# Postgraduate Top-Up Scholarships

Role summary for potential applicants

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| Advertised Job Title**:** | CSIRO Geological and Bioregional Assessment Postgraduate Top-up Scholarships |
| Reference Number**:** | 57414 |
| Scholarship: | AU$7,500 per year as a top up scholarship (stipend), plus an operating budget of up to $7,500 per annum  |
| Location**:** | Various locations across Australia |
| Length of Engagement: | (Up to) 3 year term (concordant with existing RTP or scholarship)  |
| Applications are open to: | [ ]  Australian Citizens Only[ ]  Australian Citizens and Permanent Residents Only* [x]  All Candidates
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| Research Areas**:** | Various  |
| How to Apply: | *Before you apply please read the information in this document about these scholarships and the research projects on offer. There is additional information on our* [*Postgraduate scholarships*](http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postgraduate-scholarships) *page at CSIRO Careers.*To apply, please prepare **ONE** document which includes all of the following:1. your **CV/resume**;
2. a project description;
3. how your skills, knowledge and experience meet the requirements;
4. an outline of your longer-term career aspirations and detail how this program will help you achieve them;
5. the name of your university, university supervisor and the relevance of the university supervisor’s research background and their willingness to supervise you in collaboration with a CSIRO supervisor; and
6. the name and contact details of an academic referee (this can be your university supervisor).

After preparing the above document please return to the advertisement and complete the following steps to apply:1. click on the ‘***Apply Now***’ button to either create a Candidate Profile or to login to your current account. Enter your personal details and then click *‘****Next***’ to move to the application form
2. complete the form and upload the **one document** you prepared as requested above in the field labelled ‘***Resume and cover letter***’
3. In the screening questions section, nominate your 2 **preferred research areas** from the list below in order of preference;  and
4. upload your **academic results** in the ‘***Requested Information***‘ field.

**Please note,** when applying for this role in the ‘Preferences’ section you may be asked to select a preference in the drop-down list next to ‘Preference 1’ and ‘Preference 2’. Please select ‘N/A’ and instead nominate your project preference/s at Question 6 (Preferred Research Area – Preference 1) and Question 7 (Preferred Research Area – Preference 2).If you experience difficulties applying online call 1300 984 220 and someone will be able to assist you. Outside business hours please email: csiro-careers@csiro.au. **Contact:** If after reading the position details you require more information please contact: **Karen Barry**via email: karen.barry@csiro.au or phone: **+61 8 8303 8725** *Please do not email your application. Applications received via this method may not be considered.* |

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| **Role Overview:** |
| CSIRO’s Geological and Bioregional Assessment program (GBA) postgraduate top-up scholarships provide enhanced opportunities in science and engineering in the area of cumulative impact assessment for outstanding graduates enrolling in the 2018/19 financial year at Australian tertiary institutions as postgraduates for research leading to the award of a PhD. The GBA program seeks to support the development of multi-disciplinary assessments to provide government, industry and the community with robust, scientific knowledge to manage future shale and tight gas development.Recipients are generally required to be Australian citizens or have permanent residency status. However, in fields in which there is a national skill shortage, studentships may be awarded to overseas candidates provided they are prepared to seek permanent residency as soon as possible within Australian Government policy guidelines. International students must be able to show evidence of admission to an Australian university, as well as evidence that either their living costs or international student tuition fees are being covered by another scholarship or from private funds. At the time of submitting an application, students must be enrolled full-time at an Australia university and have obtained (or expect to gain) a Research Training Program (RTP) scholarship or its equivalent. While normal expectation is that scholarships will be full time, they may be converted from full-time to part-time where CSIRO agrees that there are compelling reasons for this and the RTP scholarship, if any, is also converted to part-time.Joint supervision of students by a university and a CSIRO supervisor is required and such joint supervisory arrangements must be consistent with the Higher Degree by Research Regulations of the host university. The primary supervisor may be either the university or CSIRO supervisor. CSIRO Geological and Bioregional Assessment Postgraduate Top-up are being offered in the priority research topic areas at various locations. Details of research areas are available in the **pages below.** |

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| **Selection Criteria:** |
| ***The criteria on which the applications will be assessed are:***1. **Quality and relevance of student project:** The primary assessment criterion for a CSIRO Postgraduate Scholarship is the quality and relevance of the project being proposed. The research must be aligned with, the advertised priority research area.
2. **Academic calibre of the student:** The quality of the student is also critical to the assessment of a scholarship and candidates must hold (or expect to gain) a relevant degree from a recognised University.
3. **Availability of appropriate university supervision:** The relevance of the University supervisor’s research background and their willingness to supervise the student in collaboration with the CSIRO supervisor should also be made clear.

As Australia’s Innovation Catalyst, CSIRO has strategic actions underpinned by behaviours aligned to Excellent science, Inclusion, trust & respect, Health, safety & environment and Deliver on commitments. In your application and at interview you will need to demonstrate alignment with these behaviours. |

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| **Research Area** | **Postgraduate Top-up Scholarship Projects** |
| **1. Water quantity** | **Project Title**Estimating surface water and vegetation changes using remote sensing techniques together with hydrological modelling**Project Description**Estimating surface water supply is a key task in the GBA Program. This PhD project provides an opportunity for a PhD student to explore important surface water data and information required in the GBA subregions. First, the PhD project will use remote sensing techniques (AVHRR and MODIS data) together with available surface water data to detect and quantify spatial patterns, extension, and variation of vegetation and surface water changes and the relationship between those changes over a long historical period (~1980 onwards). Second, the PhD project will combine the estimated changes together with future climate scenarios and hydrological modelling to investigate the possible impact in available surface water in these subregions in the future. The results can serve as a foundation dataset in supporting the water supply analysis for GBA.**CSIRO GBA contacts:** Russell Crosbie and Yongqiang Zhang |
| **2. Water quantity** | **Project Title**Efficient analysis of potential impacts to receptors using adjoint sensitivity analysis methods**Project Description**Sensitivity analysis (SA) traditionally uses local, one-at-a-time (OAT) methods, where changes to model parameters are assessed individually, or global SA methods, where model parameters are varied simultaneously to account for interactions between parameters.Adjoint SA methods offer an efficient approach that is less computationally intensive and can be developed for any model that is based on a differential equation (ordinary or partial). For example, a single adjoint model could predict the potential impact to surface water flows associated with all possible well pad locations within a catchment. In contrast, traditional SA methods use thousands of model-runs to assess sensitivity to possible well pad locations and model parameters. Adjoint SA solutions can provide robust and efficient estimates of model prediction sensitivities to improve impact analysis for groundwater, surface water, or other numerical models that are critical to the successful delivery of proposed modelling activities in Stage 3 of GBA.**CSIRO GBA contact:** Russell Crosbie |
| **3. Water quality** | **Project Title**Rapid lab-on-chip tools for ecological assessment of chemical from shale and tight gas operations**Project Description**The ANZECC (2000) water quality guidelines recommends moving away from relying solely on chemical guideline values for managing water quality, to the use of integrated approaches, which incorporate measures of *bioavailability*. The use of bioavailability in environmental monitoring, impact assessments, and management has been slow due mainly to the lack of routine tests/devices (laboratory and field) and high costs associated with current specialised laboratory procedures and practices. The PhD project will focus on the development of rapid ecotoxicological tools (e.g. lab on chip, microarrays) for improved environmental risk assessment of complex chemical mixture present in produced or released waters from shale and tight gas operations. The tools would enable a rapid assessment of chemicals/stressors in waters near operations to enable better management and mitigation strategies to be implemented to reduce environmental impacts.**CSIRO GBA contacts:** Jason KirbyandAnu Kumar |
| **4. Impacts on protected matters** | **Project Title**Water regimes of groundwater dependent ecosystems**Project Description**Understanding the impacts of development on groundwater dependent ecosystems is hampered by a poor understanding of the water regimes that support these ecosystems. While there has been considerable focus on identifying and mapping potential groundwater dependent ecosystems, the water regimes required to support these have received much less focus. The project will explore the utility of emerging modelling and remote sensing technologies to classify GDE's on the basis of the water regime and at scales required to support maintenance of these important ecosystems.**CSIRO GBA contacts:** Anthony O’GradyandTim McVicar |
| **5. Impacts on protected matters** | **Project Title**The role of ecosystem services in impact assessment**Project Description**Underpinning much environmental impact assessment is an often unstated assumption that environmental assets provide a range of benefits to society. The nature and quantum of these benefits is a function of the capacity of the environmental assets to deliver the environmental services, be it regulating cultural or provisioning.Unconventional gas development has the potential to impact on the provision of these critical environmental services, however application of environmental services thinking in impact assessment is underdeveloped. This project seeks to understand the impacts of uncongenial gas developments on the delivery and valuation of critical environmental services roving spatially explicitly information on impacts on environmental services.**CSIRO GBA contacts:** Anthony O’Gradyand Tim McVicar |