THE UNIVERSITY OF NOTRE DAME AUSTRALIA

# Research Output Reporting

This information is highly relevant to all Notre Dame members of staff who are engaged in research, the administration of research activity, and the reporting of research activity. This may include Administration Officers in Schools, Deans and Directors, as well as academics, including sessional and adjunct staff. This document outlines and explains the following research output related reporting processes, research output classifications and supporting software.

## Integrated Research Management Application (IRMA)

## Higher Education Research Data Collection (HERDC)

## Excellence in Research for Australia (ERA)

## Fields of Research (FOR)

## Socio-economic Objective (SEO)

## 1. Integrated Research Management Application (IRMA)

IRMA (Integrated Research Management Application) is the Research Management System (RMS) adopted by the University of Notre Dame Australia to manage its research activities and outputs.

IRMA is different to ResearchOnline@ND, and has a unique, if complementary role within the University. While ResearchOnline is a repository for the University's research output and showcases our researchers' works to the world, it does not have the reporting capacity needed by the University to comply with government and internal reporting requirements.

IRMA has been designed to create the appropriate reports in the correct format for ERA (and previously HERDC) as well as allowing for School by School reporting or reports of outputs by individual researchers. Research data collected by IRMA is forwarded to ResearchOnline so that the University's outputs are accessible to the wider research community. As such, research information is submitted once but utilised by both systems for their different purposes.

The IRMA system offers several modules including Publications, Contracts and Grants, ERA, HDR, Ethics, Projects and Reporting. Notre Dame is implementing the Publications, Contracts and Grants, and HDR modules in the first instance.

### Publications Module

The Publications Module manages information about published research outputs by ND researchers, research students and professional staff, and makes this information available to ResearchOnline@ND.

Outputs include but are not restricted to books, book chapters, journal articles, conference papers, reports and creative works. Staff in the Research Office currently enter all publications data into IRMA. These data are obtained from a number of sources: Schools and Research Centres, individual researchers, the CVs of new staff and from a number of key databases such as Scopus. Individuals can notify the Research Office about new or missing publications at any time.

Each publication is assigned a research output category according to the following classification system:

**Publication Categories**

**Books**

A1 - Book Authored - Research
A2 - Book Authored - Other
A3 - Edited Book
A4 - Revision/New Edition/Reprint

**Book Chapters**

B1 - Book Chapter - Research
B2 - Book Chapter - Other

**Journal Articles**

C1 - Refereed Journal articles
C2 - Other contribution to a refereed journal
C3 - Non Refereed Journal Article
C4 - Letter or note
C5 - Edited Journal Issue

**Conference Proceedings**

E1 - Conference Publication - Full/refereed
E2 - Conference Publication - Full/NON-refereed
E3 - Extract of paper - eg. Abstract/Poster
E4 - Edited Conference Proceedings
E5 - Other conference publication

**Computer Software**

G1 - Computer Software

**Patents**

I1 – Patents

**Reference Work**

K1 – Encyclopedia/Dictionary over 4000 words
K2 – Encyclopedia/Dictionary under 4000 words

**Reports**

L1 – Public Sector Report
L2 – Industry Report
L3 – Not-For-Profit Report
L4 – Other Report
L5 – Internal Report

**Internal Working Papers**

M1 – Internal Working Paper

**Newspaper/Magazine**

N3 – Newspaper article

**Creative Works**

Q1 – Original Work - Textual
Q2 – Original Work - Other
R1 – Live Performance - Play
R2 – Live Performance - Other
S1 – Recorded/Rendered Work - Film/Video
S2 – Recorded/Rendered Work - Performance
S3 – Recorded/Rendered Work - Other
T1 – Curated Work - Exhibition/Event
T2 – Curated Event - Festival

**Other Outputs**

X1 – Interview
X2 – Thesis - PhD/Masters
X3 – Research Output not covered elsewhere (eg. Online opinion pieces)

**Please note: Research submitted to IRMA does not have to be ERA reportable, just as has been the case for ResearchOnline@ND.**

**Required Data for IRMA -** The Publications module has a number of fields, grouped into tabs:

| | |
|---|---|
| **Header tab** | Information which generally describes a publication such as its title and year of publication, number of internal and external authors, ISBN/ISSN, publisher, place of publication, volume, issue, pagination, DOI, Internal author's affiliation to UNDA, ERA extent (eg number of pages) |

| | |
|---|---|
| **Authors tab** | Names of all internal UNDA and external authors identified on the publication. Authors are linked to the school/s or unit claiming the publication. |
| **Documents tab** | Copies of files in pdf, doc, wav, mp3, xls, tif, tiff, jpg, jpeg, mov, wma, docx, xlsx file types can be uploaded. URL links can also be added. |
| **Notes tab** | The abstract or brief notes about the publication are entered here. |
| **Coding tab** | Up to 3 Field of Research (FoR) subject codes and up to 3 Socio-Economic Objective (SEO) codes and their associated percentages can be assigned. FoR and SEO codes are obtained from the Australian and New Zealand Standard Research Classification (ANZSRC), available at http://www.arc.gov.au/pdf/ANZSRC_FOR_codes.pdf |
| **Verification tab** | Allows verification check list to be completed for outputs. |
| **Summary tab** | Previously used for calculating HERDC points for authors/schools. This is no longer relevant as HERDC points for publications are no longer collected. |

## 2. Higher Education Research Data Collection (HERDC)

As of 2016 the Higher Education Research Data Collection (HERDC) no longer collects research publications data. HERDC continues to report on university research income.

## 3. Excellence in Research for Australia (ERA)

ERA is an assessment system that evaluates the quality of the research conducted at Australian higher education institutions.

### Definition of Research

The term *research* is a short form for *research and experimental development*, often abbreviated as R&D. The HERDC definition of *research* is consistent with the OECD definition of research and experimental development (R&D) and is defined as:

> 'creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.' (OECD, 2015)

This definition encompasses pure and oriented basic research, applied research and experimental development.

*Basic research* is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.

*Pure basic research* is carried out for the advancement of knowledge, without seeking economic or social benefits or making an active effort to apply the results to practical problems or to transfer the results to sectors responsible for their application.

*Oriented basic research* is carried out with the expectation that it will produce a broad base of knowledge likely to form the basis of the solution to recognised or expected current or future problems or possibilities.

*Applied research* is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective (including a client-driven purpose).

*Experimental development* is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

(Commonwealth of Australia*,* 2017*)*

The Research Office will use this definition of research when assessing research outputs.

ERA assessment is based on four categories of indicators:

- Research quality, including publishing behaviour, citation analysis, peer review by ERA reviewers, and peer reviewed Australian and international research income;
- Research volume and activity, based on the total of research outputs, research income, and other research items related to the profile of eligible researchers;
- Research application, including research commercialisation income, patents and registered designs, Plant Breeder's Rights, and NHMRC endorsed guidelines;
- Recognition, based on a limited range of esteem measures.

An ERA submission includes data about eligible researchers, research outputs, research income, applied measures, and esteem measures, and may include explanatory statements describing research activity in disciplines. To be eligible, researchers must be affiliated with the institution on the staff census date (not yet released for ERA 2018).

Coinciding with ERA 2018, Australia will introduce a national Engagement and Impact (EI) assessment, which will assess the benefits flowing from university research.

ERA research outputs must meet the definition of research, have been published during the reference period (not yet released for ERA 2018), have one or more eligible researchers listed as author(s), and be an eligible output type (research books, chapters in research books, journal articles and fully published and refereed conference papers, as well as some Non-Traditional types of research output, ie creative works and commissioned reports).

For the purposes of ERA, disciplines are defined at four-digit and two-digit Fields of Research (FoRs) as identified in the Australian and New Zealand Standard Research Classification (ANZSRC).

Data for ERA are submitted at the four-digit FoR level. Indicators are calculated at the four-digit and two-digit FoR levels based on the data submitted for each institution, and this information is aggregated to create four-digit and two-digit Units of Evaluation.

## Low Volume Thresholds

To ensure that there is a meaningful level of data to be evaluated, a 'low volume threshold' exists for each Unit of Evaluation in ERA.

For disciplines where citation analysis is used, the low volume threshold is 50 apportioned indexed journal articles over the six year research outputs reference period. Articles must have been published in journals which appear in the ERA Journal List, and must have been included in the citation data provided by the ERA citation data provider (not yet announced for ERA 2018).

For disciplines where peer review is used, the low volume threshold is the equivalent of 50 submitted apportioned research outputs. For these disciplines, books are given a weighting of 5:1. 30% of each type of research output included in the Unit of Evaluation must be nominated for peer review by the ERA

Despite these low volume thresholds, all eligible research outputs are included in an institution's ERA submission, whether or not Units of Evaluation meet the threshold.

Evaluation of ERA submissions is carried out by Research Evaluation Committees (RECs) comprising experienced, internationally recognised experts.

### ERA Rating Scale

| Rating | Description |
|---|---|
| 5 | Outstanding performance well above world standard |
| 4 | Performance above world standard |
| 3 | Average performance at world standard |
| 2 | Performance below world standard |
| 1 | Performance well below world standard |
| N/A | Not assessed due to low volume |

Detailed information about ERA is available from the ARC website:

http://www.arc.gov.au/excellence-research-australia

## ERA Traditional Research Outputs – eligibility for reporting and verification

**BOOK –** Authored Research, major work of scholarship **(A1)**

### Eligibility

In order to be included as an A1 research output, the book must meet the definition of research and **ALL** of the following:

- be a major work of scholarship
- have an International Standard Book Number (ISBN)
- be written entirely by a single author, or by joint authors who share responsibility for the whole book
- have been published by a commercial publisher, or if not published by a commercial publisher, must have been peer reviewed:

> Publication is more than the production of a book. It includes quality control such as peer review or equivalent in-house quality control through processes such as expert assessment or review, as well as editing, copy-editing, design, and conversion of the work to an appropriate format.

### Types of books that may meet the criteria include:

- critical scholarly texts
- new interpretations of historical events
- new ideas or perspectives based on established research findings

Scholarly editions and scholarly translations must have a major demonstrable original research component in the edition or translation to be considered for inclusion.

### The type of book that is <u>unlikely</u> to meet the criteria:

- textbook
- anthology
- edited book
- creative work such as a novel
- translation (unless it has a major demonstrable original research component)
- revision or new edition
- manual or handbook

- thesis (PhD, Masters and Honours)

**Verification requirements**

To be included in the A1 collection, ND needs to provide PDF documentation of the following details for each entry:

- title page
- bibliographic details - ISBN, publisher, all dates referring to copyright, publication, place of publication and printing
- table of contents

**BOOK CHAPTER –** Subject to editorial scrutiny **(B1**)

**Eligibility**

In order to be included as a B1 research output, the chapter must meet the definition of research and **ALL** of the following:

- have an International Standard Book Number (ISBN)
- have been published by a commercial publisher, or if not published by a commercial publisher, must have been peer reviewed:

> Publication is more than the production of a book. It includes quality control such as peer review or equivalent in-house quality control through processes such as expert assessment or review, as well as editing, copy-editing, design, and conversion of the work to an appropriate format.

**Types of book chapters that may meet the criteria include:**

- a scholarly introduction of chapter length to an edited volume, where the content of the introduction reports research and makes a substantial contribution to a defined area of knowledge
- a critical scholarly text of chapter length
- critical reviews of current research.
- A book chapter may be included if it has been published previously as long as it constitutes **substantial new knowledge** and constitutes original research.

**The type of book chapter that is <u>unlikely</u> to meet the criteria:**

- a chapter in a textbook
- an entry in a reference book
- an anthology
- a revision of a chapter in an edited book
- a foreword
- a brief introduction
- a brief editorial
- an appendix
- a literary or creative piece such as a short story; and
- a translation (unless it has a major demonstrable original research component)

**Verification requirements**

To be included in the B1 collection, the University needs to provide PDF documentation, from the publication, of the following details for each B1 entry:

- title page
- bibliographic details - ISBN, publisher, place of publication, all dates referring to copyright, publication and printing
- full table of contents
- a copy of the full chapter being claimed (required if nominated for ERA peer review)
- copy of the footnotes and/or references related to the chapter if not within the text or at the end of the chapter
- if claiming a new chapter in a revised edition, the table of contents of the previous edition is required. If there is a chapter with the same title in previous editions, we will also need a copy of that chapter to show the new chapter is substantially different.

**JOURNAL ARTICLE –** Refereed, Scholarly Journal **(C1)**

**Eligibility**

In order to be included as a C1 research output, the journal article must meet the definition of research and **ALL** of the following:

- be published in a scholarly journal
- have been peer reviewed in full
- have an International Standard Serial Number (ISSN)
- For inclusion in the University's ERA report, the journal must be on the ERA journal list

**The types of journal articles that may meet the criteria include:**

- commentaries and communications of original research

- research notes
- letters to journals, provided that the letter satisfies the definition of research and the requirements for journal articles in this section
- critical scholarly texts which appear in article form
- articles reviewing multiple works or an entire field of research
- invited papers in journals
- articles in journals which are targeted to both scholars and professionals
- articles in a stand alone series

**The type of journal article that is <u>unlikely</u> to meet the criteria is:**

- a letter to the editor
- a case study
- an article designed to inform practitioners on existing knowledge in a professional field
- an article in a newspaper or popular magazine
- an editorial
- a book review
- a brief commentary or communication of original research
- a review of an art exhibition, concert, theatre production.

**Verification requirements**

To be included in the C1 collection, the University requires:

- a copy of the full published article
- proof of peer reviewing
- bibliographic details - journal name, volume/issue and dates referring to publication and copyright (if not on the article itself, we would need copies of the front of the journal with that information and a contents page)

**CONFERENCE PUBLICATIONS –** Full Paper, Refereed **(E1)**

**Eligibility**

In order to be included as an E1 research output, the conference publication must meet the definition of research and **ALL** of the following:

- be published in full in any of the following formats: a volume of proceedings, a special edition of a journal, a normal issue of a journal, a book or a monograph, CD Rom or conference/organisation website
- the full paper must be peer reviewed
- be presented at a conference, workshop or seminar of national or international significance
- a conference paper can be counted once only, even if published in more than one format, e.g. if a conference paper is later published in a special issue of a journal, it cannot be claimed in this journal if it was first published in a separate proceedings

**The type of conference publication that does <u>not</u> meet the criteria:**

- a paper that appears only in a volume handed out to conference participants
- a keynote address
- a plenary address
- a poster presentation
- an abstract of a conference publication

**Verification requirements**

To be included in the E1 collection, the University requires:

- a copy of the full article (from the published Proceedings), i.e. not an author's copy of the paper

- proof of full paper peer review
- proof of the national or international significance of the conference

**ERA Non-Traditional Research Outputs – eligibility for reporting and verification**

In considering non-traditional research outputs, research is defined in the same way as it is for traditional outputs:

> ‘creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.’ (OECD, 2015)

**Non-Traditional Outputs include:**

Original Creative Works
- Textual Work
- Other

Live Performance of Creative Works
- Play
- Other

Recorded/Rendered Creative Works
- Performance
- Audio/Visual Recording
- Other

Curated/Produced Exhibition/Event
- Exhibition/Event
- Festival

Research Reports for an External Body
- Public Sector
- Industry
- Not-For-Profit
- Other

For non-traditional research outputs which are nominated for ERA peer review, a statement identifying the research component of the output must be provided as part of the submission of an institution. The statement must be no more than 2000 characters including spaces (around 250 words) and cannot contain any embedded links.

Research statements should address the following categories:

1. Research Background
   - Field
   - Context
   - Research Question

2. Research Contribution
   - Innovation
   - New Knowledge

3. Research Significance
   - Evidence of Excellence

(Australian Government, 2014)

**ERA and affiliation to the University of Notre Dame Australia (ND)**

**IRMA collects affiliation information for each research output but please note: unlike the publication reporting criterion previously required by HERDC (that is, mandatory affiliation with ND), a research output as reported to ERA, need not show affiliation to ND. Publication inclusion is dependent on a number of researcher eligibility criteria. For a researcher who is an employee on the staff census date (this is expected to be March 31, 2017), either full time or greater than 0.4 FTE, <u>all</u> the staff member's research outputs should be submitted. A staff member of less than 0.4 FTE must have at least one demonstrable publication association with the institution. If so, <u>all</u> the staff member's research outputs should be submitted. For those staff member who are employed as casual, visiting, exchange, seconded, or unpaid, only affiliated outputs may be submitted.**

## 4. Fields of Research (FoR)

The Australian and New Zealand Standard Research Classification (ANZSRC) is jointly produced by the Australian Bureau of Statistics (ABS) and Statistics New Zealand (Statistics NZ).

ANZSRC is the collective name for a set of three related classifications developed for use in the measurement and analysis of research and experimental development (R&D) undertaken in Australia and New Zealand. The three constituent classifications included in the ANZSRC are:

- Type of Activity (TOA) (not discussed in this document)
- Fields of Research (FoR), and
- Socio-economic Objective (SEO) – discussed below.

The categories in FoR classification include major fields and related sub-fields of research and emerging areas of study investigated by businesses, universities, tertiary institutions, national research institutions and other organisations.

The FoR is a hierarchical classification with three levels, namely Divisions (2 digits), Groups (4 digits) and Fields (6 digits). Each level is identified by a unique number.

Each Division is based on a broad discipline. Groups within each Division are those which share the same broad methodology, techniques and/or perspective as others in the Division. Each Group is a collection of related Fields of research.

Consistent use of the following general procedures should ensure consistent and successful use of the classifications.

A research project or research program is to be allocated to a FoR field in a hierarchical manner. This is achieved by:

- first determining the division in which the largest component of the research project or research program is being performed; then
- determining the most relevant group within that division; and then
- determining the most relevant field within that group.

**FoR Division codes and titles**

01 Mathematical Sciences
02 Physical Sciences
03 Chemical Sciences
04 Earth Sciences
05 Environmental Sciences
06 Biological Sciences
07 Agricultural and Veterinary Sciences
08 Information and Computing Sciences
09 Engineering
10 Technology
11 Medical and Health Sciences
12 Built Environment and Design
13 Education
14 Economics
15 Commerce, Management, Tourism and Services
16 Studies in Human Society
17 Psychology and Cognitive Sciences
18 Law and Legal Studies
19 Studies in Creative Arts and Writing
20 Language, Communication and Culture
21 History and Archaeology
22 Philosophy and Religious Studies

(Commonwealth of Australia, 2008)

Examples of Divisions, Groups and Fields

| **Level** | **Example** | | |
|---|---|---|---|
| Division | 11 Medical and Health Sciences | | |
| Group | | 1103 Clinical Sciences | |
| Field | | | 110317 Physiotherapy |

| **Level** | **Example** | | |
|---|---|---|---|
| Division | 13 Education | | |

| | | | |
|---|---|---|---|
| Group | | 1302 Curriculum and Pedagogy | |
| Field | | | 130209 Medicine, Nursing and Health Curriculum and Pedagogy |

The University's ERA submission includes data about eligible researchers, research outputs, research income, applied measures, and esteem measures, and may include explanatory statements describing research activity in **disciplines**. For the purposes of ERA, **disciplines** are defined as four-digit and two-digit Fields of Research.

As an example, FoR codes may be used to describe the University's Research Focus Areas as outlined in the Strategic Plan 2013 -2016.

| **Research Focus Area** | **FoR** |
|---|---|
| Indigenous Research | 169902 Studies of Aboriginal and Torres Strait Islander Society |
| Health | 11 Medical and Health Sciences |
| Ethics | 2201 Applied Ethics |
| Philosophy | 2203 Philosophy |
| Theology | 2204 Religion and Religious Studies |
| Catholic Education | 130211 Religion Curriculum and Pedagogy |

## 5. Socio-economic Objective (SEO)

The ANZSRC SEO classification allows R&D activity in Australia and New Zealand to be categorised according to the **intended purpose or outcome of the research**, rather than the processes or techniques used in order to achieve this objective.

The purpose categories include processes, products, health, education and other social and environmental aspects in Australia and New Zealand that R&D activity aims to improve.

### Structure of the SEO Classification

SEO codes are required for both the ERA assessment and the Australian Bureau of Statistics Survey of Research and Development Higher Education reports which the University is required to participate in biennially.

The SEO is a hierarchical classification with four levels, namely Sector (letter), Divisions (2 digits), Groups (4 digits) and Objectives (6 digits).

While the Sector forms part of the hierarchical structure of the SEO, it is used only for grouping divisions for publication of R&D data, not for data collection. Sectors are identified by a letter, while the lower levels of the classification are identified by unique numbers.

Each Division is based on a broad research objective. Groups within each Division are those which are aligned towards the same objective as the Division. Each Group is a collection of related research Objectives. Groups and research objectives are categorised to the Divisions with which they are most closely aligned.

An example of the hierarchical structure of the SEO classification system:

| **Level** | **Example** | | | |
|---|---|---|---|---|
| Sector | B: Economic Development | | | |
| Division | | 86 Manufacturing | | |
| Group | | | 8607 Agricultural Chemicals | |

| | | | | |
|---|---|---|---|---|
| Objective | | | | 860702 Chemical Fertilisers |

## Expanding Knowledge

Due to their unique nature some divisions have only one Group within them. For example, the Defence and Expanding Knowledge Divisions each contain only one group. However, these Divisions still follow hierarchical principles and contain a number of Objectives.

Sector E, Expanding Knowledge is for the categorisation of R&D which does not have an identifiable socio-economic objective. This is usually the case for pure basic research or strategic basic research.

The conceptual framework adopted for the development of the SEO uses R&D activities according to the objective or outcome of the research undertaken, rather than the processes and techniques used in the R&D.

## Guidelines for classifying by SEO

Consistent use of the following general procedures should ensure consistent and successful use of the classification among users.

A research project or research program should first be considered in its broadest sense and in terms of the dominant beneficiary of the research output at the conclusion of the research project or research program. A research project or research program is to be allocated to a SEO objective in a hierarchical manner. This is achieved by:

- first determining the most relevant sector in which the largest component of the research project or research program is being performed; then
- determining the most relevant division within that sector; then
- determining the most relevant group within that division; and then
- determining the most relevant objective within that group.

Many R&D projects will be a homogeneous body of work directed towards a specific objective. These are more straightforward to categorise. However, if the project or program is sufficiently large or complex (in terms of research areas) then multiple fields should be selected and attributed with a proportion of resources relative to the project's

or program's total R&D expenditure. If the disaggregation is difficult, consideration of relative importance may indicate a primary objective only (whether a specific or more general subject focus).

Where a defined objective cannot be identified within a group for a research project or research program, the 'not elsewhere classified' category at the objective level is to be used.

**SEO sector and Division Codes and Titles**

Sector A: Defence
- 81 Defence

Sector B: Economic Development
- 82 Plant Production and Plant Primary Products
- 83 Animal Production and Animal Primary Products
- 84 Mineral Resources (excl. Energy Resources)
- 85 Energy
- 86 Manufacturing
- 87 Construction
- 88 Transport
- 89 Information and Communication Services
- 90 Commercial Services and Tourism
- 91 Economic Framework

Sector C: Society
- 92 Health
- 93 Education and Training
- 94 Law, Politics and Community Services
- 95 Cultural Understanding

Sector D: Environment
- 96 Environment

Sector E: Expanding Knowledge
- 97 Expanding Knowledge

(Commonwealth of Australia, 2008)

**Contact us for further information or any questions regarding research publications reporting**

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