

**GSI Geoscience Groundwater Programme
Targeted Research Project - Terms and Conditions, FAQs and
Application Template**

Call for applications for a research project in:

**Integrated modelling of hydrogeological/hydrological data and climate change
scenarios for preselected Irish groundwater systems**

Objectives of the GSI Groundwater Programme

Geological Survey Ireland is a division of the Department of Communications, Climate Action and Environment. The GSI Groundwater Section is responsible for providing groundwater maps, data, expertise and advice at the national, regional and local scales to a number of stakeholders. These include the general public, consultants, researchers, non-government groups, government divisions and agencies such as local authorities, Office of Public Works, Environmental Protection Agency, Irish Water, National Federation of Group Water Schemes and Transport Infrastructure Ireland.

The Geological Survey Ireland Groundwater Section has specific responsibility for delivering:

- National turlough (karst groundwater) flood risk maps to support OPW's commitments under the EU Floods Directive
- Local and regional groundwater assessments to support groundwater flooding mapping and flood alleviation projects (OPW and Local Authorities)
- National aquifer, vulnerability, subsoil permeability, groundwater recharge and groundwater protection maps (used for planning purposes)
- Drinking water protection maps and reports for c. 150 public supplies (to date) as well as c. 250 group water schemes
- Local and regional assessments to support the understanding of groundwater movement with regard to drinking water supplies.

Continued and additional groundwater level data gaps and potential climate change impact modelling needs have been identified and will be addressed in a new GSI programme: *Geological Survey Ireland Climate Change Actions: Groundwater Monitoring and Modelling Response*. To support this programme, GSI seeks applications for a related research project.

Background and aims of the research programme

In 2016, Geological Survey Ireland received funding to address the shortfall in turlough (karst groundwater) flooding information, as outlined in *A Programme for a Partnership Government (2016)*. Further to the successful delivery of the national turlough (karst groundwater) flood risk maps to the Office of Public Works, the Geological Survey is continuing with this work and extending the monitoring network and modelling programme to other groundwater areas that are impacted by climate change and have a large number of data gaps (see Appendix 4 for associated work to be undertaken by the GSI Groundwater Section). The programme will make advances in meeting obligations under the National Climate and Biodiversity Emergency, the National Adaptation

Framework, recommendations from the Citizens' Assembly on Climate Change, and the All of Government Climate Action Plan to Tackle Climate Breakdown.

It is intended that the data and analysis will greatly improve the national capacity to understand how groundwater resources respond to climatic stresses and improve the reliability of planning and forecasting, which will inform climate adaptation strategies. Specifically, the work will support decision-making for areas impacted by groundwater flooding, and areas impacted by reduced groundwater recharge ("drought issues") due to seasonally lower precipitation and higher temperatures.

GSI is now calling for applications to specifically address the following research topic:

Integrated modelling of hydrogeological/hydrological data and climate change scenarios for preselected Irish groundwater systems

Proposed projects and teams should:

- Review, collate and develop a database of historical/existing, available and appropriate groundwater and meteorological data;
- Provide improved understanding and knowledge of meteorological data as they relate to Irish groundwater studies, as well as climate change data and models that are appropriate for Ireland (this information will be used within the wider programme of work to aid in the design of the groundwater monitoring network);
- Utilise open source, low cost, remotely sensed data (including satellite imagery) to develop and improve knowledge at the locations of interest and, in combination with the monitoring information, help improve the accuracy of climate change impact forecasting;
- Develop numerical models for hydrogeological/hydrological data. Modelling should be developed in collaboration with the wider GSI team with a view to forecasting the impact on groundwater volumes and linked surface water systems and ecosystems for different climate change scenarios in line with those being used across the Irish water sector. The numerical models should be developed towards further enhancing 3D conceptualisation and visualisation; and
- Work in close collaboration with the programme team in GSI in relation to the monitoring network design, numerical modelling and to fully integrate the research outputs into the programme's activities.

Supporting Data

Applicants should provide evidence that existing datasets are available and accessible (either reference open databases, or provide a statement of ownership or letter from the data owner to say it will be made available). All project proposals must clearly define the research question, methodology, expected outputs, expected impact and dissemination activities. For GSI hosted data, the relevant members of GSI staff should be contacted prior to submission to ensure availability (contact research@gsi.ie) if you require specific information/contact details).

Duration of project

The Project may be up to 24 months duration¹. The duration of the project proposed must be appropriate for the project described. Projects are expected to start approximately February 2020 with latest possible start date of April 1st 2020.

Host institute and location

The Host Institute must be a higher education institute in the Republic of Ireland, however, as this research project will be one component of a larger groundwater programme, it is expected that member(s) of the successful team will be located in the GSI office for a minimum of 60% per year for the duration of the project. This is to ensure integration of the research activities and outputs into the wider project, and also to provide access to the facilities and data required.

Definitions

The Project- The project is the overall research project as proposed by the Applicant. It should be of sufficient scale to deliver the research outputs and include nominated staff positions (e.g. Postdoctoral Researchers) as appropriate for the work.

Applicant – the Applicant is the person responsible for submitting, leading and managing the project. They must be employed in the host organisation for the duration of the project (their salary costs may be charged to the Project) and will act as the primary point of contact. They must hold a qualification/have relevant experience in the aspect of the work to be undertaken (this must be demonstrated in their cv). The Applicant must have been awarded their PhD before June 1st 2017.

Collaborators – Collaborators have a specific role in the project but do not receive funding. They may be providing expertise, data etc. as appropriate to support the project.

Host organisation – this must be a Higher Education Institute in Ireland². Valid tax clearance certificates must be supplied on request.

Authorised person – the application must be signed by the Research Office/authorised official of the host organisation. The signature indicates the organisation's willingness and ability to host the award in terms of financial, human and physical resources required.

Eligibility

All criteria listed in the definitions must be adhered to.

Applications from researchers who are currently outside the Republic of Ireland are only eligible if the Applicant will be physically and administratively hosted in an organisation in RoI, full-time, for the duration of the award.

CVs for the Applicant and each Collaborator must be submitted with the proposal and must demonstrate the ability of each to carry out their responsibilities within the project.

¹ There may be an option to extend the project in which case a decision will be based on the annual reports submitted and a full review at month 24 and an assessment of the overall outputs and needs of the project at that time. All initial project descriptions must be limited to 24 months.

² As recognised by the HEA <https://hea.ie/higher-education-institutions/?v=1> plus Dublin Institute for Advanced Studies. For any clarification please contact research@gsi.ie

Researcher profile and CVs

The Applicant must attach a CV which should be no longer than 4 pages and must include;

- Contact details
- Recent employment history
- Academic qualifications or equivalent experience
- Publications
- Other information relevant to the proposal*

Collaborators must attach a CV which should be no longer than 2 pages and must include;

- Contact details
- Recent employment history
- Academic qualifications or equivalent experience
- Key Publications
- Other information relevant to the proposal*

**For all information regarding funding secured to date;*

- *You must clearly state your role in any project listed (Lead/PI/Partner)*
- *If you were an unfunded collaborator this can be included but it must be clearly stated you were not funded.*
- *Any funding awarded/decision pending must clearly state how much funding has been/may be awarded to the Applicant and not the total value of the project to the whole consortium or institute.*

Misrepresentation of research grants awarded/pending is considered a serious breach of ethics and terms and conditions. Any misleading information found in applications for funding will result in the application being returned without review. Information provided may be queried with other named funding agencies if necessary.

Submission

The call comprises a one stage application process. Full Proposals must be submitted by email before the call deadline. Any applications not adhering to submission and formatting rules, or received after the deadline, will be deemed ineligible and will not be reviewed.

**Proposals must be submitted via email to research@gsi.ie
by 1pm, Thursday December 19th 2019.**

For details of the application form see Appendix 1. The research project application form, cvs and relevant letters of support must be combined to **one single pdf** for submission. The file must be no bigger than 5MB.

Format and Layout

Text font in the file submitted should be no smaller than Arial 11 with page margins no less than 2.5cm (please do not alter the layout of the template file). All word limits outlined in the application template must be adhered to. Only PDF files will be accepted. Any pages beyond the limit will be excluded from review.

Budgets

All values must be in presented Euro. Maximum allowable budget per year is €85,000³ (including up to 10% contribution to indirect costs).

Eligible costs

- Total salary costs of the team members (including all pension, taxes etc.)
- Consumables (e.g. access fees, lab consumables, consumable items for fieldwork)
- Software licenses
- Publication fees
- Travel (including fieldwork travel costs)
- Contribution to cost of summer student (max €5,000)
- Indirect costs (maximum 10% of direct costs)

Examples of non-eligible costs (not exhaustive)

- Protective clothing
- Salary/staff costs for other staff in the Host or partner organisations (including Mentors)
- Maintenance contracts
- Office equipment/furniture
- Durable equipment

If there are any queries regarding eligible and non-eligible costs please contact research@gsi.ie *before* submitting your proposal.

Financial reports signed by the Institute finance office will be required annually. Payments will only be made once these are received and approved by Geological Survey Ireland.

Projects can be co-funded by cash/in-kind contributions from partner organisations though this is not a requirement; in such cases, the total cost of the project including the partner contributions and GSI funds requested must be included.

In-kind contributions can include personnel time, access to facilities, access to existing data etc.

Budget Justification

This section should clearly justify the planned expenditure including expected timings.

Reporting

The project must be completed within the designated time. Annual reviews will be scheduled before the start of the project. These will include written activity and financial reports. A final report must be submitted at the end of the project. Failure to submit these reports on time will result in payments being withheld and/or exclusion from subsequent GSI calls. Reporting templates will be provided.

As part of the reporting procedures, successful applicants may be asked to present their results (oral or poster presentation) at a GSI event.

If the annual reports indicate that the project is (i) not adhering to the terms and conditions, (ii) is significantly behind schedule, and/or (iii) is not adhering to the projects described in the contract, GSI reserves the right to withdraw funding.

³ Additional fieldwork costs may be requested if clearly justified however, funding is not guaranteed. Please contact research@gsi.ie if you have queries.

Project information

Project description

This section is a maximum of 3000 words excluding figures and references and should comprise:

- (i) Strategic context and rationale for the project including background information, state of the art and reasons for addressing the issue now. The projects should also clearly demonstrate how the results of the research will be incorporated into the wider programme of work in GSI Groundwater (Appendix 4), and/or how the research will bring added value to that programme.
- (ii) Objectives and scientific/engineering targets beyond the state of the art. This should outline how the project will expand our knowledge beyond current understanding and clearly outline the objective of the planned work.
- (iii) Methodology & Implementation plan should include the approach to be used along with timelines, milestones for the project and any information relevant to the efficient management of the project.
- (iv) Outputs. The outputs should be well defined, ambitious and realistic. They should link clearly to the milestones and timing of the project as well as the budget. Details must be provided alongside some examples, e.g.;
 - New models for groundwater resources in Ireland,
 - Maps and digital data set(s),
 - Development of new methods, equipment, techniques, technology or cross-disciplinary applications, and
 - Presentations at international conferences and publications in high impact journals.

Expected impact (max. 1000 words)

The outputs of the project will be expected to be integrated into the wider GSI Groundwater programme (Appendix 4) and activities. **Details of how this can be achieved must be included.**

This section should also comprise any additional impacts; positive impacts on two or more of the following should be described;

- Scientific discovery,
- Development of new methodology/toolkits,
- Development of new software/prototypes, and/or
- Significant contribution to policy and governance.

This section should clearly show how the project will impact these areas and whether the expected impact is short, medium or long term.

Communication and dissemination plan

Dissemination of the project outputs are expected as standard and a clear communication plan should be clearly described including timing of known conferences, events, outreach activities, etc.

Review process and criteria

Once received, all applications will be checked for eligibility. Projects that are deemed ineligible, beyond the scope of the call, or not responding to project requirements will not be reviewed. Eligible applications will be reviewed by experts and assessed under the following criteria;

- Quality of Scientific/Engineering project described (40%)
- Impact (25%)
- Quality of the proposed team including Applicant and Collaborators and their contribution (25%)

- Implementation, management plan and value for money (10%)

Please remember, the review panel will include international experts who may be unfamiliar with specific Irish geology, acronyms etc.

The review panel will also include a senior member of the GSI Groundwater team to ensure relevance to the Programme. For this reason ***Applicants may not contact GSI staff to solicit information, lobby or discuss potential project applications. All queries must be directed to the GSI Research Manager research@gsi.ie. Applicants breaching this rule will be deemed ineligible.***

Ethics

All proposals are expected to adhere to standard ethics rules (e.g., IAH, IAPG or IGI ethics guidelines, national rules and procedures). Where organisational ethics guidelines are in place, the Applicant is expected to adhere to their ethics committee guidelines.

Open research policy

Geological Survey Ireland and the Department of Communications, Climate Action and Environment support the National Open Research Forum policies. Applicants are expected to follow the National Framework on the Transition to an Open Research Environment, including open access to publications and data.

Non compliance

Where proposals or awards are found to be non-compliant as per these Terms and Conditions or in breach of Contract, projects will be deemed ineligible (at initial review stage) or funding may be withdrawn.

Confidentiality

All applications and subsequent correspondence with applicants will be treated as confidential and will follow [GDPR regulations](#). By submitting your application you are agreeing to GSI's GDPR policy.

Acknowledgement

Geological Survey Ireland must be clearly acknowledged in all activities and outputs including publications, conference presentations, reports, events etc. High resolution image files of the relevant logos will be made available and must be included.

All dissemination and communication activities must be recorded and included in the final report.

Intellectual property and data management

Intellectual Property (IP) will remain with the researcher, however, where commercial product(s)/service(s) result from GSI Geoscience Research funding, the product/service will be provided free of charge to the GSI. Where data is collected as part of a GSI funded project, a copy of the raw data must be provided to the GSI and, where relevant, standard data formats should be used (e.g., INSPIRE). Specific terms and conditions relating to data use and data storage will be determined before the start of the project on a case by case basis.

Programme management

Any queries regarding the application process or project description should be submitted by email to research@gsi.ie

APPENDIX 1 (word version available as a separate file)



**Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhshaoil**
Department of Communications,
Climate Action & Environment

For official use only

Date received:

Ref. No.:

Eligibility check:

Lead Applicant Name	
Lead Applicant Title	
Email	
Phone number	

Organisation name	
Organisation type:	☐ HEI ☐ Public Sector (non-HEI) ☐ Private Sector
Company Registration No. (if applicable)	
Department/section	
Address	

Project Title	
Total financial support requested from GSI	€

Declaration

I declare that the information provided is accurate and correct. I agree that the Geological Survey Ireland Research Programme management may make any enquires it considers necessary to verify the information provided herein. I have read, and agree to, the Geological Survey Ireland Terms and Conditions for this call.

Signature of Lead Applicant:

Date:

Approval of Authorised person:
(Research Office stamp)

1. Partner information – please copy table as needed:

Collaborator name	
Role in the project	
Organisation name	
Organisation type:	☐ HEI ☐ Public Sector (other) ☐ Private Sector
Company Registration No. (if applicable)	
Department/section	
Address	

Collaborator name	
Organisation name	
Organisation type:	☐ HEI ☐ Public Sector (other) ☐ Private Sector
Company Registration No. (if applicable)	
Department/section	
Address	

2. Project information:

Title of project	
Keywords (<i>max 10 words</i>)	
Duration (<i>max 36 months</i>)	

Abstract/short description (*max 200 words*):

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Project Description (*max 3000 words, excluding figures and headings*):

(i) Strategic context and rationale

(ii) Objectives and scientific/engineering targets beyond the state of the art

(iii) Methodology & Implementation plan

(iv) Outputs (please provide a short description and complete the table below)

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3. Project Deliverables

Task No.	Deliverable description	Expected delivery
1	e.g.: Beta version of modelling software	e.g.: month 9

Impact of the project outputs(max 500 words):

References:

4. Project Budget *(double click on table below to activate. Maximum GSI contribution is €85,000 per annum. Indirect costs cannot exceed 10% of the total direct costs.).*

Item	Cost €
Personnel costs	0
Student fees	0
Consumables	0
Travel (incl. Fieldwork)	0
Other (please specify..)	0
Total	0
Contribution (cash & in-kind), if applicable	0
Total requested from GSI	0

Budget justification:

Ethics and gender considerations	Delete as appropriate
Ethics – all relevant ethical implications have been considered and will be addressed within the organisation. Please refer to the IGI code of Ethics (http://igi.ie/assets/files/Codes%20and%20Guidelines/Ethics%20Code.pdf)	Yes/no
Gender – due consideration has been given to gender balance within the proposed research team. Please refer to the following as appropriate for your organisation - HEA National Review of Gender Equality in Irish Higher Education Institutions or (http://www.hea.ie/sites/default/files/hea_review_of_gender_equality_in_irish_higher_education.pdf) - Gender Equality in Ireland (http://www.genderequality.ie/en/GE/Pages/Employment)	Yes/no

Additional documentation

Please attach the following documents:

- CV of Lead Applicant (max 4 pages). Evidence of formal career breaks, if applicable, (e.g. parental leave) can be included in addition to the cv
- CV(s) of Collaborators if applicable (max 2 pages)
- Letter(s) of support for any team members or collaborator providing in-kind or cash contributions

APPENDIX 3



Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhshaoil
Department of Communications,
Climate Action & Environment

Frequently Asked Questions

1. Are salaries eligible costs?

Personnel costs for the researchers carrying out the research are eligible. The total cost should include all pensions and PRSI contributions but not indirect costs (these are listed separately in the budget). All salary costs should be in-line with IUA salary scales (<https://www.iua.ie/for-researchers/researcher-salary-scales-career-framework/>). A contribution to stipends for summer students is allowable but must be in line with all Host Organisation HR practices.

2. Are overheads/indirect costs an eligible cost?

Yes, up to a maximum of 10% of total direct costs

3. Can researchers outside the Republic of Ireland be funded?

Researchers who currently reside outside the RoI are eligible to apply but must be living in the RoI for the duration of the projects and physically based at the Host Organisation/GSI (excluding short term visits to other institutes).

4. Can researchers outside Ireland be collaborators/partners?

Yes, there is no limit to the number or type of collaborator but they cannot receive funding.

5. Is the researcher interviewed by GSI reviewers?

No, the Applicant is expected to provide evidence (e.g. in their CV) of their suitability to deliver this proposed project.

6. Can the award be moved if the Applicant changes Institute?

Yes, but only with the agreement of both Host Organisations and the GSI. The new Host Organisation must also fulfil the criteria as per the Terms and Conditions.

7. Are agencies (e.g. Teagasc, EPA) or companies eligible to host the project?

No, though they may be unfunded partners if appropriate.

8. Will my project be assessed more favourably if it has external co-funding?

No. Assessors will be asked to consider the overall project proposed and whether resources are appropriate.

9. Is VAT an allowable cost in the budget for items such as consumables?

Yes.

10. The budget limit is €85,000 per year, can underspend from an individual year be carried forward?

Part of the budget for an individual year can be carried if justified. The GSI must be informed of any planned changes to the budget.

11. Is a computer considered durable equipment (and therefore not an eligible cost)?

If the Host Organisation considers computers a consumable or assigns a lifespan of less than one year, then it is an eligible cost.

12. What are 'references' in the template?

These are any publications, papers, published documents etc. that you have referred to in your text and project description, not personal statements from referees.

APPENDIX 4 Related programme of work to be undertaken by Geological Survey Ireland
Groundwater Section beginning January 2020 (this is for information purposes only and to provide context for the research call – the programme of work described below will be undertaken by members of the GSI Groundwater team)

Introduction

The Department of Communications, Climate Action and Environment as represented by Geological Survey Ireland (GSI) will appoint one Hydrogeologist/Groundwater Engineer Project Manager, and up to three Graduate Geoscientist(s)/Groundwater Engineer(s). The work with the GSI Groundwater team and dedicated project research personnel will deliver of a three year schedule of works that will enhance the understanding of (selected) groundwater system responses to climate change. This work will support evidence-based decision making for policy-makers, and potential management options by our stakeholders.

Background and Aims

In 2016, the GSI received funding to address the shortfall in turlough (karst groundwater) flooding information, as outlined in *A Programme for a Partnership Government (2016)*. Further to the successful delivery of the National turlough (karst groundwater) flood risk maps to the Office of Public Works, GSI will be continuing with this work and extending the monitoring and modelling programme to other groundwater systems that are being impacted by climate change and have a large number of data gaps. This programme will make significant advances in meeting obligations under the *National Climate and Biodiversity Emergency*, the *National Adaptation Framework*, recommendations from the *Citizen's Assembly on Climate Change* and the *All of Government Climate Action Plan to Tackle Climate Breakdown*.

The data and analyses will greatly improve the national capacity to understand ***how groundwater resources respond to climatic stresses and improve the reliability of planning and forecasting***, which will inform climate adaptation strategies. Specifically, the work will support decision-making for:

- 1) areas impacted by groundwater flooding due to changes in rainfall amounts and timing, and
- 2) areas impacted by reduced groundwater recharge (“drought issues”) due to seasonally lower precipitation and higher temperatures, which will have direct consequential impacts on:
 - a) sustainable water supplies for clean drinking water, agricultural and industrial uses, and
 - b) ecosystems, including surface rivers and lakes.

Draft Programme of Works and Tasks

It is proposed to design and install a strategic groundwater level monitoring network that will help to further the understanding of groundwater response to climate change impacts over a range of hydrogeological settings. The number and location of the monitoring points within the network will be decided in close consultation with GSI staff and appropriate stakeholders as part of this project.

The design of the network will consider current and future GSI and stakeholder needs and will complement existing groundwater monitoring locations across Ireland.

Direct water level (and some temperature and Electrical Conductivity) measurements will be augmented with any other appropriate and available data, such as spring or river flows and remotely sensed information, that will enhance data interpretation and modelling with respect to groundwater, or groundwater-related, response to climate variations (e.g. groundwater flood or drought impacts; possibly karst-specific issues).

The data collected will be analysed and modelled to: i) advance the hydrogeological and three dimensional (3D) understanding of the groundwater system(s) being monitored; ii) more accurately characterise 'impacts' of climate change (e.g. flooding and drought parameters), which can more realistically inform potential management options and associated costs, and iii) more accurately model groundwater system changes from climate change forecast models.

The monitoring data and results of analyses will be disseminated and communicated to specific and technical stakeholders, research institutes and the general public. Appropriate dissemination and presentation material will be an important output of the project.

The works will include, but will not be limited to:

- Planning, design and installation of an appropriate groundwater monitoring network. All additional benefits should also be taken into account during site selection where possible, e.g., water quality/groundwater-surface water interaction/habitat management. It is anticipated that the installation of monitoring boreholes will be undertaken using the GSI drilling rig, or that the GSI will fund appropriate alternative means of installing monitoring boreholes or infrastructure.
- Collection, database entry and analyses of hydrological/hydrogeological data (including appropriate geophysical data) and monitoring points, and identification of data gaps.
- Field investigations, which will include: hydrogeological mapping (e.g. walkover surveys, well surveys, water level surveys, spring location and flow surveys, karst feature mapping, dye tracer testing, pumping tests); possible ground investigations e.g. drilling and/or trial pitting; liaising with internal and external GSI partners with respect to potential geophysical investigations.
- Utilisation, where appropriate, of open source/freely available remotely-sensed data to develop and improve the accuracy of topographic mapping and hydrogeological features (potentially including karst features) at the locations of interest which will be used in combination with the monitored information in improving the accuracy of climate change impact forecasting.
- expertise and development of databases, conceptual models, and 3D geological/hydrogeological models for selected hydrogeological settings, which may include karst systems, fracture flow groundwater systems or sand and gravel aquifer systems. The static models will allow 3D conceptualisation and visualisation, and along with the databases will form the basis of the quantitative modelling within the parallel research project for forecasting the impact of different climate change scenarios on groundwater and linked surface ecosystems.

- Liaison with internal and external stakeholders to meet the requirements of end users. It is anticipated that there will be a large degree of interaction with other GSI Groundwater Section (e.g. 'GW3D Project'; GeoERA projects)/GSI projects being undertaken to ensure the consistency of appropriate outputs.
- expert advisory service to key stakeholders on groundwater flooding/drought, management and policy issues.
- appropriate data dissemination material for a range of stakeholders.
- Presentation of the project development and project outputs to a range of audiences.
- additional advice and assistance into related projects as required.

Project Deliverables

- Long-term groundwater level (and physico-chemical) monitoring network to include appropriate physical and digital infrastructure for data acquisition and download/telemetry.
- Groundwater level and temperature (and other physico-chem parameters) database (including turlough levels and spring flows/levels).
- Analysis and reporting of groundwater system properties across the selected region.
- Development of 3D models and associated databases for the hydrogeological systems of interest.
- Effective collaboration with the parallel quantitative modelling research project.
- Appropriate means of dissemination of outputs e.g. web service delivery.
- Stakeholder-specific management outputs e.g. maps and 3D conceptual models.
- Expert advisory service for stakeholder groups including the general public.
- Appropriate dissemination and presentation material.
- Progress and final reports documenting the stages, milestone and results of the monitoring, data analyses and modelling.
- Presentations to a range of audiences and presentation material for future use.