



Data and Information Verification Report

Report for:

The Manufacturers Life Insurance Company

LRQA reference:	CQA00000030/5206138
Verification dates:	May and June 2022
Verification location:	Remote
Verification criteria:	WRI/WBCSD GHG Protocol
Verification team:	Brooke Farrell, Lead Verifier
LRQA Client Facing Office:	Burlington, Ontario, Canada

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Attachments
n/a

<p>This report was presented to and accepted by:</p> <p>Name: Brooke Tucker-Reid</p> <p>Job Title: Director, Global Sustainability</p>
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1. Executive report

Verification outcome:

LRQA Canada was contracted by The Manufacturers Life Insurance Company (Manulife) to verify its Scope 1, Scope 2, and select Scope 3 greenhouse gas (GHG) emissions and Social Indicators for Calendar Year 2021.

The verification covers two of Manulife's three business units (Corporate Real Estate and Manulife Investment Management (MIM) Real Estate. Emissions from Manulife Investment Management (MIM) Timberlands and Agriculture (formerly Hancock Natural Resources Group or HNRG), were excluded.

Verified data consists of the following:

- Scope 1 and Scope 2 greenhouse gas emissions from all operationally controlled, owned or leased facilities in the following business units:
 - Manulife Corporate Real Estate (Corporate)
 - Manulife Investment Management Real Estate (Real Estate)
- Scope 3 greenhouse gas emissions from the following areas:
 - business travel (air travel, rental car mileage and personal car mileage)
 - electricity consumption in equipment at third-party data centers
 - paper use
 - waste generated in operations (municipal solid waste)
- Energy Use;
- Social Indicators:
 - Workforce Diversity
 - Woman percent of all employees
 - Woman percent of Vice President and Above
 - Community Investments
 - Cash contributions
 - Volunteer hours
 - Employee Engagement
 - Employee engagement score
 - Employees participating in engagement survey
 - Talent Acquisition & Retention
 - Average employee tenure
 - Open positions filled by internal candidates
 - Voluntary turnover rate

Although emission from MIM Timberlands and Agriculture were not included, Scope 3 emissions from business travel and paper use have been extrapolated across all business units.

Scope 3 emissions from municipal solid waste are currently being gathered for a portion of the properties in Manulife's portfolio. Therefore, LRQA was commissioned to verify the portion of data currently being gathered, consisting of 67% of square footage for Real Estate. Manulife Corporate did not report emissions from waste generated in operations.

The verification was conducted to a limited level of assurance and at a materiality based on the professional judgement of the verifier. The final quantities verified are as follows:

Table 1. Summary of Manulife's GHG Emissions and Environmental Data for CY 2021:

Data Parameter	Data	Unit
Scope 1 GHG emissions ¹	35,642	Metric Tons CO ₂ e
Scope 2 GHG emissions (Location-based) ^{1,2}	106,154	Metric Tons CO ₂ e
Scope 2 GHG emissions (Market-based) ^{1,2}	91,520	Metric Tons CO ₂ e
Scope 3 GHG emissions: Paper Use	5,705	Metric Tons CO ₂ e
Scope 3 GHG emissions: Waste ³	1,560	Metric Tons CO ₂ e
Scope 3 GHG emissions: Business Travel ⁴	1,985	Metric Tons CO ₂ e
Energy Use ⁵	654,281,457	kWh equivalent
<p>1. This data does not include Scope 1 and 2 emissions from the Manulife Investment Management (MIM) Timberlands and Agriculture business unit, as they have not been included in this verification, though Scope 3 emissions from business travel and paper use have been extrapolated to include MIM Timberlands and Agriculture.</p> <p>2. Scope 2, Location-based and Scope 2, Market-based are defined in the GHG Protocol Scope 2 Guidance, 2015.</p> <p>3. Waste refers to municipal solid waste. Data is currently being gathered for a portion of the properties in Manulife's portfolio. Data coverage percentages are included in the Terms of Engagement section above.</p> <p>4. Business Travel includes air travel, personal vehicle mileage and rental car mileage.</p> <p>5. Energy use includes kWh equivalent energy from use of electricity, steam and chilled water, combustion of natural gas, and diesel fuel from stationary sources.</p>		

Table 2. Summary of Manulife's Social Indicators for CY2021.

Data Parameter	Data	Unit
Workforce Diversity		
Woman (% of all employees)	56%	Percent
Woman (% of Vice President and Above)	31%	Percent
Community Investments		
Cash contributions (C\$ millions)	\$21.70	Million CAD
Volunteer hours (#)	17,704	Hours
Employee Engagement		
Employee engagement score (on a five point scale)	4.34	Five-point scale
Employees participating in engagement survey (%)	95%	Percent
Talent Acquisition & Retention		
Average employee tenure (years)	7	Year
Open positions filled by internal candidates (%)	39%	Percent
Voluntary turnover rate (%)	12%	Percent

Based on LRQA's approach nothing has come to our attention that would cause us to believe that the total Scope 1, Scope 2 and Scope 3 greenhouse gas emissions disclosed in the Inventory are not materially correct and the Inventory has not been prepared in accordance with the WRI/WBCSD GHG Protocol, with the following qualifications:

- Paper usage from one vendor and recycled paper values from three vendors were omitted in calculating Scope 3 emissions from paper use.

This does not have a material impact on the emission value reported

LRQA confirms that the contents of this report, together with any evidence or notes taken during this verification will be treated in the strictest confidence and will not be disclosed to any third party, without the prior consent of the client, except as required by the accreditation authorities.



Areas for senior management attention:

Manulife may consider the following recommendations for improvements to the GHG Inventory and/or Inventory Management systems:

- To improve accuracy of electricity emissions reported for US sites, consider using zip codes to identify appropriate eGRID subregions for each site rather than assigning the subregion based on the state, as eGRID Subregions don't necessarily correspond to state lines.
- To improve accuracy of emissions reported from car rental, consider contracting with specific rental car companies that will track miles fuel consumption and emissions. Alternatively, to improve transparency of current methodology, consider documenting in the GHG Accounting Guidance the source of reimbursement values programmed into Manulife's expense system, which are used to calculate rental car mileage.

Additional opportunities for improvement can be found in the Findings Log in Section 3 of this report.



2. Verification summary

Visit objective

The verification is intended to provide Manulife with an independent opinion on the completeness and accuracy of the GHG emissions data inventory.

This report records the outcome of the LRQA verification activities performed for the Manulife CY 2021 inventory of greenhouse gas (GHG) emissions and social indicators. The verification was conducted by Brooke Farrell, Lead Verifier in May-June 2022.

Introduction

The reporting criteria used to evaluate the CY 2021 emissions report was the WBCSD/WRI Greenhouse Gas (GHG) Protocol and Manulife's GHG Accounting Policy, dated January 2021. LRQA used verification criteria from ISO 14064 Part 3:2006 to perform the verification.

Stage 1 verification activities included:

- Initial review and discussions – to confirm scope, objectives, criteria, level of assurance, materiality, and their appropriateness for the verification
- Review of the GHG Inventory and systems in place for its derivation
- Strategic Analysis and Risk Analysis
- Verification Planning for Stage 2

Stage 2 verification activities included:

- Assessment of Criteria Conformance
- Implementation of the data review based on the LRQA sampling plan
- Verification of Data and Information for GHG emissions sources
- Development of issues log and findings

This report includes a discussion of the items listed above, together with the Verification Schedule, the Verification Plan, and the findings and their resolution.

Grading of Findings

The following definitions apply to the grading of findings in this report:

Misstatement (MIS)	A misstatement (omissions, misrepresentations and errors) in an assertion, data or information that, in the professional judgment of the verifier, is unlikely to affect the decision of the intended user. If such a finding is outstanding at the end of the verification, a positive Assurance Statement will be possible, although qualifications, limitations, and/or recommendations may be included in the Assurance Statement.
Material Misstatement (MMIS)	A misstatement, (omissions, misrepresentations and errors) in an assertion, data, or information that, in the professional judgment of the verifier, could affect the decision of the intended user. If such a finding is left outstanding at the end of the verification then the misstatement must be corrected or a positive Assurance Statement will not be possible.
Non-conformity (NCN)	A nonconformity with the requirements of the assurance criteria (including the terms of engagement) that, in the professional judgment of the verifier, is unlikely to affect the decision of the intended user. If such a finding is outstanding at the end of the verification, a positive Assurance Statement will be possible, although qualifications, limitations, and/or recommendations may be included in the Assurance Statement.
Material Non-conformity (MNCN)	A nonconformity with the requirements of the assurance criteria (including the terms of engagement) that, in the professional judgment of the verifier, could affect the decision of the intended user. If such a finding is left outstanding at the end of the verification then the nonconformity must be corrected or a positive Assurance Statement with regard to the assurance criteria will not be possible.
Opportunity for Improvement (OFI)	An opportunity for improvement is a suggestion from the verifier to improve the operator's performance in monitoring and reporting.
LRQA	A 'follow up' item for the LRQA Verifier to track ongoing issues within the Findings Log where required.



3. Findings Log

1. Grading of the finding *	2. New, Open, Closed	3. Description of the LRQA finding	4. Review by LRQA	5. Process, aspect, department or theme
6. Date of the finding	7. YYMM<Initials>seq.#	8. Clause of the applicable standard		
* MIS = Misstatement	MMIS = Material Misstatement	NCN = Nonconformity	MNCN = Material Nonconformity	OFI = Opportunity for Improvement xLRQA = LRQA Follow Up

Grade 1	Status 2	Finding 3	Correction, root cause & corrective action review 4	Process / aspect 5	Date 6	Reference 7	Clause 8
NCN	Closed	The emission factor for British Columbia is not consistent with the factor set referenced. Value used: 120 g CO2/kwh. Factor in NIR for BC, 18.3	LRQA confirmed emission factor updated, now consistent with NIR 2021.	Electricity	5/24/2022	2205BF08	Accuracy
MIS	Closed	The value reported for energy from electricity is not consistent with the Scope 2 electricity use reported on the electricity tab. 431,992,522 kWh vs. 430,187,928 kWh (summary tab cell c102) Inconsistencies were also noted for steam and chilled water.	This has been corrected on the Summary tab.	Electricity	5/31/2022	2205BF12	Accuracy
MIS	Closed	The formulas in row 6 of the "Raw-Office Paper 2021 tab" are calculating using some data from row 5. This impacts the total tonnes reported for Manulife (cell H6). Original total from RAW - Office Paper-2021 was reported as 51 metric tons which goes into the G8 total on Raw- 2021 Paper Usage Report of 943. LRQA calculates the G8 total to be 952 and the G4 total coming from RAW - Office Paper-2021 tab as 61 rather than 51.	The formula for Office paper is updated and now total office paper in tab 'Raw-2021 Paper Usage Report' in Cell G4 is 61 tonnes.	Paper	5/24/2022	2205BF16	Accuracy



Grade 1	Status 2	Finding 3	Correction, root cause & corrective action review 4	Process / aspect 5	Date 6	Reference 7	Clause 8
NCN	Open	The tab Raw- 2021_Paper_ConsolSummary contains a section "Waiting for Reports" with the vendor "Innovative Design & Print". Please clarify if paper from this vendor could have a material impact on the emissions total.		Paper	5/31/2022	2205BF18	Completeness
NCN	Open	Three vendors have TBD recycling values that are missing/to be determined. Please confirm the omission of these values does not have a material impact on the emissions value for paper.		Paper	5/31/2022	2205BF20	Completeness
MIS	Closed	Please explain why Manu_14500 and Manu_55561 are not reported (Waste Data Provided = No, square footage rolled up into "Not Reported" category.	The values in cell M71 and M133 are updated to 'Yes' as per the comment for the correct accounting of square footage under 'Reported' values	Waste	5/31/2022	2205BF21	Completeness
MIS	Closed	Why is there a discrepancy between the total square footage on the waste tab and the total op control square footage from the Portfolio tab? 45,837,382 vs 46,296,024)	The reason for discrepancy is due to value (0) in Cell M120, M121 & M124 being different than 'Yes' or 'No'. This has been updated to reconcile square footage data in Portfolio tab of sites with operational control	Waste	5/31/2022	2205BF22	Accuracy
MMIS	Closed	The emission factor for calculating waste from the EPA's WARM Model is in metric tons CO2e/short ton of waste. Solutions 105 data in metric tons was not converted to short tons for the calculation. Due to the small materiality threshold for Scope 3 categories, the difference is material.	The total was corrected by adjusting the emissions factor applied rather than correcting the formula. LRQA finding issued for next verification to explain why the factor is no longer consistent with WARM.	Waste	6/14/2022	2205BF29	Accuracy



Grade 1	Status 2	Finding 3	Correction, root cause & corrective action review 4	Process / aspect 5	Date 6	Reference 7	Clause 8
MIS	Closed	The comment in Air Travel cell C10 says that HNRG is included in the air travel. The formulas in E10 and E11 do not include HNRG (D174).	Though HNRG is reported separately in row 174 of the Emissions Factor tab, Deloitte has stated that the FTE for North America also includes HNRG and therefore any HNRG travel is included in the dataset for North American Travel.	Business Travel - Air	5/31/2022	2205BF23	Accuracy
MIS	Closed	Mileage traveled in rental cars is calculated from average rates in 2021 based on data provided in MFC's expense system. Please provide evidence that these factors were used in MFC's expense system.	The factor for converting USD to mileage was adjusted based on the reimbursement values used in Manulife's concur export of mileage reimbursement data in 2021. The factor was updated from 0.535 USD/mile to 0.445 USD/mile	Business Travel - Rental Cars	5/31/2022	2205BF26	Accuracy
MNCN	Closed	The following data centers are identified as decommissioned and have no kWh reported for the year, but were not reported as decommissioned in the previous year. Please provide decommissioning dates. Why has power consumption not been reported for the part of the year the site was active? MSL PROD - SST (New) MSL DR - SISDC (OLD) SH SZ	These data centers were decommissioned in June 2021. 50% of previous year's value has been added to the inventory for each site.	Data Centers	5/31/2022	2205BF27	Completeness



Grade 1	Status 2	Finding 3	Correction, root cause & corrective action review 4	Process / aspect 5	Date 6	Reference 7	Clause 8
LRQA	Open	The emission factor used for calculating GHG emissions from waste was adjusted to correct for a unit conversion that was not included in the formula on the Waste tab. As a result, the emission factor listed on the Emission Factors tab is no longer consistent with WARM. Emissions reported are correct.	Documented for future verification.	Waste	6/21/2022	2205BF29	Transparency
OFI	Open	Consider updating eGRID factors to eGRID2020 release, 1/2022		Electricity	5/31/2022	OFI-1	Accuracy
OFI	Closed	Data is labeled as 2020 on the RAW - 2021 Leased Properties Tab.	The data labels are updated to 2021	Labeling	5/31/2022	OFI-2	Accuracy
OFI	Open	To improve accuracy of electricity emissions reported for US sites, consider using zip codes to identify appropriate eGRID subregions for each site rather than assigning the subregion based on the state, as eGRID Subregions don't necessarily correspond to state lines.		Electricity	5/31/2022	OFI-3	Accuracy
OFI	Open	To improve accuracy of emissions reported from car rental, consider contracting with specific rental car companies that will track miles fuel consumption and emissions. Alternatively, to improve transparency, consider documenting the source of reimbursement values programmed into Manulife's expense system used to calculate rental car mileage in the GHG Accounting Guidance.		Business Travel – Rental Cars	6/15/2022	OFI-4	Accuracy



Grade 1	Status 2	Finding 3	Correction, root cause & corrective action review 4	Process / aspect 5	Date 6	Reference 7	Clause 8
OFI	Open	To improve accuracy of reported electricity emissions for international locations, consider using only finalized published values rather than EIA's future estimates.		Electricity	6/15/2022	OFI-5	Accuracy
OFI	Open	Consider implementing additional systems to improve tracking of data center electricity values.		Electricity	6/15/2022	OFI-6	Accuracy



Verifier: Brooke Farrell

Verification of:

Terms of Engagement -
Contract Conditions
Confirmation

Auditee(s):

Audit trails and sources of evidence:

Contract Conditions

Evaluation and conclusions:

Scope:

Description of Industry/Sources:	Corporate and Real Estate (Commercial Property Management)
Geographic Boundaries:	International
Reporting Period:	January 1, 2021 through December 31, 2021
Greenhouse Gases (GHG) Verified:	CO2, CH4, N2O, HFCs, PFCs, SF6, NF3
GHG Scopes covered:	Scope 1, 2, and 3. Scope 3 includes: Business Travel: Air and car travel only, Paper Use, Waste, Third Party Data Centers
	<u>Environmental Data:</u> Energy Use
	<u>Social Indicators:</u>
	Diversity: % of Women Employees
	Diversity: % of Women in Leadership (Vice President or Higher)
	Community Investments: Cash Contributions
	Community Investments: Volunteer Hours
	Employee Engagement: Score
	Employee Engagement: Survey Participation
	Talent Acquisition: Average Employee Tenure
	Talent Acquisition: Open positions filled by internal candidates
	Talent Acquisition: Voluntary Turnover
Other Data:	
Reporting Basis:	Operational Control

Objectives: To provide Manulife with an independent opinion on the completeness and accuracy of the data and information provided

Criteria: WBCSD/WRI GHG Protocol, ISO 14064-3: Specification with guidance for validation and verification of greenhouse gas assertions

Level of Assurance: Limited

Materiality: Professional Judgement of Verifier

Changes to Terms of Engagement: Data Centers were removed from final verification scope.

In completing this report, the LRQA verifiers confirm their independence from the client and that there was no known conflict of interest during the engagement.

**Verification of:**

Strategic Analysis and Risk Analysis (SARA)

Auditee(s):**Strategic Analysis:**

Through the Strategic Analysis, the Verifier determined the significance of the items of information and data to be verified. This judgement of significance is based on the nature and scale of the information and data as they relate to the scheme requirements.

Information or Data Source	Significance	Basis of Significance
Electricity	H	72% of Combined Scope 1 and 2 Emissions
Natural Gas	H	96% of Scope 1 Emissions
Steam and Chilled Water	L	3% of Combined Scope 1 and 2 emissions
Business Travel: Air and Car	H	Scope 3 category independently assessed for materiality
Paper Use	H	Scope 3 category independently assessed for materiality
Waste	H	Scope 3 category independently assessed for materiality
Third-Party data centers	H	Scope 3 category independently assessed for materiality
Diversity	H	Category evaluated independently
Community Investment	H	Category evaluated independently
Employee Engagement	H	Category evaluated independently
Talent Acquisition	H	Category evaluated independently

Risk Analysis:



Through the Risk Analysis, the Verifier determined the potential risk of an omission, misrepresentation or error in relation to information and data sources. This determination included, but was not necessarily limited to, a judgement based on:

- the inherent risk associated with the data / information management
- the level of control applied to the data / information management
- the control of monitoring and metering used to gather data
- the number of personnel involved in the data management, their competence, attitude, and commitment.

Information or Data Source	Significance	Data Gathering	Measuring Equipment	People	OVERALL RISK
Electricity	H	L	L	L	M
Natural Gas	H	L	L	L	M
Steam and Chilled Water	L	L	L	L	L
Business Travel: Air and Car	H	M	L	L	M
Paper Use	H	H	L	L	M
Waste	H	L	L	L	M
Third-Party data centers	H	M	L	L	M
Diversity	H	L	L	L	M
Community Investment	H	L	L	L	M
Employee Engagement	H	L	L	L	M
Talent Acquisition	H	L	L	L	M
Electricity	H	L	L	L	M

This was the second year in which the inventory was prepared by Deloitte and the team that prepared the inventory used the same consolidation spreadsheet as in previous years. This provided some risk mitigation, as the calculation spreadsheet formulas and design have been previously verified.

Client note: Generally, the outputs of the Risk Analysis influence the Verification Plan to manage the risk of LRQA detecting omissions, misrepresentations and errors in the following way:

High Overall Risk – detailed verification and data sampling

Medium Overall Risk – verification and data sampling to a lesser extent than High Overall Risk

Low Overall Risk – limited verification, simple checks only.

The Verifier will manage the degree of sampling through their Data and Information Sampling Plan.



Verification Planning:

As a result of the completion of the Strategic Analysis and Risk Analysis, a Verification Plan was developed. The Verification Plan (attached) defines the key elements of the verification and when those elements will be covered. The Verification Plan is supported by a Data / Information Sampling Plan which defines all the specific items of data and information which the Verification Team has identified as relevant and the depth to which relevant data is to be verified.

The emissions report was compiled by Manulife's consultant (Deloitte) in a single spreadsheet which contains most of the raw data used in emissions calculations. This file uses the same format and calculations as previous years.

The Stage 1 review was based on contract terms, Manulife's GHG Accounting Policy, and on Manulife's emissions spreadsheet. The Stage 2 review consisted of a detailed review of Manulife's emissions spreadsheet, including data sampling. Scope 1 and 2 data came entirely from the solutions 105 export. Solutions 105 has been a trusted data source, and was reviewed in depth during the CY20 verification.

A site visit was not conducted. The assessment was performed to a limited level of assurance; therefore the verification could be completed through review of summaries of records prepared by service providers and compiled by Manulife.

LRQA follows the sampling strategy delineated in its CCAS CORE Guidance – Strategic Analysis / Risk Analysis, Verification Plans, Data/Information Sampling Plans. Risk assessments reviewed usage data to identify specific facilities or categories to sample.

Verification of:	Criteria Conformance	Auditee(s):	Ariel Kangasniemi, Sr. Director – Head of ESG, General Account
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Audit trails and sources of evidence:

MFC 2021 GHG Inventory Tool_all Scopes vF
Manulife GHG Accounting Guidance 2021

Evaluation and conclusions:

A structural change occurred in which MIM Real Estate took over management of some sites that were formerly reported under Corporate, and Manulife determined that many sites that had previously been reported under corporate with estimated data were out of their operational control. The Accounting Guidance Document was updated to reflect this change, consistent with the requirements of the WRI Protocol Appendix F, Categorizing GHG Emissions Associated with Leased Assets.

LRQA confirmed the client has a documented baseline recalculation policy in their inventory management plan and the calculation file contains adjusted values for previous year inventories.

Nonconformities were also written due to missing paper data, an out of date emission factor, and missing data for data centers. Manulife ultimately opted to remove data centers from the CY21 verification due to data quality concerns.

The two open nonconformities regarding missing paper data have been combined into one qualification.

These findings are documented in detail in the Findings Log, Section 3 of this report, and in some cases, are referenced in the descriptions of their corresponding scopes in the following tables.



Verification of:	Data & Information Verification: GHG Emissions and Energy	Auditee(s):	Ariel Kangasniemi, Sr. Director – Head of ESG, General Account
Audit trails and sources of evidence: See Evidence List at the end of this report for client files reviewed All GHG Data source data were provided in inventory calculation spreadsheet			
Evaluation and conclusions: <u>Scope 1 and 2</u> LRQA reviewed the calculation file and reported totals. All operationally controlled sites are now tracked in solutions 105 eliminating manual transposition of any Scope 1 and 2 data. Formulas and aggregations were reviewed. One finding was identified regarding summing of reported energy data and this was corrected. <u>Scope 3</u> LRQA reviewed the data, calculations and emission factors provided as well as the method and calculations for extrapolating company-wide emissions based on FTE. <u>Paper</u> Paper data and calculations were reviewed, and a formula correction was made. Some paper data was not included but this was demonstrated to be immaterial based on spend data provided and previous year reporting. This has been documented as a qualification. <u>Waste:</u> Waste data is not collected across the entire organization. All tracked waste data comes from solutions 105 and therefore the square footage of these sites can be determined. The percentage of square footage for which waste data is being gathered is reported and this has been reflected in the assurance statement. Waste data and square footage is included in the inventory and calculated according to operational control. Some sites were identified as having waste and under Manulife's operation control but not included. This was determined to be a labeling error in the calculation spreadsheet that was preventing the formula from categorizing them accurately. The issue was corrected. A unit discrepancy was also identified which impacted the total emissions calculated. This was corrected by adjusting the emission factor, and an LRQA finding was documented to explain this factor adjustment and document it for future verifications. <u>Business Travel</u> The emission factor used to calculate mileage from rental car expenditure data was adjusted to conform with Manulife's internal expense reporting base on actual reimbursements in 2021. An OFI was issued to improve accuracy and transparency in this area. Data centers were initially included but Manulife opted to remove them from the inventory due to data quality concerns. All clarifications and data requests were adequately addressed and closed. See the findings log in Section 3 of this report for a detailed description of all findings issued.			



Verification of:	Data & Information Verification Social Indicators	Auditee(s):	Elena Lau, HR Compliance and Reporting Specialist, People Analytics Brooke Tucker Reid, Director, Global Sustainability
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Audit trails and sources of evidence:

Assertion: 2021 Social Indicators for Assurance

Screenshare Session with Elena Lau for methodology and calculation review. Confidential Reports were not provided to LRQA. All reports generated in Workday Database. Reports used to calculate data include:

Workforce Diversity:

- Workday data as of December 31, 2021. Includes active regular employees and employees on paid leave
- Report: Hackathon - Recruiting - Internal and External - Requisitions with Applications by Step with Gender

Talent Acquisition and Retention

- Staffing Reports - Terminations by Effective and Action Date (for HR Dashboard)
- Staffing Reports - Primary Employee Listing - WAP Version

Community Investment

- Benevity Export
- Payroll Export

Employee Engagement:

- Gallop Survey Results export

See Evidence Log for a complete list of files reviewed

Evaluation and conclusions:

All reported social indicator values were reviewed and recalculated.

Due to confidentiality, files for workforce diversity and talent acquisition and retention could not be provided so the review, analysis and recalculation were done over screenshare for those indicators.

All Requests for clarification and additional data were adequately addressed. No findings were issued for social indicators.



Verification of:	Errors and Corrections	Auditee(s):	
Audit trails and sources of evidence: MFC 2021 GHG Inventory Tool_Scope 1 and 2 only MFC 2021 GHG Inventory Tool_all Scopes vF MFC 2021 GHG Inventory Tool_20220610_Updated assurance changes_v1 MFC 2021 GHG Inventory Tool_20220610_Updated assurance changes_v2 Manulife GHG Accounting Guidance 2021 Final Manulife GHG Accounting Guidance 2021 Final_updates for leased properties			
Evaluation and conclusions: LRQA reviewed the updates to Manulife's GHG Inventory and confirmed all material findings have been addressed.			

Verification of:	Materiality Conclusion	Auditee(s):	
Audit trails and sources of evidence: LRQA Data and Information Verification Workbook			
Evaluation and conclusions: Based on LRQA's approach nothing has come to our attention that would cause us to believe that the total Scope 1, Scope 2 and Scope 3 GHG emissions disclosed in the Inventory are not materially correct and the Inventory has not been prepared in accordance with the WRI/WBCSD GHG Protocol, with the following qualification: <ul style="list-style-type: none">Paper usage from one vendor and recycled paper values from three vendors were omitted in calculating Scope 3 emissions from paper use. This does not have a material impact on the emission value reported This does not have a material impact on the inventory.			













Evidence list:

Greenhouse Gas Emissions:

All data use for GHG Calculations was included in the inventory calculation file.

Social Indicators:

-  Indicator protocols_Social and Governance (Assured indicators)
-  UPDATED FINAL - 2021 ESG Report - CI Data
-  UPDATED 2021 Workday Time Off - Asia, Canada, US
-  FINAL - 2021 ESG Report - CI Data UPDATED
-  Asia Central File 2021 by Country
-  2021 Workday Time Off - Asia, Canada, US
-  2021 US Benevity Volunteer Hours (Final)
-  2021 Sustainability Report Audit for LRQA_Brooke Farrell_20220519
-  2021 Social Indicators for Assurance
-  2021 Manulife Employee Donations
-  2021 EES - for ESG reporting
-  2021 Canada Benevity Volunteer Hours (Final)

4. Verification schedule

	Stage 1	Stage 2	Technical Review					
Visit type >								
Due date >								
Start date >								
End date >								
Verifier days >	1.5	6	0.5					
Process / aspect								
On-Site	N/A	N/A	N/A					
Strategic Analysis	✓							
Risk Analysis	✓							
Preparation of Verification Plan	✓							
Preparation of Data / Information Sampling Plan	✓							
Data / Information Verification		✓						
Criteria Conformance Assessment		✓						
Review of organisation's inventory assertion, report, etc.		✓						
LRQA Reporting		✓						
Preparation of External Verification Report / Assurance Statement, etc.		✓						
Technical Review			✓					

Next visit details

Visit type	Data and Information Verification, includes Stage 1/Stage 2/Technical Review				
Verifier days	8	Due date	June 2023	Actual start / end dates	TBD
Locations	Remote				
Activity codes	048009				
Team	TBD				
Criteria	WRI GHG Protocol				
Justification for following visit / years verification days, remarks and instructions					
n/a					



5. Verification plan

Manulife Data & Information Verification, CY 2021 Verification Plan 5/2/2022		
Verification Objectives:	To provide Manulife with an independent opinion on the completeness of the data and information covered in the verification scope.	
Verification Criteria:		
Protocols and Standards:	World Resources Institute / World Business Counsel for Sustainable Development (WRI/WBCSD) GHG Protocol Corporate Standard	
	GHG Protocol Scope 2 Guidance	
	GHG Protocol Scope 3 Accounting and Reporting Standard	
	ISO 14064-3: Specification with guidance for validation and verification of greenhouse gas assertions	
Verification Scope:		
Description of Industry/Sources:	Corporate and Real Estate (Commercial Property Management)	
Geographic Boundaries:	International	
Reporting Period:	January 1, 2021 through December 31, 2021	
Greenhouse Gases (GHG) Verified:	CO2, CH4, N2O, HFCs, PFCs, SF6, NF3	
GHG Scopes covered:	Scope 1, 2, and 3. Scope 3 includes: Business Travel: Air and car travel only, Paper Use, Waste, Third Party Data Centers	
	<u>Environmental Data:</u> Energy Use	
	<u>Social Indicators:</u>	
	Diversity: % of Women Employees	
	Diversity: % of Women in Leadership (Vice President or Higher)	
	Community Investments: Cash Contributions	
	Community Investments: Volunteer Hours	
	Employee Engagement: Score	
	Employee Engagement: Survey Participation	
	Talent Acquisition: Average Employee Tenure	
	Talent Acquisition: Open positions filled by internal candidates	
	Talent Acquisition: Voluntary Turnover	
Other Data:		
Reporting Basis:	Operational Control	
Level of Assurance:	Limited	
Materiality Threshold:	Professional judgement of verifier	
LRQA Verification Team:		
Lead Verifier:	Brooke Farrell	
Technical Reviewer (QA/QC):	Marisol Bacong	
Verification Activities and Schedules:		
Scheduled for week of:	Task	
May 2, 2022	Delivery to GHG Assertion and Inventory to LR	
May 3, 2022	Kick-Off Meeting	
May 3, 2022	Stage 1 (Strategic Review / Risk Assessment)	
May 3, 2022	Initial Data Request to Client	
May 3, 2022	Initial Data submitted to LR	
n/a	Site Visit(s)	
May 9, 2022	Stage 2 (LR Data Review)	
May 23, 2022	LR Delivery of Final List of Findings	
May 30, 2022	Client to address Findings	
June 13, 2022	LR Technical Review	
June 20, 2022	Delivery of Final Verification Report and Verification Statement	
Verification Plan approval:		
Name:	Brooke Farrell	
Date:	May 2, 2022	



6. Data and Information Sampling Plan

Verification type Data and Information Verification	Verification criteria WRI GHG Protocol	
Verification team Brooke Farrell	Verification dates May-June 2022	Issue date May 2022

Data and Information to be Sampled:

Data and Information Sampling Plan

Source stream	Raw Data checks	Transposition checks	Aggregation checks	Assumption checks	Calculation checks	Materiality level	Conformance	Justification of sample size
Electricity	All Scope 1 and 2 data provided in solutions 105	Confirm formulas accurately pulling to appropriate calculation tab.	All data included and accurately aggregated in Summary tab	Emission factors and GWPs	Review formula calculations and unit conversions.	Professional Judgement of Verifier	WRI GHG Protocol	Reflects 5% Materiality – reference LRQA Verifier Handbook guidance (as per ISO 2859-1:1999)
Natural Gas	All Scope 1 and 2 data provided in solutions 105	Confirm formulas accurately pulling to appropriate calculation tab.	All data included and accurately aggregated in Summary tab	Emission factors and GWPs	Review formula calculations and unit conversions.	Professional Judgement of Verifier	WRI GHG Protocol	Reflects 5% Materiality – reference LRQA Verifier Handbook guidance (as per ISO 2859-1:1999)



Scope 3: Business Travel: Air and Car	All data provided	Confirm formulas accurately pulling to appropriate calculation tab.	All data included and accurately aggregated in Summary tab	Emission factors and GWPs	Review formula calculations and unit conversions.	Professional Judgement of Verifier	WRI GHG Protocol	Reflects 5% Materiality – reference LRQA Verifier Handbook guidance (as per ISO 2859-1:1999)
Scope 3: Paper	4 of 15 Vendors	Confirm formulas accurately pulling to appropriate calculation tab.	All data included and accurately aggregated in Summary tab	Emission factors and GWPs	Review formula calculations and unit conversions.	Professional Judgement of Verifier	WRI GHG Protocol	Reflects 5% Materiality – reference LRQA Verifier Handbook guidance (as per ISO 2859-1:1999)
Scope 3: Waste	All data provided in Solutions 105	Confirm formulas accurately pulling to appropriate calculation tab.	All data included and accurately aggregated in Summary tab	Emission factors and GWPs	Review formula calculations and unit conversions.	Professional Judgement of Verifier	WRI GHG Protocol	Reflects 5% Materiality – reference LRQA Verifier Handbook guidance (as per ISO 2859-1:1999)
Scope 3: Third-Party data centers	5 of 19 data centers reported	Confirm formulas accurately pulling to appropriate calculation tab.	All data included and accurately aggregated in Summary tab	Emission factors and GWPs	Review formula calculations and unit conversions.	Professional Judgement of Verifier	WRI GHG Protocol	Reflects 5% Materiality – reference LRQA Verifier Handbook guidance (as per ISO 2859-1:1999)
Diversity: % of Women Employees	Workday Database (screenshare)	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed
Diversity: % of Women in Leadership	Workday Database (screenshare)	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed



Community Investment: Cash Contributions	Benevity and Payroll exports for US and Canada	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed
Community Investment: Volunteer Hours	Benevity exports for US and Canada	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed
Employee Engagement: Score	Gallop Database	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed
Employee Engagement: Survey Participation	Gallop Database	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed
Talent Acquisition : Average Employee Tenure	Staffing Reports (screenshare)	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed
Talent Acquisition: Open positions filled by internal candidates	Staffing Reports (screenshare)	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed
Talent Acquisition: Voluntary Turnover	Staffing Reports (screenshare)	Confirm calculated total accurately transposed to Social Indicator assertion file	All appropriate data included in aggregation	n/a	Review calculation formulas	Professional Judgement of Verifier	LRQA Verification Procedure	Full dataset reviewed