


S. S. W. W.  
  
DESCRIPTION OF PUMPING STATIONS  
1921.

VOL. I

FRED. J. DIXON, M. INST. C.E.  
ENGINEER.

SOUTH STAFFORDSHIRE WATERWORKS COMPANY.

PUMPING STATIONS.

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ROMSLEY PUMPING STATIONHUNNINGTON near HALESOWENin the County of WORCESTER.S U M M A R Y  
-----

Total Engine Power at Station  
is equal to 219,000 Gallons  
per 24 hours.

|                                |                      |   |               |                               |
|--------------------------------|----------------------|---|---------------|-------------------------------|
| <u>No. 1. Engine.</u>          | <u>Power per day</u> | - | <u>75,000</u> | <u>Gallons</u>                |
| <u>No. 1 CENTRIFUGAL PUMP.</u> |                      |   | <u>72,000</u> | " (SEE NEW ELECTRICAL PLANT.) |
| <u>No. 2. Engine.</u>          | <u>ditto</u>         | - | <u>72,000</u> | do                            |

|                             |                 |                   |                    |
|-----------------------------|-----------------|-------------------|--------------------|
|                             | <u>T.W.L.</u>   | <u>929.7</u>      | <u>965</u>         |
|                             | <u>E.H.F.L.</u> | <u>614.6</u>      | <u>614.6</u>       |
| <u>TOTAL SPECIFIED HEAD</u> | <u>-</u>        | <u>315 Feet</u>   | <u>350 FEET.</u>   |
| <u>(STATIC HEAD ONLY)</u>   |                 | <u>(OLD TANK)</u> | <u>(NEW TOWER)</u> |

PUMPING MAIN 4" DIA. 2420 YDS. LONG.      RD. 26/4/38.

|                             | <u>C O S T S</u> |            |           |
|-----------------------------|------------------|------------|-----------|
|                             | <u>£.</u>        | <u>s.</u>  | <u>d.</u> |
| <u>Land and Law Charges</u> | ... 174.         | 18.        | 0.        |
| <u>Engine House</u>         | ... 391.         | 19.        | 8.        |
| <u>Engines, ...</u>         | ... 615.         | 7.         | 5.        |
| <u>Sundries ...</u>         | ... 58.          | 10.        | 1.        |
|                             | <u>£ 1,240.</u>  | <u>15.</u> | <u>2.</u> |
| <u>Pumping Main</u>         | ... 1,488.       | 9.         | 3.        |
| <u>Ferro-Concrete Tank</u>  | ... 156.         | 6.         | 11.       |

Station Commenced - 1910

Station Completed - 1912.

ROMSLEY PUMPING STATION.LAND

One Piece of 360 Sq. Yards  
purchased from J. Weston,  
in December, 1910.

Second piece of 750 Yards  
purchased from W. Briscoe, in  
December, 1910.

Level of E.H.F. above O.D. ... 614.6 Ft.

NOTE:- 2nd piece of land is  
occupied by the Reservoir Tank.

CONTRACTORSBUILDINGS.

Engine House, G. Law, ... 1911

ENGINES (OIL)

Tangyes Ltd, Birmingham, 1911

C O S T S

|                         | <u>£.</u> | <u>s.</u> | <u>d.</u> |
|-------------------------|-----------|-----------|-----------|
| Land and Law Charges .. | 174.      | 18.       | 0.        |
| Engine House, ..        | 391.      | 19.       | 8         |
| 2 Oil Engines ..        | 615.      | 7.        | 5.        |
| Sundries, .. ..         | 58.       | 10.       | 1.        |
|                         | <hr/>     |           |           |
| TOTAL COST              | £ 1,240.  | 15.       | 2.        |
|                         | <hr/>     |           |           |

Pumping Main ... £ 1,488. 9. 3.

Ferro-Concrete Tank . 156. 6. 11.

This is a Re-Pumping Station.  
The Pumps draw their water from  
a cistern under the Engine House

Floor and deliver it into a Ferro-  
Concrete Tank at a distance of 2450  
yards. The top water level of Tank  
is 315 Feet above Engine House Floor.

ENGINE HOUSE

|                                 |                |
|---------------------------------|----------------|
| Internal Dimensions. Length ... | 25 Ft - 0 Ins. |
| Width ...                       | 16 Ft - 0 Ins. |
| Height to top of Wall Plate ... | 10 Ft - 6 Ins. |

SUCTION TANK OR CISTERN UNDER E.H.F.

Cistern occupies the whole area of  
Engine House Floor

Depth Cistern bottom below E.H.F. 11 Ft - 1 In.

PLANT

Horizontal Oil Engines drawing  
through gearing Treble Vertical  
Ram Pumps.

DUTY SPECIFIED

Each Pump to deliver a net quantity  
of 72,000 gallons per 24 hours.

CAPACITY

Net quantity of each unit equals  
75,000 Gallons per 24 hours, with  
Pumps running at 40 revolutions  
per minute.

SPECIFIED HEAD (Maker's Order No. 017679).

|                                   |          |
|-----------------------------------|----------|
| On Pumping Main ...               | 315 Feet |
| Pump Horse Power, each unit, ...  | 5.       |
| Revolutions, Pumps per Minute ... | 40       |
| Brake Horse Power, each unit ...  | 12       |

ROMSLEY P.S.OIL ENGINESTangye's Oil Engines Horizontal"AA" type of 12 B.H.P.No.1.Engine, Maker's No.,20436 B.No.2. " ditto 20437

|                                    |                             |
|------------------------------------|-----------------------------|
| Centre line from E.H.F. ...        | 2 Ft - 3 $\frac{1}{2}$ Ins. |
| Diameter, Pistons ...              | 7 $\frac{1}{2}$ Ins.        |
| Micrometer. Size Cylinder Liner )  |                             |
| ) No. 1. Engine, )                 | 7.495                       |
| ) No. 2. Engine, )                 | 7.493                       |
| Stroke ...                         | 14 Ins.                     |
| Diameter, Crank Shaft Bearings ... | 2 $\frac{5}{8}$ Ins.        |
| " Flywheels ...                    | 4 Ft - 6 Ins.               |
| Width, Flywheel Rim ...            | 5 Ins.                      |
| Internal Diameter, Boss ...        | 2 $\frac{5}{8}$ Ins.        |
| Wheel in one Casting with ...      | 6 Arms.                     |
| Diameter, Crank Pin ...            | 2 $\frac{7}{8}$ Ins.        |
| Length, Connecting Rod ...         | 2 Ft - 8 Ins.               |

PUMPS.Tangye's Vertical Treble Ram Pumpsdriven through Cast Iron Machine-CutGearing by Oil Engines.

Maker's Number. No.1.Engine Pumps

do No.2. ditto

|                                   |                      |
|-----------------------------------|----------------------|
| Diameter, Pump Rams ...           | 4 $\frac{1}{2}$ Ins. |
| Stroke do ...                     | 8 Ins.               |
| Gallons pumped per revolution ... | 1.375                |
| Multiplier given to Foreman ...   | 1.35                 |
| Revolutions per minute ...        | 40                   |

FORCE PUMP VALVES (GUNMETAL)

|  |                     |
|--|---------------------|
| Number Suction Valves to each Pump,                                | 3                   |
| " Delivery ditto   | 3                   |
| Seats of Valves are driven in with a taper. Diameter top of taper, | $4\frac{1}{16}$ In. |

Gutta Percha Beats are fixed in the Valves and not in Seats.

|  |        |
|--|--------|
| Diameter, Suctions to Pumps ...        | 4 Ins. |
| " Deliveries from " ...                | 4 Ins. |
| Suction Pipe in Cistern to Pumps, dia. | 4 Ins. |

RETAINING VALVE ON SUCTION (SUITABLE FOR 300 Ft. Head)

|                              |                    |
|------------------------------|--------------------|
| Valve ... ..                 | 4 Ins.             |
| Diameter, Rubber on Flap ... | $5\frac{1}{2}$ Ins |
| Thickness, Rubber ... ..     | $\frac{1}{4}$ In.  |

CAST IRON STRAINER ON SUCTION.

|                       |      |                   |
|-----------------------|------|-------------------|
| 96 Holes in Strainer, | dia. | $\frac{5}{8}$ In. |
|-----------------------|------|-------------------|

LEVER LOADED RELIEF VALVES ON

|                                     |                      |
|-------------------------------------|----------------------|
| each Delivery Pipe from Pumps, dia. | $2\frac{1}{16}$ Ins. |
| Weight on end of 16 in. Lever ...   | 61.5 Lbs.            |
| Diameter, Weight ... ..             | $8\frac{1}{2}$ Ins.  |
| Thickness, do ... ..                | $4\frac{1}{2}$ Ins.  |

DELIVERY AIR VESSEL

|                                   |                   |
|-----------------------------------|-------------------|
| Approximate Internal Diameter ... | 13 Ins.           |
| " Total Length ...                | 8 Ft - 4 Ins.     |
| " Thickness of Metal ..           | $\frac{3}{4}$ In. |
| Inlet & Outlet Branches on Vessel | 4 Ins.            |

WATER GAUGE GLASS on AIR VESSEL.

Standard Patent Water Gauge with  
flanged ends fitted with Sight  
Slot Shield. Made by Dewrance  
& Co., London.

One Air Valve fitted to Air Vessel.

Diameter, Glass ... ..  $\frac{3}{4}$  In.

WHEEL GEARING ON PUMPS (MACHINE-CUT GEAR)

The Pinions of the Wheel Gearing  
are of Compressed Paper.

FITTINGS

One Electric Alarm Delivery  
Pressure Gauge. Dia. 10 Ins.  
Made by Schaffer & Budenburg  
Manchester.

Open Dial graduated up to ... .. 300 Feet

WATER LEVEL INDICATOR FOR CISTERN.

Made by Glenfield & Kennedy Ltd.

KILMARNOCK.

Indicator graduated up to ... .. 15 Feet

OIL TANKS.

|                   |     |                 |
|-------------------|-----|-----------------|
| 2 Tanks, Diameter | ... | 30 Ins.         |
| Height            | ... | 5 Feet          |
| Capacity          | ... | 100 Galls. each |
| 1 Tank, Capacity  | ... | 70 Galls.       |

ENGINE COUNTERS (One on each Engine)

Hardings Seven Figure Circular

Make.



OFFICIAL TEST - 16TH JULY, 1912.NO. 1. ENGINE (3 Hours Trial).

|  |     |        |       |
|--|-----|--------|-------|
| Average Total Head on Main             | ... | 347.64 | Feet  |
| Revolutions, Engine per Minute         | ... | 244    |       |
| " Pumps do                             | ... | 39.88  |       |
| Total Gallons Pumped                   | ... | 9869   |       |
| Number Explosions per Minute           | ... | 82.66  |       |
| Mean Effective Pressure in Cylinder,   |     | 66.35  | Lbs.  |
| Oil consumed per hour                  | ... | 5.5    | Pints |
| Efficiency, Oil Engine (Tangye Figure) |     | 77     | %     |
| Indicated Horse Power                  | ... | 8.55   |       |
| Brake Horse Power                      | ... | 6.58   |       |
| Pump Horse Power                       | ... | 5.77   |       |
| Mechanical Efficiency                  | ... | 67.4   | %     |
| Efficiency, Pumps and Gearing          | ... | 87     | %     |

NO. 2. ENGINE (3 Hours Trial)

|  |     |        |       |
|--|-----|--------|-------|
| Average Total Head on Main             | ... | 346.28 | Ft.   |
| Revolutions, Engine per Minute         | ... | 245.14 |       |
| " Pump do                              | ... | 40.45  |       |
| Total Gallons pumped                   | ... | 10,009 |       |
| Number, Explosions per Minute          | ... | 82     |       |
| Mean effective Pressure in Cylinder.   |     | 66.17  | Lbs.  |
| Oil consumed per Hour                  | ... | 5.83   | Pints |
| Efficiency, Oil Engine (Tangye Figure) |     | 77     | %     |
| Indicated Horse Power                  | ... | 8.459  |       |
| Brake Horse Power                      | ... | 6.51   |       |
| Pump Horse Power                       | ... | 5.835  |       |
| Mechanical Efficiency                  | ... | 68.9   | %     |
| Efficiency, Pump and Gearing           | ... | 89     | %     |

OFFICIAL TESTS (Continued)

Messrs Tangye guaranteed to pump

3,000 Gallons against 315. Ft.

Head per hour with a consumption

of Royal Daylight Petroleum of

.95 pint per Brake Horse Power

per hour, when developing 9 Brake

Horse Power.

Height of Main Pressure Gauge

from E.H.F.

...

2.66 Feet

- - - - -