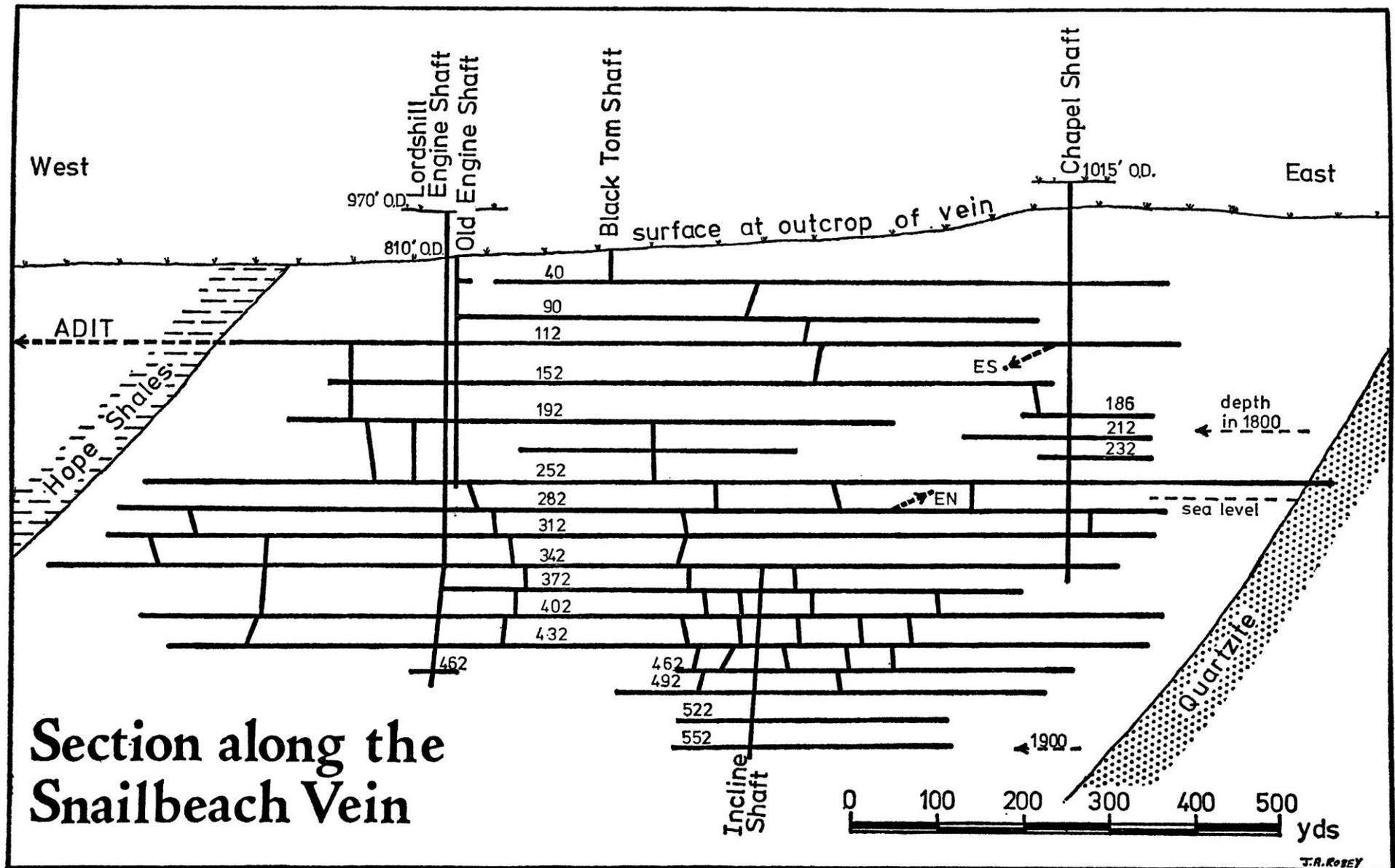


# 4L Section through Snailbeach Mine



## Understanding the Section

The depth of the mine is measured in yards from the top of the main shaft, called 'Old Engine Shaft' on this diagram and named 'George's Shaft' at Snailbeach.

The depth is measured in YARDS. One Yard is three feet or nearly one metre. The mine was worked from a series of LEVELS. As the name implies, a LEVEL is a horizontal tunnel on which a small tramway can be laid to transport material to the shaft. The lowest part of the mine has a LEVEL 552 yards below the top of the Old Engine Shaft. This is 504 metres. Each Level was extended as far as possible through lead bearing rock. Only a part of the Mytton Flags had a workable vein, whilst the Quartzite and Hope Flags had no lead.

The 112 YARD LEVEL is particularly important. The horizontal tunnel, labelled ADIT was dug for over a kilometre to come to the surface close to the valley floor at Wagbeach. This allowed the upper part of the mine to be drained without needing to be pumped.

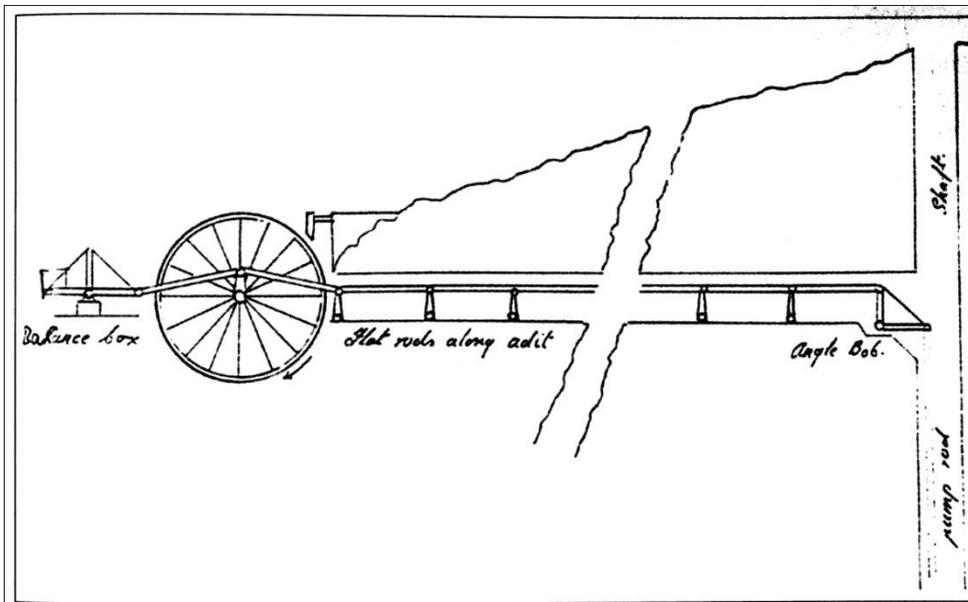


Diagram of the Water Wheel at Wagbeach and the rods connecting this to the pump

The river at Wagbeach was harnessed to drive a water wheel and this was used to drain the lowest part of the mine. The diagram shows how this was done, with a system of rods moving backwards and forwards down the whole length of the tunnel to operate a pump. The ANGLE BOB where the horizontal ADIT meets the vertical SHAFT converts the sideways motion into vertical movements.

Lifting the rods which go down the shaft requires a great deal of power, so the weight of these rods is balanced by weights in the balance box by the water wheel.

The heights of the ground above sea level are given in feet. O.D. means 'Ordnance Datum' – meaning sea level as defined on Ordnance Survey Maps.

When the mine was made much deeper the new shaft was dug on Lordshill, and the steam powered pumping engine there raised the water in the mine so that it could be emptied through the ADIT. It meets the vein at the 342 yard LEVEL. Circle this point in the section in red.

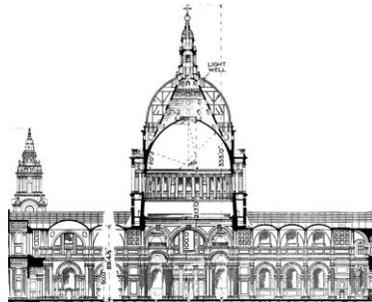
The tops of Lordshill Engine Shaft and Chapel Shaft appear to be hanging in the air. This is because the shafts don't start in the vein. They were made to intersect the vein at a greater depth. Chapel Shaft was never very successful as a separate mine, but it was taken over by the Snailbeach Company in 1861. It meets the workings at the 282 yard LEVEL. Circle this point on the section.

Black Tom Shaft was dug mainly to mine Barytes.

The Incline Shaft was completely underground and did not come to the surface. It was used for hauling from the deepest part of the mine which was not under either of the Engine Shafts. The steep slope follows the line of the vein downwards.

## Number Questions about the Section

1. How deep was the mine in 1800? Give the answer in Yards.  
(A Yard is nearly a metre. If you want to know exactly how many metres this is, use a calculator to multiply the number of Yards by 0.914)
2. How do you know that the water wheel was needed to drain the mine in 1800?
3. How far did it need to lift the water in 1800?
4. How deep was the Old Engine Shaft by the time it was finished?
5. The depth of the mine in 1800 is marked. Show the depths reached by the following years. In 1840, the mine was 360 yards deep  
In 1861, 440 yards deep    In 1872, 462 yards deep.  
In 1884, 492 yards deep.
6. How many new levels were dug between 1800 and 1840?
7. How many new levels were made between 1840 and 1861?
8. How deep was Lordshill Engine Shaft when it was finished?
9. St. Paul's Cathedral in London is 365 feet (122 yards) tall from the ground to the top of its dome. Draw an outline of the cathedral to scale on the section of the Snailbeach Vein with the top level with the top of Old Engine Shaft. It may help if you decide first which level would be at the base.
10. The Eiffel Tower was the tallest building in the world when it was built in 1889. It is 354 yards or 324 metres tall, as tall as an 81 storey building. Draw an Eiffel Tower to scale on the section, with its base at the bottom of the mine.
11. It is 1900 (five years after the accident at George's Shaft, labelled Old Engine Shaft on the section). You are a miner extending the mine along the lowest



level, the 552 Yard Level. How many rungs on the ladders would you climb up to the next level? Assume that four rungs will climb one yard.

12. You reach your working place by being taken in the cage to the foot of the Old Shaft. You then walk along levels and go down ladders to where you are working. After you have finished work, you climb the ladders and walk along levels to the foot of the Old Shaft. How many ladder rungs do you have to climb? Assume that four steps will climb one yard.

## The End of Mining

Chapel Shaft had produced very little lead. Black Tom Shaft only had Barytes. Within the richest part of the mine each Level was only continued for as long as it produced enough lead to be worth working. In the deepest part of the mine the lead was found to be mixed with zinc ore, and there was no large market for this. Label the parts of the mine with 'NO LEAD', 'BARYTES' and 'ZINC'.

Then circle the richest part of the mine.

Imagine you are mine manager in 1905. What will you report about the future of the mine? How difficult is it to continue? Can you make a profit?