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## Australian Research Data Commons Institutional Underpinnings Project



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## Introduction

The Australian Research Data Commons (ARDC), in partnership with 25 Australian universities, is creating a Research Data Management Framework, a national resource to support a coordinated approach to research data management within the university sector.

During the first phase of the Institutional Underpinnings program eight elements have been identified by working groups as essential to research data management (RDM);

- Active Research Data Management
- Culture Change
- Policy
- Research Data Management Planning
- Retention and Disposal
- Open Research and Data Publication
- Sensitive Data
- Support, Training and Guidance

The University of Adelaide has undertaken a project within the Support, Training and Guidance Element of the program recognising a gap in understanding the role of Data Stewards and how the University of Adelaide can best support this role to enable researchers to be compliant and proactive in managing their research data. A recent review in 2021 of the University's Research Data and Primary Materials Policy<sup>1</sup> resulted in an updated policy which defines and articulates the new role of data steward and its responsibilities.

Initial project outcomes included the development of training materials for both trainers and data stewards, a checklist, and decision-making examples. It was also envisaged that the training could become a stepping-stone towards the necessary cultural change needed to improve research data management outcomes at the University of Adelaide.

Managing research data is not only necessary due to funder and policy requirements but also provides an array of benefits to researchers and end users. The competency framework developed through this project gives a straightforward way that researchers and students can fulfil requirements and highlights the reasons and benefits of why this is necessary.

## Strategy

Several steps were taken to reach the initial project outcome, these being:

- Formation of a working group, comprising research infrastructure, library, and research staff, to undertake the data stewardship project on behalf of the University of Adelaide. Initial weekly meetings were undertaken which became fortnightly whilst research was ongoing
- Define the role of a data steward in the University of Adelaide context
- Proposed literature review of data stewardship and its development both nationally and internationally
- Environmental scan of Australian university RDM procedures in relation to data stewardship
- Identify the needs of data stewards at the University of Adelaide
- Design a Data Steward Competency Framework (DSCF) which:
  - acts as a checklist for RDM requirements
  - directs researchers to related documents and tools

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<sup>1</sup> University of Adelaide Research data and Primary Materials Policy 2021

- provides a clear and logical route to data stewardship support and training resources
- incorporates the University's Research data and Primary Materials Policy requirements
- Documentation to support the competency framework
- Ascertain what training is already provided for data stewards at the University of Adelaide
- Development and/or adaptation of training materials for data stewards

It was also recognised that cultural change would be required to integrate data stewardship into the research data management environment at the University of Adelaide. The Institutional Underpinnings element of cultural change was therefore also pertinent to this project, however was considered out of scope for this current IU project.

## Data Stewardship

An important first step was to define data stewardship and how it fits within the RDM environment at the University of Adelaide. The value of having the data steward role clearly defined assisted in establishing how data stewardship benefits RDM at the University of Adelaide (and elsewhere) and the responsibilities of the data steward.

The data stewardship role is defined in the University's Research Data and Primary Materials Policy as:

*'A nominated, senior person responsible for the management of research data and primary materials associated with a specific research project (which may be a component of a larger initiative) during the full lifecycle of that project. By default, this will be the Lead Chief Investigator of the project, unless another nomination is made by the Lead Chief Investigator or their Head of School.'*

It is important to note that the role of data steward varies greatly from one institution to another. The environmental scan in the appendices (see Appendices 1) is testament to this. Therefore, depending on the definition provided for the role, the competency framework could be applied to (for example) data custodians, data owners, or data managers equally.

Data stewardship is an important step in cultural change relating to RDM at the University of Adelaide. With the Research Data and Primary Materials Policy focussing on data stewardship as a key responsibility within the research lifecycle it becomes a necessity for support in the form of training and guidance to be firmly established and accessible by all staff. To offer the most appropriate support a number of related documents were referred to when designing the competency framework and an environmental scan undertaken.

## Related Documentation

The outputs of the project align with several internal and external documents, including:

- University of Adelaide Research Data and Primary Materials Policy
- Australian Code for the Responsible Conduct of Research (2018)<sup>2</sup> (The Code)

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<sup>2</sup> Australian Code for the Responsible Conduct of Research (2018) (The Code)

- Management of Data and Information in Research – A guide supporting the Australian Code for the Responsible Conduct of Research<sup>3</sup>
- FAIR principles<sup>4</sup>
- CARE principles<sup>5</sup>
- ARDC Institutional Underpinnings Draft Framework<sup>6</sup>
- Australian Institute of Aboriginal and Torres Strait Islander Studies Code of Ethics for Aboriginal and Torres Strait Islander Research<sup>7</sup>

The internal and external documents were integrated to produce the DSCF. The DSCF serves as a single point for all researchers to access throughout the lifespan of a research project, giving guidance and direction on the fundamental areas of RDM and the responsibilities of a data steward.

### ***University of Adelaide Research Data and Primary Materials Policy***

This Policy is fundamental to the University of Adelaide’s Institutional Underpinning project as the basis for the role of data steward. The University of Adelaide’s Research Data and Primary Materials Policy (the Policy) was updated in 2021 to reflect changes made to The Code in 2018. Compliance with The Code is a requirement for the receipt of funding by the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC) and other research agencies are encouraged to adopt the Code as a mandatory requirement.

The Policy has four principles; these can be seen in the table below alongside objectives from the DSCF:

<b>Policy Principles</b>	<b>DSCF ‘What Do I Need to Do?’</b>
Governance, Stewardship and Compliance	Data Management Plan, Retention and Disposal
Ethical, Legal and Risk Considerations	Ownership, Collaboration, Ethical, Legal and Risk, CARE Principles
Effective Management and Care	Curation, Storage
Access and Re-use	OPEN Access, FAIR Principles

Some of the objectives in the left-hand column fit under more than one Policy principle, for example, Retention and Disposal would also align with Legal Considerations.

The Policy states that:

- ‘The University will provide training and education to support responsible research conduct for its staff and students’ (S1.2)

<sup>3</sup> Management of Data and Information in Research – A guide supporting the Australian code for the Responsible Conduct of Research

<sup>4</sup> Wilkinson, M. D. et al. The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data* 3:160018 doi: 10.1038/sdata.2016.18 (2016).

<sup>5</sup> Research Data Alliance International Indigenous Data Sovereignty Interest Group. CARE Principles for Indigenous Data Governance. The Global Indigenous Data Alliance. GIDA-global.org., September 2019

<sup>6</sup> ARDC Institutional Underpinnings Draft Framework, 2021

<sup>7</sup> Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) 2020, AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research, <http://aiatsis.gov.au/ethics>

- ‘For each research project a Data Steward must be nominated, who will be responsible for the overall management (curation, recording, storage and disposal) of research data and primary materials associated with that specific research project. By default, this will be the Lead Chief Investigator of the project, unless another nomination is made’ (S1.5)
- A research Data Management Plan (DMP) is required for all University of Adelaide-led research projects (S1.6)

It is recommended that ALL researchers are familiar with the Policy; this includes HDR students, supervisors and Heads of School.

### Australian Code for the Responsible Conduct of Research (2018)

This document is a requisite for all researchers; it establishes a framework for responsible research conduct that provides a foundation for high-quality research, credibility and community trust in the research endeavour.

The Code lists eight principles (P1-P8) of responsible research conduct:

- P1 Honesty
- P2 Rigour
- P3 Transparency
- P4 Fairness
- P5 Respect
- P6 Recognition
- P7 Accountability
- P8 Promotion

P7, Accountability

*‘Ensure good stewardship of public resources used to conduct research’*

The Code is supported by Guides that detail how to comply with the eight Principles and numerous responsibilities of the Code. The most relevant of these guides to data stewardship is ‘the **Management of Data and Information in Research: A guide supporting the Australian Code for the Responsible Conduct of Research.**’ The responsibilities of institutions in providing guidance on ownership, stewardship and control of research data and primary materials is looked at in further detail within this guide.

The box below highlights key areas that the data stewardship project considers:

Under the Code, institutions have responsibilities to:

R1 Establish and maintain good governance and management practices for responsible research conduct

R3 Develop and maintain the currency and ready availability of a suite of policies and procedures which ensure that institutional practices are consistent with the principles and responsibilities of the Code

R4 Provide ongoing training and education that promotes and supports responsible research conduct for all researchers and those in other relevant roles

R5 Ensure supervisors of research trainees have the appropriate skills, qualifications and resources

**The FAIR principles** describe four foundational principles - Findability, Accessibility, Interoperability, and Reusability that are used globally within RDM by researchers to make their data available to others where possible.

**The CARE principles** are for the governance of Indigenous data and are people and purpose-orientated. They are Collective Benefit, Authority to Control, Responsibility, and Ethics.

**ARDC Institutional Underpinnings Draft Framework** this framework describes the initial findings of the research data management Support, Training and Guidance element of the Framework, providing institutions with guidance for researchers to gain essential knowledge to manage research data effectively.

**Australian Institute of Aboriginal and Torres Strait Islander Studies Code of Ethics for Aboriginal and Torres Strait Islander Research** this Code outlines four principles that underpin ethical Australian Indigenous research. Each principle frames a set of responsibilities for researchers.

## Literature Review

The literature review was seen initially as an important output of the project to assist in developing a better understanding of the landscape both nationally and internationally, the positioning of data stewards as part of the RDM framework, and how other institutions currently utilise data stewards. However, as research into the role progressed it was clear that other institutions were not utilising the role of data steward in the same way as the University of Adelaide. Data stewards, especially in institutions in Europe are often professional staff members, the role being one that is constantly developing and increasing in importance with specialised training being provided,<sup>8</sup> for example, in Europe a series of summer schools are ongoing that address the need for research data management skills across all disciplines.<sup>9</sup> However, the data steward role at the University of Adelaide is not a professional one and therefore the literature review has currently been postponed.

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<sup>8</sup> Grootveld, Marjan, & Verburg, Maaïke. (2022, February 23). Connecting Data Stewardship to Research Projects. Zenodo. <https://doi.org/10.5281/zenodo.6244906>

<sup>9</sup> Daniel Bangert, Joy Davidson, Steve Diggs, Marjan Grootveld, Hugh Shanahan, & Shanmugasundaram Venkataraman. (2020). The CODATA-RDA Data Steward School. *International Journal of Digital Curation*, 15(1), 1–6. <https://doi.org/10.2218/ijdc.v15i1.711>

## Environmental Scan

The ARDC has a vast array of material available and the following were used to assist with the environmental scan:

- Institutional Research Data Management Policies and Procedures
- [Listings of publicly-available data-related policies from Australian research institutions](#)

The environmental scan highlighted a vast difference by Australian universities in their approach to data stewardship, which comes in many forms and contexts, all with the common goal of supporting data management.

The environmental scan<sup>10</sup> provides details regarding research data management protocols for each Group of Eight university, along with Flinders University and the University of South Australia (to provide local context). Macquarie University was also included to draw attention to the range of measures, including procedures, policies, guidelines and standards, it has in this area.

## Data Steward Training Needs

To determine the level of support needed by researchers at the University of Adelaide a survey of our researchers was discussed but due to time pressures alternative material was sourced from the Research Data Alliance Professionalising Data Stewardship Interest Group (PDS-IG) Models Task Group<sup>11</sup> which sought input from the research data community to help model different approaches to research data stewardship through an online survey<sup>12</sup> in October to November 2021.

The survey results<sup>13</sup> gave an insight into how the University of Adelaide could be more proactive in supporting researchers with RDM throughout the lifecycle of their projects and also the potential barriers that may hinder cultural change in this area at the University.

It is clear from the literature that data stewards (chief investigators) need support during individual phases of the research project:

Beginning – Preparation of data management plans, costing of data management activities, use of online tools

Middle – Data documentation, storage, legal and ethical

End - FAIR principles and preservation

The current support from the University is detailed below and it is an aim of this project to establish a clear connection between the data steward role and the research data management training that is provided.

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<sup>10</sup> See Appendices

<sup>11</sup> RDA Professionalising Data Stewardship Interest Group (PDS-IG) Models Task Group

<sup>12</sup> RDA Data Stewardship Organisational Models Survey 2021 Output Dataset | Zenodo

<sup>13</sup> Ayres, Bill, Lehtsalu, Liise, Kuchma, Iryna, Parton, Graham, Száldobágyi, Ádám, Warren, Eleanor, Whyte, Angus, & Zimmer, Niklas. (2022). RDA Data Stewardship Organisational Models Survey 2021 Output Dataset [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.6665306>



# Research Data Management at University of Adelaide: current support and training

Responsibility for supporting research data management is spread across different areas at the University of Adelaide, , including:

- Division of Research Innovation
- University Library
- Information Technology and Digital Services (ITDS)
- Intersect

## **Division Research Innovation (includes Research Services)**

- Offers guidance on research integrity, ethics, and legislation and resources

## **University Library**

Provides comprehensive research data management services, tools and support which are detailed in the Library's [Research Support Framework](#)

- Managing your Research Data is a **comprehensive online course** that helps in preparing, organising, analysing, keeping, and sharing digital research data. While the module is designed primarily for research students, sections are useful for research supervisors and researchers new to the University.
- Research Data Planner tool
- Online [Research Data Management](#) support materials
- The support and training offered by the Library will be reviewed and aligned to the project recommendations.

## **ITDS**

- Provides data storage solutions
- Offers guidance on storage and accessing documents on the University network

## **Intersect**

- Provide data storage and security solutions
- Provides access to an eResearch Analyst who can support researchers using Intersect's data storage options.
- The eResearch analyst can also provide advice on data management, research tools and training
- Offers Hacky Hour sessions bi-monthly to researchers to discuss technology related issues, this can relate to RDM.
- Training sessions throughout the year on research needs such as:
- Version Control with Git

There are further areas that can be explored such as consolidating all RDM content into one centralised place on the website; having dedicated RDM support staff, repurposing existing content, hands on tailored support, RDM consultations.

## Why a Competency Framework?

The Working Group decided that one of the outputs of the Institutional Underpinnings Project should be a competency framework to support the data steward responsibility at the University of Adelaide.

The competency framework has been informed by the documentation mentioned previously and scholarly literature including surveys conducted by higher education institutions globally.

‘The context of increasing volumes of data being created by researchers and the strengthening of requirements for research data management and data sharing has created demand for a new and evolving set of competencies and skills for researchers who create and use the data, and the growing cadre of professionals who support them’.

Education and Training on Handling of Research Data Interest Group - RDA<sup>14</sup>

The purpose of the DSCF is to offer consolidated and clear guidance, to researchers who act as data stewards, on their obligations under both the Code and the Policy, and to highlight the benefits of good research data management. The DSCF provides guidance to chief investigators, or nominated data stewards, in understanding what is expected of them in managing their research data and any associated primary materials that have been produced during their research. The DSCF aims to provide a standardisation of RDM requirements and competency levels across faculties, schools, and disciplines.

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<sup>14</sup> Education and Training on Handling of Research Data Interest Group - RDA

## The Data Steward Competency Framework

The Framework will be embedded onto the University website with links to the appropriate support material necessary for the data steward to begin navigating the research data management requirements for the project being undertaken.

COMPETENCY FRAMEWORK																												
WHAT	WHY				HOW				WHO				WITH															
do I need to do?	should I?				best to do this?				will support me?				what tools?															
	Legal Requirements	Funding Requirements	University Requirements	Benefits	Knowledge	Skill	Tool	Licence	Library	ITDS	Research Services	Intersect	Other	<a href="#">Research Data Planner</a>	<a href="#">LabArchives</a>	<a href="#">Figshare</a>	<a href="#">AR&amp;S</a>	AURORA	Content Manager	Box cloud storage	University network drives S & R	<a href="#">Genomics Repository</a>	External Storage Options	Naming Conventions	Metadata Curation Tools	Version Control	Creative Commons	
Data Management Plan		✓	✓	✓	✓		✓		✓		✓			✓														
Curation (Organisation)		✓	✓	✓	✓	✓	✓		✓						✓	✓		✓						✓	✓	✓		
Storage	✓	✓	✓	✓	✓		✓		✓	✓		✓			✓	✓	✓		✓	✓	✓	✓	✓					
Retention & Disposal	✓		✓	✓	✓		✓		✓							✓	✓		✓	✓	✓	✓	✓					
Ownership	✓		✓	✓	✓		✓	✓	✓		✓																✓	
Collaboration			✓	✓	✓	✓	✓	✓	✓		✓				✓	✓												
Ethical, Legal & Risk	✓	✓	✓	✓	✓						✓		✓															
<a href="#">OPEN ACCESS</a>		✓	✓	✓	✓	✓	✓	✓	✓				✓				✓											✓
<a href="#">FAIR Principles</a>		✓	✓	✓	✓				✓							✓	✓											
Findable					✓				✓						✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Accessible					✓				✓	✓					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Interoperable					✓	✓			✓	✓																		
Reusable					✓				✓						✓	✓												
<a href="#">AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research</a>		✓	✓	✓	✓				✓																			
Indigenous self-determination					✓				✓																			
Indigenous leadership					✓				✓																			
Impact and Value					✓				✓																			
Sustainability and Accountability					✓				✓		✓																	

## Additional Resources

Resources referred to in this framework, or that support the principles or responsibilities outlined in the framework include:

### **Internal – University of Adelaide**

[Responsible Conduct of Research Policy](#)

[Information Management Policy](#)

[Policies and Guidelines | Information Technology and Digital Services](#)

[Research Tools | Information Technology and Digital Services](#)

[Research Data | Research Technology Support](#)

[Storage for Staff | Information Technology and Digital Services](#)

### **External**

#### **Australian Government Research Ethics and Research Integrity Guidelines**

[Australian Code for the Responsible Conduct of Research, 2018 | NHMRC](#)

[National Statement on Ethical Conduct in Human Research \(2007\) - Updated 2018 | NHMRC](#)

[Ethical guidelines for research with Aboriginal and Torres Strait Islander Peoples | NHMRC](#)

#### **Australian Research Data Commons (ARDC, formerly Australian National Data Service (ANDS))**

[Data versioning](#)

[Data management plans](#)

[About data](#)

#### **Creative Commons**

[Creative Commons Australia](#)

#### **F.A.I.R.**

[Australian FAIR Access Working Group](#)

#### **International Guidelines**

[OECD Principles and Guidelines for Access to Research Data from Public Funding](#)

# Appendix

## Environmental Scan

	University of Adelaide	UniSA	Flinders University	University of Sydney	University of WA	Monash University	ANU	University of Melbourne	UNSW	UQ	Macquarie University
RDM Policy or University Policy which includes details regarding management of research data	<a href="#">Research Data and Primary Materials Policy</a>	<a href="#">Responsible Practice in Research Policy</a>	<a href="#">Management of Research Data and Primary Materials Policy</a>	<a href="#">Research Data Management Policy</a>	<a href="#">Research Integrity Policy</a>	<a href="#">Research Data Management Policy</a>	<a href="#">Responsible Conduct of Research Policy</a>	<a href="#">Research Data Management Policy</a>	<a href="#">Research Data Governance &amp; Materials Handling Policy</a>	<a href="#">Research Data Management Policy</a>	<a href="#">Research Data Management Policy</a>
Year of RDM policy	2021	2009	2016	2014	2021	2017	2019	2022	2019	2021	2021
Procedures				<a href="#">Research Data Management Procedures</a>		<a href="#">Research Data Management Staff, Adjuncts and Visitors Procedures</a>			<a href="#">Handling Research Material and Data Procedure</a>		<a href="#">Research Data Management Procedure</a>
Codes									<a href="#">Responsible Conduct of Research</a>		<a href="#">Macquarie University Code for the Responsible Conduct of Research</a>
Guidelines			<a href="#">Guidelines for Research Data Management</a>		<a href="#">Research Integrity Guidelines</a>	<a href="#">Guidelines for Researchers</a>	<a href="#">Conduct of Research Guideline</a>				<a href="#">Research Data Sensitivity, Security and Storage Guideline</a>
Standards											<a href="#">Research Data Management Standards</a>
Data stewards role	Chief Investigator is also the data steward							Professional staff are data stewards and provide advice	Research Data Owners look after their own research data		Research Data Custodian and Data Steward - differing roles and responsibilities
Data Steward definition	A nominated, senior person responsible for the management of research data and primary materials associated with a specific research project (which may be a component of a larger initiative) during the full life-cycle of that project. By default, this will be the Lead Chief Investigator of the project, unless another nomination is made by the Lead Chief Investigator or their Head of School.										
RDM resources	<a href="#">Research Data Management</a>	<a href="#">Research Data Management Guide</a>	<a href="#">Research Data</a>	<a href="#">Research Data Management Platforms</a>	<a href="#">RDM Toolkit</a>	<a href="#">Research Data Management at Monash</a>	<a href="#">Research data management</a>	<a href="#">Research Data Management Services</a>	<a href="#">Research Data Management Overview</a>	<a href="#">UQ Research Data Manager</a>	<a href="#">Managing Research Data LibGuide</a>
Further RDM Resources	<a href="#">Research Data Planner</a>				<a href="#">Research Integrity Research</a>	<a href="#">Research Data Lifecycle</a>		<a href="#">Managing Data @ Melbourne</a>			