

# Tunnelling in Hillingdon update

Ruislip Rugby Club recreation area

4 May 2023

# What have the issues been?

## **Foam appeared out of the ground at the edge of the rugby club recreation area - 20 February 2023**

- During the tunnelling process, 'conditioning fluids' and water are added to the soil in front of the tunnel boring machine. When these 'conditioning fluids' mix with the water foam is created. Even a small amount of this conditioning fluid can make a lot of foam when it mixes with water.
- The foam came out of a borehole that had not been sealed completely when the tunnel boring machine passed underneath it.
- The foam is biodegradable and not toxic and has been approved by the Environmental Agency.
- The borehole was sealed immediately and nearby boreholes along the line of route inspected to avoid this happening again.

## **Normal tunnelling operations encountered ground conditions resulting in air escaping causing surface water to bubble - 20 March 2023**

- There is more of a mix of clay, chalk and sand than anticipated. This may have facilitated the movement of air within the ground, especially when grouting was taking place behind the tunnel segments as part of normal tunnelling activities.
- The relatively wet ground due to recent rainfall may have also had an adverse effect.

## **Grout appeared on the surface during tunnel grouting operations whilst carrying out local ground investigations - 24 March 2023**

- One of the investigation holes created a pathway. The area was immediately fenced off and cleared. We immediately established the cause of this incident have implemented measures to prevent this happening again.

# What we have done to remedy issues

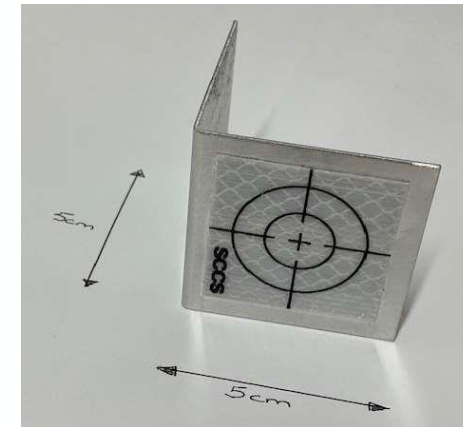
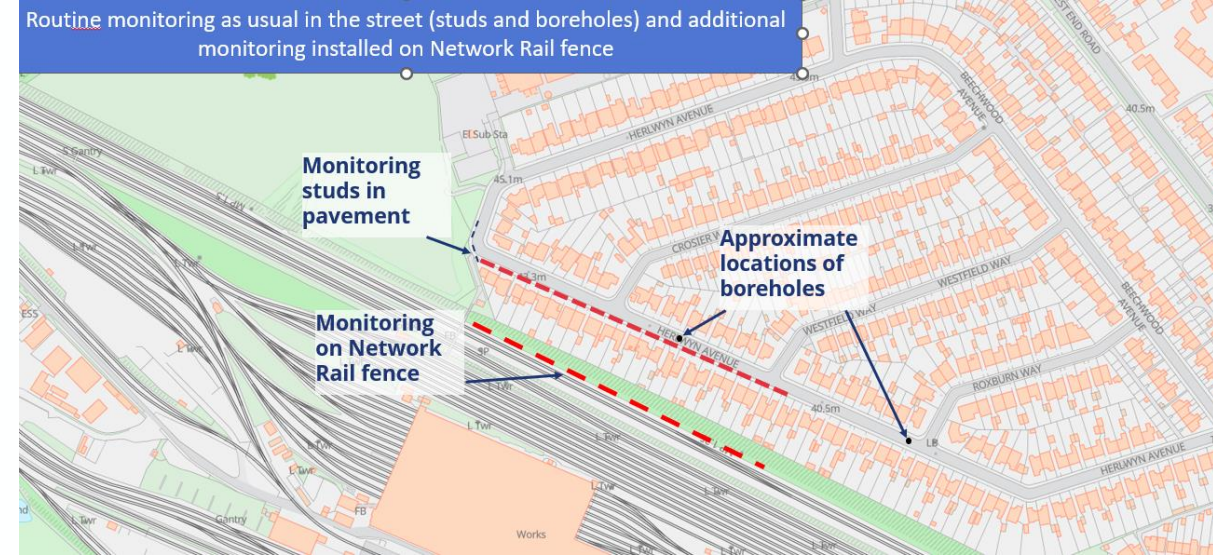
- Both tunnel boring machines were stopped under the recreation ground whilst we reviewed our tunnelling technique.
- We trialled some refinements to our tunnelling technique with our second tunnel boring machine (TBM) Caroline.
- The revised technique proved effective at minimising air escaping to the surface through the ground. As the recreation ground has similar conditions to residential gardens, this gave the reassurance that we could implement them with TBM Sushila before it moved under residential properties.
- We are carrying out more ground investigations above the completed tunnel to confirm that grouting operations have successfully overcome the challenges presented by the ground conditions in the area.
- We will be replacing the topsoil and grass at the affected areas.
- Whilst we have minimised the risk of air escaping to surface through natural fissures in the ground, we cannot completely discount it. We have been carrying out targeted engagement with Herlwyn Avenue residents since 6 April – in advance of tunnelling and after the TBMs have passed.
- Herlwyn Avenue residents on the line of route have been issued a letter giving an update and information on what's been happening and a 24/7 incident response line has been set up should an incident occur (see slide 9).

# How we are monitoring

- Monitoring of ground movement throughout.
- Showing stable results within our predictions.
- Checking surfaces which are publicly accessible.
- Additional monitoring:

On Network Rail fence located behind houses and the railway line.

Ten properties along Herlwyn Avenue have agreed to have small monitoring targets mounted on brackets on exterior walls (see sample letter and consent form slides 9 and 10).



# Tunnelling progress and targeted engagement

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- Following the borehole incident, we displayed a notice on the barriers at the recreational ground (slide 7).
- Issued a notice to residents on both sides of Herlwyn Avenue running parallel with the line of the HS2 route (slide 7).
- TBM Sushila re-started on 14 April and is moving under Herlwyn Avenue.
- TBM Caroline is stationary under the recreation ground and due to re-start on 12 May.
- We have been carrying out targeted engagement with Herlwyn Avenue residents since 6 April – in advance of tunnelling and after TBM Sushila has passed.
- Engagement is ongoing with residents of Lawn Close, Almond Close and the Roundways.
- Regular communications with the Rugby Club and Sacred Heart Primary School.
- Notice (see slide 10) to inform the community displayed on barriers, entrance to the recreational ground and by the Rugby Club entrance. Information included in the school parents newsletter.
- Further targeted engagement will be repeated for TBM Caroline.



TBM  
Caroline  
resumes  
tunnelling  
12 May

C

S

Approximate TBM locations 4 May

Tunnel route shown by the arrows

Targeted engagement with properties along  
the line of route

- 72-88 Herlwyn Avenue
- 90 to 114 Herlwyn Avenue
- 116 to 126 Herlwyn Avenue
- 138 to 150 Herlwyn Avenue
- 152 to 172 Herlwyn Avenue



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## Ground investigation borehole

21 February 2023

We apologise for the inconvenience caused relating to the incident on Saturday 18 February 2023 whereby foam used to treat the ground in front of our tunnel boring machines appeared out of a borehole in this area

The borehole was created earlier in the project to investigate ground conditions in the area. The boreholes are usually sealed afterwards and we are looking into whether this one was correctly treated

The borehole has now been sealed. However there may still be a small amount of foam appearing in the next 12-18 hours which is being forced out as the grout used to seal the borehole sets and hardens

The foam is biodegradable and not harmful to plant or animal life but we would ask that you keep away from the affected area

We are also checking other boreholes along the route of the tunnel boring machines to avoid this happening again

A Boreholes FAQ will be available online in the next few days at <https://www.hs2.org.uk/building-hs2/tunnels/tunnel-drives/northolt-tunnel/>



We thank you for your patience and apologise for any disturbance and inconvenience this incident may have caused

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**Contact us**

Contact our HS2 Helpdesk team every day of the year on:

☎ Freephone  
**08081 434 434**



🏠 Minicom  
**08081 456 472**

@ Email  
**hs2enquiries@hs2.org.uk**

✉ Write to:  
**FREEPOST**  
HS2 Community Engagement

🌐 Website **www.hs2.org.uk**

To keep up to date with what is happening in your area, visit:  
**HS2inHillingdon.org.uk**

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## Herlwyn Avenue borehole inspections

February 2023 | [www.hs2.org.uk](http://www.hs2.org.uk)

High Speed Two (HS2) is the new high speed railway for Britain.

You can sign up for regular updates in your local area at [hs2inHillingdon.co.uk](http://hs2inHillingdon.co.uk).

**HS2 & SCSJV information hub**

The community information hub is now open for drop-ins on **Mondays** and **Wednesdays** from **2pm to 4pm**.

Our community engagement team is available to answer your questions about the project and our works in Hillingdon and Northolt.

You can find us in the portacabin on the right of the West Ruislip Portal Site entrance on Ickenham Road.

**What we are doing**


We will be inspecting two boreholes located in the road at Herlwyn Avenue. The boreholes were created earlier in the HS2 project to investigate ground conditions in the area before tunnelling began using the Tunnel Boring Machines (TBMs).

You may be aware of an incident on Saturday 18 February where foam appeared out of the ground at the edge of the Ruislip Rugby Club playing fields. The foam came out of a borehole that had not been sealed completely when the TBM passed underneath it. The foam is biodegradable and not toxic.

To avoid this happening again, we are checking other boreholes along the route of the TBMs. In the next few days, you may see our contractor carrying out an inspection of the boreholes. Please see the map overleaf showing the approximate location of the boreholes.

**If you have a question about HS2 or our works, please contact our HS2 Helpdesk team on 08081 434 434 or email [hs2enquiries@hs2.org.uk](mailto:hs2enquiries@hs2.org.uk)**

**Notification**



**What to expect**



Operatives on Herlwyn Avenue carrying out borehole inspections

**What we will do**

Maintain access to your property


Provide updates at [HS2inHillingdon.co.uk](http://HS2inHillingdon.co.uk)

Call our HS2 Helpdesk team on **08081 434 434**

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## Herlwyn Avenue borehole inspections

**Notification**



[www.hs2.org.uk](http://www.hs2.org.uk)

**Approximate locations of boreholes**



Operatives on Herlwyn Avenue carrying out borehole inspections

Maintain access to your property

Provide updates at [HS2inHillingdon.co.uk](http://HS2inHillingdon.co.uk)

Contact our HS2 Helpdesk team on **08081 434 434**





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31 March 2023

Dear Resident

We are writing to give you an update on the HS2 tunnelling works in your area. Following the launch of the two tunnel boring machines (TBMs), Sushila and Caroline, last autumn the tunnelling has progressed a total of 2.1km as planned.

In the grounds of the Ruislip Rugby Club recreation area, ground conditions were encountered which resulted in air, and in one case grout, rising to the surface during normal tunnelling operations. We understand that this is both concerning and disruptive to those using the recreation area, particularly the Rugby Club, for which we apologise and we are working closely with them to minimise disruption caused.

To understand and address these issues fully, and with the agreement of the Rugby Club, we installed temporary track matting to allow access for a test rig to undertake local ground investigations. Due to one of these investigation holes creating a pathway, grout appeared on the surface whilst undertaking tunnel grouting operations. The area was immediately fenced off and cleared and we are in the process of replacing the topsoil and grass. We have established the cause of this incident and are implementing measures to prevent recurrence.

Whilst we are undertaking the local ground investigations and developing a revised tunnelling technique, we have paused TBM Sushila in the recreation area. This technique is currently being trialled by our second TBM Caroline within the recreation area to provide reassurance prior to recommencing tunnelling with TBM Sushila.

As TBM Caroline undertakes these trials, we will be monitoring ground conditions to inform the next steps. It is possible that air will continue to bubble at the surface over the next few days.

TBM Sushila will not restart until we have concluded these trials and we are confident that the issues that occurred in the recreation ground do not reoccur in the location of your property.

We will also be installing monitoring equipment on land owned by Network Rail located between Herlwyn Avenue gardens and the railway line. We do not require any access via your property, but you may notice our staff installing the equipment and taking subsequent readings. There will be some use of hand tools during the installations, however the surveying is otherwise not a noisy process.

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We will continue to keep you updated through regular door knocks in the coming days to ensure residents whose properties are near the route of the tunnels are informed of the TBMs' progress and can ask any questions.

If you have any questions in the meantime, please contact our HS2 Helpdesk team on **08081 434 434** or email [hs2enquiries@hs2.org.uk](mailto:hs2enquiries@hs2.org.uk).

Yours faithfully,

SCS Railways Joint Venture on behalf of HS2 Ltd



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[www.hs2.org.uk](http://www.hs2.org.uk)

6 April 2023

Dear Resident,

We are writing to give you an update on the HS2 tunnelling works in your area and what we have done to resolve the issues we encountered at the Ruislip Rugby Club recreation area.

We have carried out local ground investigations and have trialled some refinements to our tunnelling technique with our second tunnel boring machine (TBM) Caroline which is located within the recreation area. The revised technique is proving effective at minimising the appearance of air bubbles through the ground. However, there is a possibility this may still occur because of the similar ground conditions along the tunnel route near to Herlwyn Avenue.

We are now planning to restart TBM Sushila from Wednesday 12 April next week. To give you reassurance, we are undertaking the following steps before the TBM moves further.

#### Monitoring

We have been undertaking monitoring of ground movement throughout our tunnelling activities and the monitoring is showing stable results within our predictions. In addition to routine checking of the monitoring equipment already located within Herlwyn Avenue and along the pavement, our staff will also be checking surfaces which are publicly accessible. We will not be going into private gardens unless we have been asked by residents to do so.

We have begun installing monitoring equipment on land owned by Network Rail located between Herlwyn Avenue gardens and the railway line. We do not require access via your property, but you may notice our staff installing the equipment and taking readings. There will be some use of hand tools during the installations, the surveying is otherwise not a noisy process.

To provide additional reassurance to residents as we progress with the new tunnelling technique, we would like to install additional monitoring on properties along Herlwyn Avenue. These are small monitoring targets (please see the picture below) mounted on brackets which are glued to the side of the buildings. We will only require access to your property to install the targets. Our staff will be able to take readings using equipment mounted on a tripod on the pavement. We will make good any surfaces which may be affected once monitoring is completed.

Our community engagement team will come to ask whether it is possible to install the targets on your property and, if you agree, we will let you know when this will happen which will be within the next week.

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#### Community response helpline

If you see or hear something unusual at your property which you are concerned about and you think may be related to our tunnelling works please contact our **dedicated 24/7 tunnelling helpline on [REDACTED]** and we will be able to send our response team to your property. We aim to get our team to you within 2 hours of contacting us.

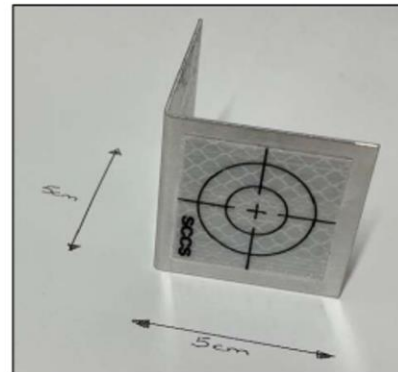
Our community engagement team will be in the area carrying out regular door knocks in the coming days to ensure residents whose properties are near the route of the tunnels are informed of the TBMs' progress and can answer any questions.

If you have any questions in the meantime, please contact our HS2 Helpdesk team on 08081 434 434 or email [hs2enquiries@hs2.org.uk](mailto:hs2enquiries@hs2.org.uk).

Yours faithfully,

SCS Railways Joint Venture on behalf of HS2 Ltd

#### Monitoring targets:



# Additional monitoring consent

April 2023

Dear Resident,

We have been in contact with you regarding monitoring of ground movement that we will be undertaking along Herlwyn Avenue as our tunnelling machines progress.

To provide additional reassurance to residents, we would like to install additional monitoring equipment on properties along Herlwyn Avenue.

This monitoring equipment is in the form of small monitoring targets (which you have seen during the engagement process), that will require installation onto the side of your property however access by SCS Railways is only required to install and remove monitoring equipment during this process.

After engagement by SCS Railways on 6<sup>th</sup> April I give consent for monitoring equipment shown during communications to be temporarily installed on my premises.

Resident Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signed \_\_\_\_\_

Date \_\_\_\_\_

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B4 6GA

XXX Herlwyn Avenue  
Ruislip

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Email: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)  
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April 2023

Dear

#### Installation of monitoring targets

Thank you for agreeing to the installation of the additional monitoring equipment on your property (attached signed consent form for your records) as discussed today.

Please find below summary of what this will entail:

- Instrumentation and Monitoring Team contacts - XXXX and XXXX  
One of the above will be carrying out the installation and will show their SCS Railways ID pass
- It may be necessary to access the wall at the rear of your property (our team will check if you have a side gate which needs to be unlocked)
- Photos will be taken of the area where the monitoring targets will be installed
- Photos taken of area once installed
- Installation is non-intrusive and will take no more than a few minutes.
- The monitoring targets will be fixed using glue (picture overleaf). The glue should not cause any damage to your wall but repairs will be made if this is the case.
- The targets may be left in place for approximately three months whilst we carry out monitoring relating to nearby tunnels construction.
- We will only require access to your property to remove the targets
- There will be regular readings taken from the street using laser equipment mounted on a tripod

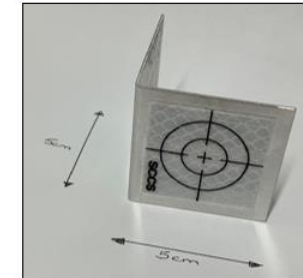
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#### Monitoring targets:



# Targeted engagement

## Ruislip Rugby Club update

April 2023

This is an update on the HS2 tunnelling works and what we have done to resolve issues during the tunnels construction under the Ruislip Rugby Club recreation area.

Our Tunnel Boring Machines (TBMs) encountered ground conditions that resulted in air, and in one case grout, rising to the surface during normal tunnelling operations. Barriers are in place around the affected areas as a precaution.

We have since trialed some changes to our tunnelling technique which is proving effective at minimising the appearance of air bubbles through the ground. We have established the cause of the grout incident and have implemented measures to prevent recurrence.

We are doing some further testing and replacing the topsoil and grass. This involves vehicles accessing the area shown below in light brown. To prevent damaging the grass we have installed a temporary track way with agreement from the Rugby Club. This should be completed by the end of April.



There has been some damage to the pavement where vehicles have accessed the area. Interim repairs have been made and a full repair will be made once we have completed our further testing and repairs.

We apologise for the disturbance and inconvenience these incidents have caused.

### Contact us

Contact our HS2 Helpdesk team all day, every day of the year on:

☎ Freephone  
08081 434 434

☎ Minicom  
08081 456 472

@ Email  
hs2enquiries@hs2.org.uk

Write to:

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HS2 Community Engagement

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