

Development of the Worsley Delph Complex

A suggested chronology & reasons for conclusions

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Before say 1758

We can only interpret the rather sketchy plans/maps of the area and references to industrial activity there. These activities centred round the needs of an estate in providing the necessities of life within the customs of a Medieval Manor with centralised services.

The water powered manorial corn mill with its adjacent mill dam is almost certainly medieval in origin. There is a mention of a Millbrook in Worsley in 1206. The course of the overflow and tailrace is shown in an early map emerging through separate arches of a bridge carrying Worsley Road. There is reason to suppose the dam was extended southwards, as shown by what is believed to be a remnant of its stone retaining wall still visible in a School Brow car park, which necessitated the diversion of its outflows and still exists in part.

Building material was largely supplied by quarrying the sandstone to the west of the mill, eventually forming the cove that became the "Delph". Considerable quantities of stone were extracted including hundreds of wagon loads for Barton during the construction of the Irwell Bridge in 1676-9. The earliest maps show a quarry floor with a central water filled basin with a water level similar to that of today. Clearly, a spit or tongue of rock was left to carry the highway, Worsley Road

Other communal services were catered for by the siting of a smithy adjacent to the corn mill and a Timber yard to the south of Worsley Road.

Supplying a localised need, transport of materials and products used the ancient highways.

1758 – 1775.

The great period of Bridgewater Canal building affecting Worsley and the Delph.

John Gilbert planned a total coal extraction and delivery operation centered on Worsley village. Its basis was that the land level at Worsley (82 feet AOD) could be followed all the way to Salford without the need for locks. It would appear the existing basin which had formed on the quarry floor, was used as a starting point for the underground canal. This is shown on the estate plan of 1764, with a connecting waterway to the newly built Bridgewater Canal to the east of the Nailmaker's shop. Worsley Road would have to bridge this canal arm. The plan also shows a cul-de-sac basin to the west of the Nailmaker's shop.

The "Gentleman's Magazine" of 1763 describes a ventilation system erected in the Delph for the underground canal. "At the mouth of the cavern is erected a water bellows, being the body of a tree forming a hollow cylinder standing upright. Upon this a wooden basin in the form of a funnel receives a current of water from the higher ground. This water falls into the cylinder and comes out at the bottom but at the same time carries a quantity of air with it which is received into tin pipes and forced into the enormous recess of the coal pits."

Arthur Young visited in 1769 and sketched the Delph. His drawing shows the still small basin being used to receive boats from the underground canal but, sadly, does not depict the water bellows mentioned above. This sketch also shows a quarry floor level extending only marginally to the east of the boat channel whilst work is continuing extracting rock on the west and north face. A crane, of what has been described as being “of very curious construction”, with stay ropes from each quarry face supporting it, had been erected on the quarry floor to expedite the loading of stone to boats. Considerable progress on extending the west face was made for in 1771 the boat basin had now reached its present size and the west entrance tunnel of the underground canal was under construction.

There has been some debate about the existence or practicality of the crane noted by Arthur Young but a later visitor, Jean-Jaques Rousseau, the Swiss educationalist, here in 1776 sketched the Worsley Road Bridge and the canal buildings, clearly depicting an identical crane in use. This sketch was subsequently used by Josiah Wedgwood to decorate one of the plates of the dinner service made for the Empress of Russia

1775 – 1810.

What we do not know:

At what date the twin arch bridge carrying Worsley Road over the Delph access branch was built and when the smaller, west Delph access tunnel was punched through the spit of rock carrying the road, to join the Delph with the basin to the west of the Nailmaker`s shop.

Conjecture: It would be logical that the west Delph access beneath Worsley Road bridge had been added when the new west underground canal tunnel was nearing or at completion thus allowing a complete “one way” circulation of mine boats between delph and canal. This would suggest that the bridge was constructed all at one time, in the form it still exists, in the early / mid 1770s to accommodate these requirements.

That changes in requirements could be accommodated is shown by the existence of a hoist shaft hole in the crown of the arch over the waterway presumably for moving materials between canal and road. By 1807 this had been sealed off.

What we DO know:

Our knowledge of the situation in the early years of the 19th C can be largely based on the drawings of John Claude Nattes who sketched extensively in Worsley in 1807.

His sketch (No 2) titled “A warehouse at Worsley” shows the twin arch bridge to the east of the Nailmaker`s shop. Its eastern arch has the by now steam powered corn mill behind it and clearly depicted structures occupying the eastern arch portion of its span. It would seem these are in line with the structures surveyed in 1988 by Aldred / Atkinson. The west arch shows prepared stone is awaiting shipment.

Nattes` sketch (No 3) “Under Worsley Road Bridge” shows the east bank of the Delph, consisting of a narrow hard standing and an earth / rock embankment. His sketches 4 and 5 depicting the stonemason`s cottage / workshop reinforce the nature of the ground level then present.

Revelations of 2018 and how do they fit in with what is known or deduced.



In June 2018 works to clear redundant structures and accumulated ground in order to allow the building of an interpretation viewing platform on the EAST side of the delph revealed substantial structures.

- 1, A substantial and well set winch at towpath level was discovered near the Worsley Road Bridge its axis aimed at the centre of the bridge arch.
- 2, Removal of accumulated ground waterside revealed a well constructed quay with hardstanding between the road bridge and the egress of the mill dam overflow.
- 3, Continuing to remove the overburden revealed a small tunnel at quay level and that the retaining wall between delph and School Brow did not go to quay level at all points.
- 4, Most intriguing was the exposure of a large (3m wide 2.5m high) brick arched tunnel running SE for some 12m. It has a level floor of hard brick at quay level and several iron bands some 1m long replacing brick course at the entrance. A smaller brick arch branch inset is some 2m from the end on its S side. Substantial wing walls akin to a canal bridge retained the overburden. **These are clearly shown on the 1 inch map of 1845 and 25 inch map of 1895.**

It would seem the termination of this tunnel had the soffit tapered upwards. It is “stopped off” by what appears to be a cement rendered wall, not part of the tunnel structure. The smaller branch tunnel of only some 2m length terminates in a return of brickwork and opens onto landfill material. These works are not shown on the Nattes drawings and therefore are likely to post date the 1807 Nattes sketches.

Conjecture about the above points:

Point 1, The winch: it appears to be of mid 19th century manufacture, a standard, mass produced two crab hand winch. Its orientation towards the centre of the eastern Worsley Road Bridge arch would suggest a use in moving materials between the roadway and the Delph waterway. Its orientation would preclude any regular use in moving boats within the Delph

Points 2to 4:

We believe these works need to be interpreted in conjunction with the structures beneath the arch of Worsley Road Bridge. These too have a floor level equating to the quay or towpath level. The room beneath Worsley Rd Bridge closest to the Delph clearly had a doorway of a height only needed for a horse ascending an incline; the newly discovered tunnel having a tapered soffit again would accommodate a horse ascending an incline.

There are, we suggest, several factors to be considered.

A, The entire area of Worsley Village remained part of the estate of the Duke, his Trustees and finally his descendant the Earl of Ellesmere until 1924. This permitted interdependent and mutually beneficial development to take place to the Delph, Mill and environs.

B, Clearly by 1807 the corn mill had developed from a water powered mill serving a local community to a steam powered operation occupying extended premises serving a regional client base requiring water transport for grain, milled product and fuel. The Mill business was leased out to individuals or partnerships by the Bridgewater succession.

C, The social engineering projects of the Earl & Countess of Ellesmere had a physical impact on the area. From 1838 School Brow was exactly that, it led the village children to the school just to the north of the Delph.

We postulate a theory as to how these works evolved and were used.

The corn mill boilerhouse chimney as shown by Nattes and in later photographs was at the Delph end of the complex so it would make sense to deliver coal, potentially upwards of 3 tons per day from the Delph quay alongside. To do so and maintain access to the stonemason's workshop would involve cutting a tunnel through the embankment shown in Nattes drawing. This was likely to have been constructed at the expense of the Bridgewater's by "cut and cover" as it has Shallow depth. It has wing walls curved on plan, a structure exactly modelled on the Bridgewater Canal bridges.

Superimposing its position on the 1895 / 1905 25 inch to mile map aligns the tunnel perfectly with a major corn mill building presumed to be the boiler house / engine house. This must have entered the building at a deep cellar level, the building itself pre-dating the establishment of school Brow as it clearly encroaches into its course.

It is well established that the east arch of the Worsley Road Bridge had a canal arm that was presumed to enter the corn mill. As above, superimposing the known portion of this canal arm onto the map aligns it perfectly with the largest building block of the complex. Again it is likely this entered a dock basin at cellar level. It is likely this waterway would transport grain and milled products. A further plus point if the above theories are correct, would be to separate "clean" grain from "dirty" coal.

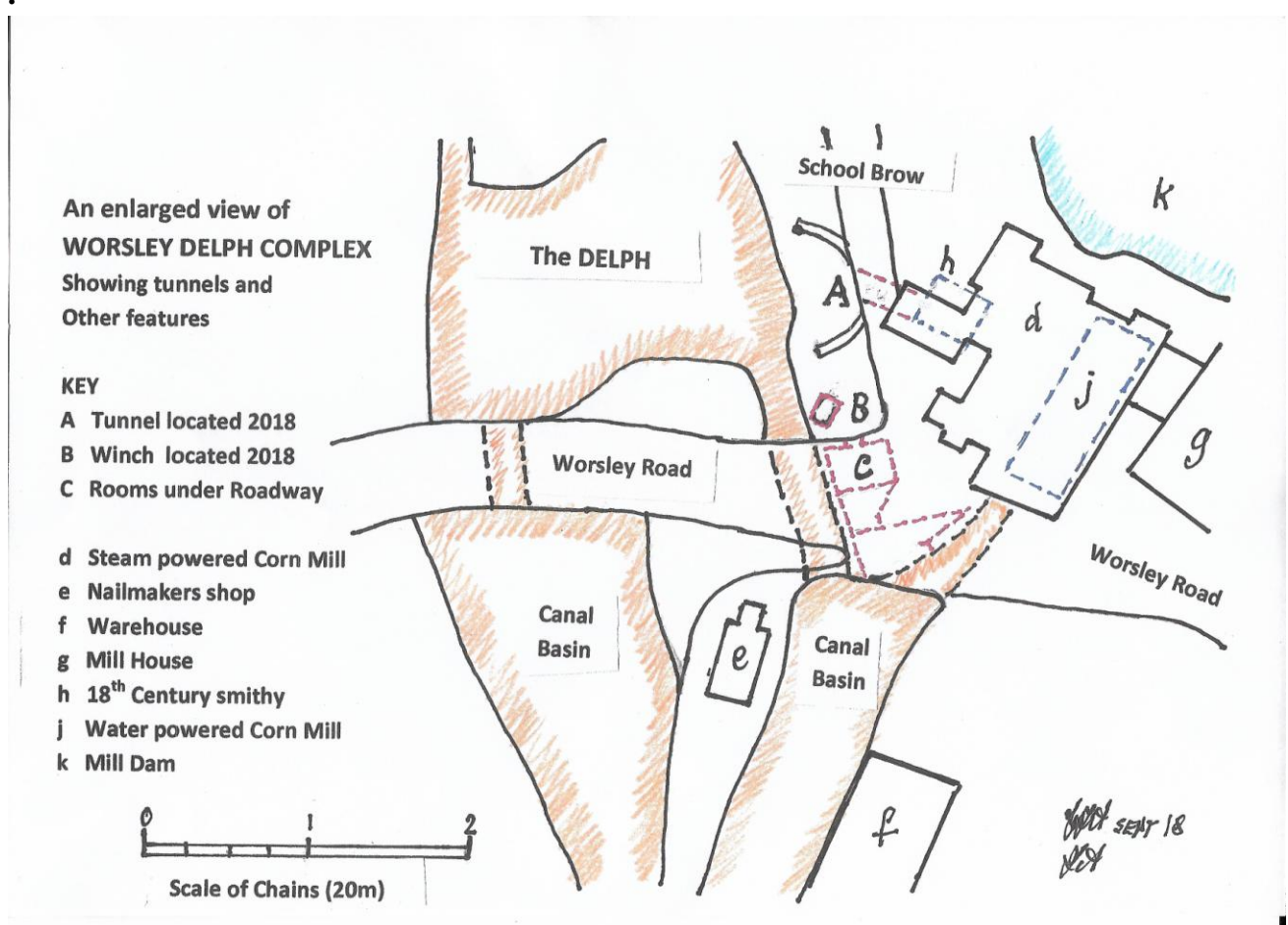
Also within this east arch is an area of hard standing and two rooms of brick construction occupying the full span of the bridge. The room at the Delph end has what appears to be a partially bricked up

high doorway retaining landfill. Superimposing this on the map shows it to have exited either onto the hard standing on the east of the Delph where the winch has been revealed or to the surface on School Brow.

It is most likely these structures were used by the Mill rather than coal / canal operations in the Delph. Horse and pedestrian connection would be made between these rooms and the tunnel revealed in 2018.

With the demolition of the corn mill C1901, a re-alignment of land levels would obliterate these features. In 2018, building works to the property now on the site suffered a floor collapse into a previously unknown void. Unfortunately this was not followed up from an archaeological aspect!

The Mill House cellars were inspected in August 2018 and are of brick barrel vault construction aligned along the axis of Worsley Road and have a floor level approximating to canal towpath. They do not appear to have had any connection with any other building.



An enlargement of the 1895 OS map with these details overlaid.

What none of this discloses is exactly how up to 80 boats per day from and into the underground canal were propelled the 200m between the tunnel mouths and to the Bridgewater Canal towpath without a towpath connection through the Delph and associated basins, or visible evidence of mechanical aid. This number is not an exaggeration, do the sums on known data.

For several decades the coal output via the Underground Canal was some 100,000 tons per year as given in the estate accounts. Assume working year of 50 weeks and week of 5.5 days with boats holding 10 tons.

$100,000 / 50 = 2,000$ tons per week

$2,000 / 5.5 = 360$ tons per day

$360 / 10 = 36$ boats per day. 36 out, 36 in + boats for spoil & materials = **around 80 boats /day**

This is a conservative estimate for by the 1830s output had soared to 165,000 Tons. The inclined plane alone is recorded as discharging up to 35 boats per day!

This investigation is ongoing and awaiting input from other sources.

Judith Atkinson Worsley, September 2018.

John Aldred