

# Data and information guidelines

National Environmental Science Program



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Department of Agriculture, Water and the Environment

GPO Box 858 Canberra ACT 2601

Telephone 1800 900 090

Web [awe.gov.au](http://awe.gov.au)

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### Document control

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# Acknowledgement of Country

We acknowledge the Traditional Owners of Country throughout Australia and their continuing connection to land, sea and community.

We pay our respects to them and their cultures and to their elders past, present and emerging.

Our Indigenous research partnerships are a valued and respected component of National Environmental Science Program (NESP) research.

# Introduction

The National Environmental Science Program (NESP) is a long-term commitment by the Australian Government to environment and climate research. The program is committed to promoting open access to public sector and publicly funded information, including optimising the use and reuse of data. Hence, open access to government-funded information is the default position with exception only for sensitivity reasons. The program works collaboratively with the private and research sectors to extend the value of public data for the benefit of the Australian public.

These guidelines are consistent with the *Australian Government Digital Continuity 2020 Policy* that encapsulates effective open access to information retained in an accessible digital form for as long as it is required. Open data is, at its best, freely available based on the FAIR principles of being findable, accessible, interoperable and reusable under licences that allow reuse. When working with Indigenous data these guidelines require the complementary use of the Global Indigenous Data Alliance's *CARE principles for Indigenous data governance* of collective benefit, authority to control, responsibility and ethics.

Through providing products that meet these guidelines, the hubs can provide up-to-date, high-quality data and information to decision-makers, environmental managers, other scientists and the public. This will increase the capacity of the program to support a collaborative, informed approach to managing Australia's environment. It also allows the program to meet national and international open-access principles and practice, underpinned by legislative instruments including:

- *Australian Information Commissioner Act 2010*
- *Freedom of Information Amendment (Reform) Act 2010*
- *Public Governance, Performance and Accountability Act 2013*.

## Purpose

NESP provides evidence for the design, delivery and on-ground outcomes for environmental programs. It helps decision-makers, including from Indigenous communities, build resilience, as well as support positive environmental, social and economic outcomes.

The success of the program hinges on the ability of decision-makers to articulate their needs to researchers, the quality and usefulness of the outcome-focused research outputs, and how effectively the outputs are communicated to their intended end-users. These guidelines are provided to NESP hubs to outline publication requirements of research outputs and to help inform hub data-management strategies.

## Scope

These guidelines apply to all research outputs generated from NESP-funded research. A broad range of research outputs are expected to be generated and may include the following:

- raw datasets including spatial data
- analysis and data products such as geographic information system-derived maps
- publications, including scientific papers, reviews, books and book chapters
- grey literature, including factsheets, project profiles, manuals and technical reports
- images, maps, photos, videos and animations
- models and other tools, such as decision-support tools and software
- websites, mobile or tablet apps
- unspecified emerging technology.

# Principles

Data and information management planning is essential to achieve successful delivery of open-access research. All information should be findable, accessible, interoperable and reusable. These principles were developed originally for application to data. We acknowledge they are useful more generally when applied to a broad variety research outputs to support discovery, data and knowledge integration, promote sharing and reuse.

**Findable** outputs and data are described using rich metadata, appropriate citation or a globally unique persistent identifier. It is discoverable through data registers, discovery portals or indexed in searchable resources.

**Accessible** outputs and data are not only available, but are in a place where they can be accessed and easily retrieved for as long as it is required. This means the actual research outputs and data, not just the metadata, are published under an open licence.

**Interoperable** means that research outputs and data can be exchanged and used by different organisations or users on different systems. Best practice is for outputs to have clear methodologies for creating research outputs, and metadata to use agreed formats, language and vocabularies. The minimum requirement for NESP data to be interoperable is to publish them using a non-proprietary format with rich metadata.

**Reusable** information should not be diminished from its original state. To make sure information it is reusable, the licence, provenance and methodology need to be clear, and comply with data and metadata standards.

To achieve the principles outlined in these guidelines, the NESP funding agreement requires a data management strategy at the commencement of the hub. The strategy should consider the following:

- a description of information products likely to be generated and how these will be made openly accessible, as well as any sensitivities
- a commitment to the publication of research outputs and data to make them available to the public, and a schedule with dates by which this will occur
- the expected repository or other location where outputs will be findable and data are uniquely identified
- resources and infrastructure required, including product-legacy planning for access to NESP outputs
- description of the metadata standards used
- description of the data used including quality and provenance, generation and collection methods, data manipulation procedures (including software), storage and maintenance
- details of a contact person responsible for ensuring the strategy is published on the internet, implemented and kept up to date (the department should be advised as soon as practicable of changes to this contact).

# FAIR research outputs

All NESP outputs should follow the FAIR principles and be available at no charge, using best-practice approaches specific to the research output type. It is recognised that there may be instances where research outputs cannot be made available publicly. These are covered below in the [Exceptions and requirements regarding the open-access policy](#) section of this document.

Providing timely, open-access to the data products and research outputs developed under NESP will provide up-to-date, high-quality data and information to decision-makers, environmental managers, other scientists and the community.

Ongoing access to NESP research outputs will be a continuing legacy of the program, so hub outputs should be available in perpetuity wherever possible. Researchers should ensure that provisions are in place to publish their material in a refereed journal or on appropriate publicly available institutional repositories and websites that will be maintained beyond the Agreement Period.

## Licence for research outputs

NESP hub funding agreements require research outputs to be made freely and publicly available under the appropriate Creative Commons licence. Hubs should be guided by their funding agreement.

## Publication of peer-reviewed research outputs

Open access to peer-reviewed publications will provide an enduring legacy of quality-assured data and information that will assist both decision makers and the wider research community.

Publication of only an abstract, or a requirement for interested parties to send an email to obtain access to an otherwise closed publication, are not considered to represent best-practice open access.

In the case of scientific publications, hubs should make reasonably practicable efforts to either publish via Creative Commons, or make scientific publications publicly accessible within 12 months of publication. Further information is provided under [Scientific publications](#) in the Exceptions section below.

## Publication of other research outputs

The guidelines described for datasets and peer-reviewed publications such as journal articles, also apply to a range of other valuable resources produced by NESP projects, such as technical or scientific reports, factsheets, grey literature, images, photographs and videos, models and software, websites and mobile applications.

Organisations are increasingly able to produce and make available research in a range of formats using digital technologies and online platforms for dissemination. This provides for a level of flexibility, relevance and timeliness often lacking in formal publications such as journal articles and books.

However, many of the benefits of these research outputs are lost because of a lack of bibliographic and production standards, systematic collection and preservation strategies and links to the specific underlying data.

Grey literature may require additional metadata, and further definition to describe its production, formats and source. Images, photographs and videos should be considered to be part of the research data where they have contributed in a significant manner to the development of a dataset.

Research outputs (peer-reviewed or not) that will be sold, including published books, must be made available through key, relevant libraries, at a minimum those libraries participating in the Commonwealth Library Deposit and Free Issue Scheme. This scheme ensures that Commonwealth Government-funded

publications are deposited in selected libraries and are freely available to library users. More information on the [Commonwealth Library Deposit Free Issue Scheme](#) is available from the Digital Transformation Agency.

## Publication of data

NESP datasets are intended to be a legacy that future projects can build on. It is therefore important that datasets undergo a quality-control process to meet minimum standard for dataset publication. Hub protocols for management should be outlined in hub data strategies.

Hub researchers must take all reasonable steps to deposit quality research data in an appropriate subject and/or institutional repository within 12 months of generation or collection of the full dataset. This will allow end-users to access data in a timely way that is aligned with the FAIR data principles.

There may be situations where a publication is produced prior to the generation or collection of a full dataset. The portion of the dataset related to the publication must be deposited in an appropriate subject and/or institutional repository within 12 months of generation or collection. Metadata and the output should be stored together in an open format, in a way that clearly shows how they are linked.

Except in cases of sensitive data or information, a requirement that interested parties send an email to obtain access to an otherwise closed data product is not considered to represent open access and is therefore not an acceptable practice (see [Exceptions and requirements regarding the open access policy](#) section).

All Australian universities have repositories with potential for providing access to research outputs. Researchers with institutional affiliations can typically contact their university library for more information and assistance on how and what to deposit.

National and international infrastructure also exists in specific disciplinary domains including:

- Atlas of Living Australia (ALA)
- Australian Ocean Data Network (AODN)
- Australian Urban Research Infrastructure Network (AURIN)
- data.gov.au
- Integrated Marine Observation System (IMOS)
- Earth System Grid Federation
- NCI Data Collections
- Terrestrial Ecosystem Research Network (TERN)
- other national and state-based infrastructure.

Publishing significant datasets as a data paper within a data journal is encouraged. This benefits peer-review of the dataset and provides an opportunity for researchers to have their dataset contribute to their citation index. A non-exhaustive list of data journals is provided by the University of Edinburgh (see [Related materials](#) section).

## Third-party material

Hubs must determine if a critical research material is open or non-open access. In the case of incorporating non-open, third-party materials or data, this can potentially significantly diminish the reuse value of the generated products. When working with third-party data, the hub must use its reasonable endeavours to make publicly available third-party material that is incorporated in the research outputs.



Where negotiation is not practical or the data cannot be made available, the hub should notify the department to discuss a suitable outcome. The metadata should document any missing third-party components.

## Metadata

Hub researchers will take all reasonable steps to add high-quality metadata to all outputs resulting from NESP funding. This provides the contextual information needed to enable the end-user to use the data appropriately and consistently. High-quality metadata can facilitate findability of data, allow for more successful data integration and increase data value.

Metadata standards can vary according to discipline. Hubs should select the appropriate and best-practice metadata standard for the research field and include schema information on how it was applied.

For spatial metadata, researchers are required to conform to the Australian New Zealand Land Information Council (ANZLIC) standard metadata profile. The international standard [ISO 19115-1](#) underpins the ANZLIC spatial metadata standard (see [Related materials](#) section).

The Open Geospatial Consortium (OGC) provides the most widely accepted formats and protocols for spatial data delivery. Although the OGC offers comprehensive protocols and standards, this does not preclude the use of proprietary formats in particular research areas. For example, shapefile is an acceptable proprietary format published by the Environmental Systems Research Institute (ESRI). It has become a widely used format with readily accessible translators to enable data in this format to be translated to most geographic information systems.

These *NESP data and information guidelines* encourage the contribution of metadata to the ARDC data discovery portal, Research Data Australia (see [Related materials](#) section). It is an online portal for finding research data and associated projects, researchers and data services. The metadata for the associated data should contain a link to related publications and to NESP. Best-practice guidelines for linking to publications and grants from data (or the data's metadata) are available from ARDC.

At a minimum, requirements for effective metadata are that it:

- describes the nature and purpose of the data along with contextual background information
- describes the methods used in the dataset creation and all data attributes, and highlights the quality or limitations of the dataset
- is available online, linked to the data (also online) and accessible by web search engines or discovery facilities
- provides links to key reports and papers that provide additional context and data details
- identifies the attributes, methods and procedures used for determining the attributes of all values within the dataset/stream
- defines or links to online definitions of all terms used in the data
- provides contacts and access locations for the data
- provides provenance for any data that is used in generating the research output.

## Persistent identifiers

A persistent identifier should be assigned to all NESP data, and, where possible, research outputs. This allows research users to be able to access products and trust that the link will keep working over a defined time period. Persistent identifiers are globally unique numeric and/or character strings that reference a digital object and are intended to function for the long term.

The identifier for products may vary, for example it could be an International Standard Book Number (ISBN), Internal Identification Number (ISSN), an internal identification number, a handle or a Digital Object Identifier (DOI).

A DOI is a type of persistent identifier that indicates a research output will be well managed and accessible for long-term use. Assigning a DOI to finalised data and other research outputs facilitates citation and is considered best practice. It is now routine practice for publishers to assign DOIs to journal articles and for authors to include them in article citations. For more information, see the [Related materials](#) section.

## Hub websites

The department's program web page is best practice and provides up-to-date, accurate information on the activities of the program. It is designed to be easy to follow, engaging and accessible. Hubs should strive to embed the same principles into their websites.

Hubs have autonomy over their own websites (for example, [www.<nesphub>.edu.au](http://www.<nesphub>.edu.au)) and are free to control the material they publish, in accordance with NESP guidelines and strategies. The hub websites' skins must be branded in a manner consistent with the *NESP brand standards*.

To aid in promoting the program and collaboration across NESP hubs, the department's web page will link to individual hub websites.

Hubs will keep their websites updated with information on key personnel, and publications and outputs produced by the hub. Hub websites should be designed to deliver services that are simple, clear and fast, while meeting user needs. At a minimum, effective hub website should include:

- NESP information page and acknowledgment
- content should be branded in a manner consistent with the *NESP brand standards*
- hub governance and operating structure
- findable research products enabled through search functionality within the website only
- project pages incorporating key information, such as project number, title, lead, summary, status, links to outputs and who to contact for more information
- publications page to allow browsing or searching of the research outputs authored by hub scientists and administration
- data page to provide information about where to find hub data (this may be links to repositories and how to find hub outputs, or direct links to the data from the webpage)
- image catalogue with image credit information (images should have alternative text (alt text) that provides information about the purpose or content of the image to be communicated if read by a screen reader)
- embedded videos with captions enabled and accompanied by a transcript.

The preferred format is HTML for accessibility and search engine optimisation. However, providing all 3 main formats (Word, HTML and PDF) is optimal. PDF format alone is not desirable and should only be selected if it is the only suitable format available for publication.

Since March 2020, the Australian Web Archive (accessible via [TROVE](#)) acts as a repository of Australia's freely available websites. Librarians can capture and store webpages on a yearly or more frequent basis, preserving them for delivery to the public now and in years to come. The department encourages hubs to sign up to the TROVE archiving service.

## **Accessibility**

Australian Government departments are obliged to meet the requirements of the *Disability Discrimination Act 1992* to ensure that online information and services are accessible by people with disabilities. The Web Content Accessibility Guidelines (WCAG) is an internationally recognised standard created by the World Wide Web Consortium.

Please consider the WCAG guidelines for best-practice publications and website development, including providing an accessibility statement on your webpage.

# Indigenous cultural and intellectual property

Respect and mutual benefit are critical to achieving a successful partnership. Relationships are built over time, with ongoing communication. It is essential to understand Indigenous aspirations and goals through taking the time to co-design research. Knowledge held by Indigenous peoples should be valued and protected throughout the partnership.

The program, hubs and individual researchers should ensure all legal obligations are understood before collecting information (including free and prior informed consent) and be guided by the objectives of the [Global Indigenous Data Alliance](#) (GIDA).

NESP acknowledges the rights of Indigenous peoples to their Indigenous cultural and intellectual property (ICIP). Any intellectual property rights will be incorporated into ICIP, in accordance with Article 31 of the *United Nations declaration on the rights of Indigenous peoples*. These obligations are mandated in the NESP funding agreements with each hub. All project and program management staff should be cultural-capability trained, for example through True Tracks®.

NESP adheres to the objectives of the GIDA with respect to Indigenous data, especially in relation to access of data by non-Indigenous users. Although the *NESP data and information guidelines* follow the FAIR data principles, when working with Indigenous data these guidelines require the complementary use of GIDA's *CARE principles for Indigenous data governance*, which consider both people and purpose as part of open data and information.

The CARE principles include:

- **Collective benefit** – Data ecosystems shall be designed and function in ways that enable Indigenous peoples to derive benefit from the data.
- **Authority to control** – Indigenous rights and interests in Indigenous data must be recognised and their authority to control such data be empowered. Indigenous data governance enables Indigenous peoples and governing bodies to determine how Indigenous peoples, as well as Indigenous lands, territories, resources, knowledges and geographical indicators, are represented and identified within data.
- **Responsibility** – Those working with Indigenous data have a responsibility to share how those data are used to support Indigenous self-determination and collective benefit. Accountability requires meaningful and openly available evidence of these efforts and the benefits accruing to Indigenous peoples.
- **Ethics** – Indigenous rights and wellbeing should be the primary concern at all stages of the data lifecycle and across the data ecosystem.

Please refer to the *NESP Indigenous partnerships principles* for more information.

## Exceptions to the guidelines

The department recognises that open access to information may not be suitable in cases where that information is culturally, environmentally, commercially or socially sensitive, or could contravene privacy laws. Decisions to restrict access to sensitive research outputs should be justified.

In cases where restricted access applies, the data custodian (as appropriate, for example, the researcher) should keep an enduring copy of the unaltered data and work with the hub data wrangler to make freely available metadata that describes the data and why it has not been released. Sensitive data may include, but is not limited to:

- location information for highly desirable or collectable species
- location information for rare species
- culturally significant site data
- social data restricted by privacy law or considerations
- other heritage or sensitive Indigenous matters.

The hub data wrangler with the hub leader, has responsibility to collate instances of exceptions to these guidelines. Collated lists are generally kept at a project level and include basic information on the data collected and the justification for their non-release. Proposed exceptions to the open-access policy must be reported to the hub steering committee and to the department by the hub leader, as an attachment to annual progress reports and in research plans.

Custodians of the data that constitute the exception should be open to discussions with the department regarding that data, the potential utility and relevance of the data to the department's business, and how relevant portions of that data could be provided to assist decision-making (for example, by de-identifying sensitive data so that a redacted dataset can be provided to department end-users).

## Intellectual property for PhD students

It is expected that all outputs produced by PhD students, such as theses, data or journal articles, will adhere to the open-access intent of these guidelines and be findable and accessible free of charge within 12 months of publication. A review after 12 months may need to be conducted to see if the embargo needs to be extended.

It is recognised that intellectual property typically resides with PhD students and that this ownership is included in the contracts held between PhD students and their institutions. These guidelines do not seek to contravene these contracts.

Hubs should retain a register of likely dates by which student data will be made publicly accessible (for example, following submission of their thesis and publication of related papers). Earlier publication of data by PhD students is encouraged where possible and metadata should be made freely available in line with these guidelines. If a NESP project concludes prior to the completion of the PhD, the department encourages students to provide a copy of the dataset to the hub data wrangler to manage under embargo. Datasets that are under embargo should have their metadata made publicly available, and this should be negotiated with the PhD student.

## Scientific publications

NESP hub funding agreements allow for hubs to grant a licence or an assignment of intellectual property to the publisher of a peer-reviewed journal, book or similar publication.

It is the responsibility of hubs to understand the copyright and licensing arrangements being entered into when signing agreements with publication houses. Hubs must use their reasonably practicable efforts to publish via Creative Commons, or make scientific publications publicly accessible within 12 months of publication.

Most journal copyright arrangements distinguish between 3 versions of a published, peer-reviewed article: pre-print (the 'submitted' version), post-print (as accepted for publication after peer-review) and re-print (publisher's final PDF format of the publications).

Publication of only an abstract or citation, or a requirement for interested parties to send an email to obtain access to an otherwise closed publication, is not considered to represent best-practice open access.

The department's preference is for the re-print to be placed on a website at the time of publication. However, in cases where this is not possible, it is acceptable for hubs to provide copies of the post-prints on their websites within 12 months of publication or to provide explanations for the exceptions through hub annual reports.

The department's preference is for research funding to be used for research, rather than publication fees.

## Communication related to research outputs

The *NESP communications and knowledge brokering strategy* outlines that the department and the hubs will adopt a collaborative approach to communicating about the NESP and the hub. A 'no-surprises' approach is central to this collaboration.

This allows the department and other Australian Government agencies the opportunity to prepare, where necessary and appropriate, a response to the research prior to its release. It also allows the Science Partnerships team to manage all incoming outputs and have a timely copy on hand.

The intent of these guidelines is to ensure that appropriate members of the department and its relevant Commonwealth agencies are provided with a timely opportunity to consider scientific papers, technical reports and other research outputs prior to public release. It is not the intention of the Australian Government to impinge upon the academic freedom of NESP-funded researchers, and the department will not seek to constrain that freedom on the basis of whether or not that research supports Australian Government policy.

The hub should email the Science Partnerships team via [research@awe.gov.au](mailto:research@awe.gov.au) the following items at least 10 working days prior to the release of any final output or final publication:

- an electronic copy of the output/ publication
- completed research output submission template, including media products.

Each month, hubs should provide a summary of research outputs from the preceding month to the Science Partnerships team.

All NESP hub research and media products must comply with the *Australian Government style guide* and the *NESP brand standards*. Please refer to the *NESP brand standards* for correct acknowledgement of funding sources.

# Data and information guidelines compliance

The information contained in these guidelines is adapted from relevant sections in the NESP funding agreements and therefore represents a contractual requirement for the hubs.

The program's success is highly dependent on effective knowledge sharing between researchers and end-users. To achieve this, the funding agreement outlines that each hub must commit to the development and implementation of a data management strategy. It must be completed within the timeframe specified in the funding agreement's milestone schedule. Each hub's strategy must be consistent with the *NESP data and information guidelines*.

The department will monitor compliance with these guidelines as part of its assessment of each hubs' annual progress reports.



# Definitions

In this document, except where otherwise expressed, the following definitions are applicable:

Term	Definition
Attribution	Means giving appropriate credit, providing a link to the licence and indicating if changes were made, but not in any way that suggests the licensor endorses you or your use (source: <a href="#">Creative Commons Attribution 4.0 International (CC BY 4.0), 8 December 2014</a> ).
Data	Individual pieces of information.
Dataset	An organised collection of data (tabular and non-tabular). For example, a dataset could be a table, an Excel spreadsheet, an extensible mark-up language (XML) file, a Word document or a geospatial data file. A dataset is not a system, for example, a database. A database will contain multiple datasets.
Embargo	In the context of this document, refers to the period of time before which a journal article or datasets can be made publicly available on the internet. Please note that this is different from a media embargo.
FAIR	A set of guiding principles to make data findable, accessible, interoperable and reusable.
Grey literature	Literature produced and disseminated outside of commercial publishing. In the NESP context, this includes factsheets, project profiles and reports.
Information	The interpretation of data based on its context. Information is the understanding and interpretation generated by analysing and contextualising data. Note that data and information exist on a continuum, and the boundary between them is context dependent.
Metadata	Data that defines and describes the characteristics of other data, used to improve both business and technical understanding of data and data-related processes. It is contextual information associated with research outputs that supports: <ul style="list-style-type: none"> <li>• discovery</li> <li>• assessment</li> <li>• access</li> <li>• re-use</li> <li>• verification and provenance</li> <li>• integration, synthesis and aggregation</li> <li>• curation and preservation.</li> </ul>
Open access	Refers to the making of information available at no cost under licensing terms and in formats that allow users to re-purpose the information from its original form. This is consistent with the Australian Government principles on open public sector information developed by the <a href="#">Office of the Australian Information Commissioner</a> .

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<b>Term</b>	<b>Definition</b>
Scientific publications	Abstracts, articles and reports in scientific journals and materials relating to presentations at scientific conferences.

## Related materials

The following related materials are available on the internet:

- Australian Government 2019, [Open Data Toolkit](#), accessed 17 March 2021
- Australian National Data Services, 2014, Summary of Australian Universities [data management policies and tools](#), accessed 17 March 2021
- Australian Research Data Commons 2019, [Enabling and enhancing the discovery and reuse of data with Metadata](#), accessed 17 March 2021
- Australian Research Data Commons 2019, [Persistent identifiers](#), accessed 17 March 2021
- Australian Research Data Commons 2021, [Data management plans](#), accessed 17 March 2021
- Australian Research Data Commons 2021, [Find data for research](#), accessed 17 March 2021
- Australian Research Data Commons 2021, [FAIR data](#), accessed 17 March 2021
- Australian Research Data Commons 2021, [Working with data](#), accessed 17 March 2021
- Commonwealth Environmental Water 2013, [Commonwealth Environmental Water: Monitoring, Reporting and Improvement Framework](#), accessed 17 March 2021
- Commonwealth of Australia, [Commonwealth Library Deposit and Free Issue Schemes, accessed 17 March 2021](#)
- Commonwealth of Australia n.d., [Full text of the Government Digital Transformation Roadmap](#), accessed 17 March 2021
- Department of Industry, Science, Energy and Resources n.d., [ANZLIC metadata profile](#), accessed 17 March 2021
- Department of the Prime Minister and Cabinet 2017, [Australian Government Public Data Policy Statement](#), accessed 17 March 2021
- Global Indigenous Data Alliance n.d., [CARE Principles for Indigenous Data Governance](#), accessed 17 March 2021
- Russo Carroll, S, Garba, I, Figueroa-Rodríguez, O.L, Holbrook, J, Lovett, R, Materechera, S, Parsons, M, Raseroka, K, Rodriguez-Lonebear, D, Rowe, R, Sara, R, Walker, J.D., Anderson, J. and Hudson, M. 2020, [The CARE Principles for Indigenous Data Governance](#), *Data Science Journal*, vol.19, Issue 1, pp.43–55, DOI: <http://doi.org/10.5334/dsj-2020-043>, accessed 17 March 2021
- Ward, Pauline 2021, [Sources of dataset peer review](#), accessed 17 March 2021
- W3C 2018, [Web Content Accessibility Guidelines \(WCAG\) 2.1](#), accessed 17 March 2021

Data repositories:

- Atlas of Living Australia n.d., [Atlas of Living Australia](#), accessed 17 March 2021
- Australian Government Data.gov.au n/d, [Search for data](#), accessed 17 March 2021
- Australian Ocean Data Network n.d, [AODN Portal](#), accessed 17 March 2021
- Australian Urban Research Infrastructure Network 2021, [What is Aurin?](#), accessed 17 March 2021
- Integrated Marine Observation System, [Integrated Marine Observation System](#), accessed 17 March 2021
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