Institutional Research Audit 2016 - Output Guidance

As a research intensive University, delivery of internationally-leading research forms one of our core institutional strategic themes. In line with this, and in the context of an increasingly competitive research environment, the continued enhancement of the quality of our research outputs is crucial to our success. As an institution we must be ambitious in our research and focus on producing an outputs profile dominated by 3 and 4 star quality.

In line with this, the Institutional Research Audit 20[1]16 is an assessment of the level of 3 and 4 star quality research being undertaken across the University, in order to identify strong outputs and support required in preparation for the next REF. The Audit provides a platform on which we can develop and refine our internal review processes ahead of the next REF which will in turn provide a body of support in the preparation of high quality outputs across the University.

Output Requirements

Proposing an output

All eligible1 staff are required to submit up to 4 research outputs that are considered to be of 3* or 4* quality. It is appreciated that staff will be at different stages of research and publication development. Furthermore, it is recognised that individual circumstances may have an impact on your output productivity to date. As such, it is not expected that all staff will submit the maximum 4 outputs. It is however, expected that where staff have less than 4 (3 and 4 star) outputs that a plan to produce four outputs by the end of the next REF submission period will be discussed with the relevant Director of Research.

Guidance on assessing output quality and criteria for 3 and 4 star outputs are provided below. Outputs should be proposed via Pure https://pure.strath.ac.uk/admin/login.xhtml

The deadline for output submission is the 31st December 2015.

Justifying your Outputs: Additional factual information to support your outputs

When proposing an output in Pure you will be promoted to complete a field titled *'Give your reason for proposing this output'*. This field provides you with the opportunity to provide additional factual information to support the case for your output being considered as 3 or 4 star.

The information provided should be factual (not opinion based) and should outline supporting evidence that is not included in the output itself. Additional information could include examples of how the output has gained recognition, led to further developments, or has been applied. Appendix 1 offers a number of examples of additional factual information from outputs submitted in REF2014 by the University. The additional information provided should be succinct, verifiable and externally referenced where appropriate. Where the additional information provided is in reference to the industrial significance of the output, please note that at a later date you may be required to provide contact details of an industrialist involved (a requirement of REF2014). While citation data was not considered as eligible 'Additional information' for REF 2014, you may wish to highlight a significant citation from prestigious organisations or individuals.

It is expected that, in most cases, sufficient information will be provided in no more than 100 words.

The deadline for submitting the factual information is 31st December 2015.

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1 All staff on Academic (R&T) contracts and/or staff identified by School/Departmental Head as independent researchers in their own right.

Further Guidance

The difference between 3 and 4**

For the purpose of the Research Audit, outputs will be reviewed based on the same criteria as used for REF 2014 (although it must be acknowledged that conditions of the next REF have yet to be announced). The assessment methods used by sub panels in REF2014 are detailed below.

Output quality ratings are based on three guiding principles:

> **i) Originality:** the extent to which the output introduces a new way of thinking about a subject, or is distinctive or transformative compared with previous work in an academic field.
>
> **ii) Significance:** the extent to which the work has exerted, or is likely to exert, an influence on an academic field or practical applications.
>
> **iii) Rigour:** the extent to which the purpose of the work is clearly articulated, an appropriate methodology for the research area has been adopted, and compelling evidence presented to show that the purpose has been achieved.

Each of these principles (originality, significance and rigour) are considered when assessing research characteristics to provide an overall output rating. The research characteristics are detailed below, each with an indicator of how they were measured by the criteria to determine 4* and 3* rating:

Quality	
4* -	Quality that is world leading in terms of originality, significance and rigour
3* -	Quality that is internationally excellent in terms of originality, significance and rigour, but which falls short of the highest standards of excellence
Contribution to knowledge and concepts	
4* -	Research that contributes to agenda setting, that is leading or at the forefront of the research area and that has great novelty in developing new thinking, new techniques or novel results
3* -	Makes important contributions to the field at an international standard
Influence in the field	
4* -	Major influence on a research theme or field; developing new paradigms or fundamental new concepts for research
3* -	Contributes important knowledge, ideas and techniques which are likely to have a lasting influence, but are not necessarily leading to fundamental new concepts
Changes to policy / practice	
4* -	Major changes in policy or practice
3* -	Significant changes in policy or practice
Influence on processes, production and management	
4* -	Major influence on processes, production and management
3* -	Significant influence on processes, production and management
Applicability and significance to relevant service users and research users	
4* -	Major influence on user engagement
3* -	Significant influence on user engagement

Review Process

In order to achieve our ambition of an outputs portfolio of predominately 3 and 4 star quality, as an institution we must develop our ability to provide fair, consistent and thorough internal output review.

Feedback from REF 2014 outlined the value and benefit of implementing review processes at Departmental/School level. The development of skilled reviewers and robust review processes at Department/School will provide a support system for academic staff in the development of higher quality outputs. As such, the University is developing internal review methodology and skills in order to develop a consistent and robust review process to support the production of 3 and 4 quality outputs.

The Audit provides the opportunity to develop and refine this process. Two nominated reviewers have been appointed per Department/School. Reviewers will assess the outputs for their Department/School based on a '13 point scale' of assessment as used during REF 2014. Implementing this numerical grading system for outputs provides a higher level granularity in the review process. Any disputed ratings are resolved by a third reviewer.

More information on the output review process will be provided in due course and will be published on the RKES portal on the Research Audit page
https://moss.strath.ac.uk/rkesportal/Research/ref/SitePages/Research%20Audit.aspx

Improving our output quality

Achieving 3 or 4 star quality outputs is ambitious, can take time and the challenges to achieving this quality level vary across subject area. Feedback from Strathclyde REF Panel members highlights some general characteristics of 3 and 4 star outputs which are summarised below.

Clear, concise writing style: The originality, significance and rigour of the research must be clear from the abstract and continue throughout the publication. Tailored training initiatives to support you in the development of your publication skills are facilitated through OSDU: http://www.strath.ac.uk/hr/learninganddevelopment/

Well timed and thorough body of work: While early results are likely to be published, consider whether further work/results could lead to a more considerable body of new knowledge which could be more significant in terms of influence in the field and contribution to knowledge and concepts.

In addition, reviewing examples of 4 star outputs in your discipline can be highlight trends and characteristics of high quality publications. The REF database http://results.ref.ac.uk/ offers a resource of all outputs submitted to REF 2014 and is searchable by UoA and Institution. You can identify institutions with high percentages of 4 star outputs in your field via the REF results documents available on the RKES portal on the Research Audit page.

Open Access

To be eligible for submission in the next REF, your research outputs must be made Open Access. The following timescales and requirements have been applied by HEFCE:

- For outputs published on or before 01/04/16 - An author final version must be deposited in an Open Access repository (PURE) within three months of the **date of publication**
- For outputs published on or before 01/04/17 - An author final version must be deposited in an Open Access repository (PURE) within three months of the **date of acceptance**

Strathclyde currently working on the basis of **date of acceptance.**

The requirement applies only to journal articles and conference proceedings with an International Standard Serial Number (ISSN). It will not apply to monographs, book chapters, other long-form publications, working papers, creative or practice-based research outputs, or data.

Support available

For guidance on the Research Audit output submission or for more subject specific guidance in achieving 3 and 4 star outputs, please consult with your Department/School Research Director in the first instance. In addition the University offers a number of training initiatives facilitated through OSDU.

The University REF Team and their colleagues in RKES also offer a range of support including:

1) Identifying publication and impact trends, through tools such as SciVal and Altmetrics
2) Individual, Department/School, Faculty support and guidance on Audit requirements and the developing REF criteria.
3) Work with your Department/School to improve training and support offered.

If you have any queries regarding any aspect of the Research Audit or outputs in general, please contact the REF Team researchaudit@strath.ac.uk

Resources
Use the REF results to identify high ranking institutions within your UoA and use the REF database to review their outputs as examples of 3 and 4 star quality in your subject area.

REF results summary:
https://moss.strath.ac.uk/rkesportal/Research/ref/SitePages/Research%20Audit.aspx

Searchable database of all REF outputs:
http://results.ref.ac.uk/

Appendix 1: Examples of Additional Information Submitted to Support Outputs Submitted by Strathclyde For REF 2014

Example 1	World first paper developing the full 3D FEA modelling of the whole wrist bone interaction including ligament and cartlidge modelling. Work has been used by medical implant groups in the UK and worldwide research groups in US (Prof Victor Kosmopoulos, University of Northern Texas, Fort Worth on ligament modelling (victor.kosmopoulos@unthsc.edu), Japan (Prof Yuji Tanabe, Niigata University which resulted in a research exchange in 2012 funded by Japanese Institution, y.tanabe@eng.niigata-u.ac.jp) and Malaysia (Prof Tunku Abindin – using our model in their biomechanical analysis of the wrist arthroplasty in rheumatoid arthritis (tkzrea@um.edu.my).
Example 2	First comprehensive investigation on the ratchet limit and crack tip plastic strain range for the cracked structure. New insight into cyclic plastic behaviour of cracks with detailed parametric studies. One of key outputs from EPSRC Grant EP/G038880/1. Cited and used by researchers from China (International Journal of Pressure Vessels and Piping, 101, 113–142, 2013). Led to further investigations on cyclic J-integral using the LMM (International Journal of Pressure Vessels and Piping, 108-109, 72-80, 2013). Delivered a step-change in modelling cracks using direct methods and secured an EngD project (NE89) funded by the EPSRC nuclear EngD centre and Siemens.
Example 3	The paper presents the first published quantification of the different relative contributions of fibre length and diameter to the levels of notched, unnotched and multiaxial impact resistance of glass fibre polyamide composites. Described as “inspirational” by Ems-Grivory, a major producer of glass fiber reinforced polyamides (philipp.harder@emsgrivory.com). Being followed up by Yan at University of Southern Queensland, Australia (Composites Part B 46:2013;221) and used by researchers at South China University of Technology, Chinese Academy of Science, Shenyang, China, Chemnitz University of Technology, Germany, Sichuan University, China and the Hassan at the University of Malaya (ahassan@um.edu.my).
Example 4	This paper develops the first theory that accurately predicts the properties of the electric double layer from the weak to the intermediate through to the strong coupling limit. It led to invitations to speak at Lund University (jan.forsman@teokem.lu.se) and Utrecht University (r.vanroij@uu.nl), as well as at workshops and conferences organized by experts in the field (e.g., “Advances in modelling electrolyte solutions,” Statistical Mechanics and Thermodynamics Group, RSC, London, UK, 2012, andrew.masters@manchester.ac.uk; “New challenges in electrostatics of soft and disordered matter,” CECAM, Toulouse, France, 2012, jd489@cam.ac.uk). This paper was included in the Best of 2010 Articles Collection for Europhysics Letters (http://iopscience.iop.org/0295-5075/page/Best%20of%202010%20Collection).
Example 5	Presenting a completely new insight into the influence of polymer degradation on composite interface. Research outcomes of this paper challenge most existing literature findings in this area by showing directly how polymer degradation would affect composite interface. Industrial interest in the research has resulted in a KTA project with PPG Industries to evaluate their fibre products using the reported techniques [J. vd. Woude, Associate Director S&T at PPG Industries (vanderwoude@ppg.com)] and a new research partnership with Prof Johnson (michael.Johnson@nottingham.ac.uk) at the University of Nottingham to jointly study composite interface with recycled fibres.