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Environmental management — Requirements with guidance for verification and validation of water statements

Management environnemental — Exigences et recommandations pour la vérification et la validation des déclarations relatives à l'eau

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 2, *Environmental auditing and related environmental investigations*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 Background

Water is vital for supporting life on Earth. It is important for continued health and wellbeing as well as for a sustainable economy and environment.

Water is a growing global concern. Demand for water continues to rise exponentially because of increasing population, industrial development, energy demands and agriculture. Water supplies are becoming more erratic and uncertain, and degrading water quality can add to this uncertainty. The current rate of water use is unsustainable.

Water is necessary for all ecosystems. In water-stressed countries/regions, during droughts and in areas where water resources are scarce, it is extremely important to ensure access to water supplies. As a result, water stewardship is necessary to sustain the natural water cycle, which is interlinked with the Earth's climate and ecosystems.

Organizations are beginning to evaluate water risk and potential impacts on operations. Financial institutions and investment firms are evaluating climate-change-related business risks and are factoring water risks into investment and credit ratings and in evaluation of green investments.

The importance of water issues is recognized by the United Nations (UN) and reflected in several of the UN Sustainable Development Goals (SDGs). Water management policies are important for achieving global poverty alleviation goals, facilitating climate change adaptation, and expanding international cooperation and capacity-building support in developing countries, and will require implementation of integrated water resources management at all levels, including through transboundary cooperation. Water management policies are important to ensure a sufficient and constant supply of water under increasing scarcity.

Water initiatives related to measuring and evaluation of risks rely on reliable and credible science-based information. This growing need to evaluate and manage water risks requires confidence in water information, and is resulting in a need for verification and validation of water statements.

0.2 Approach of this document

This document provides the requirements and guidance for verification and validation activity, whether used in combination or independently, that can enable a verifier or validator to issue an opinion on a water statement (or agreed-upon procedures findings) that are attributed to any organization, project or normalized unit (e.g. product). Water information that is subject to verification is historical in nature, while validation relates to the outcome of future events. User(s) of this document are responsible for determining how to apply the requirements of this document in relation to the context and type of the applicable water programme.

This document can be used by first-, second- and third-party water information verifiers and validators, which may be an individual or a body. It is regime neutral, meaning that it can be used for verifying and validating water information statements regardless of the criteria used to develop those water statements. Criteria may be based on, for example, governmental agreements, regulatory requirements, voluntary programme requirements or other compliance obligations.

This document provides requirements and guidance for performing verification and validation of water statements. It is intended to be useful to a broad range of users, including:

— first-, second- and third-party water information verifiers and validators;

— organizations and individuals involved in developing and commissioning water projects;

— organizations conducting internal verification and validation of their water statements;

— organizations involved in water information verifier or validator training;

— voluntary and mandatory water programme administrators;

— investor, finance and insurance communities;

— regulatory agencies;

— organizations involved in accreditation and conformity assessment.

Applications of this document can include but are not limited to verification and validation of:

— water projects in response to climate adaptation and mitigation measures;

— water projects implemented to meet organizational requirements for water conservation, water quality improvement, or improvements in water use efficiency;

— water projects that enhance or restore water flows to benefit critically dewatered sections of rivers, streams and wetlands and to replenish depleted groundwater supplies;

— municipal and corporate water use information;

— water footprint information based on ISO 14046;

— water information normalized by a relevant unit;

— supply chain water information;

— sustainability report water information;

— water information to support water quality credit trading schemes;

— water information as part of local/municipal, regional or national reporting.

The requirements of this document describe a process for providing assurance to intended users that an organization's or project's water statements are complete, accurate, consistent, transparent and without material discrepancies.

This document:

— describes the process and specific requirements necessary for providing confidence in the outcome of verification and validation of water information but includes considerable guidance and flexibility;

— addresses/considers accounting principles which are necessary for providing rigor and confidence in validation and verification results;

— addresses issues relating to materiality or level of assurance, where applicable;

— discusses the use of risk assessment in designing and carrying out verification and validation investigations (which is critical in designing sampling methods and plans, and in evaluating results of investigations).

The document provides specific requirements and guidance for:

— identification of purpose and intent of the engagement (e.g. verification, validation, other);

— identification and agreement on level of assurance, verification/validation criteria, materiality, scope and boundaries;

— strategic analysis to determine timing and required resources for conducting the verification or validation;

— conducting a risk assessment to facilitate development of a verification/validation plan;

— evidence gathering plan, and appropriate sampling methodologies consistent with the type of engagement, criteria for the engagement and the level of assurance required;

— conducting the verification/validation, including assessing water information and information systems and controls and related support;

— preparing water information verification and validation opinions and reporting results;

— water information verifier/validator competency requirements.

In this document, the following verbal forms are used:

— “shall” indicates a requirement;

— “should” indicates a recommendation;

— “may” indicates a permission;

— “can” indicates a possibility or a capability.

Environmental management — Requirements with guidance for verification and validation of water statements

1 Scope

This document specifies principles, requirements and guidelines for the verification and validation of water statements.

It is applicable to organizational, product and project water statement verification and validation, and can also be used to provide confidence in reported water information on a local, regional or national level.

This document is programme neutral. If a programme is applicable, requirements of that programme are additional to the requirements of this document.

NOTE Legislation can differ from jurisdiction to jurisdiction. It is the user's responsibility to determine how applicable legal requirements relate to this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms related to water information

3.1.1
water information
information supporting a *water statement* (3.3.3) and pertaining to water characteristics important to the *intended user(s)* (3.2.3) such as accessibility to water resources, water use, *water withdrawal* (3.1.5), water degradation, water quality, water availability and water scarcity

3.1.2
water information system
policies, processes and procedures to establish, manage, maintain and record *water information* (3.1.1)

Note 1 to entry: A water information system can include measurements, spreadsheets, samples, calibration instructions, etc.

[SOURCE: ISO 14064-3:2019, 3.5.1, modified — "water" has replaced "greenhouse gas" and "GHG".]

3.1.3
water project
activity or activities that alter the conditions of a *baseline* (3.3.1) and which cause changes to water characteristics

3.1.4
water report
report containing *water information* (3.1.1) that has been developed to meet the *requirements* (3.4.16) of *water programme* (3.2.5) or *agreed-upon procedure* (3.4.10)

3.1.5
water withdrawal
anthropogenic removal of water from any *water body* (3.1.7) or from any *drainage basin* (3.1.6), either permanently or temporarily

Note 1 to entry: The term "water abstraction" is sometimes used for this concept.

Note 2 to entry: Water withdrawal typically describes the total amount of water withdrawn from a surface water or groundwater source. Measurements of this withdrawn water can help evaluate demands from domestic, industrial and agricultural users.

[SOURCE: ISO 14046:2014, 3.2.2, modified — Note 2 to entry has been added.]

3.1.6
drainage basin
area from which direct surface runoff from precipitation drains by gravity into a stream or other *water body* (3.1.7)

Note 1 to entry: The terms "watershed", "drainage area", "catchment", "catchment area" or "river basin" are sometimes used for the concept of "drainage basin".

Note 2 to entry: Groundwater drainage basin does not necessarily correspond in area to surface drainage basin.

Note 3 to entry: The drainage area(s) within the scope of *verification* (3.4.1) or *validation* (3.4.2) and the related boundaries are normally defined in the agreement between the *verifier* (3.4.28) or *validator* (3.4.29) and the *client* (3.2.4) and may be specified in legal *requirements* (3.4.16) or water programme requirements.

[SOURCE: ISO 14046:2014, 3.1.8, modified — Note 3 to entry has been replaced.]

3.1.7
water body
entity of water with definite hydrological, hydrogeomorphological, physical, chemical and biological characteristics in a given geographical area

EXAMPLE Lakes, rivers, groundwaters, seas, icebergs, glaciers and reservoirs.

Note 1 to entry: The water body(ies) within the scope of *verification* (3.4.1) or *validation* (3.4.2) and the related boundaries are normally defined in the agreement between the *verifier* (3.4.28) or *validator* (3.4.29) and the *client* (3.2.4) and may be specified in legal *requirements* (3.4.16) or water programme requirements.

[SOURCE: ISO 14046:2014, 3.1.7 modified — Note 1 to entry has been replaced.]

3.2 Terms related to entities involved in water information verification and validation

3.2.1
organization
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

[SOURCE: ISO 14001:2015, 3.1.4, modified — Note 1 to entry has been deleted.]

3.2.2
responsible party
person or persons responsible for the provision of the *water statement* (3.3.3) and the supporting *water information* (3.1.1)

Note 1 to entry: The responsible party can be either individuals or representatives of an *organization* (3.2.1), *water project* (3.1.3) or product, and can be the party who engages the *verifier* (3.4.28) or *validator* (3.4.29).

[SOURCE: ISO 14064-3:2019, 3.2.3, modified — "water" has replaced "GHG".]

3.2.3
intended user
individual or *organization* (3.2.1) identified by those reporting *water information* (3.1.1) as being the one who relies on that information to make decisions

Note 1 to entry: The intended user can be the *client* (3.2.4), the *responsible party* (3.2.2), *water programme* (3.2.5) administrators, regulators, investors, green bond providers, or other interested parties, such as local communities, government departments or non-governmental organizations.

[SOURCE: ISO 14064-3:2019, 3.2.4, modified — "water" has replaced "GHG".]

3.2.4
client
organization (3.2.1) or person requesting *verification* (3.4.1) or *validation* (3.4.2)

Note 1 to entry: The client could be the *responsible party* (3.2.2), *water programme* (3.2.5) administrator or other interested party.

[SOURCE: ISO 14064-3:2019, 3.2.5, modified — "water" has replaced "GHG".]

3.2.5
water programme
voluntary or mandatory system or scheme that develops *requirements* (3.4.16) for managing and reporting *water information* (3.1.1), and providing a *water statement* (3.3.3)

Note 1 to entry: A water programme can be at the international, national or subnational level.

Note 2 to entry: In some cases, an *organization* (3.2.1) may develop its own internal water programme.

3.3 Terms related to the water statement

3.3.1
baseline
situation resulting in quantitative and/or qualitative water characteristics that would have occurred in the absence of a *water project* (3.1.3) and which provides the *baseline scenario* (3.3.2) for comparison with water project water characteristics

[SOURCE: ISO 14064-3:2019, 3.4.6, modified — "greenhouse gas" has been deleted from the term, "situation resulting in quantitative and/or qualitative water characteristics" has replaced "quantitative reference(s) of GHG emissions and/or GHG removals", "water project" has replaced "GHG project" and "water project water characteristics" has replaced "project GHG emissions and/or GHG removals".]

3.3.2
baseline scenario
hypothetical reference case that best represents the conditions most likely to occur in the absence of a proposed *water project* (3.1.3)

Note 1 to entry: The baseline scenario concurs with the water project timeline.

[SOURCE: ISO 14064-3:2019, 3.4.7, modified — "water" has replaced "GHG".]

3.3.3
water statement
factual and objective declaration regarding water characteristics and supported by *water information* (3.1.1) that provides the subject matter for the *verification* (3.4.1) or *validation* (3.4.2)

Note 1 to entry: The water statement could be presented at a point in time or could cover a period of time.

Note 2 to entry: The water statement provided by the *responsible party* (3.2.2) should be clearly identifiable, capable of consistent evaluation or measurement against suitable *criteria* (3.4.17) by a *verifier* (3.4.28) or *validator* (3.4.29).

Note 3 to entry: The water statement could be provided in a *water report* (3.1.4) or *water project* (3.1.3) plan.

[SOURCE: ISO 14064-3:2019, 3.4.3, modified — "water" has replaced "greenhouse gas" and "GHG". "regarding water characteristics and supported by water information" has been added to the definition. Note 3 to entry has been revised.]

3.4 Terms related to verification and validation

3.4.1
verification
process for evaluating a *water statement* (3.3.3) of historical data and information to determine if the water statement is materially correct and conforms to *criteria* (3.4.17)

[SOURCE: ISO 14064-3:2019, 3.6.2, modified — "water statement" has replaced "statement" twice.]

3.4.2
validation
process for evaluating the reasonableness of the assumptions, limitations and methods that support a *water statement* (3.3.3) about the outcome of future activities

[SOURCE: ISO 14064-3:2019, 3.6.3, modified — "water statement" has replaced "statement".]

3.4.3
verification/validation team
person or persons conducting *verification* (3.4.1) / *validation* (3.4.2) activities

Note 1 to entry: One person of the verification/validation team is appointed as the *team leader* (3.4.4).

[SOURCE: ISO 14064-3:2019, 3.2.8]

3.4.4
team leader
person who manages the *verification /validation team* (3.4.3)

[SOURCE: ISO 14066:2011, 3.1.2]

3.4.5
independent reviewer
competent person, who is not a member of the *verification/validation team* (3.4.3), who reviews the *verification* (3.4.1) or *validation* (3.4.2) activities and conclusions

Note 1 to entry: The independent reviewer may be an employee of the *organization* (3.2.1) which employs the verification/validation team.

[SOURCE: ISO 14064-3:2019, 3.2.9, modified — Note 1 to entry has been added.]

3.4.6
data trail
complete record by which *water information* (3.1.1) can be traced to the primary data

[SOURCE: ISO 14064-3:2019, 3.5.2, modified — "water" has replaced "GHG" and "primary data" has replaced "GHG source".]

3.4.7
retracing
test (3.4.27) that uncovers errors in *water information* (3.1.1) by following *data trails* (3.4.6) back to primary data

[SOURCE: ISO 14064-3:2019, 3.2.10, modified — "water" has replaced "GHG".]

3.4.8
tracing
test (3.4.27) that is designed to uncover errors in *water information* (3.1.1) by following primary data to water information

[SOURCE: ISO 14064-3:2019, 3.2.11, modified — "is designed to uncover" has replaced "uncovers" and "water" has replaced "GHG".]

3.4.9
engagement
arrangement between two parties, with the terms usually specified in a contract, to perform services

[SOURCE: ISO 14064-3:2019, 3.6.1]

3.4.10
agreed-upon procedures
AUP
engagement (3.4.9) that reports on the results of *verification* (3.4.1) or *validation* (3.4.2) activities and does not provide an *opinion* (3.4.24)

[SOURCE: ISO 14064-3:2019, 3.6.4, modified — "or validation" has been added.]

3.4.11
level of assurance
degree of confidence in the *water statement* (3.3.3)

Note 1 to entry: Assurance is provided on historical information.

[SOURCE: ISO 14064-3:2019, 3.6.5, modified — "water" has replaced "GHG".]

3.4.12
reasonable assurance
level of assurance (3.4.11) where the nature and extent of the *verification* (3.4.1) activities have been designed to provide a high but not absolute level of assurance on historical data and information

[SOURCE: ISO 14064-3:2019, 3.6.6]

3.4.13
limited assurance
level of assurance (3.4.11) where the nature and extent of the *verification* (3.4.1) activities have been designed to provide a reduced level of assurance on historical data and information

[SOURCE: ISO 14064-3:2019, 3.6.7]

3.4.14
material
information capable of influencing the decisions of *intended users* (3.2.3)

[SOURCE: ISO 14064-3:2019, 3.6.8]

3.4.15
materiality
concept that individual *misstatements* (3.4.21) or the aggregation of misstatements could influence the *intended users'* (3.2.3) decisions

[SOURCE: ISO 14064-3:2019, 3.6.9]

3.4.16
requirement
need or expectation that is stated, generally implied or obligatory

[SOURCE: ISO 14050:2020, 3.1.15]

3.4.17
criteria
policy, procedure or other *requirement* (3.4.16) used as a reference against which the water *statement* (3.3.3) is compared

[SOURCE: ISO 14064-3:2019, 3.6.10, modified — "water" has replaced "GHG".]

3.4.18
controls
responsible party's (3.2.2) policies and procedures that help ensure that the water *statement* (3.3.3) is free from *material misstatements* (3.4.23) and conforms to the *criteria* (3.4.17)

[SOURCE: ISO 14064-3:2019, 3.6.11, modified — "water" has replaced "GHG".]

3.4.19
site
location where an *organization* (3.2.1) carries out work or a service

Note 1 to entry: A site may include one or several *facilities* (3.4.20).

[SOURCE: ISO 14064-3:2019, 3.6.13]

3.4.20
facility
single installation, set of installations or production processes (stationary or mobile), which can be defined within a single geographical boundary, organizational unit or production process

[SOURCE: ISO 14064-3:2019, 3.6.14]

3.4.21
misstatement
errors, omissions, misreporting or misrepresentations in the *water statement* (3.3.3)

[SOURCE: ISO 14064-3:2019, 3.6.15, modified — "water" has replaced "GHG".]

3.4.22
uncertainty
parameter associated with the result of quantification that characterizes the dispersion of the values that could be reasonably attributed to the quantified amount

Note 1 to entry: Uncertainty information typically specifies quantitative estimates of the likely dispersion of values and a qualitative description of the likely causes of the dispersion.

[SOURCE: ISO 14064-3:2019, 3.6.16]

3.4.23
material misstatement
individual *misstatement* (3.4.21) or the aggregate of actual misstatements in the *water statement* (3.3.3) that could affect the decisions of the *intended users* (3.2.3)

[SOURCE: ISO 14064-3:2019, 3.6.17, modified — "water" has replaced "GHG".]

3.4.24
opinion
formal written declaration provided by the *verifier* (3.4.28) or *validator* (3.4.29) to the *intended user* (3.2.3) that provides confidence on the *water statement* (3.3.3) in the *responsible party's* (3.2.2) *water report* (3.1.4) and confirms conformity with the *criteria* (3.4.17)

[SOURCE: ISO 14064-3:2019, 3.6.18, modified — "verification/validation" has been deleted from the term, "provided by the verifier or validator" had been added and "water" has replaced "GHG".]

3.4.25
nonconformity
non-fulfilment of a *requirement* (3.4.16)

[SOURCE: ISO 14050:2020, 3.1.17]

3.4.26
analytical procedure
evaluation of *water information* (3.1.1) made by an analysis of plausible relationships between water information and non-water data

Note 1 to entry: Analytical procedures evaluate relationships between water information and other data to identify inconsistencies.

[SOURCE: ISO 14064-3:2019, 3.6.20, modified — "water" has replaced "GHG" and Note 1 to entry has been added.]

3.4.27
test
technique used to assess a characteristic of items in a sampled population of *water information* (3.1.1) against *verification* (3.4.1) or *validation* (3.4.2) *criteria* (3.4.17)

[SOURCE: ISO 14064-3:2019, 3.6.21, modified — "water information" has replaced "GHG data and information".]

3.4.28
verifier
competent and impartial person with responsibility for performing and reporting on a *verification* (3.4.1)

[SOURCE: ISO 14064-3:2019, 3.2.6]

3.4.29
validator
competent and impartial person with responsibility for performing and reporting on a *validation* (3.4.2)

[SOURCE: ISO 14064-3:2019, 3.2.7]

3.4.30
inherent risk
susceptibility of an assertion to a *material misstatement* (3.4.23) assuming that there are no related *controls* (3.4.18)

Note 1 to entry: Inherent risk is higher where an assertion is based on complex calculations and lower where an assertion is based on simple calculations. Similarly, inherent risk is higher where an assertion is based on estimates and lower where an assertion is based on factual data.

3.4.31
control risk
likelihood that the *controls* (3.4.18) of the *organization* (3.2.1) will not prevent or detect a *material* (3.4.14) discrepancy

Note 1 to entry: This risk is a function of the effectiveness of the design and operation of internal controls relating to *water information* (3.1.1).

Note 2 to entry: Control risk is high where data providing the basis for an assertion are manually transcribed and low where data are automatically obtained from measuring equipment and input into a computer database electronically. Some control risk will always exist because of inherent limitations on internal controls.

3.4.32
detection risk
likelihood that the *verifier* (3.4.28) will not detect a *material* (3.4.14) discrepancy that has not been corrected by the *controls* (3.4.18) of the *organization* (3.2.1)

Note 1 to entry: Detection risk is a function of the effectiveness of the evidence gathering procedure and its application by the verifier.

Note 2 to entry: Detection risk cannot be reduced to zero because the verifier usually does not examine all *water information* (3.1.1) in an area and because of other factors such as the possibility that the verifier selects an inappropriate evidence gathering procedure, misapply an appropriate evidence gathering method, or misinterpret the evidence gathering results. These other factors may be addressed through adequate planning, proper assignment of competent personnel, application of professional scepticism, and adequate supervision and review of the work performed. Detection risk relates to the nature, timing and extent of evidence gathering procedures that are determined by the verifier to reduce the risk that *material misstatements* (3.4.23) are not detected to an acceptably low level.

Note 3 to entry: For a given level of verification risk, the acceptable level of detection risk has an inverse relationship to the assessment of the risk of material misstatements. The higher the risk of material misstatement, the lower the level of detection risk that can be accepted.

Note 4 to entry: As well as the risk of the verifier drawing a positive conclusion when *nonconformities* (3.4.25) exist, there is also a risk of the verifier drawing a negative conclusion where no nonconformities exist.

3.4.33
professional scepticism
attitude that includes a questioning mind and a critical assessment of evidence

Note 1 to entry: Further information on professional scepticism can be found in ISAE 3000.

[SOURCE: ISO 14066:2011, 3.1.3, modified — Note 1 to entry has been replaced.]

3.4.34
competence
ability to apply knowledge and skills to achieve intended results

Note 1 to entry: Ability implies exhibiting appropriate personal behaviour when conducting the *verification* (3.4.1) or *validation* (3.4.2).

Note 2 to entry: When defining competence, the following meanings have been applied to the words used:

— knowledge refers to facts and methods, i.e. to know;

— skills mean to carry out in practice, i.e. to do.

Note 3 to entry: This document uses the term “competence” instead of “competency”. The meanings of the terms are differentiated as follows:

— competence is defined as the broad range of knowledge, skills, attitudes and observable behaviour that together comprise the ability to deliver a specified professional service; it also involves adoption of a professional approach that values accountability to the public and leadership in professional practice, the public sector, the corporate sector and education;

— competency is defined as the particular tasks that competent personnel perform while applying, or bringing to bear, the pervasive qualities and skills that are characteristic of competent personnel to the level of proficiency defined as appropriate by the profession.

[SOURCE: ISO 14066:2011, 3.1.4, modified — Note 2 to entry has been deleted and the subsequent notes renumbered.]

3.4.35
technical expert
person who provides specific knowledge or expertise to the *verification/validation team* (3.4.3)

Note 1 to entry: Specific knowledge or expertise is that which relates to the *organization* (3.2.1), the *water project* (3.1.3) to be verified or validated, or language or culture.

Note 2 to entry: A technical expert does not act as a *verifier* (3.4.28) or *validator* (3.4.29) in the verification/validation team.

[SOURCE: ISO 14066:2011, 3.3.6, modified — Note 3 to entry has been deleted.]

3.4.36
sensitivity
likelihood that the outcome of a study will significantly change based on changes to input variables and methodologies used in the study

4 Principles

4.1 General

The application of principles is fundamental to ensure that water information is a true and fair account. The principles are the basis for, and will guide the application of, the requirements in this document.

4.2 Impartiality

The verification/validation is objective and does not introduce bias.

4.3 Evidence-based approach

The verification/validation engagement employs a rational method for reaching reliable and reproducible verification/validation conclusions and is based on sufficient and appropriate evidence.

4.4 Fair presentation

The verification/validation activities, findings, conclusions and opinions are truthfully and fairly presented. Significant obstacles encountered during the process, as well as unresolved, diverging opinions among verifiers or validators, are reported to the responsible party and the client.

4.5 Documentation

The verification/validation is documented and establishes the basis for the conclusion and conformity with the criteria.

4.6 Conservativeness

When assessing comparable alternatives, a selection that is cautiously moderate is used.

NOTE For further details on conservativeness, see Clause B.8.

5 Requirements applicable to verification/validation

5.1 Pre-engagement activities

5.1.1 General

The verifier/validator shall confirm the following aspects of the engagement:

a) type (see 5.1.2);

b) level of assurance applicable to verification only (see 5.1.3);

c) objectives (see 5.1.4);

d) criteria (see 5.1.5);

e) scope (see 5.1.6);

f) materiality thresholds (see 5.1.7);

g) language (see 5.1.8).

Engagement types specified in this document include verification and validation. Annex C describes an engagement type called "agreed-upon procedures" and contains requirements that shall be followed.

Agreement on the engagement with the client can require ensuring appropriate approvals for access to facilities, personnel, databases and other sources of information relevant to the verification or validation.

5.1.2 Type of engagement

The verifier/validator and the client shall agree on the engagement type(s) and shall consider the needs of the intended user. The verifier/validator shall assess the appropriateness of the proposed engagement type.

The agreement shall consider confidentiality requirements for the engagement, if any.

A verifier/validator can conduct a mixed engagement, as described in Annex D, when:

a) the scope of each type of engagements is clearly defined;

b) the water statements are developed in accordance with criteria.

NOTE The specific confidentiality requirements will vary depending on whether the engagement is first, second or third party.

5.1.3 Level of assurance in the case of verification

For verification, the verifier and the client shall agree on the level of assurance to be applied and shall consider the needs of the intended user. The verifier shall assess the appropriateness of the level of assurance. The verifier shall not change the level of assurance during the verification, but may terminate the engagement and start a new engagement with a different level of assurance. The level of assurance shall be specified prior to the start of the verification because the level of assurance establishes the nature, extent and timing (the design) of the evidence-gathering activities.

This document describes requirements applicable for verification at a reasonable level of assurance. In cases of limited level of assurance, the requirements in Annex A shall be met.

Considerations for verification are given in Annex B.

5.1.4 Objectives

The verifier/validator and client shall agree on the verification/validation objectives at the beginning of the verification/validation engagement.

Verification objectives shall include evaluation of the water statement for conformance to applicable criteria including levels of assurance and materiality.

Validation objectives shall include an assessment of the likelihood that implementation of the water-related activities will result in the achievement of outcomes as stated by the responsible party.

5.1.5 Criteria

The verifier/validator and client shall agree on the criteria taking into account the principles and requirements of the standards or water programme to which the responsible party subscribes. The verifier/validator shall assess the suitability of the criteria proposed by the client, considering:

a) the method for determining engagement scope and boundaries;

b) the water information to be accounted for;

c) applicable water programme requirements.

Criteria shall be relevant, complete, reliable and understandable. It shall be available to the intended user. The criteria shall be referenced in the opinion.

5.1.6 Scope

The verifier/validator and client shall agree on the verification/validation scope at the beginning of the verification/validation process. The scope, as a minimum, shall include the following:

a) boundaries;

b) facilities, physical infrastructure, activities, technologies, processes and reporting units as applicable;

c) types of water (if applicable);

d) time period;

e) baselines and baseline scenarios, as applicable.

5.1.7 Materiality thresholds

The verifier/validator shall confirm the materiality threshold required by the intended users. If no materiality threshold has been specified by intended users, the verifier/validator shall set (a) materiality threshold(s) and communicate them to the client.

NOTE 1 The water programme can establish a threshold for materiality.

NOTE 2 Materiality has qualitative and quantitative components. Quantitative materiality refers to error in value in the water statement. Examples include misstatements, incomplete inventories, misclassified water information or misapplication of calculations. Qualitative materiality refers to intangible issues that affect the water statement. Examples include:

a) control issues that erode the verifier's confidence in the reported water information;

b) poorly managed documented information;

c) difficulty in locating requested information;

d) noncompliance with regulations related to the water statement.

NOTE 3 The concept of materiality is used in designing the verification/validation and in assessing the evidence to come to a conclusion.

5.1.8 Language

The verifier/validator shall confirm with the client on the language to be used during the verification/validation.

5.2 Verification/validation team selection

A team shall be selected that has the necessary competence to undertake the verification/validation in accordance with Annex E.

NOTE Annexes F to J provide additional information regarding verifier/validator competency.

5.3 Verification/validation activities and techniques

Verifiers/validators shall employ the following evidence-gathering activities and techniques in the verification/validation as applicable to the engagement:

a) observation;

b) inquiry;

c) analytical testing;

d) confirmation;

e) recalculation;

f) examination;

g) retracing;

h) tracing;

i) control testing;

j) sampling;

k) estimate testing;

l) cross-checking;

m) reconciliation.

5.4 Specific requirements

5.4.1 Verifier/validator communication

The verifier/validator, as soon as practicable, shall communicate requests for clarification, material misstatements and nonconformities to the responsible party. If there is a material adjustment to be made to the water statement, the verifier/validator shall communicate the need for the adjustment to the responsible party.

If, in the verifier's/validator's judgement, the responsible party does not respond appropriately within a reasonable period, the verifier/validator shall inform the client, if different from the responsible party.

If, in the verifier's/validator's judgement, the client does not respond appropriately within a reasonable period, the verifier/validator shall:

a) issue a modified or adverse verification/validation opinion; or

b) withdraw from the verification/validation.

The verifier/validator should communicate non-material misstatements to the responsible party.

5.4.2 Sufficiency of evidence

If the verifier/validator determines that there is insufficient information to support the water statement, the verifier/validator shall request additional information. If sufficient information cannot be obtained and the information is necessary for the verifier/validator to form a conclusion, the verifier/validator shall not proceed with the verification/validation and shall disclaim the issuance of an opinion.

5.4.3 Intentional misstatement

If a matter comes to the verifier's/validator's attention that causes the verifier/validator to believe in the existence of intentional misstatement or noncompliance by the responsible party with laws and regulations, the verifier/validator shall communicate the matter to the appropriate parties as soon as practicable.

5.4.4 Documented information

The verifier/validator shall maintain the following documented information:

a) engagement terms;

b) risks identified and mitigation action;

c) verification/validation plan;

d) evidence-gathering plan;

e) who performed the evidence-gathering activities and when they were performed;

f) reference to objective evidence supporting conclusions;

g) requests for clarification, material misstatements, nonconformities, and relevant non-material misstatements arising from the verification/validation and the conclusions reached;

h) communication with the responsible party on material misstatements;

i) the conclusions reached and opinions by the verifier/validator;

j) the name of the independent reviewer, the date of review and comments of the reviewer;

k) other documented information necessary to demonstrate conformity with this document.

5.4.5 Process for completing a verification/validation

The process for completing a verification of a water statement based on the requirements in Clause 6 is shown in Figure J.1.

The process for completing a validation of water information based on the requirements in Clause 7 is shown in Figure J.2.

6 Verification

6.1 Planning

6.1.1 Strategic analysis

6.1.1.1 General

The verifier shall perform a strategic analysis to understand the activities and complexity of the organization, water project or product, and to determine the nature and extent of the verification activities.

The strategic analysis shall consider:

a) relevant sector information;

b) the nature of operations of the facility(ies) or water project or product;

c) the requirements of the criteria, including applicable regulatory and/or water programme requirements;

d) the intended user's materiality threshold, including the qualitative and quantitative components;

e) the likely accuracy and completeness of the water statement;

f) the scope of the water statement and related boundaries;

g) the time boundary for water information;

h) the impact of previous naturally occurring environmental changes that can impact the water statement

i) changes in water information from the prior reporting period;

j) appropriateness of quantification and reporting methods, and any changes;

k) sources of water information;

l) water information system and controls;

m) management oversight of the responsible party's reporting water information and supporting processes;

n) the availability of evidence for the responsible party's water information and water statement;

o) the results of previous verifications;

p) the results of any sensitivity or uncertainty analysis;

q) the types of water;

r) the applied monitoring methodology;

s) other relevant information.

The results of the strategic analysis shall be used in the risk assessment.

6.1.1.2 Additional requirements for water project water statement verification

The strategic analysis shall consider:

a) the water project plan;

b) the results of the validation report, if applicable;

c) the requirements of the monitoring plan;

d) the applied monitoring methodology;

e) the monitoring report.

6.1.1.3 Additional requirements for product water statement verification

The strategic analysis shall consider the results of any life cycle assessment reports, including interpretations, conclusions and limitations.

When a strategic analysis is undertaken for product water statement verification, it may be based on ISO 14040 and ISO 14044.

6.1.2 Risk assessment

6.1.2.1 General

The verifier shall perform a risk assessment of the water statement and their engagement to identify the risk of a material misstatement or nonconformity with the criteria.

The verifier shall perform a risk assessment of the water statement using the strategic analysis as input and their engagement to identify the risk of a material misstatement or nonconformity with the criteria.

The verifier shall assess the risk of misstatement and determine the nature and extent of evidence-gathering activities. The verifier shall determine performance materiality taking into account the intended user's quantitative materiality threshold. The verifier shall identify qualitative matters that can be material.

NOTE The performance materiality is a value that is set lower than what can be material to the intended user(s) to identify misstatements that, when aggregated, can be material.

Any input into the risk assessment shall be recorded.

6.1.2.2 Types of risks

Inherent risks, control risks and detection risks shall be identified and assessed for the water statement.

6.1.2.3 Risk assessment considerations

The risk assessment shall consider the following:

a) the likelihood of intentional misstatement in the water statement;

b) the relative effect of water information sources on the overall water statement and materiality;

c) the likelihood of omission of potentially significant water information;

d) whether there are any significant changes in water information that are outside the normal course of business that can impact the water statement or that otherwise appear to be unusual;

e) the nature of operations specific to an organization, facility, water project or product;

f) the degree of complexity in determining the organizational or water project boundary or product system boundary and whether related parties are involved;

g) any change from prior periods that can have a direct effect on the content of the water statement;

h) the likelihood of noncompliance with applicable laws and regulations that can have a direct effect on the content of the water statement;

i) any significant economic or regulatory changes that can impact water information and reporting;

j) the impact of previous naturally occurring environmental changes that can impact the water statement;

k) selection, quality and sources of water information;

l) the level of detail of the available documentation;

m) the nature and complexity of quantification methods;

n) the degree of subjectivity in the quantification methods;

o) any significant estimates and the data on which they are based;

p) the characteristics of the water information system and controls;

q) the apparent effectiveness of the responsible party's control system in identifying and preventing errors or omissions;

r) any controls used to monitor and report water information;

s) the experience, skills and training of personnel involved in developing the water statement;

t) any difficulties that can be encountered in accessing data that can impact evidence gathering and the ability of the verifier to assess the water statement.

6.1.2.4 Site visits

The verifier may perform an initial site visit to obtain information for the risk assessment.

6.1.2.5 Additional requirements for water project water statement verification

The risk assessment shall consider the following:

a) whether the current operating conditions reflect the assumptions, limitations, methods and uncertainties in the water project plan or criteria;

b) the complexity and data availability of the baseline calculations;

c) a comparison of actual versus expected performance results.

6.1.2.6 Additional requirements for product water statement verification

The risk assessment shall consider the following:

a) the reliability of any water information studies used;

b) the results of any critical review;

c) the degree of product complexity and system boundaries.

6.1.2.7 Risk assessment output

The risk assessment output shall be used in developing the verification and evidence-gathering plans.

The risk assessment output shall address how the verification is planned with respect to the following:

a) boundaries;

b) water information management details;

c) management controls.

6.1.3 Evidence-gathering activities

6.1.3.1 General

Using the output of the risk assessment, the verifier shall design evidence-gathering activities to collect sufficient and appropriate evidence upon which to base the conclusion. The verifier shall obtain more persuasive evidence when there is a higher risk of misstatement.

The verifier shall develop evidence-gathering activities that determine whether the water statement conforms to the criteria, taking into account the principles of the standards or programme that apply to the water statement.

6.1.3.2 Data trail

The verifier shall design evidence-gathering activities to determine the existence of data trails for verifying the water information supporting the water statement, consistent with the results of the risk assessment.

6.1.3.3 Water information system and controls

Evidence-gathering activities that assess the design and effectiveness of the water information system and controls shall consider:

a) selection and management of the water information;

b) processes for collecting, processing, consolidating and reporting water information;

c) systems and processes that ensure the validity and accuracy of the water information;

d) design and maintenance of the water information system;

e) systems, processes and personnel that support the water information system, including activities for ensuring data quality;

f) results of instrument maintenance and calibration;

g) results of previous verifications, if available and appropriate.

6.1.3.4 Water information

The verifier shall design the evidence-gathering activities to test water information.

6.1.3.5 Data aggregation process

The verifier shall design evidence-gathering activities that relate to the data aggregation process including reconciling the water statement with the underlying records and examining material adjustments made during the course of preparing the water statement.

6.1.3.6 Application of selected verification activities and techniques

6.1.3.6.1 Analytical testing

In designing and performing analytical testing, the verifier shall consider:

a) the ability of the analytical test to reduce or mitigate the risk identified;

b) the reliability of the data to be analysed;

c) the likelihood that the analytical testing will identify material misstatements.

If analytical testing identifies fluctuations or relationships that are inconsistent with other relevant information or that differ significantly from expectations, the verifier shall investigate such differences by obtaining additional evidence and performing other evidence-gathering activities.

6.1.3.6.2 Control testing

The verifier shall design and implement evidence-gathering activities to test the operating effectiveness of controls. If deviations are detected, the verifier shall assess whether the deviations affect the ability to rely on those controls, whether additional test of controls are necessary and whether other types of evidence-gathering activities need to be applied.

If the characteristics of the data are such that only tests of controls can be used, the verifier shall design and implement evidence-gathering activities to establish the operating effectiveness of those controls. If deviations are detected, the verifier shall assess whether the deviations affect the ability to rely on those controls and whether additional tests of controls are necessary.

6.1.3.6.3 Estimate testing

If estimates are used for water information and are determined through the risk assessment to have material impact on the overall water statement, the verifier shall perform estimate testing by evaluating:

a) the appropriateness of the estimate methodology;

b) the applicability of the assumptions in the estimate;

c) the quality of the water information used in the estimate.

The verifier shall develop evidence-gathering activities that test the operating effectiveness of the controls governing the development of the estimate. The verifier shall develop their own estimate or range to evaluate the responsible party's estimate.

The verifier shall evaluate whether the estimates, if any, comply with the criteria and whether the methods for making estimates:

— have been applied consistently from prior periods;

— have been changed from prior periods;

— are appropriate.

6.1.3.6.4 Sampling

If sampling is used, the verifier shall consider the purpose of the evidence-gathering activities and the characteristics of the population from which the sample will be drawn when designing the sampling methodology and determining the sample size.

6.1.4 Site visits

6.1.4.1 Site and facility selection

Site visits shall be planned and performed as appropriate to gather information needed to reduce verification risk and to aid in the design of evidence-gathering activities.

On the basis of the risk assessment, the verifier shall identify the need to visit sites and facilities, including the number and location of individual locations to be visited, considering:

a) the results of the risk assessment and efficiencies in collecting evidence;

b) the number and size of sites and facilities involved in reporting the water information;

c) the diversity of activities at each site and facility that can have an impact on the water statement;

d) the nature and significance of the water information provided by different sites and facilities, and their contribution to the water statement;

e) the degree of confidence in the water information system;

f) any risks identified through the risk assessment indicating the need to visit specific locations;

g) the results of prior verifications or validations, if any.

6.1.4.2 Circumstances requiring a site or facility visit

The verifier shall perform a site or facility visit under any of the following circumstances:

a) an initial verification;

b) a subsequent verification for which the verifier does not have knowledge of the prior verification activities and results;

c) a verification where there has been a change of ownership of a site or facility and where the water information is material to the water statement;

d) when misstatements are identified during the verification that indicate a need to visit a site or facility;

e) there are unexplained material changes in water information since the previous verified water statement;

f) material changes in scope or boundary of reporting;

g) significant changes in the water information management involving the specific site or facility.

The verifier may determine that the circumstances specified in a) through g) above do not require a site or facility visit based on the results of the risk assessment and evidence-gathering plan, and considering the results of any prior verification to the same site or facility.

If a verifier determines that a site or facility visit is not necessary, the verifier shall justify and document the rationale for the decision.

6.1.4.3 Activities to perform during site visits

The verifier shall perform evidence-gathering activities at the site or facility to assess, as determined by the risk assessment:

a) operations and activities relevant to water information;

b) water information system and controls;

c) physical infrastructure;

d) equipment, such as measuring devices and instruments, to establish traceability to applicable calibration and monitoring information;

e) types of equipment and supporting assumptions and calculations (e.g. verifying that manufacturer information used as a basis for calculations matches installed equipment);

f) processes and material flows that have an impact on water information;

g) scope and boundaries;

h) conformity with operational and data collection procedures;

i) personnel activities that have a potential to impact materiality;

j) sampling equipment and sampling methodologies;

k) monitoring practices against the requirements established by the responsible party or specified in criteria;

l) calculations and assumptions made in determining the water information;

m) quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported water information.

6.1.5 Verification plan

The verifier shall develop a verification plan that describes verification activities and schedules. The verification plan shall be revised as necessary during the verification.

The verification plan shall address the following:

a) the scope and objectives;

b) identification of the verification team and their roles on the team;

c) client/responsible party contact;

d) schedule of verification activities;

e) level of assurance;

f) verification criteria;

g) materiality;

h) schedule for site visits.

The verifier shall communicate the verification plan to the responsible party and ensure that relevant responsible party's personnel are notified prior to the beginning of any site visit.

6.1.6 Evidence-gathering plan

The verifier shall develop an evidence-gathering plan based on the results of their risk assessment. The evidence-gathering plan shall be designed to lower the verification risk to an acceptable level. The evidence-gathering plan shall specify the type and extent of evidence-gathering activities. The evidence-gathering plan should not be communicated to the client or responsible party.

6.1.7 Approval of verification and evidence-gathering plans

The verification plan and evidence-gathering plan shall be approved by the team leader.

Amendments to the verification plan and evidence-gathering plan shall be approved by the team leader in the following circumstances:

a) change in scope or timing of verification activities;

b) change in evidence-gathering procedures;

c) change in locations and sources of information for evidence-gathering;

d) the identification during the verification process of new risks or concerns that can lead to material misstatements or nonconformities.

6.2 Execution

The verifier shall conduct the verification according to the verification plan and conduct the evidence-gathering activities according to the evidence-gathering plan.

Whenever the responsible party makes changes to the water statement as a result of requests for clarification, misstatements and nonconformities, the verifier shall assess these changes.

6.3 Completion

6.3.1 Evaluation of the water statement

6.3.1.1 Evaluation of changes

The verifier shall evaluate any changes in risks and materiality threshold that have occurred over the course of the verification. The verifier shall evaluate whether any analytical procedures applied remain representative and appropriate.

6.3.1.2 Evaluation of sufficiency and appropriateness of evidence

The verifier shall determine whether the evidence collected is sufficient and appropriate to reach a conclusion. If the verifier determines there is insufficient or inappropriate evidence, the verifier shall develop additional evidence-gathering activities.

6.3.1.3 Evaluation of material misstatements

The verifier shall evaluate and document material misstatements.

6.3.1.4 Evaluation of conformity with criteria

The verifier shall evaluate conformity with the criteria, and shall identify and document any nonconformities.

6.3.2 Conclusion and draft opinion

6.3.2.1 General

The verifier shall reach a conclusion based on the evidence gathered and draft a verification opinion.

NOTE For alternative names to verification opinion types, see Table 1.

6.3.2.2 Unmodified opinion

In order to draft an unmodified opinion, the verifier shall ensure that:

a) there is sufficient and appropriate evidence to support the water statement;

b) the criteria are applied appropriately;

c) the effectiveness of controls has been evaluated when the verifier intends to rely on those controls;

d) there are no material misstatements and nonconformities.

6.3.2.3 Modified opinion

In order to draft a modified opinion, the verifier shall ensure that there is no material misstatement in the water statement.

When there is a non-material misstatement or other departure from the requirements of the criteria or a scope limitation, the verifier shall decide what type of modification to the verification opinion is appropriate. In addition to materiality, the verifier shall consider:

— the degree to which the matter impairs the usefulness of the water statement;

— the extent to which the effects of the matter on the water statement can be determined;

— whether the water statement is, or can be understood to be, misleading even when read in conjunction with the verifier's opinion.

A modified verification opinion, when read in conjunction with the water statement, normally will serve adequately to inform the intended user(s) of any deficiencies or possible deficiencies in the water statement.

In this case, the non-material misstatement shall be:

a) confined to specific elements, classifications or line items of the water statement;

b) even if confined, not representative of a substantial portion of the water statement;

c) not fundamental to the intended user's understanding of the water statement.

6.3.2.4 Adverse opinion

In order to draft an adverse opinion, the verifier shall conclude that:

a) there is insufficient or inappropriate evidence to support an unmodified or modified opinion; or

b) criteria are not appropriately applied; or

c) the effectiveness of controls cannot be determined when the verifier intends to rely on those controls.

If the responsible party does not correct any material misstatement or nonconformity, the verifier shall not issue an unmodified or modified opinion and shall either issue an adverse opinion or disclaim the issuance of an opinion.

6.3.2.5 Disclaiming the issuance of an opinion

In order to disclaim the issuance of an opinion, the verifier shall ensure that he/she has been unable to obtain sufficient appropriate evidence and can conclude that the possible effects on the water statement of undetected material misstatement(s) are material and pervasive.

6.3.3 Verification report

The verifier shall prepare a documented verification report, which shall include as a minimum:

a) an appropriate title;

b) the client or responsible party who engaged the verifier;

c) date(s) during which the verification was performed;

d) identification of the verification team and team leader;

e) purpose and scope;

f) criteria;

g) a statement that the responsible party is responsible for the preparation and fair presentation of the water statement in accordance with the criteria;

h) a statement that the verifier is responsible for expressing an opinion on the water statement based on the verification;

i) a summary of the water statement;

j) a description of the verification evidence-gathering procedures used to assess the water statement;

k) the verification opinion or disclaimer;

l) the date of the report;

m) the verifier's signature;

n) reference to the verification criteria.

7 Validation

7.1 Planning

7.1.1 Strategic analysis

The validator shall have a sufficient understanding of the water-related activity and its relevant sector information to plan and conduct the validation. This shall enable the validator to:

— identify the types of potential material misstatements and their likelihood of occurrence;

— select the evidence-gathering procedures that will provide the validator with a basis for their assessment and conclusions.

The strategic analysis shall consider:

a) relevant sector information;

b) the nature of operations;

c) the requirements of the criteria, including applicable water programme requirements;

d) the intended user's materiality threshold, including the qualitative and quantitative components;

e) the likely accuracy and completeness of the water statement;

f) the proper disclosure of the water statement;

g) the scope of the water statement and related boundaries;

h) the time boundary for water information;

i) appropriateness of quantification and reporting methods, and any changes;

j) sources of water information;

k) water information system and controls;

l) management oversight of the responsible party's reporting water information and supporting processes;

m) the availability of evidence to support the responsible party's water statement;

n) the results of sensitivity or uncertainty analysis;

o) other relevant information.

7.1.2 Materiality thresholds

The validator shall identify materiality thresholds for the purposes of concluding on the water statement. The validator shall identify qualitative matters that can be material.

NOTE See also 5.1.7.

7.1.3 Estimate testing

The validator shall evaluate whether the assumptions applied comply with the criteria and whether the estimates of future values are appropriate.

The validator shall assess:

a) the appropriateness of the estimate methodology;

b) the applicability of the assumptions in the estimate;

c) the quality of the data used in the estimate.

The validator shall develop validation evidence-gathering procedures that test the operating effectiveness of the controls over how the estimate was done. The validator shall develop an estimate or range to evaluate the responsible party's estimate.

7.1.4 Assessment

7.1.4.1 General

The validator shall develop evidence-gathering activities that assess the following:

— boundaries;

— baseline selection;

— activity measurements;

— relevant variables;

— quantification methodologies and measurements;

— water information system and controls;

— functional equivalence;

— the calculation of water statement;

— future estimates;

— uncertainty;

— sensitivities.

7.1.4.2 Scope and boundary

The validator shall assess whether the defined scope and boundary as set by the responsible party are appropriate.

7.1.4.3 Baseline scenario assessment

The validator shall assess whether the baseline selected as the baseline scenario is the most appropriate, plausible and complete hypothetical scenario.

In assessing the baseline scenario, the validator shall:

a) evaluate whether the baseline can be recognized by the intended user;

b) assess whether the baseline is established using a credible, documented and repeatable process;

c) assess whether the baseline is appropriate for the period referenced in the water statement;

d) assess the baseline selection, including how conservativeness, uncertainty, common practice and the operating environment affect the selection.

7.1.4.4 Activity measurements

The validator shall assess the designed operational conditions and the associated activity levels used in the water information quantification methodologies for the water-related activity to determine how they will produce accurate, complete and conservative estimates.

7.1.4.5 Relevant variables

The validator shall assess relevant variables that impact the water project and can materially impact the water information to see that they have been taken into account by the responsible party in developing the water project.

7.1.4.6 Quantification methodologies and measurements

The validator shall assess whether the selected quantification methodologies and associated measurements or monitoring meet the applicable requirements of the water programme or the intended user.

In assessing the quantification methodologies and measurements, the validator shall:

a) assess whether these quantification methodologies and associated measurements or monitoring are of acceptable accuracy and reliability;

b) assess whether these quantification methodologies and associated measurements or monitoring are conservative;

c) assess whether these quantification methodologies and associated measurements or monitoring have been appropriately applied;

d) assess whether operational ranges, expected operational conditions and assumptions are appropriate, as they relate to the quantification methodologies and measurements, and applicable water programme requirements, and identify any nonconformities.

NOTE Quantification methodologies refer to the method of estimating water project water performance results and can include calculations, models, mass-balance and their associated indirect measurements, and direct measurements, etc.

7.1.4.7 Water information system and controls

The validator shall assess the water information system and the procedures for water-related activities that impact water information to determine whether they can be relied upon during verification.

In assessing water information management, the validator shall:

a) identify all measuring and monitoring data and assess whether it corresponds to the calculation of expected water project outcomes, including identifying the measured and monitored data for the water related activities;

b) identify and confirm the acceptability of all additional information that is used in the water project water outcome calculations;

c) assess whether there is a sufficient and appropriate planned record-keeping to connect the measurements to the reporting;

d) identify key points in the water information management process that have inherently higher risks of misreporting and assess the responsible party's water information system controls at the key risk points;

e) identify responsibilities for the water information system and assess whether appropriate segregation of duties has occurred and appropriate levels of responsibility and authority have been assigned;

f) assess whether the data collection frequencies and operational controls are appropriate;

g) assess whether the data backup and retrieval systems are sufficiently robust;

h) assess whether the content of the water statement and who it is distributed to are appropriate;

i) assess whether the water information system and controls meet the requirements of the water programme and the intended user.

7.1.4.8 Functional equivalence

The validator shall assess whether the water project and baseline are functionally equivalent. In assessing functional equivalence, the validator shall:

a) assess both quantitative and qualitative aspects of functional equivalence;

b) identify and document the methodology and units used for the quantitative assessment;

c) assess the comparability of the scope of the water project boundaries.

7.1.4.9 Calculation of water statement

The validator shall confirm the calculations used in the water statement. In confirming the calculations, the validator shall:

a) confirm the correct application of conversion of measurement units;

b) confirm that the calculations have been correctly applied in accordance with the criteria;

c) confirm that water information has not been aggregated in a way that can be potentially misleading.

NOTE Factors that can result in potentially misleading data aggregation include water inputs or outputs from different resource types, quality, form, locations with different environmental condition indicators, or with different temporal considerations.

7.1.4.10 Future estimates

If applicable, the validator shall evaluate the future estimates associated with the water statement. In evaluating forecasts or water projections, the validator shall assess:

a) the proposed approach and assumptions inherent in the water projection;

b) the applicability of scope of the water projection;

c) the sources of data used in the water projection, including their appropriateness, completeness, accuracy and reliability.

The validator shall assess the comparability between the baseline and the proposed water project, including the consistency of assumptions and boundaries across the water statement period.

7.1.4.11 Uncertainty

The validator shall assess whether the uncertainty associated with the water statement affects disclosure or the ability of the validator to arrive at a conclusion. In assessing uncertainty, the validator shall:

a) identify uncertainties that are greater than expected;

b) assess the effect of the identified uncertainties on the water statement;

c) determine the appropriate course of action given the uncertainty.

7.1.4.12 Sensitivity

The validator shall identify assumptions with high potential for change and assess whether these changes are material to the water statement.

7.1.5 Validation plan

The validator shall develop a validation plan that describes validation activities and schedules. The validation plan shall be revised as necessary during the validation.

The validation plan shall address the following:

a) scope and objectives;

b) identification of the validation team and the roles of team members;

c) client and responsible party contacts;

d) schedule of validation activities;

e) validation criteria;

f) materiality;

g) schedule for site visits, if any.

The validator shall communicate the validation plan to the responsible party and ensure that relevant responsible party personnel are notified prior to the beginning of any site visit.

7.1.6 Evidence-gathering plan

The validator shall design an evidence-gathering plan that identifies the evidence-gathering activities to collect sufficient and appropriate evidence to support the validator's conclusion. Except in cases where the validator chooses to examine all evidence, the validator shall use a risk-based process to identify evidence to be collected. The evidence-gathering plan shall specify the type and extent of evidence-gathering activities. The evidence-gathering plan should not be communicated to the client or responsible party.

7.1.7 Approval of validation and evidence-gathering plans

The validation plan and evidence-gathering plan shall be approved by the team leader.

Amendments to the validation plan and evidence-gathering plan shall be approved by the team leader in the following circumstances:

a) change in scope or timing of validation activities;

b) change in evidence-gathering procedures;

c) change in locations and sources of information for evidence-gathering;

d) the identification during the validation process of new risks or concerns that can lead to material misstatements or nonconformities.

7.1.8 Amendments to validation and evidence-gathering plans

If evidence collected indicates a material misstatement(s) or identifies a nonconformity with the criteria, the validator shall modify the validation plan and evidence-gathering plan, as required.

7.2 Execution

7.2.1 General

The validator shall conduct the validation according to the validation plan and the evidence-gathering activities according to the evidence-gathering plan.

7.2.2 Evaluation of the water statement

The validator shall use their assessment and evaluations and the evidence gathered to assess the responsible party's water statement against validation criteria. The validator shall assess, individually and in the aggregate, whether uncorrected misstatements are material to the water statement. The validator shall assess conformity with the criteria and re-assess recognition.

7.2.3 Proper disclosure

The validator shall evaluate the water statement for proper disclosure and shall ensure that material disclosures occur. In assessing proper disclosure, the validator shall:

a) assess whether the water statement is accurate and complete;

b) assess whether the disclosure is a fair reflection of the water project activity;

c) assess whether the disclosure contains unintended bias;

d) assess whether the disclosure addresses the intended users' requirements and needs.

7.3 Completion

7.3.1 General

The validator shall reach a conclusion based on their evaluation of the water statement and whether the water statement has been properly disclosed. If the responsible party does not correct any material misstatement or nonconformity in an agreed period of time, the validator shall take this into consideration when reaching the conclusion.

7.3.2 Opinion

7.3.2.1 General

The validator shall draft a validation opinion based on the evidence gathered during the validation and choose one of the options in 7.3.2.2 to 7.3.2.5.

NOTE For alternate names to validation opinion types, see Table 1.

7.3.2.2 Unmodified opinion

In order to draft an unmodified opinion, the validator shall ensure:

a) there is sufficient and appropriate evidence to support the future estimate;

b) the criteria meet the needs of the intended user;

c) the criteria are appropriately applied for material removals or storage;

d) there are no material misstatements and nonconformities.

7.3.2.3 Modified opinion

In order to draft a modified opinion, the validator shall ensure that there is no material misstatement in the water statement.

When there is a departure from the requirements of the criteria or deficiencies in the assumptions used to develop future estimates, the validator shall decide what type of modification to the validation opinion is appropriate. In addition to materiality, the validator shall consider:

— the degree to which the matter impairs the usefulness of the water statement;

— the extent to which the effects of the matter on the water statement can be determined;

— whether the water statement is, or can be understood to be, misleading even when read in conjunction with the validator's opinion.

A modified validation opinion, when read in conjunction with the water statement, normally will serve adequately to inform the intended user(s) of any deficiencies or possible deficiencies in the water statement.

7.3.2.4 Adverse opinion

In order to draft an adverse opinion, the validator shall conclude:

a) there is insufficient or inappropriate evidence to support a modified or unmodified opinion; or

b) criteria are not appropriately applied; or

c) the effectiveness of controls cannot be determined when the validator intends to rely on those controls.

If the responsible party does not correct any material misstatement or nonconformity, the validator shall not issue an unmodified or modified opinion and shall either issue an adverse opinion or disclaim the issuance of an opinion.

7.3.2.5 Disclaiming the issuance of an opinion

In order to disclaim the issuance of an opinion, the validator shall ensure that the validator has been unable to obtain sufficient appropriate evidence and concludes that the possible effects on the water statement of undetected material misstatement(s) are material and pervasive.

7.3.3 Validation report

The validator shall prepare a validation report. The validation report shall include as a minimum:

a) an appropriate title;

b) the client or responsible party who engaged the validator;

c) date(s) during which the validation was performed;

d) identification of the validation team and team leader;

e) purpose and validation scope;

f) criteria;

g) a statement that the responsible party is responsible for the preparation and fair presentation of the water statement in accordance with the criteria;

h) a statement that the validator is responsible for expressing an opinion on the water statement based on the validation;

i) description of the validated baseline, or reference to it;

j) projected water project performance;

k) a description of the validation evidence-gathering procedures used to assess the water statement;

l) the validation opinion;

m) the date of the report;

n) the validator's signature;

o) reference to the validation criteria.

8 Independent review

An independent reviewer(s) shall be selected that is competent and different from the persons who conducted the verification, validation or AUP.

An independent review shall be completed before the opinion is issued. The independent review may be conducted during the verification/validation process to allow significant issues identified by the independent reviewer to be resolved before the opinion is issued.

The independent reviewer(s) shall evaluate:

a) the appropriateness of team competencies;

b) whether the verification/validation has been designed appropriately;

c) whether all verification/validation activities have been completed;

d) significant decisions made during the verification/validation;

e) whether sufficient and appropriate evidence was collected to support the opinion;

f) whether the evidence collected supports the opinion proposed by the verification/validation team;

g) the water statement and the verification/validation opinion;

h) whether the verification/validation was performed according to this document, including whether:

   1) the risk assessment, verification/validation plan and evidence-gathering plan address the objective, scope and level of assurance;

   2) for verification:

      i) the evidence-gathering activities address the risks identified;

      ii) a data trail has been established for material water information;

   3) for validation:

      i) the evidence-gathering activities address the water-related activity characteristics;

   4) verification/validation team decisions are supported by sufficient and appropriate evidence;

   5) any restatements have been adequately assessed;

   6) the water statement is in accordance with the criteria;

   7) significant issues have been identified, resolved and documented.

NOTE Significant issues are misstatements and nonconformities identified by the verification/validation team that can affect the verifier/validator opinion.

The independent reviewer shall communicate with the verification/validation team when the need for clarification arises.

Concerns raised by the independent reviewer shall be addressed.

The independent review results shall be documented.

The verification/validation team shall revise the verification/validation report to address the concerns raised by the independent reviewer if necessary.

9 Issuance of opinion and report

9.1 General

The verifier or validator shall make a decision whether to issue an opinion or to disclaim the issuance of an opinion.

9.2 Types of opinions

After reaching a decision to issue an opinion, the verifier/validator shall issue an opinion of one of the following types:

a) unmodified;

b) modified;

c) adverse.

NOTE See 6.3.2 and 7.3.2 for requirements associated with the drafting of opinions.

Table 1 provides different terms used by verifiers and validators to describe opinion types for different programmes.

Table 1 — Verification/validation opinion name variants

Programme A	Programme B	Programme C	Programme D	Programme E
Unmodified	Unqualified	Positive	Satisfactory	Positive
Modified	Qualified	Qualified positive	Satisfactory with comments	
Adverse	Adverse	Adverse	Unsatisfactory	Negative
Disclaim the issuance of an opinion				

9.3 Contents of opinion

The opinion shall contain:

a) identification of the scope and boundaries;

b) identification of the water statement, including the date and, if required, the period covered by water statement;

c) identification of the responsible party and a statement that the water statement is the responsibility of the responsible party;

d) identification of the criteria used to compile and assess the water statement;

e) a declaration that the verification or validation of the water statement was conducted in accordance with this document;

f) the verifier's conclusion including level of assurance, if applicable;

g) the validator's conclusion;

h) the date of the opinion.

The opinion may contain statements that limit the liability of the verifier or validator.

For a modified opinion, the opinion shall contain a description of the reason for the modification and place this description before the verifier's or validator's conclusion.

The verifier or validator shall state the reasons for an adverse opinion.

When the issuance of an opinion is disclaimed, the verifier or validator shall state the reasons for the decision.

Where the water statement includes a forecast of future water project performance, the verifier/validator opinion shall explain that actual results can differ from the forecast as the estimate is based on assumptions that can change in the future.

Annex D provides examples of verification and validation opinions, including the use of limitation statements, and requirements for mixed engagement that shall be followed.

NOTE There can be schemes that specify both a verification and validation. In which case, the opinions can be issued jointly or independently.

If the scheme has a requirement for both verification and validation, this should be agreed in the planning phase including if a joint statement is necessary.

9.4 Issuance of the report

The verifier or validator shall make a decision whether to issue an opinion or to disclaim the issuance of the opinion.

The verifier or validator shall issue the verification/validation report (see 6.3.3 and 7.3.3). The report shall reflect the verifier's/validator's decision reached to issue an opinion.

10 Facts discovered after the verification/validation

The verifier or validator shall obtain sufficient appropriate evidence and identify relevant information up to the date of the verification or validation opinion.

If facts or new information that can materially affect the verification or validation opinion are discovered after this date, the verifier or validator shall take appropriate action, including communicating the matter as soon as practicable to the responsible party, the client and the water programme.

The verifier or validator may also communicate to other interested parties the fact that it is possible that reliance of the original opinion is now compromised given the discovered facts or new information.

Annex A
(normative)

Limited level of assurance verifications

A.1 General

The concept of limited assurance provides some flexibility to the verifier by allowing the verifier to accept engagements that provide a lower level of comfort to users than reasonable assurance while still providing some level of assurance. A limited assurance engagement provides a level of assurance that is less than for reasonable assurance, but is appropriate for the circumstances and provides a level of confidence in the conclusion that is meaningful to the user. What is appropriate in a particular situation depends on the engagement circumstances, including the needs of intended users, the criteria, the subject matter and scope of the engagement, and the degree of reliance that can be placed on controls and control systems.

A limited level of assurance verification has a higher acceptable verification risk than a reasonable level of assurance verification (see Figure A.1). A verifier does not design and apply as many evidence-gathering activities or pursue evidence trails to the same depth as in a reasonable assurance engagement but places more reliance on the control environment and the controls. This allows the verifier to conclude that nothing has come to their attention to cause him/her to believe that the water statement is misstated (negative form of conclusion).

A limited level of assurance engagement can be appropriate for high-level verification at the aggregation level, e.g. information in a corporate sustainability report where the verifier reviews the aggregated information and may conduct interviews or sample additional information to arrive at an opinion without tracing information back to its primary data. However, because of the reduced rigor, a limited assurance engagement should not be used as an initial verification if high reliance is to be placed on the water statement, e.g. as a basis for monetary credits or for to demonstrate meeting regulatory permit requirements. In such instances, limited assurance engagements may be used to supplement reasonable level of assurance engagements over a period of time where the reliability of the controls is established by a reasonable level of assurance followed a limited assurance engagement or engagements for a defined period.

The water programme may provide specific requirements for limited assurance engagements.

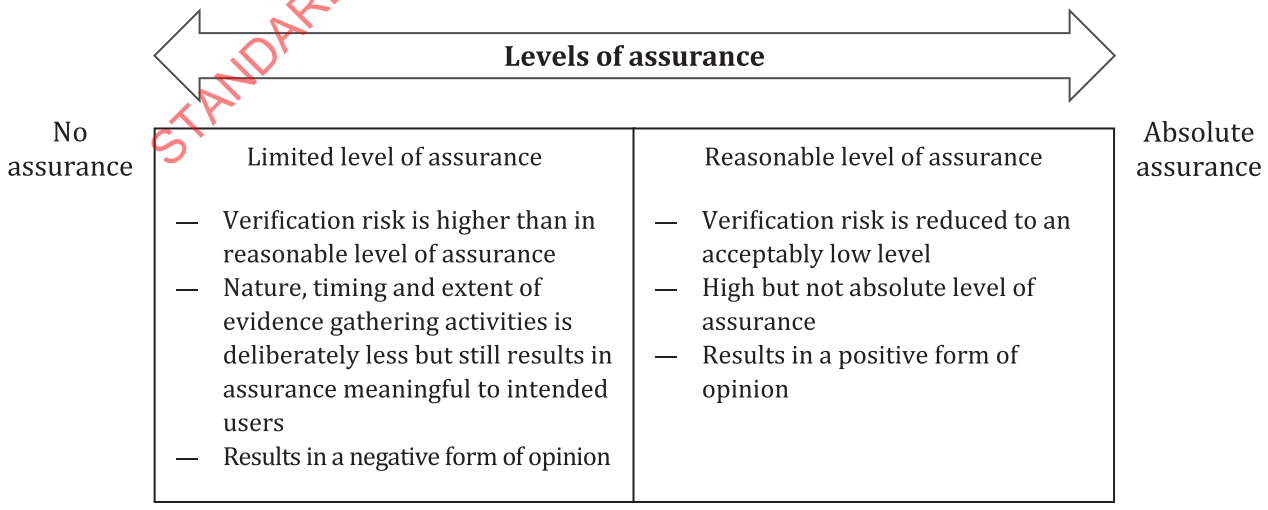

Figure A.1 — Levels of assurance

A.2 Specification of level of assurance

The level of assurance shall be specified prior to the start of the verification because the level of assurance establishes the nature, extent and timing (the design) of the evidence-gathering activities.

A verifier shall not change levels of assurance once an engagement has begun. If a change in level of assurance is justified, the verifier shall:

a) document the reasons for the change;

b) start a new verification at a different level of assurance.

An insufficiency in the criteria or evidence cannot be addressed by changing the level of assurance. Insufficiencies of criteria shall be addressed by communicating with the creator of the criteria. Inadequacy or insufficiency of evidence shall be addressed in the same manner in limited assurance engagements as they are in engagements performed at a reasonable level of assurance (see 5.4.2).

A.3 Limited level of assurance verification process

A.3.1 General

The limited level of assurance verification follows the same general process as the reasonable level of assurance verification with the following clarifications.

A.3.2 Strategic analysis

Limited level of assurance verifications does not require a detailed assessment of the design, existence and effectiveness of controls because of the underlying assumption that the controls are reliable.

A.3.3 Risk assessment

For a limited level of assurance, the risk assessment is performed on the water statement as a whole and is not as detailed as a reasonable level of assurance engagement.

The verifier shall categorize risks as inherent, control and detection risks.

As a basis for identifying and assessing the risks of material misstatement the verifier shall obtain an understanding of internal control relevant to water information quantification and reporting, including:

a) the control environment;

b) the information system, including the related business processes;

c) communication of water information reporting roles and responsibilities and significant matters relating to water information reporting;

d) the results of the organization's risk assessment process.

A.4 Evidence-gathering activities

A.4.1 General

The verifier shall design evidence-gathering activities that address all items in the water statement and focus on areas where material misstatements are likely to arise. If the verifier becomes aware of potential material misstatements, the verifier shall design appropriate evidence-gathering activities to be able to reach a conclusion about those potential material misstatements.

NOTE Limited level of assurance verifications consist primarily of inquiry and analytical procedures to obtain sufficient and appropriate evidence.

If the verifier determines through the risk assessment that an unacceptable level of risk is present relating to controls, the verifier shall take appropriate steps to reduce the risk to an acceptable level by designing appropriate evidence-gathering activities.

A.4.2 Water information system and controls

The verifier may design evidence-gathering activities for the water information systems and controls as indicated by the risk assessment.

A.4.3 Data aggregation process

A.4.3.1 General

The verifier shall obtain, through inquiry, an understanding of the data aggregation process and of material changes made during the course of preparing the water statement.

The verifier may design additional evidence-gathering activities to support the results of the inquiry.

A.4.3.2 Application of verification activities and techniques

A.4.3.2.1 Analytical testing

In designing analytical tests, the verifier shall identify an expectation of quantities and ratios but this expectation does not need to be sufficiently precise to identify potential material misstatements.

If the results of the analytical tests are inconsistent with other information or the verifier's expectations, these results may be resolved through inquiry. The verifier may design additional evidence-gathering activities to support the results of the inquiry.

NOTE Analytical testing is designed for the water statement as a whole and does not need to be designed for the occurrence, completeness, accuracy, cut-off and classification for water characteristics relating to the water statement unless indicated by the risk assessment of evidence collected during the verification.

A.4.3.2.2 Control testing

The verifier may design additional evidence-gathering activities to test controls as indicated by the risk assessment.

A.4.3.2.3 Sampling

In limited level of assurance verifications, since the risk identification is at the level of the water statement as a whole, the sampling is conducted at a higher or in a more aggregate form. The verifier shall design sampling appropriate to the verification risk.

A.4.3.2.4 Site visits

If the verifier includes a site visit in the verification plan, the verifier shall perform activities at the site or facility to assess, as applicable:

a) operations and activities relevant to the water statement;

b) physical infrastructure relevant to the water statement;

c) processes that impact the water statement;

d) scope and boundaries;

e) calculations and assumptions made in developing the water statement.

A.4.3.2.5 Estimate testing

The verifier shall evaluate whether the estimates comply with the criteria. As indicated by the risk assessment, the verifier may design additional evidence-gathering activities that:

a) evaluate the appropriateness of the estimate methodology, the applicability of the assumptions in the estimate and the quality of the data used in the estimate;

b) test the operating effectiveness of the controls governing the development of the estimate;

c) develop their own estimate or range to evaluate the responsible party's estimate.

A.4.3.3 Verification plan

In the limited level of assurance, the facility or site that aggregates the data for the water statement shall be visited, unless the verifier has prior knowledge of the facility or site's aggregation process. Other facility or site visits shall be determined based on the risk assessment and designed evidence-gathering activities.

A.4.3.4 Evidence-gathering plan

In reasonable level of assurance verifications, the evidence-gathering plan is continually updated until sufficient and appropriate evidence is gathered to allow the verifier to reach a conclusion. In limited level of assurance verifications, the verifier updates the evidence-gathering plan primarily for potentially material misstatements.

A.5 Issuance of opinion

A.5.1 Report

The report discussion of the work performed is normally more detailed than for a reasonable assurance engagement and identifies the limitations of the limited assurance engagement and of the evidence gathering procedures.

The report shall include a statement that the evidence-gathering procedures are more limited than for a reasonable assurance engagement, and therefore less assurance is obtained than in a reasonable assurance engagement and shall discuss the limitations.

A.5.2 Opinion

The opinion shall include a statement that the verification activities applied in a limited level of assurance verification are less extensive in nature, timing and extent than in a reasonable level of assurance verification. The opinion shall be expressed in the negative form.

NOTE The following text is an example of a negative form of opinion:

"Based on the process and procedures conducted, there is no evidence that the water statement:

— is not materially correct and is not a fair representation of water information;

— has not been prepared in accordance with related International Standards on water quantification, monitoring and reporting, or to the relevant national and voluntary water programme standards or practices."

Annex B
(informative)

Considerations for verification

B.1 Initial design

Reasonable assurance is the higher of two levels of assurance that generally applies to verification. It provides a high level of confidence to intended users of verification opinions that the stated information is accurate and complete. Put another way, a verifier who reaches a reasonable level of assurance must have considered a sufficient amount of evidence to reduce the risk of material misstatement to an acceptably low level. Once this level of assurance has been reached, the verifier is justified in expressing their conclusions in a positive way (i.e. to conclude that the responsible party's water statement "is fairly stated").

Limited assurance provides a lower level of confidence to intended users of verification opinions. A verifier typically accepts an engagement at the limited level of assurance only after she or he has previously performed a verification at the reasonable level of assurance. Having a prior understanding of the organization and its water information systems and controls enables the verifier to plan a subsequent limited assurance engagement.

Verification risk is higher for a limited level of assurance, not because the inherent or control risk is different, but because the detection risk is higher because the level of detail in the verification evidence-gathering activities is lower. Verifiers offering a limited level of assurance expect the responsible party will have fairly rigorous control over their water information to ensure that the control risk is sufficiently low or have inventory characteristics that have low inherent risks to allow for a design of the evidence-gathering activities for an acceptable verification risk.

Using a limited level of assurance is cost effective for providing assurance on interim reporting periods. A limited and a reasonable level of assurance are generally combined such that the limited level of assurance is provided on water statements that occur between significant reports that have a reasonable level of assurance. For example, a water programme can require a reasonable level of assurance on reports that are issued every five years and permit a limited level of assurance on reports that are issued in between these times.

A limited level of assurance generally should not be used at the beginning of an assurance programme because the verifier needs to assess the rigor of responsible party's water information systems and ability to manage the control risk.

B.2 Risk assessment

B.2.1 General

In an engagement performed at the reasonable level of assurance, the verifier identifies and assesses risks of material misstatement for the water statement as a whole, and as well for occurrence, completeness, accuracy, cut-off and classification of material water information. The risks of a misstatement as a whole are risks that are not identifiable with a specific emission or removal, but result from circumstances that increase the risk more generally, such as:

a) inadequate or poorly documented procedures or adherence to procedures for collecting data, quantifying and preparing water statements;

b) lack of staff competence in procedures for collecting data, quantifying and preparing water statements;

c) lack of management involvement in preparing water statements;

d) failure to identify all material and removals;

e) inconsistent preparation of information from prior periods without disclosure;

f) misleading presentation of material, such as highlighting favourable data or trends;

g) inconsistent quantification methods or reporting between sites, division or other segments of the water statement;

h) errors in unit conversions;

i) inadequate disclosures of uncertainties and assumptions;

j) management override of internal controls.

B.2.2 Considerations for engagements at the limited level of assurance

When verifying at the limited level of assurance, the verifier should identify and assess these risks for the water statement as a whole, and for material types water information. There is no requirement to further divide risk categories into occurrence, completeness, accuracy, cut-off and classification.

In a limited assurance engagement, the verifier should consider the reasons for the risks and obtain more persuasive evidence when the risk is higher.

B.3 Evidence-gathering plan

The depth of the evidence-gathering activities is less at the limited level of assurance, in particular, tests of control, analytical procedures and the assessment of estimates.

At a reasonable level of assurance, there is an expectation, but not a requirement, that the verifier will use tests of control in the evidence-gathering plan.

At a limited level of assurance, tests of controls are optional.

B.4 Analytical procedures

When designing and performing analytical procedures for use in a reasonable level of assurance engagement, the verifier should determine the likelihood the analytical procedures will identify material misstatements. In order to do so, the designed procedures should be of sufficient precision to detect material misstatements. If analytical procedures identify fluctuations or relationships that are inconsistent with other relevant information or that differ significantly from expectations, the verifier should investigate such differences by obtaining additional evidence and performing other evidence-gathering activities.

When verifying at the limited level of assurance, analytical procedures do not have to be precise enough to identify likely material misstatements. Instead, inquiry, depending on the responses, may provide sufficient follow-up evidence.

B.5 Estimates

In reasonable level of assurance engagements, the verifier should design evidence-gathering activities and develop verification evidence that test the operating effectiveness of the controls over how estimates were made. The verifier should develop their own point estimate or estimate range to evaluate the responsible party's estimate.

In an engagement performed at the limited level of assurance, tests of the operating effectiveness of controls over how an estimate was made are not always carried out, and the verifier does not always develop their own point estimate or estimate range to evaluate the responsible party's estimate.

B.6 Aggregation of the water statement

In a reasonable level of assurance engagement, the verifier should include evidence-gathering activities that relate to the aggregation process, including examining material adjustments made during the course of preparing the water statement.

In a limited level of assurance engagement, inquiry, depending on the response, may provide sufficient evidence that any material adjustments were appropriate.

B.7 Determining further evidence-gathering activities

In a reasonable level of assurance engagement, the verifier should design sufficient and appropriate evidence-gathering activities to lower the verification risk to an acceptable level. The evidence-gathering plan should be iterated continually until this state is complete.

In a limited level of assurance engagement, the verifier establishes the initial evidence-gathering plan and resolves any matters that come to their attention by either concluding that the matter is or is not material to the water statement. Although there is some iteration, it is usually significantly less than in engagements performed at the reasonable level of assurance.

B.8 Interpretations of conservativeness

Conservativeness is a principle that is used to choose between options that are similar in completeness and accuracy. Consequently, the principles of completeness and accuracy always apply and the principle of conservativeness can apply. Additionally, the principles of completeness and accuracy apply before applying the principle of conservativeness.

Conservativeness is interpreted differently depending on the circumstances. For example, for a water statement that is attempting to meet a target water volume for water conservation, an overstatement would be conservative. For a water project water statement that is used to establish a base year water withdrawal value to use in comparing later water withdrawal information, an understatement would be conservative.

NOTE This clause is applicable to validation as well.

Annex C
(normative)

Agreed-upon procedures (AUP)

C.1 General

AUP is a type of engagement used when the intended user(s) do not require assurance on the water statement but require a qualified verifier/validator to test specific aspects of a subject (see Clause C.3) using verification/validation techniques.

An AUP engagement may be used for verification or validation where there are no water programme requirements or where the verifier/validator and the intended user(s) agree on the evidence-gathering activities and the intended user(s) take responsibility for the procedures for their purposes.

An AUP engagement may be more or less extensive than verification or validation. However, the verifier/validator may provide advice on the ability to effectively perform the procedures.

The AUP need to be documented and agreed to. The verifier provides a report only on the results of the AUP, and no assurance or opinion is expressed. The intended user(s) assess the results of the activities and draw their own conclusions. The report contains the AUP and the results, including the errors and exceptions identified, even if rectified. Where the intended user(s) wish to distribute the results of the AUP engagement to a wider audience (e.g. public disclosure), any limitations on disclosure of report information shall be specified in the report and in the agreement with the intended user(s).

The verifier/validator shall not perform an AUP engagement when the intended user(s) do not agree to the content and sufficiency of the procedures.

C.2 Application of agreed-upon procedures

AUP can be used with verification/validation activities. This document anticipates that this type of engagement can be applied to:

a) water programmes that specify AUP rather than assurance;

b) compliance to specifications;

c) water information system and controls.

The process for AUP is given in Figure C.1.

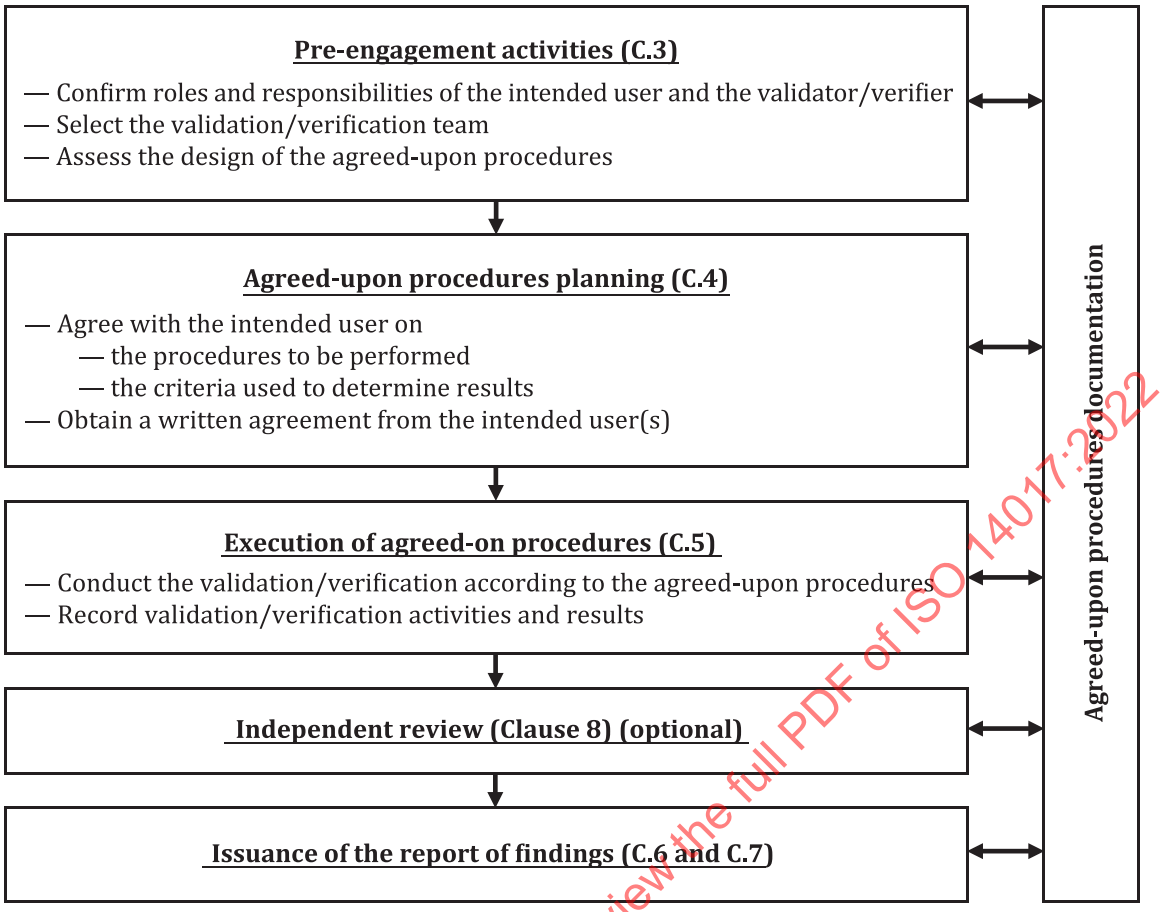

Figure C.1 — Agreed-upon procedures process

C.3 Roles and responsibilities

C.3.1 Roles and responsibilities of the intended user

The agreement between the verifier/validator and the client shall make clear that the intended user(s):

a) are responsible for the water statement and supporting evidence;

b) are responsible for the sufficiency of the AUP for their purposes;

c) acknowledge the risk that the intended user can misunderstand or otherwise inappropriately use findings properly reported by the verifier/validator.

C.3.2 Roles and responsibilities of the verifier/validator

The verifier/validator:

a) is impartial from the intended user(s) and subject;

b) assumes the risk that misapplication of the procedures can result in inappropriate findings being reported;

c) assumes the risk that appropriate findings are not always reported or can be reported inaccurately;

d) does not have the responsibility for determining the differences between the AUP and an assurance engagement.

C.3.3 Assessments made by the verifier/validator on the design of the agreed-upon procedures

The verifier/validator, in assessing the AUP, shall determine whether:

a) the subject can be measured in a reasonably consistent manner;

b) the AUP will produce reasonably consistent results;

c) the evidence required for the AUP is expected to exist;

d) the evidence required for the AUP provides a reasonable basis to determine the results.

The verifier/validator should not agree to perform procedures that are subjective and thus possibly open to varying interpretations.

C.4 Planning

The verifier/validator and the intended user(s) shall agree on:

a) the procedures to be performed;

b) the criteria used to determine results.

The verifier/validator shall obtain a written agreement from the client and any other intended user(s) of the report. An AUP engagement shall not be performed without this written agreement.

The agreement shall include the following information:

— a description of the nature of the engagement including the fact that the procedures performed do not constitute a verification or validation and that no assurance is provided;

— identification of the client and intended users of the report;

— purpose for the engagement;

— identification of the water information to which the AUP will be applied;

— nature, timing and extent of the specific procedures to be applied;

— anticipated form of the report;

— limitations on distribution of the report.

C.5 Execution of agreed-upon procedures

C.5.1 General

The verifier/validator shall perform the AUP and report the findings. The nature, extent and timing of the procedures may be as limited or as extensive as the intended user(s) specify.

The AUP may evolve or may be modified over the course of the engagement if the client and intended user(s) acknowledge responsibility for the sufficiency of such procedures for their purposes. Any modifications shall be documented in an amendment to the agreement (see Clause C.4).

Appropriate AUP may include:

a) execution of a sampling technique after agreeing on relevant parameters;

b) inspection of specified documents evidencing certain types of measurements;

c) confirmation of specific information with third parties;

d) comparison of documents, schedules or analyses with certain specified attributes;

e) performance of specific procedures on work performed by others;

f) performance of mathematical computations.

C.5.2 Inappropriate agreed-upon procedures

Inappropriate AUP include:

a) simply reading work performed by others that only describes or contains their findings with no other supporting material;

b) evaluating the competency or objectivity of another party;

c) obtaining an understanding about a particular subject;

d) interpreting documents outside the scope of the verifier's/validator's professional expertise.

C.5.3 Agreed-upon procedures process

The verifier/validator shall obtain evidence from applying the AUP to provide a reasonable basis for findings.

If circumstances exist that prevent the verifier/validator from implementing the procedures, the verifier/validator shall attempt to obtain agreement from the intended user(s) to modify the procedures. If agreement cannot be reached, the verifier/validator shall describe the restriction in the report or withdraw from the engagement.

An independent review process may be completed prior to the presentation of AUP results.

C.6 Presentation of the agreed-upon procedures results

The verifier/validator shall not issue an opinion on evidence-gathering activities in an AUP type engagement, as no assurance is provided in an AUP engagement.

C.7 Presentation of the agreed-upon procedures findings

The verifier/validator reports all findings from application of AUP. Users of the report assess for themselves the procedures and findings reported by the verifier/validator and draw their own conclusions from the report.

The AUP engagement report shall include:

a) title;

b) addressee (the client or responsible party who engaged the validator/verifier/validator);

c) identification of the specific water information to which the AUP have been applied;

d) a statement that the procedures performed were those agreed upon with the client and any intended users;

e) a statement that the engagement was performed in accordance with this document;

f) identification of the purpose for which the AUP were performed;

g) identification of the specific procedures performed;

h) a description of the verifier's/validator's findings including sufficient details of errors and exceptions found;

i) a statement that the procedures performed do not constitute either a verification/validation and, as such, no assurance is expressed;

j) a statement that had the auditor performed additional procedures; it is possible that other matters will have come to light that would have been reported;

k) a statement that the report is restricted to those parties identified in the agreement (see Clause C.3) that have agreed to the procedures to be performed;

l) date of the report;

m) identification of the verifier/validator.

The verifier/validator may include additional explanatory language in the report, such as:

— disclosure of stipulated facts, assumptions or interpretations (including the source thereof) used in the application of AUP;

— description of the condition of records, controls or data to which the procedures were applied;

— explanation that the verifier/validator has no responsibility to update the AUP report;

— explanation of sampling risk.

The verifier/validator shall use the date of completion of the AUP as the date of the AUP report.

C.8 Examples of agreed-upon procedures reporting and findings

Examples of AUP are given in Tables C.1 and C.2.

Table C.1 — Example of an agreed-upon procedures report content

Name	Description
Title	Title that includes the word "impartial" Addressee [ordinarily the client/intended user(s)]
Content and roles	Identification of the client/responsible party Identification of the subject A statement that the subject is the responsibility of the client/ responsible party A statement that the sufficiency of the procedures is solely the responsibility of the intended user(s) A disclaimer of verifier/validator responsibility for the sufficiency of those procedures
Methodology	A statement that the procedures performed were those agreed to A statement that the verification/validation was performed in accordance with ISO 14017:2022, Annex C A statement that the verification report is to be used solely by the intended user(s) that have agreed upon the procedures
Procedures and results	Identification of the purpose for which the AUP were performed A listing of the specific procedures performed Where applicable, a description of any agreed-upon materiality thresholds A description of the verifier's factual findings including sufficient details of errors and exceptions found

Table C.1 *(continued)*

Name	Description
Caveats to the methodology	Where applicable, reservations or restrictions concerning procedures or findings Where applicable, a description of the nature of the assistance provided by any technical experts
Caveats to the AUP report	A statement that the activities performed do not constitute either a verification or validation and, as such, no assurance is expressed A statement that had the verifier/validator performed additional activities, a verification or validation, it is possible that other matters will have come to light that would have been reported A statement that the report is designed for the client and any intended user(s) and is not always suitable for any other purposes
Verifier/Validator	Date of the report Verifier/Validator's address Verifier's/Validator's signature

Table C.2 — Examples of appropriate and inappropriate descriptions of findings resulting from the application of certain agreed-upon procedures

Agreed-upon procedures	Appropriate description of findings	Inappropriate description of findings
Inspect the invoice dates for a sample (agreed-upon) of specified invoices, and determine whether any such dates were subsequent to 20XX-12-31.	No invoice dates shown on the sample of invoices were subsequent to 20XX-12-31.	Nothing came to my attention as a result of applying that procedure.
Calculate the quantity of water consumed based on invoiced amounts during the year ending 20XX-09-30; compare the resultant number to the total water consumption value in the Summary.xls spreadsheet.	The quantity of water consumed based on invoices was 1 200 l more than the value in the Summary.xls.	The amount of water consumed approximated the total water consumption value in the Summary.xls.
Inspect the identification of water sources identified in the water inventory during a specified period; compare this to those specified by the water programme.	The identification of water sources identified in the water statement for the specified period were the same as those specified by the water programme with the exception of the following: [*List all exceptions.*]	The identification of water sources appeared to comply with the water programme requirements.

Annex D
(normative)

Mixed engagement

A mixed engagement is an engagement combining verification and validation activities performed at the same time and on the same water statement.

Verification is applied when the water information supporting the statement is historical and the verifier can obtain sufficient evidence, and if a controls approach is used or a limited level of assurance is applied, the verifier has access to the controls for testing.

Validation is applied when the water statement relates to future performance projections, and where the validator can obtain sufficient evidence that the projected changes in performance are likely to occur, and the design of the data management systems, including the controls, are likely to be effective.

AUP are applied when the intended user(s) require the results of verification/validation evidence-gathering activities but do not require the opinion of the verifier.

A mixed engagement may apply in the following instances:

a) verification or validation of a water statement where the water information and associated water information system is controlled by an entity other than the responsible party or client and the verifier/validator does not have access to the data and its associated data management system;

b) verification and validation of a water statement that relates to occurrences in the past and in the future;

c) a water statement where criteria specify supporting information and where the verifier does not have the ability to obtain sufficient evidence to assess appropriateness, responsibility, completeness, accuracy, cut-off, classification and/or consistency;

d) a water project where the baseline is hypothetical and the water project's emissions, removals and/or storage have occurred or will occur;

e) a water project validation where an operational period is included.

A mixed engagement includes two or three types of engagements conducted at the same time. The boundary of each engagement shall be delineated and the appropriate methodology used (e.g. verification is risk based, validation is conceptual design based, AUP is execution of verification/validation activities). A mixed engagement shall clearly report to the intended user(s) the boundaries, the methodology and the results obtained from executing each type of engagement. When areas of a water statement are not addressed by the mixed types of engagements, these areas shall be identified.

Annex E
(normative)

Competency

E.1 Team competence

E.1.1 General

A verification/validation team collectively shall have the required competence to perform verification or validation activities.

The verifier/validator shall maintain records to provide evidence of competency.

E.1.2 Knowledge

E.1.2.1 General

A verification/validation team shall possess the following:

a) water programme knowledge;

b) technical knowledge;

c) data and information auditing knowledge;

d) team leader knowledge.

E.1.2.2 Water programme knowledge

E.1.2.2.1 Generic water programme knowledge

A verification/validation team collectively shall have water programme knowledge, including the following, as applicable to the engagement:

a) eligibility requirements;

b) applicable legal requirements;

c) implementation in different jurisdictions, as applicable;

d) restrictions associated with geographic locations;

e) verification or validation requirements and guidelines;

f) scope of the water characteristics subject to reporting.

E.1.2.2.2 Additional water programme knowledge for organization level verification

A verification team shall have additional water programme knowledge for the organization level verification, including, where applicable, knowledge of processes, hydrology and hydrogeology.

E.1.2.2.3 Additional water programme knowledge for water project level verification or validation

A water project verification/validation team collectively shall have additional water programme knowledge for water project verification or validation, including (as applicable) the following:

a) established water project boundaries and water project types, including industry sectors, hydrology, hydrogeology and technology areas;

b) applicable water project methodologies;

c) programme eligibility requirements.

E.1.2.3 Technical knowledge

E.1.2.3.1 Generic technical knowledge

A verification/validation team collectively shall have technical knowledge, including (as applicable) the following:

a) water information, hydrology and hydrogeology within the boundaries of the activity;

b) application of materiality and material discrepancy;

c) application of quantification and reporting principles (e.g. completeness, consistency, accuracy, transparency and relevance);

d) relevant sector quantification methodologies, monitoring techniques and calibration procedures, and their consequences for data quality.

E.1.2.3.2 Additional technical knowledge for organization level verification

A verification team collectively shall have additional technical knowledge for organization level verification, including (as applicable) criteria, processes, procedures and/or methodologies for setting:

a) organizational boundaries;

b) operational boundaries.

E.1.2.3.3 Additional technical knowledge for water project level verification or validation

A water project verification/validation team collectively shall have additional water project-specific technical knowledge, including (as applicable) the following:

a) the application of the following principles and concepts:

   1) conservativeness;

   2) equivalence;

   3) additionality;

   4) leakage;

   5) permanence;

b) common criteria, processes, procedures and/or methodologies for:

   1) selecting baselines;

   2) setting water project boundaries;

3) assessing additionality (as exemplified by benchmarking and financial, technological and policy barriers);

4) the treatment of uncertainty;

c) key factors that influence the water information;

d) the views of relevant stakeholders.

E.1.2.3.4 Additional technical knowledge for the verification of other water assertions

A verification team collectively shall have additional technical knowledge for the verification of other water assertions, including (as applicable) criteria, processes, procedures and/or methodologies for the following:

a) environmental declarations and labels;

b) water information statements and other related assertions.

E.1.2.4 Data and information auditing knowledge

A verification/validation team collectively shall have data and information auditing knowledge, including the following:

a) data and information auditing methodologies;

b) risk assessment methodologies;

c) data and information sampling techniques;

d) water data and information control systems;

e) typical internal control systems.

E.1.2.5 Team leader knowledge

A team leader shall have sufficient verification or validation knowledge (applicable to the engagement), including the following:

a) the scope, criteria, objective, materiality and level of assurance of the verification or validation;

b) the competence of team members;

c) verification or validation of related risks;

d) water project, resource, and team management.

E.1.3 Skills

A verification/validation team collectively shall have the necessary skills to perform verification or validation activities. Examples of applicable skills include the ability to:

a) retrieve relevant information and apply the knowledge in a manner appropriate for the work;

b) understand the meaning, translation and interpretation of information;

c) think critically and analyse multiple inputs;

d) distinguish between facts and inferences and exercise professional scepticism;

e) carry out independent research to challenge assumptions and evidence asserted by a responsible party or client;

f) strike a balance between attention to detail and a high-level assessment of the anticipated outcome during the verification or validation process;

g) manage detail, particularly at the level of ensuring that required checks are performed (e.g. between a water project plan and the water project report, and between a water inventory and its corresponding report);

h) evaluate the information, data and assumptions, and make professional judgements;

i) apply verification or validation methods in expected and unanticipated situations;

j) communicate the verification or validation process and results.

E.2 Development and maintenance of verification and validation knowledge and skills

E.2.1 General

A verification/validation team is competent on the basis of the team's collective knowledge, skills and abilities.

E.2.2 Demonstration of knowledge and skills

For the purposes of achieving initial or supplemental qualifications to undertake verification or validation activities for given sectors, verifier or validator knowledge and skills shall be developed using a variety of methods including, but not limited to:

a) education;

b) training;

c) work experience relevant to the competence required for the activity;

d) report of tutoring or mentoring by more experienced staff (e.g. other members of the water verification/validation team).

NOTE 1 Examples of work experience can include employment, consulting, water project development or professional auditing in the technical area.

NOTE 2 Practical experience, especially in an environment in which teamwork is encouraged, helps less experienced team members to develop attitudes of professional scepticism and make sounder judgements concerning the assessment of risk and the sufficiency and appropriateness of evidence.

E.2.3 Maintenance of knowledge and skills

A verifier or a validator shall maintain knowledge and skills through ongoing awareness of developments in water management, including relevant local, regional and international water programmes, climate science and relevant legal requirements.

A verifier or a validator shall also undertake a programme of continuing professional development, including training, consistent with emerging trends in water management.

Team members' competency records shall be maintained as related to the scope of work.

Team member performance (e.g. the demonstration of knowledge and skills) shall be periodically monitored.