

# THE COURSE OF A TUDOR COAL MINE DRAINAGE 'SOUGH' AT WOLLATON AND LENTON, NOTTINGHAMSHIRE, 1552

by

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Although all obvious signs have now disappeared, coal mining was a feature of life in Wollaton for over 500 years, the last coal mine closing in 1965. The coal pits were particularly profitable in the late 16<sup>th</sup> century, when Sir Francis Willoughby used the proceeds to finance the building of Wollaton Hall.<sup>1</sup>

Although mining was making a significant contribution to the Willoughby family's income in the 16<sup>th</sup> century the industry was still in its infancy. Initially mining in the middle of the century consisted of the simple quarrying of coal at those places where inclined seams emerged on the surface. When the visible surface coal had been excavated the direction of the inclined seam became obvious and the overburden could then be removed to provide access to the underlying coal. However as the depth of the overburden increased it became uneconomical to remove it all. At this point the miners sank shafts down to the seam and removed the coal at and around the bottom until the shape resembled a bell, a method of working known as bell-pit mining. As the amount of extractable coal was limited by the danger of roof collapses, such pits had a relatively short life. New shafts would then be sunk, with the spoil used to fill the old ones. As a result of this backfilling very little evidence of these early pits has survived.

As shafts became deeper the amount of spoil requiring removal to access a given volume of coal increased and the method became uneconomic. Towards the end of the 16<sup>th</sup> century 'pillar and stall' working appears to have been introduced. This new technique, in which pillars of coal were left to support the roof and reduce the risk of collapse, made it economical to mine deeper coal as it increased the volume that could be removed via a single shaft.

A significant problem faced by early coal miners was the accumulation of water in the mine workings.

One solution was to hoist water out of the pits using buckets or barrels. A less labour-intensive solution, but one that required a significant capital investment, involved the construction of drains. These were known as 'soughs' in the Midlands and 'watergates' in the North East<sup>2</sup>. In general, a sough consisted of a series of tunnels and/or ditches using gravity to discharge water into a lower level water course. Documentary evidence indicates that soughs were in use at Cossall, Nottinghamshire<sup>3</sup> and watergates in Rainton, Durham<sup>4</sup> in the 14<sup>th</sup> century. Soughs were partly supplemented by pumping, and pumps were first introduced into the Wollaton coalfield in 1573<sup>5</sup>. Eventually pump technology improved, particularly after development of the steam engine in the 18<sup>th</sup> century, making it possible to de-water much lower mine workings than was practical with sough drainage alone.

## *The early Wollaton coal pits and soughs*

Soughs were used in Wollaton in the 15<sup>th</sup> and possibly earlier centuries, but physical and documentary evidence of their location and construction is very patchy. Dr Richard Smith, in his major study of the early Willoughby coal mines wrote:

The reference to the Wollaton pits in the 1493 will of Sir Henry Willoughby stipulating that 'there shal be goyng yerely 5 colepittes beside the levell pitte in the lordship of Wollaton' shows that a 'level' or underground sough was in use by this date in Wollaton, and ... a lengthy and expensive sough was probably a necessity from the beginning for the operations in low-lying areas at Wollaton. The Bailiffs' Accounts include an early payment towards the expenses of the 'Newe Soughs' (1509), and the payments of rent of eight rooks of coal to the Prior of Lenton in the Coalpit Book of 1526 indicates that this early sough probably followed roughly the course through the manor of Lenton taken by the very extensive sough built to supersede it in the 1550s.<sup>6</sup>

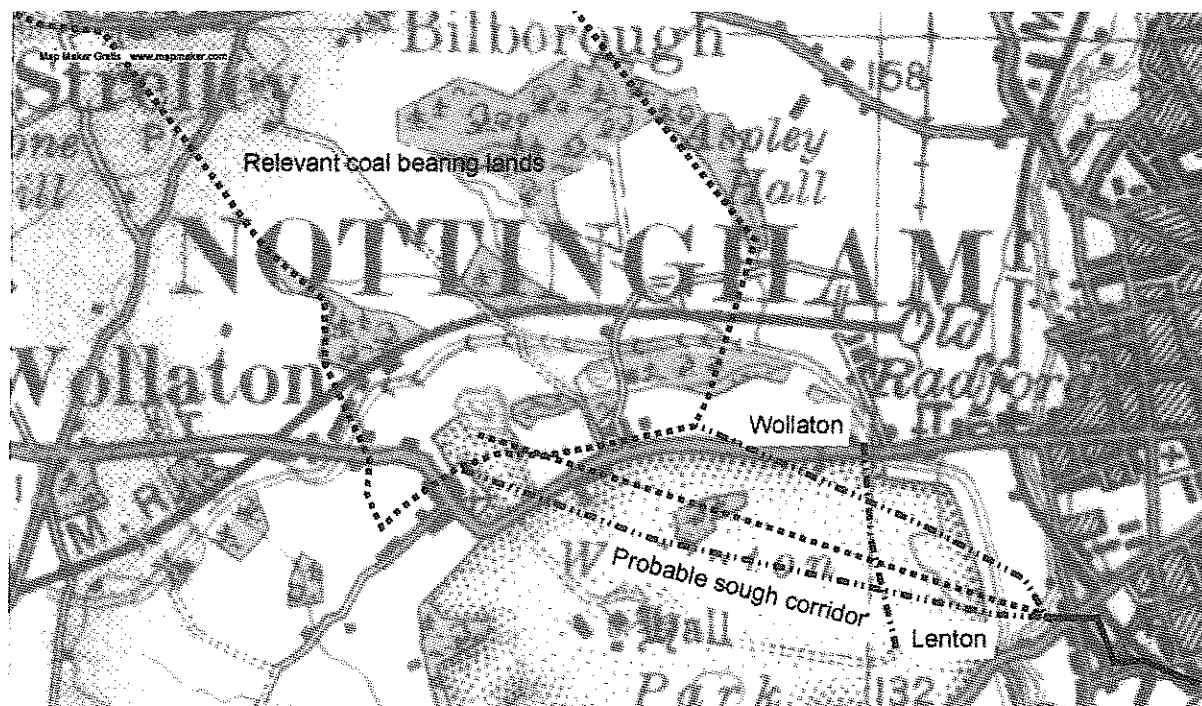


FIGURE 1: General location of coal-bearing land in Wollaton and of drainage soughs.

Coal-bearing land at Wollaton is marked on Figure 1<sup>7</sup>; in this area three coal seams emerge at the surface and coal could be accessed using simple quarrying and bell-pit techniques. Although there was coal in other parts of Wollaton this area is at a height and location suitable for draining through soughs leading down towards the Trent flood plain via Lenton. The corridor through which the soughs probably passed and an indication of their likely route is also shown in Figure 1.

A major new sough at least two miles long was planned in 1549-52 which, according to Dr Smith, 'probably represented the largest feat of engineering in the Midlands at that period'<sup>8</sup>. Although unfortunately no surface trace of either this new sough or its predecessors appears to remain,<sup>9</sup> it is difficult to understand how such major constructions, the majority of which would have taken place underground, could have been removed or completely destroyed. In the belief that part of the 1552 sough must still exist this article describes the results of research to trace its location.

#### *The new sough, c.1549-1552*

Historical attention was first drawn to the intention to construct a new sough by the *Victoria County History of Nottinghamshire* published in 1910<sup>10</sup> which quoted the draft petition in the Public Record Office, London<sup>11</sup>. This was drawn up on behalf of the infant heir Thomas Willoughby to the Court of Augmentations and indicated that 'your sayd supplyant entendeth to make his petyt'on vnto your worship for the grante of a newe sovg'h' through the royal manor of Lenton. Although the document is undated it must have been produced shortly after the death of Thomas's father Henry in 1549. Indeed, although Henry Willoughby had enjoyed the estate for only seven months when killed by Kett's rebels, his will ordained that his executors shall within eight years of his decease 'make or cause to be made at Wollaton aforesayd a newe soughe for getting cole within the same lordshypp, and to bestow theruppon the some of on[e] thowsande poundes, or more or lesse, as nede shall require.'<sup>12</sup>

In the draft petition it was recalled that Sir Henry