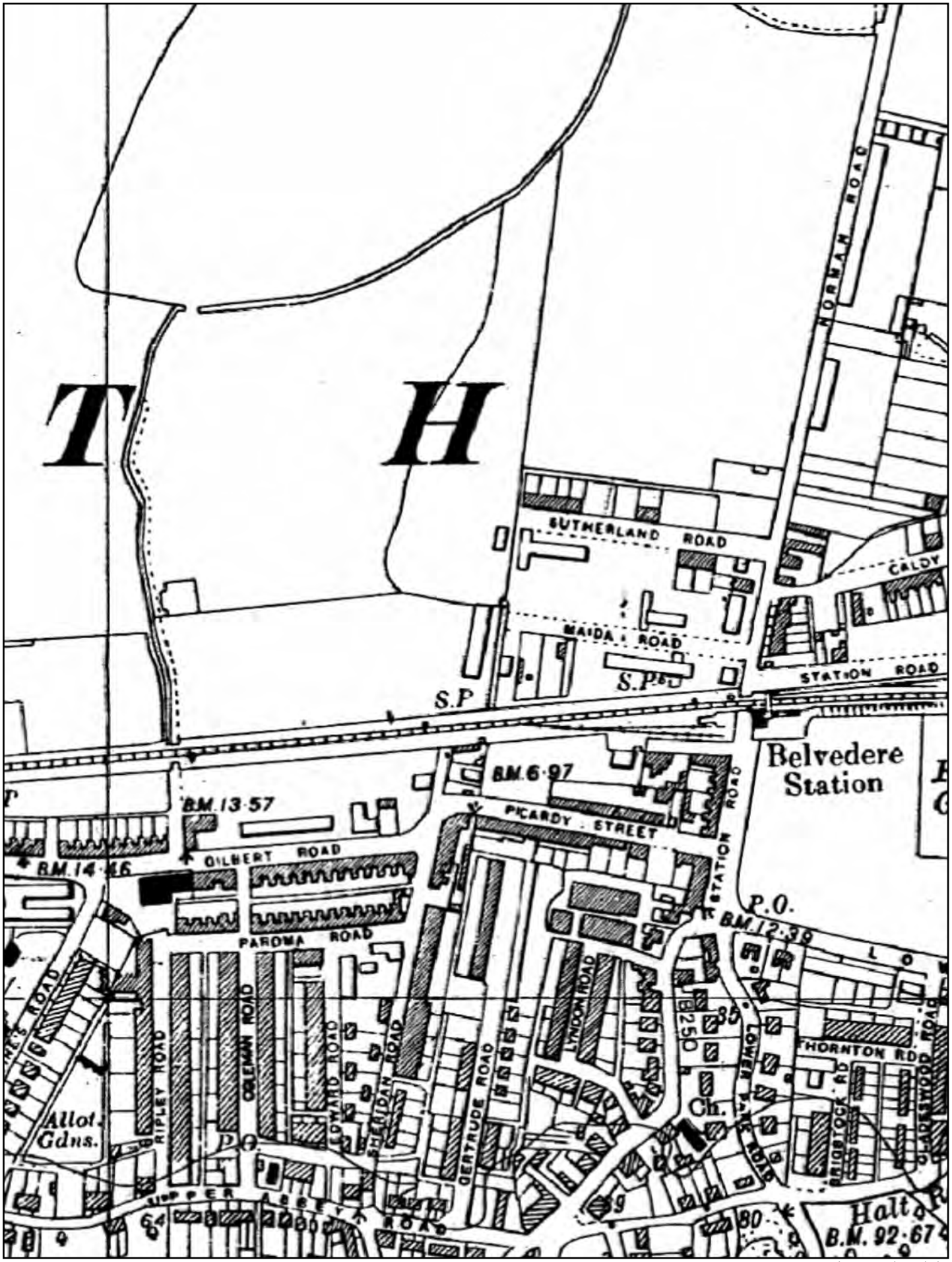


01/23686_Y/REPI/5/01

Figure 5: Extract from Ordnance Survey map, 1897
Reproduced from Landmark Information Group (c) Ordnance Survey

01/23686_Y/REPI/6/01

Figure 6: Extract from Ordnance Survey map, 1938
Reproduced from Landmark Information Group (c) Ordnance Survey



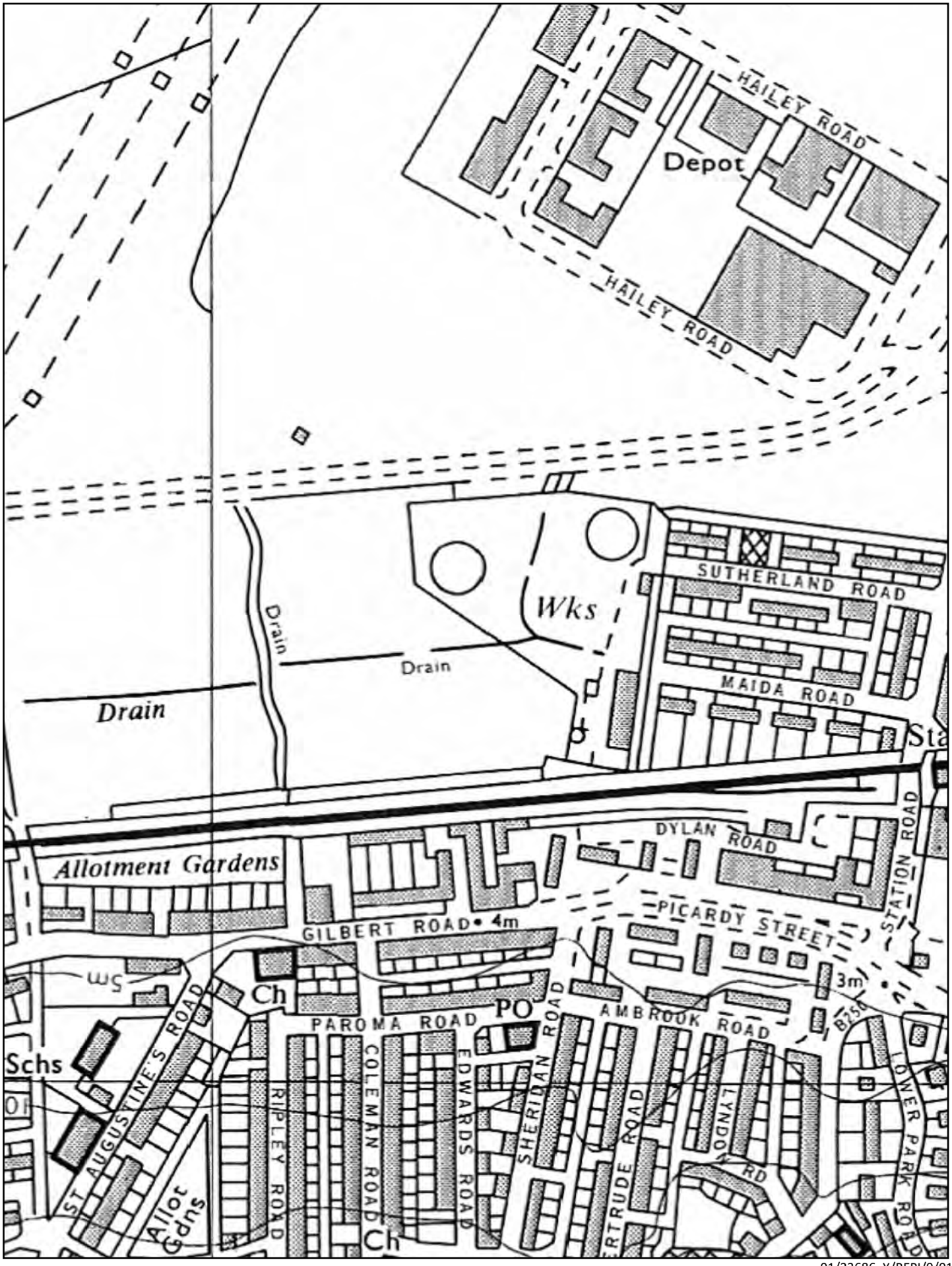
01/23686_Y/REPI/7/01

Figure 7: Extract from Ordnance Survey map, 1940
Reproduced from Landmark Information Group (c) Ordnance Survey

01/23686_Y/REPI/8/01

Figure 8: Extract from Ordnance Survey map, 1959

Reproduced from Landmark Information Group (c) Ordnance Survey

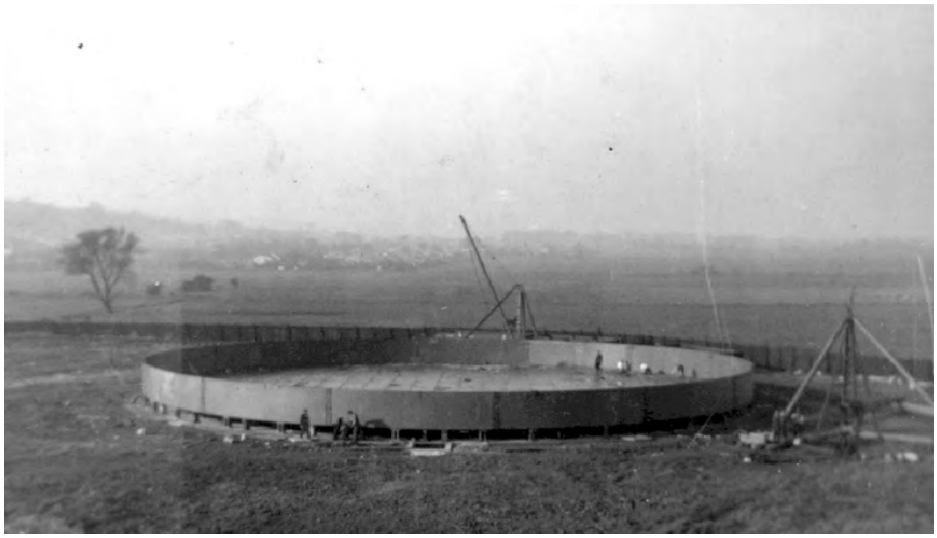


01/23686_Y/REPI/9/01

Figure 9: Extract from Ordnance Survey map, 1975
Reproduced from Landmark Information Group (c) Ordnance Survey

01/23686_Y/REPI/10/01

Figure 10: Extract from Ordnance Survey map, 1996
Reproduced from Landmark Information Group (c) Ordnance Survey



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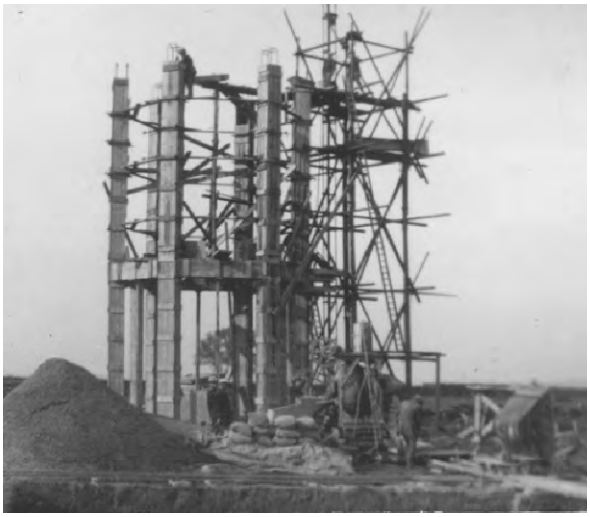


Archive Ref: xg02538

Archive Ref: xg02542

Archive Ref: xg02536

01/23686_Y/REPI/11/01

Figure 11: Archive Photogrpahs of Gasholder No 1 under construction, 1937

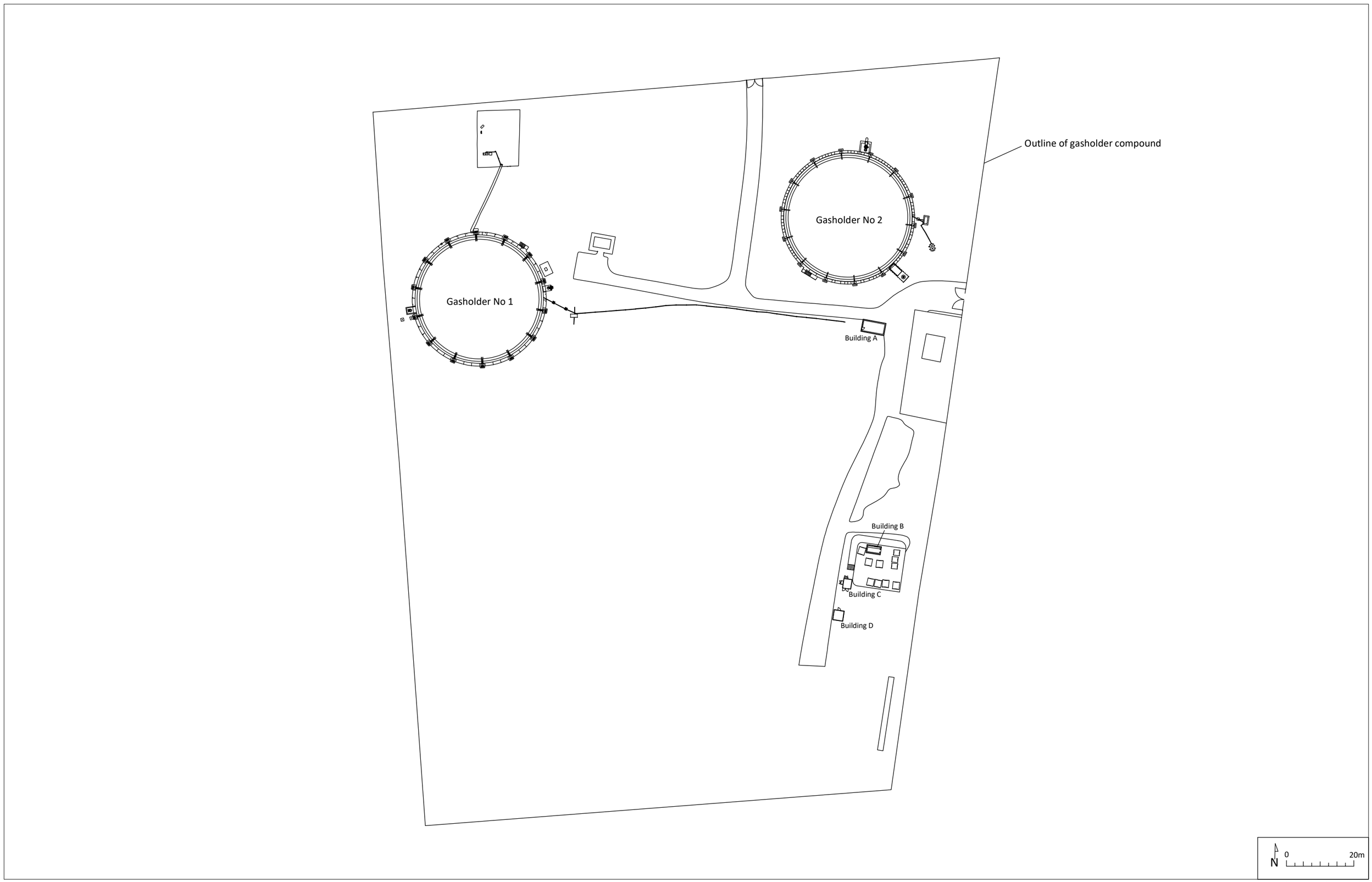


Figure 12: Gasholder Nos 1 & 2, Yarnton Way, Belvedere, general site plan of gasholder compound

01/26386_Y/REP/12/01

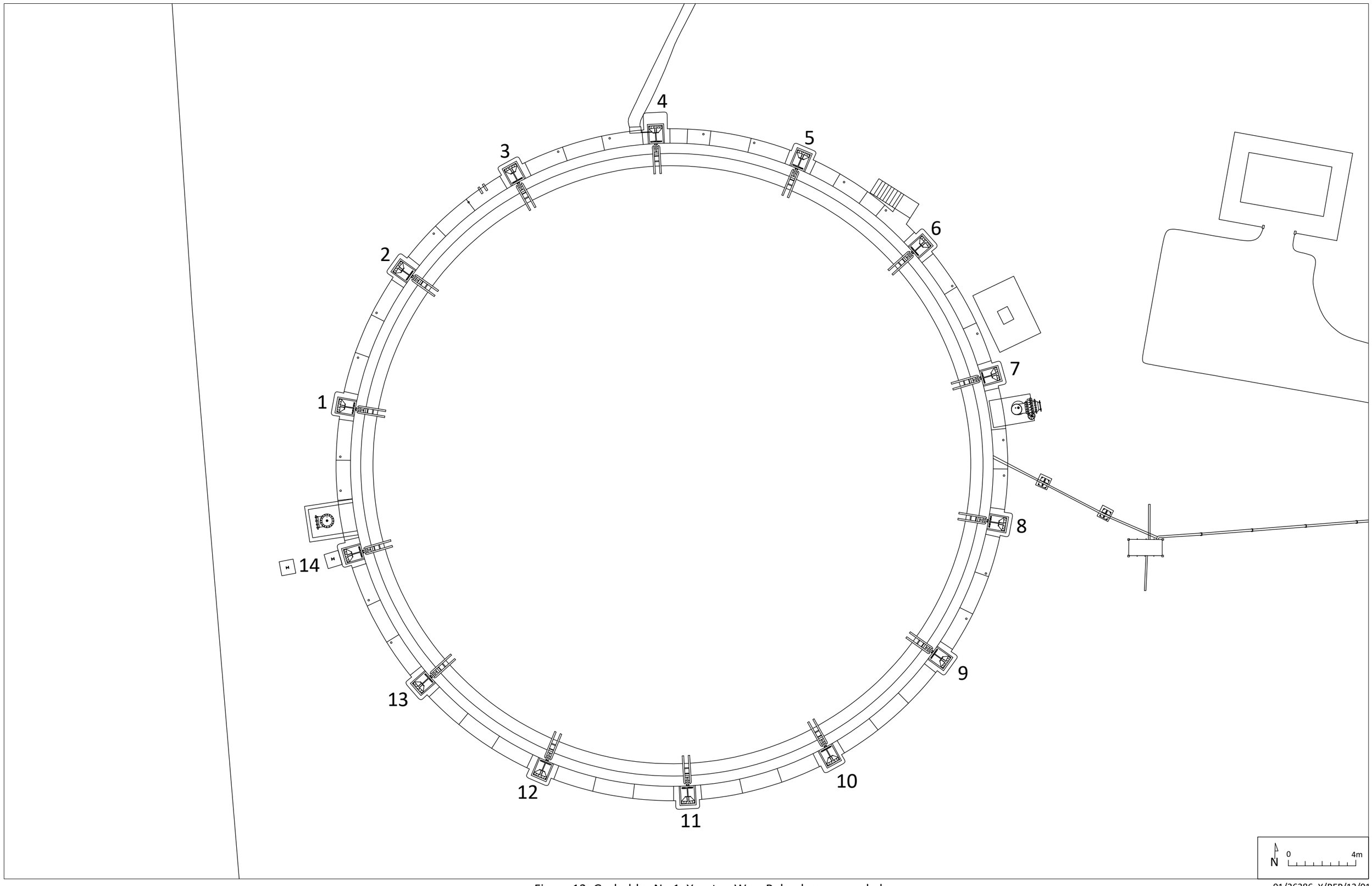


Figure 13: Gasholder No 1, Yarnton Way, Belvedere, ground plan

01/26386_Y/REP/13/01

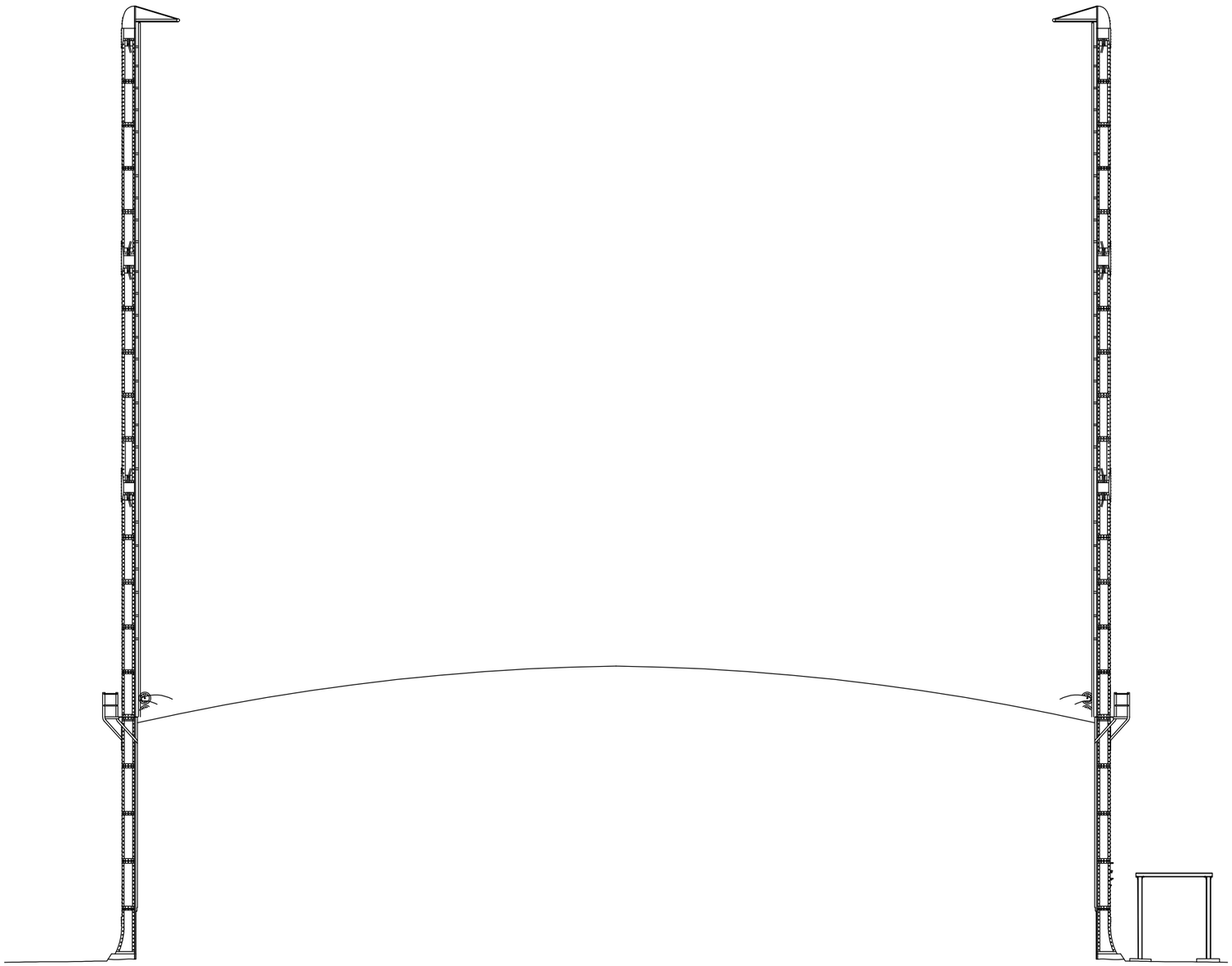


Figure 14: Gasholder No 1, Yarnton Way, Belvedere, section

01/26386_Y/REP/14/01

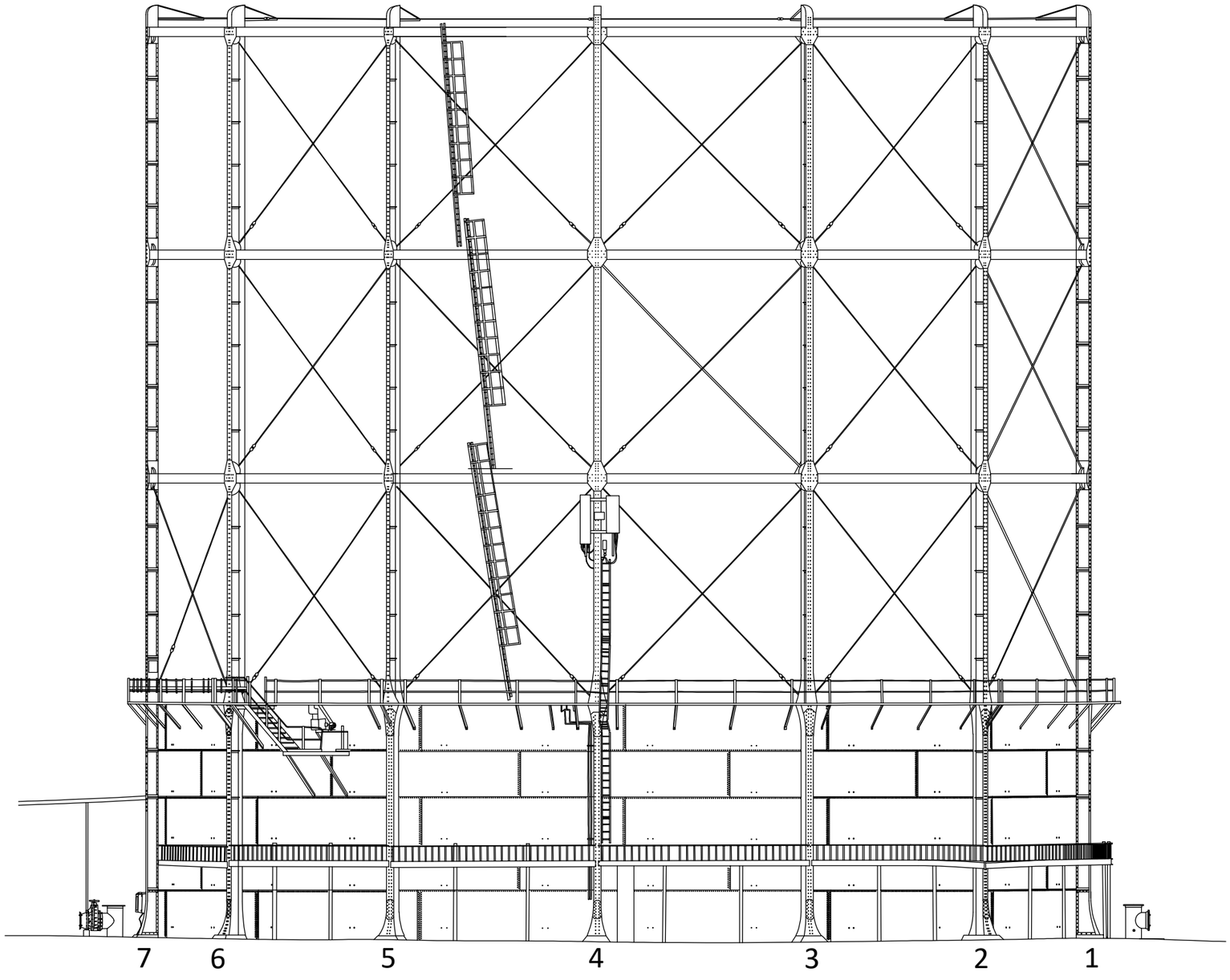


Figure 15: Gasholder No 1, Yarnton Way, Belvedere, north-facing elevation

01/26386_Y/REP/15/01

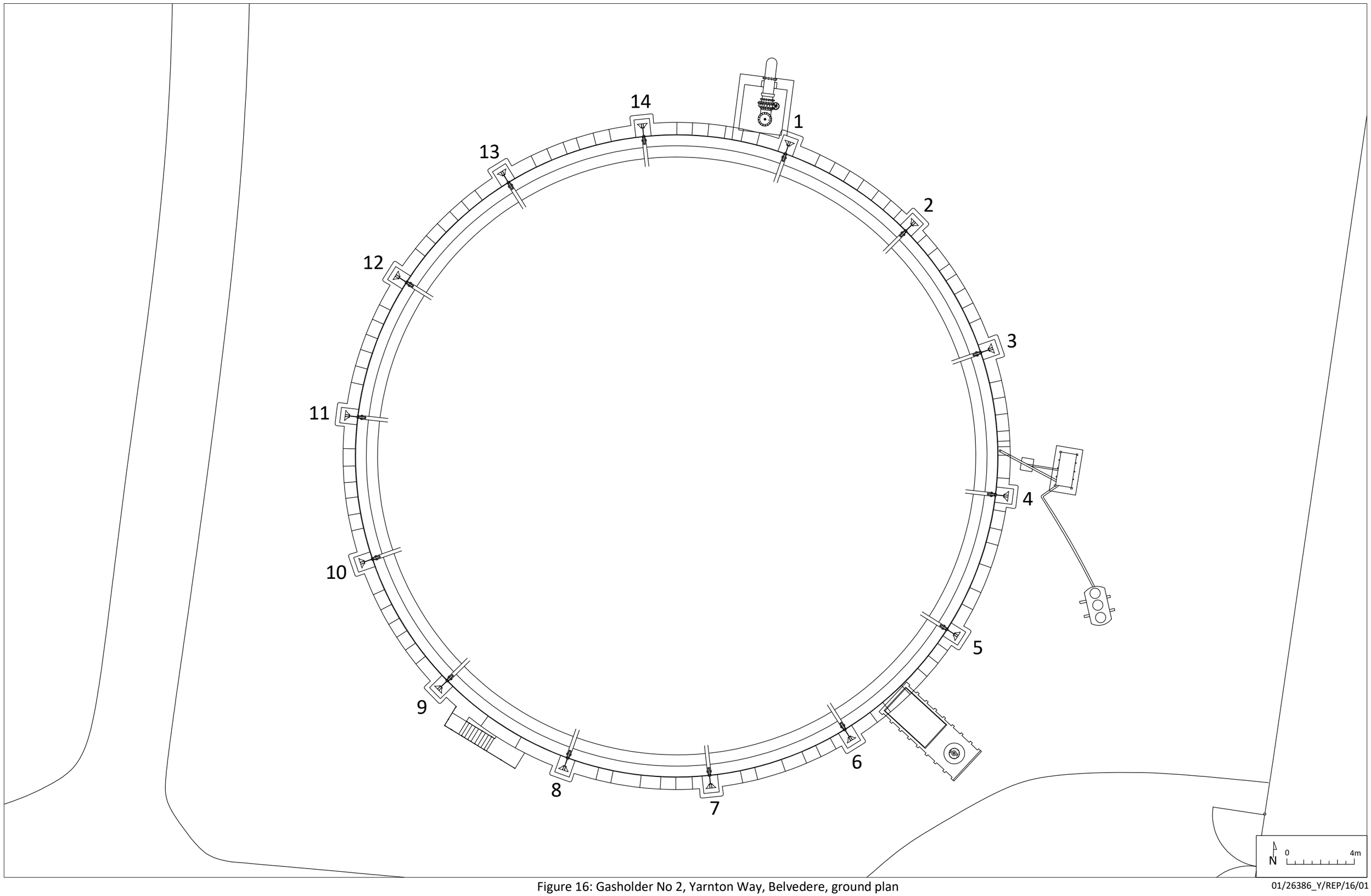


Figure 16: Gasholder No 2, Yarnton Way, Belvedere, ground plan

01/26386_Y/REP/16/01

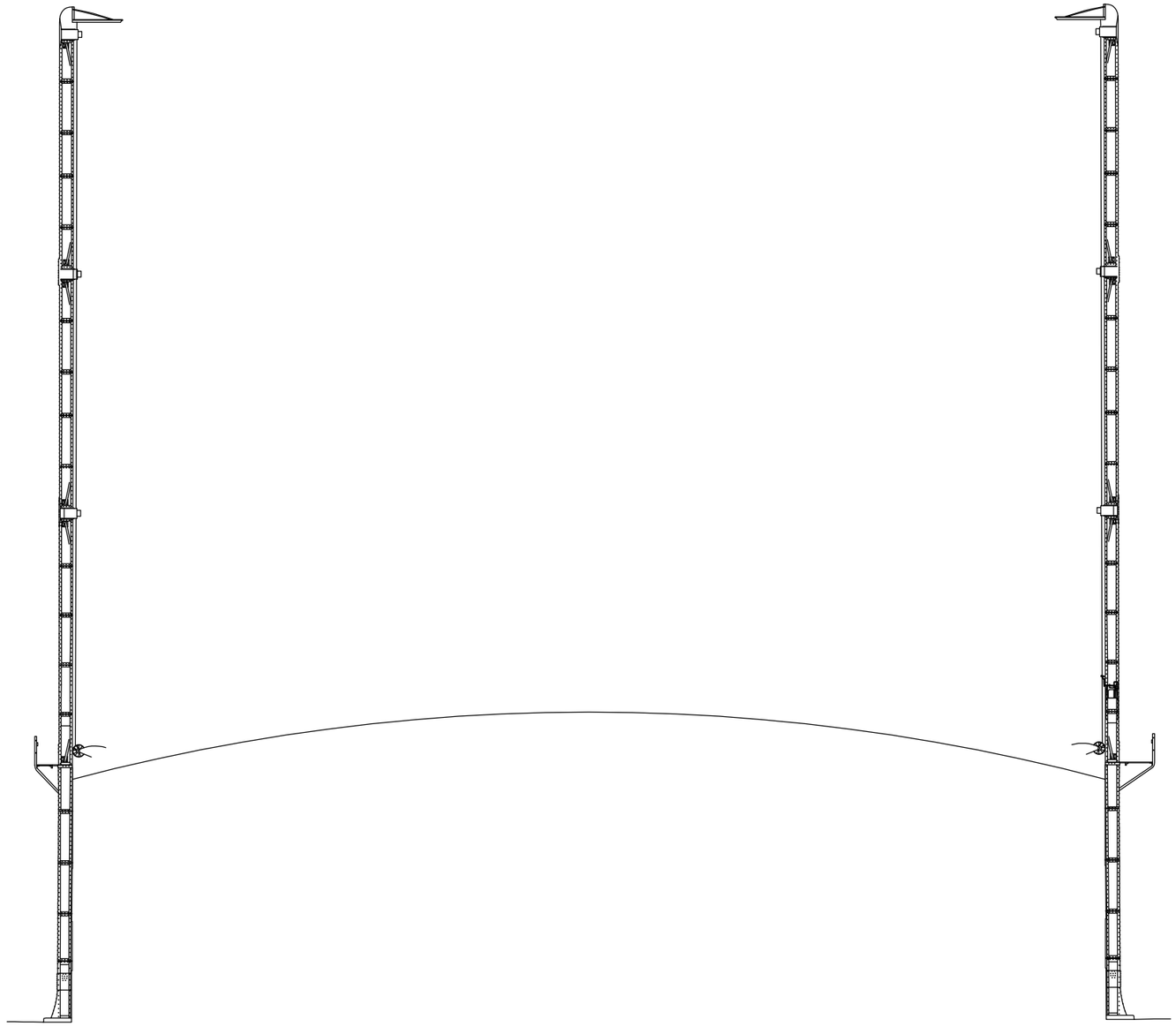


Figure 17: Gasholder No 2, Yarnton Way, Belvedere, section

01/26386_Y/REP/17/01

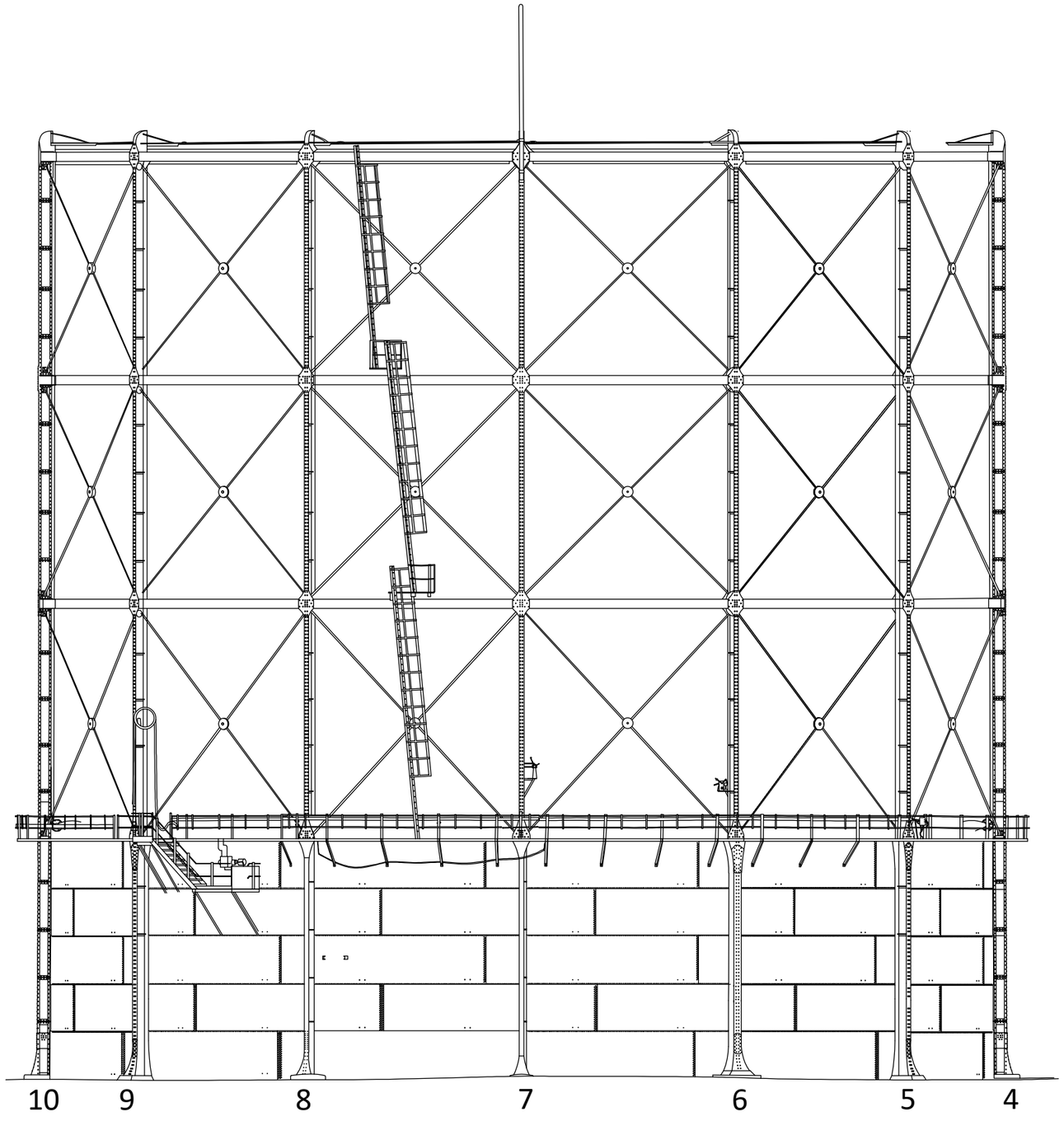


Figure 18: Gasholder No 2, Yarnton Way, Belvedere, south-facing elevation

01/26386_Y/REP/18/01

APPENDIX 2: PLATES

Plate 1 (BEL093): General view of the gasholders from Sutherland Way, from the east

Plate 2 (BEL095): General view of gasholders from Edwards Road from the south

Plate 3 (BEL096): General view of the gasholders from Clydesdale Way from the north-east

Plate 4 (004): General view of the gasholders within the compound from the south

Plate 5 (BEL001): Gasholder No 1, general view from the WSW

Plate 6 (BEL003): Gasholder No 1, general view from the WNW

Plate 7 (BEL002): Gasholder No 1, general view from the NNE

Plate 8 (BEL007): Gasholder No 1, general view of guide framing from the north-west

Plate 9 (BEL012): Gasholder No 1, general view of the guide framing from the north

Plate 10 (BEL017): Gasholder No 1, general view of the guide framing from the north-east

Plate 11 (BEL030): Gasholder No 1, detail of diagonal bracing of the guide framing from the south-west

Plate 12 (BEL005): Gasholder No 1, general view of the north-west side of the gasholder and standard 2, from the north-west

Plate 13 (BEL008): Gasholder No 1, detail of the base of standard 2 from the north-west

Plate 14 (BEL009): Gasholder No 1, close detail of original number plaque of standard 2 from the north-west

Plate 15 (BEL011): Gasholder No 1, general view of the north side of the gasholder showing above ground tank, from the north

Plate 16 (BEL016): Gasholder No 1, general view of the north-east side of the gasholder showing above ground tank, from the north-east

Plate 17 (BEL015): Gasholder No 1, detail of removed stair between standards 5 and 5, from the north-east

Plate 18 (BEL025): Gasholder No 1, detail of upper walkway on the south-east side of the gasholder from the ENE

Plate 19 (BEL014): Gasholder No 1, detail of sequence of stairs for upper lifts, from the north

Plate 20 (BEL010): Gasholder No 1, detail of concrete support for now-removed pipework between standards 2 and 3, from the north-west

Plate 21 (BEL020): Gasholder No 1, detail of concrete platform and support for now-removed pipework between standards 6 and 7, from the north-east

Plate 22 (BEL018): Gasholder No 1, detail of pipework between standards 7 and 8 from the north

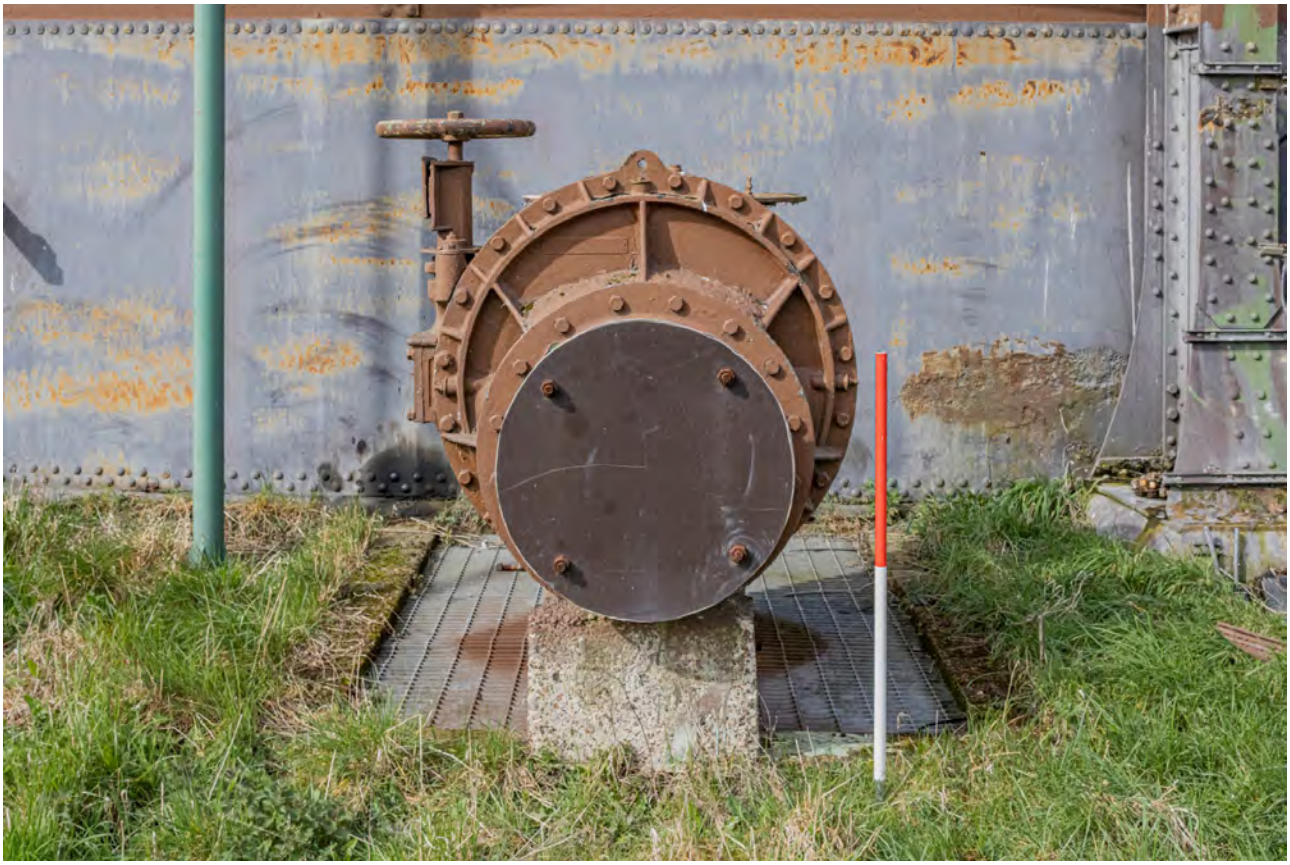


Plate 23 (BEL019): Gasholder No 1, detail of pipework between standards 7 and 8 from the east

Plate 24 (BEL036): Gasholder No 1, detail of manufacturer's plaque on the pipework between standards 7 and 8 from the south

Plate 25 (BEL037): Gasholder No 1, detail of manufacturer's plaque on the pipework between standards 7 and 8 from the south

Plate 26 (BEL023): Gasholder No 1, detail of pipework and tank between standards 7 and 8, from the east

Plate 27 (BEL022): Gasholder No 1, detail of pipework and tank between standards 7 and 8, from the north-east

Plate 28 (BEL021): Gasholder No 1, detail of concrete platform between standards 7 and 8 from the east

Plate 29 (BEL035): Gasholder No 1, detail of pipework and frame between standards 1 and 14 from the SSE

Plate 30 (BEL034): Gasholder No 1, detail of pipework between standards 1 and 14 from the north

Plate 31 (BEL038): Gasholder No 2, general view from the west

Plate 32 (BEL047): Gasholder No 2, general view of the guide frame from the south-east

Plate 33 (BEL050): Gasholder No 2, general view of the guide frame from the SSE

Plate 34 (BEL053): Gasholder No 2, detail of the diagonal bracing of the guide frame, from the south

Plate 35 (BEL039): Gasholder No 2, general view of above ground tank and standard 2 from the NNW

Plate 36 (BEL045): Gasholder No 2, detail of standard 3 from the north

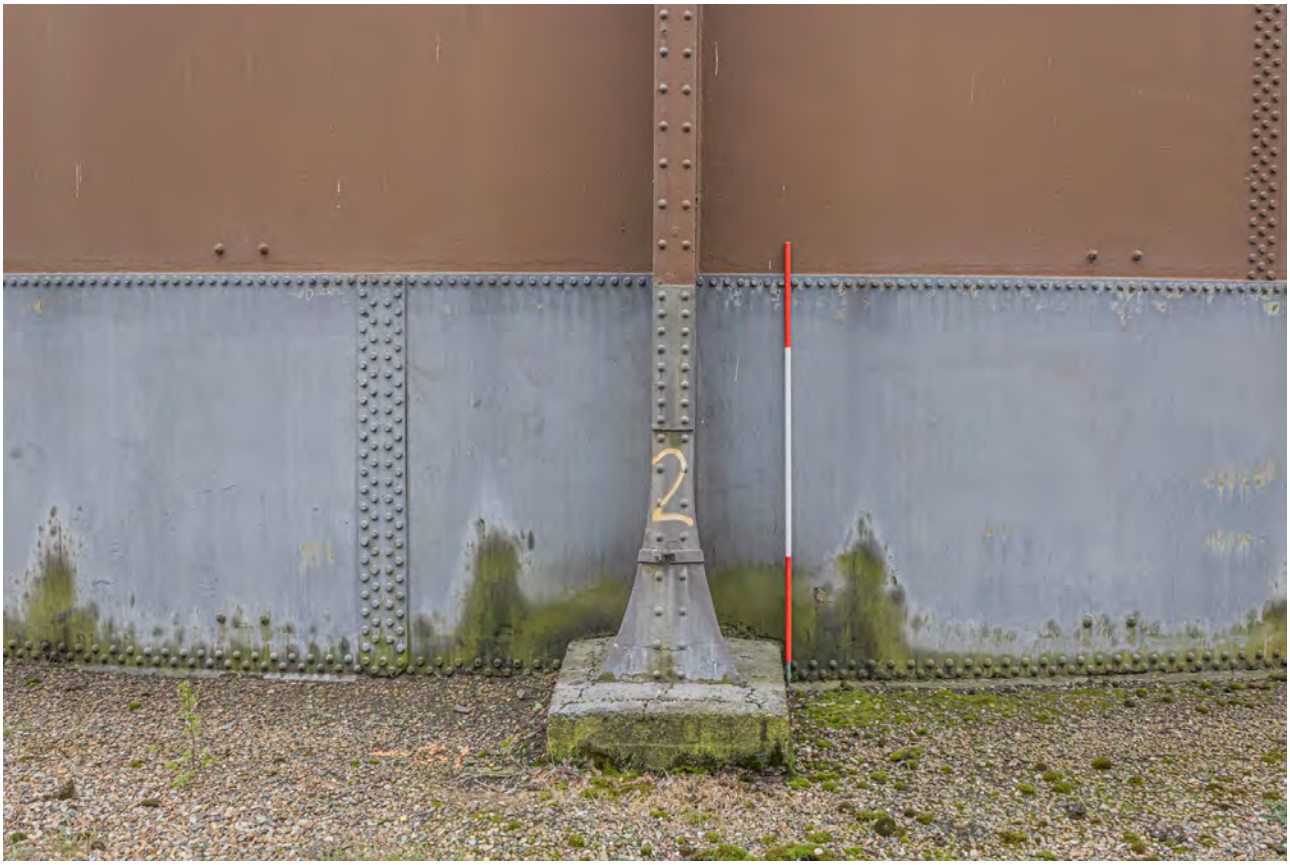


Plate 37 (BEL040): Gasholder No 2, detail of standard 2 from the north-east

Plate 38 (BEL082): Gasholder No 2, detail of standard 2 from the north-east

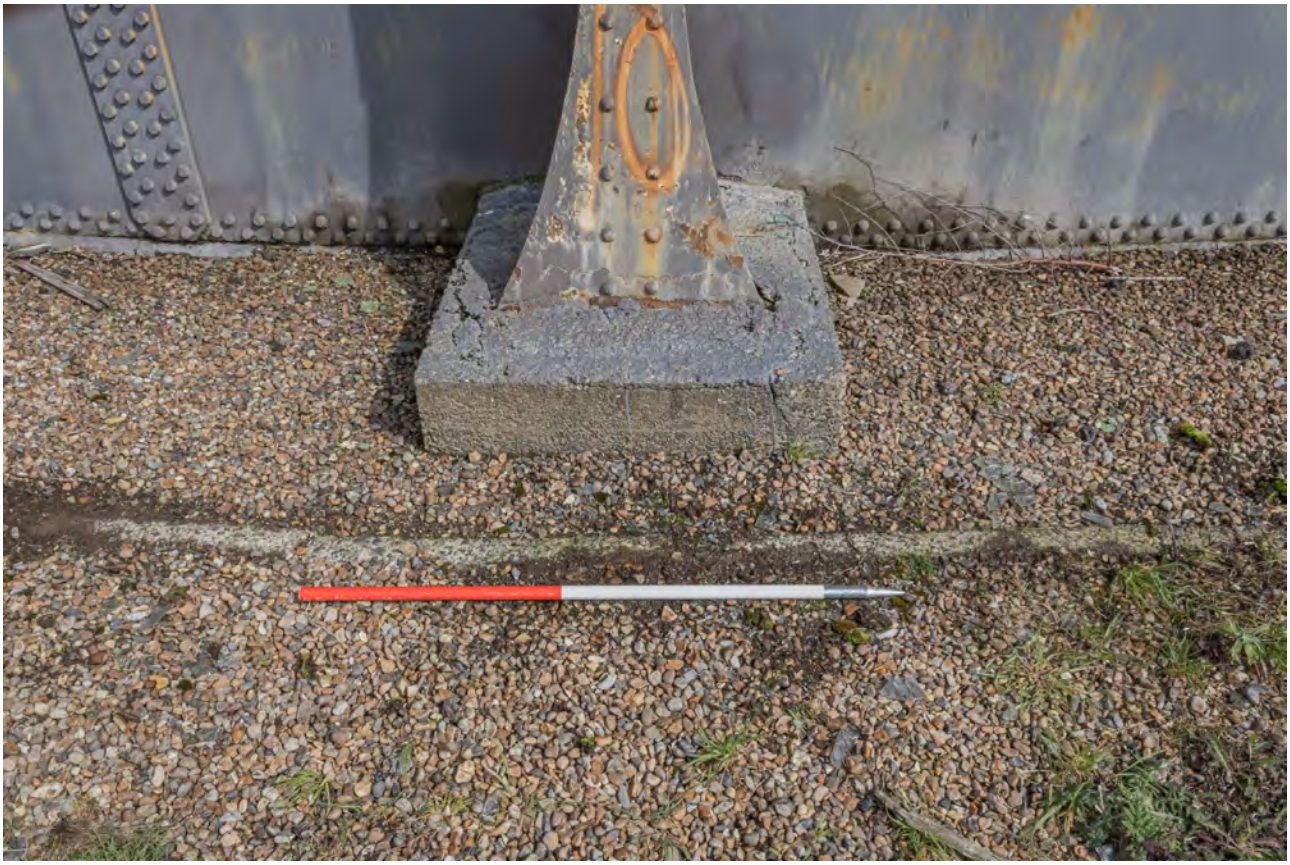


Plate 39 (BEL059): Gasholder No 2, detail of base of standard 10, from the south-west

Plate 40 (BEL041): Gasholder No 2, general view of the above ground tank between standards 2 and 3, from the north

Plate 41 (BEL046): Gasholder No 2, general view of above ground tank at standard 5, from the south-east

Plate 42 (BEL049): Gasholder No 2, general view of above ground tank between standards 6 and 8, from the SSE

Plate 43 (BEL055): Gasholder No 2, general view of above ground tank between standards 9 and 10, from the SSW

Plate 44 (BEL060): Gasholder No 2, general view of above ground tank between standards 10 and 12, from the SSW

Plate 45 (BEL062): Gasholder No 2, general view of above ground tank between standards 12 and 13, from the WSW

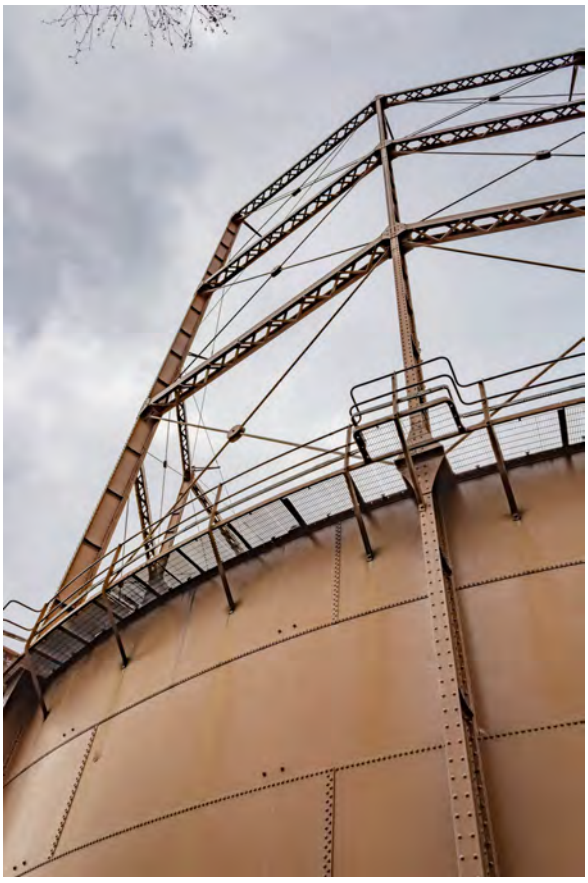


Plate 46 (BEL042): Gasholder No 2, detail of upper walkway from the north

Plate 47 (BEL054): Gasholder No 2, detail of upper stair to the SSW of the gasholder, from the south-east

Plate 48 (BEL043): Gasholder No 2, detail of tank on the east side of the gasholder, from the north

Plate 49 (BEL048): Gasholder No 2, detail of instruments attached to standard 5 from the south-east

Plate 50 (BEL051): Gasholder No 2, detail of knock-off switch above standard 8, from the south-east

Plate 51 (BEL052): Gasholder No 2, detail of knock-off switch above standard 5 from the south-west

Plate 52 (BEL057): Gasholder No 2, detail of hoses on the south-west side of the gasholder above standard 9, from the south-west

Plate 53 (BEL066): Gasholder No 2, detail of pipework on the north side of the gasholder, from the WNW

Plate 54 (BEL068): Gasholder No 2, detail of pipework on the north side of the gasholder, from the east

Plate 55 (BEL069): Gasholder No 2, detail of manufacturer's mark on the east side of the pipework on the north side of the gasholder, from the east

Plate 56 (BEL067): Gasholder No 2, detail of markings on the west side of the pipework on the north side of the gasholder, from the west

Plate 57 (BEL070): Building A, general view from the north

Plate 58 (BEL071): Building A, general view from the east

Plate 59 (BEL072): Building A, general view from the south

Plate 60 (BEL073): Building A, general view from the west

Plate 61 (BEL092): Building B, general view of area to the south of the gasholder compound from the south-west

Plate 62 (BEL074): Building B, general view from the north

Plate 63 (BEL075): Building B, general view from the south-east

Plate 64 (BEL079): Building B, general view from the east

Plate 65 (BEL080): Building B, general view of the interior from the east

Plate 66 (BEL077): General view of steel covers from the north-west

Plate 67 (BEL078): General view of steel covers from the WNW

Plate 68 (BEL081): Detail of concrete platform from the north

Plate 69 (BEL085): Detail of steps up to raised platform from the west

Plate 70 (BEL076): Detail of valve wheel from the SSW

Plate 71 (BEL083): Detail of pipework from the north-east

Plate 72 (BEL087): Building C, general view from the west

Plate 73 (BEL088): Building C, general view from the south

Plate 74 (BEL086): Building C, detail of cupboard on the north elevation, from the north

Plate 75 (BEL089): Building D, general view of the Instrument Room from the north

Plate 76 (BEL090): Building D, general view of the Instrument Room from the west

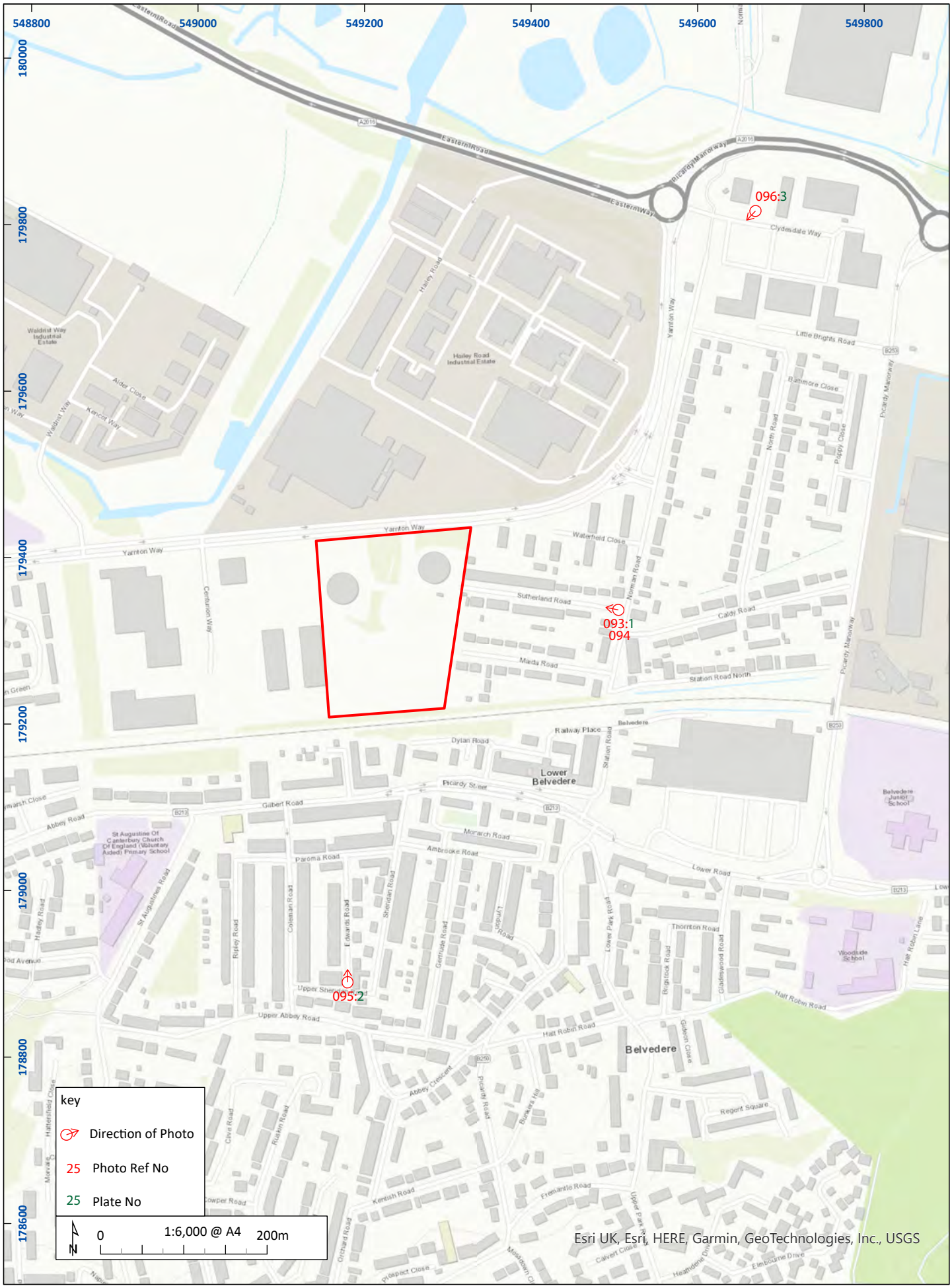
Plate 77 (BEL091): Building D, general view of the Instrument Room from the south

APPENDIX 3: DIGITAL PHOTOGRAPHIC REGISTER

Photo Ref	*Gasholder/ Structure*	*Description*	*Taken From*	*Date*
BEL001	Gasholder No 1	General View	SE	05/04/2022
BEL002	Gasholder No 2	General View	S	05/04/2022
BEL003	Gasholder No 1	General View	E	05/04/2022
BEL004	Gasholder No 1 & 2	General View	S	05/04/2022
BEL005	Gasholder No 1	General View of standards 1 and 2	NW	05/04/2022
BEL006	Gasholder No 1	General View of standards 1 and 2	NW	05/04/2022
BEL007	Gasholder No 1	General View of standards 1 and 2 upper frame	NW	05/04/2022
BEL008	Gasholder No 1	Detail of base of standards 2	NW	05/04/2022
BEL009	Gasholder No 1	Detail of standards number marker	NW	05/04/2022
BEL010	Gasholder No 1	Detail of brick fitting and valve	NW	05/04/2022
BEL011	Gasholder No 1	General View of standards 3 and 4	N	05/04/2022
BEL012	Gasholder No 1	General View of standards 3 and 4 upper frame	N	05/04/2022
BEL013	Gasholder No 1	General View of standards 3 and 4 upper frame	N	05/04/2022
BEL014	Gasholder No 1	General View of standards 3 and 4 upper frame	N	05/04/2022
BEL015	Gasholder No 1	Detail of the top of the stairs	NE	05/04/2022
BEL016	Gasholder No 1	General View of standards 5 and 6	NE	05/04/2022
BEL017	Gasholder No 1	General View of standards 5 and 6 upper frame	NE	05/04/2022
BEL018	Gasholder No 1	Detail of valving	N	05/04/2022
BEL019	Gasholder No 1	Detail of valving	E	05/04/2022
BEL020	Gasholder No 1	Detail of concrete block	E	05/04/2022
BEL021	Gasholder No 1	Detail of concrete pad	E	05/04/2022
BEL022	Gasholder No 1	Detail of runoff system	NE	05/04/2022
BEL023	Gasholder No 1	General View of standards 7 and 8	E	05/04/2022
BEL024	Gasholder No 1	General View of standards 7 and 8 upper frame	E	05/04/2022
BEL025	Gasholder No 1	Detail of knockoff	NE	05/04/2022
BEL026	Gasholder No 1	General View of standards 9 and 10	SE	05/04/2022
BEL027	Gasholder No 1	General View of standards 9 and 10 upper frame	SE	05/04/2022
BEL028	Gasholder No 1	General View of standards 11 and 12	SW	05/04/2022
BEL029	Gasholder No 1	General View of standards 11 and 12 upper frame	SW	05/04/2022
BEL030	Gasholder No 1	Detail of tension bars	SW	05/04/2022
BEL031	Gasholder No 1	Detail of knockoff	S	05/04/2022
BEL032	Gasholder No 1	General View of standards 13 and 14	SW	05/04/2022
BEL033	Gasholder No 1	General View of standards 13 and 14 upper frame	SW	05/04/2022
BEL034	Gasholder No 1	Detail of valving	N	05/04/2022
BEL035	Gasholder No 1	Detail of frame	S	05/04/2022
BEL036	Gasholder No 1	Detail of valving	S	05/04/2022
BEL037	Gasholder No 1	Detail of valving	S	05/04/2022
BEL038	Gasholder No 2	General view	W	05/04/2022
BEL039	Gasholder No 2	General View of standards 1	NE	05/04/2022
BEL040	Gasholder No 2	Detail of base of standards 2	NE	05/04/2022
BEL041	Gasholder No 2	General View of standards 2	NE	05/04/2022
BEL042	Gasholder No 2	General View of standards 2 upper frame	NE	05/04/2022
BEL043	Gasholder No 2	Detail of runoff storage	NW	05/04/2022
BEL044	Gasholder No 2	General View of standards 3	N	05/04/2022
BEL045	Gasholder No 2	Detail of standard	N	05/04/2022
BEL046	Gasholder No 2	General View of standards 4 and 5	SE	05/04/2022
BEL047	Gasholder No 2	General View of standards 4 and 4 upper frame	SE	05/04/2022
BEL048	Gasholder No 2	Detail of control box	SE	05/04/2022
BEL049	Gasholder No 2	Details of standards 6 and 7	S	05/04/2022

BEL050	Gasholder No 2	Details of standards 6 and 7 upper frame	S	05/04/2022
BEL051	Gasholder No 2	Detail of knock off switch	SE	05/04/2022
BEL052	Gasholder No 2	Detail of knock off switch	SW	05/04/2022
BEL053	Gasholder No 2	Detail of ties	S	05/04/2022
BEL054	Gasholder No 2	Detail of stairs	E	05/04/2022
BEL055	Gasholder No 2	Details of standards 8 and 9	W	05/04/2022
BEL056	Gasholder No 2	Details of standards 8 and 9 upper frame	W	05/04/2022
BEL057	Gasholder No 2	Detail of knock off	W	05/04/2022
BEL058	Gasholder No 2	Detail of knock off	W	05/04/2022
BEL059	Gasholder No 2	Detail of concrete tank surrounding the gasholder	W	05/04/2022
BEL060	Gasholder No 2	General View of standards 10 and 11	W	05/04/2022
BEL061	Gasholder No 2	General View of standards 10 and 11 upper frame	W	05/04/2022
BEL062	Gasholder No 2	General View of standards 12	SW	05/04/2022
BEL063	Gasholder No 2	General View of standards 12 upper frame	SW	05/04/2022
BEL064	Gasholder No 2	General View of standards 13	NW	05/04/2022
BEL065	Gasholder No 2	General View of standards 14	NW	05/04/2022
BEL066	Gasholder No 2	Detail of valving	NW	05/04/2022
BEL067	Gasholder No 2	Detail of valving mark	W	05/04/2022
BEL068	Gasholder No 2	Detail of valving	E	05/04/2022
BEL069	Gasholder No 2	Detail of valving	E	05/04/2022
BEL070	Building A	General view of building to the south of Gasholder 2	N	05/04/2022
BEL071	Building A	General view of building to the south of Gasholder 2	E	05/04/2022
BEL072	Building A	General view of building to the south of Gasholder 2	S	05/04/2022
BEL073	Building A	General view of building to the south of Gasholder 2	W	05/04/2022
BEL074	Building B	General view of building to the south of Gasholder 2	N	05/04/2022
BEL075	Building B	General view of building to the south of Gasholder 2	SE	05/04/2022
BEL076	N/A	Detail of valve wheel	S	05/04/2022
BEL077	N/A	Detail of covers	W	05/04/2022
BEL078	N/A	Detail of covers	W	05/04/2022
BEL079	Building B	General view of building to the south of Gasholder 2	E	05/04/2022
BEL080	Building B	Interior of the building	E	05/04/2022
BEL081	N/A	Detail of concrete platform	E	05/04/2022
BEL082	Gasholder No 2	Detail of the base of standard 2	N	05/04/2022
BEL083	N/A	General view of building to the south of Gasholder 2	NE	05/04/2022
BEL084	N/A	Detail of piping	W	05/04/2022
BEL085	N/A	Detail of steps	W	05/04/2022
BEL086	N/A	Detail of controls	N	05/04/2022
BEL087	N/A	General view of building to the south of Gasholder 2	W	05/04/2022
BEL088	N/A	General view of building to the south of Gasholder 2	S	05/04/2022
BEL089	N/A	General view of building to the south of Gasholder 2	N	05/04/2022
BEL090	N/A	General view of building to the south of Gasholder 2	W	05/04/2022
BEL091	N/A	General view of building to the south of Gasholder 2	S	05/04/2022
BEL092	N/A	General view of building to the south of Gasholder 2	SW	05/04/2022
BEL093	Gasholder No 1 & 2	General view	E	05/04/2022
BEL094	Gasholder No 1 & 2	General view	E	05/04/2022
BEL095	Gasholder No 1 & 2	General view	E	05/04/2022
BEL096	Gasholder No 1 & 2	General view	S	05/04/2022
BEL097	Gasholder No 1 & 2	General view	NE	05/04/2022

APPENDIX 4: SITE PLANS SHOWING POSITION AND DIRECTION OF PHOTOGRAPHS & PLATES



01/23686Y/REP1/A1/01

Figure A1: Gasholder Compound, Yarnton Way, Belvedere, wider site photo plan

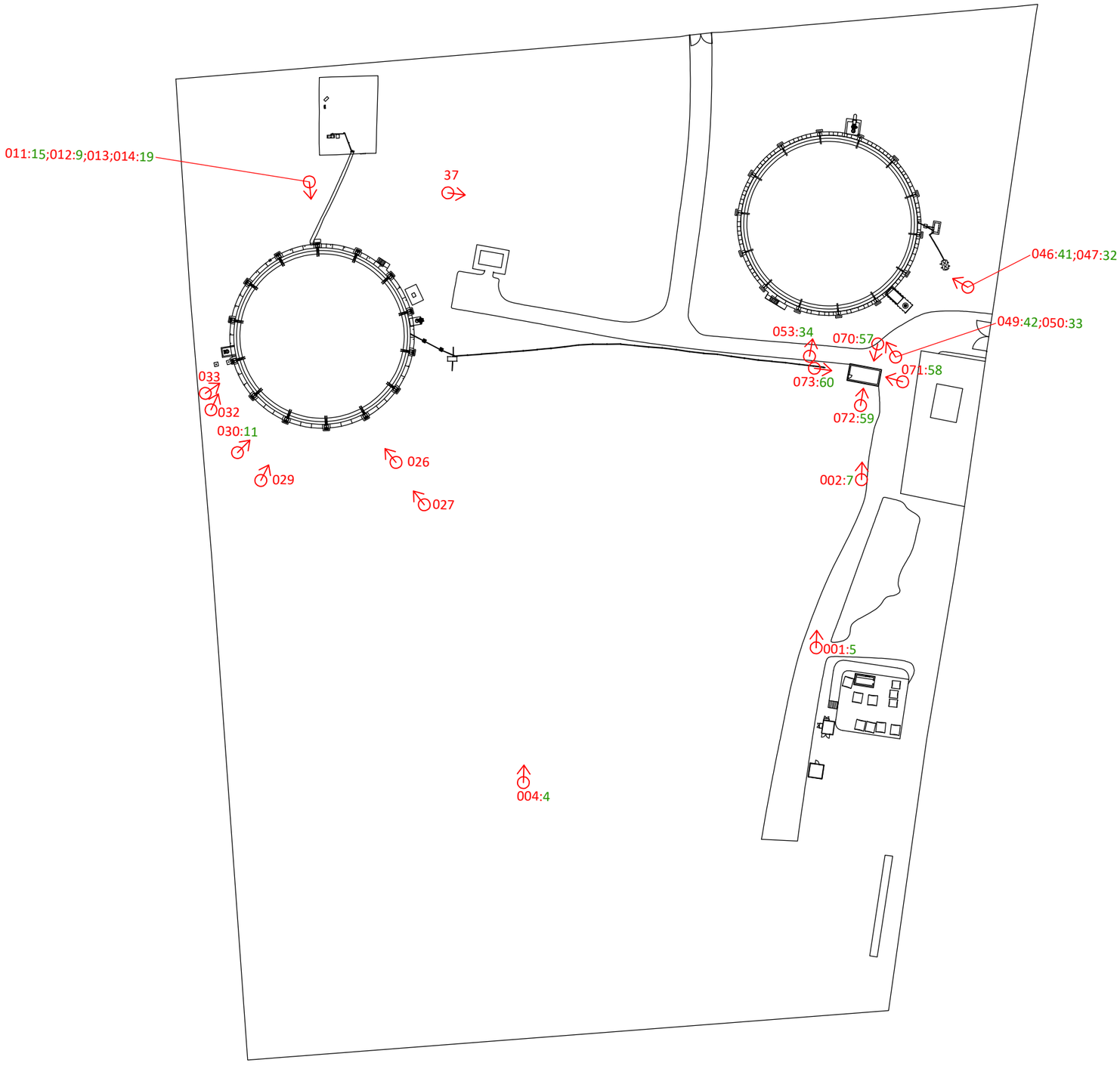


Figure A2: Gasholder Compound, Yarnton Way, Belvedere, general photo plan

01/26386_Y/REP/A2/01

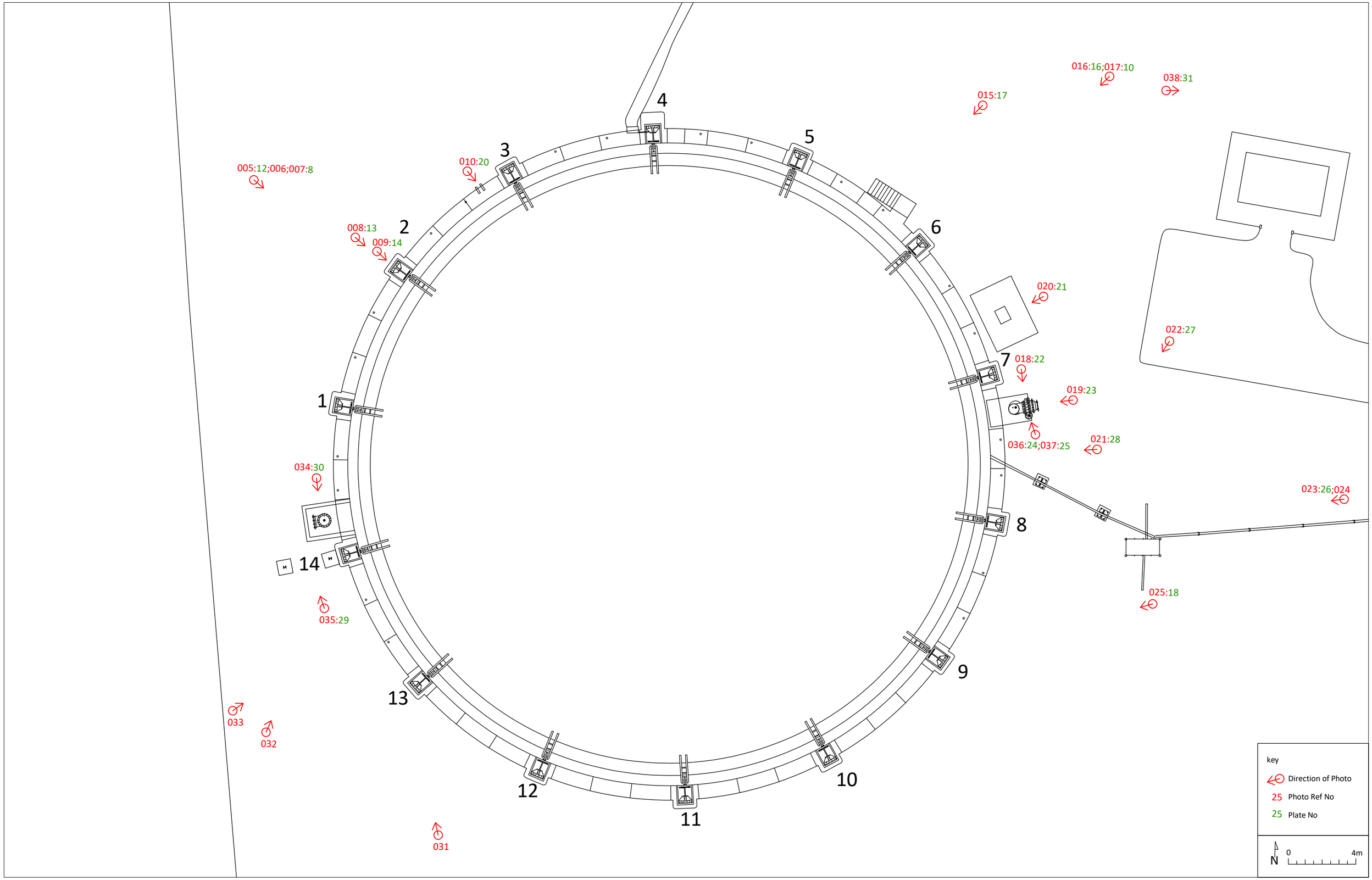


Figure A3: Gasholder No 1, Yarnton Way, Belvedere, ground plan photo plan

01/26386_Y/REP/A3/01

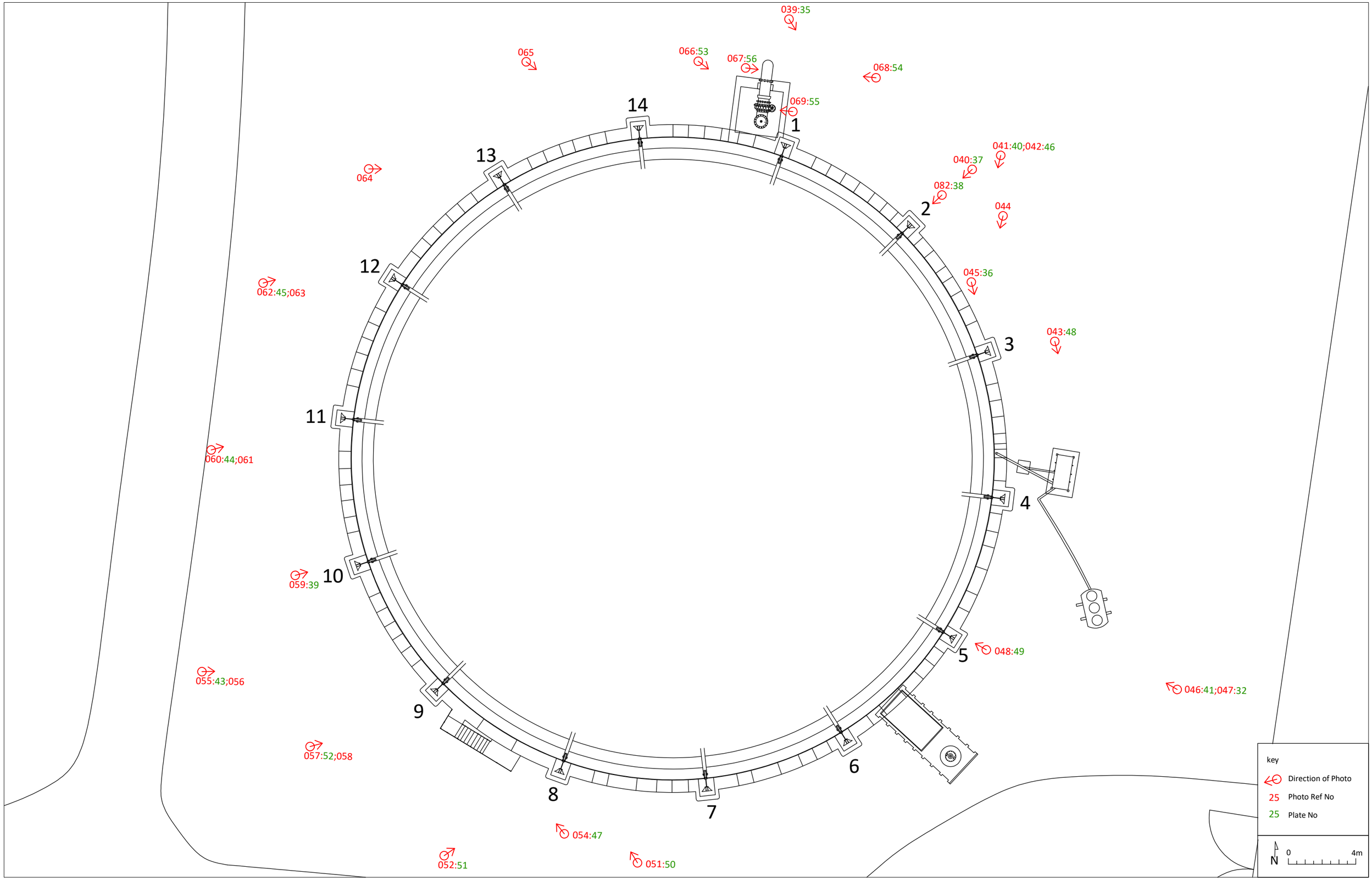


Figure A4: Gasholder No 2, Yarnton Way, Belvedere, ground plan photo plan

01/26386_Y/REP/A4/01

Figure A5: Gasholder Compound, Yarnton Way, Belvedere, additional structures to south, photo plan

01/26386_Y/REP/A5/01

APPENDIX 5: 3D LASER SCAN METADATA REGISTER

The measured survey of Belvedere Gasholders was undertaken using a Trimble TX-8 laser scanner. The TX-8 scanner is a time of flight system, capable of full dome scanning at ranges of ca. 0.6m to 120m and at resolutions of up to 92 lines per degree. Scanning was undertaken on site using resolutions as recorded below yielding a typical point-cloud resolution of between 22.6mm and 5.7mm at 30m from the instrument. Overlapping stations mean that the majority of the site is scanned at a greater resolution. The survey was controlled using spherical targets, located using a Trimble S6 total station with site control provided by a Trimble R6 GPS using the 'vrs now' service.

The laser scan data was registered in Trimble Realworks 12.0. The site drawings were produced using Rhino 7.0, AutoCAD LT 2022 and ArcGIS Pro 2.9.1.

STN	Number of points	Resolution (point spacing @ 30m)	Quality
23686Y_Scan_01	61,591,078	11.3mm	Standard
23686Y_Scan_02	61,32,069	11.3mm	Standard
23686Y_Scan_03	60,220,630	11.3mm	Standard
23686Y_Scan_04	57,533,741	11.3mm	Standard
23686Y_Scan_05	54,740,992	11.3mm	Standard
23686Y_Scan_06	207,829,216	5.7mm	Standard
23686Y_Scan_07	63,872,847	11.3mm	Standard
23686Y_Scan_08	61,925,480	11.3mm	Standard
23686Y_Scan_09	60,762,796	11.3mm	Standard
23686Y_Scan_10	58,689,085	11.3mm	Standard
23686Y_Scan_11	56,919,322	11.3mm	Standard
23686Y_Scan_12	55,504,972	11.3mm	Standard
23686Y_Scan_13	55,133,483	11.3mm	Standard
23686Y_Scan_14	56,890,218	11.3mm	Standard
23686Y_Scan_15	57,713,450	11.3mm	Standard
23686Y_Scan_16	58,985,591	11.3mm	Standard
23686Y_Scan_17	64,637,971	11.3mm	Standard
23686Y_Scan_18	17,024,936	22.6mm	Standard
23686Y_Scan_19	17,910,083	22.6mm	Standard
23686Y_Scan_20	66,124,013	11.3mm	Standard
23686Y_Scan_21	61,224,184	11.3mm	Standard
23686Y_Scan_22	55,889,528	11.3mm	Standard
23686Y_Scan_23	22,518,015	22.6mm	Standard
23686Y_Scan_24	19,060,554	22.6mm	Standard
23686Y_Scan_25	18,534,026	22.6mm	Standard
23686Y_Scan_26	19,981,459	22.6mm	Standard
23686Y_Scan_27	19,983,096	22.6mm	Standard
23686Y_Scan_28	21,949,411	22.6mm	Standard
23686Y_Scan_29	16,073,286	22.6mm	Standard
23686Y_Scan_30	230,107,309	5.7mm	Standard
23686Y_Scan_31	54,625,450	11.3mm	Standard
23686Y_Scan_32	18,646,042	22.6mm	Standard
23686Y_Scan_33	17,211,304	22.6mm	Standard
23686Y_Scan_34	57,245,216	11.3mm	Standard

23686Y_Scan_35	57,398,805	11.3mm	Standard
23686Y_Scan_36	199,597,338	5.7mm	Standard
23686Y_Scan_37	54,068,108	11.3mm	Standard
23686Y_Scan_38	55,606,742	11.3mm	Standard
23686Y_Scan_39	55,437,934	11.3mm	Standard
23686Y_Scan_40	203,141,664	5.7mm	Standard
23686Y_Scan_41	52,210,712	11.3mm	Standard
23686Y_Scan_42	60,077,249	11.3mm	Standard
23686Y_Scan_43	16,664,729	22.6mm	Standard
23686Y_Scan_44	17,400,950	22.6mm	Standard
23686Y_Scan_45	16,635,558	22.6mm	Standard
23686Y_Scan_46	58,832,665	11.3mm	Standard
23686Y_Scan_47	57,063,959	11.3mm	Standard
23686Y_Scan_48	252,631,573	5.7mm	Standard
23686Y_Scan_49	58,097,383	11.3mm	Standard
23686Y_Scan_50	56,380,136	11.3mm	Standard
23686Y_Scan_51	54,994,556	11.3mm	Standard
23686Y_Scan_52	52,921,786	11.3mm	Standard
23686Y_Scan_53	51,694,719	11.3mm	Standard
23686Y_Scan_54	210,738,894	5.7mm	Standard
23686Y_Scan_55	197,871,490	5.7mm	Standard
23686Y_Scan_56	188,905,919	5.7mm	Standard
23686Y_Scan_57	52,233,973	11.3mm	Standard
23686Y_Scan_58	13,050,366	22.6mm	Standard
23686Y_Scan_59	12,900,369	22.6mm	Standard
23686Y_Scan_60	64,799,536	11.3mm	Standard
23686Y_Scan_61	54,480,948	11.3mm	Standard
23686Y_Scan_62	51,923,393	11.3mm	Standard
23686Y_Scan_63	53,032,509	11.3mm	Standard
23686Y_Scan_64	13,254,434	22.6mm	Standard
23686Y_Scan_65	12,930,166	22.6mm	Standard
23686Y_Scan_66	12,592,517	22.6mm	Standard
23686Y_Scan_67	12,355,280	22.6mm	Standard
23686Y_Scan_68	14,800,412	22.6mm	Standard
23686Y_Scan_69	13,730,490	22.6mm	Standard
23686Y_Scan_70	14,526,089	22.6mm	Standard

APPENDIX 6: COPY OF OASIS REPORT

OASIS ID: aocarcha1-436726

Project details	
Project name	Gasholder Nos 1 and 2, Yarnton Way, Belvedere
Short description of the project	AOC Archaeology Group was commissioned by SGN to undertake a survey of two redundant gasholders, Gasholder Nos 1 and 2, at Yarnton Way in Belvedere in the London Borough of Bexley. The work has been undertaken as part of a wider programme involving the decommissioning and dismantling of the remaining redundant gasholders in the UK operated by SGN. Gasholder No 1 to the west of the site is a frame-guided holder with two lifts, an above ground tank and a nominal capacity of 1,038,897ft³ (29,418m³). It is a 'Type 47' gasholder with shallow untapered fabricated standards combined with laterally stiff, horizontal-axis girders. Gasholder No 2 is also a frame-guided holder of a similar type, although with three lifts, and a nominal capacity of 1,022,000ft³ (28,940m³). Both gasholders were constructed in the mid-20th century by Clayton and Sons Ltd, as late examples of their type, and as a standalone gasholder site.
Project dates	Start: 05-05-2022 End: 05-05-2022
Previous/future work	No / Yes
Any associated project reference codes	23686_Y - Contracting Unit No.
Type of project	Building Recording
Site status	None
Current Land use	Industry and Commerce 1 - Industrial
Monument type	GASHOLDER Modern
Significant Finds	GASHOLDER Modern
Methods & techniques	'''Laser Scanning''','''Measured Survey''','''Photographic Survey''','''Survey/Recording Of Fabric/Structure'''
Prompt	At request of SGN
Project location	
Country	England
Site location	GREATER LONDON BEXLEY BEXLEY Gasholders No1 and 2, Yarnton Way, Belvedere
Postcode	SE2 9UJ
Study area	0 Square metres
Site coordinates	TQ 549175 179365 50.939456536251 0.205215089689 50 56 22 N 000 12 18 E Point
Site coordinates	TQ 549285 179389 50.939475140496 0.205372569031 50 56 22 N 000 12 19 E Point

Project creators	
Name of Organisation	SGN
Project brief originator	Montagu Evans
Project design originator	Montagu Evans
Project director/manager	Diana Sproat
Project supervisor	Robert Usher
Project supervisor	Jamie Humble
Type of sponsor/funding body	Public Utilities
Name of sponsor/funding body	SGN
Project archives	
Physical Archive Exists?	No
Digital Archive Exists?	No
Paper Archive recipient	Greater London Historic Environment Record
Paper Contents	''none''
Paper Media available	''Report''
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Gasholder Nos 1 and 2, Yarnton Way, Belvedere, London Borough of Bexley: Historic Building Recording Phase I Interim Report
Author(s)/Editor(s)	Sproat, D
Other bibliographic details	AOC_23686_Y
Date	2022
Issuer or publisher	AOC Archaeology Group

Place of issue or publication	Edinburgh
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Entered by	Diana Sproat (diana.sproat@aocarchaeology.com)
Entered on	19 May 2022









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