# Position Details

## Research Scientist/Engineer- CSOF5

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| The following information is for applicants |
| Advertised Job Title | Mathematical Modeller/ Data Scientist |
| Job Reference | 71450 |
| Tenure | Indefinite, Full-time  |
| Salary Range | AU$98,735\_ to AU$106,848 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Dutton Park, Brisbane, Qld |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian Citizens Only |
| Position reports to the | Andrew Higgins |
| Client Focus – Internal | 20% |
| Client Focus – External | 80% |
| Number of Direct Reports | 1 |
| Enquire about this job | Contact Andrew Higgins via email at Andrew.higgins@csiro.au or phone +61 7 3833 5738 |
| How to apply | Apply online at <https://jobs.csiro.au/> Internal applicants please apply via **Jobs Central**If you experience difficulties when applying, please email careers.online@csiro.au or call 1300 984 220. |

### Role Overview

The role of Research Scientist Staff in CSIRO is to conduct innovative research leading to scientific achievements that are aligned with CSIRO’s strategies. You may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. You will have the opportunity to build and maintain networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts.

The role will provide innovative science in mathematical and spatial analysis to advance the team/group activities in transport and logistics; supply chain analysis and benchmarking; supply chain resilience and recovery. It will be in a multi-disciplinary team-based environment. The applicant will have applied skills in mathematical optimization, multi- criterial analysis, statistical analysis, scientific programming and spatial analysis.

The position will provide a mathematical and systems modelling capability to underpin the science in existing areas such as Transport Network Strategic Investment Tool (TraNSIT) (www.csiro.au/TraNSIT), as well as to provide capability for emerging national and CSIRO priorities. These include supply chain resilience and benchmarking, food security as well as response and recovery to national disasters. A research scientist with a strong background in applied mathematical modelling and optimization, data analytics, operations research, economics and spatial analysis would be an ideal fit to meet these growing science needs in the national priorities.

The position will provide core capability to projects under several L&W and CSIRO impact areas such as:

Adapting to Change. The position will be actively involved in projects that inform government investments to: lower cost and emissions transport, create greater transport network resilience to natural disasters, and plan infrastructures for a changing production landscape under climate change and extreme events.

Sustainable prosperity for communities in Australia and our region. The position has and will contribute to projects to inform new supply chains of waste (e.g. backload to upcountry energy and feed production, circular economy) through transport infrastructure (e.g. Inland Rail projects), supply chains and food security, Infrastructure Australia Plan 2021, and other recent National Freight and Supply Chain Strategy initiatives that the project team is connected with through the Australian Government.

Northern Australia.The position will actively be engaged in these, some of which were funded by the Office of Northern Australia and DITRDC and will likely continue and possibly intensify into the medium to long term

National Approach to National Disasters:

Supply chain risk analysis pilot: conduct case study to assess impact of supply chain disruption on a region with limited connectivity.

### Duties and Key Result Areas:

* Develop new methods to advance TraNSIT for future applications beyond its current use. This includes new methods for routing of vehicles for other models of transport; models for air and sea freight; new methods for handling big data
* Develop scientific methods for interfacing TraNSIT outputs with other research. This includes supply/demand elasticity models to better understand impacts of supply chains on food security. These are major on-going activities with the Australian Government that are national priorities and CSIRO is the preferred agency.
* Develop computer-based tools for other projects in supply chains, climate and resilience services and other science domains important to the CSIRO strategy as the opportunity and need arises.
* Coding algorithms in programming languages that connect with existing tools/software developed by the team.
* Conduct high level analysis of data supplied by external stakeholders, as part of project delivery and synthesizing inputs for models.
* Work with government and industry stakeholders as part of communicating their science, gathering expert knowledge and validation.
* Preparing scientific publications from their research.
* The position will involve some travel to meet with stakeholders in Queensland and across Australia.
* Under limited direction of the team leader, assist in the planning and preparation of research proposals and carry out research investigations, requiring originality, creativity and innovation.
* Draw on professional expertise, knowledge of other disciplines and research experience, recognise opportunities for innovation and generate new theoretical perspectives by pursuing new ideas/approaches and networking with scientific colleagues across a range of disciplines.
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Work collaboratively as part of a multi-disciplinary, often regionally dispersed research team, and business unit to carry out tasks in support of CSIRO’s scientific objectives.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.

## **Required Competencies:**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. **Education/Qualifications:** A PhD in applied mathematics, engineering, information technology, with at least three years post PhD working experience in a relevant field
2. **Skills:** Demonstrated skills in Mathematical optimisation, statistical analysis, computer-based modelling, supply chains, and programming (e.g. Python) for real world problems
3. **Experience:** In the domains of transport, supply chains, energy, water, land management, with demonstrated applications with industry or government
4. **Communication:** Excellent communication skills, both written and oral, including the ability to anticipate the interests and knowledge level of an audience and present information and feedback accordingly**.**
5. **Adaptability:** The ability to effectively manage a number of competing priorities simultaneously, work across multiple science domains, and work in a multi-disciplinary team.
6. **Problem Solving:** Proven ability to investigate underlying issues of complex and ill-defined problems and develop appropriate responses by adapting/creating and testing alternative solutions

## **Desirable:**

1. Expertise in spatial data analysis and mapping using GIS software, particularly using network analysis in the context of transport and land use.
2. Demonstrated experience in analysing large data sets from a variety of stakeholders and documenting their use.

Special Requirements

The successful candidate will be required to obtain and maintain a security clearance at the Baseline level.

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Find out more about CSIRO [Land and Water](https://www.csiro.au/en/Research/LWF)