# Third HS2 Tunnel Boring Machine completes 16-month drive under West London



The construction of the Northolt Tunnel, a central component of the High Speed 2 (HS2) project, has reached a significant milestone with the completion of its third Tunnel Boring Machine (TBM), named Emily. This achievement marks the end of a substantial 16-month drive under West London, cementing Emily’s role in the construction of the 5.5-kilometre eastern segment of the tunnel at Green Park Way, Greenford.

Emily joins the ranks of her predecessors, Sushila and Caroline, which successfully bored the western section of the Northolt Tunnel, completing their tasks in December 2024 and April 2025, respectively. The fourth TBM, Anne, is currently operating on the remaining eastern bore and is anticipated to finish by the summer. Each of these machines is part of a crucial tunnelling process that extends a total of 13.5 kilometres, linking West Ruislip to North Acton before converging at Green Park Way.

Operated by the Skanska Costain Strabag joint venture (SCS), Emily has undertaken the excavation of approximately 775,000 tonnes of London Clay, installing over 17,500 concrete tunnel segments to reinforce the bore. Designed to manage the unique conditions of soft London clay, this earth pressure balance TBM, manufactured by Herrenknecht in Germany, boasts a cutterhead diameter of 9.11 metres and has achieved a peak progress rate of around 38 metres per day. The innovative engineering behind its design reflects significant advancements in tunnelling technology, relevant to the unique geological challenges of the area.

The Northolt Tunnel employs an innovative reception can technique to ensure safe retrieval of the TBMs from beneath the ground. This process mitigates high water pressure by using a sealant before depressurising the chamber and lifting the machines out, thereby preserving the integrity of the tunnel.

Following the completion of the TBM operations, SCS will proceed to develop 34 cross-passages between the twin tubes, create a flat invert base for track laying, and enhance ventilation and emergency access systems. Such infrastructural advancements are critical as HS2 seeks to refine its network connectivity in West London, especially with the construction of the new transport hub at Old Oak Common.

In discussing the project's progress, HS2 Ltd project client director Malcolm Codling remarked, “HS2’s tunnelling drives in London for the Northolt Tunnel are nearing completion… it's a real achievement for our team to complete this 3.4-mile section safely and with such efficiency.” Echoing this sentiment, SCS project director, tunnels and routeway, Dave Hannon, stated, “The arrival of TBM Emily at Green Park Way marks a significant milestone in the programme… an exciting achievement and a testament to the collaboration, dedication, and technical capabilities of our teams.”

Moreover, the project has prioritised sustainability with the extracted clay from the tunnelling process being transported by conveyor and rail to the London Logistics Hub. This material will be repurposed across various sites in Cambridgeshire, Kent, and Warwickshire, demonstrating a commitment to environmentally responsible construction practices.

As HS2 progresses towards its ambitious goals, the completion of the Northolt Tunnel appears to be a pivotal step towards enhancing transport infrastructure in the UK and improving connectivity, ultimately benefitting the wider transport network.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.newcivilengineer.com/latest/hs2-third-london-tbm-breaks-through-after-16-month-drive-under-capital-13-06-2025/), [[2]](https://www.hs2.org.uk/work-items/update-on-northolt-tunnel-construction/)
* Paragraph 2 – [[1]](https://www.newcivilengineer.com/latest/hs2-third-london-tbm-breaks-through-after-16-month-drive-under-capital-13-06-2025/), [[3]](https://mediacentre.hs2.org.uk/news/hs2-launches-third-giant-tunnelling-machine-under-capital-building-the-northolt-tunnel)
* Paragraph 3 – [[1]](https://www.newcivilengineer.com/latest/hs2-third-london-tbm-breaks-through-after-16-month-drive-under-capital-13-06-2025/), [[4]](https://mediacentre.hs2.org.uk/news/its-in-the-can-hs2-tunnelling-machine-finishes-its-5-mile-journey), [[5]](https://www.hs2.org.uk/about-us/our-documents/update-on-northolt-tunnel-construction-august-2024/)
* Paragraph 4 – [[1]](https://www.newcivilengineer.com/latest/hs2-third-london-tbm-breaks-through-after-16-month-drive-under-capital-13-06-2025/), [[6]](https://www.hs2.org.uk/about-us/our-documents/northolt-tunnel-west-update-september-2023/)
* Paragraph 5 – [[1]](https://www.newcivilengineer.com/latest/hs2-third-london-tbm-breaks-through-after-16-month-drive-under-capital-13-06-2025/)
* Paragraph 6 – [[1]](https://www.newcivilengineer.com/latest/hs2-third-london-tbm-breaks-through-after-16-month-drive-under-capital-13-06-2025/), [[7]](https://tunnelbuilder.com/News/HS2-Second-TBM-completes-the-western-section-of-Northolt-tunnel-.aspx)

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.newcivilengineer.com/latest/hs2-third-london-tbm-breaks-through-after-16-month-drive-under-capital-13-06-2025/> - Please view link - unable to able to access data
2. <https://www.hs2.org.uk/work-items/update-on-northolt-tunnel-construction/> - This official HS2 update provides detailed information on the Northolt Tunnel's construction progress. It outlines the tunnel's length, the two phases of construction, and the use of four Tunnel Boring Machines (TBMs). The update also discusses the completion of cross passages, boreholes, and monitoring surveys along the tunnelling route. Additionally, it highlights upcoming engagement events and provides contact information for the HS2 Helpdesk team. The document is regularly updated to reflect the latest developments in the project.
3. <https://mediacentre.hs2.org.uk/news/hs2-launches-third-giant-tunnelling-machine-under-capital-building-the-northolt-tunnel> - This press release announces the launch of the third Tunnel Boring Machine (TBM), named Emily, for the Northolt Tunnel construction. It details the machine's specifications, including its weight, cutterhead diameter, and design tailored for the soft London clay. The release also mentions the upcoming launch of the fourth TBM, Anne, and provides insights into the tunnelling process and the project's progress. Additionally, it includes a video showcasing the TBM's construction and launch process.
4. <https://mediacentre.hs2.org.uk/news/its-in-the-can-hs2-tunnelling-machine-finishes-its-5-mile-journey> - This article reports on the completion of a 5-mile tunnelling drive under London by TBM Sushila. It describes the breakthrough into a reception can filled with foam concrete and discusses the innovative method used due to high water pressure in the ground. The piece also provides context about the Northolt Tunnel's purpose and its role in the HS2 project, highlighting the significance of this milestone in the overall construction timeline.
5. <https://www.hs2.org.uk/about-us/our-documents/update-on-northolt-tunnel-construction-august-2024/> - This document offers an update on the Northolt Tunnel's construction as of August 2024. It provides insights into the progress of the tunnelling work, including details about the tunnel's length, the phases of construction, and the use of Tunnel Boring Machines. The update also touches upon the completion of cross passages and other structural elements, as well as upcoming engagement events and community outreach efforts related to the project.
6. <https://www.hs2.org.uk/about-us/our-documents/northolt-tunnel-west-update-september-2023/> - This September 2023 update focuses on the western section of the Northolt Tunnel. It provides detailed information about the progress of the tunnelling work, including the completion of specific milestones and the use of Tunnel Boring Machines. The document also discusses the challenges faced during construction and the methods employed to overcome them, offering insights into the technical aspects of the project.
7. <https://tunnelbuilder.com/News/HS2-Second-TBM-completes-the-western-section-of-Northolt-tunnel-.aspx> - This news article reports on the completion of the western section of the Northolt Tunnel by the second Tunnel Boring Machine (TBM), named Caroline. It details the breakthrough into an underground reception can filled with foam concrete and discusses the innovative method used due to high water pressure in the ground. The piece also provides context about the Northolt Tunnel's purpose and its role in the HS2 project, highlighting the significance of this milestone in the overall construction timeline.