

TUNNEL BORING MACHINE LAUNCHED ON ELAN VALLEY AQUEDUCT



Monday 23 May 2016 marked a significant milestone for the Elan Valley Aqueduct (EVA) Rehabilitation Project being delivered by the BNM Alliance (Barhale / North Midland Construction) for Severn Trent Water. The Tunnel Boring Machine (TBM) arrived at the site in Bleddfa and will be used to construct a tunnel 1.8km long to replace part of the existing aqueduct at Bleddfa, the first of 3 sections associated with the project.



To mark the occasion, Severn Trent and the BNM Alliance invited local residents and key stakeholders to see the arrival and launch of the TBM before it starts its tunnelling journey and to also see the work undertaken to construct the massive drive pit where the tunnelling will start.

The BNM Alliance site team have been working around the clock for the last 2 months to make sure they were ready for the event. Not only breaking out the rock in the excavation for the drive pit, but also wrapping a protective concrete surround to the existing aqueduct structure, which is enclosed by the pit. There are over 300 million litres of water flowing through that part of the drive pit every day and when the tunnel is complete this flow will be diverted from the old aqueduct into the new tunnel while it is still flowing.

The brand new TBM arrived on site after a 1000 mile journey from the Herrenknecht factory in Schwanau, South Germany. The low-loaders transporting the TBM convoy travelled to Bleddfa with a 4-car escort to clear the way ahead. The TBM consists of 3 main sections. The lead one is the cutterhead, which has to do all the hard work, cutting out all the rock in front of it as its big cutterwheel rotates.



Over 100 visitors attended the day, most of them being neighbours to the project. The day commenced with an unveiling and naming ceremony with pupils from Presteigne Primary School. The name was chosen from over 60 entries to a competition set by the project team at a presentation about the project a few weeks earlier. There were some interesting suggestions, but in the end "Master Mine" was chosen as the most appropriate.

This was followed by the TBM cutterhead being lowered into the drive pit by a large mobile crane hired in especially for the operation. The crane has a lifting capacity of 1,000 tonnes at short radius, which was more than enough to lift the TBM sections. The heaviest piece is the cutterhead which weighs nearly 80 tonnes.



So let's all wish "Master Mine" a safe and uneventful journey.



Project Background:

The project in Wales consists of the off line replacement of the existing water conduit in three locations - Bleddfa, Nantmel and Knighton. The total length of replacement is approximately 5km.

The offline replacements are necessary due to the strategic importance of the EVA, which for over 100 years has been bringing water to supply the homes and businesses of over 1.2 million customers in Birmingham and the surrounding area. It discharges over 300 million litres of water every day into the reservoir at Frankley Water Treatment Works on the outskirts of Birmingham, but storage limitations at the reservoir mean that supply

from the EVA cannot be interrupted for more than 5 days at a time which can only happen twice a year, making any major repair or alterations to the EVA impossible in the time available.

The need for the replacements has been identified during regular inspections of the aqueduct, where the old structure is showing varying signs of deterioration in these locations. Severn Trent has taken the decision to tackle all three sections in a co-ordinated programme of work, to gain the maximum efficiency from common construction techniques and resources.