EXPLANATORY STATEMENT

Issued by the authority of the Chief Metrologist

National Measurement Regulations 1999

National Measurement (Accuracy) Determination 2023

Purpose and Operation

The purpose of the *National Measurement (Accuracy) Determination 2023* (the Determination) is to provide consistency in how measurement accuracy, is to be ascertained and expressed as an uncertainty for the verification and certification of standards of measurement, artefacts and certified measuring instruments under the *National Measurement Regulations 1999*.

Maintaining a consistent approach to ascertaining and expressing uncertainty provides support for the comparison of different measurements and allows for an assessment of the accuracy of measurements across the national measurement system. In other words, this approach supports the calibration and propagation of units of measurement throughout the Australian economy; in turn providing confidence in the accuracy of measurement results used for all manner of trade transactions and other legal purposes.

JCGM 100:2008 – Evaluation of measurement data – Guide to the expression of uncertainty in measurement (JCGM 100:2008) represents international best practice with respect to the ascertainment and expression of measurement uncertainty. Formal recognition of JCGM 100:2008 reflects current practice within many Verifying Authorities and Certifying Authorities, and further harmonises Australia's measurement system with those of our international trading partners.

JCGM 100:2008 is available here:
https://www.bipm.org/en/committees/jc/jcgm/publications

The Determination requires the accuracy of standards of measurement, artefacts and certified measuring instruments to be ascertained and expressed as an uncertainty in accordance with the principles of the JCGM 100:2008.

Background

The objects of the *National Measurement Act 1960* include to:

- establish a national system of units and standards of measurement of physical quantities;
- provide for the uniform use of those uniform units and standards of measurement throughout Australia;
- co-ordinate the operation of the national system of measurement; and
- provide the legal framework for a national system of trade measurement.

The Regulations also allow for the Chief Metrologist to determine the manner in which the accuracy of standards of measurement, artefacts and certified measuring

instruments are to be ascertained and expressed, when certified under the Regulations.

Details of the Determination are set out in **Attachment A**. The Determination is a legislative instrument for the purposes of the *Legislative Instruments Act 2003*.

Authority

Part 3, Part 3A and Part 4 of the Regulations provide the legal framework for the maintenance, verification and certification of standards of measurement, artefacts and certified measuring instruments.

Consultation

The Determination supports the work of Verifying Authorities and Certifying Authorities that are appointed under the Regulations. The National Measurement Institute consulted with all appointed Verifying Authorities and Certifying Authorities regarding the Determination during the period 5 July 2022 to 5 August 2022.

All feedback received from Verifying Authorities and Certifying Authorities agreed with the contents of the Determination and supported the alignment with relevant international standards.

Regulatory Impact

The Office of Impact Analysis (OIA) was consulted concerning the development of the Determination. OIA advised that the Determination was likely to have only a minor regulatory impact. As such, the preparation of a formal Impact Analysis (IA) was not required.

A Statement of Compatibility with Human Rights is at **Attachment B**.

ATTACHMENT A

Details of the *National Measurement (Accuracy) Determination 2023*

Clause 1 – Name

This clause specifies the name of the Determination is the *National Measurement (Accuracy) Determination 2023.*

Clause 2 – Commencement

This clause provides that the Determination will commence the day after registration on the Federal Register of Legislation.

Clause 3 – Authority

This clause provides that the Determination is made under the *National Measurement Regulations 1999* (the Regulations).

Clause 4 – Schedules

This clause is a machinery provision that gives effect to the Schedule according to its terms.

Clause 5 – Definitions

This clause provides for definitions of terms used in the Determination.

Clause 6 – Standards of measurement, artefacts and measuring instruments
This clause details the determinations of the Chief Metrologist with respect to the manner in which the accuracy of the following shall be ascertained, or ascertained and expressed:

- Australian primary standards of measurement;
- Australian secondary standards of measurement;
- State primary standards of measurement;
- Reference standards of measurement;
- Artefacts; and
- Certified measuring instruments.

In each case, the Determination requires that the accuracy of the above be ascertained and expressed as an uncertainty in accordance with the principles of the *JCGM 100:2008 – Evaluation of measurement data – Guide to the expression of uncertainty in measurement.*

Measurement accuracy is defined as the closeness of agreement between a measured quantity value and a true quantity value of a measurand (a.k.a. the quantity that is being measured). All measured quantity values have an associated measurement uncertainty, defined as a parameter, associated with the result of a measurement, that characterises the dispersion of the values that could reasonably be attributed to the measurand.

The use of the *JCGM 100:2008* guide provides for a consistent approach to the quantification and expression of measurement uncertainty of the calibration and verification of standards of measurement, artefacts and certification of certified measuring instruments; thereby aligning Australian requirements with internationally accepted best practice.

The appropriate use of standards of measurement, artefacts and certified measuring instruments depends upon the accuracy and uncertainty with which they are calibrated and verified to be quantified and reported. The manner in which the uncertainty is ascertained and expressed must be consistent to allow for comparability of standards of measurement, artefacts and certified measuring instruments as well as all measurements that are made with them and are traceable to them.

Schedule 1 – Repeals

This clause revokes the following determinations made with respect to ascertaining and expressing the accuracy of reference standards of measurement:

1. Determination by the National Standards Commission - Accuracy of reference standards of measurement - 14 June 2002 (F2008B00669)

This instrument is repealed and replaced by subsection 6(3) of the Determination. This instrument is outdated as it relies upon a previous edition of the JCGM:100 and only covers reference standards of measurement.

ATTACHMENT B

STATEMENT OF COMPATIBILITY WITH HUMAN RIGHTS

Prepared in accordance with Part 3 of the Human Rights (Parliamentary Scrutiny) Act 2011

National Measurement (Accuracy) Determination 2023

This Legislative Instrument is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Overview of the Legislative Instrument

The *National Measurement (Accuracy) Determination 2023* supports the national measurement system by providing consistency in the manner in which the accuracy of standards of measurement, artefacts and certified measuring instruments are to be ascertained and expressed when certified under the *National Measurement Regulations 1999*.

Human rights implications

This Legislative Instrument does not engage any of the applicable rights or freedoms.

Conclusion

This Legislative Instrument is compatible with human rights as it does not raise any human rights issues.

The Chief Metrologist

Dr Richard Bruce Warrington