

# What we can offer

Atkins is one of the leading providers of professional, technologically-based consultancy and support services in the world.

We employ over 18,000 staff throughout our offices worldwide. We are well positioned to undertake a diversity of projects, with a multidisciplinary team spread across a network of offices throughout the UK and overseas in the Americas, Asia and South East Asia, Western Europe, Central and Eastern Europe, and the Middle East.

## Geotechnical Skills & Services

- engineering geology & geohazards
- environmental geotechnics
- engineering geomorphology
- advanced geomechanics
- rock & soil slope stabilisation
- earthworks
- foundations & substructure engineering
- highways geotechnics
- rail geotechnics
- river & coastal geotechnics
- offshore geotechnics
- water supply & sewerage geotechnics
- nuclear geotechnics
- tunnel & shaft engineering
- due diligence & expert witness



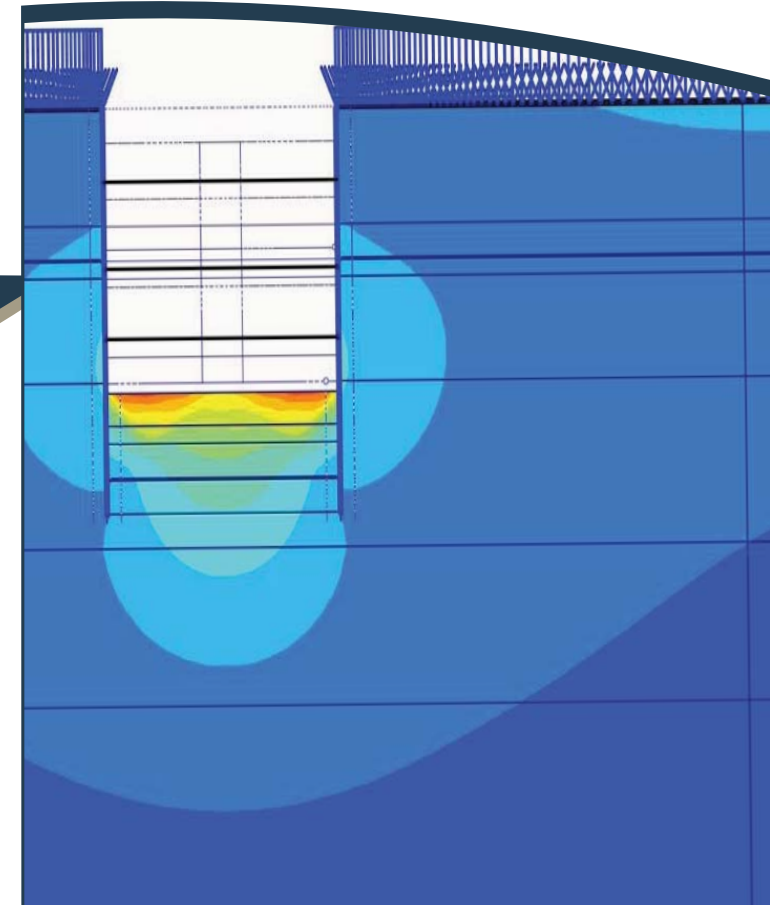
# Key Contacts

For further details regarding our capabilities please email:  
[geotechnicalengineering@atkinsglobal.com](mailto:geotechnicalengineering@atkinsglobal.com)



ATKINS

## Advanced Geomechanics



# Office Locations UK & Ireland

Our UK & Ireland offices include:

Aberdeen	Crewe	Haverfordwest	Northampton	St. Asaph
Altrincham	Croydon	Ipswich	Nottingham	Stockton-On-Tees
Barking	Cumbria	Knutsford	Oxford	Swansea
Belfast	Derby	Leeds	Peterborough	Swindon
Birmingham	Dublin	London	Plymouth	Taunton
Bristol	Edinburgh	Maidstone	Pontypridd	Telford
Cambridge	Epsom	Manchester	Reading	Warrington
Cardiff	Exeter	Newcastle-under-Lyme	Sale	Warwick
Chelmsford	Gillingham	Newcastle-Upon-Tyne	Scunthorpe	Winchester
Chippenham	Glasgow	Newport	Sheffield	York
Colwyn Bay	Gloucester		Southampton	
Cork	Havant			

Plan Design Enable

# Project Experience

## Channel Tunnel Rail Link, Contract 220 - (West Tunnels), UK

Atkins was appointed to provide tunnelling design services to the Joint Venture for this major section of the Channel Tunnel Rail Link project.

Assessment of short-term loading conditions posed particular challenges to the temporary works design. They were overcome with a combination of 3D analysis and specific on-site monitoring. The design of permanent works required integration of third party designs, which imposed very stringent design restrictions and increased the complexity of the modelling and analysis. Atkins' previous experience and our comprehensive understanding of the problems were key contributors to the success of this work.

## Joint Industry Project DEA (E) 101 - Conductor Study

The aim of this Drilling Engineering Association (Europe) Joint Industry Project was to investigate available methods of analysis for the lateral loading of subsea well conductors.

A program of detailed analysis work was undertaken using a variety of approaches, including the conventional p-y approach and advanced finite element methods. Full three-dimensional finite element modelling was undertaken using ABAQUS.

The project reporting phase included harmonisation of the field data with the results of the analytical work and the preparation of design charts and design guidance.



# Project Experience

## Docklands Light Railway - Extension to Lewisham, London

Atkins provided advice and designs for the geotechnical and soil-structure interaction aspects of this project. The station box at Cutty Sark was a particularly demanding structure, being 60m long, 25m wide and 22.5m deep. It was constructed top-down with temporary and permanent propping at five levels between diaphragm walls.

Finite element and finite difference modelling of the station box was undertaken to:

- validate simplified limit equilibrium methods of analysis
- investigate complex soil-structure interaction aspects
- evaluate ground movements associated with top-down construction
- investigate possible cost savings associated with a full 3D analysis approach

## District and Circle Lines, High Street Kensington, London

Covered Ways 12 and 58 on London Undergrounds' District and Circle Lines were constructed in the 1860's. Major strengthening works were carried out during two track possessions.

As part of this work, Atkins was commissioned to advise on geotechnical and soil structure interaction aspects of the project and to assess the strength and stability of the existing abutment walls. The assessment and analysis of in situ ground stresses was an important part of our work.



# Project Experience

## Navijet Project - Jet Grouting Research and Development

Atkins' geotechnical specialists contributed to the Navijet project, an EU funded research initiative to improve all aspects of the jet grouting ground improvement technique. Jet grouting involves drilling into the ground to a required depth and then, as the drillstring is removed, jetting grout at very high pressure from a nozzle positioned above the drillbit. This process breaks down the fabric of the surrounding soil and creates a soil/grout column up to several metres in diameter.

We evaluated the effectiveness of grout columns as barriers to groundwater flow by employing a combination of two and three dimensional finite difference analysis to a large range of possible circumstances.

## Cwm Relief Road, South Wales, (Cover-and-Fill Tunnel)

A critical part of the Cwm Relief Road project comprises a 122m long concrete arch cover-and-fill tunnel which supports a roundabout above the Newport to Ebbw Vale railway line. Variable and difficult ground conditions combined with a marginally stable valley side at the tunnel location, and its proximity to a live railway, presented considerable challenges in the geotechnical design.

Atkins' geotechnical specialists made appropriate use of numerical modelling techniques to:

- verify and refine the foundation design in conjunction with limit equilibrium calculations; and
- improve the reliability of predictions of structural design forces and ground movements as a means of achieving a safe and economical design solution

