

SOLUTIONS FROM THE GROUND DOWN



THE GEOTECHNICAL SPECIALISTS



CENTRAL ALLIANCE
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SOLUTIONS FROM THE GROUND DOWN

Geo Central works closely with its clients to ensure that the best possible solution is found to ground investigation problems. Our extensive experience allows us to consider all aspects of the investigation when planning and carrying out our work.

Central Alliance is built on the expertise and experience of our directors, engineers and drillers, backed by a strong administration team. We are able to offer supervision of investigations, as well as undertaking the physical works along with subsequent laboratory testing and reporting of the results.

Today's geotechnical engineers face a range of challenges, especially when it comes to design. Projects are often developed where ground conditions are unknown or undocumented and the more extreme weather conditions we have experienced of late are putting earthworks, structures and their foundations to the test. It is now more important than ever that accurate information is gathered to establish the cost implications and estimates for developing and remediating sites.

Rotary Drilling

Central Alliance has a variety of rotary drilling rigs of various size available to suit all types of projects. Our rigs range from tracked multipurpose rigs to small restricted access tracked units and bespoke skid mounted equipment. We have a full range of drilling tooling enabling us to utilise rotary coring, open holing, overburden drilling and hollow stem augering techniques.

Project Name: Highland Improvement Scheme (HEPS), Aberdeen to Inverurie and HEPS Scheme Forres and Elgin

Client: BAM Nuttall / Network Rail

Project Description: Geo Central provided ground investigation for the new rail route between Aberdeen and Inverurie and a new station at Forres and platform extensions and improvements at Elgin.



Project Name: Greengate, Pilkington Glass

Client: SWECO

Project Description: Works included geo-environmental investigation, mine workings investigation, slope access work, UXO clearance, resistivity testing, geotechnical and environmental laboratory testing.



Dynamic Sampling & Dynamic Probing

Central Alliance has a number of dynamic sampling rigs and hand held equipment to carry out dynamic sampling with undisturbed sampling and Standard Penetration Testing as required.

We have extensive experience in embankment investigations and have developed modular dynamic sampling, telehandler and long reach excavator mounted rigs for dynamic sampling in restricted access locations.

Project Name: Transpennine Route Upgrade (TRU East of Leeds)

Client: Volker Rail / J Murphy & Sons / Siemens

Project Description: Providing ground investigation services including dynamic sampling/probing/cable percussive boring, rotary drilling, structural coring, installation of piezometers, inclinometers, VWP's and laboratory testing.



Additional Services

Cable Percussion

Also referred to as “shell & auger” these tripod rigs can reach significant depths but are limited to drilling through soils or weak weathered rock. Cable percussion boreholes are used where ground conditions may be variable and when information is required at depths greater than around 6.00mbgl from the ground investigation.



Trial Pitting

Machine dug trial pits can often provide the most practical and economical method of site investigation and assessment. Often used to obtain samples and engineering logs of shallow strata and can be important when dealing with variable ground conditions.



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Slope/Restricted Access Site Solution

Slope failures particularly in the railway and highway environments are increasingly common. Site investigations are important to characterise the ground conditions in these areas of instability, enabling geotechnical engineers to design appropriate remediation measures.

Traditionally, investigation of these sites either entailed setting up platforms using scaffolding that would service a cut down cable percussion or rotary rig, or clients would need to accept a downgrade in the data that could be recovered by using hand held window sampling equipment. In addition, these difficult to access locations are often remote from access points, so possessions of the railway and traffic management on highways are often required. Moving and establishing equipment/scaffolding on and off site can take a long time and be prohibitively expensive when using these traditional techniques.

To combat these issues, Central Alliance has developed a range of drilling rigs that are able to access these sites and provide the sound geotechnical data required by clients' engineers. We have used our experience of current drilling technology and projects on difficult access locations, to design rigs that are **true 'geotechnical' rigs**.

Our remote control slope climbing rigs are self-levelling, one of which is mounted with a CPT/CPTu mast and the other, a multi-purpose dynamic sampling and rotary mast. The rigs have full body and mast rotation enabling us to carry out ground investigation at the same orientation, location and angle as proposed remedial works such as soil nailing or Electrokinetic slope stabilisation techniques, reducing the risk of encountering unforeseen ground conditions during construction. The ability to measure in-situ pore-water pressures on slopes, often critical in slope stability analysis, marks a significant step forwards in the quality of investigative information that can now be provided to designers.

Our clients have been impressed by the ease of access, quality of data capture and high quality instrument installation capabilities that require no scaffolding, no possessions or traffic management, and no expensive equipment hire!

Our solutions include:

- Massenza MIP18 Slope climbing rigs (CPT, CPTu, direct push sampling, undisturbed sampling, dynamic sampling, rotary drilling, SPTs)
- Long reach mounted platform rig with dual dynamic sampling and rotary masts
- Telehandler mounted platform rig with dual dynamic sampling and rotary masts
- Modular dynamic sampling rigs
- Modular rotary rig

When combined with our innovative survey techniques including unmanned aerial vehicles (UAV's) and mobile mapping solutions these ground investigation techniques provide the highest quality of site investigation information that has ever been available on slopes and remote and difficult access sites.

Project Name: A14 Improvement Scheme at Brampton Hut

Client: Arney / Highways England

Project Description: Bespoke ground investigation using specialist slope climbing rigs that can reach difficult to access locations and provide high quality geotechnical data to design engineers.



Project Name: Eden Brows

Client: Story Contracting

Project Description: Geo Central carried out detailed ground investigations including rotary boreholes using our special platform rig, mounted on a long reach excavator that safely carried out the investigations of the steep upper slope.



Structural Investigation

We carry out structural investigations using a number of highly specialist as well as standard techniques, depending on the nature of the structure as well as the requirement of the investigation and whether elements such as structural condition, detail, concrete assessment and material testing are required. Services include:

- Diamond Coring
- Voided Structures Investigations
- CCTV
- Subsurface Laser Scanning
- Foundation Inspection Pits
- Concrete Investigations
- Brick, concrete and materials testing

Project Name: LNE Voided Structures Investigation

Client: AMCO Rail

Project Description: 7 year programme of investigating at risk voided structures (viaducts) throughout the LNE Zone.



Instrument & Monitoring

Geo Central has extensive experience of the design, installation and monitoring of a wide range of geotechnical and geo-environmental instruments that can monitor groundwater levels and pressure, ground movement and settlement and slope instability including measurements from:

- Inclinometers
- Extensometers
- Piezometers/stand pipes.
- Vibrating wire piezometers
- Tiltmeters
- Remote monitoring
- Ground gas
- Contamination

Fully automated systems can be installed incorporating alert systems which are essential for unstable slopes adjacent to critical infrastructure.

Project Name: Arcow Quarry

Client: Story Contracting

Project Description: Vibrating wire piezometers were installed as well as additional monitoring instrumentation including rod and plate settlement markers, permanent ground markers and structure targets in order to provide a comprehensive solution for observing settlement during the construction of a new earthwork embankment.



In Situ Testing

All field investigations are performed by trained engineers and technicians and supported by experienced site investigation professionals in order to provide the highest quality site investigation. Testing includes:

- In-situ CBR
- Cone Penetration Testing
- Dynamic Cone Penetrometer / TRL probe
- Standard Penetration Testing
- Dynamic Probing
- Hand Shear Vane
- Plate Load Testing
- Permeability Testing
- Soakaway Testing
- Infiltration Testing

Project Name: Cowden

Client: Dong Energy

Project Description: Work on this site included trial anodes and pull out testing, CPT's and installation of piezometers in addition to plate load testing and trial excavations, utility mapping and UXO clearance.



Soils, Rock and Materials Testing

Geo Central engineers can integrate the process of testing, data acquisition and reporting to provide data for informed decision making within the design process in support of project safety and success. Services include:

- Geotechnical Testing
- Environmental Laboratory Testing
- Materials Testing

Factual and Interpretative Reporting

Factual and interpretative reports are written by our highly qualified and experienced team of Geotechnical and Geo-environmental engineers and cover every aspect of the site investigation, along with recommendations and advice where required.

Technical advice can be provided from our Geotechnical team who are highly qualified experts in engineering geology and geotechnical engineering including slope stability analysis and foundation design, and well qualified to offer solutions to geotechnical problems.

Soil and Rock Logging

Our geotechnical engineers have extensive experience in the logging of soil and rock to BS 5930-2015, BS EN ISO 14688-1 2002 and BS EN ISO 14688-2 2002 along with relevant CIRIA guidance.

Subsurface Sonar Survey

- Dry and submerged cavities (using subsurface sonar systems)
- ROV inspections
- CCTV high definition photography/video of shafts and voids

Down the Hole CCTV Surveys

CCTV camera technology allows full investigation and condition surveys of structural voids and natural cavities.

Scan Line Surveys

Understanding the spacing and size of discontinuities in a rock mass is extremely important in the prediction of rock behaviour. The characteristics of discontinuities in rock faces can be estimated using scan line surveys. Central Alliance are able to provide experienced engineering geologists with an understanding of rock mechanics to carry out such surveys.

Subsurface Laser Scanning

Subsurface laser scanning can provide accurate survey information about voids and cavities below the surface, including those that cannot be accessed readily or safely by a surveyor.

Using remote 3D laser scanning and sonar technology we can accurately capture geo-referenced survey data to provide information about the size, shape and position of a void or cavity. Our range of subsurface laser scanning services include:

- DTH (Down The Hole) scanning of voids and cavities located in boreholes
- Deep manholes
- Shafts

Competencies

Our in-house geotechnical and drilling teams are qualified in a wide range of specialisms and hold the following competency's

CSCS

CCNSG Safety Passport

SMSTS

Personal Track Safety (PTS)

First Aid

PAS: 128 (Utility Mapping Surveys NVQ level 3&5)

PASMA

BESC/SHEA

Streetworks (Chapter 8)

IOSH

CAT & Genny

RD8000

PfCO approved UAV Pilots

Industry Common Induction (ICI)

Land Drilling NVQ Level 2

Tracked Dumper

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