

A practical guide to applying geofencing on your worksite



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Make your rail projects safer and more efficient

Due to the high-risk nature of trackside environments, ensuring worker safety continues to be an industry priority. Frequent maintenance, upgrade and renewal programmes expose trackside workers to hazards such as moving trains.

These safety challenges are increased with the presence of human error - miscommunication, distraction, fatigue and a loss of situational awareness are just a few human factors that can lead workers to deviate into hazardous areas, which can be fatal in these high-risk environments.

Fortunately, with the introduction of geofencing technology to the railway, virtual boundaries can be created around safe working zones onsite, and workers are alerted using a highly accurate wearable device if they move into a potentially unsafe position. These alerts help workers regain situational awareness, enhancing their safety.



**AMCO
GIFFEN**

"Tended allows us to better protect our teams in a way that hasn't been done before by using innovation in safety. Our commitment to keeping our track workers safe is absolute and uncompromising. Tended shares that commitment and what impressed me is that they have designed a product that puts the user first. Our people were very impressed with device accuracy. This is essential in building trust and confidence."

- Andy Crowley, Operations Director, AmcoGiffen

Safe site access

A loss of situational awareness can lead to teams going to an incorrect access point. This, combined with line direction disorientation, can risk workers accessing the worksite from the wrong location where a line remains open.

By specifying geofencing within safe systems of work, you can help teams enter site at the correct location and time, ensuring individuals have an additional check to verify they are in the correct place and inside the specified safe working zone.

A geofence can be mapped at the site entrance to represent a safe access point. Tended's Wearables will emit a confirmatory alert when workers enter this zone for the first time, reducing the risk of uncertainty around teams being in the right location.

If the safe site access point is not adjacent to the worksite, you can create a geofence for your authorised walking route.



Access points can be created separate to the worksite itself, as the start times for each might be different, and a worksite should not be set active until authorisation has been given. So, if your team was to attempt to leave the site access point too early and enter the walkway or worksite before it is safe to do so, Tended's Wearable would instantly alert them of their unsafe position.

Now you know how to set up a safe site access point, let's dive into how to enhance the safety of some different types of worksites.

Working on or near the line

Working on a blocked line adjacent to an open line requires teams to remain in a separated site of work, at a safe distance away from the adjacent open line(s).

However, individuals can sometimes lose situational awareness and stray from these boundaries outside of the blockage and too close to open lines.

So how can we apply geofencing to these types of work to keep teams within safe working limits?

- Track maintenance
- Patrols and inspections
- Troughing works
- Signalling and telecoms

In these instances, geofences will be set up around the perimeter of the work being carried out to create a working zone at a safe distance away from the open line. Date and times can be input from your safe work pack to ensure the safe zone is aligned with the duration of the line blockage.



Your team can enter the safe working zone and get on with their job working on or near the line. The moment they step outside of the safe working zone and either too close to the adjacent open line or outside of the line blockage, the Wearable will alert them of their potentially unsafe position.

If a line block needs to be temporarily handed back, active safe zones can be turned off. This triggers an alert to all workers assigned to that worksite, notifying them that the zone is no longer safe and to move to a position of safety. This flexibility helps you quickly respond to schedule changes and minimises the risk of workers being exposed to open lines and oncoming trains.

Lineside operations

Operating alongside open lines, teams carrying out lineside tasks are required to remain at a safe distance of at least 2 m away from the adjacent track at all times.

But sometimes, often due to a loss of situational awareness, individuals can stray beyond these safe distances and too close to the open lines.

So how can geofencing be integrated into safe systems of work to keep teams a safe distance away from open lines?

- De-vegetation
- Litter clearance
- Fence inspections
- Building and civils works



In these instances, geofences will be set up around the perimeter of the lineside work being carried out, creating a safe work zone set at a minimum distance of 2 m away from the nearest open line.

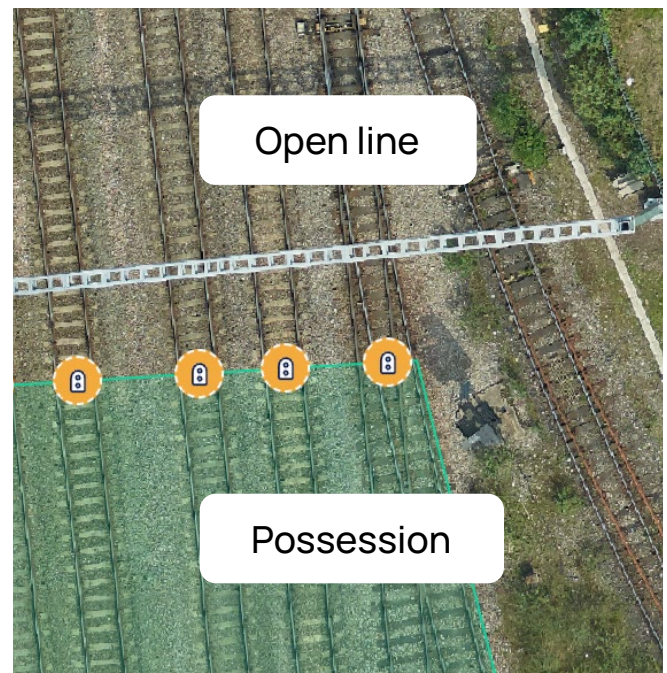
Your team can enter the safe working zone and get on with their lineside tasks. The moment they step outside of the safe zone and towards the nearest open line, the Wearable will alert them of their potentially unsafe position.

Working in a possession

Working in a possession mainly entails major engineering works with a multitude of dangers, creating a very high-risk environment for workers. One of these dangers is the risk of someone losing situational awareness and unknowingly leaving the safe boundaries of the possession.

Using geofencing, safe working zones can be set up around the perimeter of the possession, to help keep workers within the boundaries and stop them from potentially straying towards hazards.

Your team can then enter the safe working zone and get on with their task. The moment they exit the possession boundaries, they will be alerted to immediately move back to a position of safety.



Placing possession equipment

The correct placement of possession equipment can also be supported with geofencing. When a worker with a Wearable reaches the edge of a predefined zone boundary, they will be instantly alerted. This signifies the edge of the safe work zone and where the marker or possession limit board should be placed. This can also be used to confirm that the possession equipment has been removed, and the line is safe for traffic.

Devices can also be attached to the equipment itself to monitor their location, which is known as geotagging.



Geotagging for enhanced worksite and possession management

For organisations operating on large or challenging worksites and complex rail networks, monitoring OTP, OTM and protection equipment can be a significant challenge. With assets constantly in motion across large geographical areas, a lack of visibility into their location can result in project inefficiencies, delays and safety challenges.

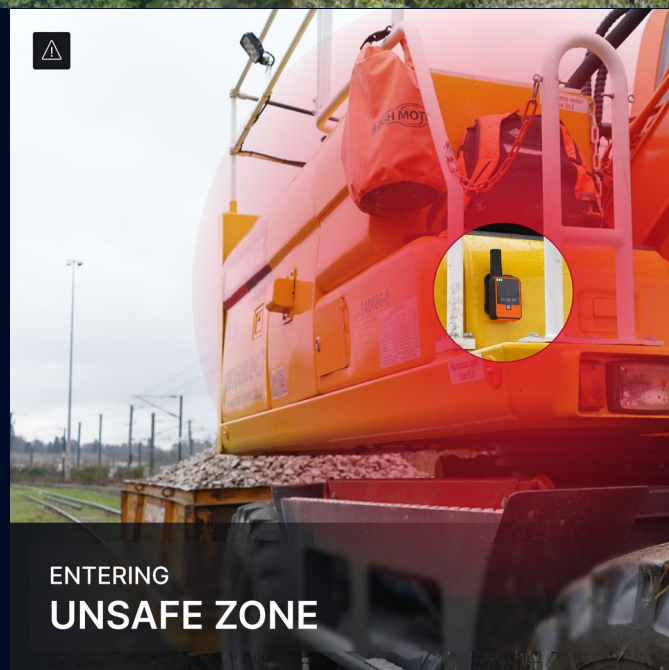
Using geotagging can transform worksite operations and possession management by providing enhanced visibility over asset location and movement. Geospatial technology captures accurate positioning data to provide a view of asset location whether stationary or moving. This is combined with geofencing to create zones on a map to represent worksites and safe work limits with alerts if assets cross the boundary. Combined, this creates a powerful solution to reduce the risk of safety incidents and improve operational efficiency.



Learn more about geotagging

Geotagging offers a multitude of benefits for companies aiming to transform their worksite operations, providing a holistic view of the worksite and a 'digital control centre' to reduce the need for outdated, paper-based systems.

[Learn more about geotagging](#)



The Siemens logo is displayed in a white circle on a dark blue background. The word "SIEMENS" is written in a bold, teal, sans-serif font.

SIEMENS

“The accuracy of Tended’s system has helped us to ensure the correct placement of marker boards while also providing the exact location of OTP and OTM and onsite assets such as trolleys. This visibility helps ensure that all equipment has been cleared from the line at the end of the works.

“This cutting-edge technology has revolutionised our operations, granting an unprecedented level of visibility into our worksites. With the incorporation of geofencing, our operations team continues to discover fresh applications, thanks to our close collaboration with Tended.”

- Eddie Bell, Lead Possession Planning Engineer, Siemens



“If we are working next to lines with trains travelling at high speeds without any barriers or fencing, we need to be confident in the safety systems we have in place. Tended has provided additional peace of mind in these situations, letting workers know instantly if they were to leave safe working areas, and helping to ensure no one approaches an open line.

“We’ve been impressed with the accuracy of Tended’s technology and how our teams have responded to it, not only buying into its ability to help keep them safe, whilst remaining efficient when being deployed on site.”

- Steve Hood, Programme Manager, Safe and Effective Working, Network Rail