POSITION DESCRIPTION

Position:  Geospatial Analyst Land Resources
Term:    Permanent
Status:  Full time
Location:  Palmerston North or potentially Wellington
Directly reporting to:  Capability Leader – Informatics Group

Purpose

This position is for an established mid-career geospatial analyst devising, implementing and executing complex spatial analyses, and developing data-driven spatial statistical models for environmental research. This position involves working primarily with scientists within our environmental science teams, particularly (but not exclusively) Informatics, Soils and Landscapes, Land Use and Ecosystems.

The primary focus of this role will be in the areas of ecosystem services, nutrient management, land use and land suitability, erosion mitigation, and impacts of climate change. The emphasis is on spatial analysis, modelling, and visualisation at landscape to farm scales and incorporating temporal perspectives.

The post holder will work in ongoing science projects but will have opportunities to co-develop new projects as part of new applied research over time. The position will involve working as part of a team with a range of stakeholders including commercial, central and local government, Māori and other researchers in New Zealand.

Over time it is expected this position will develop collaborative opportunities across other research themes especially those requiring geospatial analysis, spatial data programming and modelling.

Context

- Manaaki Whenua’s purpose is science for our land and future. Our ambitions for New Zealand include goals for biodiversity, biosecurity, land and the wider environment including climate change. These ambitions are achieved through combining our scientific research with the work of our partners in central and local government, industry, Māori organisations, the science sector and wider public. For our work to create valued outcomes and impact we strive for it to be excellent and relevant to society’s and our partners’ needs. How we translate our knowledge to make it useful is critical.
- The role sits within the Informatics Team at Manaaki Whenua. The Team undertakes informatics research and development and provides services to scientists and end users including spatial analytics and modelling, data processing, application support, customised tools and software delivery such as web applications.
- Increasingly our science is reliant on data-driven environmental science systems with data generated by ground-based and remote sensors and the need to bring multi-scale and heterogeneous data sources together for analysis and in modelling.
• We contribute nationally to areas such as research data management, data infrastructures and data interoperability and help develop international data standards and service interfaces (APIs).
• The Team works with other researchers in the boarder science sector as well as stakeholders including industry, central and local government, and Māori.

Key aims of the position are to help Manaaki Whenua meet the demands of recent funding successes and the growth in the use of our science, solutions, services and expertise, to grow revenue and sector leadership, and to help us develop our capability in spatial modelling of land resources and landscapes.

**Primary Objectives and Accountabilities**

The duties of this position may include but are not limited to the following:

• Undertake geospatial consultancy in the areas of land resources and across landscape scales using spatial analyst and modelling approaches
• Develop and manage tasks that involve the processing, manipulation, fusion, mining, analysis, modelling and interpretation of spatial environmental data
• Advise and assist scientists and clients to develop clear understanding of analytical and data requirements and where and how spatial analysis solutions can be applied at relevant spatial and temporal scales, quantifying uncertainty in the models used
• Work with scientists, clients and Informatics staff to define, validate, and document spatial analysis processes and workflows where automation of analyses is required
• Participate in project planning and project monitoring
• Contribute to the preparation of project proposals and tender responses
• Support published research in high-impact journals and in contract reports
• Ensure analytical approaches meet Manaaki Whenua’s quality standards, supporting and promoting a structured approach to spatial modelling and analysis
• Meet organisational administrative requirements as required, and
• Undertake new tasks as the team grows and develops its services for both internal and external partners.

**Health, Safety and Environment Objectives**

Applicable to all staff

• Take reasonable care to ensure your own health and safety in the workplace, and that no action or inaction on your own part harms others. Also ensure own activities comply with all relevant statutory and other Health, Safety and Environmental (HSE) requirements and apply appropriate CoPs, SOPs and other procedures
• Set an example of accountability and continual improvement in HSE practices
• All invited non-employees (visitors, volunteers, students, interns etc.) are hosted responsibly

Please note: use this [HSE Performance Objectives](#) link to identify additional objectives applicable to the specific position; these will also be measured in the HSE section of the Performance Appraisal and Development process.

**Person Specification**
Essential

1. **Education/Qualifications and Learning**
   - A postgraduate degree in GIS or spatial analysis with relevant research or industry experience

2. **Knowledge, Skills and Experience**
   - Awareness of national scale and integrated modelling issues (scale, performance, integration)
   - Significant knowledge of spatial data concepts with a strong interest in applying methods to cross-domain environmental issues
   - Practical skills in mathematics, statistics, computer programming/scripting and data processing
     - Demonstrated capability with one or more GIS based spatial modelling tools such as: ArcGIS Spatial Analyst, QGIS, or GRASS and related scripting/analytical languages (e.g. R, Python, NumPy, Julia etc.)
     - Database skills with one or more of the following: Postgres, SQL Server, MS Access
     - Demonstrated ability to work with spatial data specifically extracting useful information from spatial datasets and undertaking complex spatial analyses but including: data manipulation, analysis, refactoring, integrating vector and raster data, transformations
   - Understanding of relevant statistical and/or geostatistical analytical and modelling techniques
   - Specific domain knowledge in one or more of the following domains: soil, land use, vegetation, ecosystem services, landscape analysis, climate change
   - Show evidence of being able to understand user analytical requirements and execute them using best industry and technical practices
   - Ability to share and communicate ideas in clear concise language, both orally and in writing, including technical writing skills.

3. **Personal Attributes**
   - Demonstrates a commitment to teamwork and team culture, and the maintenance of a collaborative and supportive work environment.
   - Highly effective when working as part of a team, being able to work across the team as needed to get the job done, with a ‘can do’ and ‘how can I help?’ attitude
   - A self-starter who displays excellent self-direction and time management skills
   - Strong work ethic, able to work well under pressure and results oriented
   - Innovative and proactive and uses initiative
   - Excellent analytical design and problem-solving skills. Curious and adept at researching research-related issues and challenges
   - Strong interpersonal skills, able to communicate openly and effectively and to build strong relationships with staff, stakeholders and clients at multiple levels and across boundaries and able to communicate conceptual ideas and design rationale to others
   - Able to work as a member of collaborative and distributed projects as well as working in traditional client/customer relationship models
• Ability to work from innovative designs and methods devised by experts in areas that are potentially new to you
• A high level of professional integrity and displays a high standard of ethical behaviour.

4. Desirable
• A strong or growing publication record
• A background or strong interest in environmental science, with good awareness of environmental data and environmental issues especially those that relate to Manaaki Whenua’s areas of core purpose (see http://www.landcareresearch.co.nz/home)
• A knowledge of the New Zealand terrestrial environment
• Have worked with New Zealand’s land resource and other environmental datasets
• Experience or good awareness of issues important to Māori
• Knowledge of informatics best practice with respect to data management, metadata, provenance and related data standards in the geospatial domain e.g. Open Geospatial Consortium (OGC) and ISO TC 211 standards
• Experience of project tracking, collaboration, task and issue management tools to manage tasks within research projects and/or software and systems development processes
• Cross-platform experience (Linux, Windows)

Interactions/Regular Contacts

Direct reports: None

Internal: Regular contact with researchers and technical staff within Informatics team and across the wider organisation, including other sites. Contact with support staff as required.

External: Interactions with private and public sector clients and end-users under direction and guidance from team and project leadership

Other research and technology staff working in both national and local government agencies, universities, national groups and bodies such as NeSI and NGOs, and other Crown Research Institutes

Delegations: None

Refer to 6.01 Delegations Policy
Performance Criteria

Manaaki Whenua - Landcare Research has a Performance Appraisal & Development process which provides an opportunity for the employee and their manager to discuss and agree what contribution the individual employee is expected to make during a regular review period towards achieving the strategic goals and objectives of the Company.

Goals and objectives will be agreed annually. These will be consistent with the Key Accountabilities and Personal Attributes contained within this Position Description, and will include performance measures (statements of achievement), together with any support and professional development required by the employee to achieve those objectives.
**Working Environment & Physical Demands**

Manaaki Whenua - Landcare Research undertakes to ensure its workplaces are safe and that no person is harmed as result of our work activities. The list below is provided to give an indication of the type of environment and potential hazards which may be encountered in this role.

*(tick appropriate boxes)*

<table>
<thead>
<tr>
<th>X Office/computing</th>
<th>□ Soils, potting mixes, composts</th>
<th>□ Adverse weather/heat/sun</th>
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</thead>
<tbody>
<tr>
<td>□ Standing for long periods</td>
<td>□ Sewage and wastewaters</td>
<td>□ Alpine conditions</td>
</tr>
<tr>
<td>□ Manual handling/lifting</td>
<td>□ Bio solids</td>
<td>□ Off-shore islands</td>
</tr>
<tr>
<td>□ Hiking/tramping - easy</td>
<td>□ Insects</td>
<td>□ International travel</td>
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<tr>
<td>□ Hiking/tramping - hard</td>
<td>□ Microorganisms</td>
<td>□ Polar environments</td>
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<tr>
<td>□ Camping out – “roughing it”</td>
<td>□ Pathogens</td>
<td>□ Isolated environments</td>
</tr>
<tr>
<td>□ River-crossings</td>
<td>□ Animals – contact/handling</td>
<td>□ Geothermal areas</td>
</tr>
</tbody>
</table>

**X On-road driving**

| □ Off-road 4WD/ATV driving                  | □ Plants and fungi               | □ Urban environments        |
| □ Charter flying/Helicopters              | □ Chemicals/toxins               | X Rural/farm environments   |
| □ Travel in Boats/Ships                   | □ Flammable liquids/gases        | □ Production forestry blocks|
| □ Construction work                       | □ Dusts/fumes/vapours            | □ Mines/earthworks/excavations|
| □ Operating tools & equipment             | □ Compressed gases               | □ Old mine shafts/pits      |
| □ Deft/fine manual tasks                  | □ Cryogenic substances           | □ Roadside work             |
| □ Microscopy                               | □ Other                          | □ Working at heights        |
| □ Swimming/Snorkelling/Diving             | □ Radioactive substances & equipment | □ Noise (in environment or from equipment) |
| □ Night time/shift work                   | □ Electricity                    | □ Confined space work       |
|                                            | □ Lasers                         |                             |
|                                            | □ Firearms/hunters               |                             |