



Key achievements

- Detailed monitoring of a Grade-II listed building and Transport for Greater Manchester assets
- Real time reporting during piling, demolition, excavation and column encasement works

The Project

Conversion of long-standing department store building into a mixed-use development including retail, leisure and office space. As the structure is listed, most of the building's appearance will remain unchanged, however, the planned works include some demolition works to create an atrium and the construction of a rooftop extension.

The Challenge

In addition to the structure of the listed building itself, there are multiple adjacent infrastructure assets that must be protected from excessive vibration. These assets include buried utilities and drainage as well as supports to the overhead power lines for public transport that are attached to the façade of the Building.

The planned piling, demolition and excavation works, as well as removal of masonry or concrete all have the potential to produce significant amounts of vibration.

The Solution

GEO-Instruments engineers installed 23 Triaxial Vibration Monitors throughout the interior and exterior of the building across the ground, first and fifth floors. In order to protect the vibration monitors against potential damage from site activity, particularly demolition, each was fitted with a metal enclosure. These also served to house the attached external batteries that extend the lifespan of the sensors.

Dust and noise sensors were also installed to monitor the impact on workers and neighbouring asset holders.

Collection and transfer of monitoring data was fully automated. Alert triggers were set at the specified limits, so the site team could receive instantaneous alarm emails if thresholds were breached.

Application

Environmental Monitoring

Technique

Vibration Monitoring
Noise Monitoring
Dust Monitoring

Market

Retail, Leisure & Office Space

Project Duration

3 years

Instrumentation

Triaxial Geophones
Sound level sensors
Dust Sensors

Keller companies

GEO-Instruments

