



Natural  
**Hazards  
Research**  
Australia

# Call for Request for Proposal

## Data Catalogue

Request for Proposal due **5:00 pm AEST, 12 May 2025**

to [research@naturalhazards.com.au](mailto:research@naturalhazards.com.au)

Reference number: 25Q1-INT-01



Australian Government

---

## Overview

Natural Hazards Research Australia (herein the 'Centre') is Requesting for Proposal (RFP) the provision of:

### Data Catalogue

Prior to submitting a response, the **Respondent** must comply with the following mandatory conditions for participation. The **Respondent** must:

- Be a legal entity recognised under Australian law at the Closing Time and Closing Date;
- Hold a valid Australian Business Number (ABN)
- Be covered by the following insurances:
  - public liability insurance
  - products liability insurance
  - professional indemnity insurance
  - workers compensation insurance
  - cyber insurance.

---

<b>Project brief</b>	<p>The Centre is seeking to develop:</p> <ul style="list-style-type: none"><li>→ an Australian research-centred <b>Metadata Profile of DCAT v3<sup>1</sup></b></li><li>→ the <b>Data Catalogue</b></li></ul> <p>both aiming to facilitate finding, accessing, integrating and reusing <b>Research Data Assets</b> and a limited subset of <b>Company Data Assets</b> owned by the Centre. This includes documentation, demonstration and testing of the deliverables.</p> <p>As a secondary option, the <b>Respondent(s)</b> should detail any existing off-the-shelf product solutions they would recommend as an alternative approach (in addition to addressing the specific requirements where off-the-shelf product solutions don't meet these requirements).</p>
<b>Proposed budget</b>	\$500,000 to \$850,000 AUD excluding hosting costs.
<b>Estimated duration</b>	<p>The Centre proposes to enter into an <b>Agreement</b> with the successful <b>Respondent(s)</b> for a:</p> <ul style="list-style-type: none"><li>→ estimated 3-month development period of the <b>Metadata Profile</b></li><li>→ estimated 12-month development period of the <b>Data Catalogue</b> with June 2026 deadline for alpha release</li><li>→ estimated 3-month beta testing period of the <b>Data Catalogue</b></li><li>→ estimated 6-month documentation / training / handover period</li><li>→ a <i>minimum</i> single-year warranty.</li></ul> <p><b>Agreement extension options</b>, in the form an optional 3 x single-year, consecutive Service Level Agreement (SLA), for operation and maintenance support is considered at Centre's discretion.</p> <p>The term of the <b>Agreement</b> (excluding the optional SLAs) is intended to be for the period FY25 to FY28.</p>
<b>Centre contact</b>	For any questions regarding this RFP, please email <a href="mailto:research@naturalhazards.com.au">research@naturalhazards.com.au</a>

---

1 World Wide Web Consortium (2024), Data Catalogue Vocabulary (DCAT) – Version 3, <https://www.w3.org/TR/vocab-dcat-3/>

---

---

# Statement of requirements

## 1. Key dates and times

The following table outlines the key dates and times expected:

Activity	Details	Date / time
Opening date	-	31 March 2025
Opening time	-	9:00am AEDT
Closing date	-	12 May 2025
Closing time	-	5:00pm AEST
Questions closing date	Questions will be permitted until the closing date	18 April 2025
Questions closing time	Questions will be permitted until the closing time on the questions closing date.	5:00pm AEST
Agreement execution date	The anticipated Agreement execution date	2 June 2025
Agreement term	The Agreement will remain in force for a period from the date the Agreement is entered into until the end of warranty period.	2 June 2028 (estimated)
Agreement extension option(s)	Agreement extension options are available, for further support and maintenance, at the discretion of the Centre.	To be agreed

---

---

## 2. The Requirement

The Centre is seeking to develop:

- an Australian research-centred **Metadata Profile of DCAT v3**
- the **Data Catalogue**

both aiming to facilitate finding, accessing, integrating and reusing **Research Data Assets** and a limited subset of **Company Data Assets** owned by the Centre.

As a secondary option, the **Respondent(s)** should detail any existing off-the-shelf product solutions they would recommend as an alternative approach (in addition to addressing the specific requirements where off-the-shelf product solutions don't meet these requirements).

### Background

---

The Centre's **Data Catalogue** is intended to demonstrate the Centre's commitment to FAIR and CARE principles through facilitating access to **Research Data Assets** and a limited subset of **Company Data Assets**. Consequently, the **Data Catalogue** must enable research service **Closure Management**, including the:

- Provision of **Research Metadata** by **Research Providers** (refer to [Appendix 1 – Stakeholder roles](#))
- **Assessments of Research Data Assets / Research Metadata** by Data Stewards / Metadata Stewards (refer to [Appendix 2 – Data Governance roles](#))
- Approvals of **Research Metadata** for publication by **Data Governors**
- Publication of Research Metadata with public and restricted access control.

The secondary objective of the **Data Catalogue** is to enable visibility and ingestion of metadata within other systems through a shared ontology, vocabulary or schema. While existing schemas exist for such purposes, for example the Registry Interchange Format: Collections and Services (RIF-CS), DataCite, and AGLS Metadata Standard (decommissioned 2023), they are primarily used in an academic/governmental context and not by large search engine metadata harvesting processes (e.g., Google Dataset Search). Aligning with the recommendations of the National Archives Australia (NAA)<sup>2</sup>, the Centre would like to develop a research-centred profile of Data Catalogue Vocabulary (DCAT v3), referencing schema.org where appropriate, to facilitate and promote integration between academic, governmental and other **Research Consumers**.

The Centre has previously developed a minimum viable product using the flask-based catalogue framework Comprehensive Knowledge Archive Network (CKAN)<sup>3</sup>. While featuring fast development, detailed documentation and a large support network, certain constraints are important considerations to justify before use within the project, such as:

- requiring CKAN-to-DCAT mapping (typically handled by extension CKANext-DCAT)
- object-relational mapping dependencies (e.g., SQLAlchemy)
- limited DBMS integration (only PostgreSQL or ad hoc DataStore support)
- copyleft GNU licence.

The Centre aims to integrate the **Data Catalogue** within its own serverless cloud infrastructure (currently supplied by Microsoft) with easy integration highly regarded.

---

2 National Archives Australia (2024), *Metadata for the web: Metadata schemas for the web*, <https://www.naa.gov.au/information-management/describing-information/metadata/metadata-web#schemas>

3 Comprehensive Knowledge Archive Network – CKAN (2025), *FAQs in category "Technical"*, <https://ckan.org/faq/technical>

---

---

## Supplier requirements

---

The **Supplier** should demonstrate:

1. Microsoft Azure Certification
2. ISO 9001 compliance
3. ISO/IEC 27017 and ISO/IEC 27018 compliance
4. full stack web-development capabilities with customer referees and endorsements
5. system maintenance and 24 hour, 7 days per week (24/7) support offering.

---

## Metadata profile requirements

---

### Technical requirements

The **Supplier** ensures that the **Metadata Profile** technically:

1. Is an Australian research profile of DCAT v3 named **ReDCAT-AU**.
2. Introduces a 'Legislation' class, referencing an Australian standard if possible (refer to DCAT-AP European Legislation Identifier – ELI – for European examples)
3. extends dcat:Resource with typical research resource child classes, which may include a Collection<sup>4</sup>, Article<sup>4</sup>, Software Application<sup>4</sup>, Media Object<sup>4</sup>, Event<sup>4</sup> and Map<sup>5</sup>.
4. Extends dcat:Resource properties to include:
  - a. 'applicableLegislation' property referencing an Australian 'Legislation' class
  - b. (refer to DCAT-AP for European examples)
  - c. 'dcterms:contributor' property referencing zero-to-many **Agents**.
5. Extends dcat:CatalogRecord properties to include:
  - a. 'dcterms:accessRights' property
  - b. 'adms:status' property
  - c. 'dcterms:creator' property
  - d. 'dcterms:contributor' property
  - e. 'dcterms:qualifiedAttribution' property.
6. Appropriately references in dcat:category the *Australian and New Zealand Standard Research Classification Scheme: Fields of Research (FoR)* and other vocabularies.
7. Extends the foaf:Agent class using The Organization Ontology.
8. Classifies properties: mandatory, recommended and optional.
9. Avoids using inverse properties and other causes of cyclic references.

---

<sup>4</sup> Referencing key properties and supporting classes from *schema.org* where DCAT v3 scope overlap does not occur.

<sup>5</sup> Referencing key properties and supporting classes from *ISO19115-GA* where DCAT v3 scope overlap does not occur.

---

---

## Documentation requirements

The Supplier ensures that the **Metadata Profile**:

10. Is documented, including:
  - a. an automatically generated static site (e.g., using MkDocs)
  - b. using Universal Modelling Language class diagrams for core classes
  - c. in machine readable formats: xml and json-ld.

---

## Data Catalogue requirements

### Technical requirements

The **Supplier** ensures the **Data Catalogue** technically:

1. Aligns within the **Centre's** data architecture plan (refer to [Appendix 4 – Data architecture](#)).
  2. Features data residency in Australia (including backups).
  3. Includes the development and deployment of a **Centre Principal Database**, which:
    - a. primarily supports internal Centre use by authenticated staff
    - b. executes **Data Catalogue API** requests by authenticated Centre staff
    - c. features Microsoft Power Platform integration
    - d. supports multi-tenancy and concurrent queries
    - e. features high availability (99.95% uptime)
    - f. features scheduled backups with point-in-time recovery
    - g. acts as a single leader replica of **Centre Replica Database**
    - h. features **ACID** compliance
    - i. features role-based access control in alignment with roles expected in [Appendix 3 – User roles](#)
    - j. features Microsoft Single Sign On (SSO) integration.
  4. Includes the development and deployment of **Centre Replica Database**, which:
    - a. acts as an asynchronous follower replica of the **Centre Principal Database**
    - b. primarily services non-authenticated read requests
    - c. features **ACID** compliance
    - d. features role-based access control
    - e. features *high availability (98% uptime)*
    - f. features Microsoft Single Sign On (SSO) integration
    - g. features autoscaling capabilities.
  5. Includes the development of **Data Catalogue API**, which:
    - a. supports CRUD operation requests from the **Data Catalogue** to the **Centre Principal Database** by authenticated users only
    - b. features rate limiting
    - c. features Microsoft Single Sign On (SSO) integration
    - d. aligns its namespace with **ReDCAT-AU** (where plausible)
    - e. supports json-ld responses (optional).
-

- 
6. Ensures database entity and data access layer class namespaces align with **ReDCAT-AU** and other well-established vocabularies/ontologies/standards where plausible.
  7. Includes the building of sitemap which adheres to the Sitemaps protocol.
  8. Features integration with Microsoft Approval Manager (optional).

### Functional requirements

The following references the Centre's expected user role's (refer to [Appendix 3 – User roles](#)), Master Data (refer to [Appendix 5 – Master Data Management](#)) and Reference Data (refer to [Appendix 6 – Reference Data Management](#)).

The **Supplier** ensures that the **Data Catalogue** functionally:

9. Features a responsive, web-based graphical user interface (GUI).
10. Features the following pages:
  - a. landing page with search / filter functions immediately operable and links to other pages defined below
  - b. user page prompting login, allowing CRUD operations of an authenticated **Person's** (user's) data<sup>6</sup>, including relating of **Persons** to **Organisations** (one-to-many), and sending of invitations to new users (for **the Centre's** staff only)
  - c. organisations page facilitating CRUD operations of **Organisations** and **Organisational Collaborations**, including relating of **Persons** to **Organisations** / **Organisational Collaborations**<sup>6</sup>
  - d. catalogue records page facilitating CRUD operations of **Catalogue Requests** and **Catalogue Records**
  - e. assessments page facilitating CRUD operations of **Assessment Requests** and **Assessments**
  - f. approvals page facilitating CRUD operations of **Approvals Requests**.
11. Features role-based access control in alignment with roles expected in [Appendix 3 – User roles](#).
12. Features conditional visibility of certain pages, including:
  - a. catalogue records, assessments and approvals page **must not** be visible for **Public** users
  - b. approvals page *must* only be visible to **Admin**, **Centre Governors** and **Centre Stewards**.
13. Ensures all user groups can search the **Data Catalogue** for **Resources**, including easily accessible:
  - a. **Resource** property filters, including the Centre's prioritisation other classification schemes (refer to [Appendix 6 – Reference Data Management](#)), title, description, type, theme, keyword, creator and publisher
  - b. **Distribution** property filters (e.g., format, byte size, language)
  - c. multi-location filters with map pop-out (e.g., filtering for singular or multiple states, Indigenous regions, local government areas...)
  - d. display for which filter types are active and ability to select/deselect filters.
14. Ensures **Admin**, **Centre Governor** and **Centre Steward** can perform a text search for **Persons**, **Organisations** / **Organisational Collaborations**, **Catalogue Records**, **Assessments** and **Approval Requests** based on title (or equivalent term).

---

<sup>6</sup> World Wide Web Consortium (2014), *The Organization Ontology*, <https://www.w3.org/TR/vocab-org/>

- 
15. Features **role-**, **status** – and **Membership**-based<sup>7</sup> (or equivalent) access control, where:
    - a. **Catalogue Records, Resources** and **Organisations** without the following **must not** be granted / visible for **Public** users:
      - i. *access rights* 'public' (or equivalent term)
      - ii. *status* 'approved' (or equivalent term)
      - iii. no '<exclusive group>' (or equivalent term) **Membership** requirements.
    - b. **Catalogue Records, Resources** and **Assessments** without the following **must not** be granted / visible for all tiers of **Member, Research Provider, Scholarship**:
      - i. *access rights* 'public' or '<user role>' (or equivalent term)
      - ii. *status* 'approved' (or equivalent term)
      - iii. **Membership** within the same **Organisation** or **Organisational Collaboration** as the entity's '<exclusive group>' (or equivalent term).
  16. Ensures that certain entities are created via request only, including that:
    - a. **Catalogue Records** and related **Resources** are only created via a **Catalogue Request**
    - b. **Assessments** *must* only be created via an **Assessment Request**
    - c. approvals *must* only be granted via an **Approval Request**.
  17. Features guided workflows for creating, updating and deleting of:
    - a. **Persons** (users)
    - b. invitations for new users
    - c. **Catalogue Records** and associated **Resource** metadata
    - d. **Organisations / Organisational Collaborations**
    - e. **Assessment Requests** and **Assessments** (related to **Closure Management**)
    - f. **Approval Requests** (related to **Closure Management**).
  18. Ensures that the creator of an **Assessment** is de-identified when read by other users.
  19. Features data validation on user input.
  20. Features the ability for **Research Providers** to upload Portable Document Format (PDF) Article resources, with a limit of 5MB in size (aligning with Google Scholar inclusion guidelines).
  21. Features a 'download search results' function (or equivalent term), facilitating the serialisation of search results into a json (JavaScript Object Notation) or xlsx (Excel) file for download.
  22. Features an 'upload catalogue records' function (or equivalent term), facilitating the ingestion of bulk catalogue records via an excel template by **Admins** and **Data Governors** only.
  23. Features a 'use form' (or equivalent term) which prompts **Research Consumers** to explain their expected use case for the **Research Data Asset** (e.g., when an access URL is clicked).
  24. Aligns with **the Centre's** Editorial and Branding Style Guides.
  25. Aligns with Web Content Accessibility Guidelines (WCAG) 2.2.
  26. Features **Data Classification** prompts when creating a **Catalogue Record**, enabling the creator to identify if any use, access or other restrictions apply (optional).
  27. Features pop-up prompt when access, use or other restrictions apply to a certain Resource (e.g., when an access URL is clicked).

---

<sup>7</sup> The addition of Membership-based access control is intended to limit the number of user roles within the DBMS – simplifying maintenance. Other options for access control based on organisational and project-based affiliation may be considered.

- 
28. Allows users with multiple user roles to toggle between roles / views (optional).
  29. Features enhanced **Resource** metadata generation or search capabilities (optional).

### Security and compliance requirements

The **Supplier** ensures that the **Data Catalogue** data security:

30. Features firewalls and other industry standard network security protocols (e.g., Transport Layer Security).
31. Features appropriate data management, which:
  - a. encrypts **Personal Information** at rest
  - b. encrypts **Sensitive Information** at rest.
32. Features confidentiality and privacy via access control for the decryption of **Personal Information** / **Sensitive Information** and unencrypted access of data.
33. Features the use of a reputable authentication service.
34. Features version control and audit trail capabilities.
35. Demonstrates a commitment to secure-by-design and secure-by-default principles.
36. Demonstrates a commitment to the Australian Privacy Principles.
37. Provides a security incident procedure.
38. Provides a business continuity plan.

### Development requirements

The **Supplier** ensures that **Data Catalogue** development:

39. Features fortnightly progress updates with the Centre's Data Manager (optional).
40. Features quarterly progress reports (outlining task progress and potential delays).
41. Prioritises the following features in an alpha release by June 2026:
  - a. guided workflow for the creation, updating and deleting of **Persons** (users), **Organisations** / **Organisational Collaborations** and invitations of new **Persons**
  - b. guided workflow for the creation, updating and deleting of **Catalogue Requests**, **Catalogue Records** (including their related **Resources**), and **Approval Requests**
  - c. **Resource** search / filter functions
  - d. **Person**, **Organisation** / **Organisation Collaboration** and **Approval Request** search functions
  - e. serialisation of search results into xlsx or json formats
  - f. ingestion of bulk catalogue records via an xlsx template
  - g. role-, status-, and **Membership**-based (or equivalent) access control.
42. Documents a physical data model for the **Centre Principal Database**, which:
  - a. includes Entity Relationship diagrams (or equivalent)
  - b. includes an automatically generated static site for the schema (e.g. using MkDocs)
  - c. includes database schema in a machine-readable format.
43. Documents the API to OpenAPI Specification 3.1.1 (or equivalent).
44. Features a two – or three-tiered architecture.

- 
45. Includes appropriate technical documentation, including Universal Modelling Language (UML) diagrams, communicating:
    - a. presentation logic
    - b. application logic
    - c. data model logic
    - d. architecture
    - e. DevOps / deployment guidelines.
  46. Features separate production environments, including at least a development, staging and production environment.
  47. Features appropriate product beta testing, including:
    - a. functional testing (including unit testing)
    - b. usability testing (in liaison with the Centre)
    - c. security testing (in liaison with the Centre's **IT Service Management Provider**)
    - d. load / performance testing.
  48. Features a handover process, including the handover of the uncompiled, unencrypted source code.

#### **Costing requirements**

The **Supplier** ensures that the **Data Catalogue**:

49. Provides **Centre Principal Database** cost-optimised cloud hosting plan considering a small size, simple query complexity and limited number of users (est. 30 monthly active users and 30 peak concurrent users) (e.g. Database Transaction Units-based purchasing model).
50. Provides **Data Catalogue** cost-optimised cloud hosting plan considering a small size, simple query complexity and limited number of users (estimated 500 monthly active authenticated users).
51. Provides a price plan for operational support for 3 years after the **Agreement term**.

#### **Warranty requirements**

The **Supplier** ensures that the **Data Catalogue** coverage:

52. offers a minimum of 12-months warranty period.

---

### Training and support requirements

The **Supplier** ensures that delivery of **Data Catalogue** training and support:

53. Includes the handover of documentation to the Centre's **Data Manager**.
54. Features at least two training sessions for Centre staff.
55. Features training materials, including:
  - a. training materials for **the Centre's** staff on core workflows
  - b. training materials for **Research Providers** on core workflows
  - c. training materials for the Centre's **Data Manager** on common administrative tasks (e.g. a 'quick guide for system admins').
56. Provides online, phone and email technical support within the warranty period.
57. Provides dedicated/assigned support representatives within the warranty period.
58. Provides software patches, releases or updates to ensure minimal disruption to the operation of the **Data Catalogue** (including **Centre Principal Database**) within the warranty period.

### Collaboration requirements

The **Supplier** ensures a collaborative approach, which:

59. works with the **Centre** and the **IT Service Management Provider** to develop and deploy the **Data Catalogue** and associated infrastructure.

---

### 3. Standards

The **Requirement** references several standards, which are documented below:

**Table 1: Referenced standards**

Abbreviation	Description
<b>DCAT</b>	The Data Catalogue Vocabulary (DCAT) is a widely recognised standard developed by the World Wide Web Consortium (W3C) to facilitate the discovery, sharing, and interoperability of datasets across diverse platforms.
<b>SCHEMA.ORG</b>	A structured vocabulary that standardises the representation of entities, relationships, and metadata on the web to improve search engine understanding and interoperability across websites.
<b>ISO19115-GA</b>	A customised implementation of the ISO 19115 standard tailored to meet the specific needs of Geoscience Australia (GA).
<b>ORG</b>	The Organization Ontology is a formal vocabulary developed by W3C to describe the structure, relationships, and roles within organisations.
<b>Style Guide</b>	The Centre’s editorial and branding guidelines governing the formatting, language, tone, and visual presentation of written and digital content to ensure clarity, consistency, and accessibility across all communications.
<b>WCAG 2.2</b>	An international standard developed by the W3C that provides guidelines for making web content more accessible to people with disability, including enhanced criteria for cognitive and mobile accessibility.

---

## 4. Deliverables

### Core deliverables

---

1. **Metadata Profile (ReDCAT-AU)**
2. **Data Catalogue**, including:
  - a. **Centre Principal Database**
  - b. **Centre Replica Database**
  - c. **Data Catalogue API**

### Additional deliverables

---

- fortnightly status updates (optional)
- quarterly progress reports
- documentation, including:
  - **Metadata Profile** documentation
  - **Centre Principal Database** documentation
  - **Data Catalogue** documentation
  - **Data Catalogue API** documentation.
- operating procedures, including:
  - security incident procedure
  - business continuity plan.
- costing plans, including:
  - **Centre Principal Database** hosting plan
  - **Data Catalogue** hosting plan
  - **Data Catalogue** operational support plan.
- training materials, including:
  - training materials for the **Data Manager**
  - training materials for **Research Providers**
  - training materials for **the Centre's** staff
  - two training sessions for **Centre** staff.
- warranty (and associated support).

## 5. Approach

**Suppliers** are expected to undertake **the Requirement** using a collaborative approach to assist in the transfer of knowledge and operation of the product to the Centre and to ensure the product meets the Centre's needs.

**Respondents** are encouraged to outline their approach to ensuring effective collaboration between **the Centre** and the **IT Service Management Provider**.

---

# Response

## 6. Responses to RFP

The **Respondent(s)** responding to this RFP are required to submit their draft project proposal (less than or equal to 10 pages) clearly addressing the **Statement of Requirements** set out in this document to [research@naturalhazards.com.au](mailto:research@naturalhazards.com.au)

Submissions should include a:

1. **Statement of capability**, including previous client referees and/or testimonials, demonstrating the ability of the company and proposed project team to undertake the work.
2. **Project team summary**, including role, expertise and indicative full-time equivalent workload<sup>8</sup>.
3. **Work plan**, including achievable timelines and key performance measures, which will be used to monitor progress towards achievement of the **Requirement**.
4. **Proposed budget**, including all expenses, for the achievement of the **Requirement**.
5. **Statement of acceptance** of the terms and conditions of the proposed **Agreement**. If such arrangements are not acceptable, details of any changes must be included within the submission as **Contractual Arrangements**.

---

<sup>8</sup> Total (cumulative) contribution over the life of the project – this means the total full-time-equivalent (FTE) per person over the life of the project. The maximum total FTE for each person is 1.0. Add up the FTE of all personnel for the cumulative contribution.

---

## 7. Evaluation

After the closing date, **the Centre** will review submitted RFPs against the **Evaluation Criteria** below. The **Evaluation Criteria** provides an indication of those matters that should be included in the RFP and supporting material – details are provided in the table below.

**The Centre** reserves the right not to offer the work, or only allocate a proportion of the available funding, if a proposal does not meet **the Centre's** needs. **The Centre** reserves the right to invite any other specific researchers as it sees fit to submit proposals before or after the closing date.

**Table 2: Evaluation criteria**

Criterion	Description	Weighting
<b>Capability</b>	The capacity and capability to deliver the <b>Requirements</b> in an Australian environment, evidenced by certifications, previous projects, previous client referees and/or previous client testimonials. The <b>Respondent</b> should have full-stack web development service offerings without, or with very limited, engagement of subcontractors.	25%
<b>Approach</b>	A demonstrated understanding of the <b>Requirements</b> , and a proposed project approach and methodology that is appropriate, feasible and robust. Acknowledgement of <b>the Centre's</b> data architecture plans and demonstrates rational around integration within <b>the Centre's</b> IT infrastructure, in collaboration with the <b>IT Service Management Provider</b> . The <b>Respondent</b> reasonably justifies use of technologies, products or approaches not considered within the RFP, including mitigation of associated risks.	50%
<b>Value for money</b>	The <b>Respondent's</b> response outlines an efficient, effective, economical and ethical use of <b>the Centre's</b> resources. This considers financial and non-financial costs and benefits of each application including, but not limited to: <ul style="list-style-type: none"> <li>→ the proposed budget for <b>the Requirement</b></li> <li>→ the quality of the application and activities represented by the assessment</li> <li>→ fitness for purpose of the application in contributing to <b>the Centre's</b> objectives and plans</li> <li>→ the <b>Respondent's</b> relevant experience and performance.</li> </ul>	25%

**Table 3: Scoring scale**

Criterion	Description	Score / 20
<b>Outstanding</b>	Highly convincing and credible. The submission demonstrates outstanding capability, capacity and experience relevant to, or understanding of, the criterion. Comprehensively documented and fully substantiated.	18-20
<b>Above required standard</b>	Convincing and credible. The submission demonstrates above average capability, capacity and experience relevant to, or understanding of, the criterion. Well documented and substantiated.	15-17
<b>Meets required standard</b>	Standard and credible. The submission demonstrates average capability, capacity and experience relevant to, or understanding of, the criterion. Adequately documented and substantiated.	10-14
<b>Below required standard</b>	Below average and lacking credibility. The submission demonstrates below average capability, capacity and experience relevant to, or understanding of, the criterion. Documentation exists but is missing detail and some claims are unsubstantiated.	6-9
<b>Well below required standard</b>	Well below average and unconvincing. The submission demonstrates significant flaws in capability, capacity and experience relevant to, or understanding of, the criterion. Documentation exists but is missing significant elements and is mostly unsubstantiated.	1-5
<b>Not observed</b>	The submission did not provide documentation, or the information provided was insufficient to make an evaluation.	0

---

## Agreement

A copy of the 'Natural Hazards Research Australia Services Agreement Data Catalogue', the proposed form of contract for the purposes of this project, [can be found here](#).

**This Agreement should be reviewed by applicants as part of the RFP submission.**

If the **Respondent** has **Contractual Arrangements** to any of the terms and conditions set out in the proposed form of **Agreement**, details and justification of the proposed changes must be included in the RFP submission. Decisions regarding **Contractual Arrangements** for will be at the sole discretion of the **Centre**.

**The Centre reserves its rights to make amendments to the Agreement.**

Selection as a shortlisted or preferred **Supplier** does not give rise to an **Agreement** (express or implied) between that **Supplier** and the Centre for the supply of goods or services. No legal relationship will exist between the Centre and the shortlisted or preferred **Supplier** until such time as a binding **Agreement** in writing is executed by both parties.

## Glossary

Table 4: Request for Proposal

Term	Definition
<b>A</b> access control	Mechanisms that restrict data access to authorised users only.
ACID	Refers to Atomic, Consistent, Isolated and Durable data consistency model typically used in relational databases.
Agreement	A binding document or contract between one or more legal parties outlining terms, conditions, and obligations enforceable by law within a specific context.
Agent	Refers to the friend-of-a-friend (FOAF) class – Agent: <i>“The Agent class is the class of agents; things that do stuff. A well known sub-class is Person, representing people. Other kinds of agents include Organisation and Group”</i> <sup>9</sup>
Approval Request	Refers to the Centre’s entity – Approval Request: A formal submission seeking authorisation for a specific action, decision, or access (related to data), requiring review and validation by a designated approval body.
Assessment	Refers to the Centre’s entity – Assessment: A singular Agent’s evaluation of another entity – typically a Submission or Resource.
Assessment Request	Refers to the Centre’s entity – Assessment Request: A formal invitation to assess a particular entity – typically a Catalogue Record in Closure Management.
<b>C</b> Catalogue Record	A record in a catalog, describing the registration of a single DCAT: Resource.
Catalogue Request	A formal proposal submitted to create/update a Catalogue Record.
CARE	Refers to <a href="#">Collective benefit, Authority to control, Responsibility and Ethics (CARE) framework</a> principles published by the Global Indigenous Data Alliance (GIDA).
Centre	Refers to National Hazards Research Australia.
Centre Principal Database	The primary database management system for Company Data Assets, Research Metadata and a limited subset of Research Data Assets.
Centre Replica Database	Replica of the Centre Principal Database supporting the functioning of the Data Catalogue with unauthenticated read requests.
Contractual Arrangements	Refers to a formal request submitted by the Respondent to modify specific terms or conditions of the proposed Agreement, such as the term or Requirements, subject to review, negotiation, and mutual agreement by the Centre.
Closing Date	Refers to the date at which the Centre no longer accepts submissions, as defined in Section 1: Key dates and times.

9 Dan Brickley and Libby Miller (2014), FOAF Vocabulary Specification 0.99: Classes, [FOAF Vocabulary Specification](#).

---

<b>C</b>	<b>Closing time</b>	Refers to the time at which the Centre no longer accepts submission on the Closing Date, as defined in Section 1: Key dates and times.
	<b>Closure Management</b>	Intends to capture the summative quality assurance (QA) and publication processes of data assets and metadata surrounding Centre's procured works, including work-specific distribution / dissemination material.
	<b>Company Data Assets</b>	Company Data Assets include business-critical data assets related to the organisation's operation. They are concerned with upstream perspectives, such as Funding Bodies, focussing on strategic positioning and risk management (e.g., due diligence). Data assets should aim to answer questions such as: <ul style="list-style-type: none"> <li>→ What are the overall goals for research procurement?</li> <li>→ What is the procurement strategy and how successful is it?</li> <li>→ Why was a research work funded?</li> <li>→ What was the research used for and how successful was it?</li> </ul>
	<b>compliance</b>	Adherence to laws, regulations, standards, and policies related to data management.
	<b>confidentiality</b>	Ensuring that sensitive data is accessible only to those authorised to view it.
	<b>consistency</b>	Uniformity of data values across systems and applications, particularly databases.
	<b>Contractual Arrangements</b>	Refers to a formal proposal submitted by one party to modify specific terms or conditions of the existing contract, such as its duration, scope, or obligations, subject to review, negotiation, and mutual agreement by all involved parties.
<b>D</b>	<b>data accuracy</b>	The degree to which data correctly represents the real-world object or event it describes.
	<b>data asset</b>	An information-based resource that can be owned and that has or generates value to an organisation.
	<b>Data Catalogue</b>	The Data Catalogue is a product intended to demonstrate the Centre's commitment to FAIR and CARE principles through facilitating access to Research Data Assets and a limited subset of Company Data Assets.
	<b>Data Catalogue API</b>	The application programming interface (API) which facilitates communication between the Data Catalogue and the Centre Principal Database.
	<b>Data Classification</b>	The process of categorising data based on sensitivity, value, and usage (e.g., public, confidential, restricted).
	<b>Data Consumer</b>	The Data Consumer role is the end-user of a data asset and/or associated metadata.
	<b>Data Custodian</b>	Data Custodians are the technical guardian of data, responsible for implementing and maintaining the infrastructure and controls necessary to secure, store, and process data assets. This role is typically filled by IT or technical personnel.
	<b>Data Governance Committee</b>	A group of stakeholders responsible for overseeing the implementation of data governance policies.
	<b>Data Governance Roles</b>	Responsibilities and accountability structures within an organisation that ensure data is managed effectively.

---

---

<b>D</b>	<b>Data Governor</b>	The Data Governor (also known as a Data Owner) role is an individual or group accountable for the overall management and strategic use of data assets and metadata within the organisation and broader ecosystem. This role is typically assigned to senior stakeholders or organisation leadership structures who have authority over the data's purpose and outcomes.
	<b>data integrity</b>	The maintenance of accuracy and reliability of data over its lifecycle.
	<b>data lifecycle</b>	The stages of data management, including creation, storage, usage, archival, and deletion.
	<b>data lineage</b>	The history of data from its origin through transformations to its current state.
	<b>Data Manager</b>	Refers to the Centre's Digital and Data Manager role.
	<b>Data Provider</b>	Data Providers are responsible for generating, collecting, or supplying data to an organisation, ensuring its accuracy, completeness, and compliance with data governance policies, regulatory requirements, and agreed data-sharing agreements.
	<b>Data Steward</b>	Data Stewards are responsible for managing and assuring of quality, security, and usability of data assets within an organisation. The data steward bridges the gap between the Data Custodian and Data Governor.
	<b>data security</b>	Measures taken to protect data from unauthorized access, alteration, or destruction.
	<b>data validation</b>	The process of ensuring data meets defined quality and accuracy standards.
	<b>de-identified</b>	Personal information is de-identified if it is no longer about an identified individual or an individual who is reasonably identifiable. De-identification involves two steps. The first is the removal of direct identifiers. The second is taking one or both of the following additional steps: the removal or alteration of other information that could potentially be used to re-identify an individual; and/or the use of controls and safeguards in the data access environment to prevent re-identification <sup>10</sup> .
	<b>Distribution</b>	Refers to DCAT class – Distribution: <i>"A specific representation of a dataset. A dataset might be available in multiple serialisations that may differ in various ways, including natural language, media-type or format, schematic organisation, temporal and spatial resolution, level of detail or profiles (which might specify any or all of the above)."</i>
<b>E</b>	<b>encryption</b>	The process of converting data into a coded format to protect it from unauthorised access.
	<b>ethical data use</b>	The practice of using data in a way that aligns with ethical standards and organisational values.
	<b>Evaluation Criteria</b>	The criteria by which the submissions of the Respondent to the Centre will be evaluated by the assessment panel.
	<b>extensible</b>	The quality of being designed to allow the addition of new capabilities or functionality.

---

<sup>10</sup> Office of the Australian Information Commissioner (OAIC) (2018), *De-identification and the Privacy Act*, [De-identification and the Privacy Act | OAIC](#).

<b>F</b>	<b>FAIR</b>	Refers to the <a href="#">Findable, Accessible, Interoperable and Reusable (FAIR) framework principles</a> for enabling data access and reuse.
	<b>interoperability</b>	The purposeful design or ability of different systems and organisations to exchange and use data seamlessly.
	<b>integration</b>	Refers to the process of connecting different systems, applications, or components to work together seamlessly by enabling data exchange, functionality sharing, and interoperability through APIs, middleware, or other communication mechanisms.
<b>I</b>	<b>IT Service Management Provider</b>	An entity responsible for the provisioning, maintenance, monitoring, and support of the Centre’s IT needs, including hardware, software, networks, cloud services, and related systems, to ensure operational efficiency, security, and compliance with agreed service levels.
<b>M</b>	<b>Master Data</b>	Master Data declares the data assets or entities essential to the organisation’s operations and serves as a single source of truth for core organisational information.
	<b>Member</b>	Refers to the Centre’s participating Members, with four tiers based on type and quality of contribution to the Centre.
	<b>Membership</b>	Refers to The Organization Ontology (ORG) class – Membership: “represents an n-ary relationship between an Agent, an Organization and a Role. It is possible to directly indicate membership, independent of the specific Role, through use of the org:memberOf property.” <sup>6</sup>
	<b>metadata</b>	Data that provides crucial context about other data, such as its source, format, or usage. Metadata is commonly used to link access rights and provenance information to data assets.
	<b>Metadata Custodian</b>	Metadata Custodians are the technical guardian of data, responsible for implementing and maintaining the infrastructure and controls necessary to secure, store, and process data asset metadata. This role is typically filled by IT or technical personnel.
	<b>Metadata Profile</b>	A customised specification that builds upon a predefined metadata standard by refining, restricting, or extending its elements to meet the specific needs of a particular domain or application.
	<b>Metadata Steward</b>	Metadata stewards are responsible for managing the quality and compliance of metadata, along with integration within the established metadata management system and broader data architecture ambitions.
<b>O</b>	<b>Opening date</b>	Refers to the date at which the Centre accepts submissions, as defined in Section 1: Key dates and times.
	<b>Opening time</b>	Refers to the time at which the Centre accepts submission on the Opening Date, as defined in Section 1: Key dates and times.
	<b>Organisation</b>	Refers to The Organization Ontology (ORG) class – Organisation: <i>“Represents a collection of people organized together into a community or other social, commercial or political structure. The group has some common purpose or reason for existence which goes beyond the set of people belonging to it and can act as an Agent. Organizations are often decomposable into hierarchical structures.”</i> <sup>6</sup>
	<b>Organisational Collaboration</b>	Refers to The Organization Ontology (ORG) class – Organisation: <i>“A collaboration between two or more Organizations such as a project. It meets the criteria for being an Organization in that it has an identity and defining purpose independent of its particular members but is neither a formally recognized legal entity nor a sub-unit within some larger organization. Might typically have a shorter lifetime than the Organizations within it, but not necessarily.”</i> <sup>6</sup>

---

<b>P</b>	<b>Person</b>	Refers to the friend-of-a-friend (FOAF) class – Person: <i>“The Person class represents people... The Person class is a sub-class of the Agent class, since all people are considered ‘agents’ in FOAF”</i> <sup>8</sup>
	<b>Personal information</b>	<p>Personal information includes a broad range of information, or an opinion, that could identify an individual. What is personal information will vary, depending on whether a person can be identified or is reasonably identifiable in the circumstances.</p> <p>For example, personal information may include:</p> <ul style="list-style-type: none"> <li>an individual’s name, signature, address, phone number or date of birth</li> <li>sensitive information</li> <li>credit information</li> <li>employee record information</li> <li>photographs</li> <li>internet protocol (IP) addresses</li> <li>voice print and facial recognition biometrics (because they collect characteristics that make an individual’s voice or face unique)</li> <li>location information from a mobile device (because it can reveal user activity patterns and habits).<sup>11</sup></li> </ul>
	<b>privacy</b>	The right of individuals to control the collection, usage, and sharing of their personal data.
<b>Q</b>	<b>quality</b>	The extent to which data meets the requirements for its intended use, measured by attributes like accuracy, completeness, and timeliness.

---

<sup>11</sup> Office of the Australian Information Commissioner (OAIC) (2018), [What is personal information? | OAIC](#).

---

<b>R</b>	<b>ReDCAT-AU</b>	Research Data Catalogue – Australia. An extension of World Wide Web Consortium’s (W3C) Data Catalogue Vocabulary (DCAT) specifically intended for the cataloguing of Australian Research Data Assets.
	<b>Research Consumer</b>	A Research Consumer is a stakeholder who utilises the outputs, findings, or resources generated through research activities to achieve specific goals, solve problems, or make informed decisions.
	<b>Research Data Assets</b>	Research Data Assets are the valuable, data-related outputs of the Centre’s procured research. They are concerned with downstream perspectives of a Research Consumer, focussing on the deliverables of the procurement process and access. Data assets in this category should aim to answer questions such as: <ul style="list-style-type: none"> <li>→ What research was procured?</li> <li>→ What did the research produce?</li> <li>→ How can the deliverables be used and accessed?</li> </ul>
	<b>Research Metadata</b>	The associated metadata of Research Data Assets.
	<b>Research Procurer</b>	As a Research Procurer, the Centre is typically responsible for sourcing and acquiring research services from Research Providers.
	<b>Research Provider</b>	A Research Provider is an individual, organisation, or entity that provides directly, or through subcontracting, the services required to fulfil a proposed body of research.
	<b>Resource</b>	Refers to DCAT class – Resource: “Resource published or curated by a single agent.”
	<b>Requirement</b>	Refers to the description of the services described in Section 2. The Requirement.
	<b>RFP</b>	Refers to the invitation of Respondents to participate in the procurement via a Request for Proposal (RFP).
	<b>role-based access control</b>	Refers to Role-Based Access Control (RBAC), a method of restricting access to data based on user roles.

---

<b>S</b>	<b>security</b>	Measures taken to protect data from unauthorized access, alteration, or destruction.
	<b>semi-structured data</b>	Semi-structured data does not adhere strictly to a formalised schema, but still contains elements of organisation that make it easier to parse (e.g. XML, JSON, CSV and PDF).
	<b>Sensitive information</b>	Information or an opinion about an individual's: racial or ethnic origin; political opinions; membership of a political association; religious beliefs or affiliations; philosophical beliefs; membership of a professional or trade association; membership of a trade union; sexual orientation or practices; or criminal record, that is also personal information or: health information about an individual; genetic information about an individual that is not otherwise health information; biometric information that is to be used for the purpose of automated biometric verification or biometric identification; or biometric templates. <sup>12</sup>
	<b>Stakeholder Roles</b>	Refer to the specific responsibilities, interests, and influence that individuals or groups have in a project, organisation, or ecosystem.
	<b>structured data</b>	Data organised in a predefined format, often following a data model or schema.
	<b>Supplier</b>	A party specified in an Agreement as a Supplier or provider of goods or services.
<b>T</b>	<b>Respondent</b>	An individual, organisation, or entity that submits a formal bid in response to the RFP, proposing to supply goods, services, or undertake specified work in accordance with the tender requirements and evaluation criteria.
<b>U</b>	<b>unstructured data</b>	Data that does not have a predefined format, such as text documents, images, or videos.
	<b>users</b>	Are individuals or entities that interact with a system, application, or dataset, accessing and utilising its functions, services, or information based on assigned roles and permissions.
	<b>user roles</b>	Define the specific permissions, responsibilities, and access levels assigned to individuals or groups within a system, ensuring appropriate data access, security, and functionality based on their organisational or operational needs.
<b>V</b>	<b>version control</b>	The practice of tracking changes to data to maintain a clear history of updates.

<sup>12</sup> Office of the Australian Information Commissioner (OAIC) (2018), *What is sensitive information?* [| OAIC](#).

---

## Appendix 1 – Stakeholder roles

The Centre aims to act as a trusted and independent voice for natural hazards research, with the primary function of procuring the highest quality research using an end-user driven approach. The Centre's operations exist within the context of the natural hazards research and emergency management ecosystems, with various stakeholder roles existing within that context. The following stakeholder roles are identified:

### **Members**

Members contribute to the Centre through cash and / or in-kind contributions and, in exchange, are offered various levels of privileges based on the type and quality of contributions.

### **Funding body**

In the context of research, a funding body typically allocates funds to organisations, researchers, or collaborative groups to advance knowledge, innovation, or societal goals. Funding bodies may be government agencies, private foundations, corporate entities, or non-governmental organisations (NGOs).

### **Research Procurer**

As a Research Procurer, the Centre is typically responsible for sourcing and acquiring research services from Research Providers. The Centre's role involves ensuring that procurement aligns with research objectives and priorities outlined in the terms of reference.

### **Research Provider**

A Research Provider is an individual, organisation, or entity that provides directly, or through subcontracting, the services required to fulfil a proposed body of research.

### **Research Consumer**

A Research Consumer is a stakeholder who utilises the outputs, findings, or resources generated through research activities to achieve specific goals, solve problems, or make informed decisions.

### **Scholarship Recipient**

An individual that receives financial or in-kind support from the Centre to conduct research, projects, or initiatives aligned with the Centre's objectives.

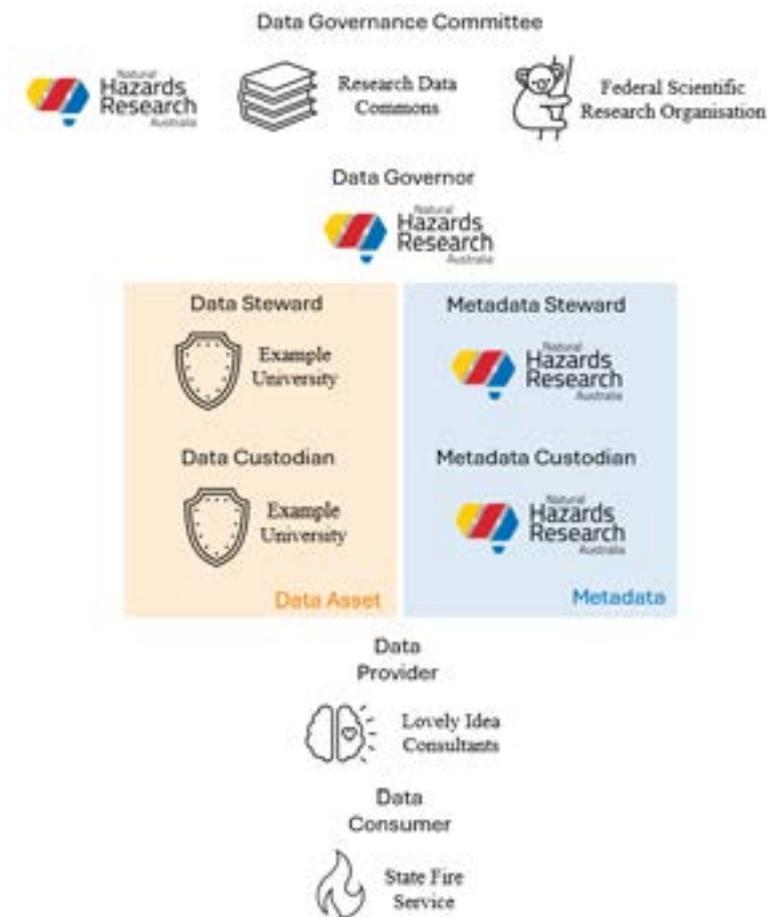
## Appendix 2 – Data governance roles

The following defines the Centre’s centralised data governance model, where the Data Governance Committee is the authoritative entity responsible for executive decision-making within the Centre. Data Governors are accountable for compliance and granting access, while Data Stewards are responsible for enforcing compliance and quality assurance. Data Custodians implement and maintain data systems. Data Providers and Data Consumers are generally responsible for complying with use and ethics policies and standards.

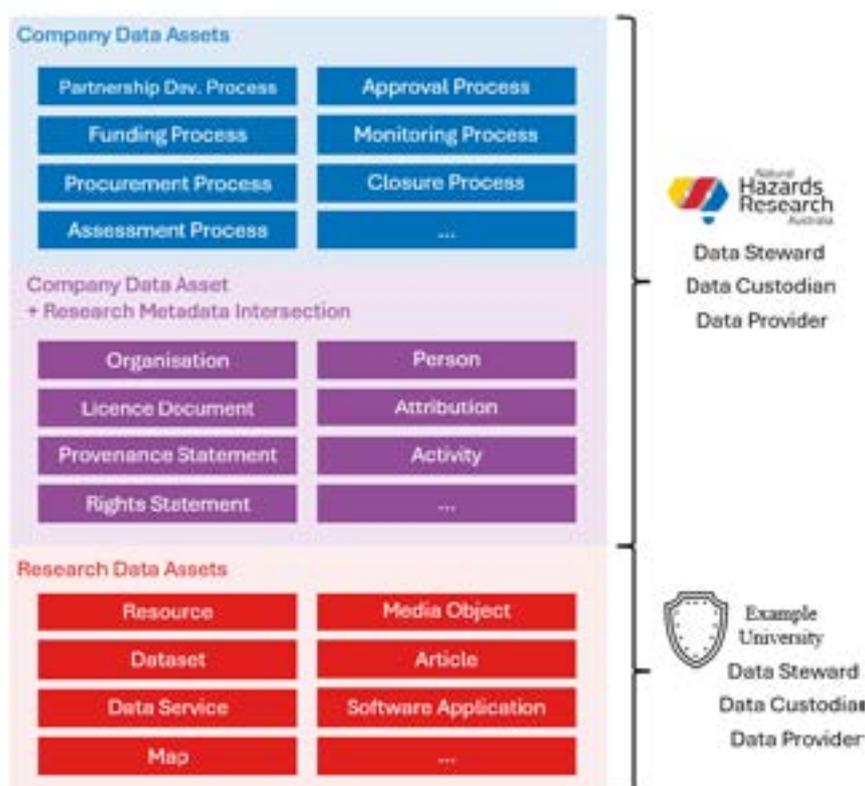
**Table 5: Data governance roles and responsibilities**

Role	Responsibilities	Example
<b>Data Governance Committee</b>	Data-related Policy Development Strategic Alignment Risk Management Stakeholder Engagement Issue Resolution Oversight and Revision Training and Awareness	The Data Governance Committee development a new “AI Generated Data” policy.
<b>Data Governor</b>	Accountable for governance Accountable for compliance Sets Terms and Conditions of Use Grants Access and Permissions	Entity X is responsible for deciding who should have access to data owned by the Centre.
<b>Data Steward</b>	Enforces governance Enforces compliance Enforces Terms and Conditions of Use Enforces Access and Permissions Assures <b>data asset</b> quality assurance (QA)	Entity Y is responsible for managing quality assurance and ethics compliance of research data assets.
<b>Data Custodian</b>	Data Asset Infrastructure Management incl. Security and Authentication Operational Support Database Administration Interoperability	Entity Z is responsible for hosting the datasets and authenticating data access requests.
<b>Metadata Steward</b>	Enforces governance Enforces compliance Enforces Terms and Conditions of Use Enforces Access and Permissions Assures <b>metadata</b> quality (QA)	The Centre is responsible for managing research metadata standards and ensuring findability.
<b>Metadata Custodian</b>	Metadata Infrastructure Management incl. Security and Authentication Operational Support Database Administration Interoperability	The Centre is responsible for hosting, authentication and access permissions to research project metadata.
<b>Data Provider</b>	Influences Terms and Conditions of Use Follows Compliance Appropriate Use of Data Infrastructure	Entity A created the report which is stored appropriately on the Centre’s SharePoint.
<b>Data Consumer</b>	Follows Terms and Conditions of Use	Entity B is compliant with the terms and conditions of use for survey data.

**Data Governance Roles** are distributed across the various stakeholders on a contract-by-contract basis for various **Stakeholder Roles** (refer to [Appendix 1 – Stakeholder roles](#)). Within the context of Research Services Agreements, the typical arrangements for core research (procured using a user-driven approach) sees the Centre to adopting a **Data Governor**, **Metadata Steward** and **Metadata Custodian** role. Conversely, commissioned research (procured for a specific stakeholder), typically sees the Centre adopting only a **Metadata Steward** and **Metadata Custodian** role. Note, these roles are only typical, with different stakeholders having the ability to adopt different roles and responsibilities depending on the context (e.g. project-by-project).



The Centre's data assets are separated into two main categories, **Company Data Assets** and **Research Data Assets**, with their respective **Data Consumers**, **Research Procurers / Funding Bodies** and **Research Consumers**. The Centre's **Company Data Assets** concern all entities from an upstream perspective – focussing on strategic positioning, organisational monitoring and risk management. On the other hand, the Centre's **Research Data Assets** concern all data assets from a downstream perspective – focussing on research deliverables as well as access and use. The two categories share *some* overlapping entities, which function both as **Company Data Assets** and **Research Data Asset** metadata (also referred to as **Research Metadata**); where the Centre *typically* assumes the role of a **Data Provider**, **Data Custodian** and **Data Steward** (Figure 2: Company Data Asset and Research Metadata Intersection).



## Appendix 3 – User roles

**Table 6: Data Catalogue user roles**

#	User role	Invitation required	Primary data governance role(s)	Description
0	Admin	-	Metadata Custodian Data Custodian	Authenticated Centre data managers
1	Centre Governors	Yes	Data Governor	Authenticated Centre leadership
2	Centre Stewards	Yes	Metadata Steward Data Steward <sup>1</sup> Data Provider <sup>1</sup>	Authenticated Centre personnel
3	Member Tier 1	Yes	Data Consumer	Authenticated users in an organisation that wishes to be involved in all activities of the Centre
4	Member Tier 2	Yes	Data Consumer	Authenticated users in an organisation that contributes significantly on a project-by-project basis
5	Member Tier 3	Yes	Data Consumer	Authenticated users in an organisation that provide pro bono support on a project-by-project basis
6	Member Tier 4	Yes	Data Consumer	Authenticated users in an organisation that contributes to the Centre without any expected outcomes
7	Research Provider	Yes	Data Provider	Authenticated users who provide research services
8	Scholarship	Yes	Data Provider	Authenticated scholarship / internship funding beneficiaries
9	Public	No	Data Consumer	Unauthenticated users

<sup>1</sup> Primarily for *Company Data Assets*, not *Research Data Assets*.

**Table 7: User request permissions**

#	User role	Catalogue request	Assessment request	Approval request	Submission request
0	Admin	CRUD	CRUD	CRUD	CRUD
1	Centre Governors	Read all CRUD <sup>1</sup>	Read all CRUD <sup>1</sup>	Read all CRUD <sup>1</sup>	Read all CRUD <sup>1</sup>
2	Centre Stewards	Read all CRUD <sup>1</sup>	Read all CRUD <sup>1</sup>	CRUD <sup>1</sup>	Read all CRUD <sup>1</sup>
9	Public	No access	No access	No access	No access
-	Other users (excluding the Public)	Read <sup>2</sup>	Read <sup>2</sup>	No access	Read <sup>2</sup>

<sup>1</sup> Where the user is the creator of the Request.

<sup>2</sup> Where the user is the recipient of the Request.

**Table 8: User Invitation Permissions**

#	User Role	Centre Governor Invitations	Centre Steward Invitations	Members Tier 1-4 Invitations	Research Provider Invitations	Scholarship Invitations
0	Admin	Yes	Yes	Yes	Yes	Yes
1	Centre Governors	No	Yes	Yes	Yes	Yes
2	CentreStewards	No	No	No	Yes	Yes

**Table 9: User Access Permissions for Entities**

User Role	Catalogue Record	Resource	Assessment	Submission	Org.	Org. Collab.	Approval
Admin	CRUD	CRUD	CRUD	CRUD	CRUD	CRUD	CRUD
CentreGovernor	CRUD	CRUD	Read all CRUD <sup>1</sup>	Read all	CRUD	CRUD	Read all CRUD <sup>1</sup>
CentreSteward	CRUD	CRUD	Read <sup>2</sup> CRUD <sup>1</sup>	Read all	CRUD	CRUD	CRUD
Member Tier 1	Read <sup>2</sup>	Read <sup>2</sup>	CRUD <sup>1</sup>	Read <sup>3</sup> CRUD <sup>1</sup>	Read <sup>2</sup>	Read <sup>2</sup>	Read <sup>2</sup>
Member Tier 2	Read <sup>2</sup>	Read <sup>2</sup>	CRUD <sup>1</sup>	Read <sup>3</sup> CRUD <sup>1</sup>	Read <sup>2</sup>	Read <sup>2</sup>	Read <sup>2</sup>
Member Tier 3	Read <sup>2</sup>	Read <sup>2</sup>	CRUD <sup>1</sup>	Read <sup>3</sup> CRUD <sup>1</sup>	Read <sup>2</sup>	Read <sup>2</sup>	Read <sup>2</sup>
Member Tier 4	Read <sup>2</sup>	Read <sup>2</sup>	CRUD <sup>1</sup>	Read <sup>3</sup> CRUD <sup>1</sup>	Read <sup>2</sup>	Read <sup>2</sup>	Read <sup>2</sup>
Research Provider	CRU <sup>2</sup>	CRU <sup>2</sup>	CRUD <sup>1</sup>	Read <sup>3</sup> CRUD <sup>1</sup>	Read <sup>2</sup>	Read <sup>2</sup>	Read <sup>2</sup>
Scholar-ship	Read <sup>2</sup>	Read <sup>2</sup>	CRUD <sup>1</sup>	Read <sup>3</sup> CRUD <sup>1</sup>	Read <sup>2</sup>	Read <sup>2</sup>	Read <sup>2</sup>
Public	Read <sup>4</sup>	Read <sup>4</sup>	No access	No access	Read <sup>4</sup>	No access	No access

<sup>1</sup> Where the user is the creator.

<sup>2</sup> Where access rights are '<user role>' or 'public' and status is 'approved' (or equivalent terms).

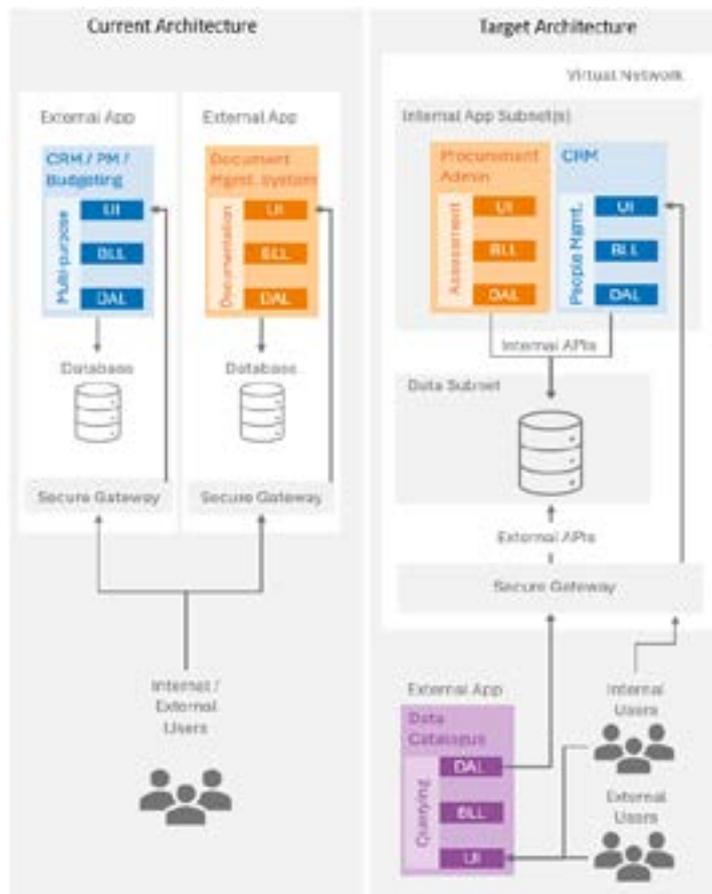
<sup>3</sup> Where the user shares **Membership** within the same **Organisation** or **Organisational Collaboration** as the entity's qualified attribution 'exclusive group' (or equivalent term).

<sup>4</sup> Where access rights are 'public' and status is 'approved' (or equivalent terms).

## Appendix 4 – Data architecture

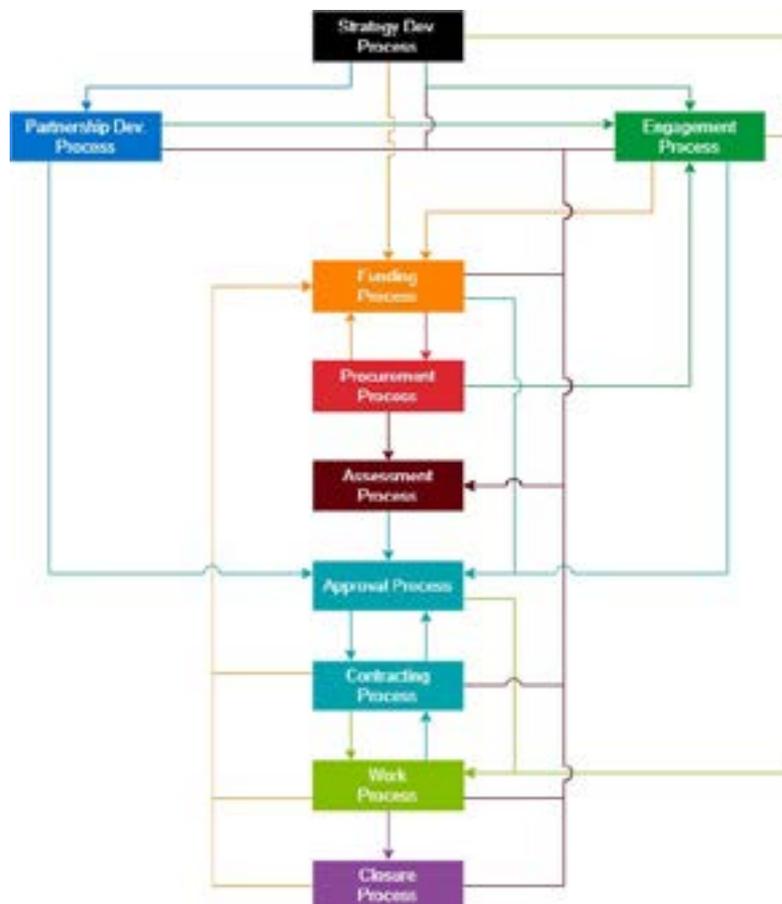
Being a small organisation with a limited funding term, **the Centre** prioritises solutions which are pragmatic and involve low operational and maintenance expenses. The Centre’s current data architecture strives towards the **consolidation of all Centre structured data storage** (where possible) within a serverless or cloud environment, with modular applications enabling users to interface with create, read, update and delete (CRUD) functionality. While this architecture potentially spans multiple applications, it is intended to reflect the **modular monolithic structure** typical of application software development.

All dynamic data within the Centre’s virtual network is intended to be stored on a single leader node, forwarding changes to read-only follower nodes asynchronously where required. External facing applications should send authenticated create, read, update and delete requests to the leader node via a secure gateway and external API, with unauthenticated read requests sent to the follower node. This approach aims to allow separate scaling and limit the exposure of unauthenticated users to the leader node.

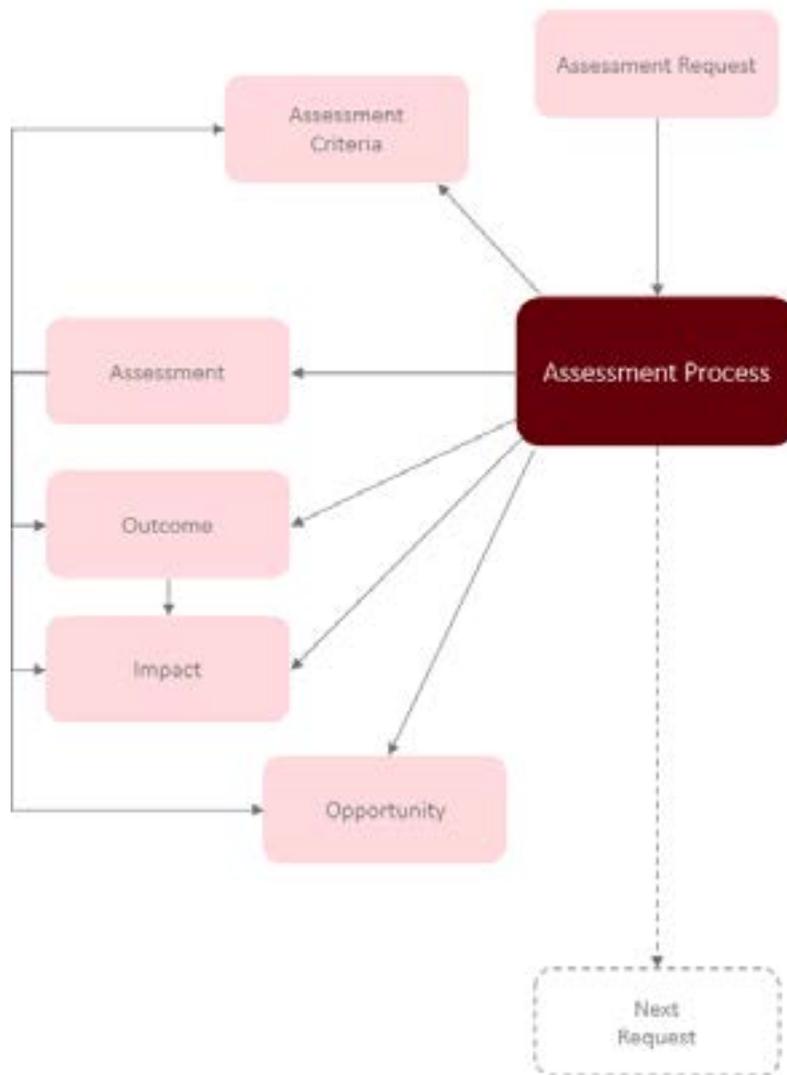


## 8. Organisation data flow

The Centre's data flow primarily begins with a Strategic Development Process, whereby strategic priorities are identified and influence Funding Processes, Partnership Development Processes, Engagement Processes and Work Management Processes. The Funding Process can initiate Procurement Process (and subsequent Assessment Process) or Approval Process directly, where Works can be contracted via a Contractual Process or developed in-house by the Centre (bypassing the Contracting Process). All processes can feature a link to an Assessment Process via an Assessment Request, outlining an Assessment Criteria against which to assess another entity. Finally, Research Metadata surrounding Research Data Assets, such as Distribution details, are stored within a Data Catalogue for potential public access via a Closure Process (Figure 4: Organisation Data Flow Diagram).



Each process is intended to be initiated by a request, enabling efficient tracking and collating of request metadata (e.g., number of requests, processing time) as well as ensuring that a structured request template is used when initiating new processes (enabling data quality assurance). Process entities are intended to act primarily as grouping mechanisms, allowing all other entities within that subject area, and related to that process instance, to be easily queried. Process and request entities further serve a data lineage mechanism, allowing all processes to be related via a request – facilitating a process chain, ideally terminating in a Closure Process (Figure 5: Request and Process Functional Example).



## Appendix 5 – Master Data management

**Master Data** declares the data assets or entities essential to the organisation’s operations and serves as a single source of truth for core organisational information. Proper management of master data ensures accuracy, eliminates duplication (e.g., multiple overlapping entities), and facilitates efficient collaboration and reporting across organisational processes. The current level of data maturity precludes detailed entity declarations; however, the following section provides a rough outline of *core* data assets, or entities, which are expected within **the Centre’s Master Data**.

The role of **Data Steward** and **Metadata Steward** emphasises defining terms and standardising vocabulary as a foundational step toward enhancing data consistency. When defining **Master Data**, referencing pre-existing ontologies can help considerably reduce the resources required for schema development. Further, using pre-established vocabularies and ontologies can assist in interoperability and search engine optimisation, allowing datasets to be more easily ingested by third parties. Therefore, the Master Data declared in this section is comprised of two main types of entities:

- **Referenced Entities** reference a pre-existing ontology, vocabulary or data model.
- **Centre Entities** are Centre-specific entities which do not reference a pre-existing vocabulary.

The main ontologies referenced are the following:

**Table 10: Referenced vocabularies, ontologies and schemas**

Abbreviation	Description
DCAT	The Data Catalogue Vocabulary (DCAT) is a widely recognised standard developed by the World Wide Web Consortium (W3C) to facilitate the discovery, sharing, and interoperability of datasets across diverse platforms.
ISO19115-GA	A customised implementation of the ISO 19115 standard tailored to meet the specific needs of Geoscience Australia (GA).
ORG	The Organization Ontology is a formal vocabulary developed by W3C to describe the structure, relationships, and roles within organisations.
PROV-O	The Provenance Ontology (PROV-O) is a W3C standard designed to represent and exchange information about the origins, history, and transformations of data, enabling users to trace its lineage and establish trust.
P-PLAN	The P-Plan Ontology (P-PLAN) is a semantic framework designed to represent the structure, execution, and provenance of workflows and plans, enabling the detailed tracking of activities, inputs, and outputs.
SCHEMA.ORG	A structured vocabulary that standardizes the representation of entities, relationships, and metadata on the web to improve search engine understanding and interoperability across websites.
SKOS	The Simple Knowledge Organization System (SKOS) is a W3C standard ontology designed to represent and share knowledge organisation systems such as classification schemes and controlled vocabularies.

## 9. Company Master Data

The following section aims to clarify the data assets or entities essential for oversight, along with the standards and processes used to maintain the quality of **Company Data Assets**. The **Company Master Data** is broken down into different subject areas, with each subject area assigned a **Data Steward** who is charged with data quality assurance. For example, if the **Agent** entity is located within the Contact Relationship Management (CRM) subject area, it is the responsibility of the CRM **Data Steward** to ensure data quality (e.g., ensuring **Agent** email address is correct).

**Table 11: Company Master Data subject areas**

Subject area	Code	Subject area description
<b>Contact Relationship Management (CRM)</b>	1	Intends to capture data relating to organisations, personnel and accounts, along with strategic opportunities for partnership development. Typically referred to as 'Client' relationship management (CRM), the word 'Contact' was chosen as a more representative title for a not-for-profit organisation such as the Centre.
<b>Legal and Governance Management</b>	2	Intends to capture all data relating to organisational governance and Contractual Agreements, letters of endorsement and approval issued by the Board and Chief Executive Officer (CEO), along with other legal resources such as licences and terms and conditions of use.
<b>Funds Management</b>	3	Intends to collate basic financial data of funds, work-specific budgets and expenditure.
<b>Submission Request Management</b>	4	Intends to capture data surrounding services / sponsorship procurement processes (excluding risk, ethical and other assessments). This includes all submission rounds, from research concept to contract.
<b>Assessment Management</b>	5	Intends to capture data involved in the risk, ethical and other assessments related to other processes.
<b>Communications Management</b>	6	Intends to capture data involved in public facing communications, including campaigns and events but excluding work-specific distribution / dissemination material. While public relations and event management are core Centre activities, they were separated from the 'Service Management' subject area due to differing requirements and relationships between communications and research / sponsorship procurement works.
<b>Work Management</b>	7	Intends to capture tasks and scheduling aspects for monitoring the primary organisation activities (e.g., research services / scholarship monitoring) until their completion.
<b>Closure Management</b>	8	Intends to capture the summative quality assurance (QA) processes and public-facing metadata surrounding Centre's procured works, including work-specific distribution / dissemination material.
<b>Strategic Management</b>	9	Intends to capture Organisation Intelligence (OI) – also known as Business Intelligence (BI) – providing key metrics surrounding process and service effectiveness / successfulness.

For the purposes of the Centre’s **Data Catalogue**, the following subject areas and entities related to **Company Master Data** have been chosen as most relevant for developer reference. The subject areas are as follows:

- Closure Management Master Data
- Legal and Governance Management Master Data
- Assessment Management Master Data
- Contact Relationship Management Master Data.

**Table 12: Closure Management Master Data**

**Referenced Entities**

Entity name	Description
Catalogue	DCAT: "A curated collection of metadata about resources."
Catalogue Record	DCAT: "A record in a catalogue, describing the registration of a single DCAT: Resource."

**Centre Entities**

Entity name	Description
Closure Request	Subclass of Request. Formal proposal submitted to create/update a Closure Process.
Closure Process	Subclass of Process. Grouping entity for other Closure Management entities involved in closure (such as Catalogue Record, Catalogue Request and Closure Request), facilitating simple and clear data lineage between Processes.
Catalogue Request	Subclass of Request. A formal proposal submitted to create/update a Catalogue Record.

**Table 13: Legal and Governance Management Master Data**

**Referenced Entities**

Entity name	Description
Provenance Statement	PROV: "A statement of any changes in ownership and custody of a resource since its creation that are significant for its authenticity, integrity, and interpretation."
Rights Statement	PROV: "A statement about the intellectual property rights (IPR) held in or over a resource, a legal document giving official permission to do something with a resource, or a statement about access rights." DCAT

**Table 13: Legal and Governance Management Master Data**

**Centre Entities**

Entity name	Description
Approval Request	A formal submission seeking authorisation for a specific action, decision, or access (related to data), requiring review and validation by a designated approval body.
Approval Process	Conceptual grouping entity for other Legal and Governance Management entities involved in approval (such as an Approval Request and Legal Letter), facilitating simple and clear data lineage between processes.
Legal Letter	A formal written communication used to convey decisions (such as endorsement or approval), requests, or notices with potential legal implications.

**Table 14: Assessment Management Master Data**

**Centre entities**

Entity name	Description
Assessment Request	Subclass of Request. A formal invitation to assess a particular entity – typically a Catalogue Record in Closure Management.
Assessment Process	Subclass of Process. Grouping entity for other Assessment Management entities (such as Assessment and Assessment Criteria), facilitating simple and clear data lineage between processes.
Assessment Criteria	A defined set of criterion used to guide an Assessment Process and striving for objectivity.
Assessment	A singular Agent's evaluation of another entity – typically a Resource.
Outcome	A concise summary of an Assessment Process. Outcomes may be linked to Impacts.
Impact	The measurable or observable influence of Outcomes on society, policy, economy, environment, or other fields, demonstrating value within multiple contexts.
Opportunity	An identified and tracked prospect which adds to the strategic goals of the organisation. Opportunities may be linked to Agents. Opportunities are classified into types: <ul style="list-style-type: none"> <li>→ Utilisation: identification of a potential use case</li> <li>→ Partnership: identification of a potential Partnership Development Process</li> <li>→ Optimisation: potential to improve the budget of a certain</li> <li>→ Innovation: identification of a potential innovation opportunity.</li> <li>→ Promotional: identification of a promotional opportunity.</li> </ul>
Risk	An identified and tracked risk which may negatively influence the strategic goals of the organisation.

**Table 15: Contact Relationship Management Master Data**

**Referenced entities**

Entity name	Description
Agent	PROV: <i>"An agent is something that bears some form of responsibility for an activity taking place, for the existence of an entity, or for another agent's activity."</i> Superclass of Organisation, Organisational Collaboration, Organisational Unit and Person.
Person	ORG: Represents a person or individual. Subclass of Agent.
Organisation	ORG: <i>"Represents a collection of people organized together into a community or other social, commercial or political structure. The group has some common purpose or reason for existence which goes beyond the set of people belonging to it and can act as an Agent. Organisations are often decomposable into hierarchical structures."</i>
Organisational Collaboration	ORG: <i>"A collaboration between two or more Organizations such as a project. It meets the criteria for being an Organization in that it has an identity and defining purpose independent of its particular members but is neither a formally recognized legal entity nor a sub-unit within some larger organization. Might typically have a shorter lifetime than the Organizations within it, but not necessarily."</i>
Organisational Unit	ORG: <i>"An Organization such as a department or support unit which is part of some larger Organization and only has full recognition within the context of that Organization. In particular the unit would not be regarded as a legal entity in its own right."</i>
Membership	ORG: <i>"Indicates the nature of an Agent's membership to an organisation."</i>
Role	ORG: <i>"Denotes a role that a Person or other Agent can take in an organisation. Instances of this class describe the abstract role; to denote a specific instance of a person playing that role in a specific organisation use an instance of Membership"</i> .
Post	ORG: <i>"A Post represents some position within an organization that exists independently of the person or persons filling it."</i>
Site	ORG: <i>"An office or other premise at which the organisation is located."</i>

## 10. Research Master Data

The following describes the most common **research data assets** owned by the Centre.

**Table 16: Research Master Data**

Referenced entities	
Entity name	Description
Resource	DCAT: <i>"Resource published or curated by a single agent. This class carries properties common to all catalogued resources, including datasets and data services... the super-class of DCAT: Dataset, DCAT: Data Service, DCAT: Catalogue and any other member of a DCAT: Catalogue... DCAT: Resource is an extension point that enables the definition of any kind of catalogue. Additional sub-classes may be defined in a DCAT profile or other DCAT application for catalogues of other kinds of resources."</i>
Dataset	DCAT: <i>"A collection of data, published or curated by a single agent, and available for access or download in one or more representations."</i>
Data Series	DCAT: <i>"A collection of datasets that are published separately, but share some characteristics that group them."</i>
Dataset Service	DCAT: <i>"A collection of operations that provides access to one or more datasets or data processing functions."</i>
Article	DCAT / SCHEMA.ORG: A text-based resource, such as a report, scholarly article, social media posting, or news article. Subclass of DCAT:Resource. This entity was created to allow integration of important metadata requirements of SCEHMA.ORG within DCAT for visibility objectives. Where scope overlap occurs, DCAT: Resource is to take priority.
Event	DCAT / SCHEMA.ORG: An event such as a webinar, forum, community or business event. Subclass of DCAT:Resource. This entity was created to allow integration of important metadata requirements of SCEHMA.ORG within DCAT for visibility objectives. Where scope overlap occurs, DCAT: Resource is to take priority.
Media Object	DCAT / SCHEMA.ORG: A media object such as an image, video or audio file. Subclass of DCAT:Resource. This entity was created to allow integration of important metadata requirements of SCEHMA.ORG within DCAT for visibility objectives. Where scope overlap occurs, DCAT: Resource is to take priority.
Software Application	DCAT / SCHEMA.ORG: Subclass of DCAT:Resource. This entity was created to allow integration of important metadata requirements of SCEHMA.ORG within DCAT for visibility objectives. Where scope overlap occurs, DCAT: Resource is to take priority.
Map	DCAT / ISO19115-GA: Subclass of DCAT:Resource. This entity was created to allow integration of specific Geological Information Systems (GIS) important metadata requirements of ISO19115-GA within DCAT. Where scope overlap occurs, DCAT: Resource is to take priority.
Centre entities	
Entity name	Description
Dissemination Document	A document intended to enable end-users to interact with a catalogued Resource.

## Appendix 6 – Reference data management

Reference data includes standardised, static data used to classify or categorise information across research projects and procurement processes. Examples in a research procurement context might include funding categories, research themes, reference or identification systems, or predefined project statuses. Reference data helps maintain uniformity across systems, allowing for seamless integration, consistent reporting, and easier comparison of research projects and procurement activities.

### 11. Referenced code lists and standards

The following table declared the referenced code lists and standards for both Company and Research Data Assets and associated metadata.

**Table 17: Referenced code lists and standards**

Category	Domain	Standard code	Description
GIS	Countries	ISO 3166-1	International Organization for Standardization (ISO) Country Codes – Part 1: Codes for Countries
GIS	States	ISO 3166-2	International Organization for Standardization (ISO) Country Codes – Part 2: Codes for Subdivisions
GIS	AUS Postcodes	Australia Post	Australia Post – Postal codes
GIS	NZ Postcodes	New Zealand Post	New Zealand (NZ) Post – Postal codes
GIS	AUS Statistical Areas	ASGS Ed. 3	Australian Statistical Geography Standard (ASGS) Edition 3 – Australian Bureau of Statistics Structures: Main Structure and Greater Capital City Statistical Areas
GIS	AUS Indigenous Areas	ASGS Ed. 3	Australian Statistical Geography Standard (ASGS) Edition 3 – Australian Bureau of Statistics Structures: Indigenous Structure
GIS	Postal Areas	ASGS Ed. 3	Australian Statistical Geography Standard (ASGS) Edition 3 – Non ABS Structures: Postal Areas
GIS	Suburbs and Localities	ASGS Ed. 3	Australian Statistical Geography Standard (ASGS) Edition 3 – Non ABS Structures: Suburbs and Localities
GIS	Local Government Areas	ASGS Ed. 3	Australian Statistical Geography Standard (ASGS) Edition 3 – Non ABS Structures: Local Government Areas
GIS	State Electoral Divisions	ASGS Ed. 3	Australian Statistical Geography Standard (ASGS) Edition 3 – Non ABS Structures: State Electoral Divisions

Category	Domain	Standard code	Description
GIS	Commonwealth Electoral Division	ASGS Ed. 3	Australian Statistical Geography Standard (ASGS) Edition 3 – Non ABS Structures: Commonwealth Electoral Divisions
Finance	Currency	ISO 4217	International Organization for Standardization (ISO) – Currency Codes
Dates and Time	Temporal	ISO 8601	International Organization for Standardization (ISO) – Date and Time Format
Language	Language	ISO 639-1	International Organization for Standardization (ISO) – Currency Codes
Classification	Research	ANZSRC	Australian and New Zealand Standard Research Classification Scheme
Classification	Role Types	ISO 19115-1	International Organization for Standardization (ISO) – Geographic information: Metadata: Role Codes
Classification	GIS Topics	AS/NZS ISO 19115-1	Geoscience Australia Community Metadata Profile of ISO 19115-1 – Geographic Information: Metadata: Topic Category
Identifiers	Australian Businesses	ABN	Australian Business Register (ABR) – Australian Business Number (ABN)
Identifiers	Digital Objects	ISO 26324	International Organization for Standardization (ISO) – Digital Object Identifier System
Identifiers	Universally Unique	RFC 9562: UUIDv4	Internet Engineering Task Force (IETF) – Universally Unique Identifiers (UUIDs): UUIDv4

## 12. Centre-specific code lists and standards

The following is Centre-specific reference data and information regarding code lists and other classification systems used to manage works.

**Table 18: Centre work status category code list**

Value	Alpha value	Description
0	noProgress	No progress stages
1	inProgress	Work in progress (WIP) stages
2	inReview	Review stages
3	concluded	Closure stages
4	cancelled	Cancelled

**Table 19: Centre work status code list\***

Value	Alpha value	Description
00	none	None – the work has not yet been started
01	deferred	Deferred – the work is on hold
11	preparing	Preparing – the work deliverables are being drafted
12	prepared	Prepared – the work deliverables have been drafted
13	revising	Revising – the work deliverables are being revised
14	revised	Revised – the work deliverables have been revised
21	assuring	Assuring – the work deliverables are being assured
22	assured	Assured – the work deliverables have been assured
31	evaluating	Evaluating – the work process is being evaluated
32	evaluated	Evaluated – the work process has been evaluated
33	concluding	Concluding – the work closure has been sent for approval
34	concluded	Concluded – the work closure has been approved
41	cancelled	Cancelled – the work has been cancelled

\* Encoded using first digit for 'work status category'.

**Table 20: Centre risk status code list**

Value	Alpha value	Description
1	G	On track (green)
2	A	Some risk to the deliverable (amber)
3	R	Major threat to the deliverable (red)
4	none	No activity
5	C	Completed

**Table 21: Centre research funding categories code list**

Value	Alpha value	Description
1	centreFunded	Centre funded research
2	coFunded	Co-funded research
3	extFunded	Externally funded research

**Table 22: Centre research service categories code list**

Value	Alpha value	Description
0	noCategory	Uncategorised research – research service featuring no categorisation
1	coreConcept	Core concept – a concept or idea for a Core Project focussing on Centre priorities
2	coreProject	Core project – research service procured via end-user driven concept procurement process focussing on Centre priorities
3	postEvent	Post-event – research for the purpose of analysis a specific natural hazard event
4	scholarshipPhD	Phd Research – research project supported by the Centre
5	scholarshipFellow	Fellowship research – research project supported by the Centre
6	scholarshipIntern	Intern research – research project supported by the Centre
7	commissioned	Commissioned research – research service commissioned via a top-down procurement process

**Table 23: Centre research theme categories code list**

Value	Alpha value	Description
00	noThemeCategory	Unknown theme category
10	foundational	Foundational themes
11	functional	Functional themes
12	drivingChange	Driving change themes
13	biennialFirst	First biennial update (2021-2023)
14	biennialSecond	Second biennial update (2023-2025)
15	biennialThird	Third biennial update (2025-2027)
16	biennialFourth	Fourth biennial update (2027-2029)
17	biennialFifth	Fifth biennial update (2029-2031)

**Table 24: Centre research theme code list\***

Value	Alpha value	Description
0000	noTheme	Unknown theme
1001	futureCom	Communities and workforces of the future
1002	sustainableEnv	Sustainable, safe and healthy natural landscapes
1003	resilientBuilt	Resilient built environment
1101	resilientCom	Resilient communities
1102	situationAware	Situational awareness
1103	opResponse	Operational response and innovation
1201	policyStrategy	Evidence-informed policy, strategy and foresight
1202	disasterLearning	Learning from disasters
1401	mitigatingRisk	Understanding and mitigating risk
1402	landusePlan	Land-use planning and urban design
1403	resilientRecov	Resilient recovery
1404	envSolutions	Environmental solutions

Value	Alpha value	Description
1405	nextGen	Next generation capability
1406	equitySocial	Social equity

\* Encoded using first two digits for 'theme category'.

**Table 25: Centre capabilities code list**

Value	Alpha value	Description
00	noCapability	Unknown capability
01	firstNations	First Nations knowledges
02	scienceData	Data management and science
03	futureWork	Future workforces
04	resilientCom	Community-led, place-based resilience
05	interop	Interoperability

**Table 26: Centre's natural hazards code list**

Value	Alpha value	Description
1	cyclone	Cyclone
2	coldsnap	Coldsnap
3	earthquake	Earthquake
4	bushfire	Bushfire
5	flood	Flood
6	heatwave	Heatwave
7	landslide	Landslide
8	multiHazard	Multi-hazard
9	seaLevelRise	Sea-level rise
10	storm	Storm
11	tsunami	Tsunami