

HS2: Florence and Cecilia pass Amersham

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HS2 says that ‘Florence’ and ‘Cecilia’ – the two giant tunnelling machines digging HS2’s longest tunnels – have passed Amersham, 5-and-a-half miles into their 10 mile drive under the Chilterns.

The enormous 2,000 tonne machines have spent almost two years excavating the twin tunnels between the M25 and South Heath in Buckinghamshire that will help the high speed rail project protect the environment while improving connections between London, Birmingham and the North.

Each machine is a 170m long self-contained underground factory, digging the tunnel, lining it with 56,000 concrete segments to form rings and grouting them into place as it moves forward.

Designed specifically for the geology of the Chilterns, the first TBMs were launched in Summer 2021 from a site near the M25 and have excavated more than 1.8 million cubic metres of chalk and flint.

As well as digging and lining the tunnels, engineers have also completed the excavation of five shafts that will provide ventilation and emergency access near Chalfont St Peter, Chalfont St Giles, Amersham, Little Missenden and an intervention shaft at Chesham Road.

The 44m deep shaft at Amersham – which the TBMs have now passed – will be in the middle of a road

junction just outside the Buckinghamshire town. A 'headhouse' will be built on top of the shaft to house safety equipment, with a flint-faced boundary wall and a pre-patinated zinc roof to help match the natural tones of the surrounding landscape.

Once complete, trains will pass through the tunnel at speeds of up to 320km/h, providing zero carbon journeys between London, Birmingham and the north while freeing up capacity on the existing rail network.

Martyn Noak, HS2 Ltd's Head of Tunnel Engineering, said: "The Chiltern tunnel will take HS2 underground and safeguard the woodlands and wildlife habits above the tunnel as well as significantly reducing disruption to communities during construction and operation of the new railway.

"I've been very impressed with the progress made by Florence and Cecilia as they make their way unseen beneath the Chiltern Hills. It's great to see how much progress they and the teams excavating the five shafts have made and I'd like to thank everyone involved in getting us this far."

The two TBMs are operated by, Align – a joint venture formed of Bouygues Travaux Publics, Sir Robert McAlpine, and VolkerFitzpatrick.

Each machine has a crew of 17 people, working in shifts and supported by over 100 people on the surface, managing the logistics and maintaining the smooth progress of the tunnelling operation.

Coralie Peroux, Tunnel Manager, Align, said: "Florence and Cecilia reaching our third shaft at Amersham is a great achievement for not only the tunnelling team and the team involved in excavating and preparing the shaft, but also the supporting teams on the surface at the South Portal, manufacturing the concrete segments required to line the tunnel and processing the spoil from the tunnels.

"In particular I would like to pay credit to Align Shafts team, working with our supply chain partners KVJV and Keltbray, who have been working tirelessly over the last few months to ensure the shaft is ready for the arrival of Florence and Cecilia."

Approximately 2.7 million cubic metres of material – mostly chalk and flint – will be excavated during the construction of the tunnels and used for landscaping. Once construction is complete, the temporary buildings at the south portal will be removed and the site landscaped with around 90 hectares of new wildlife-rich chalk grassland habitats.

Chalk grassland used to be widespread across the hills of southeast England and are considered habitat of international conservation significance with just 700ha left across the Chilterns.

HS2 currently has five TBMs in the ground, with a further five due to be launched over the coming years. Together they will create 64 miles of tunnel between London and the West Midlands including major tunnels on the approach to London and Birmingham.

Photo credit: HS2 Ltd