Financial Reporting Council

Technical Actuarial Standard 100: General Actuarial Standards

Version 2.0

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Contents

The FRC's purpose is to serve the public interest by setting high standards of corporate governance, reporting and audit and by holding to account those responsible for delivering them. The FRC sets the UK Corporate Governance and Stewardship Codes and UK standards for accounting and actuarial work; monitors and takes action to promote the quality of corporate reporting; and operates independent enforcement arrangements for accountants and actuaries. As the competent authority for audit in the UK the FRC sets auditing and ethical standards and monitors and enforces audit quality.

1 Introduction

1.1 Technical Actuarial Standard 100 (TAS 100) v2.0 applies to **technical actuarial work** that is completed on or after 1 July 2023.

1.2 Terms in bold are defined in the Glossary of defined terms used in Technical Actuarial Standard 100, appended to this standard.

Purpose

1.3 TASs promote high quality **technical actuarial work**, supporting the **reliability objective**:

To allow the **intended user** to place a high degree of reliance on **actuarial information**, practitioners must ensure the **actuarial information**, including the **communication** of any inherent uncertainty, is relevant, based on transparent and appropriate assumptions, complete and comprehensible.

Scope and compliance

1.4 In applying judgement to the application of the TASs it is important to be guided by the **reliability objective**.

1.5 Practitioners are encouraged to have regard to the guidance that accompanies this Standard and, in particular, the guidance on proportionality, to inform how they will comply with this Standard.

1.6 TAS 100 must be applied by all members of the Institute and Faculty of Actuaries (IFoA) carrying out **technical actuarial work** within the **geographic scope**. Wider adoption is encouraged and other relevant regulators and contracting parties may require **entities** and individuals who are not members of the IFoA to comply with TAS 100.

1.7 **Actuarial information** that is **material** must include a statement by the practitioner confirming compliance with TAS 100. Any **material** caveat, qualification or limitation in that statement must be justified to the **intended user**. The evidence demonstrating compliance must be available to the **intended user**, if requested.

General Provisions

1.8 This standard consists of Principles and related Application statements[1]. The Principles set out mandatory requirements.

1.9 The Application statements set out regulatory expectations. Practitioners must have regard to these regulatory expectations; divergence may be acceptable, but **material** deviations must

[1] A cross-reference to the related Application statement(s) is included at the end of the relevant Principle or provision and a cross reference to the related Principle or provision(s) at the end of each Application statement.

be justified. The justification must demonstrate how compliance with the relevant Principles has been achieved despite not meeting regulatory expectations.

2 Principles

Principle 1 Risk identification

Practitioners carrying out **technical actuarial work** must identify and consider all relevant **material** factors and relevant **material** risks that may affect or have the potential to influence their **technical actuarial work** and which the practitioner might reasonably be expected to know about at the time of carrying out the work.

P1.1 Practitioners must allow for relevant **material** factors and relevant **material** risks. **A1.1-A1.5**

P1.2 Practitioners must consider how relevant **material** factors and relevant **material** risks are interconnected and allow for any corresponding dependencies, where these are considered **material**. **A1.5**

P1.3 Practitioners must consider how the profile of relevant **material** factors and relevant **material** risks, including their interconnectedness may change within the timeframe the **technical actuarial work** relates to. **A1.1-A1.5**

Principle 2 Judgement

Practitioners must exercise judgement in a reasoned and justifiable manner, so that the **intended user** can rely on the resulting **actuarial information**.

P2.1 Practitioners must base **material** judgements on supporting justification. **A2.1**

P2.2 Practitioners exercising **material** judgement must consider credible alternative methodologies, **models**, **data** and assumptions.

P2.3 Where the practitioner exercises judgement that is **material** to and formed the basis for an implemented decision that will persist for a period of time, the practitioner must highlight the circumstances that require that judgement to be reviewed to ensure that the implemented decision remains appropriate over that period.

P2.4 Where a practitioner exercises judgements that are **material (**either individually or when combined), the practitioner must consider the potential impact on outcomes from quantitative and/or qualitative perspectives, as appropriate.

Principle 3 Data

Practitioners carrying out **technical actuarial work** must seek to ensure **data** is sufficiently accurate, complete and appropriate, so that the **intended user** can rely on the resulting **actuarial information**.

P3.1 Practitioners must ensure effective checks and controls are applied to **data**. **A3.1**, **A3.2**, **A3.5**

P3.2 Practitioners must identify the extent of any **material bias** within the **data**. **A3.3**, **A3.4**, **A3.5**

Principle 4 Assumptions

Assumptions used, or proposed for use, by practitioners in their **technical actuarial work** must be appropriate, so that the **intended user** can rely on the resulting **actuarial information**.

P4.1 Practitioners must identify the extent of any **material bias** within the assumptions. **A4.1**, **A4.2**

P4.2 Unless set by the **intended user**, a third party or by regulation, assumptions used by practitioners must be consistent with each other and must be derived from as much relevant information as is sufficient. **A4.3**

P4.3 The practitioner must consider whether the set of assumptions are appropriate when considered in aggregate.

P4.4 Where an assumption (or a set of assumptions when considered in aggregate) is set by the **intended user** or a third party and the practitioner considers the assumption not to be appropriate for its purpose then the practitioner must consider whether this could have a **material** impact on **actuarial information**.

Principle 5 Models

Practitioners must ensure **models** used in their **technical actuarial work** are fit for purpose and subject to sufficient controls and testing, so that the **intended user** can rely on the resulting **actuarial information**.

P5.1 Practitioners must ensure they understand the **models** used in their **technical actuarial work**, including intended uses and limitations. **A5.1**

P5.2 Practitioners must ensure that the **models** they use for **technical actuarial work** have in place an appropriate level of **model governance**.

P5.3 Practitioners must identify the extent of any **material biases** within the **models** that are used. **A5.2, A5.3**

P5.4 Where **material** limitations exist in **models** or methodologies used, the practitioner must consider the implications of those **material** limitations.

P5.5 Where key stakeholders such as boards, management, sponsors, trustees and regulators require the **model** to incorporate effects of **material** actions, practitioners must consider the implications of these actions.

Principle 6 Documentation

Practitioners must ensure **documentation** relating to their **technical actuarial work** contains sufficient detail to allow technically competent persons responsible for reviewing or providing assurance in relation to the **technical actuarial work** to understand the matters involved and assess the **judgements** made.

P6.1 Practitioners must ensure **documentation** includes the following:

a) Judgements and their supporting justifications;

b) **Data** used; **A6.1**

c) Assumptions used; **A6.2**

d) How a **model** used is fit for purpose and what that **model** does, including intended uses and limitations of the **model**;

e) **Model governance** and associated **model** controls and testing; **A6.3**

f) The implications of any **material** modelled actions, where these are required by key stakeholders (e.g., boards, management, sponsors, trustees and regulators).

P6.2 In case of a **material** deviation from regulatory expectations, practitioners must **document** the required justification (see 1.9).

Principle 7 Communications

Practitioners' **communications** must be clear, comprehensive and comprehensible, so that the **intended user** can reasonably be expected to understand matters relevant to **actuarial information** and make informed decisions. Application 7

P7.1 Practitioners must ensure the style, structure and content of **communications** is suited to the skills, understanding and levels of relevant technical knowledge of the **intended user**.

P7.2 In support of the **reliability objective**, practitioners' **communications** must include sufficient information in support each of Principles 1 to 5. **A7.2**-**A7.6**

P7.3 The practitioner's **communications** must exclude information that is not **material** if that information obscures **material actuarial information,** unless the inclusion of such information is a regulatory requirement.

P7.4 Practitioners' **communications** must state the **intended user**, the standpoint from which the practitioner is acting, the scope and purpose of the relevant **technical actuarial work** and who commissioned it. **A7.1**

P7.5 Practitioners must confirm in written form any **material actuarial information** provided orally.

P7.6 If a practitioner responsible for a **communication** becomes aware that the **communication** has not been understood by the **intended user**, that practitioner must provide clarification or information to correct the misunderstanding.

3 Application

Application 1 Risk identification

A1.1 The relevant **material** risks to be allowed for by practitioners in their **technical actuarial work** should include risks associated with the relevant **technical actuarial work** (for example: mortality, longevity, persistency, premium, catastrophe, other underwriting, market, inflation, expenses, liquidity and tax risks). **P1.1, P1.3**

A1.2 The relevant **material** factors to be allowed for by practitioners in their **technical actuarial work** should include all internal or external environmental factors that have the potential to influence the **technical actuarial work** either directly or indirectly. Internal factors may, for example, include management changes, commercial changes or changes to risk mitigation measures or other factors that could result in the emergence of operational risks. External factors may, for example, include climate change, technological, economic, political and geopolitical, regulatory and legislative changes. **P1.1, P1.3**

A1.3 The practitioner should take account of any relevant legal opinions relating to the **technical actuarial work** or existing practices relating to the exercise of discretion, where **material**. **P1.1, P1.3**

A1.4 Where **material**, practitioners should consider the most plausible risk management actions that might be taken by **intended users** or other parties in response to risks emerging, the ability to implement these risk management actions and the effectiveness of the assumed risk management actions once implemented. As part of this, the practitioner should consider how other market participants might be exposed to the same factors and risks and consequently, how they might behave. **P1.1, P1.3**

A1.5 The practitioner should consider whether different risks may occur at the same time in response to a specific event limiting the potential ability to diversify the exposures to those individual risks. **P1.1 - P1.3**

Application 2 Judgement

A2.1 The practitioner's supporting justification for **material** judgements should allow the **intended user** and other relevant parties (such as peer reviewers, auditors or regulators) to determine whether the judgements are reasonable. **P2.1**

Application 3 Data

A3.1 The practitioner should ensure that the checks and controls applied to **data** are sufficient to establish whether the **data** is sufficiently accurate, complete and appropriate. **P3.1**

A3.2 Practitioners should seek to ensure **data** that is considered insufficient or unreliable is improved to address its deficiencies, for example, by adjusting or supplementing it. **P3.1**

A3.3 In identifying the extent of **material bias** within **data**, the practitioner should consider whether any of the factors outlined below exist and whether these suggest that the **data** are not representative of the population or events of study:

a) certain elements of the dataset are over- or under-represented, for example, the presence or not of extreme events or outliers;

b) modifications such as interpolation, extrapolation, adjustment or discarding of outliers were made to the dataset;

c) the **data** includes content which is subjective and/or not supported by statistically credible information. **P3.2**

A3.4 If **material biases** are identified, the practitioner should take reasonable steps to improve the **data**, by adjusting or supplementing it, if appropriate, to reduce the impact of this **bias**. **P3.2**

A3.5 Where limitations in **actuarial information** arise from the use of **data** that is insufficient, unreliable or contains **material bias**, the practitioner should assess the impact of these limitations. **P3.1**, **P3.2**

Application 4 Assumptions

A4.1 In identifying whether assumptions include any **material bias** the practitioner should consider whether:

a) any underlying **data** is **biased** and the extent and **materiality** of any such **bias**;

b) assumptions contain adjustments to reflect a desired outcome. **P4.1**

A4.2 If **material biases** are identified, the practitioner should seek to improve the assumptions, by adjusting or supplementing them, if appropriate, to reduce the impact of the identified **bias**. **P4.1**

A4.3 If insufficient information is available to reliably set an assumption then the practitioner should assess the **materiality** of that insufficiency by considering the range of possible alternative outcomes. **P4.2**

Application 5 Models

A5.1 In ensuring **models** are appropriate for their intended use, practitioners should consider whether the **model** has sufficient regard to extreme events or outliers. **P5.1**

A5.2 In identifying whether **models** include any **material bias**, the practitioner should consider whether:

a) The **model** leads to consistent overestimation or underestimation;

b) the **model** contains systematic error, leading to results that are not representative of the aspect of the world that it is designed to **model**. **P5.3**

A5.3 If **material biases** are identified, the practitioner should seek to improve the **model**, by adjusting it, if appropriate, to reduce the impact of this **bias**. Where **model bias** gives rise to **material** limitations in **actuarial information**, the practitioner should assess the implications. **P5.3**

Application 6 Documentation

A6.1 The practitioner's **documentation** of **data** used should include:

a) sources and characteristics of **data** and rationale for the selection of **data**;

b) details of grouping of **data**, including the rationale, the criteria used to determine the groups and the resultant groupings; and the **data** points removed and the rationale for their removal;

c) checks and controls that have been applied to that **data**;

d) the source and justification of any **data** proxies;

e) any actions taken to improve **biased**, insufficient or unreliable **data**. **P6.1**

A6.2 The practitioner's **documentation** of assumptions used should include:

a) their rationale, including consideration of the consistency between individual assumptions;

b) commentary on **material bias** in assumptions and any actions taken to remove it, where relevant. **P6.1**

A6.3 The practitioner should ensure the **documentation** of **model** checks and controls includes **documented model** instructions designed to manage **model risk**. **P6.1**

Application 7 Communications

A7.1 Practitioners' **communications** should:

a) indicate clearly whether the practitioner is acting to comply with statutory or regulatory obligations and, if so, confirm compliance with them; **P7.4**

b) indicate clearly the capacity in which the practitioner is acting, e.g., an employee, director or external adviser; **P7.4**

c) where there was a previous exercise carried out for the same purpose, include a comparison of results of calculations with the previous results with an explanation of any **material** differences;

d) where **actuarial information** contains **prudence**, include sufficient information to enable the **intended user** to understand the level of **prudence** in the resulting **actuarial information**, and where there was a previous exercise carried out for the same purpose, should further include an explanation of, and reason for, any **material** change in the level of **prudence** from the previous exercise carried out for the same purpose;

e) clearly define terminology used such as "best estimate", "central estimate" or other similar terms, so that the **intended user** can reasonably be expected to understand the nature of these estimates;

f) state any **material** changes or **material** events that are known to have occurred since the effective date of the **data**. **Principle 7**

A7.2 In support of the risk identification principle, practitioners' **communications** should state the nature and significance of each **material** risk or **material** uncertainty faced by the **entity** in relation to the **technical actuarial work** and explain the approach taken to the risk. **P7.2**

A7.3 In support of the judgement principle, practitioners' **communications** should include:

a) details of **material** judgements and the process used to arrive at each judgement. **Material** judgements should be explained to the **intended user** and other relevant parties;

b) descriptions of any alternative **models**, **data** or assumptions considered. If no other alternatives were considered the reason should be **communicated**;

c) sensitivity of results to judgements that are **material** either individually or in combination. **P7.2**

A7.4 In support of the **data** principle, practitioners' **communications** should:

a) describe **data** used, the source of **data**, the rationale for the selection of **data**, the checks and controls that have been applied, any **material** uncertainty in **data**, and the approach taken to deal with that **material** uncertainty;

b) include an explanation of any **material** limitations in **actuarial information** resulting from the use of insufficient or unreliable **data**, or **data** containing **material biases** and provide an indication of their impact on **actuarial information**;

c) describe any modifications made to **data** such as interpolation, extrapolation, adjustment or discarding outliers;

d) include an explanation of any **data** proxies used and describe their rationale;

e) include a description of any grouping of **data**, including the rationale. **P7.2**

A7.5 In support of the assumptions principle, practitioners' **communications** should:

a) state the **material** assumptions describing how they were derived and their rationale including consideration of the consistency of individual assumptions;

b) where there was a previous exercise carried out for the same purpose, describe any change to a **material** assumption used in the previous exercise with an explanation of any **material** difference, and description of any change in the rationale underlying that **material** assumption;

c) state whether any assumption was set by the **intended user**, a third party or by regulation;

d) where considered **material**, provide an indication of the impact on **actuarial information** arising from the use of an assumption (or a set of assumptions when considered in aggregate) which was set by the **intended user** or a third party and which the practitioner considers not to be appropriate for its purpose;

e) include an explanation of any **material** limitations in **actuarial information** resulting from the use of assumptions based on limited information and provide an indication of their impact on **actuarial information**;

f) include an explanation of any **material** limitations in **actuarial information** resulting from the use of assumptions containing **material biases** and provide an indication of their impact on **actuarial information**. **P7.2**

A7.6 In support of the **models** principle, practitioners' **communications** should include:

a) an explanation of the methodology used and describe its rationale;

b) where there was a previous exercise carried out for the same purpose, an explanation of any change to a methodology used with an explanation of any **material** difference, and description of any change in the rationale underlying that methodology;

c) an explanation of the appropriateness and the intended uses of the **model** and **material** limitations of the methodology or **models** used, and the implications of those **material** limitations;

d) an explanation of any **material** limitations in **actuarial information** resulting from the use of **models** containing **material biases** and provide an indication of their impact on **actuarial information**;

e) a description of any **material** modelled actions and the broad implications of these actions on **actuarial information**;

f) where the methodology involves quantifying future cashflows, a description of the nature of the cash flows that are quantified, including their timing. **P7.2**

4 Glossary of defined terms used in TAS 100

must	Statements using the word 'must' set out mandatory requirements.
should	Statements using the word 'should' set out regulatory expectations and are intended to assist in compliance with mandatory requirements. Deviation may be acceptable but **material** deviations will need to be justified. The justification must demonstrate how compliance with mandatory requirements has been achieved despite not meeting regulatory expectations.

Terms in **bold** in the text of this TAS 100 are used with the definitions set out below. These terms may also be used in the other TASs with the same meaning.

actuarial information	The output of **technical actuarial work**, including output from a **model** designed for direct use by the **intended user**.
bias	A disproportionate weight in favour of or against something.
change control process	A process that: (i) only allows authorised changes to the **model**; (ii) **documents** any changes made, testing carried out, and any **material** impact on the **model** or its outputs; and (iii) allows any changes to be reversed.
communications	**Actuarial information** that meets the **reliability objective** and is provided to an **intended user** to assist the **intended user** in making informed decisions.
data	Facts or information usually collected from records or from experience or from observation. Examples include membership or policyholder **data**, claims **data**, asset and investment **data**, operating **data** (such as administrative or running costs), benefit definitions, and policy terms and conditions.
documentation	Physical or digital material that provides evidence that serves as a record of facts, opinions, explanations of judgements, or other matters. It is not necessarily provided to an **intended user**.
entity	The pension scheme, insurer, funeral plan trust, fund or other body that is the subject of the work being performed.

geographic scope	The intended geographic scope of the TASs is limited to **technical actuarial work** done in relation to the UK operations of **entities**, as well as to any overseas operations which report into the UK, within the context of UK law or regulation. This definition of scope applies regardless of the location or domicile of the person carrying out the work.
intended user	A person or group of persons whose decisions **communications** are intended (at the time they are provided) to assist.
material	Matters are **material** if they could, individually or collectively, influence the significant or relevant decisions that could be taken by an **intended user**. Assessing whether a matter is **material** is a matter for judgement and therefore subjective, requiring consideration of the objectives underpinning the **technical actuarial work**, the expectations and experience of the **intended user** and other considerations, such as the significance of resulting commercial or practical implications.
model	A simplified representation of some aspect of the world. The **model** produces a set of outputs from inputs in the form of **data**, assumptions and parameters. Inputs and outputs may be qualitative or quantitative. The **model** is defined by a specification that describes the matters that should be represented, the inputs, and the relationships between the inputs, and the resulting outputs. The **model** is implemented through a set of mathematical formulae and algorithms (e.g., a computer program).
model governance	A set of activities, policies and procedures for identifying, managing and mitigating **model risks**. Actions to mitigate **model risks** include clear **model** ownership and responsibilities, **documentation**, **model validation**, a **change control process** including for example, appropriate checks to ensure the stability of **model** outputs.
model risk	The risk that **models** are either incorrectly implemented (with errors) or make use of assumptions that cannot be justified rigorously, or assumptions that do not hold true in a particular context.
prudence	The application of margins for adverse deviations to assumptions or methodology in order to allow for uncertainty in the underlying **data** and other information, assumptions, or methodology. The application of such margins gives rise to assumptions that contain intended **bias**. Certain regulators may prescribe the use of prudent assumptions (for example, the Pensions Regulator requires the triennial valuation to be based on prudent assumptions).

reliability objective	To allow the **intended user** to place a high degree of reliance on **actuarial information**, practitioners must ensure the **actuarial information**, including the **communication** of any inherent uncertainty, is relevant, based on transparent assumptions, complete and comprehensible.
technical actuarial work	Work performed for the **intended user**: (i) where the use of principles and/or techniques of actuarial science is central to the work and which involves the exercise of judgement; or (ii) which the **intended user** could reasonably regard as **technical actuarial work** by virtue of the manner of its **communication**.
validation	The processes and actions verifying that a **model** is performing as expected and is fit for purpose.

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