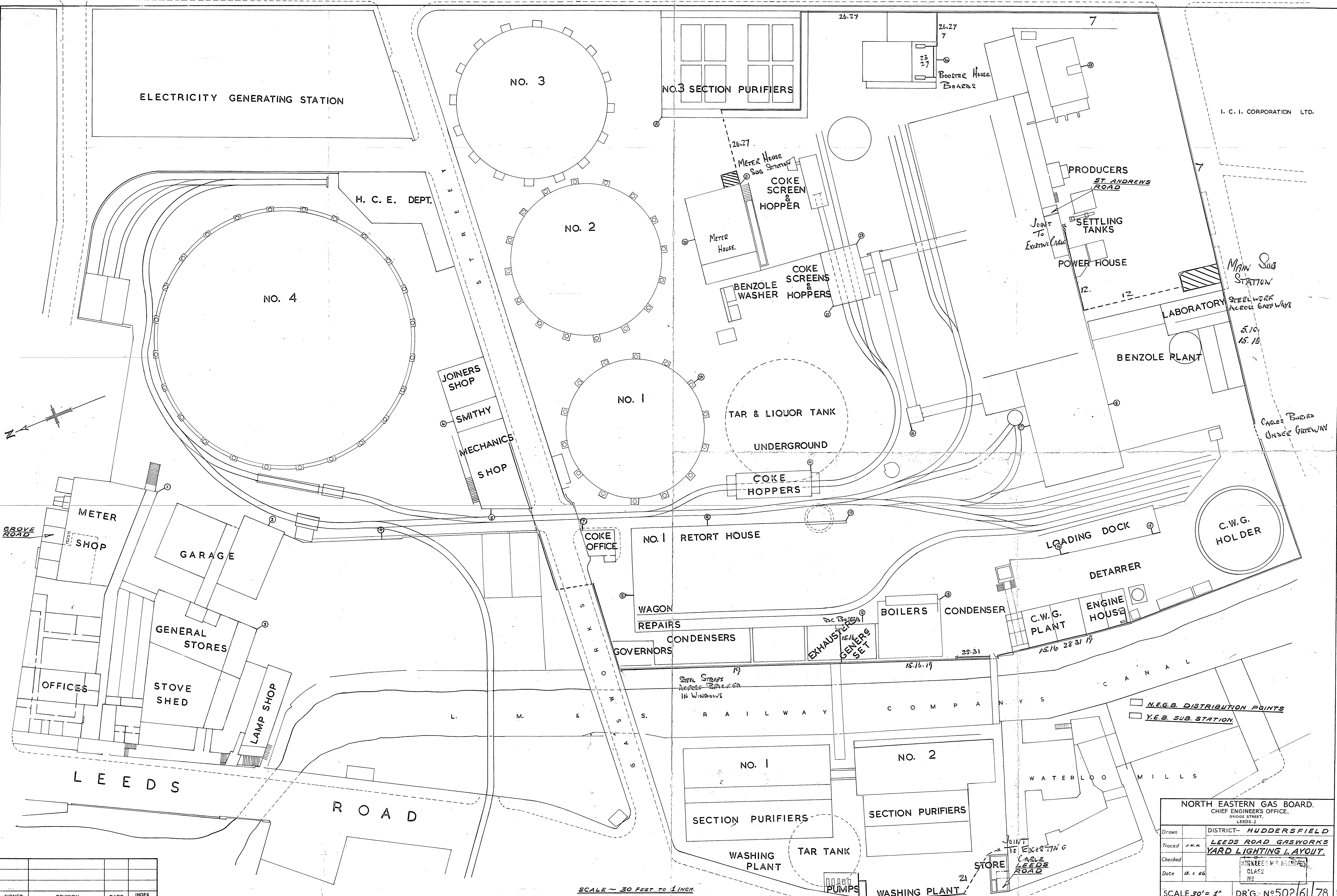


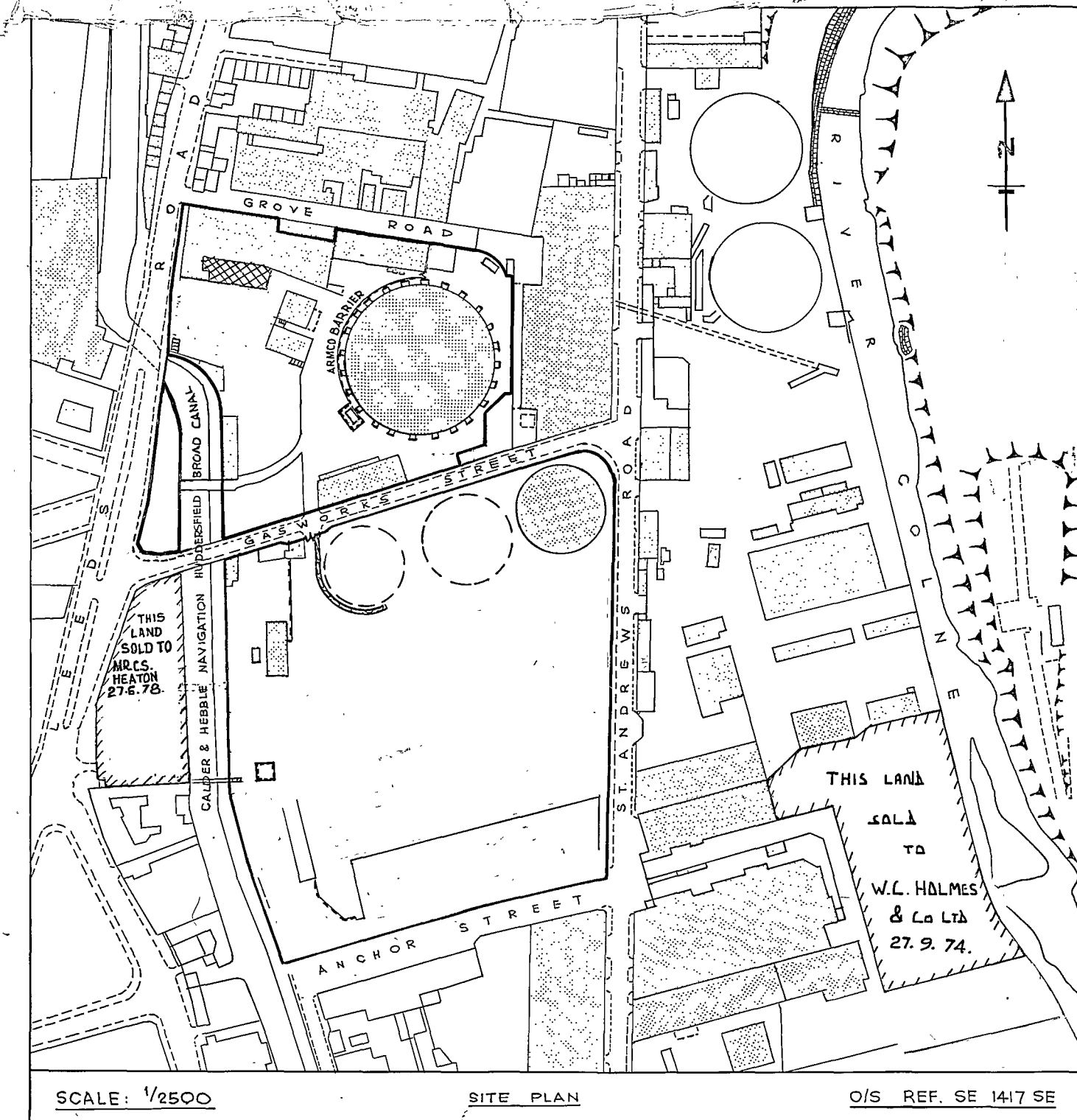
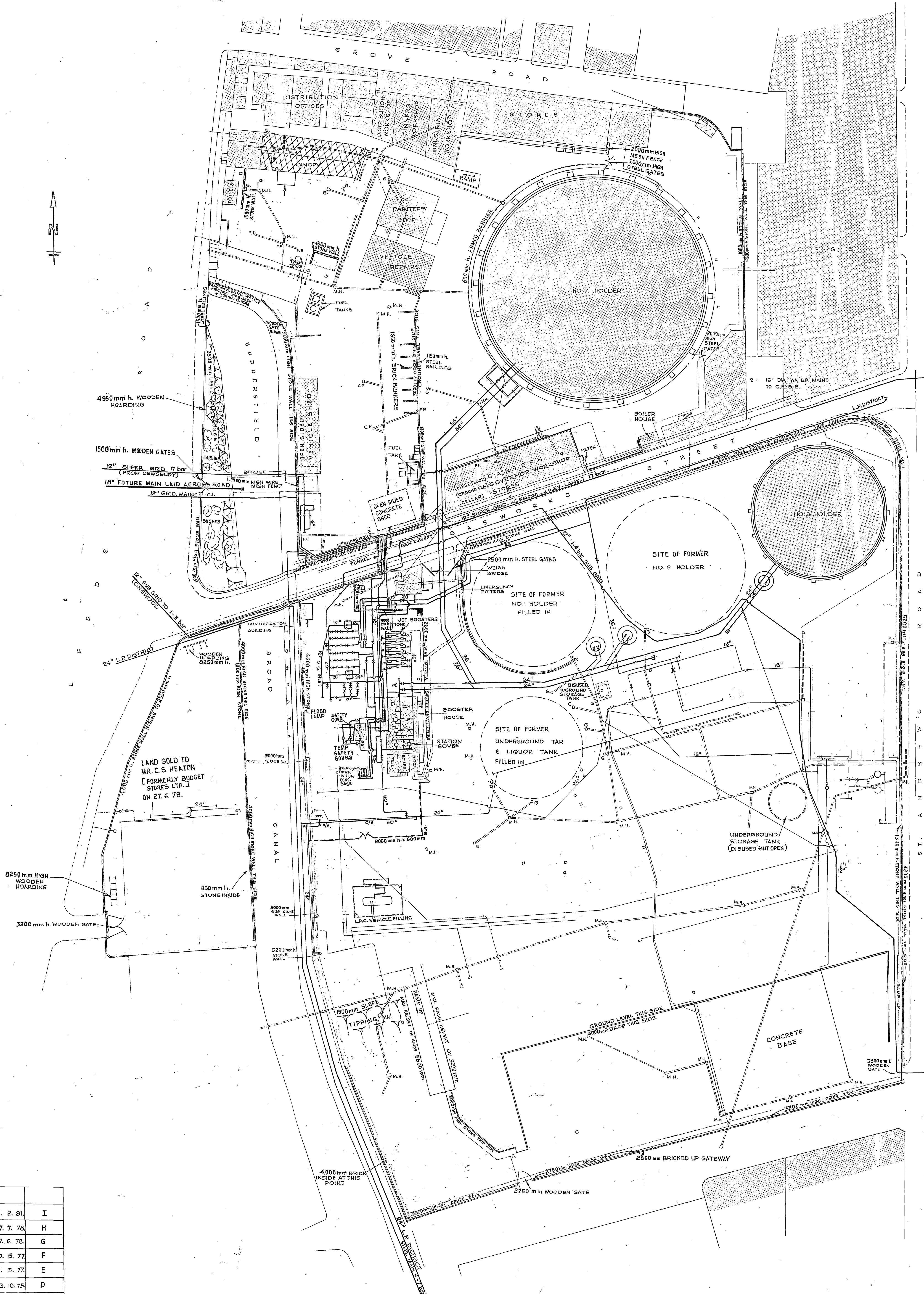


SIGNED	REVISION	DATE	INDEX LETTER

SCALE ~ 30 FEET TO 1 INCH.

NORTH EASTERN GAS BOARD. CHIEF ENGINEER'S OFFICE, BRIDGE STREET, LEEDS. 2	
Drawn	DISTRICT - HUDDERSFIELD
Traced	J.M.M.
Checked	LEEDS ROAD GASWORKS YARD LIGHTING LAYOUT.
Date	15.1.56
CLASS	
SCALE 30' = 1"	
DR'G-N°502/61/78	
NE/PEN/LWC/EE/20	

P.D.	DRAWING UPDATED	3. 2. 81.	I
P.D.	DRAWING UPDATED	27. 7. 78	H
P.D.	SALE OF LAND TO MR C.S. HEATON	27. 6. 78.	G
P.D.	DRAWING UPDATED (C)	10. 5. 77	F
J.D.W.	DRAWING UPDATED	4. 5. 77	E
P.D.	TEMP SAFETY GATES, BUNKER & FENCING ADDED.	23. 10. 75	D
P.D.	DRAWING UPDATED	5. 8. 78	C
A.W.P.	LEGAL BOUNDARY REVISED	18-11-74	B
T.L.H.	BOUNDARY ADJUSTED ON SITE PLAN	14.2.74	A.
SIGNED	REVISION	DATE	INDEX LETTER



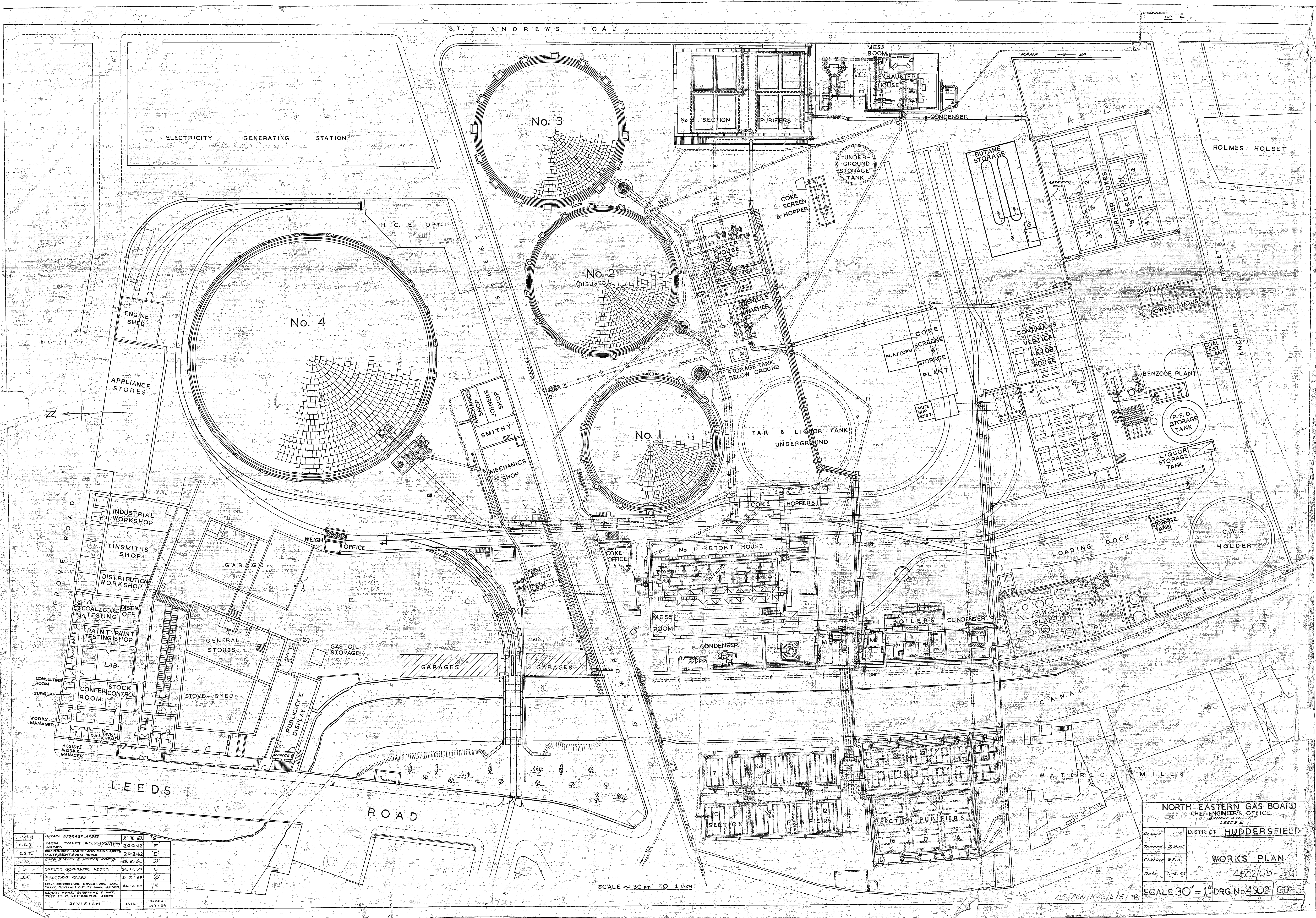
KEY	
GAS MAINS (LIVE)	—
GAS MAINS (DEAD)	—
ELECTRICITY MAINS	—
WATER MAINS	—
G.P.O. (O/H)	—
G.P.O. (U/G)	—
DRAINS & SEWERS	—
FENCING	—
STONE WALL	—
BRICK WALL	—
CONCRETE WALL	—

Supercogged,
BY 4502/GD-114

APPROX. TOTAL AREA = 48 900 m²
THE ROUTES OF GAS MAINS AND OTHER UTILITY SERVICES ARE APPROXIMATE ONLY. HAVING BEEN DETERMINED BY CONSULTATION WITH DIVISIONAL DISTRIBUTION PERSONNEL, SURFACE EXAMINATION AND WHERE POSSIBLE BY THE USE OF MAINS LOCATING EQUIPMENT.

NEGAS ENGINEERING DEPT. NEW YORK ROAD LEEDS LS2 7JH	
Drawn	P.S.C. SECTION PLANT ENGINEERS
Checked	M.F.N.
Date	7. 7. 78
HUDDERSFIELD HOLDER STATION SITE PLAN	
SCALE 1/500	DRG. NO. 4502/GD-38. 1

NE/PEN/HUC/6/E/3



J.M.M.	BUTANE STORAGE ADDED.	7. 11. 63.	G
C.S.T.	NEW TOILET RECOMMODATION ADDED.	20.2.62	F
C.S.T.	COALCOKE TESTING INSTRUMENT ROOM ADDED.	20.2.62	E
J.M.	COKE SCREEN & HOPPER ADDED.	26. 8. 62.	D
E.F.	SAFETY GOVERNOR ADDED.	24. 11. 59.	C
J.M.	P.F.D. TANK ADDED.	3. 7. 59.	B
E.F.	NEW CONDENSER GOVERNORS, BAY PLANT GOVERNOR DISPLAY ADDED.	24. 11. 58.	A
	RETORET HOUSE, BURNING PLANT, TEST POINT, NEW BURNER ADDED.		
	REVISION	DATE	INDEX LETTER

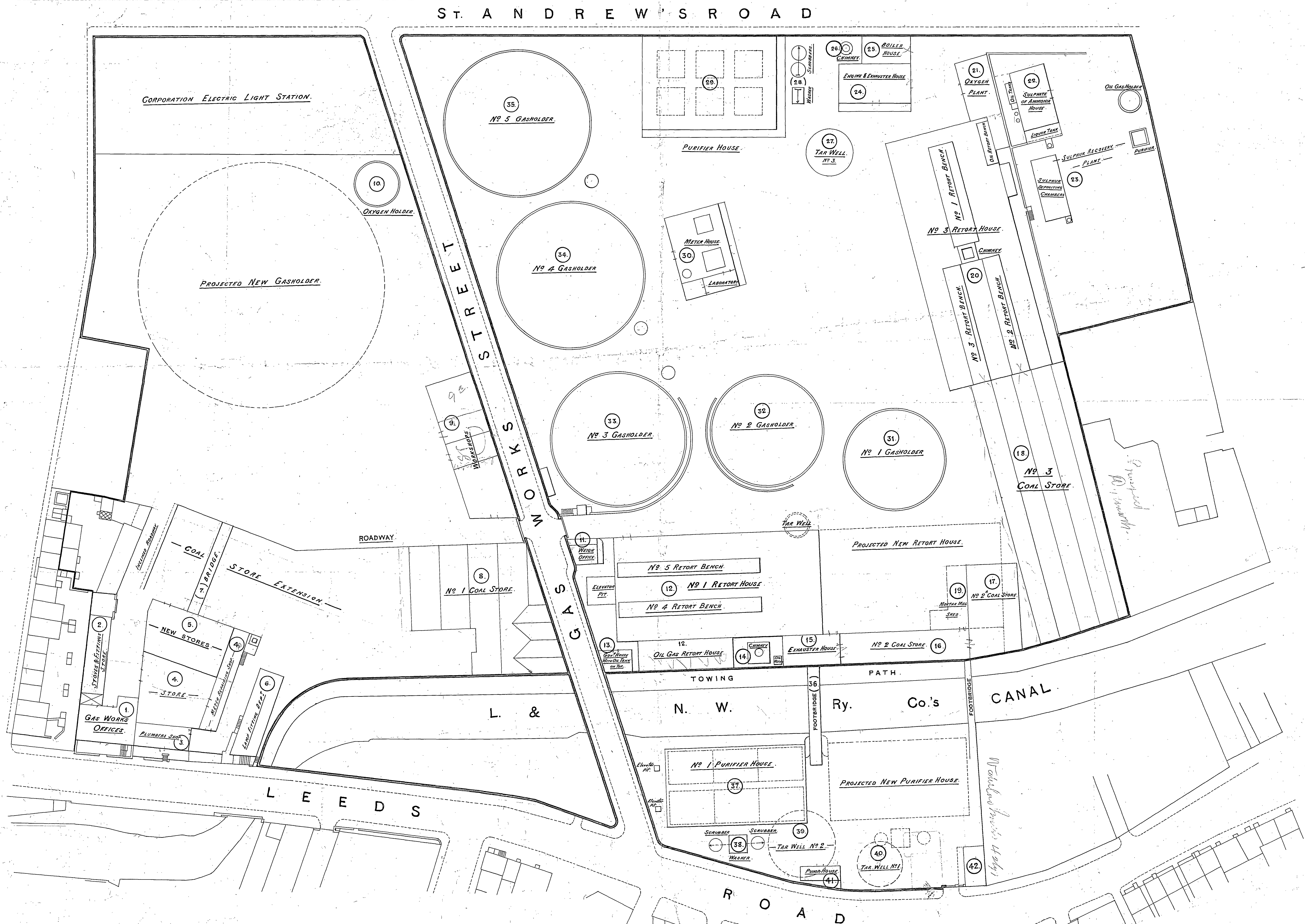
NORTH EASTERN GAS BOARD	
CHIEF ENGINEER'S OFFICE,	
BRIDGE STREET, LEEDS 2	
Drawn	DISTRICT HUDDERSFIELD
Traced	J.M.M.
Checked	W.F.B.
Date	1. 12. 68
WORKS PLAN	
4502/GD-38	
SCALE 30' = 1" DRG. No 4502/GD-38	

4502/GD-3

— HUDDERSFIELD CORPORATION GAS WORKS —

SCALE 500, OR 41.66 FEET TO ONE INCH.

— KEY PLAN TO INSURANCE POLICY. —



Edward A. Johnson.
ENGINEER.
14th Nov. 1901.

W 59.

966

NEHUC/E/132

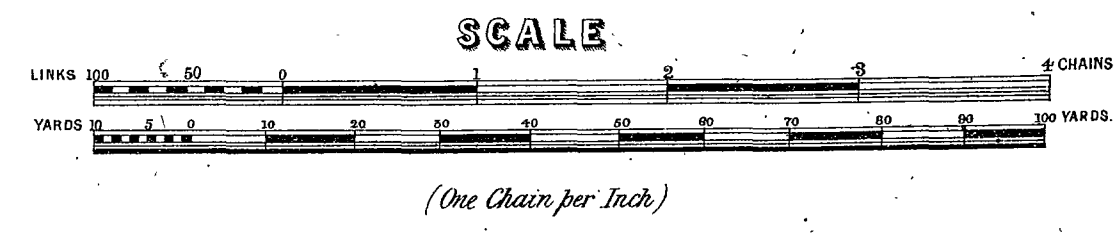
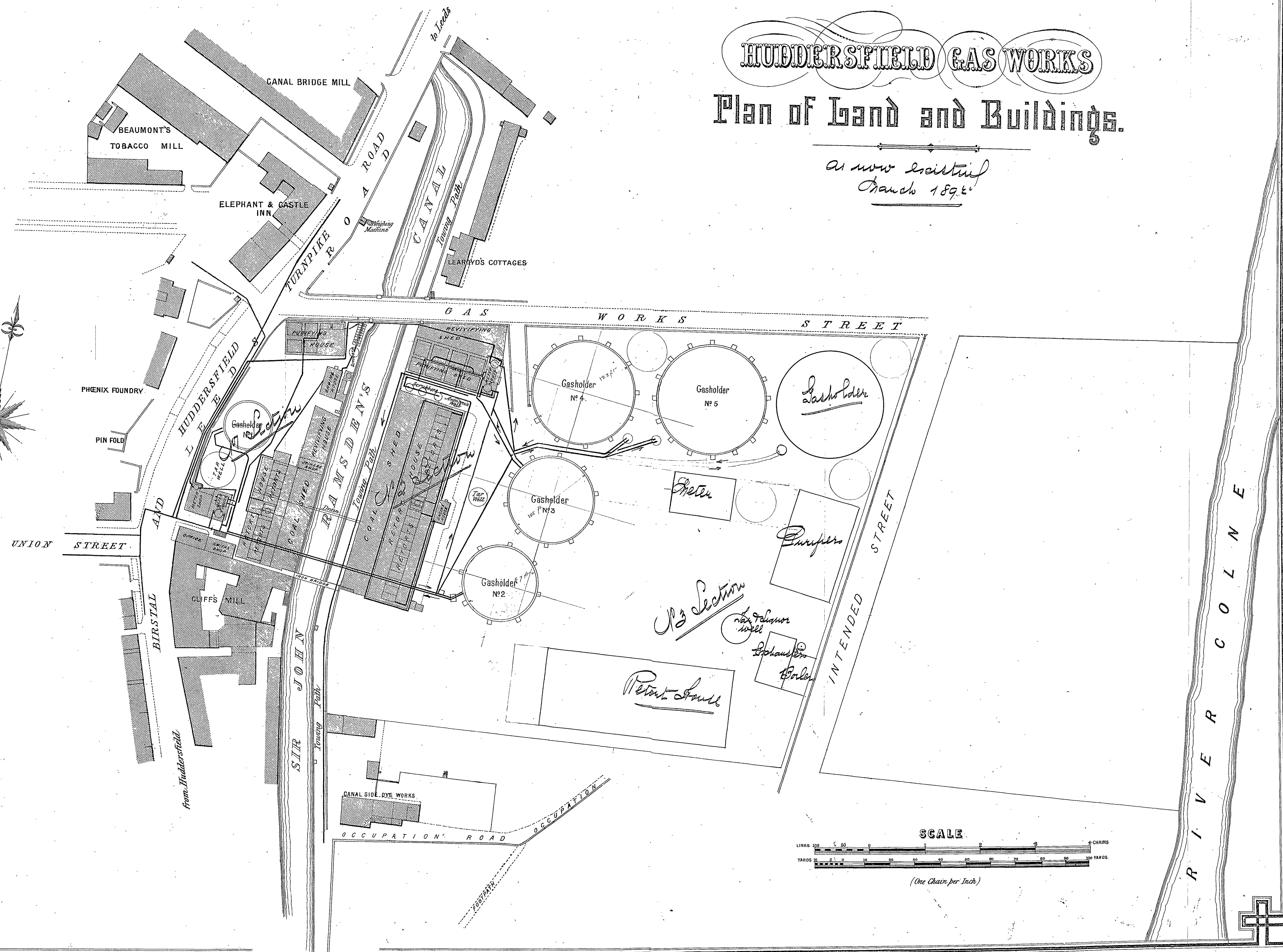
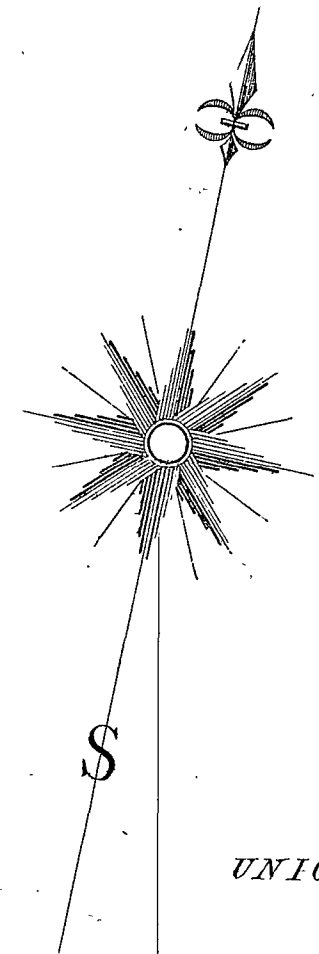
KIRK...

W
2

HUDDERSFIELD GAS WORKS

Plan of Land and Buildings.

*as now existing
March 1892.*



A. JUBB, LITHO. HUDDERSFIELD.

NE/HUC/E/E/126

KIRKLEES M.B. ARCHIVES
CLASS
NO 498

W
2

913

NOV 1941

THE GAS UNDERTAKING OF THE HUDDERSFIELD CORPORATION.

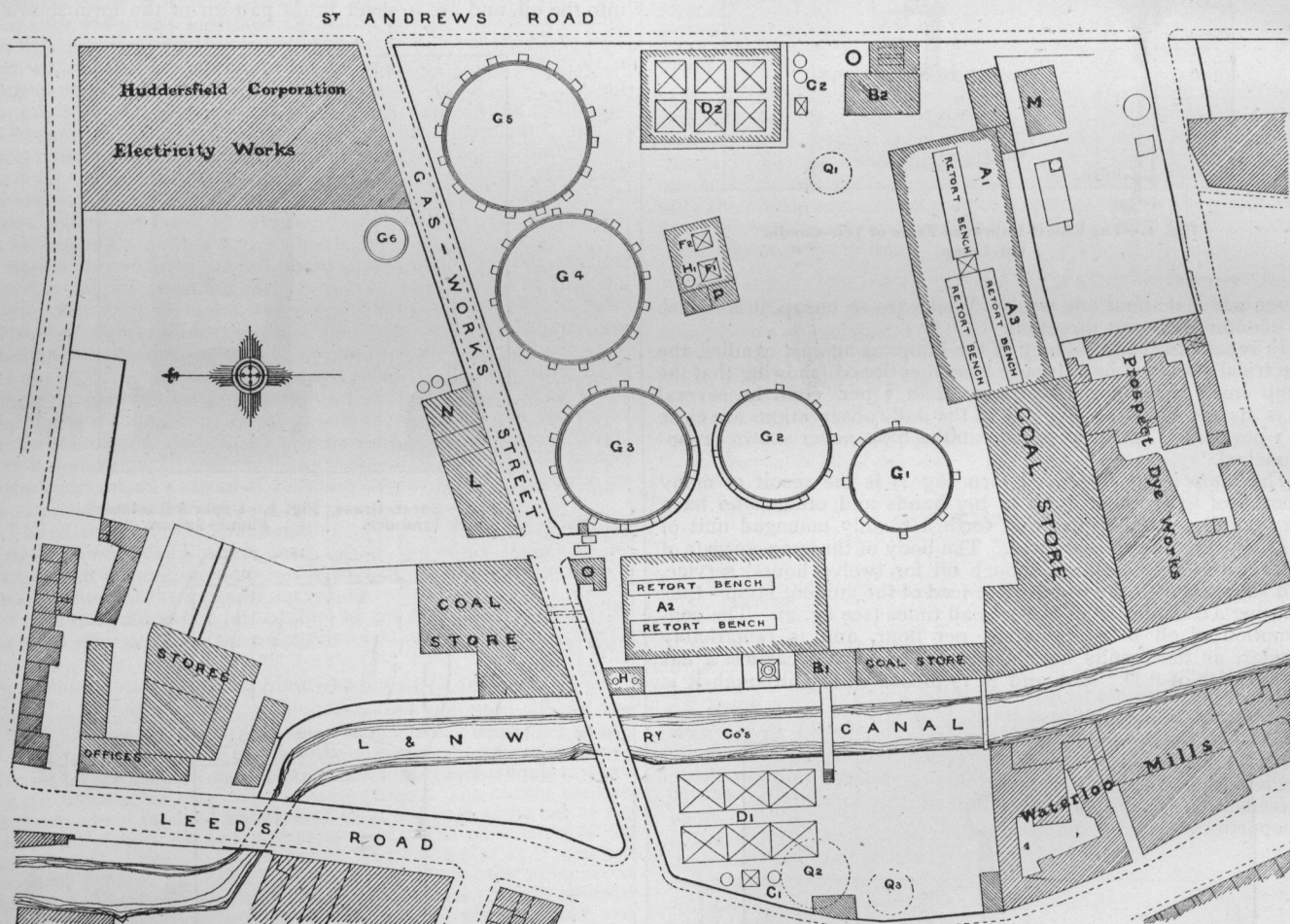
Visited last Saturday by the Manchester District Institution of Gas Engineers.

The Huddersfield Gas-Works were erected in the year 1821, the Contractors being Messrs. Cawood and Son, of Leeds; and they were purchased by the Huddersfield Corporation in 1872 for £130,336. In the succeeding 25 years (to 1897), the capital was increased to £322,655, at which figure it has since remained. The sinking fund amounts to £81,911, and the depreciation and contingency fund to £20,037; so that the actual liability of the Corporation is £220,707. The area of the works, which are leased from Sir John Ramsden, Bart., at a ground rent of £1300 per annum, is about 13½ acres. The area of the district supplied is 16,725 acres; the population is about 100,000; and the supply embraces 171 miles of mains. The works have no sidings; but the London and North-Western Railway Canal runs alongside, and is available for the transport of surplus coke, sulphate of ammonia, &c. For some years it has been found desirable to cart all coal from the "shoots" at the railway sidings which are about half-a-mile distant.

The gas sold in the first full year (1873) of the Corporation

working was 166,808,600 cubic feet; for the year ending March, 1906, it was 624,677,000 cubic feet. The Gas Department has contributed to the relief of local taxation a sum of £142,241. It is by far the largest ratepayer in the town—paying between £5000 and £6000 per annum, or about 1-33rd of the whole rates of the borough.

The present prices of gas per 1000 cubic feet are: For lighting, 2s. 6d.; for stoves (domestic purposes), 2s. 1d.; for engines and for stoves of all kinds for business purposes, 1s. 6d.—all subject to 5 per cent. discount for payment within one month from the date of the accounts. These are rendered three times yearly—viz., on the 1st of January, April, and October. The three collections per annum have been found a most convenient arrangement to the consumers. Those of the prepayment system are supplied with 30 cubic feet of gas for 1d.; and they have returned to them 1d. for each shilling as discount at the time of collection. These consumers are supplied with a cooking-stove free of charge, or, if desired, a boiling-ring or breakfast-griller. The present number of prepayment meters in use is 12,790, and the money



EDWARD A. HARMAN, Engineer.

PLAN OF THE COUNTY BOROUGH OF HUDDERSFIELD GAS-WORKS.

A. Retort-Houses. B. Exhauster Houses. C. Bye-Pass Valves. D. Purifiers. F. Station Meters. G. Gasholders. H. Governors. L. Mechanics' Shop. M. Sulphate Plant. N. Coal-Testing Plant. O. Weighbridge. Q. Tar Wells.

collected for the twelve months ending March was £19,492, or an increase of £1412 on the year, in spite of the reduction in price of gas; while the total number of all consumers amounts to 25,817. All meters are fixed free, and all service-pipes are laid and renewed when required without charge to the consumers. The street lighting is undertaken by the Gas Department; and there are about 3000 public lamps fitted with ordinary "C" Welsbach burners and "A.V.I.L." anti-vibrators. Hexagonal lanterns are used in all cases. The wholesale and retail markets are brilliantly lit with incandescent burners; but the high-pressure system of lighting has made little advance in the town.

For the convenience of consumers, the Gas Department have a large show-room and order office situated in the centre of the town (opposite the Parish Church), where there is an exhibition of up-to-date gas appliances; but the Department does not trade in chandeliers and burners. Extensive advertising of gas-stoves for cooking and heating purposes has been adopted, with most satisfactory results. Upwards of 16,000 stoves, fires, boilers, &c., have been supplied by the Department.

The coal carbonized last year was 63,015 tons, compared with 21,464 tons in the year 1873—the first full year of the Corporation working. The present local price of coke is 10s. per ton; and

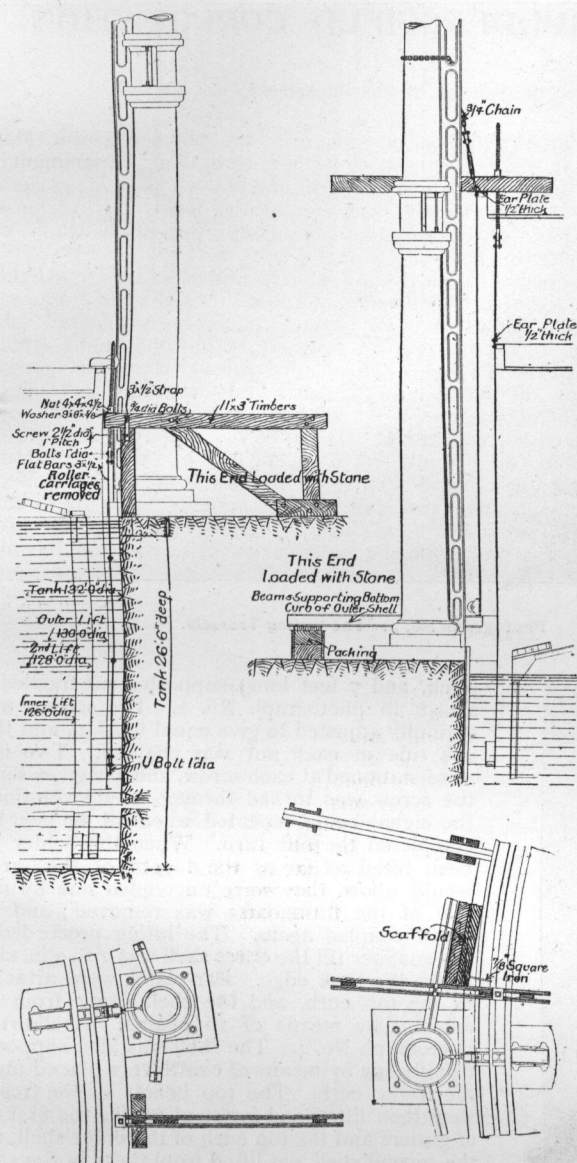
the Committee afford every facility for its use by delivering it at the rate of 1s. per ton per mile. Bags containing 1 cwt. are delivered at 9d. anywhere within the area of gas supply.

For the year ending March, 1906, the gross or trading profit was £33,024, or equivalent to 10½ per cent. upon the capital of £322,655. It was allocated as follows:—

Stoves and prepayment meters	£1,482
Interest, &c.	12,112
Sinking fund	1,795
Reconstruction of works account	7,195
Depreciation fund	6,823
Relief of local taxation (2d. in the pound)	3,617
Total	£33,024

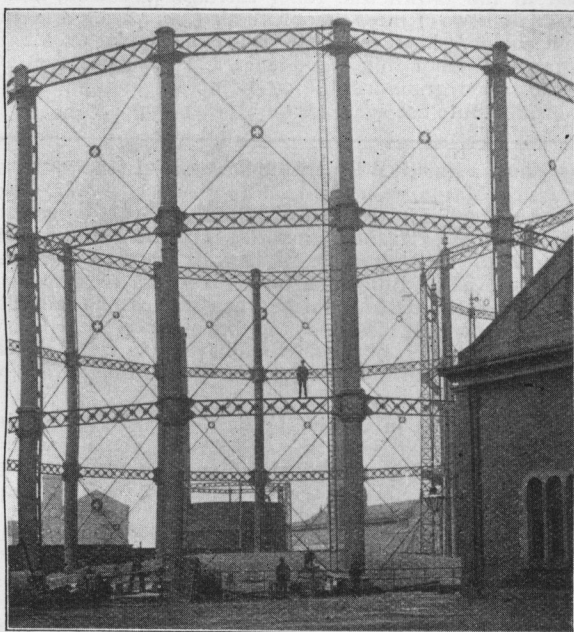
The Gas Committee and the ratepayers are to be congratulated upon possessing so valuable an asset in their gas undertaking, the Engineer and Manager of which is Mr. Edward A. Harman, M.Inst.C.E., who was appointed in March, 1897.

The advocates of the municipalization of gas-works have in the Huddersfield undertaking a strong case. It has been particularly fortunate in having from its inception a businesslike management. Alderman William Henry Jessop, J.P., who has



Repairing No. 4 Gasholder. The Method of Lifting the Shells.

served the town as its Chief Magistrate for upwards of two years, is the present Chairman; and the Vice-Chairman (Mr. Councillor Shaw) is thoroughly in touch with the undertaking. The Mayor (Alderman Benjamin Broadbent, M.A., J.P.) is something of an expert upon gas matters, having been a Director of the Longwood Gas Company for many years, and being interested in other companies. He is a graduate of Oxford, and is a distinct acquisition to the administration of the concerns of the Gas Department.



Photograph No. 1.—The Holder Grounded preparatory to Lifting.

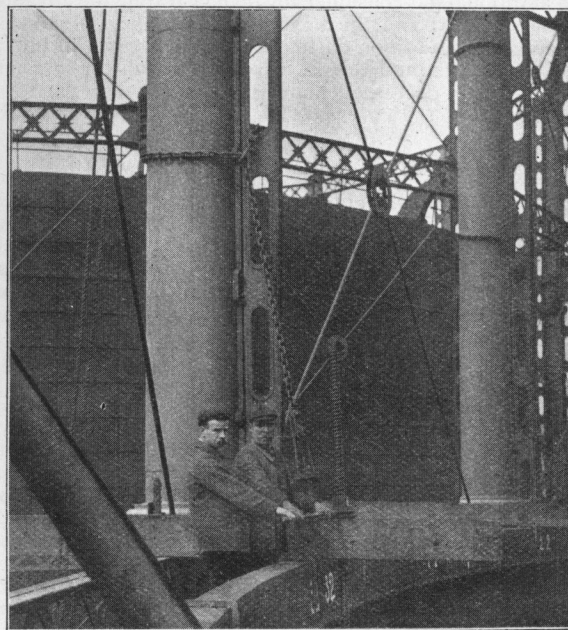
DESCRIPTION OF THE WORKS.

Having given a few particulars as to the gas undertaking, we now proceed to describe the works. They consist of two spacious retort-houses, one containing twenty beds of nines (inclined) and nine beds of eights (horizontal). The purchase of additional land has enabled this house to be cellared since the last visit of the Institution. The other house contains twenty-four beds of nines (inclined). The coal is carbonized in six-hour charges. The condensers are of the horizontal type, and are made of wrought iron. There are four of Donkin's exhausters, each capable of dealing with 100,000 cubic feet of gas per hour; and a like number of tower scrubbers, 10 feet in diameter, filled with boards on edge. They are fitted with 18-inch and 24-inch valves and connections, and are arranged for bye-passing. There is also one of Walker's patent purifiers, with machinery room over the top, to pass 3 million cubic feet of gas every 24 hours. It is 12 feet square and 26 ft. 6 in. high, and contains one tier of perforated inverted troughs and seven tiers of moving washers, consisting of wood boards placed vertically $\frac{3}{8}$ inch apart, and attached to iron framing, secured to four shafts having a vertical reciprocating motion, alternately lifting the washers in and out of the water. The connections are 24-inch. There is also one of Kirkham's washer-scrubbers arranged for bye-passing, and having 18-inch valves and connections. There are two sets of purifiers, consisting of six boxes each, the dimensions of which are: No. 1, 25 ft. by 25 ft. and 5 ft. 3 in. deep over all; No. 2, 30 ft. by 40 ft. and 6 ft. 3 in. deep. In No. 1 set, the first four boxes are worked by a centre-valve, and in the last two by two four-way bye-pass valves, 18-inch connections and valves being used; in No. 2 set, the first four boxes are worked by one of Weck's 24-inch four-box valves, and the last two by a two-box valve of the same size and make. The connections are 24-inch. There are two meters, the capacity being 100,000 and 125,000 cubic feet per hour respectively, with 24-inch connections, and hydraulic valves made for bye-passing. The gas is stored in five holders (one at present under repair), having a total capacity of 3,500,000 cubic feet, or equivalent to nearly a maximum day's output. The works are provided with a coal-testing plant, having two holders in connection with it. Four governors control the town supply. One, by Messrs. J. & J. Braddock, has a bell 8 feet in diameter, and is fitted with water-loading tank and pipe and an improved regulator for changing the pressure. It has 36-inch connections and three 36-inch valves for bye-passing.

The sulphate plant is that employed in Dr. Feldmann's process; and a full description of it was given in a paper read by Mr. Harman to the members of the Institution on Nov. 27, 1897.* There is a sulphur-recovery plant on the Claus system carried out to the drawings of the present Engineer. The condenser consists of fifteen 6-inch pipes, 22 feet long, placed horizontally. The coke-scrubber is 3 ft. 6 in. in diameter by 20 feet high; and the limestone scrubber is of the same size. The kiln is 8 ft. 6 in. diameter and 9 feet deep; and the sides are lined with fire-brick and 9 inches of sand. There are thirteen depositing chambers 2 ft. 6 in. by 20 ft. by 6 ft. 6 in. to the springers, plus 7 ft. 8 in. by 10 ft. by 5 ft. 7 in. The brick purifier is 12 ft. 6 in. square by 3 ft. 6 in.

The principal boilers are two Cornish, 5 ft. 9 in. diameter and 20 ft. 9 in. long, and two Lancashire, 7 feet diameter and 28 feet long. There are three mortar-mills (the Gas Department working up the furnace ashes with lime for sale to the local builders) and two weighbridges, one for carts entering and the other for those

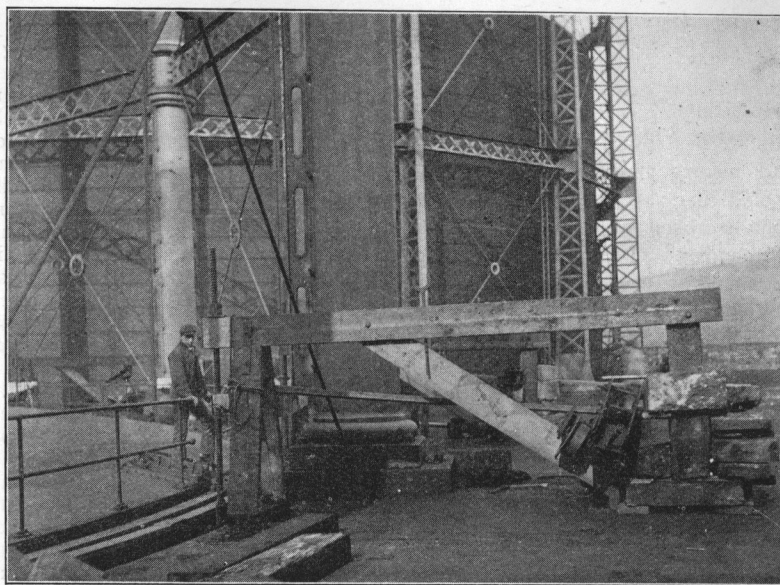
* See "JOURNAL," Vol. LXX., p. 1169.



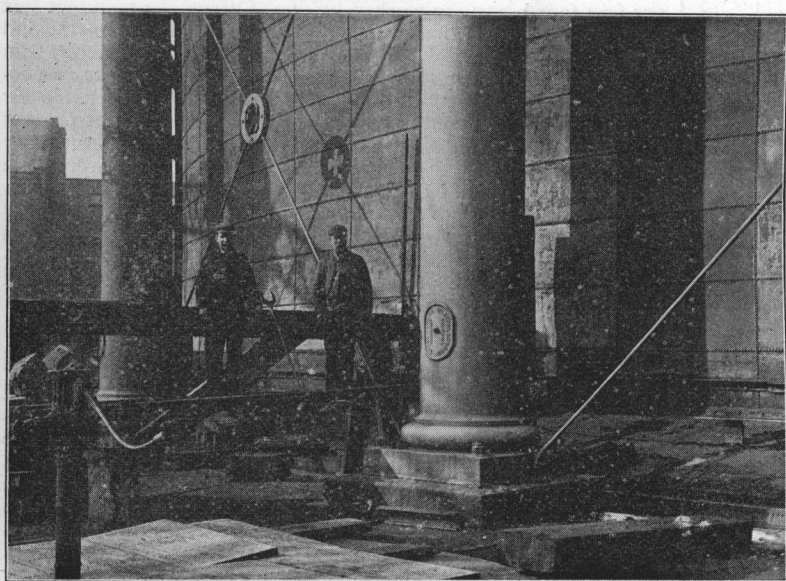
Photograph No. 4.—The Scaffold on the First Tier of Girders.

leaving the works, which are admirably provided with machinery, pumps, and engines of many kinds, as well as with a capital laboratory. A large four-storey mill has been converted into excellent stores, with stables, &c., in the base. The weighing office, time office, meter repairing and testing departments, lamp department, meter inspectors' department, main and service layers' departments, mechanics' workshops, &c., are admirably fitted up. Adequate arrangements have been made for the comfort of the workmen; dining and reading rooms, lavatories, and baths being provided. There are three roofed-in coal-stores, capable of holding 20,000 tons; the present stock being about 13,000 tons. Old gasholder tanks have been converted into tar and liquor storage tanks. All the buildings on the works are of stone, substantial in construction, and of excellent design for their respective uses. In the Leeds Road there are spacious offices and show-rooms, well adapted for the convenience of both consumers and staff.

Naphthalene was for some time very prevalent in the district supplied—hundreds of stoppages occurring daily; but this trouble has been gradually got rid of. The Engineer attributes its abolition almost entirely to the circuiting and tying-in of mains wherever possible. During the past ten



Photograph No. 2.—The Lifting Trestles.



Photograph No. 3.—The Outer Lift Raised.

years, the Committee have connected up scores of mains, with this object in view. Mr. Harman advocates, in the case of a *cul de sac*, running a main up either side of the road, and connecting the two across at the ends, with the object of keeping the gas in constant circulation, as it is in the trunk mains.

As already mentioned, every endeavour has been made to secure additional gas consumers by demonstrating the advantages of the use of gas; and the benefit of this policy is sufficiently evidenced by the addition during the past ten years of upwards of 6000 consumers, and this in a town in which the last census showed a slightly decreased population compared with the previous one.

REPAIR OF A GASHOLDER.

At the time of the visit, one of the gasholders, made by Messrs. Clayton, Son, and Co., Limited, of Leeds, having three lifts, was in course of having a new cup fitted by the makers; and the method adopted of raising the lifts was an object of much interest to the members of the Institution. They are shown in the accompanying diagram, which was on view on the occasion. The same firm last year also put in the same way a new cup to an adjoining gasholder made by them. The following is a description of the methods adopted.

To repair the cup of the second lift, the gasholder was fully inflated with gas until the bottom curb of the outer lift was only just sealed. This curb consists of two $3\frac{1}{2}$ in. by $3\frac{1}{2}$ in. by $\frac{1}{2}$ in. angle-iron rings, and the upper one of these was drilled to take 16 equidistant U-bolts. These were inserted and fastened in securely. To each a pair of 10 in. by 3 in. by $\frac{1}{2}$ in. plates was fastened; and to these lifting-bars, 3 in. by $\frac{1}{2}$ in. and 6 ft. 6 in. long, were attached one by one as the holder was gradually deflated. The rods were fastened up with rope until they were wanted. The holder was then grounded, the inlet and outlet pipes blanked up, the three manhole covers removed from the crown, and the roller carriages taken from the two inner lifts. The top ends of the lifting-rods were then attached to screws ($2\frac{1}{2}$ inches diameter, 1-inch

pitch, and 7 feet long) supported on trestles as shown in photograph No. 2. The screws were carefully adjusted to give equal tension, and then one side of each nut was chalked. Two men were stationed at each screw, and at a given signal the screw was turned through one revolution—the signal being repeated when all the men had completed the full turn. When the holder had been lifted as far as the length of the screws would allow, they were uncoupled one by one; one of the lifting-bars was removed; and the screw coupled again. The lifting proceeded in this manner till the outer shell was 2 ft. 9 in. clear above the tank edge. Ear-plates were attached to the top curb, and the shell slung from the columns by means of 16 chains, as shown in photograph No. 4. The shell was also supported from below by means of cantilevers placed under the lower curb. The top beams of the trestles were then lifted and fastened across the first tier of girders and the top curb of the outer shell, and the second shell was lifted from these in the same manner as the outer shell had been raised. It was found necessary to lift the second shell, by means of hooks placed round the dip-plate, until it was high enough to allow of ear-plates being attached, when the lifting-bars were transferred to these, and the shell lifted until it was 12 inches clear of the water. On examination, it was de-

cided to effect the repair by renewing the entire ring of dip-plates of the outer shell, and repair other places where necessary. The second shell was repaired and lowered, the dip-plate of the outer shell cut off and renewed (all bolt or other holes made in the course of the work being closed by means of rivets or patches), and the outer shell lowered into position. Windows and a trap were then fastened to the crown, the roller carriages replaced, and the holder inflated two or three times with air from a fan worked by a portable engine. Men were sent inside the holder on a raft to adjust the inner guide-rollers and make a final examination. The holder was then grounded, the crown made gas-tight, and the vessel brought into use again for the storage of gas.

Mr. Money's Municipal Powers Bill Dropped.—In the "JOURNAL" for the 27th of March, we noticed a Bill introduced by Mr. Chiozza Money, the Member for North Paddington, for very considerably enlarging the powers of Municipalities, so as to enable them to purchase land, build houses, and acquire or establish trading undertakings. The Bill came up for second reading on the 16th inst., and the debate which arose was adjourned till the following Monday. It then stood the 39th order on the paper, with 29 Government Orders of the day before it. As there appeared to be no chance of the Bill being read a second time, it has, very wisely, been dropped.

Home Instruction in Cooking by Gas.—Actuated by a desire that all their consumers who use gas-stoves for cooking purposes, numbering nearly 300,000, should obtain the utmost possible satisfaction, the Directors of the Gaslight and Coke Company have decided to offer, free of charge, the advice of expert lady demonstrators, who will attend at the residence of any consumer who desires instruction (for self or servants) regarding the proper use of the stove. It is only necessary for the consumer to send the Company a post-card, stating the day and hour (between 11 a.m. and 5 p.m. on ordinary working days and 2 p.m. on Saturdays), which would be most convenient for the demonstrator to call.

