



Australia's National  
Science Agency

# CSIRO submission to consultation on Draft Core Skills Occupations List

CSIRO Submission 24/043

May 2024

Enquiries should be addressed to:



# Introduction

CSIRO welcomes the opportunity to provide input to the Jobs and Skills Australia consultation into the draft Core Skills Occupation List (CSOL).

As Australia's national science agency, we work to solve the greatest challenges through innovative science and technology. We are enabled to do this by attracting, hiring, and empowering talent. This includes working to attract world-class talent – including highly sought-after scientists, researchers, and technicians – as the destination employer in Australia for the best global science and technology talent. CSIRO is constantly seeking to engage top talent, both locally and from around the world, with 319 positions currently open.

CSIRO has hired 150 international employees on a Temporary Skill Shortage (TSS) visa since January 2022. Of these:

- 24 are in occupations that are on the 'Confident Off' list
- 85 are in occupations on the 'Targeted for Consultation' list

Engaging international talent through a TSS visa provides CSIRO with the opportunity to access deep expertise in cutting-edge and fast-evolving scientific areas that are sometimes limited or unavailable in the Australian market.

This submission provides relevant data and examples of how the proposed changes to the CSOL could impact CSIRO, by limiting our access to the world-class talent that empowers us to support and bolster Australia's world-class science industry and impact.

CSIRO welcomes the opportunity to engage with Jobs and Skills Australia to discuss this submission and the consultation more broadly.

# CSIRO response to the draft Core Skills Occupation List (CSOL)

## Confident Off List

CSIRO has identified two key occupations on the draft CSOL Confident Off List which would have significant impacts on the delivery of our science if removed from the CSOL:

- Life Sciences Technician
- Microbiologist

### Life Sciences Technician

CSIRO has hired **326 employees** in this position since January 2022, **17** of whom were hired internationally on TSS visas. This position is vital to the delivery of outcomes across several key impact science areas, including National Collections and Marine Infrastructure and Health & Biosecurity.

The occupation supports work seeking to overcome key challenges faced by the nation including around:

- Enhancing the resilience, sustainable use, and value of our natural and built environments, including by mitigating and adapting to the impacts of climate and global change.
- Helping to safeguard Australia from threats (including pandemics).
- Achieving sustainable security through new AgriFood products, technology and innovation for Australia.

CSIRO relies on international talent to meet capacity and capability needs for this occupation given:

- National recruitment drives have identified limited capability within Australia offering the expertise required in these roles, particularly when it comes to diversity of experience.
- Hiring Life Sciences Technicians from around the world further works to ensure diversity of experience, cutting-edge innovation, and enhanced knowledge is applied to our research and management of our National Collections.

World-class capability supporting the curation of, and research in, our National Collections directly aligns with CSIRO's Corporate Plan Objectives of *Purpose-driven science* and *World-class infrastructure*. Should we be unable to recruit internationally, we may not be able to fill positions with optimal curation and research capability - and therefore could be unable to adequately support our world-class infrastructure to appropriate standards.

### Microbiologist

CSIRO considers the occupation of Microbiologists be a critical capability, with demand forecasted to increase over the next 3 years. The occupation supports work seeking to overcome key challenges faced by the nation including around:

- Helping to safeguard Australia from biothreats (including exotic diseases).

- Enhancing the health of Australians through preventative, personalised, biomedical and digital health services.

CSIRO hosts the Australian Centre for Disease Preparedness (ACDP), a high-containment facility designed to allow scientific research into the most dangerous infectious agents in the world. The facility plays a vital role in maintaining the health of Australia's animals, the international competitiveness of Australian agriculture and trade, the well-being of Australians, and the quality of our environment.

CSIRO relies on international talent to meet capacity and capability needs for this occupation given:

- Microbiologists are a key occupation required to keep ACDP running, with the facility holding infectious agents that are not available at any other research institutions within Australia.
- There is a limited number of appropriately skilled and trained microbiologists within Australia who can fill these positions. Given the critical nature of this capability and its impact on our future workforce, it is important that CSIRO can bring essential experience from other international high-containment biological laboratories to Australia.

### Targeted for Consultation List

CSIRO has identified three key occupations on the Targeted for Consultation List which could impact the delivery of our science if removed from the CSOL:

- Agricultural Research Scientist
- Software Engineer
- Chemical Engineer

### Agricultural Research Scientist

Agricultural science is a foundational capability that enables us to explore, challenge, and improve how agricultural systems function. CSIRO has hired **126** Agriculture Research Scientists since January 2022, **28** of whom are hired internationally on a TSS visa.

The occupation supports work seeking to overcome key challenges faced by the nation including around achieving sustainable security through new AgriFood products, technology and innovation for Australia, to grow a sustainable future for Australia's agri-food and fibre sectors.

CSIRO relies on international talent to meet capacity and capability needs for this occupation given:

- National recruitment drives have identified limited capability within Australia offering the expertise required in these roles, particularly when it comes to diversity of experience.
- Hiring Agricultural Research Scientists from around the world ensures diversity of experience, cutting-edge innovation, and enhanced knowledge is applied to Australian farming systems, enabling Australia to remain a leader in the agri-food and fibre sectors.

## Software and Chemical Engineer

Engineering capability is crucial to the successful delivery of CSIRO's impact science, from supporting the running of national facilities to designing and delivering systems to support cutting-edge discoveries.

These occupations support work seeking to overcome key challenges faced by the nation including around building competitiveness, sustainability and security, nationally and regionally, of our energy and minerals systems and resources while lowering emissions to Net Zero.

CSIRO relies on international talent to meet capacity and capability needs for this occupation, particularly across the minerals and resources sector, where there is particularly high competition for engineers.

### Chemical Engineer

CSIRO's work in mineral process chemistry and engineering is globally competitive with unique multi-scale, multi-modal characterisation facilities and expertise focused on delivering geoscience and process chemistry applications. CSIRO's Chemical Engineers work in the fields of hydrometallurgy, pyrometallurgy and chemical engineering.

CSIRO relies on international talent to meet capacity and capability needs for this occupation, given:

- Chemical Engineering accounts for 12% of capability in CSIRO's Mineral Resources business unit, indicating the criticality of the various areas to scarcity of qualified people to fill the positions.
- Attracting qualified talent from overseas positively impacts our ability to remain a global leader in the field.
- This capability is required to deliver on its goal and intended impact from our R&D on hydrogen technologies to help Australia transition its energy supply to meet the nation's goal of net zero emissions by 2050.

### Software Engineer

Innovation in clean energy technology is essential for Australia for continued economic prosperity and to contribute to global efforts to reduce emissions. Software engineers develop digital technologies that open opportunities for data-driven and physically informed analysis and artificial intelligence methods that can enhance energy system forecasting and real-time operation, as well as enable a range of multi-energy system scenarios and futures to be explored.

CSIRO's Mineral Resources has an objective to raise digital maturity, supporting improved data management for internal projects and as a key enabler of value research with industry. CSIRO is building world-class, decision support software that integrates geoscience, geochemical, spectral and other sensor data into a predictive capability for smart exploration and ore body knowledge. World-class software engineers who can design and deliver the required bespoke software are required, and the market is highly competitive due to high demand for these skills, in turn limiting domestic talent attraction.

## Square Kilometre Array Project

The Square Kilometre Array (SKA) project is an international effort to build the world's largest and most capable radio astronomy observatory, designed to enable transformational science that will change our understanding of the Universe. Australia is a member of the international organisation established to build and operate this facility, the SKA Observatory (SKAO).

Australia has a treaty agreement with the SKAO, and CSIRO has been appointed as the Commonwealth organisation partner to build and host the SKA-Low telescope at Inyarrimanha Ilgari Bundara, CSIRO's Murchison Radio-astronomy Observatory in Western Australia.

This international effort will also require international skills and capabilities. CSIRO has identified several occupations that are subject to this consultation which will be required to successfully construct and operate the SKA-Low telescope:

- Confident Off List – ICT Project Manager, ICT Support Engineer, ICT Support Technicians, Facilities Manager
- Targeted for Consultation List – Data Analyst, Electronics Engineer, Systems Analyst, Software Engineer, Computer Network and Systems Engineer, ICT Quality Assurance Engineer, ICT Systems Test Engineer, Electrical Engineering Technician

These are essential skills needed for the current construction and the ongoing maintenance of 50 years of operations of the SKA Low Telescope as part of this global collaboration, which will promote growth and employment in the region. If CSIRO were unable to obtain a visa for these individuals, it would limit opportunities and funding, as well as impact carefully designed team structures.

In summary, the current changes proposed to the CSOL will have impacts on CSIRO's ability to hire the highly sought-after and unique scientific experience and talent required from the global market to further science research for Australia, as well as impacting the broader research sector. This submission has highlighted the occupations within CSIRO that will be impacted by the proposed changes.

**As Australia's national science agency and innovation catalyst, CSIRO is solving the greatest challenges through innovative science and technology.**

CSIRO. Unlocking a better future for everyone.

[www.csiro.au](http://www.csiro.au)

