

Notes



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Project title	Geological Society Periglacial and Glacial Engineering Geology Working Party	Job number
Meeting name and number	02/2011	File reference
Location	13.5 Room 1, Arup, 13 Fitzroy Street, London	Time and date 10:00 3 rd March 2011
Purpose of meeting	Steering Group meeting of Periglacial and Glacial Engineering Geology Working Party	Page 1 of 2
Present	John Charman (Chair) Chris Martin (Secretary) Dave Giles Kevin Privett Mike Winter	
Apologies	Julian Murton	
Circulation	Those present EGGS committee Prof Jim Griffiths	

Action

- 1. Chairman's introduction, review previous minutes and proposed agenda**
 - Aim to complete ToR and proposed WP structure today, then concentrate on WP members at June meeting.
 - Previous minutes were reviewed and approved. Any outstanding actions incorporated into agenda items.
- 2. Terms of Reference for Working Party**
 - Draft 1 reviewed and amended to Draft 2 (attached).
 - Geographical focus of WP reviewed and clause added.
- 3. Publication Proposal**
 - SG would prepare a proposal for WP support from GS and GSPH.
 - Alternative routes would still be considered.
 - MW would speak to Neil Marriott (GSPH Director) to make

MW

Prepared by Chris Martin
Date of circulation 15th April 2011

Project title	Job number	Date of Meeting
Geological Society Periglacial and Glacial Engineering Geology Working Party		
		Action
<ul style="list-style-type: none"> him aware of WP intentions and determine best way forward. Proposal would include proposed ToR, potential members, outline report structure, WP budget and programme, etc. 		All
4. Outline of Working Party Report Structure and Contents		
<ul style="list-style-type: none"> First draft (two options – material vs. process-driven approach) prepared by DG following the last meeting. Revised by KP in Jan-11 to remove possible repetition. Reviewed during meeting; revised version attached. DG/KP to review number of ground models. CM/DG to produce first draft of risk matrix. MW to redraft ‘Design & Construction Considerations’ section structure. [<i>Post-meeting note: Done – see attached</i>] 		DG/KP
5. Potential Officers and Members of Working Party		
<ul style="list-style-type: none"> To review at next meeting. Prof Jim Griffiths had tentatively agreed to take on role of Working Party Editor. JG to aim to attend the next meeting. 		
6. Input to Engineering Group Forum on ‘Quaternary Engineering Geology,’ 23rd November 2011		
<ul style="list-style-type: none"> DG is technical convenor. Keynote by Dave Evans (Durham Uni). JC/CM to present on WP proposals (20 min). 		
7. Expense claims		
<ul style="list-style-type: none"> SG members to return claim forms to CM, for approval and onward transmission to EG Treasurer and GS. 		All CM
8. AOB and Matters Arising		
<ul style="list-style-type: none"> None 		
9. Date of Next Meetings		
<ul style="list-style-type: none"> Tuesday 28th June 2011 19th or 20th October. TBC. Tuesday 22nd November 2011 (before the EGGs Forum) 		All

PERIGLACIAL AND GLACIAL ENGINEERING GEOLOGY

A Geological Society Engineering Group Working Party

DRAFT TERMS OF REFERENCE

**to be formulated into the final Terms of Reference
during the first and/or second meeting of the Working Party**
(This is to be considered a working draft)

1. These Terms of Reference are as agreed by the Periglacial and Glacial Engineering Geology Working Party (PGEGWP).
2. The PGEGWP has been established by the Engineering Group of the Geological Society and comprises officers and specialist participating members who will act as chapter authors or co-authors. The participating members may be assisted by any number of corresponding members.
3. The PGEGWP will produce a report, in book format, to complement the earlier report on Tropical Residual Soils produced by an earlier Working Party of the Engineering Group, first published in 1990 and republished in book format in 1997. A similar format was adopted by the Hot Deserts Working Party, which is due to publish their final report in 2011. It is intended that the report will be a comprehensive, state-of-the-art review on the ground conditions associated with relict Quaternary periglacial and glacial environments and their materials, from an engineering geological viewpoint. There necessarily will be appropriate coverage of the processes and environments that formed these relict materials.
4. It is not intended to define the geographic extent of relict periglacial and glacial environments around the world, but to concentrate on ground models that would be applicable to support the engineering geological practitioner.
5. The aim of the PGEGWP is to produce a report that will act as an essential reference handbook for professionals as well as a valuable textbook for students and others. The style will be concise and digestible by the non-specialist, yet be authoritative, up-to-date and extensively supported by data and collations of technical information. The use of jargon will be minimised and necessary specialist terms will be defined in an extensive glossary. There will be copious illustrations, many of which will be original, and many good quality photographs.
6. The content of the report will embrace a full range of topics, from the latest research findings to practical applications of existing information. There will be an endeavour to identify likely directions of future research and to predict future development. The report will be based on world-wide experience in periglacial and glacial terrain and will draw upon the experience of its members and publications on periglacial and glacial conditions.
7. The Working Party members will be collectively responsible for the whole report. Although each participating member will be the named author or co-author of one or more chapters, all members will be expected to review and contribute to the chapters drafted by other members and would be acknowledged as such. Individual book chapters will be included in the Thomson Book Citation Index.
8. It is intended that the report will be completed within four years.

Some initial thoughts based on Dave's landsystem framework and incorporating sub-headings and points from Eyles (1983), Balantyne & Harris (1994) and Benn & Evans 2010. As it stands, there is some repetition and, most likely, some superfluous material and is only a 'first pass' to get more details down on paper. This version is based on 'behaviour', 'investigation' and 'design' being chapters in their own right, rather than sub-sections of the ground model chapters (as this might be less repetitive and concentrates the mind of the reader on what to do about it, once the various features have been described).

DRAFT TABLE OF CONTENTS

WP members & acknowledgements.

Contents.

Forward.

Preface.

1. INTRODUCTION

2. QUATERNARY SETTING

2.1 Event framework.

2.2 Stratigraphic framework.

2.3 Geographic framework

2.4 Landsystem approach (geomorphological background).

3. GLACIAL CONCEPTUAL GROUND MODEL

3.1 Sub-glacial.

a) Processes, Landforms & Deposits

b) Ground Model

c) Geohazards checklist and engineering significance

3.2 Supra-glacial.

a) Processes, Landforms & Deposits

b) Ground Model

c) Geohazards checklist and engineering significance

3.3 Glaciated valley.

a) Processes, Landforms & Deposits

b) Ground Model

c) Geohazards checklist and engineering significance

3.4 Glaciolacustrine & glaciomarine. [combined or separate?]

a) Processes, Landforms & Deposits

b) Ground Model

c) Geohazards checklist and engineering significance

3.5 Fluvioglacial.

a) Processes, Landforms & Deposits

b) Ground Model

c) Geohazards checklist and engineering significance

3.6 Glaciotectonic.

a) Processes, Landforms & Deposits

b) Ground Model

c) Geohazards checklist and engineering significance

3.7 Ice marginal.

a) Processes, Landforms & Deposits

b) Ground Model

c) Geohazards checklist and engineering significance

4. PERIGLACIAL CONCEPTUAL GROUND MODEL

- 4.1 Upland regions.
 - a) Processes, Landforms & Deposits
 - b) Ground Model
 - c) Geohazards checklist and engineering significance
- 4.2 Lowland regions.
 - a) Processes, Landforms & Deposits
 - b) Ground Model
 - c) Geohazards checklist and engineering significance

5. GEOHAZARDS & PROBLEMATIC GROUND CONDITIONS

- 5.1 Geohazards and problematic ground conditions.
 - a) From individual soil types or associations of soil types.
 - b) From the larger scale landforms (landslides, cambers, solifluction sheets, etc. [full list not developed]).

6. ENGINEERING INVESTIGATION & ASSESSMENT

- 6.1 Soil & rock description & characteristics.
- 6.2 Desk study, remote sensing, walk-over/field evaluation & eng geol mapping.
- 6.3 Ground investigation, testing & interpretation.
 - a) Drilling, trial pitting & trenching.
 - b) Sampling equipment & quality.
 - c) In-situ testing – SPT, CPT, plate bearing, pressuremeter, permeability.
 - d) Geophysics.
 - e) Lab. testing.
- 6.4 Hydrogeological investigation.
 - a) Aquifers, recharge, abstraction, hydrochemistry, superficial cover.

7. ENGINEERING BEHAVIOUR & PROPERTIES

- 7.1 Engineering behaviour of rock and soil materials.
 - a) Deformed/shattered bedrock, till, sand & gravel, laminated silts & clays, quick clay, loess & brickearth, solifluction deposits, ice rafts, peat.
 - b) Example for tills – engineering classification, PSD, Atterbergs, moisture content, liquidity, post-depositional modification, shear strength, influence of discontinuities, compressibility, in-situ stress.

8. DESIGN & CONSTRUCTION CONSIDERATIONS

- 8.1 Foundations.
 - a) Common problems, bearing capacity & settlement, rockhead, shallow foundations, piles.
- 8.2 Slopes and slope stability
 - a) Cut
 - b) Natural slopes
- 8.3 Earthworks
- 8.4 Retaining walls
 - a) Depending n detail this may end up under either foundations or earthworks or drop-out completely.
- 8.5 Dams
 - a) Common problems, valley profiles, rockhead, rock conditions, groundwater, construction materials, buried valleys, superficial deposits.
 - b) Inevitably some overlap with earthworks and foundations so we may need to refer back and deal only with issues that reflect the unique issues surrounding dams (i.e. the need to impound water) here.
- 8.6 Tunnels and underground structures
 - a) Common problems, water, variability of ground conditions.
 - b) Specific features – sand lenses, etc.
- 8.7 Issues related to linear infrastructure
 - a) Roads.
 - b) Railways.

- c) Pipelines and buried cables.
- d) Transmission lines.
- 8.8 Issues related to wind farms
 - a) Onshore
 - b) Offshore
 - c) This might end up under foundations and slopes
 - d)

Appendices.

Glossary.

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