



## SCIENCE POSITION DESCRIPTION

<b>Position Title</b>	HPC Senior Science Advisor and Platforms Architect	<b>Reports To</b>	Chief Scientist HPC and Data Science (alongside functional report to NeSI Director)
<b>Function</b>	Science	<b>Location</b>	Wellington
<b>Level</b>	S3 / 4	<b>Position Status</b>	Permanent
<b>Hours of Work</b>	Permanent, Full Time	<b>Date Prepared</b>	December 2018

### Purpose of Position

The Senior Science Advisor and Platform Architect – High Performance Computing and Data Science is at the forefront of providing a high performance computing platform for New Zealand science to enable a broad cross section of scientific endeavor. The position works nationally with scientific communities gathering their High Performance Computing & Data Science (HPC & DS) needs and extracting patterns, issues, and requirements that help drive positive change to NIWA and NeSI's shared infrastructure and services platform. The position provides strategic advice and expertise through evaluating future technologies for potential application in scientific computing and leading performance measurement and optimisation of the shared platform for specific communities and workflows.

The position reports directly to NIWA's Chief Scientist HPC & DS, is a member of the NeSI Senior Management Team and maintains a functional reporting line to NeSI's Director.

### Scope

NIWA requires quality HPC services (<https://www.niwa.co.nz/our-services/high-performance-computing-facility>) to maintain and further develop its leading research and science services in atmosphere, weather hazards, climate, freshwater and ocean environments. In partnership with its NeSI collaborators (University of Auckland, University of Otago, and Manaaki Whenua Landcare Research Ltd.) NIWA also hosts infrastructure to support NeSI in its delivery of HPC & DS services to the wider New Zealand science community (<https://www.nesi.org.nz/>).

This position supports the strategic planning and development of future HPC & DS systems and new and evolving services, across phases of design, procurement, build, and ongoing evolution. They will hold deep expertise across areas of relevance to NIWA's science; they will have an aptitude to connect with less familiar science communities / disciplines and to learn new things quickly in unfamiliar domains. This position covers both NIWA and NeSI responsibilities, and requires scientific, technical, and business knowledge as well as great interpersonal and relationship skills.

Within NIWA this is a senior leadership position, and includes contributing thought leadership to the development of current HPC systems, informing the policies under which they operate, supporting future business case development and associated infrastructure procurement, and gathering needs and informing service requirements to underpin national research programmes and NIWA research, forecasting operations, and commercial services. The position supports the Chief Scientist – HPC and Data Science to carry out service governance over NIWA's use of the HPCF.

Within NeSI this is a senior sector leadership role, supporting nationwide planning across a broad array of research communities, contributing to business case development, and supporting procurement and delivery of critical HPC&DS infrastructure for New Zealand's science. They advise on and support development and delivery of fit-for-purpose HPC compute and analytics services. The position is a member of NeSI Senior Management Team and maintains a functional reporting line to the NeSI Director.

The position requires travel both within New Zealand and on occasion internationally.

#### Direct Reports

No direct reports

#### Key Relationships

Internal	External
<ul style="list-style-type: none"> <li>General Manager, Innovation and Technology</li> <li>General Manager, Research</li> <li>Chief Finance Officer</li> <li>Chief Executive</li> <li>Chief Scientists (HPC and Data Science, Climate, Atmosphere and Hazards, Freshwater, Coasts and Oceans,)</li> <li>HPCF Operations Manager</li> <li>Scientific Programming Group Manager</li> <li>Operational forecasting team</li> <li>NIWA Research Software Engineers</li> </ul>	<ul style="list-style-type: none"> <li>NeSI Director (functional reporting line)</li> <li>NeSI Senior Management Team (Business Operations, HPCF Operations, Solutions and Engagement)</li> <li>CTOs and IT Directors and leadership teams at NeSI Collaborator Institutions and in the wider sector</li> <li>Research Sponsors at NeSI Collaborator Institutions</li> <li>Research Operational Contacts at NeSI Collaborator Institutions</li> <li>Site Managers at NeSI Collaborator Institutions</li> <li>Partner organisation leadership teams, including REANNZ, Genomics Aotearoa</li> </ul>

#### Budget Accountability & Delegated Authorities

This position has the following budget accountability:

- Capital expenditure: Operate within approved amounts.
- Operational Expenditure: Operate within approved project budgets.

This position has the delegated authorities defined in the Delegated Authority document updated annually, currently: Operational budgeted expenditure of up to \$20,000.

#### Key Result Areas

#### Critical Activities

##### - Generic

##### Technical

- Provide expertise informing the development of HPC architecture, strategic and highly innovative, leading edge, and complex HPC&DS skills, capabilities, solutions, services, and infrastructure sector wide

	<ul style="list-style-type: none"> <li>Contribute thought leadership to NIWA and NeSI's organisational knowledge in technologies and technology directions which support science needs and priorities of today and tomorrow</li> </ul>
<b>Research</b>	<ul style="list-style-type: none"> <li>Frequently represent NIWA and NeSI as a national and world authority on high performance computing for science at various fora, workshops, conferences, government, national or multinational organisations</li> <li>Regularly provide expertise into and support the planning of research and scientific computing initiatives across NIWA and NeSI, especially through the NIWA National Centre(s), and for large or multi-objective, multi-disciplinary research programmes</li> </ul>
<b>Production, Products, Services</b>	<ul style="list-style-type: none"> <li>Jointly lead planning of detailed phases of work for large, complex projects/programmes and sponsor the development of integrated research and/or services across NIWA and NeSI</li> <li>Regularly liaise and negotiate with key internal and external clients and collaborators, tracking cross teams' dependencies and being a customer advocate driving service feature development, progress and closure</li> </ul>
<b>Science Management / Leadership / Planning</b>	<ul style="list-style-type: none"> <li>Develop, maintain and grow large networks and alliances with national and international researchers and agencies that advance NIWA's and NeSI's interests</li> <li>Lead and disseminate best scientific computing practice alongside colleagues across NIWA and NeSI, nationally and internationally</li> <li>Undertake, and support others to undertake, robust contingency planning that effectively eliminates or minimises potential problems</li> </ul>
<b>- Position Specific</b>	
<b>Well-used HPC services</b>	<ul style="list-style-type: none"> <li>Promote and advocate for HPC &amp; DS in general and use of the HPCF for research and operations across public sector and private enterprise</li> <li>Support partners to carry out Service Governance over the use of the HPCF by all research communities and institutions nationally, and support the Chief Scientist HPC &amp; DS in this regard with respect to NIWA researchers, NIWA operations (e.g., EcoConnect), and commercial users</li> </ul>
<b>Strong relationships with key stakeholders</b>	<ul style="list-style-type: none"> <li>Collaborate with and support sector senior institutional and science leadership and management teams regarding needs analysis, specialised solutions, service access and development, strategies to drive adoption and capability development, and on policy matters</li> <li>Liaise with HPC-related technology vendors (at all levels), maintaining strong relationships to help ensure ongoing goodwill and extra-mile support efforts.</li> <li>In coordination with NeSI, contribute expertise to and support HPC &amp; DS meetings and coordinate other activities as appropriate.</li> </ul>
<b>High-value future HPC facilities</b>	<ul style="list-style-type: none"> <li>Consistently support consultation and engagement across a broad range of own and less familiar research communities and disciplines.</li> <li>Establish a broad view of science needs, identifying requirements needing specialised solutions or extracting patterns, issues, and requirements driving change to shared infrastructure and services</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Support planning and procurement and manage the design of future HPC systems in collaboration with NeSI and the wider sector. This will include contributing to preparation of the business case and RFP including benchmarks, managing the proposal review process, negotiation of the supply and support agreements and leading the implementation and tailoring and acceptance processes.</li> </ul>
<b>A positive and professional team culture</b>	<ul style="list-style-type: none"> <li>▪ Work as a colleague and peer, providing advice and support to other senior managers within NIWA and NeSI, and working jointly to deliver on strategies and priorities.</li> <li>▪ Provide leadership that emphasises a culture of collaboration, service delivery, professionalism and customer focus.</li> <li>▪ Mentor and coach other staff as appropriate to build up and spread HPC-related capability for the future.</li> <li>▪ Contribute to building and maintaining a positive work environment and culture that enables NIWA and NeSI staff to perform to their potential.</li> <li>▪ Promote and participate in the sharing of knowledge amongst NIWA and NeSI teams and beyond to promote efficiency and mitigate risks.</li> <li>▪ Adhere to NIWA's standards of professionalism and ethics.</li> </ul>
<b>Health and Safety</b>	<ul style="list-style-type: none"> <li>▪ Take all practicable steps to ensure own safety at work (including using suitable personal protective equipment).</li> <li>▪ Ensure that no action or inaction while at work causes harm to any other person.</li> <li>▪ Accurately report and record all incidents and accidents.</li> <li>• Undertake Health and Safety training and other specific safety training relevant to your work.</li> </ul>
<b>Core Indicators</b>	<ul style="list-style-type: none"> <li>• Perform all tasks within allocated timeframe, to industry expected standard, within budget</li> <li>• Complete and support others to complete administrative tasks in an accurate and timely manner</li> <li>• Comply with and actively ensure safe working practices of self and others in accordance with NIWA's Health and Safety policy and procedures</li> <li>• Act within delegated authority level</li> <li>• Observe, promote and help develop NIWA and NeSI's policies, procedures, strategy and internal management systems</li> <li>• Model effective communication, and champion the provision of constructive feedback</li> <li>• Support and champion NIWA and NeSI's positive overall organisational culture</li> <li>• Provide leadership, align and ensure others align research, consulting, product initiatives, business culture and strategy</li> </ul>

Person Specification	
<b>Qualifications</b>	<ul style="list-style-type: none"> <li>• A relevant PhD, combined with a considerable scientific research sector experience in a similar organisation or specialised facility of at least comparable size and scale as NIWA and NeSI's HPC systems</li> </ul>
<b>Experience</b>	<ul style="list-style-type: none"> <li>• Good research publication record</li> <li>• 10+ years of HPC/research/complex IT computing experience</li> <li>• 5+ years in managing HPC systems and teams</li> <li>• Leadership in advanced scientific environments, including 5+ years' experience in an operational management position</li> <li>• Excellent team building, planning, financial and project management skills and experience. Demonstrated people management and professional leadership capabilities.</li> <li>• Demonstrated HPC system design (architecture), selection, procurement, contracting and implementation experience.</li> <li>• Demonstrated experience and understanding of risk management, incident response, organisational requirements, policies and procedures, and a strong track record of business delivery in ICT Service Management</li> </ul>
<b>Technical Knowledge and Skills</b>	<ul style="list-style-type: none"> <li>• Knowledge of the complexities and challenges of design and operating both capability and capacity HPCs</li> <li>• Programming knowledge in C or Fortran, MPI, OpenMPI</li> <li>• Knowledge of virtualisation technologies e.g. OpenStack</li> <li>• Deep understanding of parallel file systems</li> <li>• Understanding of Hierarchical Storage Management systems</li> </ul>
<b>Competencies</b>	<p><b>Strategic Thinking</b> Takes a broad view. Maintains a focus on the future needs of the business, sets goals and identifies strategies which will ensure ongoing viability and development of the organisation.</p> <p><b>Communication Skills</b> Writes and speaks clearly and concisely. Able to convey their ideas and seek relevant information from others effectively.</p> <p><b>Decision-Making</b> Considers relevant data objectively, consults and informs others. Identifies the range of options available, considers implications and evaluates merit based on relevant criteria. Maintains a focus on the "big picture".</p> <p><b>Planning and Organising</b> Thinks ahead and plans work so requirements are met. Prioritises and manages time effectively. Well-organised and systematic approach.</p> <p><b>Leadership</b> Influential with other people, provides vision and direction. Creates a sense of belonging and commitment to the team. Sets a positive example which inspires others to follow. Takes the initiative in situations of uncertainty.</p>

**Relationship-Building**

Develops positive working relationships with others quickly and easily. Networks effectively. Is well regarded and uses relationships for mutual benefit.

**Developing People**

Puts emphasis on coaching, developing & training team members to improve skills, maintain motivation & meet business needs. Delegates relevant tasks & provides performance feedback.

**Interpersonal Skills**

Confident and relaxed, mixes easily with others in a range of situations. Comfortable initiating contact for business purposes. Open and approachable, listens and questions effectively. Interprets situations & adapts behaviour.

**Commercial Awareness**

Awareness of financial factors and legal and regulatory requirements which may impact on the commercial success of the business.

**Customer Service**

Recognises that meeting internal and external customer needs is a high priority and puts effort into doing so. Responds positively and helpfully to customer requests.

**Change Orientation**

Open to new approaches and positive about change in the workplace. Shows flexibility and a willingness to adapt to new requirements.

## NIWA Values

<b>Safety</b>	<b>Working safely is paramount at all times.</b> <ul style="list-style-type: none"> <li>Zero Harm is our safety target for our people and those working with us.</li> <li>We take personal responsibility for the safety of ourselves and others.</li> <li>We are always safety conscious, thinking “What am I about to do? What could go wrong? How can I do it safely?”</li> <li>We maintain high standards of safety in all working environments.</li> <li>We report all hazards, incidents and near misses, acting on and learning from them.</li> <li>We continually improve our safety systems and processes.</li> </ul>	<b>Excellence</b>	<b>We strive for excellence in everything we do.</b> <ul style="list-style-type: none"> <li>We apply the highest standards of rigour to our work.</li> <li>We are creative and innovative in our thinking and apply leading-edge practices.</li> <li>We are highly professional in the way we operate.</li> <li>We are proud of our reputation for high quality science.</li> <li>We are efficient, effective and resourceful, seeking to eliminate waste and maximise opportunities.</li> </ul>
<b>Customer Focus</b>	<b>We provide our customers with an outstanding service and experience.</b> <ul style="list-style-type: none"> <li>We recognise that NIWA wouldn’t exist without its customers.</li> <li>We all work together to ensure a positive customer experience.</li> <li>We value and respect our customers, and act to ensure excellent and enduring relationships with them.</li> <li>We communicate with our customers openly and proactively.</li> <li>We deliver on our commitments to customers – in full, on time and within specifications.</li> <li>We seek customer feedback to help us improve.</li> </ul>	<b>Agility</b>	<b>We are agile, resourceful and responsive to opportunities, and challenges.</b> <ul style="list-style-type: none"> <li>We actively create, identify and develop new opportunities.</li> <li>We react quickly and flexibly to changing priorities.</li> <li>We are positive, solution-focused and future-oriented in our outlook.</li> <li>We recognise change as continuous, and treat it as an opportunity.</li> <li>We are committed to continuous learning and improvement.</li> </ul>
<b>People and Teamwork</b>	<b>We are OneNIWA and work collaboratively for the greater benefit of NIWA and our customers.</b> <ul style="list-style-type: none"> <li>We help and support our colleagues, treating each other with courtesy and respect.</li> <li>We value diversity and respect other cultures.</li> <li>We value the opinions, knowledge and contributions of others, and celebrate success.</li> <li>We willingly share our expertise.</li> <li>We all take responsibility for getting things done.</li> <li>We listen openly and communicate honestly and constructively.</li> <li>NIWA’s interests and reputation take precedence over advancing our own individual interests and reputation</li> </ul>	<b>Integrity</b>	<b>We are honest, trustworthy and reliable in our work and our relationships with others.</b> <ul style="list-style-type: none"> <li>We uphold the highest ethical standards.</li> <li>We deliver.</li> <li>We take ownership and are accountable for our actions.</li> <li>We provide accurate, evidence-based information and advice.</li> <li>We maintain objectivity at all times, avoiding advocacy and bias.</li> <li>We are viewed as trusted professionals in our areas of expertise.</li> <li>We avoid or declare all conflicts of interest.</li> </ul>

NeSI Team Memorandum of Understanding – in respect of the NeSI Platforms Manager role	
<b>MANAGEMENT</b>	Day-to-day functional management and allocation of work will be the responsibility of the NeSI Director.
<b>PERFORMANCE OBJECTIVE &amp; DEVELOPMENT PLANNING</b>	The NIWA line manager (according to local processes) in collaboration with the relevant NeSI Director will agree performance objectives and development plans with the employee by September of each year in accordance with their local processes.
<b>PERFORMANCE &amp; DEVELOPMENT REVIEW PROCESS</b>	The NIWA line manager (according to local processes) will lead the performance review process in accordance with local policy and procedures with the NeSI Director providing second level review, feedback, and support where applicable. In accordance with local performance and development review progress meetings the NIWA line manager will discuss performance feedback with the employee taking into consideration input from the NeSI Director.
<b>ANNUAL SALARY REVIEW PROCESS</b>	The annual salary review process shall be administered in accordance with local policies and procedures.
<b>DISPUTE RESOLUTION</b>	If any dispute or difference shall arise between local site employee and NeSI Director, both parties shall use their best endeavours to resolve such dispute or difference in the spirit of co-operation and good faith. If the parties are unable to resolve the matter themselves they will participate in mediation with a mutually acceptable third party appointed if necessary by the Board. For any dispute or difference between site staff and their employer local standard employment procedures and policies for resolving disputes shall apply.