


S. S. W. W.

DESCRIPTION OF PUMPING STATIONS
1921.

VOL. I

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SOUTH STAFFORDSHIRE WATERWORKS COMPANY.

PUMPING STATIONS.

<u>Index.</u>	<u>Page.</u>
Ashwood	1
Bourne Vale	31
Brindley Bank	47
Cawney Hill	61
Coneygre	68
Fradley	82
Hinksford	93
Huntington	106
Lichfield	118
Maple Brook	139
Moors Gorse	159
Pipe Hill	171
Romsley	196
Shavers End	204
Shenstone	210
Springs Mire	229
Trent Valley	246
Winshill	268
Wood Green	277

and supplementary
pages 156 A & J.

WINSHILL PUMPING STATION

situate at

BURTON - UPON - TRENTIn the County of STAFFORD.S U M M A R Y

Total Pump Power at Station is
equal to 232,800 Gallons per
24 Hours

NO. 1. Pump Power per 24 Hours - 100,800 Gallons
NO. 2. ditto - 132,000 do

TOTAL SPECIFIED HEAD (BOTH PUMPS) - 215 Feet.

C O S T S

	<u>£.</u>	<u>s.</u>	<u>d.</u>
Water Tower & Pump House,	4,990.	12.	1.
Pumps & Motors complete,	648.	0.	3.
Sundries	8.	13.	6.
Fencing and Hollies ...	144.	14.	4.
Law Charges & Compensations,	96.	13.	0.
Main	322.	12.	7.
	<hr/>		
	£ 6,211.	5.	9.
Less Contribution by Corporation of Barton and sale of tree.	1,001.	0.	0.
	<hr/>		
	£ 5,210.	5.	9.
	<hr/>		

STATION COMMENCED - 1907

STATION COMPLETED - 1915

LAND (1 Acre, 1 Rood)

Rented from the Marquis of Anglesey
in 1907 at a rental of £16. per annum.

Level B.H.F. above O.D. 301 Feet

CONTRACTORS.

BUILDINGS

Water Tower & Pump House,

T. Lowe & Sons, 1908

TANK IN WATER TOWER (Cast Iron)

Newton-Chambers & Co.

PUMPS. (ELECTRICALLY DRIVEN)

No. 1. Mather & Platt, Supplied 1908
No. 2. ditto " 1915

C O S T S

			<u>£.</u>	<u>s.</u>	<u>d.</u>
Water Tower	...	...	3,435.	5.	5.
Pump House	...	...	594.	0.	0.
Cast Iron Tank	...	...	584.	0.	0.
Joists, etc	...	...	34.	1.	6.
Wages & Disbursements	.....	.....	343.	5.	2.
			4,990.	12.	1.

PUMPS & MOTORS

	<u>£</u>	<u>s</u>	<u>d</u>			
1st Pump	60.	0.	0.			
2nd do	65.	10.	0.			
1st Motor	86.	15.	0.			
2nd do	75.	0.	0.			
10 Cwt Travelling Blocks)	18.	2.	6.			
Cable & Laying .	89.	16.	10.			
Mercurial Gauge.	18.	10.	7.			
Erection, Piping, &c	234.	5.	4.	648.	0.	3.

Ford. £ 5,638. 12. 4.

COSTS (Continued)

		£	s	d
	Ford	-		
Sundries	...	5,638.	12.	4.
Fencing and Hollies	...	8.	13.	6.
Law Charges and Compensation ..	...	144.	14.	4.
Main	... ..	96.	13.	0.
		322.	12.	7.
		<hr/>		
		£ 6,211.	5.	9.
<u>Deduct Contribution)</u>	£1000			
Burton Corp'n				
Sale of Tree ..	£1			
		1,001.	0.	0.
		<hr/>		
<u>TOTAL COST OF STATION.</u>		£ 5,210.	5.	9.
		<hr/> <hr/>		

This is a Re-pumping Station.

The Pumps - driven by Motors - draw water from a cement lined Cistern under the Pump House Floor, and deliver it into a Cast Iron Tank of 50,000 Gallons capacity, erected on a Tower, at an elevation of 80 feet from the surface of the ground.

The distance from the Pump House to the Tower is about 350 yards.

The Motors are automatically stopped and started as the level of the water in the tank rises and falls. This is accomplished by an electrical contrivance operated from a switch which is worked by a float in the Tank. A cable connects the switch on the Tank to the motor controllers in the pump room. When the tank water level is low, the float switch closes, energising solenoid control switch which starts the

SPECIFIED HEAD ON PUMPING MAIN ... 215 Feet

The head on Pumping as given
when No. 2. Pump was installed
is as follows :-

Water level in Tower to centre of Gauge in Pump House ...	196 Ft -
Centre of Gauge to P.H.Floor ..	5 Ft.
P.H.Floor to Water Level in Cistern	10 Feet
Friction on Pumping Main ...	2.3
	<hr/>
	213.3 Feet
Assumed extra friction due to) additional quantity of) water delivered by No.2. Pump)	2
	<hr/>
TOTAL	215.3 Feet
Pump Horse Power ...	
No. 1. Pump,	4.5
No. 2. Pump,	6
Revolutions, Pumps per minute,	1440.

NO. 1. PUMP

This Pump is Mather & Platt's
improved Patent Turbine, designed
to deliver 70 gallons per minute
against a head of 215 feet at a
speed of 1440 revolutions per
minute. The Cast Iron Chambers
contain specially designed guides
giving an easy path to the water.

Maker's Number on Pump ...	1268
Number, Chambers in Pump ...	6
Diameter, Suction Branch ...	5 Ins.
" Delivery Branch ...	4 Ins.
" Impellers ...	9½ Ins.

No. 2. PUMP.

Supplied in 1915 by Mather & Platt.
Delivers 92 Gallons per Minute against
a Head of 215 Feet when running at a
speed of about 1440 Revolutions per
Minute.

Maker's Number ...	...	3989
Number Chambers...	...	4
Diameter, Suction Branch ...		5 Ins.
" Delivery "	...	4 Ins.
Efficiency, as specified ...		60%

MOTORS (1ST)

Single-phase Semi-enclosed
Alternating Type.

Brake Horse Power ...	...	10
Guaranteed Efficiency of Motor		81 %
Voltage ...	...	200
Cycles ...	...	75
Weight ...	...	8½ Cwts.

Made by Rhodes Motors Ltd.
Doncaster.

A second Motor (similar to the first)
 was ordered in November, 1907, to act
 as a standby for No. 1. Pump.

Both Motors are rated at 10 B.H.P. with
 a combined efficiency and Power Factor
 of about 66 %

CIRCUIT BREAKER AND TIME LAG RELAY.

A 100 amp model "E" Automatic Circuit Breaker
 of the Switchgear Company Ltd, Newhall Street,
 Birmingham, make, and one of Statter's Time Lag

CIRCUIT BREAKER & TIME LAG RELAY (Continued)

Relays to work in conjunction Circuit Breaker was installed. The Time Lag prevents Circuit Breaker from operating during the momentary overload current taken to run the motor up to speed in the starting Time Switch.

The Borough Electrical Engineer has installed a Time Switch to control hours of running to enable shutting down during restricted hours to be done automatically.

A double Turnover Switch was fitted when second Pump was erected to enable the current to switch from one Pump to the other.

FLEXIBLE COUPLINGS

Flexible Couplings are fitted to
make the connections between Pumps
and Motors.

Number Rubber Buffers ... 6

SLUICE VALVES

Made by Glenfield & Kennedy.
Fitted to Delivery Side of
each Pump

Diameter 4 Ins.

FOOT VALVES AND STRAINERS.

Made by Joseph Evans & Sons.
Fitted on Suction Side of Pumps.

Diameter, Foot Valves ... 5 Ins.

MERCURIAL GAUGE.

Fitted in Pump House for indicating
level of water in Tower.

MERCURIAL GAUGE (Continued)

External Dia. Mercury Gauge Glass $\frac{7}{8}$ In.

OVERHEAD RUNWAY

One Runway Joist of 29 Feet Length,
suitable for loads up to ... 10 Cwts

One 10 Cwt Double Bogie Ball bearing
Trolley Complete with Lifting
Gear and Chains for a height of
about 10 Ft - 6 Ins from under-
side of Runway to Pump House
Floor.

Supplied by H. Morris & Bastert,
Loughbrough.

CURRENT.

The Current for driving the Motors is
supplied by the Burton-upon-Trent
Corporation, and is transformed at the
Pump House to 200 volts of 75 frequency.
The supply is Single phase Alternating
Current.

TRIAL OF PUMPING PLANT (3 Hours)

NO. 1. PUMP - 22nd January, 1908

Water pumped during the test was measured
by a 6 In. Siemen's Meter fixed on the
Delivery Main outside.

Water pumped	...	...	14,410 Galls.
Units used	...	...	30.6 B.T.Us
Pressure on Gauge	...	...	197 Feet
Distance from Gauge to water in/ Cistern)			10 Feet
		<u>TOTAL HEAD</u>	<u>207 Feet</u>
Pump Horse Power	...	...	5.02
Electrical Horse Power	...	...	13.19
Mechanical Efficiency	...	...	38 %
Expected do	...	...	50%

OFFICIAL TRIAL No. 2. PUMP.

According to Pump Test Sheet submitted by
Mather & Platt after Test at their Works.

9th August, 1915.

Head obtained	...	...	216 Feet
Gallons pumped per Minute	...	...	92
Water Horse Power	...	...	6.02
Volts	...	...	212
Amps	...	...	48.5
Brake Horse Power	...	...	10.2
Motor Efficiency	....	...	73.5 %
Pump do	...	...	59 %
Pump Horse Power	...	...	6

This Pump was tested with Mather
& Platt's own Test Motor, as they
were unable to run the Pump with
the Motor sent from Winshill on
account of the difference in
periodicity of current.