



Audit Methodology

**For the Performance-Based Research Fund
(PBRF) 2018 Quality Evaluation**

Revised April 2017

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Key dates

Phase 1: Process Assurance

Activity	Timeline
Issue audit methodology	April 2017
Issue audit questionnaire	15 May 2017
Audit questionnaire due back from TEOs	13 June 2017
Site visits to universities and selected other TEOs	July 2017 – September 2017
Remote audits	August – December 2017
Reporting	December 2017 – February 2018
Issue final report on Process Assurance audit of TEOs	February 2018

Phase 2: Data Evaluation audit

Activity	Timeline
Staff participation audit	16 July 2018 – December 2018
Evidence Portfolio audit	16 July 2018 – December 2018
Report to the TEC	15 February 2019

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The methodology revised April 2017 was prepared based on the information available at the time.



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1 Introduction

1.1 Background Information

Performance in the Performance-Based Research Fund (PBRF) will determine the allocation of \$1.8 billion of funding for the six years starting 2019. The majority (55%) of this funding is allocated through the Quality Evaluation.

The Tertiary Education Commission/Te Amorangi Mātauranga Matua (TEC) is responsible for administering the PBRF. The TEC implemented the first PBRF Quality Evaluation in 2003 as part of the introduction of the PBRF to the New Zealand tertiary education sector. Quality Evaluations were also completed in 2006 and 2012.

Additional information on the PBRF Quality Evaluation is published on the TEC website.

References are made throughout this document to the [Guidelines](#) for tertiary education organisations participating in the 2018 Quality Evaluation (known as the “PBRF guidelines”) that are also published on the TEC website.

1.2 2018 Quality Evaluation audit objectives

The Quality Evaluation is supported by a comprehensive compliance audit programme. The objective of this audit programme is to provide assurance to the TEC that the PBRF guidelines have been consistently and correctly applied by all participating tertiary education organisations (TEOs). Specifically, the audit programme will provide assurance that:

- Staff submitting Evidence Portfolios (EPs) meet the staff participation criteria.
- The research outputs and contributions referenced in EPs exist, were published in the correct period to be considered eligible, and are accurately represented.

In addition to providing assurance on data submitted, the audit approach involves assessing the preparedness of participating TEOs before the Quality Evaluation.

The purpose of this document is to provide the TEC and TEOs with clarity on the timing, extent and nature of the audit activities that will be completed during the Quality Evaluation.

1.2.1 Scope exclusions

The audit methodology outlined in this document does not include providing assurance over the following areas:

- Panel Review and Moderation processes.
- Aspects of the PBRF funding formula outside of the Quality Evaluation, including:
 - Research Degree Completion
 - External Research Income
 - The formula to calculate annual PBRF funding.

1.3 Quality Evaluation auditors

Following a competitive procurement process, KPMG was appointed as the auditor for the 2018 Quality Evaluation. KPMG also audited the 2006 and 2012 Quality Evaluations. KPMG’s team has a strong understanding of the PBRF with David Sinkins and Blair Wightman both returning for the 2018 Quality Evaluation.

2 Key Auditing Principles

2.1 Guiding principles of the PBRF and the Quality Evaluation audit

The key principles underpinning the audit methodology are to ensure it is robust, transparent and equitable to all TEOs. This aligns with the guiding principles of the PBRF. We set out four of the principles that are particularly relevant to this methodology below:

Consistency	Evaluations of quality made through the PBRF should be consistent across the different subject areas, and in the calibration of quality ratings against international standards of excellence.
Credibility	The methodology, format and processes employed in the PBRF must be credible to those being assessed.
Efficiency	Administrative and compliance costs should be kept to a minimum, consistent with a robust and credible process.
Transparency	Decisions and decision-making processes must be explained openly, except where there is a need to preserve confidentiality and privacy.

The TEC and KPMG understand concerns relating to the efficiency of the audit methodology. This methodology strikes an appropriate balance between compliance costs and the necessary level of assurance over this important process.

3 Summary of audit approach

This section provides a brief overview of the audit approach, which is similar to the approach followed by KPMG in the previous audits of the Quality Evaluation. KPMG has revised the audit approach to take into account:

- Changes to the PBRF guidelines.
- Learnings from the 2012 Quality Evaluation.
- Feedback obtained by the TEC in the Sector Reference Group consultation paper on the TEO audit process.

Phase 1: Process Assurance	
Activity	Timeline
Questionnaire	May – Jun '17
Site visits & remote audits	Jul – Dec '17
Reporting	Dec '17 – Feb '18

Phase 1: Process Assurance

This phase will be completed between May and December 2017 and will provide assurance to the TEC that TEOs have adequate systems and controls in place to ensure their preparedness for the 2018 Quality Evaluation.

Phase 1 will commence with an audit questionnaire to be sent to all TEOs, followed by site visits to the eight universities and other selected TEOs. Smaller TEOs, not subject to a site visit, will be audited remotely. The timing of site visits will be confirmed in May 2017.

This phase will involve:

- interviewing key personnel from each TEO
- reviewing process documentation
- performing a limited amount of sample-based testing to form an assessment of each TEO's preparedness.

Workshops and webinars will be held in late 2017, in conjunction with the TEC PBRF Programme team. These will introduce the audit process and answer any questions that TEOs may have about the audit.

A brief report will be provided to each TEO highlighting any findings and suggested areas of focus to ensure the TEO is fully prepared for the Quality Evaluation. A summary report will be prepared for the TEC, highlighting themes observed across TEOs.

Phase 2: Data Evaluation audit	
Activity	Timeline
Staff participation audit	Jul – Dec '18
Evidence Portfolio audit	Jul – Dec '18
Report to the TEC	Feb '19

Phase 2: Data Evaluation audit

This phase will be completed between July and December 2018 and will provide assurance to the TEC and PBRF Peer Review Panels that staff submitting EPs meet the staff participation criteria, and that research outputs and contribution items within EPs exist, were published in the correct period to be considered eligible, and are accurately represented.

Phase 2 involves extracting the data submitted by TEOs from the PBRF IT system and selecting samples for review. Evidence provided by TEOs is assessed against the requirements of the PBRF guidelines and queries are raised with TEOs where potential discrepancies have been identified.

TEOs are asked to respond, with evidence, to address the queries raised. Any unresolved queries are referred to the TEC for assessment, and, where appropriate, the TEC may apply sanctions.

4 Detailed audit approach

4.1 Phase 1: Process Assurance



Questionnaire

Phase 1 will commence with an audit questionnaire to be sent to all TEOs, followed by site visits to the eight universities and other selected TEOs. Information from the questionnaire will be used to undertake a risk assessment to determine the level of auditing to be undertaken at each TEO.

TEOs will be selected for a site visit based on the number of EPs they expect to submit. All TEOs expected to submit more than 100 EPs will be visited. Other TEOs deemed to be high-risk based on the questionnaire may also be visited.

Smaller TEOs, not subject to a site visit, will be audited remotely. The timing of site visits will be confirmed in May 2017.

The questionnaire will seek to understand the processes TEOs have implemented to ensure all staff submitting EPs meet the requirements in the PBRF guidelines. TEOs will have 21 working days to respond to the audit questionnaire.



Site visits & workshops

The questionnaire will be followed by site visits to the eight universities and other selected TEOs. The audit team will communicate through telephone and / or email with TEOs not selected for a site visit. KPMG will document, review and test processes implemented by each TEO to apply the PBRF guidelines. This will include understanding how each TEO calculates FTE and determines the residency of their staff. The scope of the site visits and remote audits will be the same.

Where TEO processes are found to have substantial deficiencies, KPMG will follow up with TEOs through late 2017 / early 2018 to confirm that gaps are addressed. Additional sample testing may also be performed in phase 2 'data evaluation' to ensure the accuracy of data submitted by the TEO.

KPMG understands that TEOs will not be fully prepared at the time of the process assurance audits. However, this phase has previously been useful to understand how TEOs are applying more complex areas of the PBRF guidelines, and also to identify TEOs that may require more assistance from KPMG or the TEC to effectively participate in the Quality Evaluation.

KPMG and the TEC will also facilitate a series of workshops and webinars with the sector to discuss themes from the process assurance phase, and answer any questions on the audit methodology.



Reporting

A brief memorandum-style audit report will be prepared for each TEO. This will highlight relevant findings from the process assurance phase and suggested areas on which to focus to ensure the TEO is prepared for the Quality Evaluation.

A report on themes and findings from the process assurance phase will also be prepared. It is expected that this report will be published on the TEC website.

4.2 Phase 2: Data Evaluation audit – Staff participation

The PBRF guidelines set out four criteria that must be met for staff to participate in the Quality Evaluation. Additional requirements are set for staff contracted from a non-TEO, and for staff classified as 'new and emerging researchers'. The audit approach provides assurance that staff submitting EPs meet the requirements of the staff participation criteria.

As part of the data evaluation audit, the population of staff submitting EPs is extracted from the PBRF IT system. From this, a sample of staff are selected for review. For each staff member in the sample, the TEO is asked to provide evidence to demonstrate that all four criteria in the PBRF guidelines have been met.

4.2.1 Sample size

A sample will be selected of staff submitting EPs for review during the audit. KPMG will determine the precise sample size once all data have been submitted in the PBRF IT system.

The sample will be calculated using the formula below¹. Applying this formula to the number of staff submitting EPs from the 2012 Quality Evaluation (7,356), the sample would be 1,271 or 17.2%. The TEC anticipates a small increase in the number of staff submitting EPs in the 2018 Quality Evaluation.

$$s = \frac{x^2 NP(1 - P)}{d^2(N - 1) + x^2 P(1 - P)}$$

Where:

- s Sample size.
- x The table value of chi-square for 1 degree of freedom at the desired confidence level (95%).
- N Population size (7,356 – the number of staff submitting EPs in 2012).
- P Population proportion (assumed to be 0.50 since this would provide the maximum sample size).
- d Degree of accuracy expressed as a proportion (2.5%).

4.2.2 Risk-based sampling approach

A sample will be selected of staff submitting EPs. The formula described above will be used to determine the sample size. The sample will be selected based on an assessment of risk, but will ensure coverage of staff from all TEOs and subject area panels. This approach is similar to the approach applied in the 2012 audit. The sample will be weighted to areas of the staff participation criteria considered to be higher risk, specifically staff:

- who were employed by, or ceased to be employed by, the TEO on or around the period 15 June 2017 to 14 June 2018
- employed at or around 0.2 FTE when resident in New Zealand, or at or around 0.5 FTE if not resident
- with a teaching or research presence predominantly outside of New Zealand
- contracted from a non-TEO.

In addition, and separate to the sample above, all new and emerging researchers will be selected for audit. In 2012, only a sample of new and emerging researchers were audited.

Limitations of this approach

As the sample is selected based on risk, it is not possible to draw statistically valid conclusions on the level of non-compliance with the PBRF guidelines. Due to the risk-based sampling approach, a higher rate of non-compliance is expected in the sample than in the total population.

¹ Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement* (30), 607-610.

4.2.3 Minimum standards of evidence for the staff participation audit

As part of the PBRF audit, TEOs will be requested to provide evidence to demonstrate that staff members who have submitted EPs meet the requirements of the PBRF guidelines.

For the majority of cases, the audit objectives will be fulfilled by reviewing the relevant staff member's individual or collective employment agreement, or contract for service. To ensure consistency in the audit, all TEOs will be required to provide employment agreements (or the equivalent documentation) on request.

For certain staff members, where the auditors are not able to form a robust conclusion that the staff participation criteria have been met, KPMG may also request to view the following documentation:

- position descriptions
- performance management documentation, for example goal setting documents or performance reviews
- Curricula Vitae*
- HR / Payroll information system records
- evidence to support residency, for example travel documents
- teaching timetables and university calendars
- timesheets (where relevant)
- leave requests.

*This information will be mandatory for staff claiming new and emerging status.

For staff employed by a non-TEO or claiming new and emerging status, the above evidence may be sought for prior years (i.e. before 2018).

Staff employed or otherwise contracted in wholly owned subsidiaries such as commercialisation companies and in fully controlled trusts of the TEO may participate in the PBRF (if they satisfy the other participation criteria), since these bodies operate under the controls of the participating TEO.

Staff who are employed by a subsidiary of a TEO will also be included in the audit sample. The same procedures will be employed for these staff, and the auditors will review the employment agreement (or similar) with the employing entity. Providing the TEO's ownership and control of the subsidiary can be demonstrated, the additional requirements for staff contracted from a non-TEO will not apply.

As with previous Quality Evaluations, KPMG will work with TEOs to ensure that information is kept confidential and appropriate safeguards are in place to protect the privacy of participating staff. Where large amounts of information is reviewed, this will be primarily performed onsite. TEOs may elect to redact sensitive aspects (e.g. salary or address), providing the auditors are still able to verify the calculation of FTE.

4.3 Phase 2: Data Evaluation audit – Evidence Portfolios

EPs include two main components:

1. Research outputs (which include between one and four Nominated Research Outputs (NROs) and up to 12 Other Research Outputs (OROs)).
2. Research contribution (which can include up to 15 items of peer esteem, contribution to the research environment and community or end-user impact).

The objective of this aspect of the data evaluation audit is to assess whether research outputs and research contributions:

- exist
- were produced² in the correct period to be considered eligible
- are accurately represented.

A team of experienced librarian auditors perform this phase of the audit. They are familiar with publishing databases and standards, common forms of research and the Quality Evaluation.

4.3.1 Sampling approach

Consistent with the calculation of the total weighted score assigned to an EP, sample selection will be split approximately 70% to research outputs and 30% to research contributions.

The research output audit will be primarily focused on NROs, as these are given particular scrutiny during the Quality Evaluation and individually have the greatest impact on the score awarded to an EP.

In 2012, 29,332 NROs and 134,878 OROs were submitted for assessment. The number of OROs is expected to reduce to circa 88,300 as the number of OROs able to be submitted has been capped at 12 in the 2018 Quality Evaluation. If all researchers submit the full quota of 15 Research Contribution items in the 2018 evaluation, 110,340³ items will be submitted for assessment.

The audit sampling approach will involve reviewing an estimated⁴:

- 2,219 or 7.5% of NROs (based on a 95% confidence level and 2% margin of error)
- 883 or 1% of OROs (non-statistical sample)
- 1,103 or 1% of research contribution items (non-statistical sample).

This represents a total of 4,205 items within EPs and will ensure that a research output or research contribution item is audited for more than 57% of staff. Panel members are able to request that specific items are reviewed by the auditors and these will be included in the sample sizes above. Exact sample sizes will be determined once all data have been submitted in the PBRF IT system.

All types of research outputs and contributions will be assessed during the audit. Samples will be selected randomly.

² 'Produced' in this context means that the final version of the research output was first made available in the public domain during the assessment period, or that the research-related activity was undertaken during the assessment period.

³ This assumes the same number of staff 7,356 as the 2012 Quality Evaluation.

⁴ These calculations are based on the 2012 Quality Evaluation results and assume no increase in the number of staff submitting EPs.

Audit of research contributions

As set out in the sampling approach, an estimated 1% of research contributions will be audited. This is a new area of assessment and audit for the 2018 Quality Evaluation. Where possible, the data supplied by TEOs will be reviewed in comparison with other data, such as:

- Externally published reports.
- The grants awarded by research funding bodies (e.g. the Ministry of Business, Innovation and Employment, the Royal Society of New Zealand or the Health Research Council).
- Other publicly available sources.

An exact match to the above sources will not necessarily be expected because of possible differences in the nature of the data. Accordingly, queries will only be raised with TEOs in the event of significant discrepancies.

Although TEOs are not required to submit evidence of research contributions for panel review, it is expected that each TEO will implement processes to provide a basic level of assurance that research contributions are accurately represented in EPs.

KPMG will send the audit sample for research contributions to TEOs shortly after the close off date for submission of EP data. This will allow TEOs to collect evidence to support research contributions from their participating staff.

A random sample of EPs will be chosen for audit. The research contribution likely to have the greatest impact on an EP will be audited.

4.3.2 Minimum standards of evidence for the Evidence Portfolio audit

Evidence must be available to support the existence and accuracy of all aspects of the bibliographical information provided in EPs for all research outputs. Where a TEO has elected to supply physical (rather than electronic) copies of research outputs, these must be provided to the auditors on request and at the TEO's cost within 10 working days. Physical research outputs will be inspected by the auditors at the TEC's premises to maintain the insurance coverage set out in the PBRF guidelines.

The section 'Forms of evidence required for assessing and auditing research outputs' in the PBRF guidelines (Pages 64 to 77 of the June 2016 version) sets out the minimum standards of evidence that TEOs must provide for research outputs selected for audit.

Similarly the section 'Evidence required for auditing research contribution items' on page 88 of the PBRF guidelines sets out the minimum standards of evidence that TEOs must provide for research contribution items selected for audit.

5 Managing and reporting errors

5.1 Investigating errors

The following process will be performed to investigate and manage errors identified during the data evaluation audit. This process begins once KPMG has reviewed the initial evidence the TEO has provided and potential discrepancies have been identified.

1. A list of queries is sent to the TEO. Efforts will be made to batch queries as much as possible. The queries will highlight the specific concerns raised by the auditors.
2. The TEO has 10 working days to respond to the queries and provide evidence.
3. KPMG will review the evidence provided and if the additional information confirms there is no error in the data, no further action is taken.
4. If the additional information does not confirm there is no error in the data, the original query and evidence, additional information, and the auditor's assessment are provided to the TEC for a final decision.
5. The TEC considers the error(s) identified and information provided and makes a final decision. Advice may be sought from the Moderators, if required.
6. The TEC advises TEOs of the outcome and the sanction to be applied (if any). The TEC applies any sanctions and actions any changes required to the staff and/or EP data.

5.2 Sanctions

As set out in section 5, KPMG will report to the TEC the nature and extent of any errors identified during the data evaluation audit. The TEC will determine whether and when sanctions are applied to TEOs.

The PBRF guidelines separate errors into three categories 'serious', 'fundamental' and 'minor'. A high-level framework is also provided that sets out the sanctions likely to be applied for fundamental and serious errors.

6 TEO declaration

The Chief Executive or Vice-Chancellor of each participating TEO must submit a declaration confirming the accuracy of information contained in the EPs, the availability of evidence for assessment and/or audit and the accuracy of assessment processes within the TEO. This must be provided to the TEC within 24 hours of the final submission date – no later than 4:00 pm 16 July 2018. The declaration to be completed is provided within the PBRF guidelines.

7 Reporting on audit findings

It is expected that the reporting format will be similar to the approach followed for the 2012 Quality Evaluation. The following sections describe the reporting on audit findings for phases 1 and 2.

7.1 Phase 1: Process Assurance

- A brief memorandum-style audit report for each TEO highlighting relevant findings from the process assurance audit and suggested areas of focus to ensure the TEO is prepared for the Quality Evaluation.
- A report on themes and findings from the process assurance phase. It is expected that this report will be published on the TEC website. This report will include a brief summary of KPMG's assessment of each TEO's level of preparedness. KPMG will clearly indicate where data collected as part of the audit questionnaire is likely to be published in the report on the overall preparedness of TEO for the Quality Evaluation.

7.2 Phase 2: Data Evaluation

- A report on themes and errors identified during the data evaluation phase. This will include specific observations for each TEO. It is expected that this report will be published on the TEC website.

8 Communication between the auditors and the sector

8.1 Key contacts

Each TEO is required to nominate a contact person with whom the PBRF auditors will communicate on a day-to-day basis. This role will be known as the 'PBRF audit coordinator'.

Throughout the audit, KPMG will communicate with the nominated PBRF audit coordinators and the appointed Senior Manager responsible for research (as appropriate). Communication will be predominantly through email.

Brief articles will be published on the TEC's PBRF TEO reference site at key times during the audit, and key announcements will also be published through the TEC's PBRF newsletter.

8.2 Queries from TEOs around the interpretation of the PBRF guidelines

As with previous Quality Evaluations, KPMG expects to receive a small number of queries from TEOs seeking clarity on specific clauses in the PBRF guidelines and regarding the treatment of specific staff or specific elements of EPs. KPMG will review each query against the requirements in the PBRF guidelines and where necessary, consult with TEC staff or the PBRF moderators to respond. All queries or clarifications will be anonymised and both the question and answer will be published on the TEC's PBRF TEO reference site so that all TEOs can view this information.

9 Escalation and complaints

9.1 Complaints about the audit process

Complaints regarding the activities or behaviours of an auditor should be made in writing to the PBRF Programme Manager.

The relevant contact details are:

Amber Flynn

PBRF Programme Manager
University Investment Team, Operations Directorate
Tertiary Education Commission
PO Box 27-048
Wellington 6141
Email to: amber.flynn@tec.govt.nz

9.2 Anonymous reporting of complaints about the behaviour of TEOs

A process has been established to manage the anonymous reporting of complaints about the behaviour of TEOs. Any party can make an anonymous report through the website below.

<https://rea.msvcs.kpmg.com/gqt-anonym/Entry/QuestionnaireEntry.aspx?QuestionnaireId=57894&NonTargetedTesting=True>

All complaints will be investigated by KPMG. The results of the investigation will be reported to the TEC. The TEC will be responsible for any decisions regarding the application of sanctions.

Contact us

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