

Role Description

Data Scientist

Cluster	Transport for NSW
Agency	Roads and Maritime Services
Division/ Branch/ Unit	Technical & Project Services/ Network and Asset Intelligence
Location	Various
Classification/ Grade/ Band	USS 11
Role Number	Various
ANZSCO Code	262111
PCAT Code	2229192
Date of Approval	June 2019
Agency Website	http://www.rms.nsw.gov.au/

Agency overview

Roads & Maritime Services (RMS) was formed on 1 November 2011 with key accountabilities:

- Delivery of new roads and maritime infrastructure to optimise safety and effective & efficient use
- Effective & efficient traffic management and use of the road and maritime network
- Execution of road and maritime safety policies and regulations
- Maintenance of the road and maritime infrastructure to optimise safety, traffic management and asset life

RMS is part of a new integrated transport authority led by Transport for NSW (TfNSW) that aims to create a better transport system, one that is fundamentally designed around the needs and expectations of customers, communities and the economy.

The other delivery focused Transport Agencies include Sydney Trains, NSW Trains and the State Transit Authority. The Private Transport Operators include Private Ferry operators and Private Bus operators.

Primary purpose of the role

The primary focus of this role is to apply data mining techniques, undertake statistical analysis, and build high-quality prediction systems for integration within self-service platforms for RMS customers.

The Data Scientist works across Roads and Maritime divisions and precincts to define opportunities from vast amounts of data to inform and develop recommendations to improve the way the road networks are developed and managed.

Key accountabilities

- Partner with Network and Asset Intelligence colleagues to produce statistical analysis that support predictive analytics and factor analysis to facilitate improved communication and decision making on the significant opportunities that ease network congestion, and improve customer safety and journey experience.

- Develop solutions to improve efficiency through the use of video data, transforming images into data sources that identify moments of truth which can be used to improve safety and journey time reliability, and empower better decision making, with minimal latency.
- Create data assets that assist Roads and Maritime in engaging customers and industry with information that illustrates the benefits of changes to customer behaviour or planning decisions.
- Develop automated data analytics solutions utilising a range of technologies, including SQL, Hadoop, R, SAS, Spark, Hive, Pig, Python, Perl, etc.
- Develop proposals to create additional data, select features to be used in Data Science solutions, including, building and optimising classifiers using machine learning techniques.
- Develop Data Science solutions that actively influence and forecast traffic volumes, Journey Time Reliability, and safety of the Roads and Maritime network.
- Develop solutions that illustrate the factors and magnitude of impact on network performance, and subsequent machine led responses to factors.

Key challenges

- Utilising numerous legacy systems and data sources to balance competing demands in a matrix operating environment to meet current and future needs.
- Working in a highly technical environment with significant engineering challenges to create new roads infrastructure.
- Developing and, implementing new technologies, and acquiring new skills to support (i.e. SQL, Hadoop, R, SAS, Spark, Hive, Pig, Python, Perl, etc.)

Key relationships

Who	Why
Internal	
Director Data Science	<ul style="list-style-type: none"> • Escalate issues, keep informed, advise and receive instructions • Provide regular updates on key projects, issues and priorities
Network & Asset Intelligence Branch	<ul style="list-style-type: none"> • Provide support and guidance to colleagues in delivering value through analytical tools and techniques • Contribute to the ongoing improvement of process and efficiency of Network and Asset Intelligence
Technical and Project Services, Regional & Freight, Motorways, and Sydney Divisions, including TfNSW	<ul style="list-style-type: none"> • Collaborate and share information, provide expert advice and contribute to the achievement of consistent joint project objectives
External	
IT and Data Engineers	<ul style="list-style-type: none"> • Collaborate and share information
Key operational stakeholder groups	<ul style="list-style-type: none"> • Ensure consistent delivery of engineering standards • Communicate and engage with stakeholders to understand requirements, and communicate in a simple way on the opportunities to leverage Data Science techniques to improve roads performance
Technology Partners	<ul style="list-style-type: none"> • Keep up-to-date of the latest developments in the discipline • Maintain and continuously improve minimum industry training

Role dimensions

Decision making

The role operates with a high level of autonomy and is expected to determine critical operational objectives within the limits of delegated authority. The role is accountable for the delivery of assigned work, quality, integrity and validity of the services provided.

The role defers to the Director on issues that require a higher level of resolution or delegation.

Reporting line

This role reports to the Director, Data Science

Direct reports

Nil

Budget/Expenditure

Nil

Essential requirements

- Relevant tertiary qualifications in either applied statistics, mathematics, computer science or software engineering, or associated field or demonstrated extensive relevant experience in a similar role.
- Experience working in a fast-paced analytics environment, with evidence of delivering significant incremental value to the organisation's leveraging data
- Extensive knowledge and familiarity with machine learning and artificial intelligence techniques
- Demonstrated experience with common data visualisation tools and data science toolkits such as R, MatLab, SAS etc
- Expert knowledge and experience using SQL and Hadoop suite of applications
- Experience with NoSQL databases such as Cassandra/HBase
- Demonstrated excellent applied statistics skills, such as distributions, statistical testing, regression





Capabilities for the role

The NSW Public Sector Capability Framework applies to all NSW public sector employees. The Capability

Capability summary

Below is the full list of capabilities and the level required for this role. The capabilities in bold are the focus capabilities for this role. Refer to the next section for further information about the focus capabilities.

NSW Public Sector Capability Framework

Capability Group	Capability Name	Level
 Personal Attributes	Display Resilience and Courage	Intermediate
	Act with Integrity	Adept
	Manage Self	Adept
	Value Diversity	Intermediate
 Relationships	Communicate Effectively	Advanced
	Commit to Customer Service	Adept
	Work Collaboratively	Adept
 Results	Deliver Results	Adept
	Plan and Prioritise	Adept
	Think and Solve Problems	Advanced
	Demonstrate Accountability	Intermediate
 Business Enablers	Finance	Intermediate
	Technology	Advanced
	Procurement and Contract Management	Intermediate
	Project Management	Adept

Focus capabilities

The focus capabilities for the role are the capabilities in which occupants must demonstrate immediate competence. The behavioural indicators provide examples of the types of behaviours that would be expected at that level and should be reviewed in conjunction with the role's key accountabilities.

NSW Public Sector Capability Framework

Group and Capability	Level	Behavioural Indicators
Personal Attributes Manage Self	Adept	<ul style="list-style-type: none"> Look for and take advantage of opportunities to learn new skills and develop strengths Show commitment to achieving challenging goals Examine and reflect on own performance Seek and respond positively to constructive feedback and guidance Demonstrate a high level of personal motivation
Relationships Communicate Effectively	Advanced	<ul style="list-style-type: none"> Present with credibility, engage varied audiences and test levels of understanding Translate technical and complex information concisely for diverse audiences Create opportunities for others to contribute to discussion and debate Actively listen and encourage others to contribute inputs Adjust style and approach to optimise outcomes

NSW Public Sector Capability Framework

Group and Capability	Level	Behavioural Indicators
		<ul style="list-style-type: none"> • Write fluently and persuasively in a range of styles and formats
Relationships Work Collaboratively	Adept	<ul style="list-style-type: none"> • Encourage a culture of recognising the value of collaboration • Build co-operation and overcome barriers to information sharing and communication across teams/units • Share lessons learned across teams/units • Identify opportunities to work collaboratively with other teams/units to solve issues and develop better processes and approaches to work
Results Deliver Results	Adept	<ul style="list-style-type: none"> • Take responsibility for delivering on intended outcomes • Make sure team/unit staff understand expected goals and acknowledge success • Identify resource needs and ensure goals are achieved within budget and deadlines • Identify changed priorities and ensure allocation of resources meets new business needs • Ensure financial implications of changed priorities are explicit and budgeted for • Use own expertise and seek others' expertise to achieve work outcomes
Results Plan and Prioritise	Adept	<ul style="list-style-type: none"> • Take into account future aims and goals of the team/unit and organisation when prioritising own and others' work • Initiate, prioritise, consult on and develop team/unit goals, strategies and plans • Anticipate and assess the impact of changes, such as government policy/economic conditions, on team/unit objectives and initiate appropriate responses • Ensure current work plans and activities support and are consistent with organisational change initiatives • Evaluate achievements and adjust future plans accordingly
Results Think and Solve Problems	Advanced	<ul style="list-style-type: none"> • Undertake objective, critical analysis to draw accurate conclusions that recognise and manage contextual issues • Work through issues, weigh up alternatives and identify the most effective solutions • Take account of the wider business context when considering options to resolve issues • Explore a range of possibilities and creative alternatives to contribute to systems, process and business improvements • Implement systems and processes that underpin high quality research and analysis
Business Enablers Technology	Advanced	<ul style="list-style-type: none"> • Show commitment to the use of existing and deployment of appropriate new technologies in the workplace • Implement appropriate controls to ensure compliance with information and communications security and use policies • Maintain a level of currency regarding emerging

NSW Public Sector Capability Framework

Group and Capability	Level	Behavioural Indicators
		<p>technologies and how they might be applied to support business outcomes</p> <ul style="list-style-type: none">• Seek advice from appropriate technical experts to leverage information, communication and other technologies to achieve business outcomes• Implement and monitor appropriate records, information and knowledge management systems protocols and policies
