

Staff guidance GHG emissions Uncertainty and data quality

Considerations for preparers and assurers

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Guidance series: GHG emissions

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Structure of this document

The structure of this document is as follows:

- **Uncertainty:** acknowledgement in the standards
- **Measurement methods:** uncertainty, selection considerations, supplier provided information, and assurance
- **Activity data:** uncertainty, data quality, third-party data, and assurance
- **Emission factors:** uncertainty, selection considerations, and assurance
- **Financed emissions calculations:** considerations for preparers and assurance

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1. Introduction: uncertainty and data quality

This guide is the first in a series of guidance by External Reporting Board (XRB) staff — to support the disclosure of greenhouse gas (GHG) emissions in accordance with Aotearoa New Zealand Climate Standards (NZ CS) and assurance on the disclosures in accordance with the XRB's assurance standards. The guidance provides information about GHG emissions accounting and assurance concepts. It has been developed to help both preparers and assurance practitioners clarify key points and address potential differences in interpretation as practice continues to evolve.

This document focuses on data quality and scientific and estimation uncertainty, two areas that are integral to GHG emissions measurement and assurance.

The examples are for illustrative purposes. They outline possible options and considerations for both preparers and assurance practitioners. They do not suggest that these are the only possible options. An entity should apply its own judgements, taking into account its specific facts and circumstances. An assurance practitioner is required to apply professional judgement when conducting an assurance engagement.

1.1 NZ CS requirements

NZ CS requires the disclosure of gross scope 1, 2 and 3 GHG emissions.¹ An entity is also required to provide additional information on its GHG emissions disclosures.² It must also apply NZ CS 3, including fair presentation, principles, and materiality as well as methods and assumptions, and data and estimation uncertainty disclosures.³

Note that NZ CS do not require an entity to measure its GHG emissions using any of the standards or methods referenced in this guidance when making its disclosures. It must, however, identify the standards and methods used.⁴

1.2 Assurance requirements

An entity is required to obtain a minimum of limited assurance over the GHG disclosures in its climate statements. NZ SAE 1 Assurance Engagements over Greenhouse Gas Emissions Disclosures requires the use of either ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements or ISO 14064 3:2019 Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements.

Assurance engagements under NZ SAE 1 can be performed by all independent, competent assurance practitioners.

¹ NZ CS 1 Climate-related Disclosures [paragraph 22\(a\)](#)

² NZ CS 1 Climate-related Disclosures [paragraph 24](#)

³ NZ CS 3 [General Requirements for Climate-related Disclosures](#)

⁴ NZ CS 1 Climate-related disclosures [paragraph 24\(a\)](#)



2. GHG emission disclosures and assurance need to know information

GHG emissions measurement standards offer a range of options for measurement and subsequent reporting.

These options give an entity flexibility and allow it to choose the most appropriate method for its circumstances. The selection of different measurement methods for the same emissions source can result in materially different GHG emissions disclosures.

The optionality makes it crucial for the entity to communicate its choices clearly and transparently.

By detailing the methods, assumptions and rationales used for its GHG emission disclosures, an entity can ensure primary users understand its decisions and reported data. An entity must ensure that its disclosures fairly present its GHG emissions.

Assurance helps provide trust and confidence in the reported information to the primary user.

The output of the GHG emissions assurance engagement is an assurance report by an independent third-party assurance practitioner that contains information about the work performed and the conclusion they have formed.

All GHG emission disclosures contain high levels of estimation and uncertainty.

This is a normal part of GHG emissions measurement and disclosure. It is important to remember that one of the main reasons for measuring and disclosing GHG emissions information is to identify areas of risk and opportunity, rather than providing absolute precision. There are likely to be high levels of uncertainty, especially as practice evolves. The assurance report will highlight this uncertainty.

An entity should work towards obtaining better quality data over time.

An entity should prioritise improving areas with high or significant emissions and low data quality, to meet the decision-making needs of its users. It is an entity's judgement as to how it makes trade-offs between the choice of methods and the quality of the data it obtains.



An entity should prepare in a consistent manner, regardless of the level of assurance.

An entity should have the same systems and controls over information to meet their reporting obligations, regardless of whether it is intending to obtain limited or reasonable assurance.

The assurance practitioner's objectives are to obtain a minimum of limited assurance as to whether the GHG emissions disclosures are free from material misstatement and to report their findings in an assurance report.

The assurance practitioner obtaining sufficient and appropriate evidence to support the conclusion they reach is integral to the assurance engagement. There is a high degree of inherent uncertainty involved in measuring GHG emissions. The GHG emissions disclosures should make the nature and extent of uncertainty clear, and the assurance practitioner may draw attention to relevant disclosures.

The entity's choice of emission factors is a source of estimation uncertainty.

An entity should choose the emission factors that best represent its emission sources, based on considerations such as technology, time, geography, peer review, global warming potential (GWP) and alternate sources. An entity must disclose the source of emission factors used to calculate its GHG emissions. The assurance practitioner will evaluate whether the methods are appropriate and have been applied consistently.⁵

An entity using a third-party data provider is responsible for ensuring its GHG emission disclosures meet the requirements of NZ CS.

The entity should implement adequate processes and internal controls to ascertain that supplier data is appropriate to be used as a basis for its disclosures. The assurance practitioner is required to obtain an understanding of these controls and the results of any risk assessment process that has been completed by the entity.⁶

⁵ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements, [paragraph 44L](#)

⁶ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements, [paragraph 25L](#)



Uncertainty

“The use of uncertain data, and reasonable estimates based upon them, is an essential part of preparing climate-related disclosures. The usefulness of the information disclosed is not undermined if it is accurately and transparently described and explained.”⁷ This applies to the GHG emission disclosures within the climate statements.

GHG emission disclosure uncertainty can be broadly categorised into scientific and estimation uncertainty.

- Scientific uncertainty arises when the science of the actual GHG emissions process is not sufficiently understood or accurately quantifiable. For example, emission factors involve particularly significant scientific uncertainty in relation to global warming potential (GWP) values. An entity should consider which parts of its inventory may include the greatest scientific uncertainty at a high level and whether this is relevant information for its primary user. GHG emissions measurement standards acknowledge that scientific uncertainty will always exist.
- Estimation or measurement uncertainty arises when GHG emissions are quantified. Quantification relies on models, data and emission factors which may be a simplification of processes, use incomplete data or be based on assumptions and averages.

2.1 How do NZ CS acknowledge uncertainty?

Under NZ CS, an entity must describe the:

- methods and assumptions used to calculate or estimate GHG emissions
- limitations of the methods used
- uncertainties relevant to the quantification, including the effect on disclosures.⁸

The level of detail of these disclosures must consider the materiality of the information to an entity’s primary users.

Applying the information principles in NZ CS to the GHG emissions disclosures will help to ensure fair presentation of the entity’s GHG emission disclosures.⁹

⁷ NZ CS 3 General Requirements for Climate-related Disclosures, [paragraph 48](#)

⁸ NZ CS 3 General Requirements for Climate-related Disclosures, [paragraphs 52 to 53](#)

⁹ NZ CS 3 General Requirements for Climate-related disclosures, [Table 1: Principles – information](#) and [Fair presentation](#)



2.2 How do the assurance standards acknowledge uncertainty?

NZ SAE 1 requires the assurance report to include a statement that GHG emission quantification is subject to inherent uncertainty.¹⁰ Within this statement the assurance practitioner may consider commenting on the inherent scientific and estimation uncertainty that is present in the quantification of GHG emissions. An example of this is the uncertainty included in the emission factors that vary considerably depending on the factors selected. This statement may:

- be a generic statement to cover all emission factors used
- highlight a particular GHG emission disclosure that has higher scientific or estimation uncertainty and is therefore a less accurate reflection of the GHG emissions.

The assurance practitioner may consider that the uncertainty disclosures made by the entity are critical to primary users' understanding of the GHG emission disclosures and may choose to highlight them, or a particular disclosure, by including an Emphasis of Matter paragraph in the assurance report. Given the high level of estimation and uncertainty in GHG emission quantification, Emphasis of Matter paragraphs are anticipated to be common in assurance reports over the GHG emission disclosures in the climate statements that are required by legislation. An Emphasis of Matter paragraph does not mean that the conclusion has been modified.

For more information on the GHG assurance report, refer to our [explainer](#).

¹⁰ NZ SAE 1 Assurance Engagements over Greenhouse Gas Emissions Disclosures, [paragraph 55](#)





3. Measurement methods

GHG emissions measurement standards offer a wide range of options for measurement and subsequent reporting. These options are intentional and give entities significant flexibility.

However, this flexibility makes it crucial for the entity to communicate its choices clearly and transparently. By detailing the methods, assumptions and rationales behind its GHG emission disclosures, an entity can help primary users understand its decisions and the reported data.

3.1 Uncertainty relating to method selection

The selection of different measurement methods can result in materially different disclosures. For example, GHG emissions reported using a spend-based method may vary significantly from those reported using a supplier-specific method.

The GHG Protocol provides guidance on how an entity may calculate GHG emissions under each of the scope 3 categories.¹¹ These methods are summarised in Table 1. This table places methods in order, going from more specific, to least specific, and highlights sources of uncertainties related to each method.

3.2 Selecting measurement methods

An entity must describe the methods used to calculate or estimate its GHG emissions and the rationale for choosing the methods.¹²

In general, more specific methods yield higher quality scope 3 GHG emissions data and less specific methods yield lower quality scope 3

GHG emissions data. However, the more specific methods are often more time-and-labour intensive. An entity may use a combination of methods within a category. For example, it can use supplier specific data where available, and secondary data to fill the gaps.

An entity should consider the following factors when selecting calculation methods:

- the size of the GHG emissions from the activity¹³
- relevance to the entity's business goals
- data availability and quality
- the cost and effort required to apply each method
- other criteria identified by the entity.¹⁴

An entity should begin by conducting a screening process, using less specific data, to determine the materiality of GHG emissions of each scope 3 activity. Then each activity can be examined to determine whether to further refine the GHG emission estimates.

An entity should select calculation methods that ensure the inventory appropriately reflects the GHG emissions of the activities and serves the decision-making needs of primary users.¹⁵ An entity needs to use its judgement about what level of specificity¹⁶ is important to achieve (and what it is able to achieve) over particular GHG emissions sources.

An entity must consider NZ CS 3 (including materiality, fair presentation principles and the specific disclosure requirements relating to GHG emissions) when preparing its NZ CS disclosures.

¹¹ [GHG Protocol Technical Guidance for Calculating Scope 3 Emissions](#) (version 1.0)

¹² NZ CS 3 General Requirements for Climate-related Disclosures, [paragraph 52](#)

¹³ [GHG Protocol Corporate Value Chain Standard](#), 7.1 Guidance for prioritizing data collection efforts, p65

¹⁴ [GHG Protocol Corporate Value Chain Standard](#), 7.3 Guidance for selecting data, p75

¹⁵ [GHG Protocol Corporate Value Chain Standard](#), 4 Principles, p23

¹⁶ [GHG Protocol Corporate Value Chain Standard](#), Table 7.7 Levels of data, p80



Table 1: Summary of measurement methods listed in order of how specific the calculation is to the individual supplier of a good or service

Method	Summary	Calculation	Sources of uncertainty related to method
Supplier specific	Collect product-level, cradle-to-gate or supplier GHG inventory data.	GHG emissions allocated in CO ₂ e from the supplier OR Unit x life cycle assessment (LCA) emission factor	Uncertainty may arise from the potential for inconsistent data quality, incomplete information or the underlying method used for calculations. It is important that an entity understands the method used to calculate GHG emissions by its supplier. For example, if its supplier is using the spend-based method to calculate the GHG emissions it provides, the uncertainties associated with that method are passed on.
Fuel-based	Determine the amount of fuel consumed and apply the secondary emission factor for the relevant fuel.	Volume x emission factor	GHG emissions calculated using this method will reflect the uncertainty associated with the fuel combustion emission factor. This is an average and may not perfectly capture the variability in fuel composition, combustion processes and operational practices.
Average-data	Collect data on the mass (for example, kilograms) or other relevant units consumed and apply the relevant secondary emission factor (for example industry average per mass or unit).	Mass [or unit] x emission factor	Actual GHG emissions could be higher or lower than the calculated value due to the variations within the group being averaged. This is because using averages often requires making several simplifying assumptions, each of which adds uncertainty to the GHG emissions estimates.
Models	A mathematical or computer-based system that simulates and calculates the amount of GHG emissions produced by a specific activity, industry or region.	Complex model that provides results in CO ₂ e	As models rely on assumptions and estimations, they often simplify complex processes. It is useful to understand the uncertainty analysis to quantify the potential range of errors associated with the results. Models are often used for estimating GHG emissions from agriculture, wastewater and waste.
Distance-based	Determine the distance and vehicle type and apply relevant secondary distance emission factor for the vehicle type used.	Distance x emission factor	Uncertainty arises due to factors including varying vehicle types, road conditions, driving speeds and load weight. These factors can significantly impact fuel consumption and therefore the GHG emission estimate.
Spend-based	Determine economic value of goods or services purchased (*usually amount spent) and multiply by relevant secondary (for example, industry average) emission factor (for example, average emissions per monetary value of goods).	Spend x emission factor (x inflation adjustment)	Uncertainty arises primarily from the lack of detailed information about the exact GHG emissions associated with each product or service purchased. *Spend is a relatively crude proxy for activity. For example, price paid for a product may depend on negotiating power. Emission factors are often based on industry averages which may not accurately reflect the specific GHG emissions profile of the products purchased by the entity.



3.3 Understanding methods used by suppliers and other third parties

Data obtained directly from suppliers is more likely to be representative of the entity's value chain activity and its GHG emissions, although this may not always be the case. Accuracy derives from the granularity of the GHG emissions data, the reliability of the supplier's data sources, and the measurement methods and allocation techniques used.

An entity using data from third parties (including suppliers) should understand the method the third party used to calculate that data. For example, did the third party use the spend-based method or another method to calculate the GHG emissions data that was provided to the entity? Where material this information should be included in an entity's methods and assumptions disclosures.¹⁷

3.4 Assurance considerations

Assurance standards require the assurance practitioner to consider the qualitative aspects of the entity's selected quantification (measurement) methods. This includes considering indicators of possible bias in judgements and decisions in making these GHG emissions estimates and in the preparation of the GHG emission disclosures.¹⁸ An assurance practitioner considers whether the measurement methods and reported policies that have been selected

and applied are appropriate and consistent with the measurement criteria or method that the entity has applied.

As outlined in Table 1, the GHG Protocol includes various calculation options. The assurance practitioner is required to evaluate the entity's quantification methods.¹⁹ The assurance practitioner is required to determine that methods used:

- are appropriate for the entity's operations
- are consistent with:
 - the measurement method (*refer Table 1*) that the entity has used
 - reporting policies in relevant industries and prior periods.

Along with the measurement method that the entity has selected, the assurance practitioner is required to consider the following in their evaluation:

- a. that the methods are consistent with the selected measurement method and are appropriate
- b. that estimates made in preparing the GHG emission disclosures are reasonable
- c. that the information presented in the disclosures is relevant, reliable, complete, comparable and understandable
- d. that the GHG emission disclosures provide adequate disclosure.²⁰ This includes that they have been made as required by NZ CS so that users can understand the significant judgements made in preparing the GHG emission disclosures.

¹⁷ NZ CS 3 General Requirements for Climate-related Disclosures, [paragraph 52](#)

¹⁸ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements, [paragraph 73](#)

¹⁹ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements, [paragraph 30](#)

²⁰ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements, [paragraph 17](#)



3.5 Example: Transparent disclosure of the choice of measurement method

Purpose of this example

There is flexibility in the choice of GHG emissions measurement methods. For this reason, transparent disclosure is important to meet fair presentation principles of NZ CS. The assurance practitioner will consider these disclosures to reach a conclusion on fair presentation.

Fact pattern

GHG emissions from one freight provider are a material source of GHG emissions for the entity.

The entity measures its GHG emissions in accordance with the GHG Protocol Corporate Value Chain Standard. The entity obtained and retained all documentation associated with preparing the disclosures, including information received from suppliers when necessary.

In accordance with NZ CS, the entity's draft disclosure included the method and assumptions that were used for this material source of GHG emissions and the source of the emission factor.

The assurance practitioner has been engaged to undertake a limited assurance engagement over the GHG disclosures in accordance with NZ SAE 1 and ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements.

The assurance practitioner's assessment is that this source is a material emission source that has a high risk of material misstatement. This is due to their assessment of the limited controls in place at the entity over the preparation of this GHG emissions source.

After discussions with the assurance practitioner, the entity amended its disclosure to include its rationale for choosing that method, and the limitations of the methods and assumptions used. It also ensured that the disclosures about data and estimation uncertainties to which this material GHG emissions source contributed were sufficient.

Preparer considerations

The entity measures its GHG emissions using the GHG Protocol Corporate Value Chain Standard. The entity could use any of the following methods to calculate GHG emissions from this freight provider: spend based, distance based or supplier specific. In making the choice of what method to use, the entity considered the following:

- if using the spend-based method:
 - how would the spend be calculated? Is it easily identifiable in the finance system?
 - could it find an appropriate emission factor to apply to the expenditure?
 - does this measurement method align to management's reporting process for reduction targets (if relevant)?
- if using the distance-based method (GHG emissions per tonne kilometre (tkm)):
 - how would the tkm for freight be estimated?
 - what evidence would be available to support this calculation?
 - what would be the most appropriate emission factor to apply to the tkm?
 - does this measurement method align to management's reporting process for reduction targets (if relevant)?



- if using the supplier-specific method:
 - what information can the supplier provide? GHG emissions or tkm?
 - how has the supplier calculated either GHG emissions or tkm?
 - does this calculation seem reasonable? What leads the entity to this conclusion?
 - does the supplier have any evidence of quality control mechanisms? For example, does it publish its own inventory report? Does it have any third-party verification or assurance?

The entity considered the factors in section 3.2, the sources of uncertainty (*Table 1*) and the data quality indicators (*Table 2*) for each option and decided which method to use. It documented its judgements including the rationale for choosing the method, supporting materials and quality controls, and made these available for checking by its assurance practitioner.

The entity knew it needed to consider NZ CS 3 (including materiality, fair presentation, principles, and the specific disclosure requirements relating to GHG emissions disclosures) when preparing its disclosures. However, in its draft disclosures it did not initially disclose its rationale for choosing its method, nor did it disclose sufficient material information regarding the data and estimation uncertainties associated with the quantification of its GHG emissions to which this emissions source contributed.

After discussion with the assurance practitioner the entity amended its disclosure to ensure it achieved fair presentation by including the rationale for the method selected, the limitations of the method and

providing further disclosures regarding estimation and data uncertainties.

Assurance considerations

The assurance practitioner considered the entity's choice of measurement method from the selected measurement criteria (the GHG Protocol Corporate Value Chain Standard), and the qualitative aspects of the entity's quantification methods and reporting practices.²¹ Primarily by way of enquiry, the assurance practitioner considered the following:

- what process did the entity use and what did the entity consider when choosing this method?
- why did the entity select its chosen measurement method?
 - are there any indicators of possible bias in judgements and estimates made in the selection of the method?
 - was a method selected that may provide higher total GHG emissions in the first year of reporting?
 - was a method selected to meet an internally established KPI?
- whether the entity has applied the selected method in line with the GHG protocol
- whether the measurement methods were available to the user
- whether the entity disclosed its rationale for choosing its method, and sufficient material information regarding the data and estimation uncertainties associated with the quantification of its GHG emissions to which this emissions source contributed?
 - in this example, as included in the fact pattern above, this was not disclosed

²¹ ISAE (NZ) 3410, [paragraph 73](#) or ISO 14064:3 2019, paragraph 6.3

- was third party independent assurance obtained when the supplier specific method was used?
 - in this example, no assurance had been obtained by an independent third-party assurance provider.

NZ CS require an entity to fairly present its climate-related disclosures.²² To achieve this the assurance practitioner evaluated whether:

- the information included in the GHG emissions disclosures was relevant, reliable, comparable and understandable
- the limitations of the methods and the nature of data and estimation uncertainty therein were appropriately disclosed by the entity together with the entity's rationale for the choice made.

In this example, the assurance practitioner discussed the requirements with the entity. In the assurance practitioner's judgement, further disclosure was required to comply with NZ CS including disclosure of the rationale for the choice made. The entity amended its disclosure as a result of these discussions.

The assurance practitioner identified the methods selected by the entity in the assurance report.

²² NZ CS 3 General Requirements for Climate-related Disclosures, [paragraphs 6-9](#)



4. Activity data

4.1 Activity data uncertainty

Uncertainty occurs in activity data when it is an estimate of that activity, rather than a direct measurement. For example, employee commuting surveys often sample an ‘average week’, rather than measuring every employee’s commuting journey. This uncertainty may or may not be able to be quantified.

Sources of uncertainty include:

- inaccurate or incomplete data collection methods
- inconsistencies in reporting
- estimations
- sampling bias
- seasonal variations.

An entity may manage this uncertainty through:

- **data quality checks:** implementing good data collection procedures and quality control measures can help to minimise uncertainty
- **sensitivity analysis:** evaluating how changes in activity data affect the calculated GHG emissions; this can help identify areas where improved data is most crucial
- **uncertainty reporting:** clearly communicating the uncertainty associated with its GHG emission disclosures.

NZ CS require an entity to describe uncertainties relevant to the quantification of its GHG emissions.²³ For example, an entity with data

from suppliers that is not assured but has been subject to its internal control and review process, should consider disclosing this information, if it is material.

4.2 Data quality considerations

An entity should collect data of sufficient quality so that the GHG emission disclosures are relevant (i.e. that the data appropriately reflects the GHG emissions of the entity and serves the decision-making needs of primary users).²⁴ An entity should use the principles of relevance, accuracy, completeness and verifiability²⁵ when selecting and judging the quality of its data sources. Disclosures should contain material information, be based on the best data available and be transparent about limitations.²⁶

In general, an entity should collect high-quality, primary data for high-priority activities.²⁷ This allows an entity to focus resources on the most significant GHG emissions in the value chain and:

- provides more accurate GHG emissions assessment
- improves reporting and transparency and benchmarking
- identifies hidden opportunities.

Data quality for significant GHG emissions sources is expected to improve over time as the entity gains experience, systems mature and more data is available.

Data quality indicators describe the representativeness of data (technology, time, and geography) and the quality of data measurement (completeness and reliability of data). When selecting

²³ NZ CS 3 General Requirements for Climate-related Disclosures [paragraph 53](#)

²⁴ Adapted from [GHG Protocol Corporate Standard](#), Relevance, p7. This is similar to ISO 14064-1:2018, 4.2 Relevance

²⁵ NZ CS 3 General Requirements for Climate-related disclosures, [Table 1: Principles – information](#)

²⁶ [GHG Protocol Corporate Value Chain Standard](#), 11 Reporting, p121

²⁷ [GHG Protocol Corporate Value Chain Standard](#), 7.3 Guidance for selecting data p74



data sources, an entity should use the data quality indicators such as those in Table 2 as a guide to obtaining the highest quality data available for a given GHG emissions activity.

Table 2: Data quality indicators from GHG Protocol²⁸

Indicator	Description
Technological representativeness	The degree to which the data set reflects the actual technology or technologies used.
Temporal representativeness	The degree to which the data set reflects the actual time (e.g. year) or age of the activity.
Geographical representativeness	The degree to which the data set reflects the actual geographic location of the activity (e.g. country or site).
Completeness	The degree to which the data is statistically representative of the relevant activity. Completeness includes the percentage of locations for which data is available and used, out of the total number that relate to a specific activity. Completeness also addresses seasonal and other normal fluctuations in data.
Reliability	The degree to which the sources, data collection methods and verification procedures used to obtain the data are dependable.

The GHG Protocol provides an example of how an entity might apply the data quality indicators (*Table 3*). However, an entity will need to make judgements and trade-offs between data quality indicators. For example, where the reliability of data is poor, but the timeliness is very good, an entity may decide this data is appropriate to use.

An entity should develop its own systems and controls to ascertain whether the quality of its data is sufficient and how it is satisfied that

²⁸ [GHG Protocol Corporate Value Chain Standard](#), Table [7.6] Data quality indicators, p76. ISO 14064-1:2018, 6.2.3 selection or development of GHG quantification model, has similar factors

this data is appropriate to be used as a basis for its disclosures. An entity should document its criteria for evaluating the quality of data to ensure consistency in its application.

Table 3: Example of application of data quality indicators from GHG Protocol²⁹

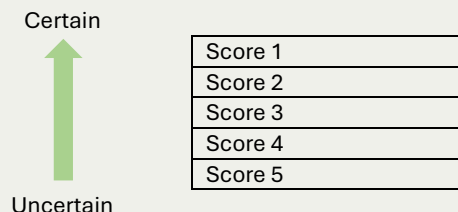
Score	Representativeness of the activity in terms of				
	Technology	Timeliness	Geography	Completeness	Reliability
Very good	Data from the same technology	Data with less than three years of difference	Data from the same area	Data from all relevant sites, over a representative period	Verified data based on measurements
Good	Data from similar technology	Data with less than six years of difference	Data from a similar area	Data from more than 50% of sites for a representative period	Verified data partly based on assumptions or non-verified data based on measurements
Fair	Data from different technology	Data with less than 10 years of difference	Data from a different area	Data from less than 50% of sites for a representative period OR more than 50% of sites but short period	Non-verified data based on assumptions or a qualified estimate (for example by a sector expert)
Poor	Data where technology is unknown	Data with more than 10 years of difference or age is unknown	Data from an unknown area	Data from less than 50% of sites for a short period or representativeness is unknown	Non-qualified estimate

²⁹ [GHG Protocol Corporate Value Chain Standard](#), Box [7.2] Example of criteria to evaluate the data quality indicators, p77



Financial institutions using Partnership for Carbon Accounting Financials (PCAF)³⁰ should use the highest quality data available for each asset class for calculations and, where relevant, should improve the quality of the data over time. PCAF has an overarching data quality hierarchy and scorecards specific to each asset class.

Table 4: PCAF data quality scoring from 1 to 5³¹



4.3 Data from suppliers and other third parties

Obtaining accurate, consistent and complete data from suppliers and other third parties can be challenging. Examples of this type of data include the GHG emissions from investments reported in scope 3 for a managed investment scheme, or the embodied GHG emissions in a product. The entity's disclosures should reflect these challenges.

An entity should consider the following factors when looking at supplier and other third-party data:

- **data quality and accuracy:** Verify the accuracy of the data by checking the methodologies and standards used by the third party
- **transparency and documentation:** Ask the third party to provide detailed documentation on how the data was collected, processed, and calculated. This includes information on emission factors, data sources, and any assumptions made

- **consistency:** Check if the third party uses consistent methods and metrics across reporting periods; this can allow for meaningful comparisons
- **scope and boundaries:** Understand the scope of the data, including which GHG emissions are covered (e.g. scope 1, 2, and 3 GHG emissions) and the boundaries of the data (e.g. geographical, operational)
- **verification and assurance:** Consider whether the data has been assured by an independent third-party assurance practitioner and for what purpose. This can add credibility and reliability to the data. The assurance practitioner is required to evaluate whether they can place reliance on the work of this other practitioner as part of their assurance engagement
- **relevance and completeness:** Consider whether the data is relevant to the users' needs and covers all significant sources of GHG emissions. Incomplete data can lead to inaccurate assessments.

An entity that relies on third-party services—such as financial institutions, cloud providers, or software vendors—may consider requesting an assurance report from its data provider. These reports may provide information about assurance procedures performed and the results of those procedures (one-to-many reports³²), or may evaluate the effectiveness of a provider's internal controls (a Service Organisation Controls (SOC) Type 2 report). These reports are designed to enable assurance practitioners to place reliance on the system's information and outputs. See section 6 for considerations for financed emissions.

³⁰ [The Global GHG Accounting and Reporting Standard for the Financial Industry](#)

³¹ [PCAF Financed Emissions](#) Part A, Figure 4-3, p42

³² One to many reports are broader than SOC Type 2 reports. These include details of assurance procedures performed and the findings.



4.5 Assurance considerations over activity data

Both limited and reasonable assurance engagements are risk-based engagements. The assurance practitioner is required to identify and assess the risk of material misstatements overall and for material types of GHG emissions and disclosures.³³

Procedures performed by the assurance practitioner will depend on the level of assurance being sought. Procedures may include enquiry, analysis and observation and inspection of relevant documents. The assurance practitioner is required to consider and respond to the risk of management bias when developing procedures³⁴ and identify how and where the GHG disclosures may be susceptible to material misstatement due to fraud.³⁵

As part of the assessment of the risk of material misstatement, the assurance practitioner may enquire about management's process for obtaining supporting documentation (including information from a third party or value chain entity). If considered necessary, the assurance practitioner may choose to confirm the entity's explanations by reviewing the entity's process or by obtaining supporting evidence.

For limited assurance, if analytical procedures over activity data are determined to be suitable and are designed and performed, these are required to include:³⁶

- taking any assessed risk of material misstatement and tests of detail into account

- evaluating the reliability of activity data when designing and performing analytical procedures, taking account of the source, comparability, nature and relevance of information available and controls over preparation
- developing an expectation with respect to recorded quantities or ratios. These may include an estimate of embodied emissions in a product using a similar representative environmental product declaration (EPD) or lifecycle analysis (LCA) report to compare against the information provided by the entity.

If the practitioner intends to place reliance on work of others, the assurance practitioner is required to evaluate the competence, capabilities and objectivity of the other individual or organisation and follow the procedures for use of their work.³⁷ The outcome of the procedures performed over the use of the work of others will determine whether the assurance practitioner may rely on this assurance work.

For reasonable assurance, the assurance practitioner may design and perform more detailed procedures including examining or independently testing how the entity's instruments are calibrated,³⁸ or they may request written confirmations directly from the value chain entity that has provided the data to the entity being assured.

³³ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements paragraph [33L](#)

³⁴ NZ SAE 1 Assurance Engagements over Greenhouse Gas Emissions Disclosures, [paragraph 28](#)

³⁵ NZ SAE 1 Assurance Engagements over Greenhouse Gas Emissions Disclosures, [paragraph 29](#)

³⁶ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements paragraph [42L](#)

³⁷ NZ SAE 1 Assurance Engagements over Greenhouse Gas Emissions Disclosures [paragraph 26](#)

³⁸ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements [paragraph A90](#)



4.6 Example: Using supplier-provided data

Purpose of this example

To improve the reliability and accessibility of data from multiple suppliers in the value chain, and to help make the entity's disclosures verifiable.

Fact pattern

An entity uses GHG emissions data from suppliers to calculate some of its scope 3 GHG emissions.

In accordance with NZ CS the entity's draft disclosure stated that around 30% of its scope 3 GHG emissions were calculated using GHG emissions data provided by suppliers. It also disclosed the data and estimation uncertainties related to the quantification of its GHG emissions, including those from supplier emissions within the climate statement.

The assurance practitioner was engaged to undertake a limited assurance engagement over the GHG disclosures in accordance with NZ SAE 1 and ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements. The assurance practitioner's risk assessment identified these disclosures as having a high risk of material misstatement. This is due to their assessment of the limited controls in place at the entity over the preparation of this GHG emissions source.

As such the assurance practitioner designed and implemented their responses to address this risk at the GHG emissions disclosures level.³⁹

10% of the supplier data had been subject to external assurance by another assurance practitioner. The assurance practitioner planned to place reliance on the other practitioner's work if it was suitable for their purposes.

After discussion with the assurance practitioner, the entity amended its disclosure and included information about its internal control and review processes over supplier-provided data. It felt that this gave sufficient certainty to the GHG emission disclosures (and that this certainty was at least no less than the certainty that it would have obtained using a spend-based method).

Preparer considerations

The entity should develop its own systems and controls to ascertain that the supplier data is appropriate to be used as a basis for its disclosures. These systems and controls do not differ based on the level of assurance but rather to meet reporting obligations. More material sources of emissions should be subject to a greater level of scrutiny by the entity.

³⁹ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements [paragraph 35 -47](#)



The entity should understand what method each supplier used to calculate the GHG emissions data provided:

- for example, did it provide an EPD,⁴⁰ or did it use activity data or spend data to calculate its GHG emissions?
- if the supplier does not have product or service specific GHG emissions, how was a proportion of its overall GHG emissions allocated to the preparer? Did it use an economic unit (for example, GHG emissions per \$ revenue) or a physical unit (for example GHG emissions per widget) or another method?
- what scopes and sources of GHG emissions were included in the supplier's calculation?

The entity developed its own internal control and review processes which included consideration of:

- whether the data from the supplier was already verified or assured
- materiality of the GHG emissions source – it implemented greater scrutiny over larger sources of GHG emissions
- external or internal benchmarking
- comparisons with prior year data.

The entity documented its judgements and quality controls in relation to supplier data as well as collating supporting material from suppliers. These were made available to its assurance practitioner.

⁴⁰ Environmental Product Declaration - is an independently verified and registered document that communicates transparent and comparable data and other relevant environmental information about the life-cycle environmental impact of a product. This often includes an emissions footprint.

The entity considered NZ CS 3 (including materiality, fair presentation, principles and the specific disclosure requirements relating to GHG emissions when preparing its disclosure). However, in its draft disclosures, it did not disclose any information on the verifiability and uncertainty considerations related to this data.

After discussion with the assurance practitioner the entity amended its disclosure to ensure it achieved fair presentation by including additional information on its internal control and review processes in relation to this data.

Assurance considerations

Consistent with the fact pattern, the assurance practitioner assessed that the scope 3 GHG emission disclosures have a high risk of material misstatement. When designing and implementing assurance procedures, the assurance practitioner was required to obtain more persuasive evidence the higher their assessment of risk.⁴¹

To design procedures, the assurance practitioner considered:

- whether the source of the information was held by the entity or by the supplier
- the process followed by the entity to include the data in their disclosures and any controls that the entity had over the preparation of the GHG emission disclosures
- how the entity assessed that this emissions data was reliable and suitable for inclusion in their GHG emission disclosures

⁴¹ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements [paragraph 37L](#)



- whether there were reliable external sources that may be used to develop an expectation, e.g. suitable published EPDs, LCA analysis
- whether the methods used by the entity were appropriate and consistently applied
- whether any changes were made to the methods applied in the prior period and whether these changes were appropriate.

If the supplier data was held at the supplier, and the assurance practitioner was unable to obtain sufficient, appropriate evidence from the entity that was subject to assurance, the assurance practitioner may have needed to make enquiries of the supplier to assure these GHG emission disclosures.

Use of the work of others

The assurance practitioner planned to place reliance on the work carried out by another assurance practitioner. The assurance practitioner considered NZ SAE 1, paragraph 26 including:

- what was the scope of the work performed? What GHG emissions did it cover? Was this scope appropriate to be used by the assurance practitioner? What standard was used by the other practitioner? Was limited or reasonable assurance obtained (or planned to be obtained)?
- did the other practitioner have the required competence to undertake the engagement? Paragraph A18 of ISAE (NZ) 3410⁴² includes some examples of GHG competencies that the assurance practitioner may have)

- did the other assurance practitioner communicate their objectivity and independence from the entity and the GHG disclosures that are being assured?
- did the other practitioner communicate any threats to their objectivity?
- what quality management system did they use? Is this suitable for the assurance practitioner to be able to use this work?
- has the other practitioner communicated their findings?

The assurance practitioner obtained the assurance report from the other assurance practitioner, and confirmed that they could place reliance on the work performed.

NZ CS require an entity to fairly present its climate-related disclosures (refer NZ CS 3 para 6-9). To achieve this, the assurance practitioner assessed the GHG emission disclosures against these fair presentation considerations. In some cases the entity may have been required to provide more disclosure than specifically required by NZ CS.

As the entity included additional disclosure about the supplier-provided data, the assurance practitioner did not consider that the entity needed to provide any additional disclosure for fair presentation considerations. The assurance practitioner highlighted the entity's disclosure of the supplier-provided data and communicated this to users in the assurance report using an Emphasis of Matter.

⁴²ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements, [A18](#)



4.7 Example: Using best available data

Purpose of this example

To clarify the concept of best available data and what to do when faced with old data.

Fact pattern

An entity is unable to obtain energy use data from tenants in office buildings that it owns. It estimates electricity use per m² based on research conducted in 2012 by a building research company. GHG emissions from tenant electricity use make up a material portion of its scope 3 emissions. The entity is unable to find any more-recent data on which to base its estimates.

In accordance with NZ CS, the entity described the method and assumptions that were used for this material source of GHG emissions and included a reference to the study. It also described the data and estimation uncertainties associated with the quantification of its GHG emissions to which this material emissions source contributed.

The assurance practitioner was engaged to undertake a limited assurance engagement over the GHG disclosures in accordance with NZ SAE 1 and ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements.

Preparer considerations

In making the choice to continue to estimate this GHG emissions source based on 2012 research, the entity considered:

- whether there was more recent data on which to base the estimate. This could include a more recent study by the same provider or alternative sources of data. In this instance there was not
- if it would be possible to use a different method to estimate this GHG emissions source and whether this would result in better data.

It documented its judgements and supporting materials and made these available to its assurance practitioner.

It considered NZ CS 3 (including materiality, fair presentation, principles, and the specific disclosure requirements relating to GHG emission disclosures) when preparing its disclosures.



Assurance considerations

The assurance practitioner is required to evaluate whether the entity appropriately applied the relevant measurement criteria and whether the methods used to make estimates were appropriate and consistently applied.⁴³ With a focus on best available data, the assurance practitioner considered the age of the information used to prepare the GHG disclosures, including:

- why did the entity consider that the 2012 data is the best available? Was this data updated by the entity, e.g. for inflation, current emission factors?
- what was the entity's policy for GHG disclosures? Was this documented and was using the 2012 data consistent with the entity's policy?
- did externally published sources of information such as the Ministry for the Environment (MfE) measuring emissions guide include a more up to date source.

After considering these areas, the assurance practitioner developed and performed the following procedures:

- used analytical procedures based on information contained in external public sources such as EPDs or academic research. Any differences were discussed with the entity's management
- developed an estimate and determined whether the estimate was reasonable

In this example, based on all their considerations, the assurance practitioner agreed that the 2012 data was the best available. The

entity included sufficient details of the methods and assumptions, as required by NZ CS. The assurance practitioner considered that these details were critical to the users' understanding, and decided to highlight this via Emphasis of Matter paragraphs in the assurance report.

⁴³ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements [paragraph 44L](#)



5. Emission factors

5.1 Emission factor uncertainty

The uncertainty related to emission factors refers to the degree of doubt or imprecision in the estimated value of an emission factor. This can arise from limitations in data collection, variability in processes, and assumptions made during calculation. Essentially, uncertainty is the margin of error associated with an emission factor. For example, when an emission factor is calculated for a seat on a flight, it is assumed that the occupancy rate is the same for each flight. In reality, the occupancy varies per flight throughout the day and year.

The GWP of GHG emissions also has associated uncertainty. For example, the GWP of methane (CH₄) and nitrous oxide (N₂O) have changed with each successive Intergovernmental Panel on Climate Change (IPCC) Assessment Report as scientific understanding of the effects of these gases has improved.

MfE provides information about assumptions, limitations and uncertainties associated with its emission factors which may be helpful for an entity using this source.⁴⁴

NZ CS require an entity to disclose the uncertainties relevant to its quantification, and the GWP rates used, or a reference to the GWP source.⁴⁵

⁴⁴ Ministry for the Environment, [Measuring emissions: A guide for organisations](#)

⁴⁵ NZ CS 3 General Requirements for Climate-related Disclosures [paragraph 53](#) and NZ CS 1 Climate-related Disclosures, [paragraph 24](#)

5.2 Selecting emission factors

Emission factors are a type of data, and the considerations in Table 2 above can be applied to them. These are interpreted for emission factors specifically in Table 5.

Table 5: Considerations when selecting emission factors⁴⁶

Indicator	Considerations
Technology	Does the emission factor reflect the technology/activity you are applying it to? Is it material? Was the emission factor meant to be used for the activity you are applying it to? Is it material?
Temporal	Does the factor relate to when your activity occurred? For example, grid electricity emission factors vary year-to-year. Will the factor be updated regularly so that you can use it in the future? Switching the method used to calculate an emission factor can have a material impact, for example an emission factor from a process-based life-cycle assessment (LCA) versus an input-output lifecycle assessment. How old is the factor? Has it been updated since you last used it? An entity should use the most recent emission factor available for that source during the reporting period. An entity should consider having a policy on how to treat emission factor updates that occur after the end of the reporting period and before assurance is completed. At what point will emission factors used for the disclosure not be updated? What would need to be disclosed?⁴⁷

⁴⁶ Adapted from [CNGP: A guide to measuring and reporting greenhouse gas emissions](#), v2.1 October 2021, Table 6, p20

⁴⁷ NZ CS 3 General Requirements for Climate-Related Disclosures, [paragraph 26](#)



Indicator	Considerations
Geographic	Does the factor relate to the area where the activity is occurring? For example, grid electricity emissions depend strongly on the generation mix of the country in question.
Peer review	Is the emission factor from a government or other authoritative source? Has the factor been peer reviewed and/or verified? For example, checked by independent experts. Some LCAs and most environmental product descriptions (EPDs) are verified.
GWP	Does the factor include the warming effect of all the different gases the activity will generate? It is tCO ₂ e or carbon only? Which assessment report has been used as the basis for the GWP? Most national level emission factors use AR5 as the basis, although the most recent assessment report is AR6. ⁴⁸
Alternatives	Are there alternatives? How do they compare in terms of magnitude?

NZ CS require an entity to disclose the source of emission factors and the GWP.⁴⁹ The source of emission factors and the judgements associated with choosing the sources should also be documented by the entity for assurance purposes.

5.3 Assurance considerations

The assurance practitioner may look through an entity's records and ask questions to understand why an emission factor has been selected and how it was chosen. The assurance practitioner is required to consider the qualitative aspects of the entity's methods

⁴⁸ The Fifth Assessment Report (AR5) was published by IPCC in late 2013. The Sixth Assessment Report (AR6) was published in 2022 and included updated GWPs for some GHGs including CH₄ and N₂O among other updates.

and reporting practices. This includes any indicators of possible bias made in preparing the disclosures and making estimates.⁵⁰

The assurance practitioner may consider the following regarding the emission factor used:

- whether the emission factor is from a government or authoritative source
- if a supplier specific emission factor is used for a significant source:
 - whether the factor represents the reported emissions and process that was used in the generation of that emission
 - whether it has been assured, what methodology was used and whether reliance can be placed on this methodology
 - whether additional expertise is required on the assurance team to understand the technicalities in understanding the calculation of the specific emission factor that was provided by the supplier
- the uncertainty related to the emission factor and whether the disclosure reflects this uncertainty
- whether the entity has disclosed any sensitivity analysis that has been completed on the emission factor. Would this disclosure be meaningful to the users?
- the entity's reporting policy and whether the most up-to-date available emission factor was used.

⁴⁹ NZ CS 1 Climate-related Disclosures, [paragraph 24](#)

⁵⁰ ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements [paragraph 73](#)



5.4 Example: Emission factors published after the end of the reporting period

Purpose of this example

To address the challenges that may arise when new emission factor sets are published after the end of the reporting period.

Fact pattern

An entity has prepared its climate statements for the period ending 31 December 2024. It has used emission factors from a recognised published source that were released in February 2024 (based on the 2021 national GHG inventory) for the calculation of some of its significant GHG emissions. This emission factor source best met the quality criteria outlined for data choices in the GHG Protocol (*Table 5, section 6.2*) and the information principles in NZ CS 3. During the period, these emission factors were the latest available from that source.

In February 2025, after the entity's reporting period but before the entity published its climate statements, a new set of emission factors were released from the same source. These were based on the 2022 national GHG inventory. The updated emission factors are materially different to those published earlier.

In accordance with NZ CS the entity disclosed that it used the emission factors published in February 2024. It also disclosed that a new set of emission factors were available after the end of the period that would have had a material impact on the GHG emission disclosures as it considered this material information.

The assurance practitioner has been engaged to undertake a limited assurance engagement over the GHG disclosures in accordance with NZ SAE 1 and ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements.

Preparer considerations

The entity has already made the choice to use the February 2024 emission factors for these emission sources in preparing its 31 December 2024 climate statements. In making the choice on whether to update the emission factors used and the subsequent disclosures the entity considered:

- its documented policy in relation to the cut-off date in respect to applying emission factor updates. This policy takes into consideration at which point in time the entity would no longer have sufficient time for management control processes to review and check the new emission factors before assurance and publication of the climate statement. This highlights the tensions and trade-offs between the information principles of accuracy and timeliness in NZ CS 3
- the materiality of the change to the emission factors and the potential impact on the GHG emission disclosure
- whether the fact that there are new emission factors which (if applied) may have an impact on the GHG emissions disclosures is material information.

The entity documented its judgements and made these available to its assurance practitioner. In this case, the entity decided it did not have sufficient time to incorporate the emission factors released in February 2025 into its disclosures.

The entity considered NZ CS 3 paragraph 26 in relation to events that occur after the end of the reporting period when making its disclosures, as the emission factors were materially different and would likely have a material impact on its GHG emission disclosures.

Assurance considerations

Given the timing of the release of the new emission factor set, after the end of the entity's reporting period, the assurance practitioner considered the following:

- whether the emission factors currently included within GHG emission disclosures were appropriate in terms of whether they were timely and relevant as required by the GHG protocol
- whether the timing of the release provided sufficient time for the entity to conduct their own processes over the factors to determine whether these new factors were appropriate for use
- whether the entity had a documented policy that addressed the use of emission factors
- whether the release of the emission factors publication was a subsequent event. ISAE 3410 paragraph 61, requires the assurance practitioner to consider whether events occurring before the assurance report is signed require adjustment or disclosure in the entity's report
- the materiality of the changes.

In this example, the assurance practitioner evaluated the impact of the recently published emission factors and identified a material difference between the emission factors used and the emission factors contained in the new publication.

The entity disclosed the issue of the new emission factors and that if these new emission factors were used, they may have a material impact on the GHG disclosures. Given the significance of the difference between the emission factors, using their professional judgement the assurance practitioner decided to highlight this disclosure via an Emphasis of Matter in their assurance report.

The assurance practitioner did not modify their conclusion as the entity complied with the requirement in NZ CS 3 paragraph 26 in relation to events that occurred after the end of the reporting period and disclosed that a new emission factor publication had been issued, and the assurance practitioner considered that an Emphasis of Matter was sufficient to communicate this to the users.



6. Financed GHG emissions

6.1 Financed GHG emission considerations

Scope 3 financed GHG emissions⁵¹ will represent the largest source of emissions for financial institutions and fund managers. More detail on specific GHG emission considerations for MIS (Managed Investment Scheme) managers is included in the Staff Guidance for MIS Managers.⁵² The use of third-party data is common for these disclosures. It is the entity's responsibility to ensure its GHG emission disclosures meet the requirements of NZ CS even if it has used a third-party provider.⁵³

As outlined in sections 3.3 and 4.3, an entity should implement adequate processes and internal controls over data provided by a third party to ensure that information is free from material error or misstatement.⁵⁴

An entity should have the same systems and controls over the information to meet their reporting obligations regardless of whether they are intending to obtain limited or reasonable assurance. An entity should keep or be able to provide access to these records to enable assurance practitioners to check them.

An entity may ask its third-party data provider for an assurance report over its information (one-to-many report) or unqualified SOC Type 2⁵⁵ report to support assurance of this data. Depending on the conclusions in this report the assurance practitioner may be able to

rely on the output of the system as the controls have been tested by an independent assurance practitioner and have been found to be operating effectively. SOC Type 2 reports are not required and are not yet common, but we expect them to become available in due course.

Assurance considerations

The use of third-party data providers may present challenges for assurance. For example, methodology behind the calculations may be proprietary and not able to be shared. If this is the case, the assurance practitioner may need to consider alternative ways of obtaining the evidence required. This may include reviewing a one-to-many report or SOC Type 2 report from the third-party provider over its information or systems and controls, or performing alternative procedures.

Given the developing nature of the GHG emissions assurance market, modifications may be common in the first few years of assurance.

⁵¹ Financed emissions are the GHG emissions associated with financial activities

⁵² [Climate-related Disclosures Staff Guidance MIS Managers](#) p72

⁵³ FMA, [Climate-related disclosures regime and the use of third-party providers](#)

⁵⁴ NZ CS 3 General Requirements for Climate-related disclosures, [Table 1: Principles – information](#) - Accuracy

⁵⁵ A SOC Type 2 report covers the design, description, design and operating effectiveness of controls in place over the system or service organisation.



6.2 Example: Reporting financed GHG emissions

Purpose of this example

To illustrate considerations for use of third-party data suppliers. This includes three variations including alternative evidence collection where a SOC Type 2 report is not available.

Fact pattern

A managed investment fund has prepared its climate statements for the period ending 31 December 2024. It has disclosed its scope 3 GHG emissions.

The fund uses a third-party data provider to calculate GHG emissions data for its investee companies.

Variation a) The data provider collects GHG emissions data from companies then collates and provides that information to the fund.

Variation b) The data provider uses proprietary methods to estimate the GHG emissions from entities. It collates and provides that information to the fund, as well as providing the methods and assumptions it has used in its calculations.

Variation c) The data provider uses proprietary methods to estimate the GHG emissions from companies. It collates and provides that information to the fund but is unable or unwilling to provide any information on how it undertakes this estimation.

In accordance with NZ CS the entity has disclosed the methods and assumptions that were used to calculate this source of its scope 3 GHG emissions. It also disclosed the limitations of the methods and assumptions used. It described the data and estimation uncertainties

associated with the quantification of its GHG emissions to which this emissions source contributed.

For variation c), after discussions with the assurance practitioner the entity amended its disclosure to include that it was unable to obtain information from the data provider on the method it used to estimate GHG emissions.

The assurance practitioner has been engaged to undertake a limited assurance engagement over the GHG disclosures in accordance with NZ SAE 1 and ISAE (NZ) 3410 Assurance Engagements on Greenhouse Gas Statements.

Preparer considerations

For all scenarios the key questions the entity considered were:

- what systems and controls do the data provider have in place to help with data quality? Has the data provider obtained any voluntary external assurance over their systems and controls (for example does it have a SOC Type 2 report available)?
- when and how does the data provider collect or estimate the company GHG emission data?
- what information does the entity need from the data provider to meet its NZ CS disclosure requirements, including explaining any limitations in relation to the data and assumptions and methods used for any estimations, models or calculations?

Variation a):

- what sense checks can the entity do to ensure it is comfortable with the data?

- is the entity able to understand how the data provider has collated the GHG emissions information and from what periods?

Variation b):

- does the method used by the data provider to estimate GHG emissions seem reasonable to the entity? Why?
- does the information from the data provider help the entity to explain any limitations in relation to the data and assumptions and methods used?

Variation c):

- is there a way that the entity can ascertain whether the estimates appear reasonable? If so, how?
- how would the entity comply with its disclosure requirements for methods and assumptions under NZ CS?

The entity documented its judgements, evidence, and quality controls and made these available to its assurance practitioner.

It considered NZ CS 3 (including materiality, fair presentation, principles, and the specific disclosure requirements relating to GHG emission disclosures) when preparing its disclosures.

Variation c) after discussion with the assurance practitioner the entity amended its disclosure to ensure it achieved fair presentation by including the lack of information on the method used by the data provider.

Assurance considerations

NZ SAE 1 paragraph 26 includes the requirements for use of the work of others. The key areas the assurance practitioner considered were:

- whether the data provider obtained external assurance over the entity's systems and processes:
 - if the entity obtained external assurance, this may have been a SOC Type 2 report in accordance with ISAE (NZ) 3402 or a one-to-many report over the information. These reports can allow the assurance practitioner to rely on the output of the system as the controls have been tested by an independent assurance practitioner and have been found to be operating effectively
 - if an assurance report was not available or the assurance practitioner could not rely on any work performed by others, the assurance practitioner would be required to perform procedures over the information supplied by the third-party data provider and reported by the entity, and gather evidence to support their conclusion.

For all variations, the assurance practitioner may have considered:

- how did the entity gain comfort over information supplied by the third-party data provider? What was the entity's process to do so?
- had the entity designed and implemented any controls over the integrity of the data, including over any models used for making GHG emissions estimates?
- was there appropriate, publicly available information that could be used to develop an expectation of emissions (e.g. publicly available assured GHG emissions information)?
- could enquiries be made of the third-party data provider to gain an understanding of the inputs, assumptions, completeness, mathematical integrity and estimations to the model? If considered appropriate, using their professional judgement the

assurance practitioner may check assumptions in the model back to supporting documentation

- does the entity's disclosure fairly present the significant assumptions and uncertainty contained within the financed GHG emission disclosure? This may include the uncertainty included in the emission factors used and the assumptions in the method.

After considering these areas, the assurance practitioner developed and performed the following procedures:

Variation a)

The assurance practitioner developed an expectation (by creating a predicted value or range of values from publicly available information). The assurance practitioner discussed fluctuations with the entity and found no material misstatements between the expectation and the reported GHG emissions.

The entity had disclosed the methods and assumptions used. The assurance practitioner did not note anything that caused the assurance practitioner to believe that the entity's disclosure did not fairly present the significant assumptions and uncertainties of the entity's financed emissions.

Variation b)

The assurance practitioner made enquiries of the third-party data provider and the assumptions and methods used in the models were provided to the assurance practitioner. The assurance practitioner was able to gather sufficient evidence from procedures performed.

Given the significance of the assumptions included in the entity's model, the assurance practitioner included more information in the key matters section of the assurance report to include their key

considerations. This included matters about the most significant procedures the assurance practitioner performed to gain an understanding of the assumptions in the model that were considered relevant to the user's understanding of the assurance engagement.

The assurance practitioner considered including an Emphasis of Matter to highlight the entity's disclosure over this GHG emission source.

Variation c)

Given the proprietary nature of the model and the lack of explanation provided, the assurance practitioner was not able to perform procedures to obtain sufficient appropriate evidence over the model to satisfy themselves that the GHG emissions disclosures were prepared, in all material respects, in accordance with the GHG Protocol.

As the requirement to obtain sufficient appropriate evidence could not be met, the assurance practitioner was not able to conclude over these disclosures and this led to a modification of the assurance report. The assurance practitioner limited this to a specific part of the GHG disclosures, and the conclusion was expressed as follows:

"Based on the procedures performed and the evidence obtained, except for the effect of the matter described in the Basis for Qualified Conclusion section of our report, nothing has come to the assurance practitioner's attention that causes them to believe that the entity's GHG disclosures do not present fairly, in all material respects."

The assurance practitioner included an Emphasis of Matter in the assurance report to refer to the entity's disclosure about the proprietary nature of the model.



7. Appendices

7.1 What is primary and secondary data?

Primary data	Data provided by suppliers or other value chain partners related to specific activities within an entity's value chain. This includes activity data or emissions data calculated by suppliers that is specific to that supplier's activities.
Secondary data	Data that is not from specific activities within an entity's value chain. For example, industry-average data, proxy data, financial data and other generic data.

7.2 Terms and standards used to develop this guidance

This guidance uses the following terms “must” for preparer requirements, “should” for recommendations and “may” for options.

This guidance is based on:

- [Aotearoa New Zealand Climate Standards](#)
- the GHG Protocol [Corporate Value Chain Standard](#)
- ISO 14064-1:2018 [Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals](#).

The GHG Protocol and ISO use: “shall” for requirements, “should” for recommendations, and “may” to indicate options. NZ CS uses “must” for requirements.

Note that NZ CS do not require an entity to measure its GHG emissions using any of the standards or methods referenced in this guidance when making its disclosures. It must, however, identify the standards and methods used.⁵⁶

The guidance for assurance is based on:

- NZ SAE 1 [Assurance Engagements over Greenhouse Gas Emissions](#)
- ISO 14064 3:2019 [Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements](#)
- ISAE (NZ) 3410 [Assurance Engagements on Greenhouse Gas Statements](#)
- ISAE (NZ) 3000 (revised) [Assurance Engagements other than Audits or Reviews of Historical Financial Information and International standards for sustainability assurance](#)

We welcome feedback, email us at climate@xrb.govt.nz.

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⁵⁶ NZ CS 1 Climate-related disclosures [paragraph 24\(a\)](#)