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INDEPENDENT LIMITED ASSURANCE OPINION TO VALE CANADA ON THE PRODUCT CARBON FOOTPRINT OF SUDBURY (COPPER CLIFF NICKEL REFINERY) NICKEL PELLETS, DISCS & CHIPS, AND NICKEL POWDERS FOR 2023

Intertek Health Sciences Inc. (hereinafter referred to as 'Intertek') represented in this project by the sustainability team, was commissioned by Vale Canada Limited (hereafter referred to as 'Vale Canada') to provide independent third-party limited assurance on the product carbon footprint of Vale's:

- Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders

The criteria against which assurance was conducted were the *Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard* (hereafter referred to as '*Greenhouse Gas Protocol Product Standard*') and ISO 14067: 2018 *Greenhouse gases — Carbon Footprint of Products — Requirements and Guidelines for Quantification*.

The critical review assurance exercise was performed against the general principles of ISO 14064-3: 2019 *Specification with Guidance for the Verification and Validation of Greenhouse Gas Statements*.

Objective

The objective of this limited assurance review was to confirm whether any objective evidence existed to suggest that Vale's Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders' product carbon footprint was not accurate, complete, consistent, transparent, or suggested material errors or omissions. The review was performed in accordance with the *Greenhouse Gas Protocol Product Standard* and ISO 14067: 2018 *Greenhouse Gases — Carbon Footprint of Products — Requirements and Guidelines for Quantification*.

The boundary of the carbon footprint was 'cradle-to-gate', of which Scope 1, 2 and 3 upstream emissions[1] were the main inputs to the product carbon intensity. Allocation of the inputs and emissions to the products is considered based on economic allocation.

This assurance activity does not provide any assurance of Vale's greenhouse gas (GHG) inventory, from which the product carbon footprint was allocated from, which has already been covered by the pre-existing limited assurance activity undertaken by another party.

Roles and Responsibilities

Vale was solely responsible for the goal and scope definition, for collecting the life cycle data, both from the audited GHG emissions inventory, and from specific complementary process data obtained from site teams to calculate Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders' product carbon footprint. They were also responsible for the underlying GHG emissions information system, data maintenance, calculating the product carbon footprint and reporting procedures in accordance with that system.

Intertek's responsibility, as agreed with the management of Vale Canada, is to provide assurance and express an independent limited assurance opinion on Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders' product carbon footprint based on our verification following the assurance scope and criteria stated below. Intertek does not accept or assume any responsibility for any other purpose or to any other person or organization. This document represents Intertek's independent and balanced opinion on the content and accuracy of the information and data held within.

[1] Scope 3 reflects indirect emissions other than those covered in Scope 2 that occur upstream of Vale through to the company's gate.

Assurance Scope

The product included within the scope of this assurance activity was Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders produced by Vale. The reference year for Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders included within the scope of this work was 2023.

Assurance Criteria

Intertek conducted the verification work in accordance with the requirements of 'Limited Assurance' as per the following standard:

- ISO 14064-3: 2019 *Specification with Guidance for the Verification and Validation of Greenhouse Gas Statements*

The criteria in which the product carbon footprint report was compared against were:

- WRI *Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard*
- ISO 14067: 2018 *Greenhouse Gases — Carbon Footprint of Products — Requirements and Guidelines for Quantification*

A limited assurance engagement comprises of limited depth of evidence gathering including inquiry and analytical procedures and limited sampling as per professional judgement of assurance provider. A materiality threshold level of 5% was applied. Assessment of compliance and materiality was undertaken against the stated calculation methodology and criteria.

Methodology

Intertek performed verification work using a risk-based approach to obtain the information, explanations and evidence that was considered necessary to provide a limited level of assurance. The verification was conducted by desktop review regarding Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders' product carbon footprint, reporting and supporting records for the year 2023. Data and information supporting Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders' product carbon footprint were historical in nature and were assured by another third-party independent auditor to a limited level of assurance. Our assurance task was planned and carried out during April 2024 to July 2024. Intertek's critical review process was carried out to ensure that:

- Methods used to calculate Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders' product carbon footprint were consistent with the *Greenhouse Gas Protocol Product Standard* and ISO 14067: 2018 *Greenhouse Gases — Carbon Footprint of Products — Requirements and Guidelines for Quantification and* were scientifically and technically valid.
- Data used, calculation formulas, assumptions and emission factors were appropriate and reasonable.
- The product carbon footprint report followed the requirements of the *Greenhouse Gas Protocol Product Standard* and ISO 14067: 2018 *Greenhouse Gases — Carbon Footprint of Products — Requirements and Guidelines for Quantification*.

Product Carbon Footprint

The product carbon footprint of Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders for 2023 is provided below:

Table 1: Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders' 2023 Product Carbon Footprint

Scope (Cradle-to-Gate)	Product Carbon Footprint (tonne CO_2e / tonne of Ni equivalent) *	
	Scope 1+2	Scope 1, 2 & 3 (upstream)
Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders	3.7	5.3

** 1 tonne of Nickel in Nickel Pellets (assumed to be 100% Ni) produced at Copper Cliff Nickel Refinery in Ontario, Canada.*

Annex A of this Assurance Statement provides the checklist of *Greenhouse Gas Protocol Product Standard* requirements against which the product carbon footprint report was confirmed.

Conclusion and Assurance Opinion

Following the critical review activities undertaken, Intertek concludes with limited assurance that there was no evidence that the product carbon footprint of Sudbury (Copper Cliff Nickel Refinery) Nickel Pellets, Discs & Chips, and Nickel Powders produced by Vale in 2023 was not materially correct, was not a fair representation of the data and information or was not prepared in accordance with the criteria listed above.

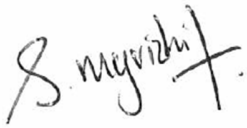
The product carbon footprint report followed the criteria of the *Greenhouse Gas Protocol Product Standard* and ISO 14067: 2018 *Greenhouse Gases — Carbon Footprint of Products — Requirements and Guidelines for Quantification.* This statement shall be interpreted with Vale's product carbon footprint report as a whole.

Statement of Independence, Integrity and Competence

Intertek ensures the selection of appropriately qualified and impartial individuals as the verifiers. The verifiers are experienced in working on greenhouse gas accounting and verification projects. They were not involved in the preparation of Vale's greenhouse gas emissions or product carbon footprints.

Intertek adheres to the requirements of ISO 14064-3 in its greenhouse gas verification works. The outcome of all assurance assessments was internally reviewed to ensure that the approach applied was rigorous and transparent. The assurance team for this work did not have any involvement in any other Intertek projects with Vale Canada.

On behalf of Intertek



Myvizhi Somasundaram, Verifier
Technical Manager – Climate Change & Sustainability

Yi Hang Yu, Reviewer
Senior Manager – Climate Change & Sustainability

15th July 2024

No member of the verification team (stated above) has a business relationship with Vale Cananda., its directors or Managers beyond that is required of this assignment. No form of bribe has been accepted before, throughout and after performing the verification. The verification team has not been intimidated to agree to do this work, change and/or alter the results of the verification. The verification team has not participated in any form of nepotism, self-dealing and/or tampering. If any concerns or conflicts were identified, appropriate mitigation measures were put in place, documented and presented with the final report. The process followed during the verification is based on the principles of impartiality, evidence, fair presentation and documentation. The documentation received and reviewed supports the conclusion reached and stated in this opinion.

Annex A: Greenhouse Gas Protocol Product Standard Assurance Checklist

The product carbon footprint report was checked against the following requirements as a minimum to ascertain assurance with the *Greenhouse Gas Protocol Product Standard*.

GHG Protocol requirement	GHG Protocol Chapter	Conforms to requirement (Yes or No)
GHG accounting and reporting of a product inventory shall follow the principles of relevance, accuracy, completeness, consistency, and transparency	4	Yes
A GHG product inventory shall follow the life cycle and attributional approaches	5	Yes
Companies shall account for carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs) emissions to, and removals from, the atmosphere	6	Yes
Additional GHGs included in the inventory shall be listed in the inventory report		NA
Companies shall define the product, unit of analysis, and reference flow		Yes
For all final products, companies shall define the unit of analysis as a functional unit		NA
For intermediate products where the eventual function is unknown, companies shall define the unit of analysis as the reference flow		Yes
The boundary of the product GHG inventory shall include all attributable processes	7	Yes
Companies shall report the life cycle stage definitions and descriptions		Yes
Companies shall disclose and justify any exclusions of attributable processes in the inventory report		Yes
Companies shall report attributable processes in the form of a process map		Yes
Companies shall report any non-attributable processes included in the boundary		NA
The boundary for final products shall include the complete life cycle, from cradle-to-grave		NA
The boundary of a cradle-to-gate partial life cycle inventory shall not include product use or end-of-life processes in the inventory results		Yes
Companies shall disclose and justify when a cradle-to-gate boundary is defined in the inventory report		Yes
Companies shall report the time period of the inventory		Yes
Companies shall report the method used to calculate land-use change impacts, when applicable		Yes
Companies shall collect data for all processes included in the inventory boundary	8	Yes
Companies shall collect primary data for all processes under their ownership or control		Yes

GHG Protocol requirement	GHG Protocol Chapter	Conforms to requirement (Yes or No)
During the data collection process, companies shall assess the data quality of activity data, emission factors, and/or direct emissions data by using the data quality indicators		Yes
For significant processes, companies shall report a descriptive statement on the data sources, the data quality, and any efforts taken to improve data quality		Yes
Companies shall allocate emissions and removals to accurately reflect the contributions of the studied product and co-product(s) to the total emissions and removals of the common process	9	Yes
Companies shall avoid allocation wherever possible by using process subdivision, redefining the functional unit, or using system expansion		Yes
If allocation is unavoidable, companies shall allocate emissions and removals based on the underlying physical relationships between the studied product and co-product(s)		Yes
When physical relationships alone cannot be established or used as the basis for allocation, companies shall select either economic allocation or another allocation method that reflects other relationships between the studied product and co-product(s)		Yes
Companies shall apply the same allocation methods to similar inputs and outputs within the product's life cycle		Yes
For allocation due to recycling, companies shall use either the closed loop approximation method or the recycled content method as defined by this standard		Yes
When using the closed loop approximation method, companies shall report displaced emissions and removals separately from the end-of-life stage		NA
Companies shall disclose and justify the methods used to avoid allocation or perform allocation		Yes
Companies shall report a qualitative statement on inventory uncertainty and methodological choices	10	Yes
Companies shall apply a 100-year GWP factor to GHG emissions and removals data to calculate the inventory results in units of CO2 equivalent (CO2e)	11	Yes
Companies shall report the source and date of the GWP factors used		Yes
Companies shall quantify and report the following: • Total inventory results in CO2e per unit of analysis, which includes all emissions and removals included in the boundary from biogenic sources, non-biogenic sources, and land-use change impacts • Percentage of total inventory results by life cycle stage • Biogenic and non-biogenic emissions and removals separately when applicable • Land-use change impacts separately when applicable • Cradle-to-gate and gate-to-gate inventory results separately or a clear statement that confidentiality is a limitation to providing this information		Yes

GHG Protocol requirement	GHG Protocol Chapter	Conforms to requirement (Yes or No)
Companies shall not include the following when quantifying inventory results: weighting factors for delayed emissions; offsets; and avoided emissions		Yes
Companies shall report the amount of carbon contained in the product or its components that is not released to the atmosphere during waste treatment, if applicable		NA
For cradle-to-gate inventories, companies shall report the amount of carbon contained in the intermediate product		Yes
The product GHG inventory shall be assured by a first or third party	**12**	Yes
Companies shall choose assurance providers that are independent of, and have no conflicts of interest with, the product GHG inventory process		Yes
Companies shall report the assurance statement in the inventory report. The statement shall include: • The level of assurance achieved (limited or reasonable) including assurance opinion or the critical review findings • Whether the assurance was performed by a first or third party • A summary of the assurance process • The relevant competencies of the assurance providers • How any potential conflicts of interest were avoided for first party assurance		Yes
Companies shall publicly report information detailed the GHG Protocol Product Standard Section 3.3	**13**	Yes
To set reduction targets and track inventory changes over time, companies shall: • Develop and report a base inventory that conforms with the requirements of this standard • Recalculate the base inventory when significant changes in the inventory methodology occur and report those changes • Complete and disclose an updated inventory report including the updated results, the base inventory results, and the context for significant changes • Use a consistent unit of analysis to enable comparison and track performance over time	**14**	NA