



Economic and wider benefits of the BGS's geospatial information

Richard Hughes

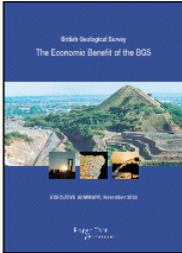
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- Creating information and knowledge from data
- Making the information accessible
- Ground stability information case study
- Quantification of economic benefits.....

Economic benefits of geoscience



BGS, 2003:

Cost-benefit method hard to apply; by value-added method 'BGS contributed to between 5-8% of national output (£34 – 61 Billion)'

Ireland: geoscience sector contribution to economy in 2006 was €4.24 Billion (3% GNP)



PwC 'evidence-based appraisal' of ozone hole, flood estimation, catchment research, **ground stability etc.**

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Exhibition Boring ES
 4-3NW
 9
 FLYWOOD

Sampling	Properties	Strata
0.00 - 0.25
0.25 - 0.50
0.50 - 0.75
0.75 - 1.00
1.00 - 1.25
1.25 - 1.50
1.50 - 1.75
1.75 - 2.00
2.00 - 2.25
2.25 - 2.50
2.50 - 2.75
2.75 - 3.00
3.00 - 3.25
3.25 - 3.50
3.50 - 3.75
3.75 - 4.00
4.00 - 4.25
4.25 - 4.50
4.50 - 4.75
4.75 - 5.00
5.00 - 5.25
5.25 - 5.50
5.50 - 5.75
5.75 - 6.00
6.00 - 6.25
6.25 - 6.50
6.50 - 6.75
6.75 - 7.00
7.00 - 7.25
7.25 - 7.50
7.50 - 7.75
7.75 - 8.00
8.00 - 8.25
8.25 - 8.50
8.50 - 8.75
8.75 - 9.00
9.00 - 9.25
9.25 - 9.50
9.50 - 9.75
9.75 - 10.00

Borehole Record
 Project: ...
 Borehole: ...
 Date: ...

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Exploiting data to create knowledge

DiGMapGB – onshore and offshore digital geological mapping

National, indicative hazard potential

- Flooding
- Natural radon
- Ground stability.....

DiGMapGB
Digital Geological Map of Great Britain



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GeoSure natural ground stability data-set



- Six haz

GeoSure

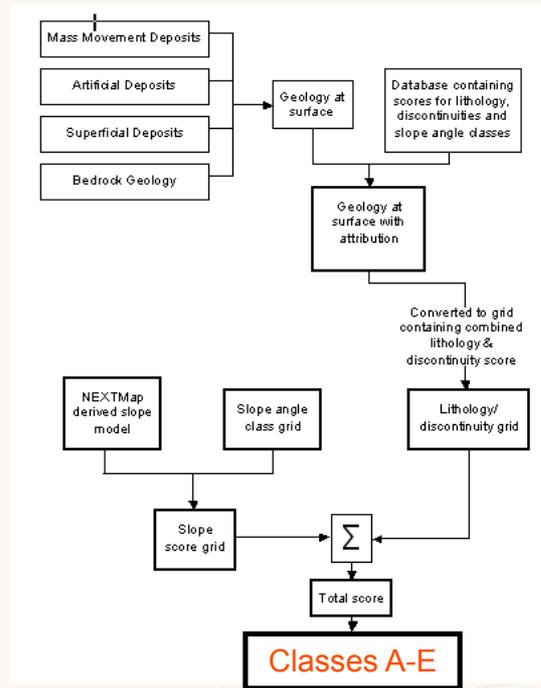
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Methodologies

Multi-parameter analysis

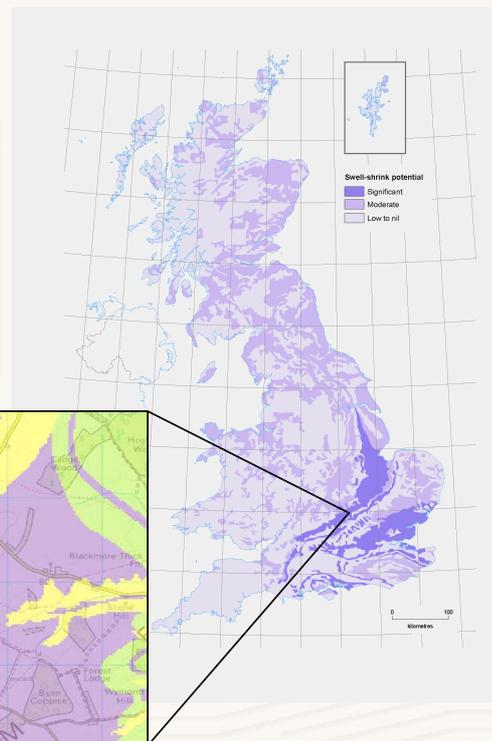
e.g. Slope instability

- Lithology, structure
- Geotechnical properties
- Groundwater, springs
- Digital terrain models
- Slope angle and class
- BGS national landslide database
- Expert and GIS validation



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Swelling and shrinking clays



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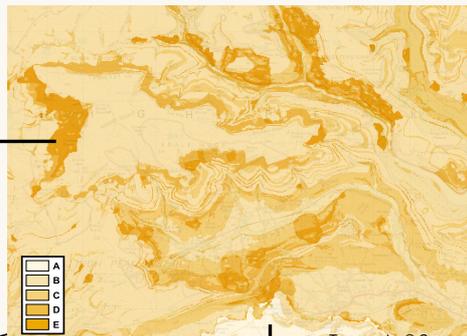
Soluble rocks



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Data to information/knowledge

E: 'Slope instability problems almost certainly present and may be active. Significant constraint on land use'



A: 'Slope instability problems are not thought to occur but consideration should be given to potential problems of adjacent areas impacting on the site'

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Information/knowledge delivery

- **Entire data-sets** under licence for internal business use (e.g. Network Rail, Highways Agency, insurers, Environment Agency)
- **Site-specific** (postcode, address, site) mostly for conveyancing and property development:
 - BGS GeoReports online
 - BGS - Coal Authority ground stability report
 - Re-sellers

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Economic benefits (PwC 2006)

Annual cost of subsidence to UK insurers is > £300M; predicted to rise with more frequent extreme weather events (ABI)



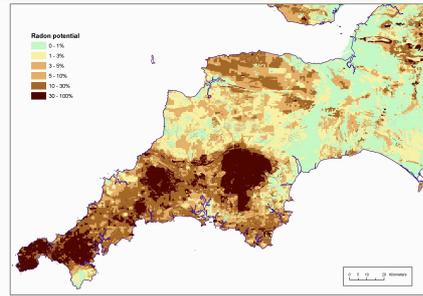
PwC:

- *'difficult for users to go elsewhere for similar data'*
- *'BGS ground stability information will create savings of £70 M - £270 M (in reduced insurance claims) between now and 2030'*

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Other data-sets.....

Natural **radon** causes *'between 1000-2000 lung cancer deaths p.a. in UK'* (Health Protection Agency 2008)



Flooding: ABI estimates costs of 2007 summer floods at £3 Billion, 180,000 claims

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Wider 'invisible' benefits

- Informed decision-making on purchase, remediation, design
- Avoidance of illness, injury, stress and disruption
- Growth of knowledge economy
- Cost recovery – no extra burden on public purse, RoI
- Science into policy



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Conclusions

- Adding value to data
 - can yield real socio-economic benefits
 - is a key to future sustainability of data centres/repositories
- Quantification of benefits is complex, best done by economists
- BGS's mix of geoscience data and expertise (for knowledge creation) is not unique