

Specialists in non-destructive investigation and engineering geophysics

railways



- Track
- Ground
- Tunnels
- Structures
- Stations
- Buildings

Part of the Fugro Group of companies with offices worldwide

track

WHY USE GEOPHYSICS FOR TRACKBED ASSESSMENT?

Because rapid scanning GPR systems enable a comprehensive overview of network condition and can answer specific questions when used on a site by site basis

High speed Ground Penetrating Radar surveys of trackbed can be used to target trial holes and other detailed surveys over routes or networks. Reporting formats can be tailored to clients' needs: numerical data can be fed into rail asset models or integrated with OmniSurveyor 3D video software.

Slow speed surveys can provide a more detailed view of trackbed structure and condition and can help explain track geometry problems by mapping ballast contamination and soft spots in the formation.

Fugro Aperio's unique sleeper assessment process use low frequency ultrasonics and high resolution GPR to check sleeper condition and can significantly reduce the cost of renewals.



Measure ballast thickness

Determine ballast condition

Map problems in formation

Identify defective sleepers

ground

WHY BUILD A FUGRO APERIO SURVEY INTO YOUR GEOTECHNICAL OR GROUND INVESTIGATION PROJECT?

Because Fugro Aperio surveys can help you understand the subsurface and get far more from a ground investigation. Use rapid scanning geophysical methods such as conductivity or magnetometry at the start of a site investigation to target more expensive point sampling methods like boreholes and CPT. Or use precision techniques like resistivity and microgravity to find targets and determine ground characteristics.

Common applications are locating mineworkings and 'blind' tunnel shafts, mapping ground layers in earthworks and investigating karstic solution features.

Map subsurface layers

Locate mineworkings

Locate hidden shafts and lost structures

Investigate embankments and earthworks

Follow up geophysics with in-house drilling and sampling

structures

WHY BUILD AN FUGRO APERIO SURVEY INTO YOUR STRUCTURAL PROJECT?

Because you will be better informed about the structure and its condition than by relying on records or localised intrusive investigation.

Non destructive investigation methods can provide crucial information for structural assessments, such as brick arch thickness or the presence of haunching and hidden spandrels in masonry structures. In more modern structures, high resolution GPR and ultrasonics can map reinforcement or structural metalwork and can determine concrete thickness.

As well as establishing hidden structural detail, Fugro Aperio can determine the condition of structures, for example by mapping voids, delamination or corrosion. Results can be used to target expensive repairs such as grouting more effectively.

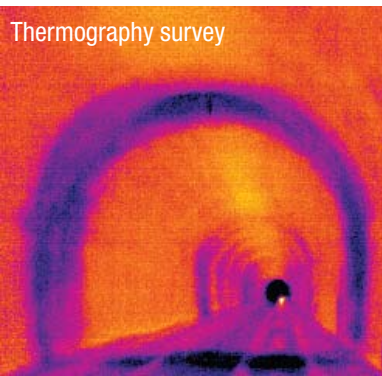
All this, with minimal disturbance and disruption to the structure and its users.

Determine tunnel condition and lining structure, map shafts

Determine bridge condition and structure

Investigate new and existing foundations, pile integrity testing

Determine material properties; concrete & masonry etc.



stations and buildings

WHY BUILD A FUGRO APERIO SURVEY INTO YOUR STATION REFURBISHMENT PROJECT?

Because you cannot rely on records for your design or construction management. Most mainline and metro stations have evolved over the last century and surprises are hidden behind every floor, wall and ceiling.

Fugro Aperio have the experience and technology to provide drawings showing the structure and condition of the subsurface; allowing you to assess the impact of your design and to avoid hazards such as buried services.

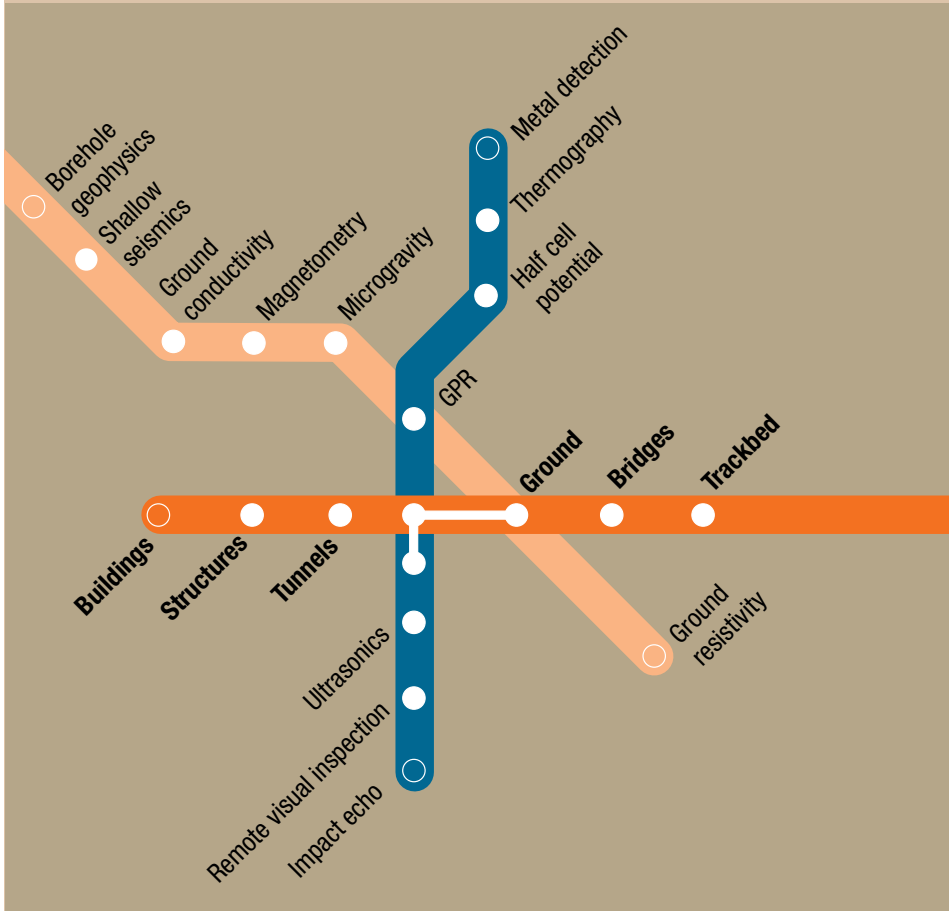
And it's not just refurb projects that will benefit. Clients looking at increased structural loads or needing to understand the cause of surface defects such as cracking will benefit from the unique subsurface perspective that Fugro Aperio can offer.

Determine construction of platforms, walls and roofs

Investigate structural elements; beams columns & foundations

Map utilities and other buried obstructions

www.fugro-aperio.com



Six good reasons to talk to Fugro Aperio

1. You will reduce project risk by identifying hazards and unravelling the subsurface structure and arrangement of all types of rail infrastructure
2. You will improve the safety of your project by getting early warning of hazards like buried services and cavities
3. You will have the resources of Europe's biggest team of engineering geophysicists equipped with the most complete pool of geophysical instruments
4. Link-Up approved, insured and accredited for Network Rail and London Underground
5. Experienced in making the most of short access opportunities
6. As well as advanced non destructive methods you will have access to a supporting capability to calibrate and verify results by targeted digging, drilling, coring or boring.

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