Research Assessment Exercise 2026
Panel 6 – Engineering
Panel-specific Guidelines on
Assessment Criteria and Working Methods

(October 2024)

Content:

Introduction

1. This document sets out the assessment criteria and working methods that the Engineering Panel of the Research Assessment Exercise (RAE) 2026 will apply. It should be read alongside the General Panel Guidelines of the exercise. The provisions set out in this document serve as further elaboration and amplification on the assessment criteria and working methods as applied to the Engineering Panel. In areas where no additional information has been specified, the provisions in the General Panel Guidelines will prevail and apply in the assessment process of the Panel. These guidelines do not replace or supersede the requirements for submissions that are set out in the Guidance Notes for RAE 2026.

2. This document describes the criteria and methods for assessing submissions in the Engineering Panel. It provides guidance on the type of information required in the submissions. It also provides a single, consistent set of criteria that will be applied by the Panel and sub-group(s)/sub-panel(s), when undertaking the assessment having regard to any differences in the nature of disciplines of respective units of assessment ("UoAs") under purview. It also provides a common approach to the working methods applied within the Panel.

Section A: Submissions

UoAs under the Panel

3. The Engineering Panel will assess universities' submissions from the following UoAs –

Code	UoAs
14	mechanical engineering, production engineering (incl. manufacturing & industrial engineering), textile technology and aerospace engineering
15	chemical engineering, biomedical engineering, other technologies (incl. environmental engineering & nautical studies) and marine engineering

4. The Panel expects to receive submissions whose primary research focus falls within the respective remit of the above UoAs. The UoAs under the Panel's remit cover the full spectrum of basic and applied engineering in the areas of mechanical (including aeronautical, aerospace, aviation and nuclear), production (including manufacturing, industrial and systems), chemical, marine and biomedical engineering, textile and other related technologies such as environmental engineering, nautical studies and sports engineering. Topics may include, but are not limited to: acoustics; additive manufacturing, aeroacoustics, aerodynamics; aeronautical engineering, aerospace engineering, aircraft design; automation; automotive engineering; aviation engineering, avionics; biomechanics, biological, biochemical and biomedical engineering; biomaterials; biomedical imaging; CAD/CAM/CAE, computational methods and optimisation; control; cyber-physical systems; dynamics; energy modelling and engineering; engineering circular economy; engineering design; engineering management and logistics; emissions reduction and treatment, water purification and waste treatment, environmental engineering (particularly air pollution generation and reduction at source); failure analysis; food process engineering; fluid mechanics; fluid power; fluidics; fuel technology; heat transfer; human factors and ergonomics; industrial health and safety; intelligent and autonomous systems; life cycle analysis; manufacturing technology, processes and systems; materials (particularly processing, forming, assembly, structural design and mechanical application of materials); maritime engineering; mechanics; mechatronics;

microelectromechanical systems, nanomaterials, nanotechnology and nanoengineering; naval architecture; nuclear engineering; precision and ultraprecision engineering; product design; product, process and systems engineering (including application of modern analysis tools such as AI, economic/environmental/social impact assessment, machine learning); robotics, sensors and actuators; solid mechanics; space engineering; sustainable engineering and green technologies; systems engineering; systems modelling and identification; textiles, fibres and technology; thermodynamics; turbo-machinery and propulsion; tissue engineering; wind engineering and vibration. It also includes pedagogic research in mechanical, aeronautical, aerospace, aviation, nuclear; production, industrial and systems; chemical, marine and biomedical engineering, textile and other related technologies such as environmental engineering, nautical studies and sports engineering.

UoA descriptors and boundaries

4.1 Descriptors: The table below lists the research areas and the sub-disciplines of UoAs 14 and 15.

Research Areas		Sub-disciplines	
14a	mechanical engineering	14a-01	solid mechanics and engineering materials
		14a-02	thermodynamics, fluid mechanics, energy
		14a-03	robotics, dynamics, acoustics sensors and control
		14a-04	engineering design
		14a-05	microelectromechanical systems, nanotechnology
		14a-06	aeronautical, aerospace and aviation engineering
		14a-07	nuclear engineering
		14a-08	sports engineering
14b	production engineering (incl. manufacturing & industrial engineering)	14b-01	manufacturing technology
		14b-02	manufacturing system
		14b-03	industrial and systems engineering

Research Areas		Sub-disciplines	
		14b-04	engineering management and logistics
14c	textile technology	14c-01	textile technology
15a	chemical engineering	15a-01	process engineering
		15a-02	kinetics and transport processes
15b	marine engineering	15b-01	marine engineering
15c	other technologies (incl. environmental engineering & nautical studies)	15c-01	energy storage
		15c-02	energy production
		15c-03	water and waste treatment
		15c-04	air pollution control
15d	biomedical engineering	15d-01	biomechanics, biomaterials and tissue engineering
		15d-02	imaging systems and devices
		15d-03	biomedical sensors and analysis

4.2 Boundaries: The Engineering Panel expects submissions from all sub-disciplines listed under the two UoA descriptors, but anticipates submissions that may span the boundaries between two UoAs within the Panel or with other UoAs outside the Engineering Panel. Submitting units are encouraged to submit outputs that are of inter-disciplinary nature, and expects that submissions may contain outputs that not only make contributions to this Panel and other cognate disciplines, but also to UoAs that extend beyond traditional cognate disciplines.

Inter-disciplinary Research

5. The Panel recognises that certain aspects of research are naturally inter-disciplinary or span the boundaries between individual UoAs, whether within the Panel or across panels. The Panel will adopt the arrangements for assessing inter-disciplinary submissions as set out in paragraphs 39-40 of the General Panel Guidelines.

6. Areas of inter-disciplinary research that are relevant to the Panel include, but not restricted to, artificial intelligence, biomedical, energy and environmental engineering, financial engineering, human factors, materials science, robotics technology and optimization.

Assignment of Eligible Academic Staff in Each UoA

7. Pursuant to paragraphs 7-11 of the General Panel Guidelines, the Engineering Panel expects to receive information on any sub-discipline(s) under a research area that each eligible staff member and respective research output(s) belong to. This information will be used to assist in assigning research outputs to panel members with appropriate expertise. With reference to the sub-disciplines listed in para 4.1, each eligible staff member could specify up to four sub-disciplines, or the number of sub-discipline(s) equivalent to the number of his/her submitted output(s), whichever is lower. An output could be specified with one sub-discipline, which must be one of the sub-discipline(s) specified by the staff member. The list of sub-disciplines provided is not exhaustive, neither are the sub-disciplines precisely defined. If universities or eligible staff members are uncertain about the research area or sub-discipline that should be assigned to an output, the Panel Convenor and Deputy Convenor will exercise their discretion in allocating that output to the most appropriate panel members for assessment.

8. It is critical that research outputs are assessed by the most appropriate panel. If the Panel suspects any anomaly regarding universities' assignment of eligible academic staff (and therefore their outputs) to research area(s) and UoA(s) under its remit, it will follow the procedures for re-assignment of eligible staff according to paragraphs 10-11 of the General Panel Guidelines. The Panel also recognises its responsibility to handle submissions arising from any re-assignment of eligible academic staff to the Panel.

Section B: Assessment Criteria: Research Outputs

Output Types

9. The Engineering Panel will consider the eligibility of research outputs as described in paragraphs 15-17 of the General Panel Guidelines, paragraphs 5.7-5.11 and Appendix E of the Guidance Notes.

10. The Panel will assess the quality of each eligible output on its own merits and not in terms of its publication category, medium or language of publication. The Panel will examine each item in detail and will not assess

outputs mechanistically according to the publication venue. The Panel recognises that there can be work of the highest quality in various output forms, and no distinction will be made between types of output submitted nor whether the output has been made available electronically or in a physical form.

11. Forms of research outputs that are admissible and specifically relevant to the Engineering Panel include the following examples. This should not be regarded as an exhaustive list. Equally, there is no implication of priority or importance in the ordering of examples in this list –

- books, book chapters and research monographs
- peer-reviewed conference papers
- patents awarded or published patent applications
- published papers in peer-reviewed journals
- publicly accessible peer-reviewed pre-prints
- review articles where these incorporate new research, or new hypotheses
- standards documents.

12. Research outputs will be assessed for the quality of original research they include. The Panel will accept the submission of books, review articles and standards documents only where they contain a significant component of unpublished research or new insight which, as specified in paragraph 18(a) of the General Panel Guidelines, is identified in the accompanying abstract or added at the end of the abstract in no more than 100 words. Such outputs will be judged only on their original research or novelty of insight. That said, the Panel recognises that the process of peer review entails careful refereeing of papers submitted to academic publishing outlets.

13. The Panel will consider subsequent editions of previous work only where they include new research, which should be detailed in the accompanying abstract or added at the end of the abstract, as specified in paragraph 18(a) of the General Panel Guidelines, in no more than 100 words.

14. The Panel requires that a brief statement of no more than 100 words must be submitted for each output item to provide additional

information beyond what is given in the abstract regarding the originality, significance and rigour of the output, e.g. the nature and originality/significance of the approach especially where it enhances the rigour, additional verifiable evidence about how an output has gained recognition, led to further developments, or has been applied; the amount and nature of overlaps between research outputs, the relationship between different outputs on the research questions, the new elements in a new version of a research output submitted in any previous RAE. etc.

Double-weighting of Research Outputs

15. Paragraphs 29-31 of the General Panel Guidelines indicate that in exceptional cases a submitting university may request that outputs of extended scale and scope be double-weighted in the assessment. The Panel recognises that there may be outputs of such scale and scope and will consider the items submitted for double-weighting in line with the General Panel Guidelines.

16. When requesting for double-weighting of an output, universities should submit a statement in not more than 100 words, explaining in what ways the output is of sufficiently extended scale and scope to justify the claim. The Panel will decide whether to double-weight the output on the basis of quantity and significance of original work.

Co-authored/Co-produced Outputs

17. The Panel affirms the principles and arrangements on assessing co-authored/co-produced research outputs as set out in paragraphs 32-34 of the General Panel Guidelines.

18. The Panel will consider co-authorship to be a normal element of research activity in its UoAs and expect all named co-authors to have made a significant contribution to the research process leading to the output concerned. Where there are more than six co-authors and where neither the first, last nor corresponding co-authors are a part of the submission, the Panel requires a statement of no more than 100 words outlining the significant contribution of the researchers who are a part of the submission. In assessing co-authored outputs, the Panel will give particular consideration to the contribution of those co-authors who are a part of the submission.

Non-traditional Outputs

19. The Panel will handle research outputs in non-traditional form according to paragraphs 35-37 of the General Panel Guidelines. The Panel considers it unlikely that research outputs in non-traditional form will be submitted.

Criteria and Quality Levels for Assessing Research Outputs

20. Panel members will use their professional judgement with reference to international standards in assessing research outputs.

21. In assessing outputs, the Panel will look for evidence of originality, significance and rigour, and will grade each output into one of the five categories of quality level as set out in paragraph 19 of the General Panel Guidelines. The generic description of the quality levels as set out in paragraph 20 of the General Panel Guidelines will be applied in the Panel's assessment.

22. The Engineering Panel provides the following amplifications on the criteria of assessing research outputs –

- originality: will be understood as the extent to which the output makes an important, original and innovative contribution to understanding, knowledge and practice in the field. Research outputs that demonstrate originality may do one or more of the following: produce and interpret new empirical findings or new material; propose new paradigm shift; engage with new and/or complex problems; develop innovative research methods, methodologies, analytical techniques; platforms and technologies; show imaginative and creative scope; provide new arguments and/or new forms of expression, formal innovations, interpretations and/or insights; collect and engage with novel types of data; and/or advance theory or the analysis of doctrine, policy or practice, and new forms of expression.
- significance: will be understood as the extent to which the work has influenced, or has the capacity to influence, knowledge and scholarly thought, or the development and understanding of theory, policy and/or practice.

- rigour: will be understood as the extent to which the work demonstrates intellectual coherence and integrity, and adopts robust, appropriate and in-depth concepts, analyses, sources, theories and/or methodologies.

23. In addition, the Panel provides the following advice on their understanding of the quality definitions adopted for assessing research outputs. The Panel will take into consideration the following characteristics in particular –

- scientific rigour and excellence with regard to the design, research method, execution and analysis of the work.
- whether or not the output has been subject to peer-review.
- significant addition to knowledge and to the conceptual framework of the field.
- potential and actual significance of the research both within and beyond the field concerned.
- the scale, challenge and logistical difficulty posed by the research.
- the logical coherence of argument.
- contribution to new theory and concepts.
- significance of work to advance knowledge, skills, understanding and scholarship in theory, practice, education, management and/or policy

Metrics/Citation Data

24. Pursuant to paragraph 24 of the General Panel Guidelines, the Panel acknowledges that metrics and citation data may serve as advisory or secondary information, and that they should not be used in any algorithmic or deterministic way for the evaluation of research quality.

25. While the Engineering Panel will examine each output in detail for the assessment, the Panel may informally use article-level metrics such as citation data to inform its assessment of individual items. However, such metrics and data will not be used in any algorithmic or deterministic way for the evaluation of research quality. The Panel is aware of the limitations

of citation data, in particular their variability within as well as between disciplines, and the need to consider that some excellent work takes time to demonstrate its full achievements.

Additional Information on Research Outputs

26. Other than the information required on research outputs as specified in the Guidance Notes, and unless specifically required by the Panel during the assessment process, no other information should be provided. The Panel will take no account of any such information if submitted.

Section C: Assessment Criteria: Research Impact

Range of Impacts

27. The Engineering Panel will accept submissions on research impacts that meet the generic definition and criteria as set out in paragraphs 47-49 of the General Panel Guidelines.

28. The Panel will assess the quality of all eligible impact submissions based on their merits on equal footing with no consideration given to the differences among submitting universities/units in terms of staff size, resources and histories. The Panel recognises that impacts within its remit can be manifest in various ways and may occur in a wide range of spheres whether locally, regionally or internationally.

29. Examples are provided to illustrate the range of potential impacts from research across the Engineering Panel in Table A. These examples are indicative only, and are not exhaustive or exclusive. Equally, there is no implication of priority or importance in the ordering of examples in the list.

30. Universities are expected to submit their strongest impact cases and not to align submitted cases specifically with the particular types of impact listed, as an impact case may describe more than one type of impact.

Table A: Examples of Impact[1]

Economic impacts *Impacts where the beneficiaries may include businesses, either new or established, or other types of organisation which undertake activity that may create wealth*	• The performance of an existing business has been improved through the introduction of new, or the improvement of existing, products, processes or services; the adoption of new, updated or enhanced technical standards and/or protocols; or the enhancement of strategy, operations or management practices. • A spin-out or new business has been created, established its viability, or generated revenue or profits. • A new business sector or activity has been created. • A business or sector has adopted a new or significantly changed technology or process, including through acquisition and/or joint venture. • Performance has been improved, or new or changed technologies or processes adopted, in companies or other organisations through highly skilled people having taken up specialist roles that draw on their research, or through the provision of consultancy or training that draws on their research. • Losses have been mitigated by improved technology or methods of risk assessment and management in safety or security critical situations.

[1] Examples of impact case studies in RAE 2020 may be accessed online at <https://impact.ugc.edu.hk/> and <https://www.ugc.edu.hk/eng/ugc/activity/research/rae/2020/impactsubmissions.html>. Other examples of research impact as assessed in other jurisdictions may be accessible online such as <https://results2021.ref.ac.uk/impact> from the United Kingdom.

Universities may also refer to examples of impacts and indicators detailed in Annex A of <https://2021.ref.ac.uk/media/1450/ref-2019_02-panel-criteria-and-working-methods.pdf> of the United Kingdom Research Excellence Framework 2021.

<u>Impacts on public policy and services</u> *Impacts where the beneficiaries may include government, non-governmental organisations (NGOs), charities and public sector organisations and society, either as a whole or groups of individuals in society*	• A policy has been implemented (including those realised through changes to legislation) or the delivery of a public service has changed. • (Sections of) the public have benefited from public service improvements. • In delivering a public service, a new technology, process or code of practice has been adopted or an existing technology or process improved. • Policy debate has been stimulated or informed by research evidence. • Policy decisions or changes to legislation, regulations or guidelines have been informed by research evidence. • Changes to education or the school curriculum have been informed by research. • Risks to the security of nation states have been reduced. • The development of policies and services of benefit to the international community has been informed by research.
<u>Impacts on society, culture and creativity</u> *Impacts where the beneficiaries may include individuals, groups of individuals, organisations or communities whose knowledge, behaviours, creative practices and other activity have been influenced*	• Public discourse has been stimulated or informed by research. • Public interest and engagement in science and engineering has been stimulated, including through the enhancement of science and engineering-related education in schools. • The awareness, attitudes or understanding of (sections of) the public have been informed, and their ability to make informed decisions on

	issues improved, by engaging them with research. • The work of an NGO, charitable or other organisation has been influenced by the research. • Research has contributed to community regeneration.
<u>Health impacts</u> *Impacts where the beneficiaries may include individuals (including groups of individuals) whose health outcomes have been improved or whose quality of life has been enhanced (or potential harm mitigated) through the application of enhanced healthcare for individuals or public health activities*	• A new drug, treatment or therapy, diagnostic or medical technology has been developed, trialled with patients, or adopted. • Patient health outcomes have improved through, for example, the availability of new drug, treatment or therapy, diagnostic or medical technology, changes to patient care practices, or changes to clinical or healthcare guidelines. • Public health and quality of life has been enhanced through, for example, enhanced public awareness of a health risk, enhanced disease prevention or, in developing countries, improved water quality or access to healthcare. • Decisions by a health service or regulatory authority have been informed by research. • The costs of treatment or healthcare have reduced. • Quality of life has been improved by new products or processes.
<u>Impacts on practitioners and professional services</u> *Impacts where beneficiaries may include organisations or individuals involved in the development of and*	• Changes to professional standards, guidelines or training have been informed by research. • Practitioners/professionals/lawyers have used research findings in the conduct of their work.

delivery of professional services	• The quality or efficiency or productivity of a professional service has improved. • Professional bodies and learned societies have used research to define best practice. • Practices have changed, or new or improved processes have been adopted, in companies or other organisations, through the provision of training or consultancy. • Expert and legal work or forensic methods have been informed by research.
<u>Impacts on the environment</u> *Impacts where the key beneficiaries are the natural environment and/or the built environment, together with societies, individuals or groups of individuals who benefit as a result*	• The environment has been improved through the introduction of new product(s), process(es) or service(s); the improvement of existing product(s), process(es) or services; or the enhancement of strategy, operations or management practices. • New methods, models, monitoring or techniques have been developed that have led to changes or benefits. • Policy debate on the environment, environmental policy decisions or planning decisions have been stimulated or informed by research and research evidence. • The management or conservation of natural resources, including energy, water and food, has been influenced or changed. • The management of an environmental risk or hazard has changed. • The operations of a business or public service have been changed to achieve environmental (green) objectives including industrial sustainability.

	• Direct intervention, based on research evidence, has led to reduction in carbon dioxide and / or other environmentally damaging emissions.

Impact Strategy

31. Universities are reminded to set out their impact strategy in the University-level and UoA-level environment overview statements.

Impact Case Study(ies)

32. Following paragraphs 7.7 (a) and (b), 7.9-7.10 and Appendix F of the Guidance Notes and also paragraph 51 of the General Panel Guidelines, submitting units are required to provide a narrative account in each case study that should be coherent, clearly explaining the relationship between the research and impact, and the nature of the changes or benefits arising. For continued impact case studies, the same requirements apply with the emphasis on the additionality aspects since the previous submission.

33. Each impact case study should include appropriate evidence and indicators that support the claims for the impact achieved, including who and what has/have benefitted, when the impact occurs/occurred, and the relationship between the case study and how it has/had sustained further innovation and impact. Individual case studies may draw on various evidence and indicators, which may take different forms depending on the type of impact.

34. Examples are provided in Table B to illustrate potential evidence or indicators that may be mostly relevant to the Engineering Panel. These examples are not intended to be exhaustive. Equally, there is no implication of priority or importance in the ordering of examples in the list. The statements apply equally to start-up companies as well as existing businesses.

Table B: Examples of Evidence or Indicators for Impact[2]

Economic impacts	• Business performance measures, for example, sales, turnover, profits, efficiency, employment or cost saving associated with new or improved products, processes or services. • A spin-off or new business startup has been created, established its viability, or generated revenue or profits. • A new business sector or activity has been created or an existing business sector has been upgraded or transformed. • Licences awarded and brought to market. Licensing income. • Jobs created or protected. • Investment funding raised or valuation attained from government and/or non-government agencies (venture capital/Business Angel, and so on) for start-up businesses and/or new activities of existing businesses. • Evidence of critical impact on particular projects, products and processes confirmed by independent authoritative evidence, which should be financial where possible. • Priority shifts in expenditure profiles or quantifiable reallocation of corporate, non-profit or public budgets.
Impacts on public policy and services	• Documented evidence of policy debate (for example, in Legislative Council, the media, material produced by NGOs). • Documented evidence of changes to public policy/legislation/regulations/ guidelines.

[2] see footnote 1.

	• Measures of improved public services, including, where appropriate, quantitative information; such information may relate for example to the quality, accessibility or cost-effectiveness of public services. • Documented evidence of changes to international development policies. • Measures of improved international welfare or inclusion.
Impacts on society, culture and creativity	• Visitor or audience numbers and feedback. • Critical reviews in the media and/or other professional publications. • Evidence of public debate in the media or other fora. • Evidence of sustained and ongoing engagement with a group. • Measures of increased attainment and/or measures of improved public understanding of science and technology.
Health impacts	• Evidence from clinical trials. • Measures of improved patient outcomes, public health or health services. • Documented changes to clinical guidelines. • Evidence of take-up and use of new or improved products and processes that improve quality of life.
Impacts on practitioners and professional services	• Traceable reference to inclusion of research in national or international industry standards or authoritative guidance.

	• Traceable references by practitioners to research papers that describe their use and the impact of the research. • New or modified professional standards and codes of practice. • New or modified technical standards or protocols. • Documented changes in knowledge, capability or behaviours of individuals benefiting from training.
Impacts on the environment	• Creation of new technologies/products or improvements in existing products that bring quantifiable environmental benefits. • Traceable impacts on particular projects or processes which bring environmental benefits. • Evidence of generic environmental impact across a sector. • Documented case-specific improvements to environment-related issues. • Traceable reference to inclusion of research into government policy papers, legislation and industry guidance. • Traceable reference to impact of research in planning decision outcomes. • Policy documentation.

35. Impact case studies, including continued impact case studies, should include the following factors –

- An impact case should cover five main aspects: summary of the impact, underpinning research, references supporting the underpinning claim that the research is of at least 2 star quality (including grants in support of this research), details of the impact (e.g., economic, social, environmental, health, policy, etc.), sources to corroborate the impact.

- Demonstration of reach through the "breadth" of activities, companies, population, environment, etc. positively affected by the underpinning research;
- Demonstration of significance by the "depth" of activities, practice, companies, population, environment, etc. positively affected by the underpinning research;
- Statement on underpinning research could include awards and prizes.
- Individual references to the research could be marked for best quality items.
- Evidence of impact could include authenticated private communication, articles/reports in public media, senior company officials from whom confidential impact details could be obtained, media reports, etc.
- Indicators for impact include verifiable quantitative data on the positive changes brought to economic, social, environmental, health, policy, etc. perspectives.
- Where claims are made relating to the industrial significance of an impact case, the name and contact details of a senior industrialist must be provided.

Underpinning Research

36. The Panel acknowledges the level of quality required for research underpinning impact cases, i.e. equivalent to at least 2 star (2*) or international standing, as stipulated in the General Panel Guidelines. Impact case studies should include appropriate evidence or indicators of the quality of the underpinning research, such as details on peer-review funding received or prestigious awards received for the underpinning research. Where necessary, the Panel will review the outputs concerned in order to ensure the quality of the research is of at least 2 star (2*).

37. Provided that the Panel is satisfied that the quality threshold has been met, the quality of the underpinning research will not be taken into account in the assessment of the quality of impact. Underpinning research referenced in a case study may also be submitted for assessment under the research output element. The evaluation of the outputs concerned under the impact element is a separate assessment only for assuring the threshold

of underpinning research. In this case, the guidance on output types and criteria for assessing research outputs as stipulated in paragraphs 9-14, 20-23 above would apply.

Criteria and Quality Levels for Assessing Research Impact

38. Panels will exercise their expert judgement in assessing the quality of each impact submission, and will not judge in terms of the type of research underpinning the impact cases.

39. In assessing impacts, the Panel will look for evidence of reach and significance, and will grade each impact submission as a whole and give a rating using one or more of the five categories of quality level following paragraphs 53-55 of the General Panel Guidelines. In respect of the Engineering Panel, the criteria of reach and significance will be understood as follows –

- reach: the extent and/or diversity of the beneficiaries of the impact, as relevant to the nature of the impact. Reach will be assessed in terms of the extent to which the potential constituencies, number or groups of beneficiaries have been reached; it will not be assessed in purely geographic terms, nor in terms of absolute numbers of beneficiaries. The criteria will be applied wherever the impact occurred, regardless of geography or location, and whether in Hong Kong or elsewhere.
- significance: the degree to which the impact has enabled, enriched, influenced, informed or changed the products, services, performance, practices, policies or understanding of commerce, industry or other organisations, governments, communities or individuals.

40. The Panel will make an overall judgement about the reach and significance of impacts, rather than assessing each criterion separately. The criteria will be applied in the assessment of the research impact regardless of the domain to which the impact relates.

Section D: Assessment Criteria: Research Environment

Research Environment

41. The Engineering Panel will accept submissions on research environment according to paragraphs 57-58 of the General Panel Guidelines. The Panel recognises that excellent research can be undertaken in a wide variety of research structures and environments. The Panel has no pre-formed view of the ideal size or organisational structure for a research environment. As a general principle, evidence of attention to achieving a suitable level of diversity in the make-up of the research environment will be regarded positively. The Panel will assess each submission based on what has been presented in relation to the work of the submitting unit in providing and ensuring a good environment.

42. A research environment submission includes one university-level environment overview statement across the same university, and one UoA-level environment overview statement and environment data for each UoA. The UoA submissions may relate to a single coherent faculty and equally to multiple departments, and may depict the commonalities and dynamics among faculties and departments within the submitting unit, and define their prime activities, how they operate and their main achievements.

Environment Overview Statements (One University-level Environment Overview Statement across the University and One UoA-level Environment Overview Statement for Each UoA)

43. Following paragraphs 9.6 (a) and (b), 9.7, 9.8 and Appendix G of the Guidance Notes, and also paragraphs 59 & 60 of the General Panel Guidelines, the Panel will use the information provided in the university-level environment overview statement to inform and contextualise their assessment of relevant sections of the UoA-level environment overview statement. Submitting units are required to describe how they have supported the conduct and production of research, in the context of the university's policies as set out in the university-level environment overview statement.

44. Within the terms of the Guidance Notes, the Engineering Panel will expect in particular to see the following in the –

44.1 University-level Environment Overview Statement

- context and mission: an overview describing the submitting university's size, structure, mission and stage of development in view of its role statement so as to provide a context for the submission.
- research policy and strategy: describing the institutional strategy for research (including research strengths, research focus areas, distribution of research activities across research areas), enabling impact (including stakeholder engagement and knowledge transfer), developing a sustainable research culture (including open access and open data policies, approach to contributing to the Sustainable Development Goals, how inter-disciplinary and collaborative research has been supported, how research integrity and research ethics are embedded in the institution), and how the overall institutional policy and strategy contribute to government priorities.
- people: institutional staffing strategy, staff development and training (e.g. recruitment, leave policies, equality and diversity agenda, measures/facilities for early career researchers/ research students, etc.), and development, training and supervision of research students.
- research funding sources: breakdown by funding source as a percentage total of overall funding; and university-level resources, infrastructure, and facilities available to support research and impact.

In the context of research environment, the university is encouraged to comment on the extent to which generative AI technologies have been addressed, applied or used within any of the above elements.

44.2 UoA-level Environment Overview Statement

In the context of the university's policies as stipulated in the university-level Environment overview statement –

- UoA context and structure: submission in this part is expected to briefly describe the organisation and structure of the unit, which research groups are covered in the submission and how research is structured across the submitting unit.
- research and impact strategy: evidence of the achievement of strategic aims for research and impact during the assessment period, details of current/future strategic aims and goals for research and impact; how these relate to the structure described above; and how they will be taken forward; methods for monitoring attainment of targets; new and developing initiatives not yet producing visible outcomes but of strategic importance; identification of priority developmental areas for the unit, including research topics, funding streams, postgraduate research activity, facilities, administration and management.
- research integrity and research ethics: give evidence of the steps taken to ensure that research is undertaken in an ethical manner with rigour, honesty and care and respect for those involved in the process. Research conducted with integrity leads to findings people can trust and have confidence in. Disciplinary best practice may consider, but is not limited to, issues ranging from approaches to training, ensuring dissemination and accessibility of results, data availability, registration of protocols, ethical compliance, authorship policies, reproducibility, open research, participatory research, the handling of conflicts of interest and intellectual property, and approaches to dealing with allegations of research misconduct and questionable research practices.
- people: evidence of staffing strategy, staff development and training (e.g. leave/sabbatical policies, equality and diversity agenda, measures for early career researchers, etc.) and evidence of their effectiveness; how individuals at the beginning of their research careers are being supported and integrated into the research culture of the submitting unit; information on postgraduate recruitment, training and support mechanisms; measures/facilities for development and supervision of research students.
- income (e.g. total grants/funding received), infrastructure and facilities: information on research funding portfolio relative to

the size of the UoA as noted in paragraph 46 below; evidence of successful generation of research income; major and prestigious grant awards made by external bodies on a competitive basis; provision and operation of research infrastructure and facilities, including special equipment, library, technical support, space and facilities for research groups and research students; information on joint-university or cross-institution shared or collaborative use of research infrastructure.

- collaborations: information on support for and exemplars of research collaborations; mechanisms to promote collaborative research at local and international level; support for inter-disciplinary research collaborations; research collaboration with research users.
- esteem: prestigious/competitive research fellowships held by individual researchers; external prizes and awards and elections to fellowships and academy membership in recognition of research achievement.
- contribution to the discipline or research base: exemplars of leadership in the academic community such as advisory board membership; participation in the peer-review process for grants committees or editorial boards.

In the context of research environment, the submitting UoA is encouraged to comment on the extent to which generative AI technologies have been addressed, applied or used within any of the above elements.

Environment Data

45. Following paragraphs 9.6 (d) and (e), 9.9 and Appendix H of the Guidance Notes, and also paragraph 61 of the General Panel Guidelines, submitting units are required to provide environment data in conjunction with the UoA-level environment overview statement. The Panel will consider the environment data within the context of the information provided in the environment overview statement, and within the context of the disciplines concerned.

46. Data on “staff employed by the university proper” including research personnel and technical staff providing research support in full

time equivalent (FTE) and "graduates of research postgraduate programmes" will be used to inform the Panel's assessment in relation to "people" (section (4) of the UoA-level environment overview statement). Data on "on-going research grants/contracts" will be used to inform the Panel's assessment on "income (e.g. grants received)" (part of section (5) of the UoA-level environment overview statement). Additional quantitative data or indicators that are particularly relevant to the Panel are indicated in paragraph 44 above. Such additional information should be submitted within the appropriate section(s) of the UoA-level environment overview statement.

Criteria and Quality Levels for Assessing Research Environment

47. Panels will exercise their expert judgement in assessing the merits of each environment submission, and will not judge automatically in terms of the scale of research environment concerned.

48. In assessing environment, the Panel will consider research environment in terms of vitality and sustainability, including its contribution to the vitality and sustainability of the wider discipline or research base. The Panel will grade each environment submission with weighting attached to individual aspects as follows –

- research and impact strategy – 10%
- research integrity and research ethics strategy– 10%
- people – 15%
- income (e.g. grants received), infrastructure and facilities – 30%
- collaboration – 20%
- esteem – 10%
- contribution to the discipline or research base – 5%

The Panel will use one or more of the five categories of quality level as specified in paragraphs 63-65 of the General Panel Guidelines for assessing each aspect within the environment element and by aggregating assessments of individual aspects to form an overall assessment for each UoA-level environment submission.

49. The Engineering Panel provides the following amplifications to supplement the generic criteria for assessing research environment –

- vitality: the extent to which a unit supports a thriving and inclusive research culture for all staff and research students, that is based on a clearly articulated strategy for research and enabling its impact, is engaged with the local and international research and user communities and is able to attract excellent postgraduate and postdoctoral researchers through a worldwide reputation.
- sustainability: the extent to which the research environment ensures the future health, diversity, wellbeing and wider contribution of the unit and the discipline(s), including investment in people and infrastructure, and the extent to which activity is supported by a continual portfolio of research funding.

50. The Panel will make an overall judgement about the vitality and sustainability of research environments, rather than assessing each criterion separately.

Section E: Working Methods

Use of Sub-Group(s)/Sub-Panel(s)

51. To facilitate assessment on specific research area(s) under the Engineering Panel, the Panel may choose to form sub-groups to assess such submissions. The final assessment and grading will be decided by the Panel as a whole.

Allocation of Work in the Assessment Process

52. The Convenor, consulting the Deputy Convenor and other panel members, as appropriate, will allocate work to members and, if necessary, lay members, impact assessors and/or external reviewers in light of their expertise and workload. In allocating the work, the Convenor will also take into account any potential conflicts of interest of respective panel members and assessors. All panel members will take account of the requirements of

the General Panel Guidelines to ensure that the exercise is conducted fairly and equitably.

53. Panel members will examine the submitted outputs in detail, and put forward a recommendation to the panel for a collective decision on the final grading. To ensure fairness and consistency, each research output will be assessed in detail by at least two members, one of whom should be a non-local member to the extent possible. For UoA(s) which is(are) only housed at one or two local universities, submissions will be assigned to at least one non-local member in order to ensure fair and impartial assessment. Final grading on research outputs will be decided by the Panel as a whole.

54. Subject to conflicts of interest of individual members, the impact and environment submissions will be assessed by panel members and, if formed, impact assessors in the sub-group(s)/sub-panel(s) under the Panel. Final grading of individual submissions will be a collective decision of the Panel.

55. Where appropriate, the Panel will decide, by exercising their professional judgement, whether lay members (local "research end-users" or professionals in respective fields from business, government, industry and professional bodies, who need not be academics) with suitable expertise will be invited to take part in the assessment. Lay members who are academically qualified may also be invited for assessment of research outputs and research environment. The engagement of lay members will be by invitation from the Panel only.

Cross-Panel Referrals

56. This Panel will follow the procedures in paragraphs 41-43 of the General Panel Guidelines when initiating referrals to other panels and assessing submissions cross-referred by another panel.

57. Generally, research on pedagogy and education issues submitted to this Panel will be assessed by panel members or external reviewers with expertise in pedagogy or cross-referred to Panel 13 – Education.

58. Cross-panel referrals are envisaged in areas such as: artificial intelligence, biomedical engineering, energy and environmental

engineering, financial engineering, human factors, materials science and robotics technology and optimisation.

External Advice

59. This Panel will follow the procedure in paragraph 67 of the General Panel Guidelines when referral to external reviewers for expert advice becomes necessary for panel assessment. External reviews may be sought in the cases for which members of the panel do not have the necessary expertise such as outputs in niche research work or foreign language.

Trial Assessment

60. With reference to paragraphs 91-93 of the General Panel Guidelines, the Panel will conduct a trial assessment using a sample of submissions selected from universities' submissions. These sample submissions will be assessed by all members of the Panel. Members from other panels may be invited for the assessment of inter-disciplinary ROs for the purpose of calibration as and when appropriate. Members will share among themselves any important observations in the assessment to ensure fairness and consistency in the actual assessment. Submissions used for the trial assessment will be assessed afresh during the main assessment period regardless of their assessment results during the trial. The Panel will decide on the sample size after the submissions are received.

Panel Feedback Report

61. With reference to paragraph 73 and Appendices E and F of the General Panel Guidelines, the Panel will provide feedback to the University Grants Committee (UGC) after the assessment process. Non-local panel members will be involved in offering comments for an impressionistic international comparison. The Convenor on behalf of the whole panel will submit the panel feedback report to the UGC by November 2026. Sector-wide comments in the panel feedback report will be released for public information after announcement of the RAE results. Comments on individual universities will be provided to the respective universities under confidential cover in accordance with paragraph 11.3 of the Guidance Notes.