

The Role of the Geological Survey in the Planning Process in Northern Ireland

Terence P Johnston BSc C Geol.
(Geological Survey of Northern Ireland)

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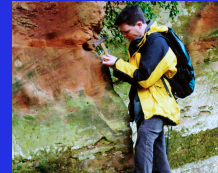
Summary

- The Geological Survey of Northern Ireland (GSNI)
- GSNI Datasets
- GSNI's Role in the Planning Process
- Geological Considerations in Land Use Planning
- Communicating Geoscience Information
- Conclusions



Geological Survey of Northern Ireland

- “National” geological survey for Northern Ireland
- Established in 1947
- Based in Belfast
- Currently employing 8 geologists plus 8 support staff
- Funded by the Dept of Enterprise, Trade & Investment (DETI)
- Managed by BGS on behalf of the DETI



GSNI Mission & Aims

“To provide the essential geoscience information necessary to promote economic growth, especially in relation to minerals, energy, groundwater, land use and natural hazards”

Aims

- Provide impartial geoscience information and advice to DETI, Government Departments & the private sector
- Maintain a continuity of locally based geological expertise
- Develop and manage geoscience data sets for the public good
- Provide up to date quality assured geological map coverage for Northern Ireland
- Help ensure sustainable development of resources


Department of Enterprise Trade & Investment

- One of 11 government departments of the NI Executive established under the Northern Ireland Act (1998)
- Responsibilities ranging from economic policy and development, tourism, health and safety and consumer protection
- *Invest Northern Ireland* is one of 4 agencies within DETI
- GSNI advises DETI on mineral and petroleum exploration and abandoned mines




Demand for Geoscience Information

- Demand for information has grown steadily during the past 10 years
- GSNI answered 600 geological enquiries in 2002
- Planning Service consultations and enquiries relating to environmental impact assessment is the main growth sector.
- Demand driven by EC Directives and economic growth



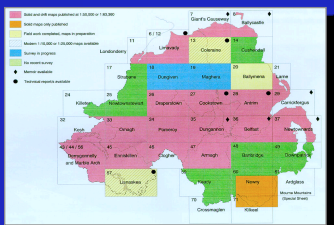
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GSNI Datasets



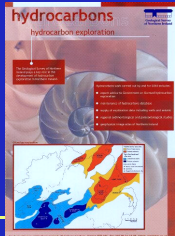
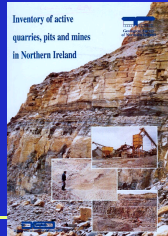
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Geoscience Maps:




bedrock
drift
applied geology
geochemistry
geophysics

Databases:





boreholes
mine shafts & adits
quarries
exploration data_

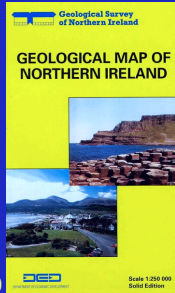


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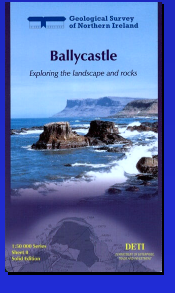
Geological Maps



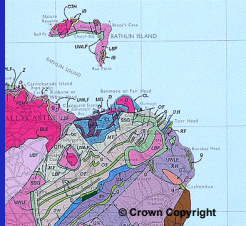
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Scale 1:250,000



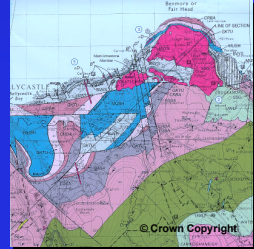
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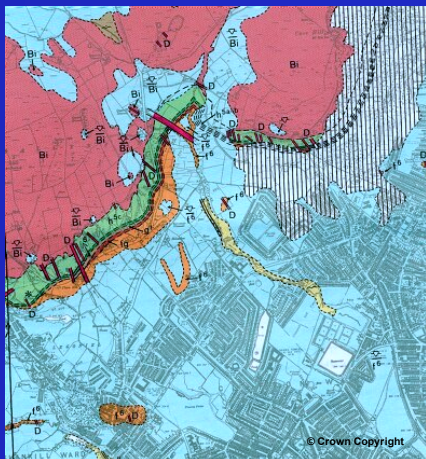


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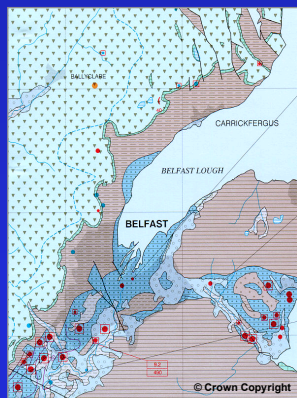


1:50k

Geological Maps: Applied



Special Engineering Geology Map of Belfast
© Crown Copyright 1984



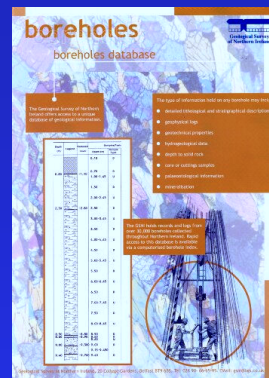
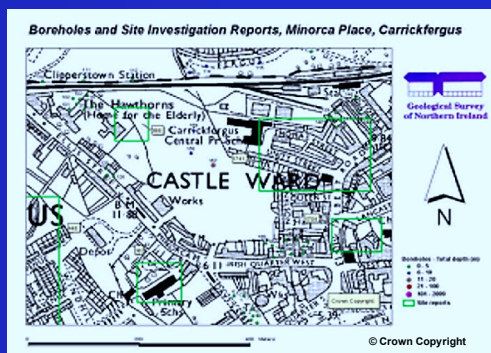
Hydrogeological Map of N Ireland
© NERC 1994



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Databases: Borehole

- 45000 archived borehole records
- advice to construction industry



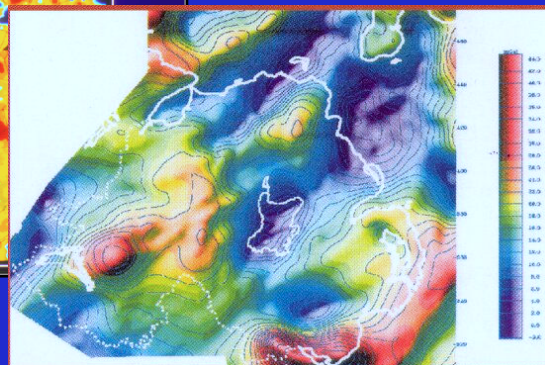
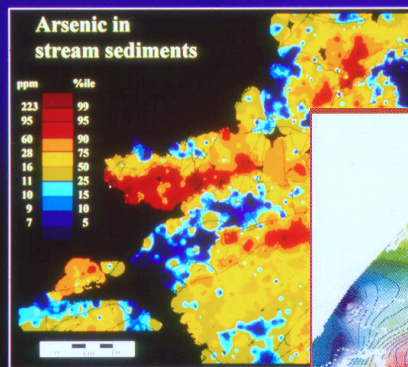
Abandoned Mines

- DETI is responsible for safety of abandoned shafts and adits
- GSNI database contains records of 2500 abandoned mines shafts and adits
- GSNI mine monitoring



Databases: Geochemistry & Geophysics

GEOCHEMICAL SURVEY OF NORTHERN IRELAND



Gravity Anomaly Map

GSNI's Role in the Planning Process

Geological information can help prevent poor planning decisions



Photograph © Rivers Agency & Esler Crawford

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The Planning Service



- The Planning Service is an Executive Agency of the Department of the Environment (NI)
- The Department of the Environment's aims to:

"improve the quality of life for people in Northern Ireland through the promotion of sustainable development activities in all the activities of government and wider society"
(Planning Service Corporate Plan 2003/04)

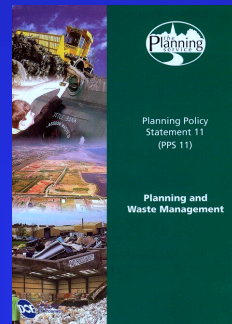
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GSNI's Role in the Planning Process

- GSNI provides professional advice/ information to Planning Service under a Service Level Agreement

- Statutory consultation inputs include:

- Strategic & Area Plans
- Planning Policy Statements (PPS)
- Development Control Action Notices (DCANs)
- Individual Planning Applications



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GSNI's Role in the Planning Process

- GSNI collects and manages Northern Ireland's principal geoscience data sets

- Data is used to establish baseline conditions and provides site specific information in support of planning and economic development

- geological information supports planning at three levels:

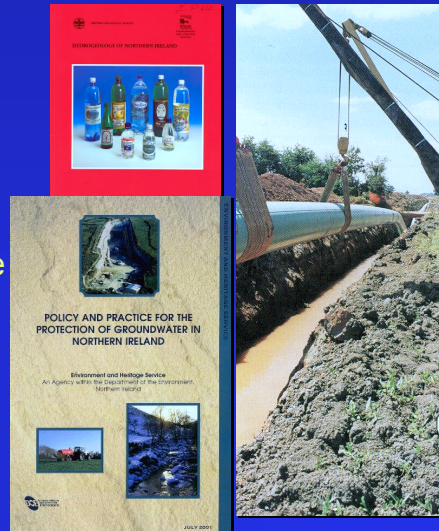
- Strategic
- Local
- Site specific

Planning Support: Strategic

• developing & implementing policy:

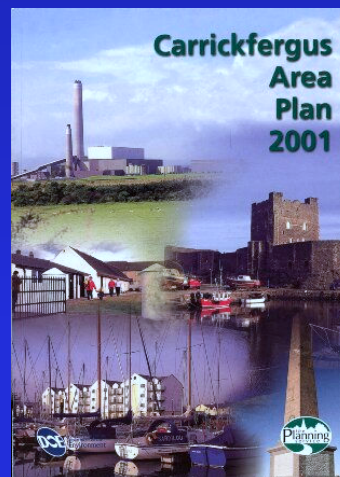
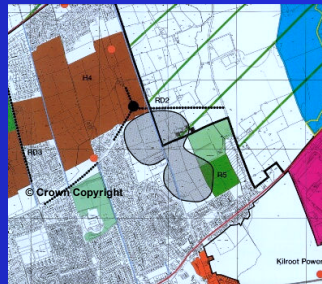
- minerals
- waste management
- water protection

• planning national infrastructure



Planning Support: Local

- local land use zoning
- protection of specific resources
- site selection for developers



Planning Support: Site Level

- site design
- geotechnical & civil engineering
- building control
- environmental impact assessment



Geological Considerations in Land Use Planning



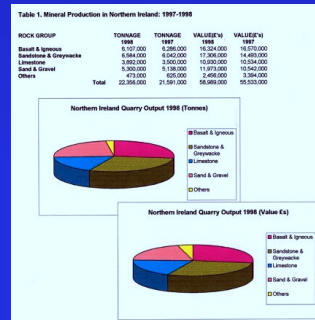
Resources

Geohazards



Resources

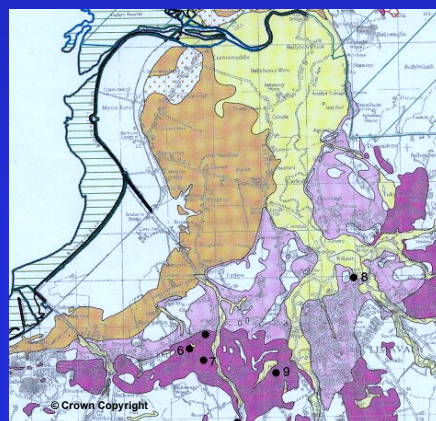
- Planning Service, GSNI & DETI all have responsibility for ensuring sustainable development
- Resources generally finite and important/essential to the economic well-being of the country.
- Northern Ireland resources include:
 - minerals: aggregates, sand & gravel, brick clays
 - MDA minerals; salt & gold?
- energy: lignite & petroleum?
- groundwater
- landscape



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Resources: Sand & Gravel

- Resource information studies for the Planning Service (Special Studies Unit)
- In conjunction with Area Plans
- to identify resources and aid planning of future development of sand & gravel resources



Sand & Gravel Resource Map, Limavady

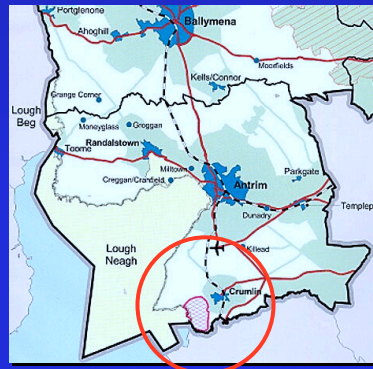
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Resources: Lignite

Protecting lignite deposits at Ballymoney & Crumlin, Co Antrim



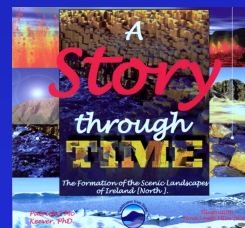
Lignite Trial Pit, Crumlin




Lignite Policy Area:
Ballymoney & Larne Area Plan 2016

Resources: Landscape


- Promoting landscape for Geotourism and recreation
- Joint GSNI - GSI Projects with local Councils
- Funding from EU,IFI, local Councils
- Developing the "Landscapes from Stone" brand
- Marble Arch-Cuilcagh (European Geopark)
- Breifne Mountain Park





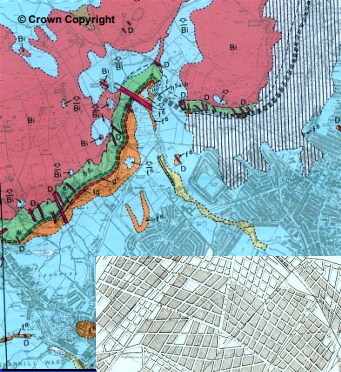
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Geohazards




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- Geological factors constrain certain types of surface development.
- GSNI databases & maps help identify areas of constraint e.g:
 - landslips & unstable ground
 - abandoned mine workings




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(Drumglass Colliery c. 1842)

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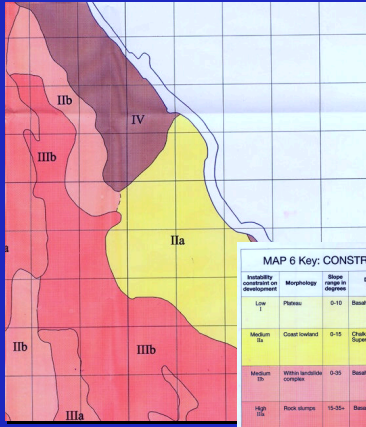
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Geohazards: Landslips




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Antrim Coast:






Garron Point, Co Antrim



MAP 6 Key: CONSTRAINTS ON DEVELOPMENT

Instability constraint on development	Morphology	Recent change in morphology	Geological	Current activity	Past activity	Notes
Low	Plains	0-10	Basalt	None	None	Restricted development
Medium	Coastal dunes	0-15	Clay, superficial deposits	None	Flows	Potential for landslides
Medium	Widespread complex	0-20	Basalt, Chalk	None	Scarp	Potential for landslides
High	Rock slumps	10-25	Basalt, Chalk	Rockfall	Rockfall	Restricted development
High	Food slopes	0-15	Lias, Greenstone, superficial deposits	None	Flows and scarp	Restructuring
Very High	Sea cliff (steeply sloping)	0-20	Lias, Greenstone, superficial deposits, Chalk, etc.	Quarrying, roadworks, etc.	Quarrying, roadworks, etc.	Stones and debris may fall onto road and cause damage to vehicles and property



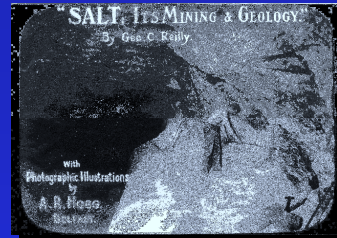
British Geological Survey

Assessment of slope instability

Rockfall, Antrim Coast Road

Geohazards: Legacy Mining

- Northern Ireland's mining legacy extends back to the 17th Century
- coal, lead, salt, iron ore, bauxite
- over 2500 abandoned mines shafts and adits recorded in database
- GSNI advise local developers and planners & building control officers



Salt Miners c. 1920



Drumglass Colliery, Dungannon

Geohazards: Mine Collapses

Collapse of salt mine at Carrickfergus, Co Antrim




August 2001



July 2002


Maidenmount Mine 2001

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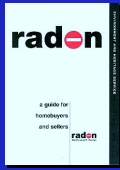
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Geohazards: Radon




ENVIRONMENT
AND HERITAGE
SERVICE

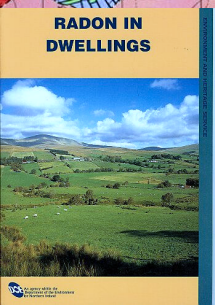
Radon is related to bedrock and superficial geology



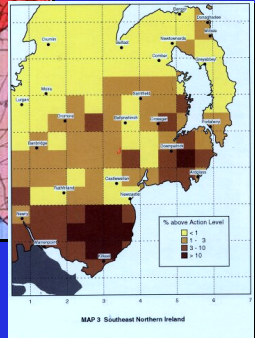
radon
a guide for
homeowners
and others



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**RADON IN
DWELLINGS**




MAP 3 Southwest Northern Ireland

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Communicating Geoscience Information

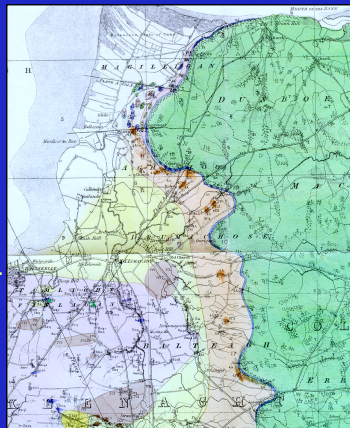


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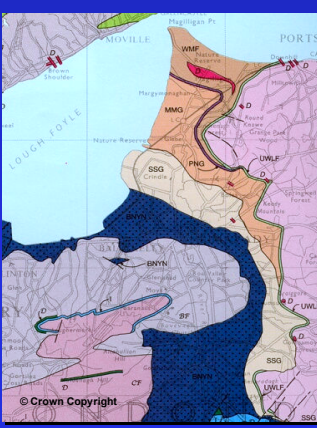
Maps remain principal medium for communicating geological data



Sir Richard Griffith (1784 - 1878)



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The Geology of Londonderry with parts
of Tyrone and Fermanagh
Maj.-Gen. J.E. Portlock
(1843)

Part of the Geological Map of Northern
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- Geographic Information Systems (GIS) are used to manage data
- GIS will help meet increasing demand for site reports etc
- GIS requires maps and data to be in digital form
- GSNI currently working on the digital geological map of Northern Ireland

Phase 1 (completed)

1:250k scale cover for Northern Ireland :

Solid Geology, Quaternary Geology, Hydrogeology, Groundwater Vulnerability

Phase 2 (completion Dec 2003)

1:50k scale digital versions of the published geological maps

Phase 3 (2004 -)

Seamless 1:50k scale geological coverage for Northern Ireland

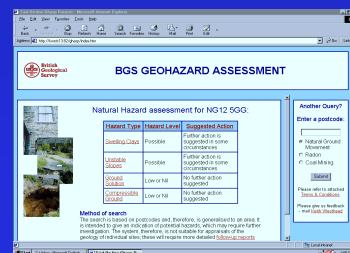
- Future 3 & 4-d modelling and visualisation of geoscience and related datasets

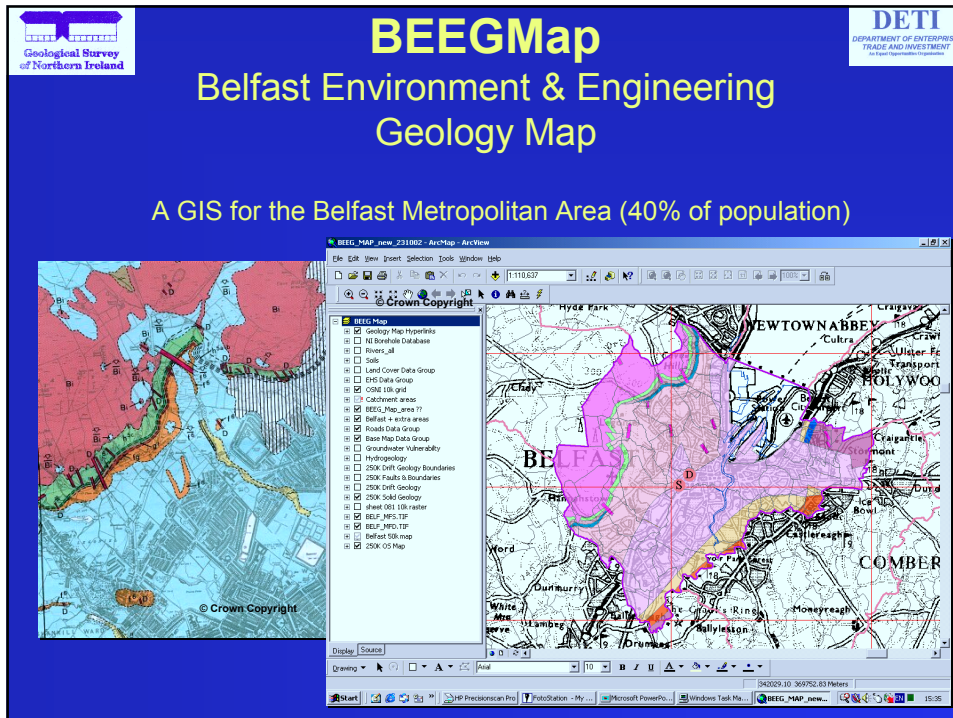
- BGS Project to produce a national data set covering geological hazards at 1:50k scale


- To help identify potential geologically related hazards

- Data sets include:
 - radon prone areas
 - shrinking clay deposits
 - landslides
 - mining hazards
 - borehole logs
 - historical Ordnance Survey maps

- GeoHazarD will form the basis for a comprehensive and efficient internet based enquiry service.








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Conclusions



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- Geology is a fundamental consideration in many aspects of land use planning
- GSNI manages a unique geoscience resource for N Ireland
- GSNI data is available to public and private sector users
- Demand for geoscience data has grown in recent years
- Demand is driven by EC environmental directives
- GIS offers improved means for communicating and sharing geoscience information & advice

Where to find us



20 College Gardens
BELFAST
BT9 6BS
N Ireland

Tel: 028 9066-6595
Fax 028 9066-2835
e-mail: gsni@bgs.ac.uk
Web: www.bgs.ac.uk/gsni