

A REPORT ON CHURCH FARM COLLIERY MANGOTSFIELD IN 1875

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The original manuscript of this report is in Gloucester City Library (ref RF 198:2) and was written in 1875 by Thomas and William Morgans of Bristol , a local firm of Civil and Mining Engineers ⁽¹⁾. The report is 14 pages long and lacks the map mentioned in it.

It was clearly made to assist in the search for additional capital in order to get the colliery working again, and thus provides valuable information about the history of the site and its state at the time of writing. Similar

reports would have been written for other local pits, and may survive un-noticed in solicitors' offices. They would be well worth searching out and publishing.

This particular report is of great interest not only for the historical data contained in it, but also because Church Farm today contains the striking remains of the engine house built subsequently for the Cornish Steam Pumps mentioned in the text. This structure has been 'Listed' as being of Architectural and Historic

interest and therefore protected against demolition. The field in which it is located has also been included in the list of archaeological sites of 'County' importance in the Draft Kingswood Local Plan, even though that Plan also includes it within the Southern boundary of the Emersons Green Development Area for major housing development ⁽²⁾.

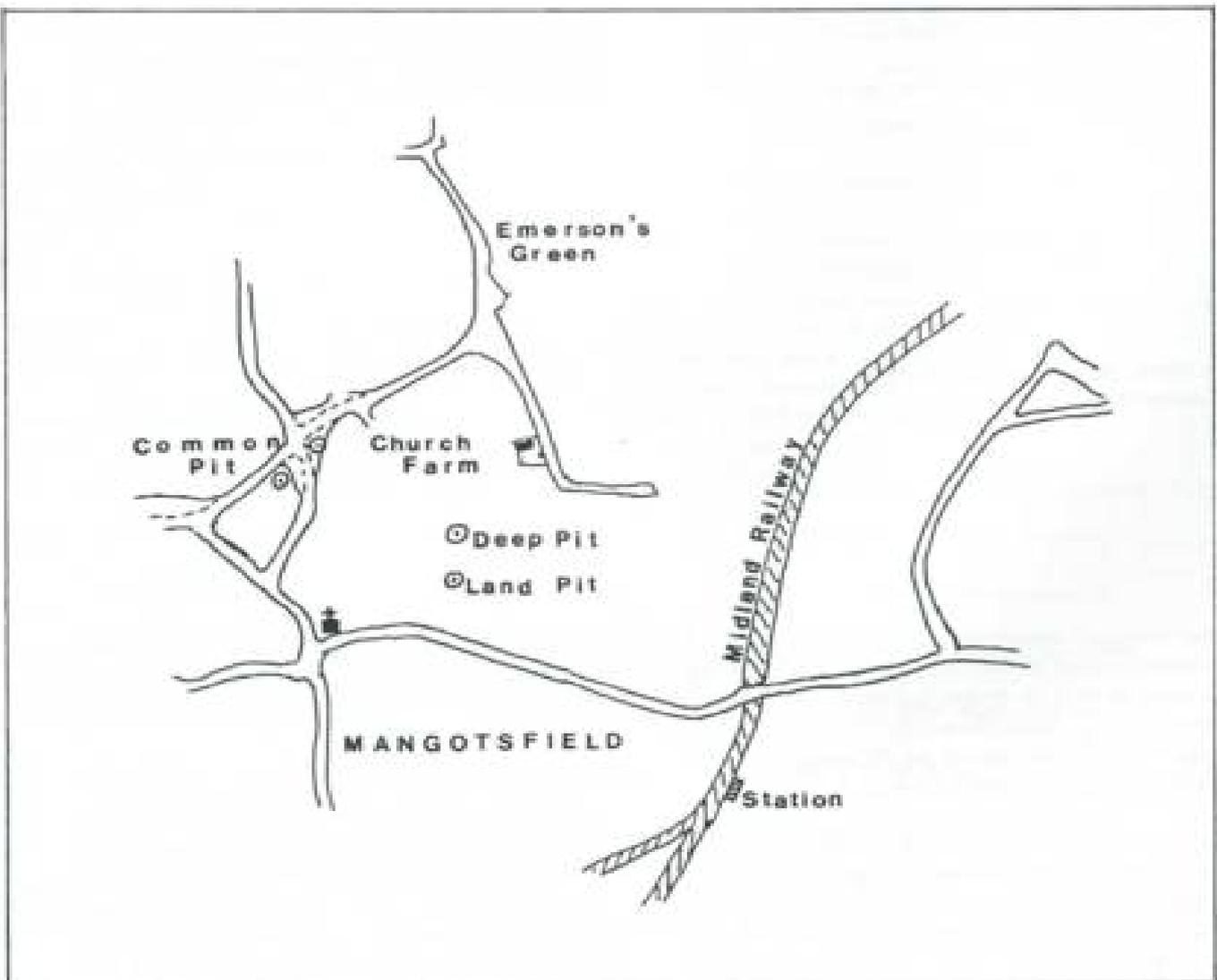
The report indicates that this site was first worked about 70 years before (1805) and 'that three shafts were sunk then. Pumps were used for drainage, which implies steam was used. Some ten acres of the site were worked, but by about 1815 it was abandoned. The pits were reopened in 1875, but one of the new partners proved unable to provide his share of the capital necessary to develop them further; hence the commissioning of the report to attract more finance.

The report provides useful information about the work involved in reopening, and, also details about the engines used for it. A horizontal

engine was first used, with 14½ inch diameter cylinder, of which the foundations still survive (cleared and measured by BIAS members in 1980), and this engine wound as well as pumped. A Cornish engine of 50 inch dia. cylinder was bought and was awaiting erection on site. This clearly was secondhand.

Much financial detail is contained about probable costs and estimated profits. The one fact missing is the number of men needed to do it. The manuscript is evidently a copy made by a clerk and as such contains a number of obvious errors. In the following transcript these have been identified Within square brackets and immediately followed by suggested correction.

Despite the glowing report given of the prospective profits to be made, this colliery was finally abandoned in 1891, with lack of capital the reason given ⁽³⁾.



**The
Mangotsfield Colliery**

The coal property comprised within the Limits of this Colliery has only been slightly worked. This Colliery is not at present in operation owing to the inability of one of the recent proprietors to provide his share of the Capital requisite for the provision of Plant and completion of arrangements commenced in 1875 for properly opening and developing the property.

It does not now require an outlay of much Capital to complete the Plant and go to open and extend Workings in Maiden coal as to place the property on a sound commercial basis.

The order of this Report is as follows:-

- 1 A description of the Property with the particulars of the seams of coal available for profitable working and an account of the existing Colliery workings and appliances.
 - 2 An estimate of the total quantity of coal available in the property and of the time required for its exhaustion.
 - 3 Cost of landing the coal and estimate of Profits.
 - 4 Outlay required for works yet necessary to be carried out to establish the Colliery as a good going concern.
 - 5 A valuation of Property.
 - 6 Supplementary Remarks
- 1 A description of the Property etc.**

This Colliery Property is situated in the Parish of Mangotsfield in Gloucestershire and is about 5 miles from Bristol and 7 miles from Bath either by road or rail

It comprises an aggregate area of about 110 acres demised by the Lessors.

The unexpired term being about 38 years in each case. Good workable coal seams exist under the entire area at a comparatively shallow depth in view of which and of the fact that several old shafts communications to the seams existed in the property when demised to the recent proprietors the royalty of one shilling per ton in each case is reasonable.

The aggregate dead rent is only £95 under about 73 acres (coloured red on the accompanying plan)

out of the total demised area. Two seams of coal known as the Mangotsfield Series exist.

They have been proved by the means of three shafts sunk in this portion of the area, and also at a short distance away to the N. W. of it at the Mangotsfield Common Colliery, where by means of shallow shafts a section of the crop portion of this upper of these seams is being worked.

Under the remaining portion of about 37 acres (coloured on the accompanying plan yellow) out of the total of 110 acres. Four seams of coal exist known as the Parkfield Series.

The seams have been proved by means of two shafts with this area.

The two seams of coal of the Mangotsfield Series have been brought up by a N. & S. fault traversing this property into juxtaposition with the Parkfield seams on the other side of it, the said two seams are the following thickness respectively,

The upper 3ft 6in
The lower 2ft 6in

The quality of the produce from the above seams is in each case excellent for Household and steam purposes.

Each of them yields only a very small proportion of ash and that is of a slightly red colour in both cases and dense enough to be divested of the disagreeable floating property characteristic of white ash dust.

A very large proportion of the yield of both veins is in large blocks which endure transport well. Such small coal as is produced burns freely and is excellent for steam purposes yielding a very little ash and clinker.

The four seams of coal of the Parkfield Series proved in this property are of the following thickness respectively,

The Hard Vein 2½ft to 3ft
The Top Vein 2¾ft to 3ft
The Holly Bush Vein 3ft to 3½ft
The Big Vein 3ft to 4ft

The qualities and adoptabilities of the above seams are well known.

The Hard Vein and Top Vein produce is good for both household and steam purposes.

The Holly Bush Vein produce is a superior Smith coal and the Big Vein makes a good coke.



The two seams of the Mangotsfield Series were first proved at the Colliery about 70 years ago by means of three shafts before mentioned, respectively about 38 yards, 50 yards and 86 yards deep to the lower Veins. The shortest and deepest of these three pits are respectively called the Land Pit and Deep Pit and they are about 150 [] . yards . apart and approximately in the same line on the dips of the seams.

The Deep Pit was used for drainage and ventilating purposes and by means of the two shortest pits some coal was won on their land "sides" or towards the "rise" from them. Those operations were conducted chiefly in the upper seams.

The present proprietor of the Colliery estimates the total area thus exhausted is a maximum of 10 acres.

After the exhaustion of the foregoing 10 acres of area further working of the Colliery was relinquished in consequence of [degaleations] . .derogations..and absconding on the part of one of the partners in the Company [they]..that.. worked the Colliery.

In 1875 after the lapse of an interval of over 60 years the present proprietor and his then partner drained and riddled the Deep and Land pits and soon after worked some coal from both of them for use at the Colliery and for sale. Between the Deep Pit and the other pits the

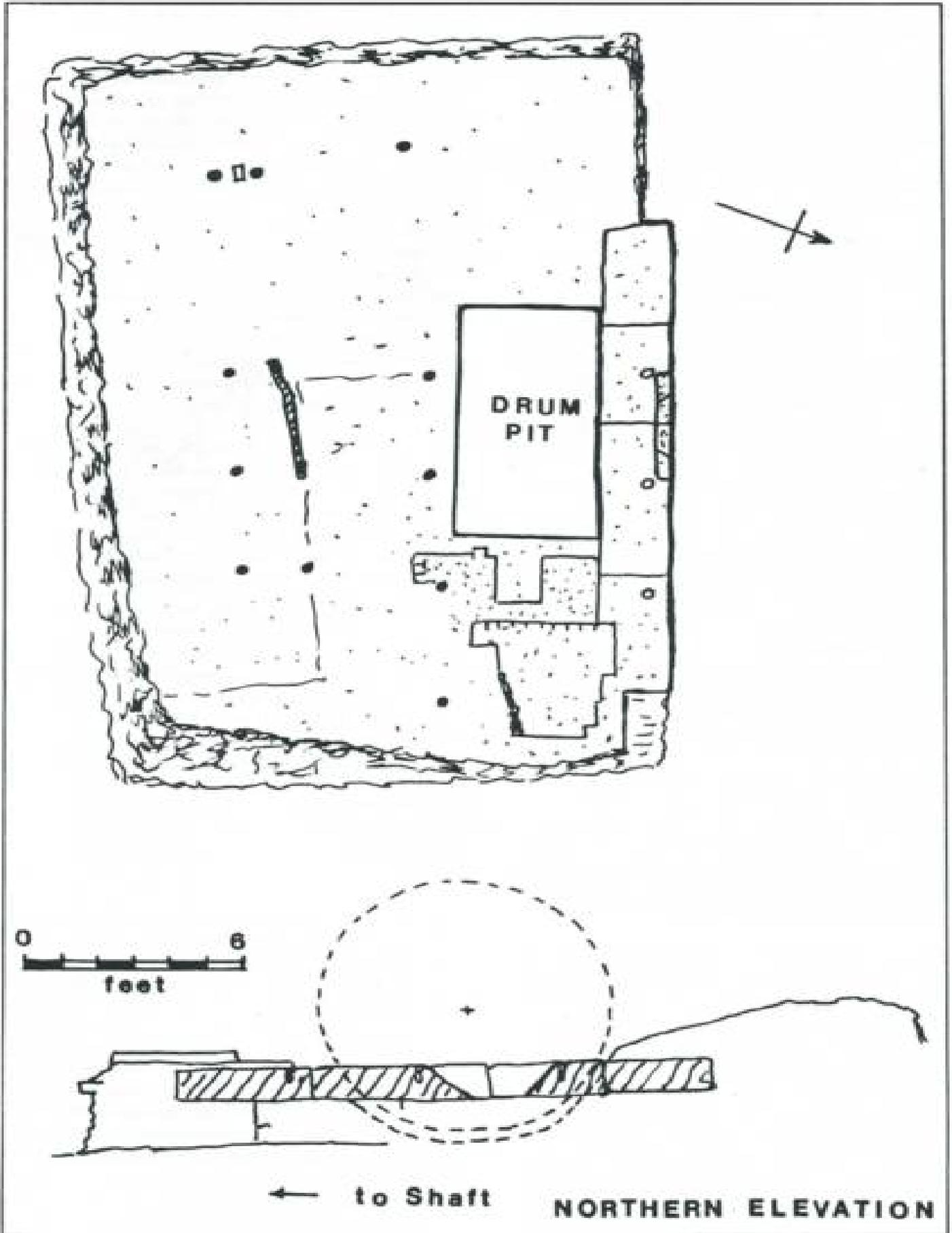
seams of coal were found to be nearly intact. A little had been wrought and some communications had been made for air circulation and for water conveyance to Deep Pit

The Deep pit was found to pass first through 70 yards of pennant rock and next 11 yards of hard shale which rests upon the upper vein of coal . This pit is sunk to the lower seam, but was not cleared out below the upper one, but the second seam was reached by means of a level cut out or branch driven from the pit on its "rise" side, and the ground intermediate to the two seams proved to be a bed of hard-shale of about 5 yards in thickness in a vertical direction. The Land pit was riddled down to the second vein and the shale proved in the same manner as at the Deep pit.

A stratum of shale believed to be of considerable thickness under lies the lower coal vein

The shale enclosing the two coal seams and intervening between them are exceedingly strong and tough. Each seam has consequently a good top and very little timber propping is required.

When the deep shaft was cleared it was found that no pit walling had been provided for securing this shale during the former working of the Colliery, nevertheless the pit sides through it were found to be quite strong and apparently



as good as when first sunk through. The present

proprietor however deemed it best to wall the portion to insure absolute security and had some substantial 18in. walling put in, and good entrances provided for level headings which were afterwards driven a short distance. The upper seam of coal was found remaining in the sides of the pit, naked clean and hard; and nearly as flush with the pit sides as when first cut through.

The ridding of the Deep Pit was effected by means of a Portable Engine and Winding apparatus (still fixed to the surface) and a good new pump column. This column consists of a 12in. lift pump with a 13in. rising main secured to stout new buntons fixed at 9ft. apart all the way up the pits. This pump was worked to a four foot stroke temporarily by means of a horizontal steam engine of 14½ inch cylinder provided for winding purposes which has been substantially erected and is now in good working order, one of the toothed wheels geared to the pumping crank requires renewal.

A Cornish Pumping Engine of 50in. cylinder was purchased for pumping and is now on the ground but has not been erected; when it is erected the pumping will be performed with great economy of steam. A chimney stack and 2 tubular boilers are erected. The boilers are all connected and were worked, two at a time, for pumping and winding purposes during the late operations at the Colliery and they are now in working order.

In summer time the water in the Colliery was cleared by the present pump (provisionally connected to the 14½ inch winding engine) when going at the rate of 7 lift strokes of 4ft. each per minute (approximately 137 gallons per min.) and in the winter time by 13 lift strokes per minute (255 gallons per minute).

When the Cornish Engine is erected the length of the pump stroke will be increased to 8ft. - double the present stroke - and as a pump of this size with a column of this height can be safely driven at thirteen 8ft. lifting strokes per minute, the pumping capabilities of water will be equal to double the present quantity, besides which the 50in. cylinder of the Engine will actuate with ease. An economy on 8ft stroke pump of more than twice the capacity of the present 12 inch pump when working at 8ft. stroke so more than four times the present maximum quantity of water or even 1500 gallons per

minute could be readily dealt with by this engine.

It is to be remarked, that when this Colliery was originally worked it was drained by means of a 9 inch pump. This pump was complete in the Deep pit when it was cleared in 1875 and a portion of it yet remains fixed in the unridged bottom of this pit. It will be observed that the present normal quantity of water, 127 gallons per minute, is inconsiderable and a portion of this, it has been discovered, resulted from the defective state of the old discharge conduit close under the land surface which permitted a good deal of the pumped water to [percede] ..proceed..back into the pit nearly as much as the normal quantity in addition, result from [infiltration]..infiltration..from the surface during the wet season of the year.

It is highly probable that only a very little more of this quantity of surface water will be met with during the further prosecution of the Colliery in consequence of the contour of the surface land contiguous to the Colliery. The Colliery is situated just at the edge of a [plateau] ..plateau..on which the village of Mangotsfield stands and from the site of the Colliery on this brow the surface declines towards the North West, North, North East (being nearly in the direction of Messrs. Wethered, Cosham & Co's Colliery about a mile away at Brandy Bottom where from many pits operations are being conducted, to reach the Mangotsfield Series of coal seams at a very great outlay ⁽⁴⁾ and South East (towards the Midland Railway) thus the surface water on adjacent lands has every facility of free escape towards the neighbouring vales in lieu of soaking under the surface.

At present while the Colliery is standing idle its water does not rise more than a little height above the bottom of the land pit which clearly shows that there is some natural means of drainage from these strata to the depth.

The stratum of hard argillaceous shales 11 yards thick immediately under the Pennant rock forms a barrier of considerable efficiency to the passage of water from above and similarly the bed of shale below the lower vein offers resistance to the percolation of water from the subjacent strata.

Nearly half of the present total demised area of coal can be won by means of this present and Deep pits which will serve for the drainage & ventilation and raising of this portion which will entirely consist of the Mangotsfield seams, [some seams]..somedea.. some of the coal lies to the deep side of Deep Pit.
Coal Mining operation. sufficient to continue through several years can therefore be at once commenced upon from the existing opening lately cleared, when put into working order again.

The Seams of the Parkfield series were proved at this Colliery by a Mr Fryer ⁽⁵⁾ some years ago, just prior to the construction of the Midland Railway which at present forms the South Eastern boundary of the Colliery. Mr Fryer had a dispute with the Midland Railway so followed by litigation in which he became the loser and that to such an extent pecuniarily as obliged him to give up the Colliery, since which period it has not been reopened. According to the testimony of men now living in the neighbourhood of the Colliery who worked in these seams (Parkfield Series) during the short period they were opened there, it appears that there were never any pumps fixed to drain them, but that the quantity of water met with was sufficiently small to be dealt with by means of winding it up in a 200 gallon. [carrel]..barrel..between whiles, they also state the thickness and qualities of the several seams to be as set forth earlier in this Report and that the produce of the Big Vein was coked at the Colliery.

2 Estimate of the total quantity of coal and of time for its exhaustion.

In estimating the total quantity of coal available at this Colliery and the cost of winning the same, it will be keeping on the safe side to assume that the seams of the Mangotsfield Series cover the whole area because in the crops they are less productive per acre in consequence of their small aggregate thickness and more expensive to get per unit in weight in consequence of their less individual thickness than those of the Parkfield Series which will be demised from the computation.

The [quality]..quantity.. in each case in the unworked area of about 100 acres may be estimated at 500,000 tons.

To properly establish this Colliery it will be advisable to raise at first and for some little period subsequently 50 tons of coal per day or 300 tons per week for which a ready sale can be at once secured in consequence of the very favourable character of the coal for Household purpose; at [the].. that.. rate of an output, the present area would be exhausted in 33 years. It is however intended to increase the area, as will be referred to later on, and gradually to increase the output to 100 tons per day for which the present surface plan after the erection of the Pumping Engine will be adequate.

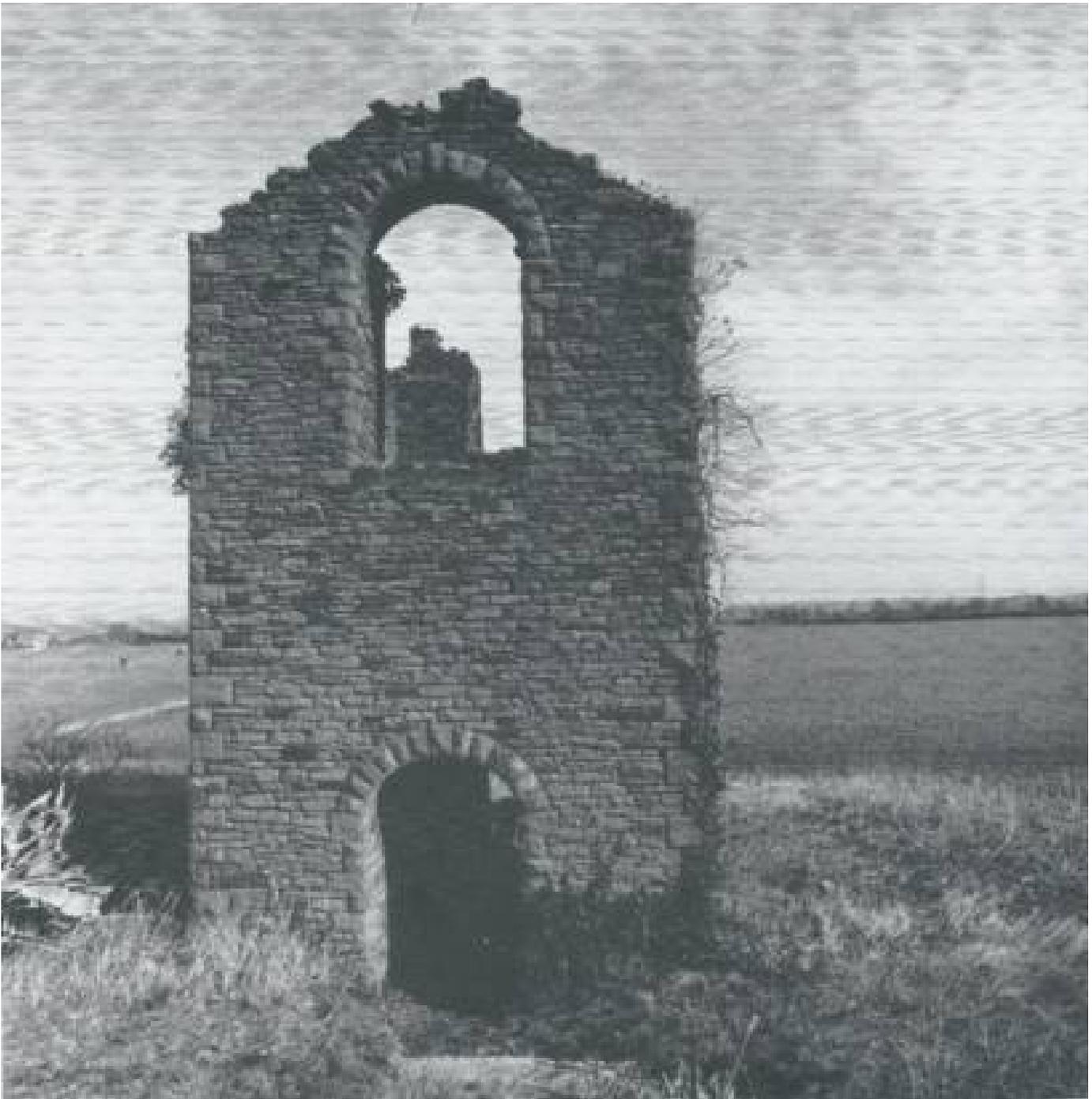
3 Cost; of landing the coal and Estimate of Profit

The two seams can be conveniently worked to the extent of 50 tons, per day of which approximately two thirds would be upper seam and one third lower seam produce. Proportionate to their respective thickness at a total cost of 5/6d per ton delivered into carts or trucks at the pit's bank. This cost includes labour, timber store, pumping and winding, interest of plant, £3,000 at 5% royalty, wayleaves and all charges. The coal can be carted from the Colliery and put into trucks at the old Mangotsfield Station siding (at a nominal rent and where a tipping shoot has been erected at a cost 10d, say 1/-, per ton) the price paid when the Colliery was recently working, which will bring up the cost to a total of 6/3d per ton for through and through coal delivered into the trucks at the Midland Railway upon which the freight rate from this station to Bristol is 9d per ton and to Bath [] per ton.

Taking the present selling price in trucks at no more than 10/- per ton for best block housecoal and 4/- per ton for good steam small coal the average selling price of this coal through and through would be 8/4d per ton on rail leaving thus a Margin of 2/1d clear profit, interest at 5% on the plant having already been charged in the cost of getting. Calling the profits 2/- per ton, weekly earning would be £30, equal to £1500 per annum on an output of 50 tons per day.

4 Outlay required for [worked]. .works.. yet necessary

To put the Colliery in a condition to enable the above output to be attained and afterwards



maintained for a period of 12 or 14 years a present outlay of about £800 is required for erecting the 50 inch pumping engine (for which sufficient boiler power is already provided) and the provisions for pit's trams, winding cage, winding rope, pit guide and some minor necessities and for opening working places under-ground; and later on, say 4 or 5 years hence, £700 out of the total sum of about £1,200 at the outside of which will be required for the provisions of underground pumping and hauling plant for the deep workings, the balance of £500 being gradually expended for pumps etc as progress is made to the deep at about 10 years after the commencement of operations.

Fryer's pit before referred to and the old ventilating pit in connection therewith would have to be reopened. A considerable portion or possibly the entire of the Deep pit will require to be walled as Mr Fryer only timbered this shaft when it was sunk. Pumping and Winding machinery and general pit plant will also have to be provided and some expenditure incurred in reopening the same. For the whole of these requirements a sum of about £3,500 will be necessary. This amount will be reduced to the extent of £1,000 the value of removeable plant

which will be brought into disuse at the period when coal winning from the present deep pit will finally cease.

After the reopening of Fryer's Pit operations would be conducted in the seams of the Parkfield Series in which very little water will have to be dealt with, until the approach of their exhaustion when the fault before mentioned herein would have to be pierced, and the remainder of the Mangotsfield seams on the West side of it worked out by means of these shafts in the Parkfield seams.

5 Valuation of the property

We consider the income from this restricted to its present area and with a daily output of 50 tons of coal may be reliably set down at £1,500 per annum during a period of 33 years to come. This income may be augmented by securing additional area and correspondingly increasing the output of coal.

After making due allowance for the outlay of Capital immediately required and also for future capital expenditure as previously indicated we estimate the present value of the Colliery and existing plant to represent of the [] .. order of.. £12,000 (Twelve thousand pounds)

6 Supplementary remarks

The proprietor of the Colliery is in treaty at present for an additional area of 57 acres at a low dead rent and a lower royalty than is payable under the existing leases. The Mangotsfield seams exist under this area and they can be wrought from the Deep and Land pits now open at the Colliery. The coal so wrought would incur a moderate wayleave charge.

It will require a period of about 5 months after a resumption of operations at the present Deep pit to erect the pumping engine and sufficiently open working under-ground to enable profits to begin to be made but some coal would be put into the market soon after the expiration of three months.

The Colliery is well situated for the distribution of its produce by Rail - Bristol being the distance of only 5 miles, Bath 7

miles, Gloucester 30 miles. By the additional outlay of about £1,500 for the construction of a railway siding from the Midland Railway direct to the Colliery a diminution in cost (after allowing interest on siding capital) to the extent of about 4d per ton on the coal deliveries on to the Midland Railway would ensue.

Pit-wood in ample quantities is procurable in the neighbourhood at very reasonable prices. Colliers and other workmen are numerous in the neighbourhood and no outlay will be required for workmen's cottages, the Colliery being situated within. 450 yards of the Mangotsfield Parish Church which is in the centre of the village. A careful consideration of the general features and details of this coal property and of the working of it has given us a good opinion of it as being a very profitable opening for the amount of Capital for restarting the Colliery and business.

(Sd) Thos. Morgan Mem. Inst. Mech. Engineers
(Sd) William Morgan Certif. Colliery Manager

The Guildhall Bristol Sept. 6th 1875

References

1. Thomas and William Morgans set up business in the Guildhall, Broad Street, Bristol, in 1874 trading under the name of Morgans & Sons. From 1877 they changed the name to Thomas & William Morgans, and in 1896 moved to 60 Queens Square where the business continued until 1923 - source - Mathews' Bristol Directory, published annually during that period. Bristol City Reference Library.
2. Kingswood Local Plan (Draft) Written Statement & Proposals Map, Kingswood Borough Council, Nov. 1988
3. see pages 46-49 *Collieries of Kingswood and South Gloucestershire* by John Cornwell, published by the author 1983
4. ibed. John Cornwell, pages 25-32
5. for Fryers Pit see page 71 The Coalfields of Gloucestershire and Somersetshire, John Anstie, originally published 1873, facsimile published by Kingsmead Reprints 1969.