

Section 3—Excellence in Research for Australia

ERA policy

Value of ERA

Q3.1 To what extent is ERA meeting its objectives to:

- a. Continue to develop and maintain an evaluation framework that gives government, industry, business and the wider community assurance of the excellence of research conducted in Australian higher education institutions. *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*

A large amount

- b. Provide a national stocktake of discipline level areas of research strength and areas where there is opportunity for development in Australian higher education institutions. *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*

A large amount

- c. Identify excellence across the full spectrum of research performance. *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*

A moderate amount: The current ERA approach can obscure instances of excellent research where they co-exist with lower quality research. The ERA system is set up to measure the research quality of a discipline as a whole, at an institution. Where instances of research excellence exist but a significant amount of lower quality activity in the same discipline co-exists the ERA assessment process is unlikely to rate the discipline highly. Although non-traditional research outputs are assessed by peer review in some disciplines, there is still a focus on 4 types of traditional outputs and blunt citation counts as indicators of excellence, thus relying on a relatively narrow definition of excellence.

- d. Identify emerging research areas and opportunities for further development. *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*

A small amount: Institutional preoccupation with ERA ratings performance means that universities tend to try to minimize their exposure to disciplines where there is a perceived risk that they will not be assessed as above world standard. Additionally, ERA is by its nature retrospective and has a time lag involved, and thus is not forward looking. ERA is important in terms of understanding research quality and capability but opportunities for development should be informed by institutional strategy. There is potential for inhibition of emerging research areas if ERA is the only input considered..

- e. Allow for comparisons of research in Australia, nationally and internationally, for all discipline areas. *A very large amount; A large amount; A moderate amount; A small amount; Not at all. . Please explain your answer.*

A small amount: ERA does not readily support international comparison of Australian research beyond the 'international standard'; comparisons of the ratings. Within Australia, differences in scale at different Institutions make comparisons problematic.

In addition, the inflation in ratings in the citation disciplines compared with the peer-reviewed disciplines suggests that the same rating cannot be compared across the two

discipline groups. It appears that the two groups are not benchmarking themselves against the same international level.

Q3.2 The ERA objectives are appropriate for meeting the future needs of its stakeholders. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Agree

a. If you disagreed with the previous statement, what should the primary purpose of ERA be going forward? *Please explain your answer.*

While we agree that the objectives listed above are appropriate, they do not recognise the role ERA has had in focussing Australian universities on quality research, after many years of volume driven HERDC reporting. Some steps toward encouraging and rewarding other behaviours that promote research excellence, such as open data, preregistration, open code, etc. would be a welcome addition.

Q3.3 What impacts has ERA had on:

a. the Australian university research sector as a whole

Encouraged a much more intensive focus on quality research compared to quantity. Arguably research in some disciplines has been discouraged because it is seen as impossible to get a strong ERA rating e.g. Accounting (1501) where there has been a significant decline in the number of universities being assessed.

ERA has also led to the closure of some local journals that were not rated as A or A in the ERA 2010 journal listing. Despite the removal of this list, its effects still remain. Researchers in some HASS disciplines are being discouraged from undertaking research on Australian issues using Australian data. The perceived importance (real or imagined) of journal reputation makes it less likely that researchers will risk publishing work in a new journal.*

b. individual universities

ERA has allowed individual universities to establish research reputation/credentials in specific disciplines, arguably creating a somewhat more level playing field

c. researchers

Researchers able to produce high quality publications have become sought after commodities across universities.

d. Other?

Please explain your answers.

Q3.4 How do you use ERA outcomes? *Please describe.*

Internally ERA outcomes inform, but don't directly determine research investment. Some use of ERA outcomes to validate institutional quality in external contexts. The potential contribution of new appointments to ERA in some codes forms part of the assessment process of new academic appointments, however is not the sole input to decision making.

Q3.5 ERA outcomes are beneficial to you/your organisation. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*

Agree: As a small institution trying to build its reputation a research-intensive university ERA has provided critical validation of Swinburne's research credentials.

Q3.6 Do you have any suggestions for enhancing ERA's value to you/your organisation? *Please explain your answer.*

ERA methodology

ERA methodology at a glance

- Q3.7 The current methodology meets the objectives of ERA. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Agree:
- Q3.8 What are the strengths of the overall methodology? *Please describe.*
ERA has been able to achieve broad agreement on appropriate quality measures for individual disciplines, and implement these to achieve reasonably objective assessments
- Q3.9 What are the weaknesses of the overall methodology? *Please describe.*
The objectivity of the assessment in peer review disciplines is less robust, with peer reviewers and REC panel members appearing to be swayed by institutional reputation, and at times appearing to succumb to a form of the prisoner's dilemma, i.e. a lack of confidence that one's own institution will be rated well, causes harsher assessment of other institutions leading to a downwards spiral. Education is an area where this might have happened. Another weakness is that discipline-based unit of assessment means that average research quality is measured, and instances of research quality can be obscured.
- Q3.10 Does the discipline-specific approach for evaluating research quality (citation analysis or peer review for specific disciplines) continue to enable robust and comparable evaluation across all disciplines?
While the discipline specific approach causes some problems, the advantages outweigh the disadvantages. Comparisons of quality between codes is problematic, but especially so when the assessment methodology is fundamentally different, i.e. is there an equivalence between an ERA 5 in Physics, and an ERA 5 in Sociology.

Citation analysis methodology

- Q3.11 The citation analysis methodology for evaluating the quality of research is appropriate. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*
Agree:
- Q3.12 Does the discipline-specific approach for evaluating research quality (citation analysis or peer review for specific disciplines) continue to enable robust and comparable evaluation across all disciplines?
- Q3.13 What are the strengths of the citation analysis methodology? *Please describe.*
Highly objective methodology, scales well.
- Q3.14 What are the weaknesses of the citation analysis methodology? *Please describe.*
Heterogeneity of citation performance within a 4 digit FOR may be leading to some sub-disciplines being disadvantaged in the assessment, this could lead to universities discouraging or discontinuing research activity in these sub-disciplines. The principal problem is that the system creates an appearance of comparing like with like, but in reality, very different research can exist within a 4-

digit code and may not evaluate evenly. In addition, citations do not necessarily indicate research quality (they may indicate popularity instead), and also do not distinguish between negative citations, etc.

Q3.15 Can the citation analysis methodology be modified to improve the evaluation process while still adhering to the ERA Indicator Principles? Yes/No.

Yes

a. If you answered 'Yes', please describe how the methodology could be improved.

Introduction of techniques such source normalisation would help to address discipline heterogeneity. Alternatively, more granular discipline analysis using 6-digit codes, or something like CWTS micro-clusters and the rolling assessments up to the 4-digit level might help

Additionally there may be additional disciplines where citation analysis could be considered. We have received feedback from ICT discipline researchers supporting the idea of citation analysis in this area. It may be possible to apply citation analysis to conference papers in ICT disciplines given a relatively high indexing rate.

Peer review methodology

Q3.16 The peer review methodology for evaluating the quality of research is appropriate. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Agree

Q3.17 What are the strengths of the peer review methodology? *Please describe.*

Article level assessment by peers is widely accepted to be a gold standard for research quality assessment.

Q3.18 What are the weaknesses of the peer review methodology? *Please describe.*

Peer review is susceptible reputational effects of institution, journal and author. This is amplified when the volume of material is scaled up, increasing the risk that peer reviewers will take short cuts, for example rely on journal reputation to assess quality. In addition, it is not clear what assessors are benchmarking a given rating against. It would be helpful to give an example of specific universities that rate as a 4 or 2 so assessors can make a less subjective rating. Note that as there are over 20,000 universities in the world, it would not be unreasonable to rate all Australian university FoRs as a 4 or 5. Some of the more specialised or niche research areas are not well represented on relatively small RECs and works end up assessed by people whose expertise sits outside the area being assessed.

Q3.19 Can the peer review methodology be modified to improve the evaluation process while still adhering to the ERA Indicator Principles? Yes/No.

Yes

a. If you answered 'Yes', please describe how the peer review methodology could be improved.

Introduction of some degree of blinding to the peer-review process might improve peer-review assessment. Further, rather than peer-reviewers assessing institutional performance by sampling from a cohort of the institutions nominated publications, consideration should be given to peer-reviewers working across the sector, i.e. sampling from all institutions other

than their own, and returning article level scores that can be compiled to score institutional performance in the discipline. Further while, peer reviewers need to operate within their areas of discipline expertise, allowing reviewers to pick items to review increases the opportunity for confirmation bias. For example, “I’m expecting some great work from this great university, this looks like a good paper”, or conversely “I don’t think university X is up to scratch in this discipline, let’s look at some of these papers in not so great journals”. This could be mitigated by randomly serving a paper for peer review from the pool (whether institutional or discipline), the reviewer has the option to decline to review the paper only on expertise, or conflict of interest grounds.

Objectivity of assessment would be improved if REC members were required to complete their own review of peer review material prior to seeing statistical or other data on the UoEs.

Arguably REC members should complete their own review of peer review material prior to seeing statistical or other data on the UoEs

Contextual indicators

Q3.20 The volume and activity indicators are still relevant to ERA. Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.

Agree: These indicators should be providing important contextual information to RECs, however it is not clear to what extent this information is being used.

Q3.21 The publishing profile indicator is still relevant to ERA. Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.

Agree: These indicators should be providing important contextual information to RECs, however it is not clear to what extent this information is being used

Q3.22 The research income indicators are still relevant to ERA. Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.

Agree: These indicators should be providing important contextual information to RECs, however it is not clear to what extent this information is being used

Q3.23 The applied measures are still relevant to ERA:

a. Patents. Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.

Disagree: Possibly better incorporated into EI assessment. Patenting is not a good indicator of research quality, engagement or impact, and incentivising it can lead to perverse behaviours of locking up otherwise useful research.

b. Research commercialisation income. Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.

Disagree: Better incorporated into EI assessment

c. Registered designs. Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.

Strongly Disagree: Better incorporated into EI assessment if used at all

- d. Plant breeder's rights. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree: Possibly better incorporated into EI assessment
- e. NHMRC endorsed guidelines. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree: Possibly better incorporated into EI assessment

ERA rating scale

- Q3.24 The five-band ERA rating scale is suitable for assessing research excellence. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*
Strongly agree: Simple, well understood scale, with a level of granularity that seems appropriate. A scale component could be added to the assessment e.g. 1Large, 3Medium, 5Large, 5Small. This would help to address some of the scale and critical mass inequities inherent in the current process but would likely advantage bigger institutions at the expense of small.
- Q3.25 Noting that 90% of units of evaluation assessed in ERA 2018 are now at or above world standard, does the rating scale need to be modified to identify excellence? Yes/No.
No
- a. If you answered, 'Yes', please explain how the rating scale can be modified to identify excellence.

ERA low-volume threshold

- Q3.26 The ERA low-volume threshold is appropriate. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree: Particularly in peer review disciplines where the threshold includes all publication types the threshold can be met with a very small annual output, A threshold of 100 in peer review disciplines would be more appropriate.
- Q3.27 Are there ways in which the low-volume threshold could be modified to improve the evaluation process? *Please describe.*
Increase the threshold in peer-review disciplines as described above; or allow optional submission up to a certain threshold e.g. between 50 and 100. Removal of 'filler' output types(e.g. conference publications in most disciplines) from the assessment would also address this issue.

ERA staff census date

- Q3.28 What is the more appropriate method for universities to claim research outputs—staff census date or by-line? *Please explain your answer.*
Staff census date: Views on the most appropriate methodology differ across the university, however on balance the staff census date approach allows current research capacity to be better assessed, rather than the (even) more historical assessment intrinsic to the by-line approach.
- Q3.29 What are the limitations of a census date approach? *Please describe.*
It is difficult to introduce efficiencies into the assessment process with the staff census date, e.g. outsourcing publication data provision to a third-party provider, annual collection of data etc. Staff can be employed on short term contracts that

span the census date, allowing the institution to be assessed on research not conducted there by staff who essentially don't work there.

Q3.30 Would a by-line approach address these limitations? Yes/No. *Please explain your answer.*

Yes, if by-lines are relied upon, more efficient collection processes could be implemented, at least for a significant proportion of publications. The by-line approach potentially also reflects the institution's investment in a research area, as it better reflects the institutional capacity to produce quality research rather than potentially the outputs of a few mobile individuals. It should be noted that some research outputs lack by-lines necessitating an additional process to obtain an authorship statement. This is particularly problematic with adjunct appointments and may be extremely difficult for publications 6-7 years old.

Q3.31 What are the limitations of a by-line approach? *Please describe.*

By-line approach makes the already laggy assessment even more laggy. Institutions would be assessed based on past rather than current staff, and institutions would potentially be assessed based on the outputs of staff who left the institution 6 years ago.

ERA interdisciplinary research and new topics

Q3.32 ERA adequately captures and evaluates interdisciplinary research. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Disagree: The interdisciplinary methodology simply attempts to partition the research across disciplines, and then assesses each component independently. Limits on the number of FoR codes that can be applied to publications further compromise assessment of multidisciplinary research

a. If you disagreed with the previous statement, how could interdisciplinary research best be accommodated? *Please describe.*

Relaxation of rules about FoR coding of interdisciplinary publications would provide some improvement. Introduction of source normalised citation analysis may also allow better assessment of interdisciplinary research.

ERA and Indigenous research

Q3.33 My institution would meet ERA low-volume threshold in Indigenous studies at:

a. Two-digit? Yes/No. *If you answered 'yes', please list which ones.*

Probably No

b. Four-digit? Yes/No. *If you answered 'yes', please list which ones.*

No

Q3.34 In ERA, the best approach for evaluating Indigenous Studies is (choose one):

a. Using established ERA methodology i.e. the low-volume threshold would apply to the Indigenous Studies discipline and all its specific disciplines

b. For Aboriginal and Torres Strait Islander studies by combining low-volume disciplines into single units of evaluation

c. For Aboriginal and Torres Strait Islander studies by combining low-volume disciplines into two units of evaluation (one unit comprising Humanities, Arts,

and Social Sciences disciplines and one unit comprising Science, Technology, Engineering and Mathematics disciplines)

d. Other. *Please describe.*

Tag ATSI relevant research and assess this work both within standard disciplines, and as a separate body of research using approach in b or c above.

Q3.35 What would be the advantages and/or disadvantages of your preferred approach for evaluating Indigenous studies in ERA? *Please describe.*

ATSI research would be more likely to reach assessment thresholds if combined. Inclusion in the standard FoR code disciplines would help to prevent isolation of the research allowing the contribution to the discipline to be appropriately recognised, while still identifying and assessing ATSI research.

ERA process

Collection of ERA data

Q3.36 ERA should move to an annual collection of data from universities. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Strongly Disagree: Would certainly assist with maintaining manageable workloads for universities but hard to see how compatibility with census date approach can work.

Q3.37 What would be the advantages and/or disadvantages of an annual data collection? *Please describe.*

Advantage: smoother distribution of effort. FoRs would be allocated to outputs ahead of citations accumulating leading to less opportunity for institutions to model outcomes. Disadvantage: locks in by-line methodology and its necessary lagging assessment

Publication of ERA data

Q3.38 In future ERA rounds, should the volume of outputs submitted for each unit of evaluation be included in the National Report?

a. Yes, *Please explain your answer.*

b. No, *Please explain your answer.*

Unless the ERA process is going to specifically include volume as a dimension of the assessment, publishing the volume of activity may result in the production of third party 'rankings' incorporating the volume measure in an uncontrolled way

Q3.39 In future ERA rounds, research outputs should be published with their assignment to specific disciplines following completion of the round. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Neither agree nor disagree

a. What would be the advantages? *Please explain your answer.*

Much increased transparency

- b. What would be the disadvantages? *Please explain your answer.*
Risk of post-hoc criticism of institutions based on real or imagined perceptions of coding practices

Q3.40 What other data do you think the ARC should publish following an ERA round? *Please describe.*
No additional publication of data is necessarily required but enhanced feedback to institutions would be appreciated. This could include comments on background statements, article level feedback on research quality and commentary on the rating awarded.

Section 4—Engagement and Impact Assessment

EI Overview

- Q4.1 Considering that EI is a new assessment, to what extent is it meeting its objectives to:
- encourage greater collaboration between universities and research end-users, such as industry, by assessing engagement and impact? *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*
A small amount: For many university disciplines, impact and translation are not key drivers of research and for those disciplines, EI assessment is unlikely to affect a cultural change. For other disciplines, EI could be a motivator for greater engagement but it is not the driver. Further, because so few case studies are requested relative to staff numbers in large universities, there is unlikely to be an impact on the culture of large universities. However, this is not to discount the value of the EI assessment as a means of demonstrating impact.
 - provide clarity to the Government and the Australian public about how their investments in university research translate into tangible benefits beyond academia? *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*
A small amount: The exercise produced a set of case studies detailing instances of impact, and these case studies were used to develop additional published promotional material promoting research impact. Universities undoubtedly selected impact studies that were easily understandable, documented, high impact, and showed the university in a good light and such, while identifying instances of good practice and impactful research, are not necessarily representative of university investment.
 - identify institutional processes and infrastructure that enable research engagement? *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*
A small amount: Universities were not directly asked to show how their institutional processes worked.
 - promote greater support for the translation of research impact within institutions for the benefit of Australia beyond academia? *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*

A moderate amount: The exercise focussed attention from some parts of the university on translation activities for a period of time. Whether this increased attention translated to concrete support is not clear.

- e. identify the ways in which institutions currently translate research into impact? *A very large amount; A large amount; A moderate amount; A small amount; Not at all. Please explain your answer.*

A moderate amount: The development process helped to identify and possibly validate some pathways to impact. The subsequent publishing of the summary of high-rated impact studies has produced only a small corpus of information. They show little about university processes.

Q4.2 The EI objectives are appropriate for the future needs of its stakeholders. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*

Agree

Q4.3 What impact has EI had on:

- a. the Australian university sector as a whole? *Please describe.*

There appears to be increased attention on impact generally across the sector. Research impact is starting to be incorporated into the promotions process at many universities creating new incentives for researchers to work with industry and government bodies.

- b. Individual universities. *Please describe.*

Again there has been some increased attention and focus on research impact. Swinburne has incorporated impact measurement in some internal performance measurement systems. There have also been attempts to establish systems to better track engagement, approach to impact, and impact however these are still far from mature.

- c. researchers. *Please describe.*

There has been a major change in the past decade. In the past, researchers have been penalised for working with industry and held back from promotion. Recognizing and rewarding research impact has changed the culture.

- d. other sectors outside of academia? *Please describe.*

Q4.4 How do you, or your organisation, use EI outcomes? *Please describe.*

Q4.5 The EI outcomes are valuable to you or your organisation. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Neither agree nor disagree

Q4.6 How else could EI outcomes be used? *Please describe.*

Attaching meaningful funding to EI outcomes would increase the attention paid to achieving EI outcomes, or at least extend the attention beyond the immediate submission/assessment period. However, it is not clear that this would lead to any actual improvement in engagement or impact.

EI definitions

Q4.7 The current Engagement definition is appropriate. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree.*

Disagree

- a. If you don't agree, what are your suggested amendments to the Engagement definition? *Please describe.*
The definition implies a clear delineation between researchers in academia and end-users outside academia. In many fields e.g., clinical medicine there is significant overlap between researchers and research end-users. The definition used was not helpful in this regard and served to obfuscate important elements of engagement.
- Q4.8 The current Impact definition is appropriate. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree.*
Agree
- a. If you don't agree, what are your suggested amendments to the Impact definition? *Please describe.*
- Q4.9 The current end-user definition is appropriate. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree.*
Disagree
- a. If you don't agree, what are your suggested amendments to the end-user definition? *Please describe.*
See 4.7
- b. Are there any end-user categories excluded in the current definition of research end-user that you think should be included? *Please explain your answer.*
The definition includes Communities but there appeared to be little opportunity to demonstrate engagement or impact of community outreach unless the engagement was formally mediated through an external organisation. There may be additional sub-groups worth specifically naming where impact and engagement and impact are especially relevant e.g. Start-ups and Entrepreneurs.
- Q4.10 Are there other key terms that need to be formally defined? *Yes/No. If you answered 'Yes', please explain your answer.*

El methodology

Unit of assessment

- Q4.11 Are the two-digit Field of Research codes the most appropriate method to define units of assessment for Engagement and Impact? *Yes/No. Please explain your answer.*
No: Two digit FoR codes are extremely broad, heterogenous groupings. There is not necessarily any common purpose, approach or capacity for impact across a Two-digit code. An illusion of alignment with the ERA assessment is created where little exists
- Q4.12 Are there other ways to classify units of assessment in EI, for example, SEO codes? *Yes/No. Please explain your answer.*
Yes: SEO codes (probably at the 2-digit level) would be a significantly better unit of assessment. SEO codes would allow impact across disciplines allowing multidisciplinary research to be assessed without fragmenting it into disciplines. It is worth noting that the intended purpose of SEOs is to categorise activity based on its intended impact.

Selectiveness of EI

Q4.13 Should there be more or fewer units of assessment per university? *More units of assessment; The same number as in EI 2018; Fewer units of assessment.*

a. How many and why? *Please explain your answer.*

A similar number of units of assessment is probably appropriate until the assessment methodology matures. Increased flexibility to opt out of assessment in particular units of evaluation would be welcome. Similarly, it may make sense to allow universities to optionally increase the number of impact studies submitted in instances where they have large volumes of activity

EI low-volume threshold

Q4.14 The EI low-volume threshold should continue to be based on the number of research outputs submitted for ERA. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree.*

Disagree

a. If you disagree, how should eligibility for assessment in EI be determined? *Please explain your answer.*

If an SEO base unit of assessment approach is adopted, ERA FoR code volumes will not be useful. However, a publication volume approach is probably an appropriate approach for an SEO. Assignment of SEO codes to ERA publications may be needed in this case.

Q4.15 The low volume threshold is set at the appropriate level. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*

Disagree: It is relatively easy for a university to research the EI assessment threshold without necessarily having any applied research within a 2 digit FoR code. For example, a small astrophysics research group could trigger the EI assessment and would likely find it hard to produce meaningful impact studies.

Engagement indicators

Q4.16 Overall, the engagement indicator suite for the assessment of research engagement is suitable. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Agree: The income indicators are readily available and relate to engagement. Arguably they measure only one dimension of engagement and so are limited in relevance.

Q4.17 The cash support from research end-users indicator using HERDC data is appropriate for the assessment of research engagement? *Strongly agree; agree; neither agree nor disagree; disagree; strongly disagree. Please explain your answer.*

Agree

Q4.18 The research commercialisation income is appropriate for the assessment of research engagement. *Strongly agree; agree; neither agree nor disagree; disagree; strongly disagree. Please explain your answer*

Agree but relevance is limited to certain FORs

- Q4.19 Are there additional metrics that would be appropriate across many or all disciplines? *Yes/No. If you answered 'Yes', please outline the metrics. If you answered 'No', please explain your answer.*
No: Robust, relevant, easily accessible metrics that measure engagement are difficult to find and will rarely apply across all activity types. Publication based metrics such as industry co-authorship have merit but were extremely time consuming to assemble in the pilot. Additionally, industry engagement does not necessarily translate into publications that are appropriate for co-authorship with industry partners.
- Q4.20 Are there alternative metrics that would be appropriate across many or all disciplines? *Yes/No. Please specify the metrics.*
- Q4.21 Should any of the current Engagement metrics be redesigned? *Yes/No. If you answered 'Yes', which ones and how?*
Yes: "proportion of specified HERDC Category 1 grants to total HERDC Category 1—grant amount and number of grants" is highly problematic in that it would perversely reward a university for performing badly in non-specified Category 1 grants. Specified Category 1 income /FTE would be a better measure.
- Q4.22 The co-supervision of HDR students should be made an engagement indicator in future rounds of EI. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Agree: This is reasonable metric, but more thought is needed with respect to what constitutes co-supervision. Does an industry-based supervisor who holds an adjunct appointment at the university count? What if the supervisor holds an adjunct or clinical appointment at another university? Inclusion of this metric without resolving these issues could perversely discourage universities from formalizing relationships with research end users. There are also specific requirements for supervisor accreditation under TEQSA – is it expected that potential co-supervisors from industry meet TEQSA standards? If yes, this may create a barrier to industry engagement in some sectors.
- Q4.23 In your opinion, are any of the ERA applied measures appropriate indicators of research engagement in EI?
- Patents. *Yes/No. Please explain your answer.*
No. Engagement with a research end user is NOT implied by registering a patent.
 - Research commercialisation income. *Yes/No. Please explain your answer.*
Yes: Seems to imply engagement but is highly dependent on IP protection strategy and IP budget for IP protection. Some universities are disadvantaged as they do not have substantial resources to pursue commercialisation.
 - Registered designs. *Yes/No. Please explain your answer.*
No: Engagement with a research end user is NOT implied by registering a design.
 - Plant breeder's rights. *Yes/No. Please explain your answer.*
No: Engagement with a research end user is NOT implied by plant breeder's rights.

- e. NHMRC endorsed guidelines. Yes/No. Please explain your answer.
Yes: Within the limited context of the NHMRC endorsed guidelines this indicator does imply engagement

Engagement narrative

- Q4.24 The narrative approach is suitable for describing and assessing research engagement with end-users. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Neither agree or disagree
- a. If you disagree, what alternative approach could be used to replace the narrative? *Please explain your answer. If you are suggesting indicators, please be specific.*
- Q4.25 One engagement submission per broad discipline is sufficient for capturing the research engagement within that discipline. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Neither agree or disagree: This would be more likely to be true in an SEO based assessment.
- Q4.26 The engagement narrative needs to be longer. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree
- Q4.27 Additional evidence is needed within the narrative. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Neither agree or disagree
- a. If you agreed, what evidence should be provided? *Please describe.*

Impact narrative

- Q4.28 The narrative approach is suitable for describing and assessing impact. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Neither agree or disagree
- a. If you disagree, what alternative approach could be used to replace the narrative? *Please explain your answer. If you are suggesting indicators, please be specific.*
While the narrative-based approach is suitable for assessing an instance of impact, it is of little value in measuring total impact by a university or the sector, or as a measure of the efficiency of a university or the sectors in achieving impact.
- b. One impact study per broad discipline is sufficient for capturing the research impact within that discipline. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree: Clearly one impact study cannot represent the impact of a corpus of research that may span many thousands of research papers at a large university. However, increasing the number to 2 or 10 doesn't provide substantial added benefit either, while proportionally increasing the cost of the exercise.

- Q4.29 The impact narrative needs to be longer. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Agree: Universities were able to produce effective impact studies within the word limit.
- Q4.30 There is a need for additional evidence to be provided within the narrative. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.* *Disagree. Obtaining impact evidence was problematic for many submissions, because the evidence had not been kept or obtaining that evidence from partners (whom are the impact beneficiaries and presumably should be able to articulate the benefit) was in some cases also problematic. Not all partners understood what was being requested from them, the need for it, or did not have the time or resources to provide.*
- a. If yes, what evidence should be provided? *Please explain your answer.*
- Q4.31 In your opinion, are there quantitative indicators that could be used to measure the impact of research outside of academia? Yes/No. *Please explain your answer.*
No: There are almost certainly no universal quantitative indicatives of impact
- a. If you answered 'yes' to the previous question, please name and describe the quantitative indicator/s, and the disciplines for which they are relevant. *Please list and describe.*

Approach to impact Narrative

- Q4.33 The narrative approach is suitable for describing and assessing approach to impact. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree
- a. If you disagree, what alternative approach could be used to replace the narrative? *Please explain your answer. If you are suggesting indicators, please be specific.*
Rating the approach to impact separately from impact seemed unnecessary. Is it necessary to link impact and approach to impact to the same work? We found that in many instances high impact research had originated at, or with other institutions making it difficult to produce strong approach to impact narratives for these items, so they were not generally used. A narrative that addressed approach to impact, including engagement, across the unit of assessment would be more useful.
- Q4.34 One approach to impact narrative per broad discipline is sufficient for capturing the activities within that discipline. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree: See previous question
- Q4.35 The approach to impact narrative needs to be longer. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.* *Neither agree or disagree : Sufficient if current approach is maintained.*
- Q4.36 There is a need for additional evidence to be provided. *Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree

- Q4.37 Would there be benefit in combining engagement and approach to impact? Yes/No. Please explain your answer.
Yes: Engagement and approach to impact are closely linked and would likely benefit from being considered in a single document. Further engagement by itself can result in a lot of 'busy' work with no impact, so linking the two is appropriate

El rating scales

- Q4.38 The engagement rating scale is suitable for assessing research engagement. Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.
Neither agree or disagree
- Q4.39 The descriptors for the engagement rating scale are suitable. Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.
Neither agree or disagree
- Q4.40 The impact rating scale is suitable for assessing impact. Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.
Agree: Given the limited maturity of impact assessment a 3-point scale is the most that can be supported.
- Q4.41 The descriptors for the impact rating scale are suitable. Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.
Agree:
- Q4.42 The approach to impact rating scale is suitable for assessing approach to impact. Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.
Agree: Given the very limited maturity of approach to impact. assessment on a 3-point scale is the most that can be supported
- Q4.43 The descriptions for the approach to impact rating scale are suitable. Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree. Please explain your answer.
Agree

El interdisciplinary research

- Q4.44 Should EI continue to include an interdisciplinary impact study in addition to the two-digit Fields of Research impact studies? Yes/No. Please explain your answer. *No: Use SEO based units of assessment instead*

El and Aboriginal and Torres Strait Islander research

- Q4.45 Should the EI low-volume threshold be applied to the unit of assessment for Aboriginal and Torres Strait Islander research in EI 2024 with the option to opt in if threshold is not met? Yes/No. Please explain your answer.
Yes: Units of assessment with sufficient activity cannot be meaningfully evaluated. Optional submission below threshold levels of activity may be appropriate in carefully justified circumstances.

- Q4.46 Should the unit of assessment for Aboriginal and Torres Strait Islander research include engagement in EI 2024? Yes/No. *Please explain your answer.*
Yes

Section 5—Overarching Issues Common to both ERA and EI

Frequency of ERA and EI

- Q5.1 How often should ERA occur? *Every three years; Every five years; Other, please specify. Please explain your answer.*
- Q5.2 What impact would a longer assessment cycle (i.e. greater than three years) have on the value of ERA results, particularly in the intervening years? *Please explain your answer.*
Longer assessment cycles lead to loss of the skills at institutions needed to prepare effective submissions and lead to inconsistent workload across the cycle. Splitting the cycle so that there are 2 (or more) overlapping cycles might assist. For example, citation discipline assessment could occur on a 6-year cycle, with peer review disciplines assessed also assessed within 6-year cycle but offset. Other splits to the ERA could also be considered.
However, as a measure of current research capacity assessment cycles of greater than 2 to 3 years are highly problematic. A 6-year-old assessment of research quality is of highly questionable value given the high rate of researcher movement within the Australia academic community.
- Q5.3 How often should the EI assessment occur? *Every three years; Every five years; Other, please specify. Please explain your answer.*
10 years. Impact evolves slowly, and the narrative based approach does not provide objective measurement that justify more frequent assessment.
- Q5.4 What impact would a longer assessment cycle (i.e. greater than three years) have on the value of EI results, particularly in the intervening years? *Please explain your answer.*
A significantly longer assessment cycle would have little impact on the value of EI, due to the current low value relative to cost, and the long development time needed for impact.

Streamlining and simplifying ERA and EI

- Q5.5 ERA and EI should be combined into the one assessment. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*
Disagree. It is not clear what the intent of this would be. It is also problematic in terms of universities being able to undertake both at the same time, even if there was some streamlining.
a. What would be the advantages and/or disadvantages. *Please explain your answer.*
- Q5.6 Are there other ways to streamline the processes to reduce the cost to universities of participating in ERA and EI? Yes/No. *Please explain your answer.*
Yes: EI: The current EI assessment approach seems to offer very little objective value. Engagement and Impact in the Australian university sector might be much better served by establishing a highly prestigious, award system that evaluated and recognised outstanding engagement and impact. In the past

BHERT provided such awards, the Eureka Prize also does this, while Universities Australia provides excellent examples of impact. Research funding bodies could nominate and / or also prepare case studies. HERDC category 2-4 research funding is a measure of engagement with external partners that is relevant for many disciplines already and is already provided.

Impact is important but more time and effort could be spent on enabling it.

ERA: A wholly citation-based assessment could be outsourced to citation data suppliers if an affiliation-based approach could be adopted. There would be little loss of utility in citation assessed disciplines beyond that inherent in the affiliation approach. Total cost could be very much lower. However, it is unlikely that this approach would be well accepted in most of the disciplines currently using a peer review approach.

The ARC could utilise institutional repositories as a data source to harvest information for submission and assessment. Every institution has a local research repository, and Swinburne has maintained Research Bank as an outward facing research outputs repository for many years. Whilst the software across institutions is mixed and is changing and maturing, the protocols for harvesting and managing metadata are very robust and can reduce duplication across institutions considerably.

The ARC should consider a national Open Access policy which mandates collection of papers into a national repository for use as an ERA/EIA database. This imperative would provide certainty for all institutions working in this space, to ensure a pathway to open access is obtained, as well as providing quality publication and outputs data on a continuous collection basis.

Q5.7 In your view, what data sources could ERA utilise? *Please explain your answer.*
There are a range of possible data sources that could be considered as possible partners for ERA including Digital Science (with their Dimensions database), Ex Libris (with their Esploro database and Primo/Summon Central Discovery Index) and OCLC (with their WorldCat database for book and conference paper data) to harvest publications data into a central repository to assist with submission and assessment. Other possible partners such as CWTS might allow updated methodologies to be implemented in citation disciplines.

Q5.8 In your view, what are the most time-consuming elements of an ERA submission? *Please describe.*
Conference publications are extremely time consuming to validate and seem to provide little to no value in most disciplines. ICT is clear exception.

Assignment of publications to FoR codes is also time consuming, however AI assignment of publications to FoR codes is probably not mature enough to adopt at present.

a. Are there efficiencies that could be introduced? *Yes/No. Please describe.*
Remove conference publications as a reportable output in the majority of disciplines.

Q5.9 In your view what are the most time-consuming elements of an EI submission? *Please describe.*
Impact studies were typically time consuming and very costly to identify, document and write. Typically, multiple candidate studies were developed to an

advanced stage before a final study was chosen. Identifying and finding evidence to sufficient standard was also time consuming.

a. Are there efficiencies that could be introduced? Yes/No. Please describe. Consider a different model for EI assessment as described above. Provide funding to support and impact officer at each university (could be normalised) to enable universities to explain the importance of impact to researchers, what they need to do to document it etc

Utilising technological advances and pre-existing data sources

Q5.10 ORCID iDs should be mandatory for ERA. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Disagree:

a. What are the advantages and/or disadvantages? Please explain your answer.

It is not clear what additional benefit ORCIDs would bring to the ERA assessment process. Use of ORCIDs would facilitate tracking of researchers across institutions but the value of this to assessment of research quality is not clear.

Q5.11 The automatic harvesting of output data using ORCID iDs would streamline a university's submission process. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Disagree

a. What are the advantages and/or disadvantages? Please explain your answer

Universities would likely have to undertake a substantial, costly amount of work to get ORCID profiles up to a standard that would allow robust harvesting. ORCID profiles are generally outside the control of universities and not all Institutional research outputs/ research management systems integrate with ORCID. In some cases, researchers may have to enter outputs into 2 systems.

Q5.12 DOIs should be mandatory for ERA. *Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree. Please explain your answer.*

Agree

a. What are the advantages or disadvantages? Please explain your answer.

DOIs would assist in matching publications across universities, and assessments, and might also reduce the metadata that needs to be submitted. Note that DOIs are still uncommon in some disciplines such as Law so making them mandatory would be highly problematic in certain disciplines

Q5.13 Are there new ways to collect data to reduce the cost and burden to universities of participating in ERA and EI whilst maintaining the robustness of the ERA and EI process? *Yes/No. Please explain your answer.*

a. What are the advantages and/or disadvantages? Please explain your answer.