Appendix A

Unit of Assessment 5 - Working Methods

1   UoA Committees and Operations

1.1   The work of UoA Committees collectively and the work undertaken by individual members of the Committee will be conducted in accordance with the University's REF Code of Practice.

1.2   All Committee members will familiarise themselves with the University's Code of Practice for the REF, which sets out the processes for the fair and transparent identification of staff across the collegiate University with significant responsibility for research; for determining who is an independent researcher; and for the selection of outputs.

1.3   The Code will apply to all University staff who are eligible for the REF (and throughout this document, the phrase `University staff' will mean eligible University employees and eligible College employees, on an equal basis). The Code of Practice obliges Committee members to undergo training in equality and diversity before beginning the process of staff identification and output selection.

2   Role of the UoA Chair

2.1   The UoA Chair will be responsible for preparing all aspects of the UoA REF return, including:

- the identification of eligible staff, including those from Colleges and related institutes, to be submitted

- the selection of research outputs

- the development and completion of all UoA impact case studies

- the review and approval of all REF data provided by the centre such as numbers of PhD students, research income, research income-in-kind and staff employment data

- the provision and verification of the accuracy of all elements of the UoA submission

2.2   The final form of the return will be agreed in consultation with the Head of School and the Pro-Vice Chancellor for Research.

2.3   In fulfilling these responsibilities, the UoA Chair will report to the Head of the relevant School and work closely with the central REF Office to ensure the completeness, timeliness, accuracy and quality of the UoA submission. During the submission, the UoA Chair will ensure that the UoA complies with the University's REF Code of Practice.

2.4   The UoA Chair will be expected to provide (with the support of the UoA Administrator) frequent and timely information to the REF Office on the status of the UoA submission and on any issues that may affect the quality or timeliness of the UoA submission. The requirement to provide this information will be driven by the University's REF timetable, by such regular reporting cycles as may be established and by factors outside these frameworks as required.

2.5 Schools, Faculties, Departments, Institutes, individual researchers and the University's REF Office will provide the UoA Chair with information that may reasonably be required for the REF return within a reasonable timescale. This information includes, for example, contractual information relevant to the REF eligibility of individual staff members, details of their research outputs and of impact created. The UoA Chair is entitled to seek the opinions of experts internal or external to the University on the quality of research outputs, in accordance with the Code of Practice.

3 Role of the UoA Committee

3.1 The role of the UoA Committee is to support the Chair in making the best possible REF submission in accordance with the University's REF Timetable, and to comply with the University's REF Code of Practice, including its equality and diversity aspects.

3.2 **Membership:**

- The Committee membership should include a nominated Deputy Chair who will lead meetings in the absence of the UoA chair and act as his/her formal Deputy as required.

- The size of the Committee should be appropriate to its workload, which in turn will depend on the size of the UoA. It is recommended that Committees should have between four and ten members, including the Chair and Deputy Chair, unless there are particular reasons (such as the unusual size of the UoA) which make it desirable to have a larger committee.

- Committee membership should reflect the subject diversity of the UoA concerned, for example reflecting the research group structure of the planned submission where it applies.

- A nominated Committee lead should be identified for (i) outputs & open access, (ii) research impact; (iii) research environment; (iv) equality & diversity. Where appropriate, the leadership for these responsibilities could rest with the UoA Chair or Deputy Chair.

- It is recommended that the membership of Committee should draw upon relevant members of the University's REF Advisory Group. Committee membership should also include cross-representation with the relevant School REF Working Group.

- One of the two Academic Leads for the relevant Main Panel should be invited to attend Committee meetings in an ex officio capacity. The relevant Head of School may also be invited to attend as required.

- The Committee will be supported by an identified UoA Administrator appointed by the relevant School. Members of the central REF team will also be available to support the work of the Committee for specific tasks (e.g. review of Impact Case Studies). It is suggested that a member of the REF Management Team and/or the relevant REF Impact Coordinator are invited to attend Committee meetings as required.

- UoA committees wishing to appoint external members or advisors to their REF Committees must ensure that external members sign the University of Cambridge REF Confidential Disclosure Agreement (REF CDA). The REF CDA should then be countersigned by the authorised signatory. Authorised signatories are nominated by the School and given delegated authority by the REF team. The fully executed REF CDA should be kept locally and a copy sent to the REF2021 team.

- In order to meet the requirements of the REF Timetable, Committees should meet on at least a twice termly basis for the 2018/19 academic year.

3.3 The frequency of meetings in the period September 2019 – November 2020 should be set as required to ensure that internal deadlines for the completion of the UoA submission can be met.

3.4 It is recommended that meetings will typically require 1-2 hours but that sufficient time is set aside to complete the business of a particular meeting, for example review of outputs or impact case studies.

3.5 Where a UoA committee member is absent for at least three consecutive meetings, or is unable to attend for at least a term due to leave arrangements, the Chair shall consult the Chair of the Faculty Board or Head of Department concerned to identify a replacement member with the necessary expertise.

3.6 Questions about whether the work of an individual member of staff falls within this Unit of Assessment will be settled in accordance with the recommendations set out in the Code of Practice paragraph 16(i). In the first instance, the Chairs of the Unit of Assessment Committees concerned will discuss the matter, in consultation with the member of staff. If agreement cannot be reached, the matter will be referred to the Head(s) of School(s) concerned for guidance. The final decision rests with the PVC-Research.

4   Data Protection

The protection of staff data is paramount and members of UoA Committees must make every effort to prevent unauthorised or accidental access to, or disclosure of, personal information. Research England Guidance on Submissions sets out the personal data that the University must supply in the submission. In the case of University-employed staff, this information will be extracted from the University's HR and payroll system and held within a secure University REF database to underpin each person's research output details. In the case of College staff, information will be provided by the Office of Intercollegiate Services and held within the same secure systems.

5   Conduct of business

5.1   The quorum for the conduct of business at a meeting will be appropriate to the size of the Committee.

5.2   The Committee has discretion under the Code of Practice to conduct any item of business by circulation, with the exception of decisions on the eligibility of staff. The Committee may delegate particular decisions to its Chair or another designated member, or to a sub-committee, but it may not delegate decisions on the eligibility of staff, the determination of the quality of an output, the selection of an output for inclusion of the pool of outputs, or the approval or amendment of the Unit of Assessment Working Methods.

6   Conflicts of interest

6.1   In the event that a member of a Committee believes that they might have a conflict of interest in the assessment of a particular output or the identification of a particular member of staff as an independent researcher, this must be declared immediately to the Chair of the Committee and they should take no further part in decisions relating to these matters.

6.2   If the Chair of a Committee believes that they have such a conflict of interest then they must declare it to the Committee and take no part in the decision. The Committee may appoint another member to act as Chair during the consideration of the matter in question.

6.3   The Chair (or UoA Administrator) will keep a confidential register of conflicts of interest declared and the action taken.

6.4   Examples of conflicts of interest include the consideration of an output of which the Committee member is a co-author, or where the selection process involves a member of staff with whom a Committee member has a personal relationship.

7   Selection of Outputs

All Units of Assessment will follow the general principles for output selection as detailed in paragraphs 51 – 55 of the Code of Practice. Unit of Assessment Committees may operate local procedures in line with the requirements of the Code of Practice, taking care not to introduce any procedures or data collection processes that may introduce bias.

Unit of Assessment 5 will review outputs guided by their Note on Article Scoring using the following scoring methodology (full Note is available as Appendix ?).

Column1	work (man years)	Methodological	Originality	importance for understanding (eg uncovering novel mechanism/theoretical game changer) or impact (eg health / food / environment)
A	20+	standard method, 100s to 1000s citations likely	paradigm shift	widespread impact or fundamental understanding
B	10	likely wide usage	major step	highly significant
C	5	specialised key method / more general, less important	important but predictable	specialised high importance / more general lower importance
D	3	some general usage	Useful	some general importance
E	1	Specialised	Modest	specialised
F	<0.5	highly specialised	Incremental	highly specialised

4 high   A in at least one aspect other than work / B in 2 or more

4 mid   at least one B outside work, probably with high work

4 low   straight Cs with high work, one B with low work

3 high   straight Cs with modest work / debateable B

3 mid   more than one C

3 low   one C or multiple Ds, likely A or B for work / 2 Cs

2 or lower   max one D, all other scores lower

7.1   Assessment of research outputs

Table A2: Outputs sub-profile: Criteria and definitions of starred levels

The criteria for assessing the quality of outputs are 'originality, significance and rigour'.	
Four star	Quality that is world-leading in terms of originality, significance and rigour.
Three star	Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence.
Two star	Quality that is recognised internationally in terms of originality, significance and rigour.
One star	Quality that is recognised nationally in terms of originality, significance anpd rigour.
Unclassified	Quality that falls below the standard of nationally recognised work. Or work which does not meet the published definition of research for the purposes of this assessment.

8   Impact

8.1   It is for the Committee to determine the impact case studies which will be included in the REF submission and to prepare the impact template. The Committee will submit those research impact case studies which, in its opinion, are the strongest. The impact element of the submission covers the Unit of Assessment as a whole and attempting to submit a broad range of different impacts will not, in itself, strengthen the submission.

Table A3: Impact sub-profile: Criteria and definitions of starred levels

The criteria for assessing impacts are 'reach' and 'significance': In assessing the impact described within a case study, the panel will form an overall view about its 'reach and significance' taken as a whole, rather than assess 'reach and significance' separately.	
Four star	Outstanding impacts in terms of their reach and significance.
Three star	Very considerable impacts in terms of their reach and significance.
Two star	Considerable impacts in terms of their reach and significance.
One star	Recognised but modest impacts in terms of their reach and significance.
Unclassified	The impact is of little or no reach and significance; or the impact was not eligible; or the impact was not underpinned by excellent research produced by the submitted unit.

9   Environment

It is for the Committee to prepare the environment template. The required data on PhD completions and research grant expenditure will be prepared centrally and circulated to UoA according to the timetable.

Note on article scoring

It is clearly difficult to score all papers on the same axes! We have tried to develop a set of semi-objective criteria that will help assign a meaningful rating to papers. We have based this on the criteria used for marking exam essays, using the logic that there are also multiple aspects to what makes a good / bad essay.

We suggest three axes by which a paper can be considered 'good': originality, importance and methodological usefulness. There is also the amount of work involved, since some acknowledgement should be given to studies where an advance requires a huge amount of data to be generated. Our suggestion is that work is used as a modifier, pushing a given rating up or down a notch depending.

For most papers the two key categories are likely originality and importance. By having two categories we hope to allow a paper to score highly either because it is a modest step in field of great impact (e.g. cancer / infectious diseases etc.) or because it represents a paradigm shift in a less import, 'blue sky' field (e.g. animal behaviour). The methodological category is more to capture methods papers, since these should have an opportunity to score highly even though they may not fit well in the other two main categories.

We hope that, with some refinement, this system can provide practical help in achieving consistent scores. I have forwarded this to a colleague who has been used in the past as an external assessor to see whether he has any comments / suggestions.

Column1	work (man years)	methodological	originality	importance for understanding (eg uncovering novel mechanism/theoretical game changer) or impact (eg health / food / environment)
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B	10	likely wide usage	major step	highly significant
C	5	specialised key method / more general, less important	important but predictable	specialised high importance / more general lower importance
D	3	some general usage	useful	some general importance

E	1	specialised	modest	specialised
F	<0.5	highly specialised	incremental	highly specialised

4 high	A in at least one aspect other than work / B in 2 or more
4 mid	at least one B outside work, probably with high work
4 low	straight Cs with high work, one B with low work
3 high	straight Cs with modest work / debateable B
3 mid	more than one C
3 low	one C or mutliple Ds, likely A or B for work / 2 Cs
2 or lower	max one D, all other scores lower

Use of citations

Assessors are allowed to use citations to assist the assessment of a publication. However, citation number needs to be interpreted with care. The following are a number of issues that need to be taken into account when using citation number as an indicator of quality:

1. Citations accumulate over time, so recent papers may have many fewer citations than those published at the start of the review period.

2. Citation number may grow at different rates in different disciplines. Crucially, some of the most important findings are only fully appreciated years after they were first published.

3. Citation number inevitably scales with the size of the field in which they occur. Thus, a paper in a field with 10,000 publications each year will on average be cited 10 times as often as papers in field with only 1,000 publications per year. It does not necessarily follow that a paper in the larger field is 10 always times as important!

4. Certain elements of a paper can result in disproportionate citations. For example, a paper that contains a table that summarises a literature search may not be a review paper but may attract similar levels of citation. Similarly, even modest methodological advances can be very highly cited. Primacy is another factor: if a paper is the first or only example of a technique applied to a particular taxon it may attract citations just because it is an example.

5. Secondary citations can act to exacerbate (4) through lazy authors simply using the same citations are others.