



Technical Report

Climate Change, Energy Use and Greenhouse Gas

Waihi North Project

Document ID: WAI-985-000-REP-LC-0056

Revision History

Date	Rev No.	Reason for Issue	Details of Revision
June 2022	A	IFR	Issued for Review
January 2025	B	Submission	Issued with FTAA Substantive Application

This document has been produced for New Zealand consenting purposes only. Information contained herein must not be relied on for investment purposes.

Table of Contents

1	INTRODUCTION.....	3
	1.1 OceanaGold Corporation.....	3
	1.2 Waihi North Project	3
2	OCEANAGOLD’S CLIMATE CHANGE STRATEGY	4
3	OCEANAGOLD’S GREENHOUSE GAS EMISSIONS PROFILE.....	5
	3.1 Global Context	5
	3.2 New Zealand Context	6
	3.3 Local Context	6
4	EMISSIONS REDUCTION OPPORTUNITIES.....	7
5	MONITORING AND REPORTING	8
6	CONCLUSION	9

1 INTRODUCTION

1.1 OceanaGold Corporation

OceanaGold's global operations began at Macraes, Otago in 1989, extending within New Zealand to include the purchase of the Waihi Mine in 2015. Today, OceanaGold is a multinational gold producer, head-quartered in Vancouver, Canada.

OceanaGold has two operating gold and silver mines in New Zealand, one at Macraes, Otago and one at Waihi, Waikato. OceanaGold has also partnered in the initial development of the Snowy River Mine, an underground mine beneath Department of Conservation (**DOC**) land on the West Coast of the South Island, and is months away from completing the successful closure and rehabilitation of an open pit mine at Reefton, also on the West Coast, ahead of handing that site back to DOC.

Together the two operating mines at Macraes and Waihi employ over 950 people directly. In 2023 Macraes spent \$84M in wages and benefits, and Waihi spent \$48M. Total expenditure by the two operations exceeded \$500M, with about 80c of every dollar spent by the New Zealand operations staying in New Zealand. As part of the Waihi North Project ("**WNP**") the addition of the Wharekirauponga Underground Mine ("**WUG**") is expected to add hundreds of additional jobs and extend Waihi's mine-life from 2030 to beyond 2040.

1.2 Waihi North Project

The WNP represents the further development of the mineral resources in the Waihi Epithermal District and seeks to extend the life of mining activities in Waihi through to at least 2040, with the potential to add over 1.5 million ounces of gold production and 2.2 million ounces of silver production in that time. The Project will maximize the recovery of the Crown's resource, provide multiple sources of production, and provide significant economic and public benefits.

The Waihi North Project will integrate with many of the existing and consented mining activities in Waihi and will add mining infrastructure that may be utilised by future mining projects by OceanaGold in the Waihi Epithermal District.

The Waihi North Project includes the following key components:

- Further mineral resource investigation and exploration progression at Wharekirauponga.
- A surface facilities area to support underground mining activities at WUG, located on OGNZL owned farmland on Willows Road ("**Willows SFA**"). These facilities include a temporary waste rock stockpile, being the Willows Rock Stack ("**WRS**").
- The construction, operation, and maintenance of an access portal ("**Willows Portal**") and associated tunnel decline ("**Willows Access Tunnel**").
- The construction, operation, and maintenance of a dual tunnel ("**WUG Dual Tunnel**") extending

from the termination of the Willows Access Tunnel to the Wharekirauponga orebody.

- The construction operation, and maintenance of a tunnel (“**the Wharekirauponga Access Tunnel**”) connecting the southern terminus of the WUG Dual Tunnel to the existing Waihi SFA located off Baxter Road.
- The construction, operation, and maintenance of an access portal (“**the WUG Portal**”) to the Wharekirauponga Access Tunnel near the existing processing plant
- The (separately consented) construction, operation, and maintenance of a buried services trench (“**Services Trench**”) connecting the Willows SFA to the Waihi SFA, with the trench providing support services including the conveyance of electricity, fibre optic, potable water, treated water, and mine water.
- The construction, operation, and maintenance of the WUG.
- The construction, operation, and maintenance of the Gladstone Open Pit (“**GOP**”), which at the completion of open pit mining activities will be utilised as a TSF (“**GOP TSF**”);
- The establishment and operation of the Northern Rock Stack (“**NRS**”).
- The establishment and operation of TSF3, being a new TSF located to the east of the existing TSFs
- Fixed plant upgrades and ongoing operations
- Conservation / habitat enhancement and surface monitoring activities on public conservation land, including planting and maintaining native species on public conservation land and pest control, pest monitoring, and native species monitoring within the Waihi North Biodiversity Project area
- Mine remediation and closure activities.

2 OCEANAGOLD'S CLIMATE CHANGE STRATEGY

OceanaGold remains committed to responsible climate change management across all our business activities and supporting the objectives of the Paris Climate Agreement. The scope of this report is to provide an overview of the Company's position on Climate Change, Energy Use and Greenhouse Gas Management and to outline the strategic actions that will be adopted as part of the Waihi North Project.

We recognize that the mining sector can contribute to managing and mitigating the effects of climate change. Our long-term goal is to achieve net zero operational (Scope 1 and 2) Greenhouse Gas (GHG) emissions by 2050, with a current interim target to reduce greenhouse gas emissions per ounce of gold produced by 30% by 2030 based on 2019 performance levels.

In 2023, we updated our Climate Change Strategy with a focus on continued decarbonization at sites, and improving the robustness of our systems and processes. The strategy aims to strengthen our overall approach to climate change, including achieving decarbonization momentum and ensuring our systems, processes and approach are grounded in a robust and cohesive Climate Transition Plan (CTP).

Our Climate Change Strategy has 5 key focus areas – Governance, Strategy, Risks, Metrics and Decarbonization, and is embedded within the broader OceanaGold Sustainability Strategy. The strategy anticipates and prepares OceanaGold for the movement towards mandatory climate reporting in the jurisdictions we operate in, including the IFRS Sustainability Disclosure Standards on Climate-related Disclosures (IFRS S2) which were published in June 2023. The IFRS S2 superseded the Taskforce for Climate Related Disclosures (TCFD).

OceanaGold aims to have clear governance structures and accountabilities for climate-related responsibilities across the organization. This is supported by our Sustainability Committee Charter, and Board Sustainability Committee who are responsible for approving the Climate Strategy, CTP and Policy.

Improving our understanding of climate-related risks and opportunities, decarbonization and the integration of climate change management into broader business processes. A key deliverable of our Climate Change Strategy in 2024 was to update and strengthen our Company-wide transition scenario analysis and complete a group level transition and physical climate risk and opportunity assessment. The risk assessments build upon the initial climate risk assessment work completed in 2021.

3 OCEANAGOLD'S GREENHOUSE GAS EMISSIONS PROFILE

3.1 Global Context

OceanaGold's emissions and emissions intensities from 2019, the base year for emissions targets, are provided in Table 1. In 2023, 63% of our emissions were scope 1 (direct), predominantly from diesel usage across our sites. Scope 2 (indirect) emissions relating to electricity consumption account for the remaining 37%. A 2024 report published by S&P Global¹ assessed the emissions of 329 gold mines for 2023, with the average intensity of 0.79tCO₂-e/oz. AU. In comparison, OceanaGold's average emissions intensity from 2019 to 2023 was 0.65tCO₂-e/oz. AU. While OceanaGold's average emission intensity for this period is lower than the 2023 average, we recognise the continued need to reduce and ultimately eliminate the impact of our operations on climate change.

Delivery on our long-term goal of net zero operational emissions will require step changes to identify, plan for, and adopt new and emerging technologies, decarbonization of electricity supply and mobile equipment use, and incrementally improving energy use, efficiency and reducing energy consumption. Throughout 2023 and 2024, we implemented operational energy and carbon reduction plans to deliver key initiatives at our mine sites to progress towards our goal.

Table 1: OceanaGold's contribution to greenhouse gas emissions from 2019

Item	Unit	2019	2020	2021	2022	2023
------	------	------	------	------	------	------

¹ <https://www.spglobal.com/market-intelligence/en/news-insights/research/primary-gold-ghg-emissions-intensities-decline>

Scope 1 emissions	tCO ₂ -e	130,052	150,547	177,132	191,789	183,946
Scope 2 emissions	tCO ₂ -e	136,334	95,191	56,359	122,253	109,367
Total emissions	tCO ₂ -e	266,386	245,738	233,491	314,042	293,313
Oz. AU produced	Oz. AU	470,600	301,700	362,900	472,200	477,300
Emissions intensity	tCO ₂ -e/oz. AU	0.566	0.815	0.643	0.665	0.615

3.2 New Zealand Context

OceanaGold's New Zealand operations, which include Waihi and Macraes, produced 82,417 tCO₂-e in 2023 with an emissions intensity of 0.44tCO₂-e/oz. AU. These emissions are attributable to scope 1 (direct) emissions, predominantly from diesel consumption, and some LPG and petrol use. OceanaGold has maintained a 100% renewable energy purchasing agreement since April 2021, meaning zero scope 2 emissions are included for the New Zealand sites.

3.3 Local Context

Specifically, the Waihi operation accounted for 8,088tCO₂-e in 2023 at an emissions intensity of 0.16tCO₂-e/oz AU, which is approximately 3% of OceanaGold's total emissions, making it the lowest emitter of GHG across our portfolio.

Statistics New Zealand reports emissions intensity by industry². This measure looks at the emissions generated during the process of economic value creation in New Zealand, equivalent to Scope 1 emissions used for company reporting purposes. This means that emissions accounted for by suppliers (including scope 2 emissions) are not counted in this measure.

The latest detailed industry dataset is for the 2022 year. Using the Statistics New Zealand intensity measure, emissions intensity is shown as tonnes of CO₂e emissions per \$1 million of GDP contribution³. Using the same form of measure, we have calculated the emissions for the existing Waihi operation using Scope 1 emissions of 6,774 tonnes of CO₂e⁴ and GDP contribution⁵ of \$114m in 2022. Using this intensity measure, Waihi gold mine emissions are 27% of the economy average and substantially less than the Mining average.

² <https://www.stats.govt.nz/assets/Uploads/Greenhouse-gas-emissions-industry-and-household/Greenhouse-gas-emissions-industry-and-household-Year-ended-2022/Download-data/greenhouse-gas-emissions-industry-and-household-year-ended-2022-intensity.csv>

³ using published nominal GDP data from Infoshare table SNE048AA

⁴ <https://vbench.virtuaresearch.com/IR/IAC/?Ticker=OGC2&Exchange=TSX>

⁵ Per economist Shamubeel Eaqub

Industry	CO2 tonne/\$m GDP	
Agriculture	2698	
Non-metallic mineral product manufacturing	812	
Electricity, gas, water, and waste services	735	
Metal product manufacturing	677	
Mining	514	
Transport, postal, and warehousing	382	
Petroleum, chemical, polymer, and rubber product manufacturing	345	
Furniture and other manufacturing	322	
Food, beverage, and tobacco product manufacturing	295	
Local government administration	276	
Forestry and logging	252	
Total all industries	217	
Wood and paper products manufacturing	141	
Fishing, aquaculture and agriculture, forestry and fishing support services	97	
Textile, leather, clothing, and footwear manufacturing	91	
Construction	76	
Waihi Gold Mine	59	
Transport equipment, machinery and equipment manufacturing	30	
Administrative and support services	26	
Wholesale trade	25	
Printing	23	
Accommodation and food services	20	
Arts and recreation services	19	
Retail trade	17	
Health care and social assistance	15	
Other services	14	
Central government administration, defence and public safety	13	
Education and training	6	
Information media and telecommunications	4	
Professional, scientific and technical services	4	
Rental, hiring and real estate services	3	
Owner-Occupied Property Operation	2	
Financial and insurance services	1	

4 EMISSIONS REDUCTION OPPORTUNITIES

OceanaGold applies, to the extent practicable, an emissions reduction hierarchy. We first evaluate opportunities to reduce and ideally avoid greenhouse gas emissions via procurement, feasibility, design and process decisions. Then seek to replace or substitute emissions intensive energy sources with renewable or lower emissions alternatives that are commercially feasible.

OceanaGold has undertaken energy audits across its operations with a level 2 energy audit completed for Waihi in 2023. The options identified in the energy audits have been assessed for applicability for each one of our operations and where suitable have been incorporated in the site's Energy and Greenhouse Gas Emissions Management Plans. These plans provide a site level action plan, including measures to be implemented and the further studies to be conducted to underpin future performance.

To demonstrate how these plans have converted into action in NZ, the Macraes site has commissioned an electric shovel and an electric furnace in 2024. Other projects to reduce energy consumption and emissions continue to be evaluated and implemented across the organisation, including the Waihi North Project.

The WNP includes the following features with favourable impacts on the project's potential emissions effects relative to its economic benefits:

- Underground mining sustains current low emissions output relative to open pit mining methods. Construction activities associated with infrastructure upgrades (GOP, TSF3, quarries, rock stacks) are expected to temporarily increase emissions intensity at Waihi, before reaching steady-state mining in WUG, where emissions intensity is expected to be less than current rate (MUG) for the Waihi operation
- Higher grade ore body improves emissions intensity (CO₂-e/oz. AU)
- Underground tunnels avoid clearance of vegetation for surface roads and reduce distances travelled
- Locally employed workforce avoids air travel associated with a "fly-in-fly-out" operations
- Future-proofing of underground infrastructure (eg: fibre-optics capability within WUG, deferred fleet selection ahead of production mining) allows for uptake of electrification technology as it becomes practically available in the future
- Use of existing process plant and infrastructure reduces construction emissions
- Continued purchase of certified renewable electricity.

In addition to local measures, the following organisation-wide actions will support achieving our net zero by 2050 goal:

- We will seek to increase our renewable electricity purchasing to reduce Scope 2 emissions.
- We will continue to monitor and assess the feasibility of key electrification technology for the mining fleet and consider options for emissions reduction in the ancillary fleet.

From an execution perspective, OceanaGold will follow an adaptive approach to driving emissions reduction by providing flexibility within local site plans to respond to emergent opportunities, lessons learned at other sites, and evolving organisational priorities. The approach will also entail reviewing the effectiveness of abatement actions against planned outcomes to build on success and ensure we remain on track to deliver against targets.

5 MONITORING AND REPORTING

Environmental management is an integral part of our operations. Specialist environmental staff are employed, and the emphasis is on making all staff aware of their environmental obligations through inductions and ongoing training.

OceanaGold publishes Greenhouse gas emissions information as part of its annual Sustainability report based on the Greenhouse Gas Protocol and the Global Reporting Initiative (GRI). Reporting includes a differentiation of Scope 1 and Scope 2 emissions for each of our operations and at an organisational level. In future, OceanaGold will be reporting on climate related matters based on the IFRS S2.

6 CONCLUSION

OceanaGold is committed to responsible environmental management across all our business activities including exploration, development, operations and closure. We aim to respect, honour, protect and support biodiversity and the natural environments where we work by identifying, mitigating, minimizing, and managing our environmental impacts and our company footprint.

In support of this we continue to pursue efforts towards renewable energy supplies, improve energy efficiencies at our operations, and to investigate opportunities towards decarbonizing our fleet. These efforts are backed by practical short-term actions and investment in studies to determine the most effective means of achieving net zero emissions by 2050.