
International Programme

Open Report OR/11/038

Richard Ellison

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Front cover
Balloon sellers of Kabul.
Picture by Bob McIntosh.

Bibliographical reference


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Keyworth, Nottingham   British Geological Survey   2011
BRITISH GEOLOGICAL SURVEY

The full range of our publications is available from BGS shops at Nottingham, Edinburgh, London and Cardiff (Welsh publications only) see contact details below or shop online at www.geologyshop.com

The London Information Office also maintains a reference collection of BGS publications, including maps, for consultation.

We publish an annual catalogue of our maps and other publications; this catalogue is available online or from any of the BGS shops.

The British Geological Survey carries out the geological survey of Great Britain and Northern Ireland (the latter as an agency service for the government of Northern Ireland), and of the surrounding continental shelf, as well as basic research projects. It also undertakes programmes of technical aid in geology in developing countries.

The British Geological Survey is a component body of the Natural Environment Research Council.
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BRITISH GEOLOGICAL SURVEY PROJECT ON INSTITUTIONAL STRENGTHENING OF THE AFGHANISTAN GEOLOGICAL SURVEY 2002-2008

1 BRIEF DESCRIPTION OF WORK

The overarching aim of the project was to develop capacity in the Afghanistan Geological Survey (AGS) so that it can play its proper role in helping Afghanistan to develop a viable minerals industry. Within this agenda the project has made available existing AGS archive data, and has developed an operational mines office capable of interfacing with international and national investors. As the project progressed, the emphasis of the work moved to promote the potential of Afghanistan’s mineral resources to the outside world, through the AGS web site and in commodity brochures. Substantial progress was made also in the initiation of laboratory facilities and the commencement of structured work programmes in the AGS for the first time since the late 1980s.

An important comment on this project was made in the DFID Annual Review of February 2007:

“…..Unambiguously, this project has contributed to the overall goal and purpose of creating a viable Afghan minerals industry through institutional strengthening and capacity building of the AGS…..”.

Approximate cost at FEC

An accountable grant from DFID, value c.£3.8M

The main beneficiaries

Work was carried out for the Afghanistan Ministry of Mines, often guided personally by the Minister, who intervened on several occasions.

The main beneficiaries include the staff of the Afghanistan Geological Survey, who received more than 50 technical training courses. In addition 150 staff were trained in English to level 3 or above and 90 staff graduated from training in basic IT. Notable amongst these beneficiaries are numerous women employees whose participation was assisted by the project funding a crèche. This is a major achievement bearing in mind that the Geological Survey only started to function again when the Taleban left Kabul in 2001.

Indirectly the Afghan nation will benefit from the work undertaken to promote Afghanistan’s mineral resources and develop the mining sector. One such example is Aynak, a world-class stratabound copper deposit estimated to contain approximately 240 million tonnes of ore of good grade situated some 35 km south of Kabul. It had been investigated extensively in the 1970s and 1980s by Russian geologists. Their work was curtailed in 1989 with the withdrawal of Russian advisors, and the subsequent civil war halted any further activity. The Russian reports on the deposit were placed in the Afghanistan Geological Survey who stored them for safe keeping until the commencement of the BGS project in 2002.

The BGS team was responsible for translating, scanning and collating all the information on Aynak, including 78 Reports and 1300 maps which were mostly in Russian and based on obsolete Soviet methodology, and making it available in brochures and via a web site (for visitor statistics see below). In addition a 3-D model was built as a visualisation tool for prospective investors.
That work was the impetus for a public tendering process in October and November 2006, overseen by the World Bank, to attract suitable international mining companies to bid for exploration and exploitation rights of the deposit. It attracted fourteen international mining companies of which the Kabul Government shortlisted nine, from countries including Russia, the US, China and India. BGS was involved as advisors and the provider of information throughout the pre-qualification and tendering stages which culminated in the award of a contract in 2008.

**Benefit to the public**

The importance of a mining industry to private sector investment and revenue collection is well documented. The Government of Afghanistan has acknowledged that development of mineral resources will require substantial investment (eg in power generation) and that in order to attract and retain investment it needs to create an enabling environment for which the BGS project has provided a strong information platform.

In addition, artisanal mining and economic activity to develop the mining sector will help to alleviate poverty and reliance on the narcotic trade in rural areas

### 2 TIMELINE FOR BGS INVOLVEMENT IN AFGHANISTAN

**November 2002**
- Visit to Kabul by Ian Penn and Mike Stephenson
- Plan for reconstruction of the Afghan Geological Survey

**January 2003**
- Minister of Mines Mohammadi visits BGS
- Memorandum of Understanding signed

**February 2003**
- Visit to Kabul by Mike Petterson

**February 2003**
- Minister of Mines Mohammadi killed in plane crash

**September 2003**
- Visit by Dave Greenbaum and Mike Petterson
  “…spirit of enthusiasm in AGS…..”

**May 2004**
- Visit by Dave Greenbaum, Mike Petterson and Ian Penn
  AGS staff profiles and training plan completed

**July 2004**
- BGS proposal formally submitted to DfID.

**August 2004**
- Project set up Visit by Greenbaum and McIntosh

**September 2004**
- Accountable grant of £3.84M awarded by DfID

**October 2004**
- Presidential elections

**October 2004**
- Project team in residence, Pete Dunkley PL
  “…electricity supply officially reduced to 4 hours in 48…”

**February 2005**
- AGS web site running

**March 2005**
- Refurbished BGS rooms completed
**September 2005**  
Pete Dunkley departed, Clive Mitchell and Stan Coats took over shared PL role

**September 2005**  
UNOPS refurbishment of AGS started  
“….advised and facilitated by BGS….”

**November 2005**  
3D model of Aynak completed

**December 2005**  
BGS moved into AGS Annex

**February 2006**  
DfID mid term review by Graeme Hancock and Chris Morgan  
“…performing extremely well …challenging circumstances… technical competence consistently high….”  
“the highest score of all DfID projects in Afghanistan”

**May 2006**  
Adam Smith International contracted to work on PRR

**July 2006**  
BGS staff withdrawn from Kabul for 4 weeks  
“…unacceptable level of risk…”

**July 2006**  
Abdul Wasay appointed Director AGS

**August 2006**  
Official opening of AGS buildings

**November 2006**  
Minister of Mines Taniwal murdered in Paktia

**January 2007**  
PRR stage 2 approved by Minister of Mines, Adel

**February 2007**  
DfID Annual Review by Roger Nellist  
“….continues a good job….work deserves wider recognition…”

**May 2007**  
First visit to project by DfID Afghanistan  
(Miguel Laric)

**July 2007**  
Project extension approved from Oct 07 until March 08 (value £343,000)  
“Care and maintenance basis with full PRR commitment”

**October 2007**  
Project extension started

**January 2008**  
Final BGS visit to Kabul and completion of closure handover report

**March 2008**  
ASI final report delivered

**June 2008**  
Abdullah Geology and Mineral Resources of Afghanistan printed

**July 2008**  
DfID Project completion review by Peter Jensen

**July 2008**  
Internal BGS Project closure meeting
Afghanistan Minister of Mines Mohammadi and David Ovadia (BGS International) signing the memorandum of understanding, Keyworth September 2002

Afghanistan Minister of Mines Adel speaking at the BGS farewell party, Kabul January 2008
3 PRINCIPAL OUTPUTS FROM THE PROJECT

Reports on the geology and mineral resources of Afghanistan

- All available reports, 2600 in total, are brought together in an archive room, indexed, translated from Russian to English, and put into a database with 9400 entries including reference to maps and other annexes contained in the reports.
- Scans made of 200 of the reports (concerning Aynak, coal resources and industrial minerals)

2006-2008 Commodity brochure series:

- The Hajigak Iron Ore Deposit
- Rare Metal deposits
- The potential for Copper
- The Aynak Copper Deposit
- Marbles of Afghanistan
- Gemstones of Afghanistan
- The potential for Gold


2008 BGS Afghanistan project. Interview for BBC Midlands Today

2008 Environmental Geochemistry and Health. (paper accepted for publication) “A pilot study on iodine in soils in Greater Kabul and Nangahar provinces of Afghanistan”.


2007 Geoscientist, 17, No. 8, “Laboratories for Afghanistan”.


2007 Papers given at the International Conference on Geology and Mineral Resources of Afghanistan, 15-16 October 2007, Kabul:


The Sediment-Hosted Aynak Copper Deposit, Logar Province, Afghanistan.

2006 Planet Earth. “Repairing war damage in Afghanistan”.

2006 Planet Earth. “Afghanistan’s gemstones”.


2004 British Association for the Advancement of Science, Exeter. Presentation: “A new Survey for a new nation - M G Petterson presents an overview on the BGS – Afghanistan project


2003 Geoscientist, 13, 16-17. Dynamism and optimism of Afghanistan’s geologists will drive reconstruction of Afghanistan Geological Survey and the natural resources sector.

2002 DFID Earthworks, 15, 3. Training needs analysis for geoscience organisations
**General Advice to AGS staff, local stakeholders and international visitors**

- An estimated 2500 individual visits were made to the BGS office (an average of four per day) where information and advice was given on a large range of geoscientific matters.

**Training**

- 56 students from the Kabul University and Kabul Polytechnic have participated in training courses since May 2006.
- 150 staff trained in English to level 3 or above, including 17 at advanced level, and 42 more are currently training above level 3.
- 99 staff have graduated from the training in basic IT, and 43 more are currently taking the course.
- Sustained on the job training has taken place over 3 years in:
  - Scanning reports and data
  - Use of databases for registration of data and samples, and recording test data
  - Use of rock cutting machinery and thin section making
  - Industrial minerals collection and testing
  - Geochemical laboratory management and testing
- 52 specific training courses, lectures, and workshops have been given (listed below) – mainly for AGS staff, but with some participation by Ministry of Mines staff and University students

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Course Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Intermediate Petrology (office based)</td>
<td>August '07</td>
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<tr>
<td>2 Field Geology 3 (field based)</td>
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<tr>
<td>3 Basic Geology 2 (office based)</td>
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<tr>
<td>4 GIS</td>
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<tr>
<td>5 Mineral economics: Lead and Zinc</td>
<td>May '07</td>
<td>20</td>
</tr>
<tr>
<td>6 Field Geology 2 (field based)</td>
<td>April '07</td>
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</tr>
<tr>
<td>7 Gemmology</td>
<td>March '07</td>
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<tr>
<td>8 GIS introduction given by LIWAL</td>
<td>March '07</td>
<td>13</td>
</tr>
<tr>
<td>9 Thin section</td>
<td>February-March 07</td>
<td>9</td>
</tr>
<tr>
<td>10 Industrial minerals and construction</td>
<td>February '07</td>
<td>9</td>
</tr>
<tr>
<td>11 Map and Compass Work (office based)</td>
<td>March '07</td>
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<tr>
<td>12 UAE Field Geology (field based)</td>
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<tr>
<td>13 Introduction to Petrology (office based)</td>
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</tr>
<tr>
<td>14 Basic Geology 1 (office based)</td>
<td>August '06 - January '07</td>
<td>45</td>
</tr>
<tr>
<td>15 Field Geology 1 (field based)</td>
<td>August '06 - January '07</td>
<td>25</td>
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<tr>
<td>16 Geological Field Techniques (office based)</td>
<td>November '06</td>
<td>25</td>
</tr>
<tr>
<td>No.</td>
<td>Course Description</td>
<td>Start Date - End Date</td>
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<tr>
<td>17</td>
<td>Observation &amp; Collection of Construction Materials (field based)</td>
<td>August '06 - January '07</td>
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<tr>
<td>18</td>
<td>Upkeep of gemmology laboratory &amp; maintenance of thin section collection</td>
<td>November 06</td>
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<tr>
<td>19</td>
<td>Refresher course on Introduction to Vulcan Modelling</td>
<td>November 06</td>
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<tr>
<td>20</td>
<td>Mineral economics</td>
<td>October 06</td>
</tr>
<tr>
<td>21</td>
<td>Modern Photographic Techniques &amp; basic use of Photoshop software</td>
<td>October 06</td>
</tr>
<tr>
<td>22</td>
<td>Role of Geological Surveys in Promoting Inward Investment to the Mining Sector</td>
<td>November 06</td>
</tr>
<tr>
<td>23</td>
<td>Familiarisation of the Aynak Data Package</td>
<td>January 07</td>
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<tr>
<td>24</td>
<td>Thin Section</td>
<td>November 06</td>
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<tr>
<td>25</td>
<td>Basic Overview of the Modern Mining Industry &amp; the Role of the Cadastre System</td>
<td>February '06 - July '06</td>
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<tr>
<td>26</td>
<td>Intermediate level database development using Microsoft Access</td>
<td>February '06 - July '06</td>
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<tr>
<td>27</td>
<td>Introduction to database development using Microsoft Access</td>
<td>February '06 - July '06</td>
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<tr>
<td>28</td>
<td>Introduction to Igneous Rocks</td>
<td>February '06 - July '06</td>
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<td>29</td>
<td>Introduction to Remote Sensing</td>
<td>February '06 - July '06</td>
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<td>30</td>
<td>Introduction to Plate Tectonics</td>
<td>February '06 - July '06</td>
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<tr>
<td>31</td>
<td>Introduction to Volcanology</td>
<td>February '06 - July '06</td>
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<tr>
<td>32</td>
<td>Metallic and Industrial Minerals exploration (office and field based)</td>
<td>February '06 - July '06</td>
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<tr>
<td>33</td>
<td>Mineral Economics (commodity trading &amp; production techniques)</td>
<td>February '06 - July '06</td>
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<tr>
<td>34</td>
<td>Introduction to Vulcan Modelling</td>
<td>February '06 - July '06</td>
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<tr>
<td>35</td>
<td>Minerals in the Marketplace (office and field based)</td>
<td>February '06 - July '06</td>
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<tr>
<td>36</td>
<td>Organisational Management</td>
<td>February '06 - July '06</td>
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<td>37</td>
<td>Impact of Mineral Taxation on Inward Investment to Afghanistan</td>
<td>February '06 - July '06</td>
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<td>38</td>
<td>Laboratory Training in Industrial Minerals Evaluation</td>
<td>February '06 - July '06</td>
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<td>39</td>
<td>Mining Industry</td>
<td>August '05 - January '06</td>
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<td>40</td>
<td>Mining systems</td>
<td>August '05 - January '06</td>
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<tr>
<td>No.</td>
<td>Course Description</td>
<td>Duration</td>
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<tr>
<td>41</td>
<td>Mineral Exploration &amp; Evaluation</td>
<td>August '05 -</td>
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<td>6</td>
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<tr>
<td>42</td>
<td>Laboratory Training in Industrial Minerals Evaluation</td>
<td>August '05 -</td>
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<tr>
<td>43</td>
<td>Studio &amp; Field Photography Techniques &amp; processing/metadata</td>
<td>August '05 -</td>
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<td>6</td>
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<tr>
<td>44</td>
<td>Seminars for senior management</td>
<td>August '05 -</td>
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<td>30</td>
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<tr>
<td>45</td>
<td>Restructuring of the AGS</td>
<td>February '05 -</td>
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<tr>
<td>46</td>
<td>Mining Industry and Mining Cadastre Systems</td>
<td>February '05 -</td>
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<td>19</td>
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<tr>
<td>47</td>
<td>Mineral Exploration and Evaluation</td>
<td>February '05 -</td>
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<tr>
<td>48</td>
<td>Data entry of archive collections</td>
<td>February '05 -</td>
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<tr>
<td>49</td>
<td>Scanning in the digitisation suite</td>
<td>February '05 -</td>
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<td>50</td>
<td>Industrial minerals workshop</td>
<td>February '05 -</td>
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<td>80</td>
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<tr>
<td>51</td>
<td>Seminars for senior management</td>
<td>February '05 -</td>
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<td></td>
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<td>52</td>
<td>Industrial Minerals Workshop</td>
<td>October '04 -</td>
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<td>110</td>
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**National promotional material**

- Publication of a major article on Afghanistan’s mineral potential in the August 2006 edition of the Mining Journal (the leading technical publication of the international mining industry);

Brochures on:
- Aynak Copper Deposit
- The potential for Copper
- Gemstones of Afghanistan
- Afghanistan Marble
- Lead Zinc mineralization
- Achin magnesite deposit
- Rare Metal deposits
- The potential for Gold
- Hajigak iron deposit

*Geology and Mineral Resources of Afghanistan* by Abdullah: prepared in English with illustrations and tables re-drawn. To be made available as a print on demand via the AGS website.

Active advice and assistance has been given to Afghanistan’s new international mineral promotion effort at:
- 3 international PDAC conferences in Canada
- Mines and Money conference in London
• Presentations at two other international minerals industry conferences;
• Marble promotion event in Dubai, September 07

Aynak

• BGS has developed a 3D Vulcan technical model of Aynak, probably the single most high-level professional technical output of the whole project,
• BGS facilitated the Aynak tendering process
• Aynak information package produced for PDAC
• Data package prepared for Aynak tender bidders

Labs and other rooms

BGS has maintained and equipped 5 key technical laboratories and support facilities:

• Industrial Minerals sample preparation and testing lab
• Thin section lab
• Petrography lab
• Gemmology lab
• Geochemistry lab
• Sample registration room
• Rock Cutting room

• In addition BGS maintains 7 other rooms in the Annex, including the BGS office, training rooms, server room etc.

• 8 offices in the main building refurbished (prior to move into Annex offices)

Databases and other information made available

• All Russian topographic maps at 1:250 000: on AGS server
• All Russian 1:250 000 geological maps, digitized by the USGS: on AGS server
• Legacy thin sections collection registered and cleaned: 4264 slides, and 2088 photographs
• Archive photographs: 1240 scanned and registered
• 10 000 photos from current projects registered and listed

AGS website

• hosted (for the time being) by the BGS.
• daily ‘visitor sessions’ to the site have risen to more than 180 per day since the site was launched in 2005, and continue at around 120 to 150 visitor session per day (see illustration below)
• on 14 June 2010 the New York Times published an article suggesting the value of minerals in Afghanistan to be $1trillion. This produced a spike of 4500 visitor sessions to the AGS Web Site (see illustration below).

The website currently contains information on:

• Afghan Marble Showcase to be held in Dubai on 11th September 2007.
• Tenders for the:
  Sarpolak/Takhmak amethyst deposit, Baghlan province
  DashtTop chromite deposit, Wardak province
  Qara Zaghan gold deposit, Baghlan province
Oshko chromite deposit, Paktiaprovence
Companies selected for Aynak Tender
Mining Journal Supplement on Afghanistan
History of the AGS
Geology of Afghanistan
Information on base metals, ferrous metals, industrial minerals, rare earth elements
Precious metals
Precious stone
Information resources in the AGS
Information on donor organizations
Links to other authorities and organizations eg AIMS, Ministry of Communications, Ministry of Finance
Separate page for the Department of Mines Affairs
Image galleries

AGS Web site visitors January 2005 to June 2008
AGS Web site visitors January 2008 to June 2010

AGS Web site visitors 13 to 15 June 2010
**IT hardware and software**

- 35 PCs, 29 of them linked to AGS servers and loaded either with Microsoft Office or Microsoft Open Office.
- 6 PCs with Arc 9 GIS software
- 6 PCs and a server at the Ministry of Mines Cadastre Office
- 5 high capacity UPS in AGS
- 2 high capacity UPS in the Cadastre Office
- 5 printers
- Large format scanner
- 2 small format scanners

**Other equipment**

- 12 sets of geology field equipment
- 4 vehicles: 2 pickups and 2 Nissan Patrol
- 8 digital cameras
- 10 microscopes
- 1 photocopier

**AGS Library and Museum**

- A new Library has been established, with around 5000 books, including UK Open University course books and videos.
- The AGS Museum displays have been renewed.

**Other support for AGS**

- For security guards
- For the crèche
Rebuilding the Afghanistan Geological Survey (2002-2005)

Office space

From this

To this

IT room

From this

To this

Laboratories

From this

To this