



THE
ENVIRONMENT
PARTNERSHIP



GASHOLDER AT FIRST AVENUE MILLBROOK, SOUTHAMPTON HISTORIC BUILDING REPORT

TEP

The Reynard Suite,
Bowden Business Village,
Market Harborough,
Leicestershire,
LE16 7SA

Tel: 01858 383120
E-mail: mh@tep.uk.com
www.tep.uk.com

Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Document Title	Historic Building Report
Prepared for	Montagu Evans LLP on behalf of National Grid
Prepared by	TEP - Market Harborough
Document Ref	8903.003

Author	Amir Bassir
Date	November 2022
Checked	Franki Webb
Approved	Jason Clarke

Amendment History					
Version	Date	Modified by	Check / Approved by	Reason(s) issue	Status
1.0	01.02.23	AB	FW/JC	Draft for client review	Draft





OASIS Report Form

The Environment Partnership (TEP)

Job Number:	8903
Project Name:	Gasholder at First Avenue, Southampton
OASIS Number:	Theenvir1-429517

PROJECT DETAILS:		
Short description	<p>The Environment Partnership (TEP) Ltd undertook a programme of historic building recording of a gasholder located at First Avenue, Millbrook, Southampton, ahead and during its demolition. The work was carried out to Historic England level 2 standards and included a photographic survey of the exterior and interior of the gasholder.</p> <p>The gasholder was spirally-guided with an above-ground tank and three lifts. It was a late example of this type and was constructed in the late 1950s or early 1960s as a regional distribution holder. The gasholder's overall design, form and method of operation was found to be typical of gasholders of its type and period, at which time, following a national switch from town gas to North Sea natural gas Britain's stock of gasworks had become redundant and were subject to widespread demolition with only the gasholders retained as part of regional distribution networks</p>	
Project type	Historic Building Recording	
Previous work	None	
Current land use	Disused gasworks	
Future work	Unknown	
Monument type and period	Post medieval and modern gasholders	
Significant finds	None	
PROJECT LOCATION:		
County	Hampshire	
Site address	First Avenue, Millbrook, Southampton, So15 0LG	
Easting Northing	SU 37789 13229	
Area (sq ,/ha)	-	
Height aOD	-	
PROJECT CREATORS:		
Organisation	The Environment Partnership Ltd (TEP)	
Project brief originator	Montagu Evans LLP	
Project design originator	The Environment Partnership Ltd (TEP)	
Director/Supervisor	Amir Bassir	
Project manager	Jason Clarke	
Sponsor or funding body	National Grid	
PROJECT DATE:		
Start date	April 2022	
End date	February 2023	
ARCHIVES:	Contents	Location (Accession No.)
Physical	None	
Paper	None	
Digital	Report and Illustrations, Photographic Archive	
BIBLIOGRAPHY:		
Title	Gasholder at First Avenue, Millbrook, Southampton, Historic Building Recording Report	
Serial title & volume	8903.003	
Author(s)	Amir Bassir	
Page numbers	33	
Date	01/02/2023	

CONTENTS	PAGE
Executive Summary	2
1.0 Introduction	3
2.0 Objectives and Methodology	4
3.0 Historic Background	5
4.0 The Gasholder	8
5.0 Discussion	11
6.0 Photographic Survey	12
References	26

FIGURES	PAGE
Figure 1 View of the gasholder from the east	12
Figure 2 View of the gasholder from the west	12
Figure 3 Detail of the tank construction at the base.....	13
Figure 4 View of the tank and anti-freeze pipes, showing the base of gasholder and embankment	13
Figure 5 View of the tank stair with inlet / outlet pipes at the left of image	14
Figure 6 Detail of stair landing and walkway with roller carriage supports	14
Figure 7 View of the crown, lifts and walkway, looking north from the east side of the gasholder	15
Figure 8 General view of the crown, looking west	15
Figure 9 Detail of anti-freeze reservoirs	16
Figure 10 Example of the roller carriages.....	16
Figure 11 Example of the lift stairs	17
Figure 12 The inlet / outlet pipes	17
Figure 13 Flow valves attached to the inlet / outlet pipes	18
Figure 14 General view of the interior of the gasholder showing crown frame and support .	18
Figure 15 View of the crown support	19
Figure 16 View of the crown frame.....	19
Figure 17 Detail of the crown frame support and lower anchor ring of the crown pin	20
Figure 18 View of the crown apex	20
Figure 19 View of the crown frame trusses and join to vertical stiffeners.....	21
Figure 20 View of the inlet and outlet pipes.....	21

Figure 21 Detail of the upper level of the inlet / outlet pipes	22
Figure 22 View of the inside face of the crown lift, showing vertical stiffeners and attachments for spiral rails	22
Figure 23 View of inside face of lifts, showing rest blocks and vertical stiffeners	23
Figure 24 Section of the tank and lifts	23
Figure 25 View looking up, showing the crown top curb and section of lifts and tank with grips in place.....	24
Figure 26 Detail of the riveted steel floor surface	24
Figure 27 Example of the embankment stairs	25
Figure 28 The modern boiler room with lagged pipes.....	25

APPENDICES

APPENDIX A: Figures

APPENDIX B: Photographic Register and Contact Sheets

DRAWINGS

G8903.001 Site Location Plan

D8903.001 Plan of the Gasholder, Showing Photograph Locations

Executive Summary

1. The Environment Partnership (TEP) Ltd undertook a programme of historic building recording of a gasholder located at First Avenue, Millbrook, Southampton, ahead and during its demolition. The work was carried out to Historic England level 2 standards and included a photographic survey of the exterior and interior of the gasholder.
2. The gasholder was spirally-guided with an above-ground tank and three lifts. It was a late example of this type and was constructed in the late 1950s or early 1960s as a regional distribution holder. The gasholder's overall design, form and method of operation was found to be typical of gasholders of its type and period, at which time, following a national switch from town gas to North Sea natural gas Britain's stock of gasworks had become redundant and were subject to widespread demolition with only the gasholders retained as part of regional distribution networks.

1.0 Introduction

- 1.1 The Environment Partnership (TEP) Ltd were instructed by Montagu Evans LLP on behalf of National Grid to undertake a programme of historic building recording of a gasholder prior to and during its demolition. The single gasholder was located at First Avenue, Millbrook, Southampton, SO15 0LG (NGR SU 37789 13229).
- 1.2 An initial survey (Phase 1) was undertaken in April 2022 ahead of planned demolitions and a second survey (Phase 2) was carried out in October 2022 at the commencement of demolitions to record the interior structure prior to removal.
- 1.3 A Written Scheme of Investigation (WSI) was produced outlining the site background and proposed methodology, resources and programme, and assessment and recording methodology. It was prepared in accordance with Historic England guidelines for Basic Level 2 recording as set out in the document *Understanding Historic Buildings, A Guide to Good Recording Practice* (HE 2016) and the Historic England document *Gasworks and Redundant Gasholders: Guidelines for their Evaluation and Recording* (HE 2019).
- 1.4 This programme of works is in response to a Historic Building Recording brief by Montagu Evans (Montagu Evans 2021) and in accordance with current best practice as defined in the Chartered Institute for Archaeologists' *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (ClfA 2014) and the Historic England document *Management of Research Projects in the Historic Environment* (HE 2015b).
- 1.5 An interim report providing an initial description of the gasholder following the Phase 1 survey was provided and is superseded by this report (TEP 2022).
- 1.6 The local planning authority is Southampton City Council and the Historic Environment Record is held by the Southampton Historic Environment Record.

Location and Topography

- 1.7 The gasholder station is located in the Millbrook area of Southampton on the western side of the city. The site lies on the immediate north of the Southampton to Christchurch railway line and is accessed from First Avenue. To the south of the railway line lies the extensive Western Docks and the surrounding area is principally comprised of light industrial units and storage and distribution facilities. The River Test enters Southampton Water in the area of the Western Docks. The gasholder station comprises a compact compound with PRS station and the gasholder occupying the main portion of the compound.
- 1.8 The underlying bedrock geology has been mapped as comprising the Earnley Sand Formation, which is formed of marine deposits of the Palaeogene Period. This is overlain by Quaternary river terrace deposits of sand and gravel, as well as tidal flat deposits of silt and clay.

2.0 Objectives and Methodology

- 2.1 The overall objectives of the work as outlined in the brief and WSI were to:
- Produce a comprehensive drawn, photographic, and written record of the gasholder and associated infrastructure prior to and during demolition,
 - Provide a written account of the site, analysing any features of archaeological, historic, or architectural interest, and to disseminate these findings in the form of a report and orderly archive.
- 2.2 The level of recording was specified as Basic Level 2, providing a descriptive record of the structure before and during demolition where it is known or suspected to retain limited historic significance. This provides a basic record in accordance with the Historic England document, *Understanding Historic Buildings: A Guide to Good Recording Practice* (HE 2016) and *Gasworks and Redundant Gasholders, Guidelines for their Evaluation and Recording* (HE 2019).
- 2.3 Specific objectives highlighted in the brief are as follows:
- Use of historical survey drawings for comparable investigation relating to building form and function, identification of fixtures and fittings where visible or accessible;
 - Provide an account of fixtures, fittings and architectural features where visible or accessible;
 - Provide a photographic record of the structures in their context.
- 2.4 Phase 1 recording was undertaken on 7th April 2022 and included a photographic record comprising general views of the site and gasholder and associated structures and pipework. Detailed photographs were taken of structural and mechanical elements. Photography was carried out using a Nikon D3500 camera with Nikon 18-70mm and 10-20mm lenses, in fine and RAW format. Photographic scales were included in views where possible. Due to safety concerns access to the top of the gasholder was restricted to the tank stair landing.
- 2.5 Phase 2 recording was undertaken on 31st October 2022 at the commencement of demolitions and included a photographic record of the interior of the gasholder with crown frame in situ.

3.0 Historic Background

Gas supply in Southampton

- 3.1 A history of the Southampton Gaslight and Coke Company is provided in a 1949 commemorative booklet produced by the company. A scan of the document is available from the National Gas Archive (NGA ref G11/SHM/6979). Southampton is noted as being one of the first towns to have a gas supply with a gas works being constructed in 1819. This was taken over four years later by a private Company until 1848 when the Southampton Gaslight and Coke Company was incorporated by an Act of Parliament. This Act, along with further Acts and Orders such as the 1936 Southampton Gas Order, led to an expansion of the Company's supply area from the town of Southampton only, to an area of 188 square miles, extending from Lyndhurst, Cadnam and Fawley in New Forest, to Botley and Hamble in the east, and Winchester to the north.
- 3.2 From the early 1900s until the interwar period the Company experienced a steady decline in customer gas consumption due to the use of electricity for lighting, as well as the increased efficiency of gas-burning appliances. Demand increased in the late 1930s and in the wartime era due to increased industrial load and usage of gas for munitions, ship repairs and aircraft manufacturing. The Company was geographically advantaged with easy access to Durham coal which was delivered by sea. During both the First and Second World Wars the Company experienced labour shortages and female labour was extensively employed, making up to 50% of the workforce.
- 3.3 The Company was also subject to repeated incidents of air attack due to the militarily strategic location of Southampton and presence of military targets. Southampton experienced 57 air raids and the Southampton Gasworks was put out of action on three occasions with the severest being a daylight raid on September 26th during which 50 high explosive bombs were dropped in the vicinity of the Southampton Gas Works, of which at least 27 landed on the works, destroying one carbonising and water gas plant, one gasholder, purifiers, power house, and resulting in 27 employee casualties, 11 unfortunately fatal. The gasworks was brought back up 80% production by 23rd November. Repeated raids across the City resulted in widespread destruction of gas mains which required regular repairs, and the total loss of the Company's main showrooms, a branch showroom and distribution offices.

- 3.4 The Southampton Gas Works was located on Britannia Road, Northam, and included wharves with electric cranes fronting the River Itchen from which coal was delivered from steamers, each carrying 1800-2000 tones (GJ/199/V202/P801). The Company is described in 1948 as having a total productive capacity of 11.5 million cubic feet per diem, with the whole of the Southampton Gas Works occupying a site of 15.5 acres. The Works included Carbonising Plant with 19 beds of 8 horizontal retorts, Carburetted Water Gas Plant, Exhausters, Washers and Rotary Scrubbers, and Purifiers. Storage was provided by a number of small gasholders of 'old design' a two-lift column-guided gasholder of 2 million cubic feet erected in 1902 and a 3.5 million cubic feet spirally-guided gasholder erected by R and J Dempster in 1934. The Company also operated the Winnall Gas Works at Winchester which had a production capacity of 1.5 million cubic feet per diem. As well as these Works the Company operated holder stations at Eastleigh and Redbridge, each site being equipped with boosters to facilitate even distribution of gas during peak load periods.
- 3.5 The 1948 commemorative booklet provides an indication of the Company's future development plans. The Southampton Works is noted being cramped and any development would require a drastic rearrangement of plant with the objective to raise the effective output of gas from 10 million to 20 million cubic feet per diem. Plans for such a development were prepared but were halted due to the onset of War and it is noted that following cessation of the War these plans were being forwarded for immediate action. These included new carburetted water gas plant, purifiers, exhausters, and compressing and boosting plant, to be followed by additional carbonising plant, coke screening and storage and holder capacity.
- 3.6 It is further noted that the area was experiencing severe housing shortage problems and that large construction schemes were underway or set to commence, including an estate of 3000 houses at Millbrook. These houses were frequently equipped with gas cookers rather than electrical appliances.
- 3.7 Following nationalisation the Company was vested in the Southern Gas Board.

First Avenue Gasholder Station

- 3.8 The gasholder station is recorded as being built by 1962 to provide additional storage and supply to the local area (Thomas 2020).
- 3.9 The first edition Ordnance Survey map of 1883 demonstrates that the area presently comprising the Western Docks was at that time yet to be developed though the railway line had been constructed by that date. Millbrook, to the east of the site and Redbridge to the west comprised distinct settlements which had not yet been amalgamated into the City. The area immediately surrounding the site is seen to have comprised of fields; the Redbridge Vitriol Works and the Linseed Oil and Oilcake Mills were located on the south-eastern of Redbridge adjacent to the railway line and the Old Canal. The map of 1897 demonstrates an expansion of industry in the Redbridge area with new rail sidings branching around the new Redbridge Wharf located on the site of the mill. The Vitriol Works is labelled as disused.

- 3.10 By 1910 the area between Millbrook and Redbridge had been partly subdivided and new development had taken place including the construction of a Power Works on the site of the former Vitriol Works. A timber pond is labelled adjacent to the wharf. By 1933 the Powder Works was disused. The area of the site remained undeveloped and the area to the immediate south of the railway line is labelled as sports ground. New areas of residential development had taken place on the periphery of Redbridge, Millbrook and Southampton. By 1947 a foundry had replaced the former powder works and both residential and industrial growth is evident around Redbridge and at Millbrook which had by this date become fully enveloped with new residential development on its eastern side.
- 3.11 The map of 1951-2 shows the expansion of industry to the south of the railway lines with new sidings and gantries being constructed between the railway line and the river, serving the foundry, the saw mills and Permanent Way Works. The site itself as yet remained undeveloped. The map of 1954-68 shows the present gasholder in place and the area to the north of the railway lines was now developed with new works and factories. The areas of Redbridge and Millbrook had by the 1960s become joined and formed an area of continuous development with the city. The principal area of industrial development was on the north side of the railway lines (Millbrook Trading Estate). During the 1970s-1980s the area to the south of the railway began to be developed through reclamation and development of mudflats on the north bank of the River Test. The gasholder station did not serve at any point as a town gas manufacturing facility instead comprising only a single gasholder for distribution purposes.

4.0 The Gasholder

- 4.1 The gasholder was spirally-guided with an above-ground tank and had three lifts. It was constructed in the late 1950s or early 1960s as a regional distribution holder. The gasholder occupied a restricted compound with a pressure reduction station (PRS) in the eastern corner of the site and a boiler house for the anti-freeze system located to the immediate south-east of the gasholder. To the immediate south / west of the gasholder station were active railway lines.
- 4.2 A gasholder basic data sheet was not available for this report and details of the gasholder such as capacity, height of lifts sheeting thickness, and manufacturer details are not known. Very little information about the site is held by the National Gas Archive.
- 4.3 The tank was approximately 51m in diameter and from base to walkway measured 10.9m in height. The tank was of a standard form for spirally-guided gasholders of the period, comprising eight courses of overlapping steel plates staggered and joined with rivets, with overlap plates placed over the vertical joints. Example courses were measured as 1.2m and 1.5m in height. Viewed during demolition it was observed that the lifts were formed of 11 courses of narrow linear sheets riveted at the edges; spiral rail plates were arranged in the typical fashion, angled at 45 degrees and riveted to the outer face of each lift.
- 4.4 A narrow trench encircled the base of the gasholder, with earth banks rising up such that the base of the gasholder was set lower than the surrounding ground level. Three sets of stairs were located around the perimeter for ease of descending the embankment. These stairs were of a simple concrete construction, partially embedded in the embankment. Around the top of the tank was a walkway supported by tapered plates which also served to support the tank roller carriages. Access to the tank walkway was by means of an external stair located on the east side of the gasholder. The stair was entirely steel construction with the strings comprising steel beams and the textured treads riveted in place. A mid-length landing was supported over a lattice steel column. Simple steel handrails of circular bars were installed on the edge of the stair and continued around the edge of the tank walkway and the lifts.
- 4.5 The tank annulus (gap between tank wall and first lift) was relatively wide and the railings formerly located around the edge of the tank had been removed, thus preventing safe access for this survey. The outer railings were supported by vertical stanchions and there were toe guards along the edge of the walkway. The walkway surface comprised of solid steel plates, textured for grip. The roller carriages were of the dual roller design with each roller axel being housed separately in a square steel box. The axel housings were bolted to a simple frame of C-section steel beams which were in turn supported by tapered plates below the walkway. The roller carriage axels projected over the annulus and were supported from below by a straight vertical column. The lift grips were square section and the lifts had riveted construction.
- 4.6 The lift stairs were of a typical form, comprising 45-degree angle steps supported on a frame of webbed vertical and horizontal girders, and braced with diagonal steel angles.

- 4.7 The crown was comprised of steel plates arranged in concentric courses radiating from the centre in the typical manner. The steel plates were riveted together. A pair of circular manholes were located at the edge of the crown on its eastern side where the inlet / outlet pipes were positioned. Three syphons / vents were located along side each other at the east side of the crown. At the centre of the crown was a valve.
- 4.8 The crown frame was of a typical construction, comprising a steel frame with primary and secondary rafters radiating from a central pin to the top curb. The primary rafters consisted of I-section top curbs and angle and flat bar lower chords joined with vertical and diagonal bracing and meeting triangular gusset plates at each vertical stiffener on the inside face of the crown lift. The lower chord of each rafter descended to join a collar at the base of the central pin. The secondary rafters were of a similar construction but stopped short of the central pin, joining a concentric purlin at a short distance from the crown apex. The crown pin consisted of welded steel drums and included concentric anchors at the top and bottom.
- 4.9 When at rest the crown frame was supported on a free-standing stanchion located at the centre of the gasholder. This was a square plan structure of bolted and riveted steel angles and flat bars, tapering towards the top.
- 4.10 On the inside face of the lifts were a series of vertical stiffeners providing structural stability to the lifts. On the crown lift these consisted of I-section steel joists and at the base of each was a bolted triangular block which passed under the edge of the lift and cup. On the first and second lifts the vertical stiffeners consisted of channel section joists. The tank was fitted with more substantial supports on its internal face consisting of vertical girders with pairs of channel joists joined with horizontal and diagonal flat bar bracing.
- 4.11 Closely spaced rest blocks consisting of lengths of I-section steel joists were positioned around the edge of the tank, forming an elevated base on which the lifts would rest when in the lowest position.
- 4.12 The inlet and outlet pipes were located adjacent to each other at the south-east side of the gasholder; on the outside of the gasholder both pipes rose to the height of the tank and dropped down to a buried tank, rising again inside the gasholder. This is a typical feature of mains pipes to prevent flooding of the system. The pipes were welded steel with externally flanged and bolted curved angles at the top. Flow valves were located at the base of the gasholder. Viewed from within the gasholder the pipes rose side by side to the level of the crown surface and were braced by steel straps bolted to the floor.
- 4.13 The concrete base of the gasholder was surfaced with riveted steel sheets arranged in staggered linear courses and overlapping at the edges. These were joined to the tank walls by means of an angle curb.

- 4.14 The gasholder utilised steam anti-freeze and a boiler house was located at the south-east side of the gasholder. The boiler house was a modern structure with corrugated metal walls and was not accessed during this survey. Lagged pipes crossed to the gasholder on an elevated gantry and were carried around the east, north and south sides of the gasholder at c1.5m off the ground, rising in three locations to the top of the tank and connecting to the lifts. The flexible pipes to the lifts were supported on simple upright stanchions located on the tank walkway and lift grips.
- 4.15 The gasholder included a range of modern telemetry, alarms and other electrical equipment used to monitor pressures and levels and were fitted around the tank walkway and lifts. At ground level on the east side of the gasholder were electrical boxes labelled 'holder stock pressure transmitter' and 'pressure difference switch'.
- 4.16 No gasholder designation numbers, or manufacturer labels were found attached to or painted on the gasholder.

5.0 Discussion

- 5.1 The surveyed gasholder was a very late example gasholder, dating to the late 1950s to early 1960s with very few examples being built following the 1970s. As was typical of gasholders of this later period it was of the spirally guided form which came to supersede frame-guided and column-guided gasholders that were typical of the late 19th and early to mid-20th centuries. This design provided advantages in terms of cost of construction and materials. It also provided some functional advantages for overall structural stability, ease of repairs, and was susceptible to problems during movement of the lifts. Spirally-guided gasholders could also accommodate a greater number of lifts and represented a considerable increase of storage capacity within the available footprint. The above-ground tank was also typical of gasholder construction where a new site was being utilised; below-ground tanks are commonly found where an earlier gasholder was being replaced to provide increased capacity.
- 5.2 The primary construction material was mild steel which had replaced cast iron and wrought iron by the early 20th century, and the steel sheets were riveted which is also typical of the early to mid-20th century period but was replaced with welding as the favoured fabrication method during the 1960s onwards.
- 5.3 The gasholder station did not originate or function as a manufacturer of town gas; its date of construction followed the Nationalisation of gas in 1949, and from the 1950s onwards there was a switch from town gas to North Sea natural gas which saw the widespread closure of gas works', retaining only the gasholders which served as a national distribution and supply network and frequently represented the only surviving elements of the former gas works sites.

6.0 Photographic Survey



Figure 1 View of the gasholder from the east



Figure 2 View of the gasholder from the west



Figure 3 Detail of the tank construction at the base



Figure 4 View of the tank and anti-freeze pipes, showing the base of gasholder and embankment



Figure 5 View of the tank stair with inlet / outlet pipes at the left of image

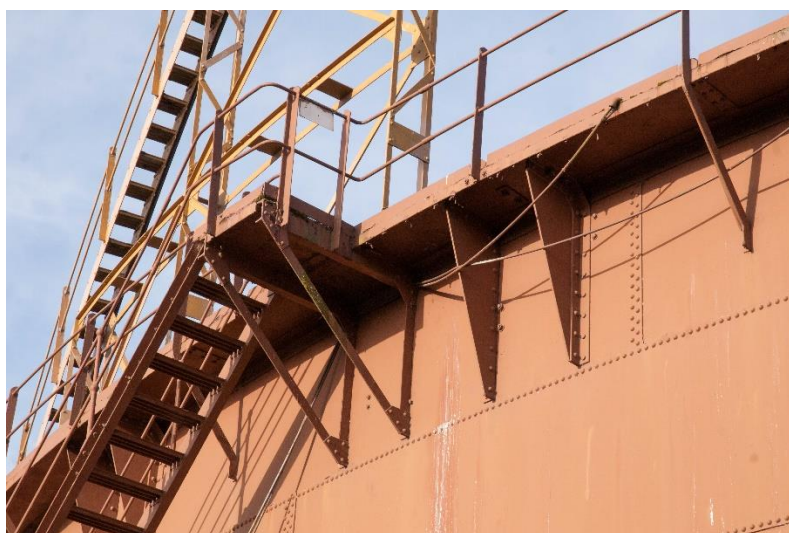


Figure 6 Detail of stair landing and walkway with roller carriage supports



Figure 7 View of the crown, lifts and walkway, looking north from the east side of the gasholder

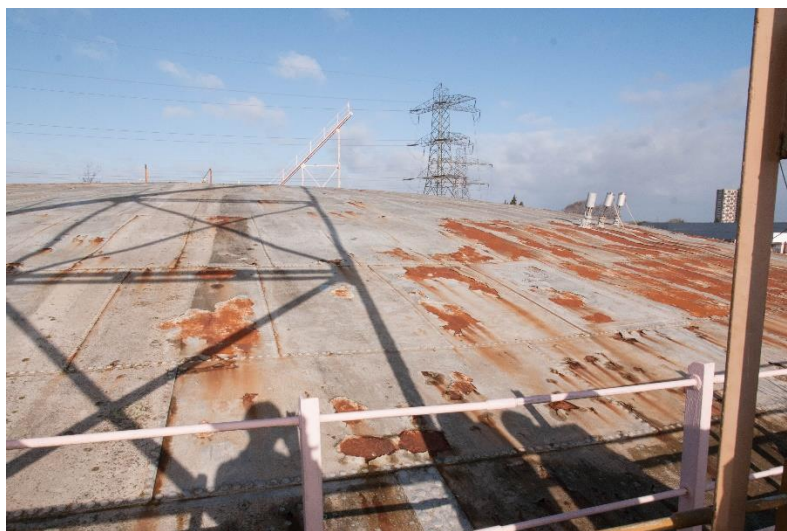


Figure 8 General view of the crown, looking west



Figure 9 Detail of anti-freeze reservoirs

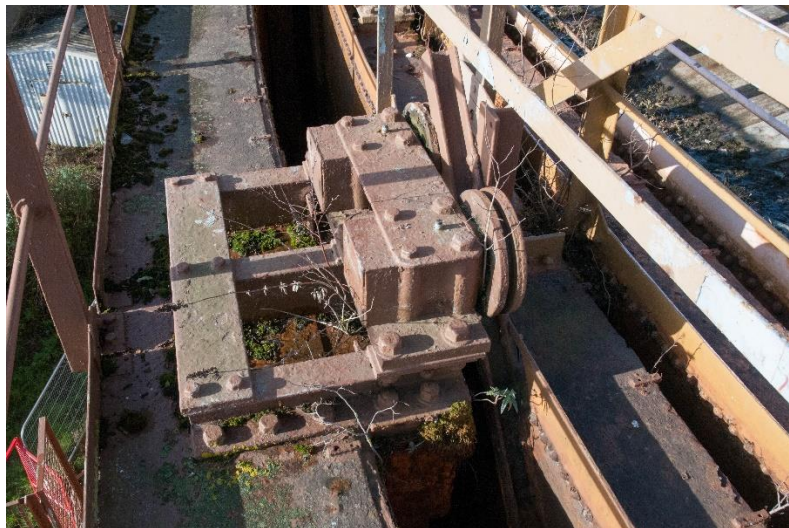


Figure 10 Example of the roller carriages



Figure 11 Example of the lift stairs



Figure 12 The inlet / outlet pipes



Figure 13 Flow valves attached to the inlet / outlet pipes



Figure 14 General view of the interior of the gasholder showing crown frame and support



Figure 15 View of the crown support

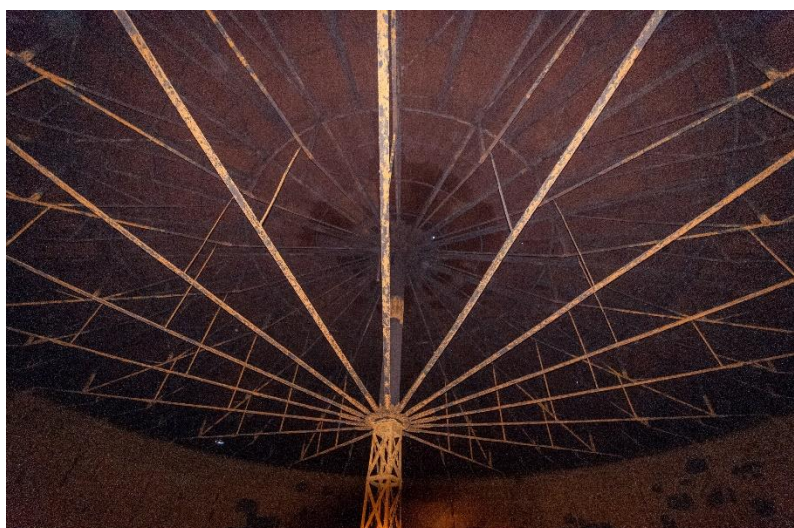


Figure 16 View of the crown frame



Figure 17 Detail of the crown frame support and lower anchor ring of the crown pin

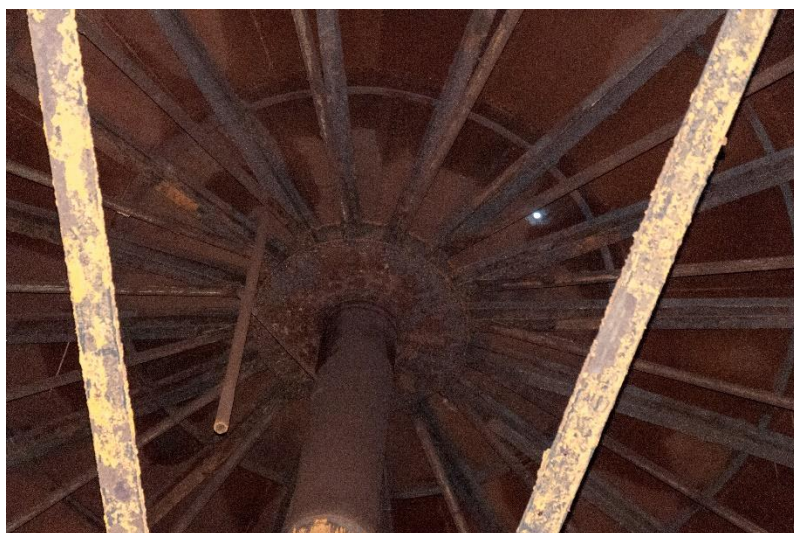


Figure 18 View of the crown apex



Figure 19 View of the crown frame trusses and join to vertical stiffeners



Figure 20 View of the inlet and outlet pipes

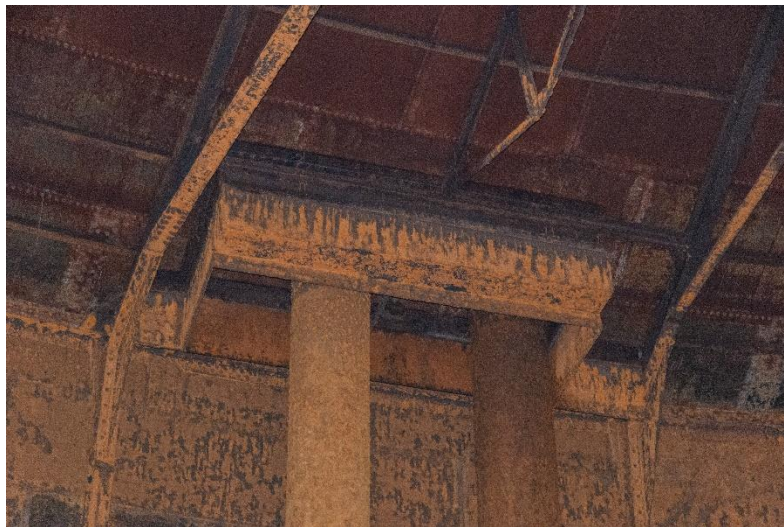


Figure 21 Detail of the upper level of the inlet / outlet pipes



Figure 22 View of the inside face of the crown lift, showing vertical stiffeners and attachments for spiral rails



Figure 23 View of inside face of lifts, showing rest blocks and vertical stiffeners



Figure 24 Section of the tank and lifts

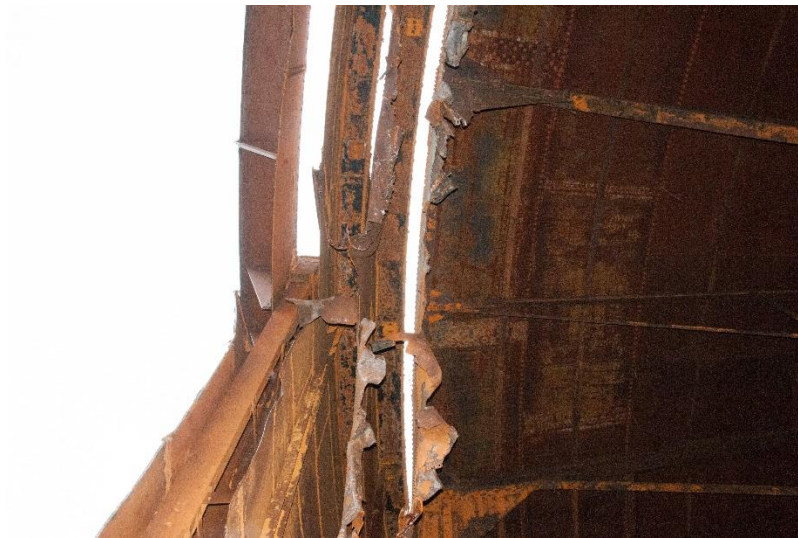


Figure 25 View looking up, showing the crown top curb and section of lifts and tank with grips in place



Figure 26 Detail of the riveted steel floor surface



Figure 27 Example of the embankment stairs



Figure 28 The modern boiler room with lagged pipes

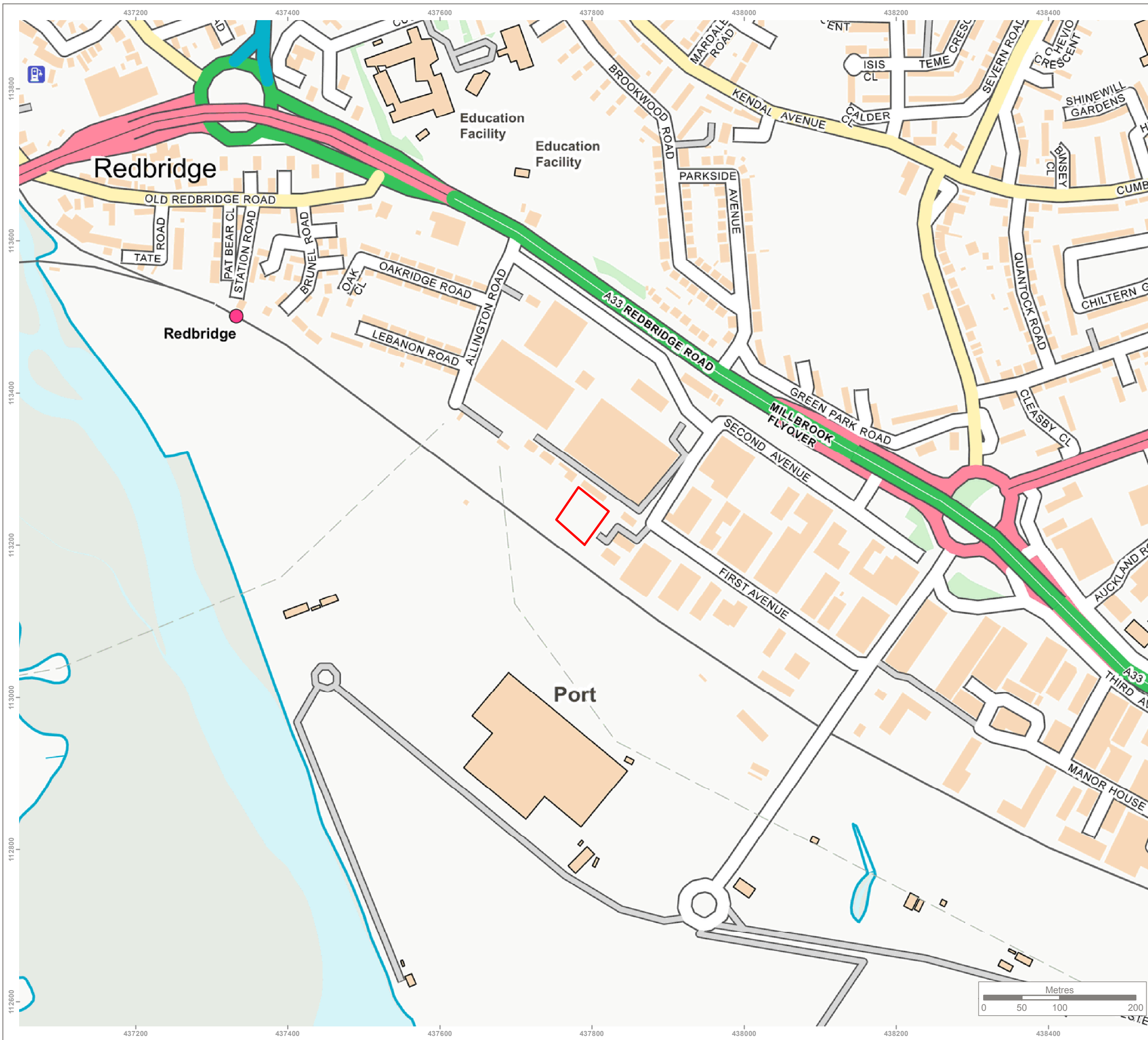
References

- British Geological Survey, 2021, Geology of Britain Viewer, <https://www.bgs.ac.uk/map-viewers/geology-of-britain-viewer/>
- Chartered Institute for Archaeologists 2014, *Code of Conduct*
- Chartered Institute for Archaeologists 2020, *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures*
- Historic England 2019, *Gasworks and Redundant Gasholders: Guidelines for their Evaluation and Recording*
- Historic England, 2016, *Understanding Historic Buildings, A Guide to Good Recording Practice*
- Historic England, 2015, *Management of Research Projects in the Historic Environment*
- Montagu Evans 2021, *National Grid, First Avenue, Southampton, SO15 0LG, Brief for Historic Building Recording*
- Southampton City Council, 2016, *Standards for the Creation, Compilation and Transfer of Archaeological Archives*
- TEP 2022, *Gasholder at First Avenue, Millbrook, Southampton, Written Scheme of Investigation*, The Environment Partnership, 8903.001
- Thomas, R, 2020, *The Manufactured Gas Industry: Volume 3 Gazetteer*

DRAWINGS

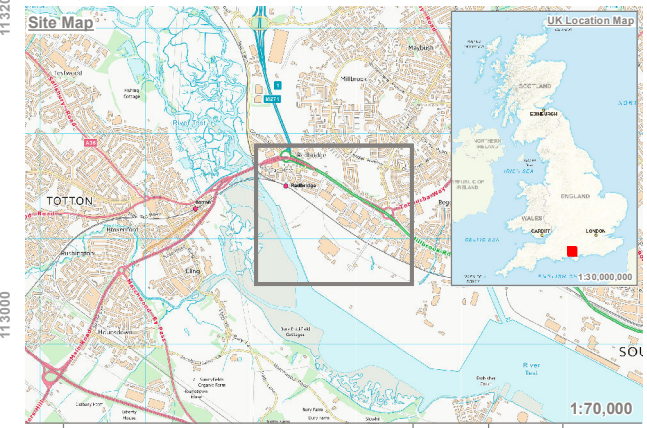
Drawing 1 – G8903.001 Site Location

Drawing 2 – D8903.001 Plan of the gasholder, showing photograph locations



KEY
 Site boundary

Reproduced by permission of Ordnance Survey on behalf of Her Majesty's Stationery Office.
 Contains OS data © Crown Copyright and database right 2021. All rights reserved.



Rev	Description	Drawn	Approved	Date

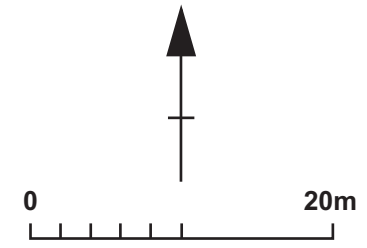
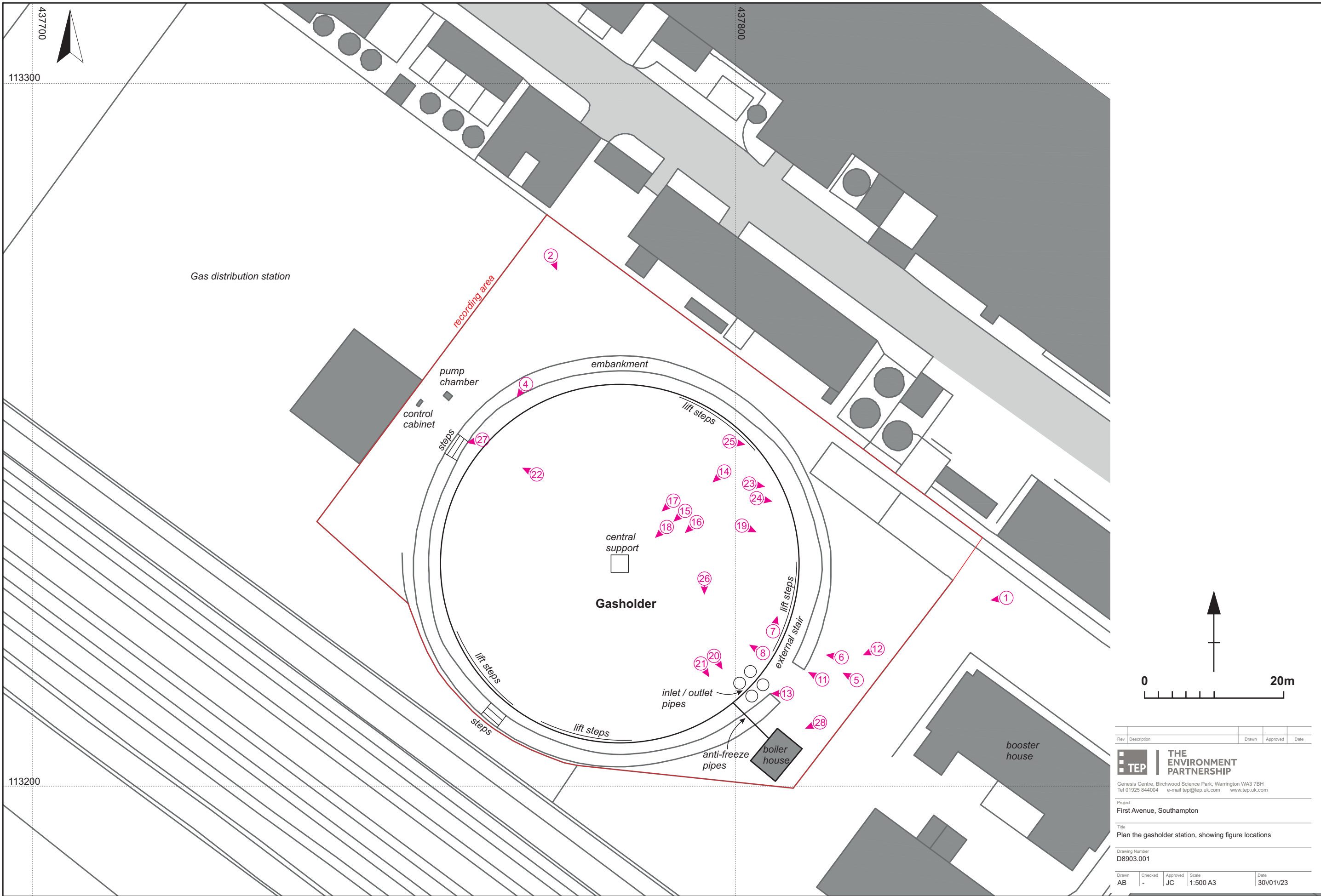
TEP | **THE ENVIRONMENT PARTNERSHIP**
 The Reynard Suite - First Floor Offices,
 Bowden Inn Farm, Market Harborough, LE16 7SA
 Tel 01858 353120 e-mail tep@tep.uk.com www.tep.uk.com

Project
First Avenue, Millbrook, Southampton


Title
Site Location

Drawing Number
G8903.001

Drawn	Checked	Approved	Scale	Date
AB	-	JC	1:5,000 @ A3	09/07/2021



Rev	Description	Drawn	Approved	Date


THE ENVIRONMENT PARTNERSHIP
 Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
 Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project:
First Avenue, Southampton

Title:
Plan the gasholder station, showing figure locations

Drawing Number:
D8903.001

Drawn	Checked	Approved	Scale	Date
AB	-	JC	1:500 A3	30/01/23

APPENDIX A: Photographic Register and Contact Sheets

Southampton, First Avenue Gasholder Station

07/04/2022, 31/10/2022

Nikon D3500, Nikon 10-20mm, 18-70mm Lens

File / Photo No.	Description
_DSC6992	View of gasholder from NE, looking SW
_DSC6993	View of lift stair
_DSC6994	Inlet and outlet pipes at SE of tank
_DSC6996	View of tank stair at E of tank
_DSC6998	Upper level of inlet / outlet pipes
_DSC6999	View of gasholder from S, looking N
_DSC7000	View of gasholder from W, looking E
_DSC7002	View of gasholder from N, looking S
_DSC7005	General view of tank walkway and supports
_DSC7008	General view of tank sheeting
_DSC7009	General view of side of gasholder on its NE side
_DSC7011	View of lagged pipes and valves at NW side of gasholder
_DSC7012	General view of embankment and base of tank at NW side of gasholder, looking N
_DSC7013	Detail of tank sheeting
_DSC7017	General view of gasholder embankment with lagged pipes at NW
_DSC7018	Example of embankment stairs at SW of gasholder
_DSC7019	The inlet / outlet pipes at E of gasholder
_DSC7021	Detail of inlet / outlet pipe valves
_DSC7022	View of the tank stair at E side of gasholder
_DSC7023	Electrical boxes and switches at E side of gasholder
_DSC7024	Embankment and base of tank stair at E of gasholder
_DSC7025	View of tank and tank stair from E, looking S
_DSC7026	General view of tank from NE, looking W
_DSC7027	View of tank landing and tank walkway
_DSC7028	Embankment stair at NW of gasholder
_DSC7029	Detail of tank and pipe access
_DSC7030	Anti-freeze boiler house at the SE side of gasholder
_DSC7031	Lagged pipes connecting boiler house and gasholder
_DSC7032	View of crown from stair landing, looking W
_DSC7033	Detail of hydrostatic reservoirs
_DSC7034	View of inlet / outlet pipe access covers on crown
_DSC7035	Example of tank roller carriages
_DSC7036	General view of tank walkway
_DSC7038	View of lift grips
_DSC7041	Anti-freeze pipe supports at NE side of gasholder
_DSC7042	General view crown, looking N
_DSC7043	Elevated view of PRS compound at E side of gasholder
_DSC7044	General view of crown, lifts and walkway
_DSC7045	Example of lift roller carriages
_DSC7046	View of lift stair from tank stair
_DSC7051	Example of tank roller carriages
_DSC7052	View of tank walkway
_DSC8504	The crown top curb, showing vertical stiffeners and rafter joins
_DSC8522	View of crown frame rafters
_DSC8532	Interior of gasholder
_DSC8538	Interior of gasholder, upper level of inlet / outlet pipes
_DSC8540	Interior of gasholder, upper level of inlet / outlet pipes
_DSC8555	View of the inlet / outlet pipes
_DSC8557	View of the crow frame rafters joining the top curb
_DSC8561	View of the crown frame and crown pin
_DSC8567	View of the crown frame apex
_DSC8568	View of the crown frame apex
_DSC8569	The upper part of the crown frame rest
_DSC8571	General view of lift wall
_DSC8577	Detail of floor surface
_DSC8584	The crown frame rest



Edit-8616



_DSC6992



_DSC6993



_DSC6994



_DSC6996



_DSC6998



_DSC6999



_DSC7000



_DSC7002



_DSC7005



_DSC7008



_DSC7009



_DSC7011



_DSC7012



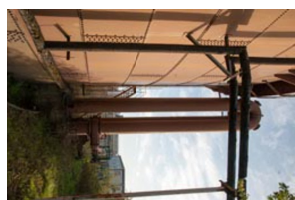
_DSC7013



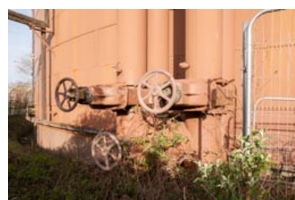
_DSC7017



_DSC7018



_DSC7019



_DSC7021



_DSC7022



_DSC7023



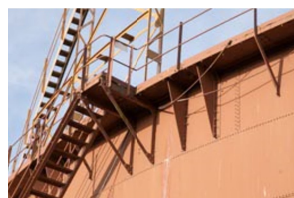
_DSC7024



_DSC7025



_DSC7026



_DSC7027



_DSC7028



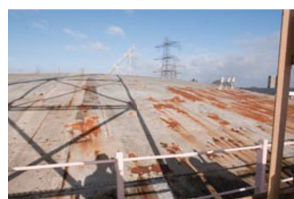
_DSC7029



_DSC7030



_DSC7031



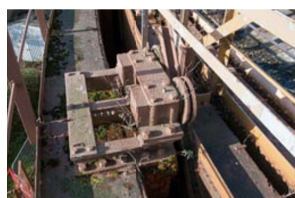
_DSC7032



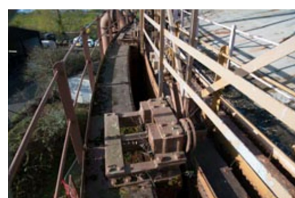
_DSC7033



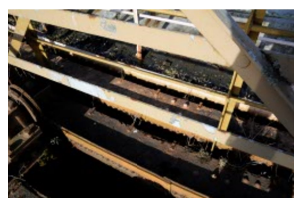
_DSC7034



_DSC-7035



_DSC-7036



_DSC7038



_DSC7041



_DSC7042



_DSC7043



_DSC-7044



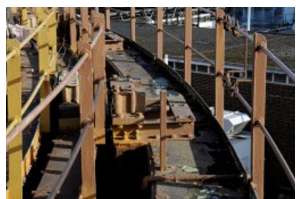
_DSC7045



_DSC7046



_DSC-7050



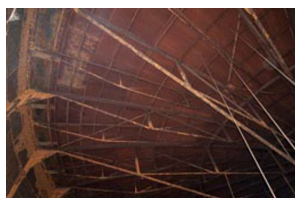
_DSC7051



_DSC-7052



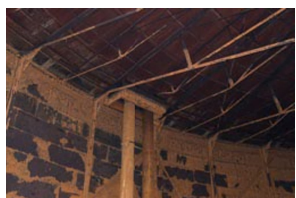
Edit-8504



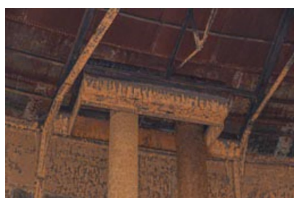
Edit-8522



Edit-8532



Edit-8538



Edit-8540



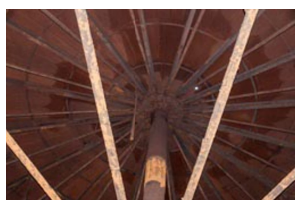
Edit-8555



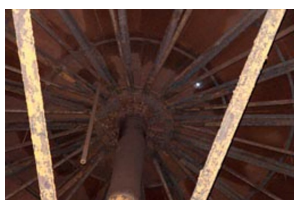
Edit-8557



Edit-8561



Edit-8567



Edit-8568



Edit-8569



Edit-8571



Edit-8577



Edit-8584



Edit-8587



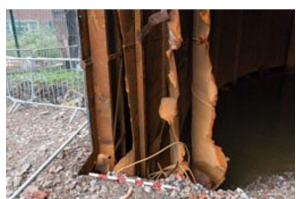
Edit-8588



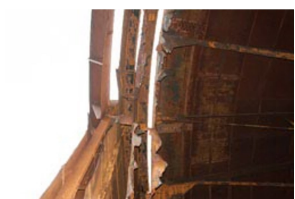
Edit-8592



Edit-8594



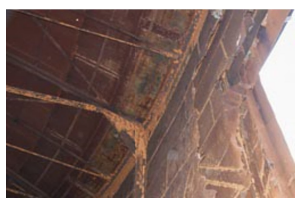
Edit-8595



Edit-8603



Edit-8605



Edit-8612



Edit-8613



HEAD OFFICE

Genesis Centre,
Birchwood Science Park,
Warrington
WA3 7BH

Tel: 01925 844004
E-mail: tep@tep.uk.com

**MARKET
HARBOROUGH**

The Reynard Suite,
Bowden Business Village,
Market Harborough,
Leicestershire,
LE16 7SA

Tel: 01858 383120
E-mail: mh@tep.uk.com

GATESHEAD

Office 26, Gateshead
International Business
Centre,
Mulgrave Terrace,
Gateshead
NE8 1AN

Tel: 0191 605 3340
E-mail: gateshead@tep.uk.com

LONDON

8 Trinity Street,
London,
SE1 1DB

Tel: 020 3096 6050
E-mail: london@tep.uk.com

CORNWALL

4 Park Noweth,
Churchtown,
Cury,
Helston
Cornwall
TR12 7BW

Tel: 01326 240081
E-mail: cornwall@tep.uk.com
