STRUCTURE

How the Mine is supported.

Since the Winsford Mine opened in 1844, extraction of the salt has been via a square-patterned room and pillar method of mining. The pillars of rock salt left behind support the roof structure, whilst the connected rooms of void space provide tunnels for access – on the last count these were in excess of 137 miles.

The 19th and early 20th century workings comprised one large cavity (known as old cavity), based around 1 & 2 Shaft, which is still stable and fully accessible today.

Determination of pillar sizes.

During the 1950s the decision was taken to regulate the size and location of the pillars and our current extraction rate is between 68% and 75%, although this is dependent on several factors, mainly those concerning the depth of the salt bed and surface geography.

A considerable amount of work has been carried out since 1958 by staff of the Mining Department at Newcastle University, with investigations undertaken into the rock mechanics for designing the Mine workings. In particular, instruments were developed to measure rock creep and strata deformation in strategic places in the Mine. Although Winsford has a long history of stability, it is the nature of rock salt to creep (move) over time and this must be constantly monitored.

Over a long period of time the results from these investigations and other measurements have provided a bank of knowledge when deciding on the size of pillars in new mining zones and, ultimately, the long-term stability of Winsford. Today, a typical void space left behind after extraction is 20m wide x 8m high, with 20m_ pillars being left to support the over-burden. The system at Winsford does not have to use roof bolting, metal mesh or pillar supports.