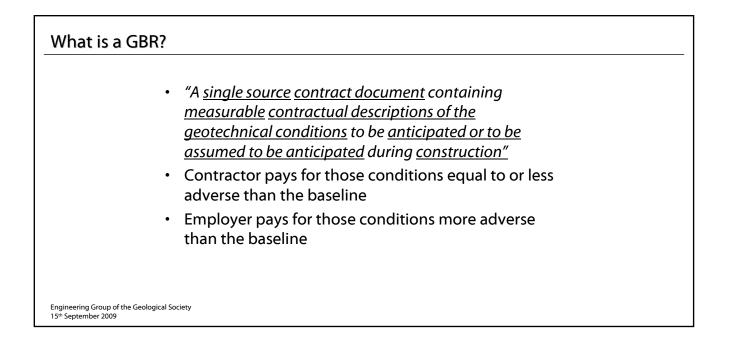
Geotechnical baseline reports

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BONUS

Why did they come into being?

- No unforeseen ground conditions clause ('left to chance')
- No or limited (poorly considered?) information provided at tender (factual report – 'points/values in space')
- Geotechnical Interpretative Report (pre-design – *outcome not known*)
- Inconsistent with Contract Documents
- Construction overruns and claims and rising costs for 'ground' works

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- Unforeseen ground conditions clause
- Since early/mid 90's (in US) (tunnels)
- 'Reference Ground Conditions' CIRIA 79 'Tunnelling - Improved Contract Practices' (1978)
- Gap in our ability to communicate
- Reintroduced in UK early 00's but for major infrastructure projects only
- GBR a requirement under ABI/ITA 'rules' for tunnel construction
- Gradually being adopted worldwide

How does a GBR work?

- Statements called 'baselines'
- GBR issued at ITT
- Contains all geo-information relevant to the bid and execution of Contract
- Takes precedence over other geoinformation
- Same for all bidders
- Comparison of bids
- If adverse, <u>may</u> lead to compensation (additional cost and time)
- Resolves to Contract administration

- Not a warranty that conditions will occur
- Baselines should be realistic
- May not be real but define 'performance limits' within which the Contractor is expected to perform
- Should not be used as a basis for design (a GBR is not a GIR)
- Clearly, need to know the implications of the baseline statement set and the risk they may be exceeded.
- Buy in from Employer

What geotechnical baselines?

- Estimated amounts and distribution of different materials (a drawing!)
- Description of strength, permeability, grain size and mineralogy of the materials
- Strength and permeability of the ground mass
- Quality of the rock mass characteristics of discontinuities
- Groundwater levels and groundwater conditions
- Ground & groundwater geochemistry

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- Anticipated behaviour of the ground to planned construction activities
- Construction impacts on adjacent facilities
- Location of potential faults etc.
- Description of the presence of boulders, foundations, utilities or other geotechnical hazards

Example of a baseline statement (1) Tunnel in glacial till Set baseline at 100 boulders ٠ ٠ Boulders of rock are to be anticipated • Employer pays for first 100 boulders and others encountered are subject to Estimated 100 to 300 boulders • additional payment Set baseline at 300 boulders – the risk ٠ Owner will get lower bid for 100 • of unforeseen ground conditions is boulders than for 300 removed Risk and impact of encountering more But, Employer pays for 300 boulders ٠ than 100 boulders needs to be whether encountered or not

• Baseline is weighed decision both - commercial and technical

assessed (the contingency)

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Example of a baseline statement (2)

- Excavation for new building to replace old
- Expected presence of old foundations likely to cause an obstruct (*lengthen time or use different or bigger plant*)
- But location/depth and extent of old foundations are not known (*no plans no ground investigation*)
- Was this a known risk?

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- Employer wants a price from ContractorHow would the Contractor price for
- How would the Contractor price for this?
- What should the Employer pay?
- What baseline should be set?
- What if there were no baseline?

Example of a baseline statement (3)

- Piled foundation
- Employer's design (DBB)
- Contract drawings would state pile size, depth and loads.
- GBR would define: -
 - anticipated ground conditions
 - preferred method of construction
 - design parameters
 - requirements to control groundwater
 - presence of hazards such as obstructions that need to be priced
 - how ground is likely to behave for likely construction methods to be used

Introduction	
Sources of information	
Project description	
Description of 'the Site'	
Site geology	
'Ground/Site' characterisation	
Considerations for design	
Considerations for construction	
References	
± Previous construction experience	

 Unambiguous Avoid repetition Succinct Explicit Measurable Quantitative terms Qualitative (e.g. suits formalised terms) Avoid imprecision (e.g. terms like 'may', 'should', 'shall' etc) 	 Content varies according to type of contract DBOT – DB – DBB and how risk is allocated.
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Summary of benefits of a GBR

Preparation

- Collaborative
- Focuses thought
- Sets performance limits
- · Identifies risk and contingencies

<u>Bid</u>

- Inform at ITT (single interpretation)
- Common basis for evaluating bids
- More reliable bids (known contingencies)
- May be negotiable/contractor input

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Implementation

- Ground conditions are now measurable
- A basis for determining eligibility for compensation under the Contract
- Greater certainty of output

Current situation

- Are they necessary?
- Little experience in the UK
- ASCE Guidelines (Gold Book, 2007)
- Relevance to the UK?
- Compatibility with forms of Contract?
- Standardised?
- Who should write the GBR?
- Shift in attitude nothing left to chance (risk management, CDM etc).

- Integration with Bills of Quantities/Activity Schedule?
- Integration with Eurocode 7?
- Integration with CDM2007?
- Better (more accurate or complete?) interpretations of the ground
- Use of geological models?
- How do you measure the ground?
- Emphasis on construction processes and ground behaviours

'a specification for the ground'

- 'a specification for the ground'
- Culmination of what we are trying to achieve
- Fills communication gap
- Involved
- Attitude

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Way forward

- Working Party established in 2008 by EGGS
- Early 2010 Draft Commentary on the use of Geotechnical Baseline Reports
- May 2010 EGGS meeting