RioTinto

2024-2026

Summary Environmental & Social Management Plan

New Zealand Aluminium Smelter (NZAS)

The purpose of this summary environment and social management plan is to provide an overview of NZAS's approach to environment (air, water and waste) and social risk management. This document consolidates information from topic specific risk assessments, various management plans, standards and procedures utilised by NZAS. The summary environment and social management plan is not a controlled document.

New Zealand Aluminium Smelter, Tiwai Point, New Zealand

We recognise and value the status of Te Rūnanga o Awarua as manawhenua of the land on which the smelter is situated. We value their connection to the whenua/land and sharing of their knowledge relating to appropriate care and management of the area.

Contents

NZAS's approach to sustainability

NZAS aligns with the Rio Tinto approach to sustainability[1], with achieving impeccable environment, social and governance (ESG) credentials as one of our core objectives. We strive to align our business priorities with society's expectations and ensure sustainability considerations are at the core of every decision we make.

In strong alignment with The Way We Work[2], the NZAS leadership team are committed to impeccable ESG and understand their responsibilities to protect the environment and use shared resources adequately to maintain the health, safety, and livelihoods of local communities.

NZAS site context

The NZAS smelter located on Tiwai Peninsula in Southland and is New Zealand's only aluminium smelter. The smelter is the only resident on the Tiwai peninsula and is approximately 25 km south of Invercargill, however across the channel is the township of Bluff, which is the closest community to the smelter. The Southland regional economy is heavily dependent on agriculture, and manufacturing, with tourism also of great importance[3].

Southland's climate is mild, temperate and mainly maritime, due to location within a belt of strong, wet westerly winds. Southland's weather is dominated by those westerly influences, which provide plentiful rainfall and a small annual range in temperatures[4].

NZAS is a joint venture owned by Rio Tinto (79.36 per cent) and Japan's Sumitomo Chemical Company (20.64 per cent)[5]. The smelter began operations in 1971 and produces approximately 337Kt of aluminium annually with a workforce of approximately 800 employees and 200 contractors. Most of the plant's alumina is supplied from the Rio Tinto Yarwun and Queensland Alumina Limited refineries. NZAS produces a range of value-added products, including speciality billets, high purity ingots, and foundry alloys that are cast from low carbon aluminium. Around 90 per cent of the aluminium produced at NZAS is exported. The primary operational areas are the smelter and the wharf, which are connected by a conveyor.

The NZAS aluminium smelter uses the Hall-Héroult process for the conversion of alumina to aluminium. Alumina is converted into aluminium backed by hydroelectricity, resulting in one of the lowest carbon footprints for an aluminium smelter in the world, emitting just two tonnes of CO_2 for every tonne of aluminium (the international average is 13 tonnes)[6]. A new 20-year power deal signed in 2024[7], has secured the future of the smelter to continue competitively producing high-purity, low-carbon metal, backed by a diversified mix of renewable electricity from New Zealand's South Island.

Each year, NZAS contributes about $406 million to the Southland economy (6.5 per cent of Southland's GDP) with annual export revenue of about $1 billion[6].

Management to a high standard of emissions to air, use of water and discharges to water in line with the requirements of its authorisations, are critical for the health, safety and wellbeing of all employees, the community, and the environment.

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[1] https://www.riotinto.com/en/sustainability/our-approach
[2] https://www.riotinto.com/en/sustainability/policies
[3] www.mbie.govt.nz Southland region factsheet
[4] Southland Regional Council https://environmentsouthland.recruitmenthub.co.nz/Living-in-Southland/#:~:text=New%20Zealand's%20climate%20is%20mild,small%20annual%20range%20in%20temperatures
[5] At the time of publishing, Rio Tinto had entered into an agreement to acquire Sumitomo Chemical Company Limited's (SCC's) 20.64 per cent interest in NZAS. On completion of the transaction, NZAS will be 100 per cent owned by Rio Tinto.
[6] NZAS Website https://nzas.co.nz/
[7] https://cdn.sanity.io/files/jhthdezs/production/f909522546cfb16fd8852698e9669ab772c58317.pdf

NZAS strives to achieve impeccable ESG performance and is regularly audited by external parties for performance. External activities conducted in the past 3 years include the Aluminium Stewardship Initiative (ASI) performance standard (v3) certification audit; ISO14001 environment management system, and ISO45001 occupational health and safety management system re-certification and surveillance audits.

NZAS also has its metal marketed under Rio Tinto's RenewAl metal brand. RenewAl certifies NZAS metal as being some of the lowest carbon in the world, with CO_2 emissions third party certified, and traceability by product tracking through the value chain from mine to metal.

NZAS's website[8] also contains further information around initiatives in place for waste reduction, remediation, and biodiversity action.

NZAS potlines, reduction block

[8] https://nzas.co.nz/

Emissions to Air

NZAS air context

An electronic weather station (EWS), owned, operated and maintained by National Institute of Water and Atmospheric Research (NIWA) as part of the national network of meteorological stations, is located at Tiwai Point to the north-west of the NZAS plant. The station indicates dominant winds are from the west, with winds from all easterly directions less frequent and of lower speed.

Ambient air quality guidelines are set by the Ministry for the Environment, and deal with community health and wellbeing. The closest non-industrial community receptor is the township of Bluff, across the harbour channel from the Tiwai peninsula. The closest environmental receptor is the Department of Conservation Land across the Tiwai peninsula,

NZAS has measures in place to manage, monitor and mitigate its emissions from its operations to achieve compliance with its authorised discharge consent. NZAS regularly monitors and reports on emissions from points sources, as well as fugitive emissions, including fluoride release and other chemical compounds across operational areas. The NZAS discharge consent is publicly available on the Environment Southland website[9], and covers discharge to air from an aluminium smelter and related activities.

Air objectives

NZAS aims to:

- Ensure identification and characterisation of air emissions and their actual and potential impacts for current and future operations.
- Evaluate and prioritise emissions with material impacts from all sources at the smelter.
- Design and implement appropriate controls.

Controlling emissions to air

NZAS has in place a range of controls to ensure potential emissions are minimised, managed, and monitored.

Some of the critical controls include:

- NZAS emissions reduction and control equipment:
    - Emissions from aluminium reduction cells are controlled by implementing system control logic and optimisation to minimise formation of contaminants within the reduction cell, applying a continuous extraction draft from all reduction cells to a scrubbing system that are designed to remove fluoride and particulates from the gases formed for return to the reduction cells. Physical covers over the reduction cells limit fugitive emissions are also used.
    - Reduction of contaminant release is also performed through optimisation of blends used within the preparation of anodes and limiting the number of cell hoods or cell end doors that are open at any one time.
    - Continuous draft and emission control equipment are installed at the carbon anode bake plant to reduce fume and particulate discharges.
- Particulate and dust management:
    - Dust collectors are installed in process streams where dusty atmospheres and material is present to reduce release into atmosphere.
- Raw material specification:
    - Defined raw material quality specifications reduce the likelihood for generation of dust and emission of other contaminants.

[9] https://www.es.govt.nz/environment/industry/new-zealand-aluminium-smelters/nzas-consents

- Dispersion Modelling:
    - Air modelling studies were undertaken by independent consultants for the application for resource consent to discharge to air. This allows mapping of potential emissions within the environment.
- Monitoring Programs:
    - NZAS has an air quality monitoring program for at point and fugitive emissions, which includes continuous and periodic monitoring at source and ambient.
    - The monitoring programs test for a variety of contaminants including but not limited to gaseous and particulate fluoride, sulphur, total particulate, total condensable hydrocarbons, polyaromatic hydrocarbons.
    - Metrological monitoring including air temperature, solar radiation, relative humidity, wind direction, wind speed is also continually collected.

NZAS main stack

Water use and discharges to water

NZAS water context

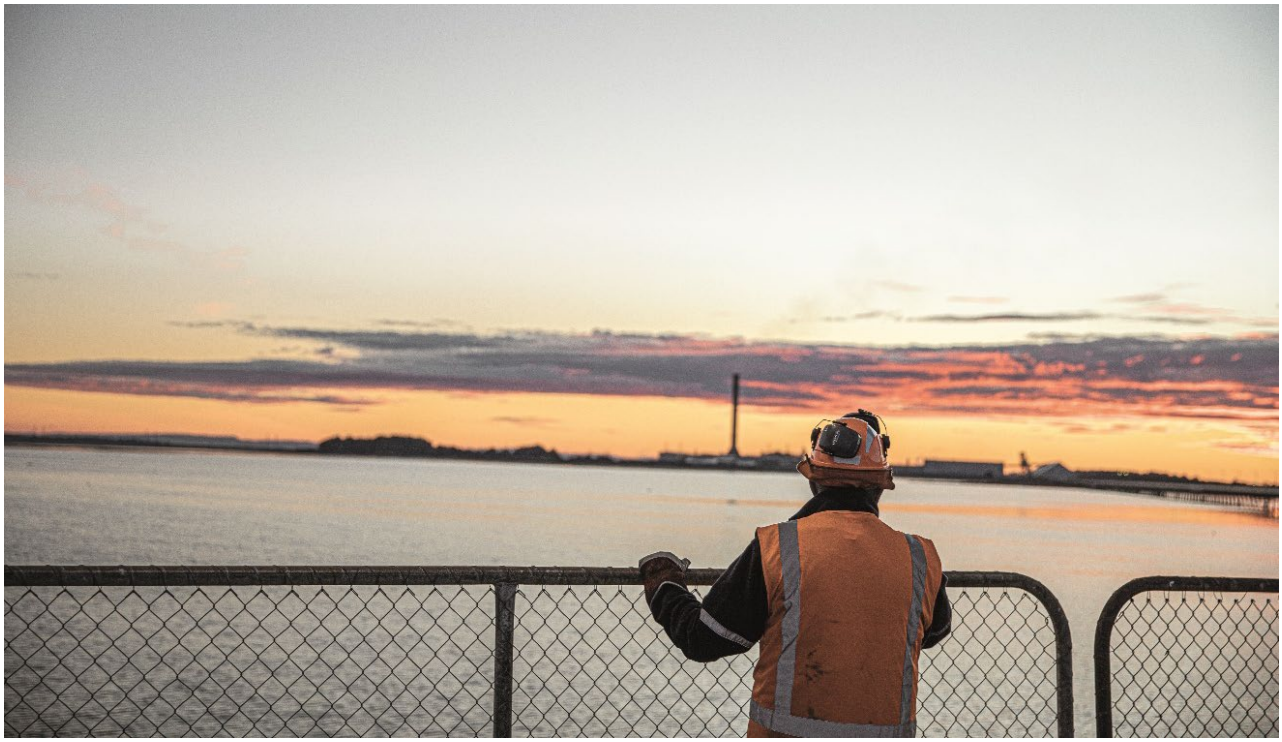
Water is used predominantly at NZAS in the production process for cooling purposes but there is also a need for a potable water supply and for emergency firefighting. NZAS operates its own self-contained water supply facility which draws water from the Tiwai Aquifer via six bores feeding into a 9.2 million litre reservoir. From the reservoir the water is reticulated to the plant as potable and process water. The continued purity of the Tiwai Aquifer remains to be a high priority for NZAS. There are no surface water allocations for the smelter. NZAS is the sole entity drawing water from the Tiwai Aquifer. The aquifer more than adequately supplies NZAS's needs and is sustainable as a long-term water supply option, as the aquifer is recharged solely by rainfall.

The long-term average rainfall for Tiwai Peninsula is approximately 1000mm per year[4]. NZAS abstracts water from six production wells located along the Tiwai Peninsula.

The Tiwai Aquifer is located within 20-30 metres of the beach gravel on the peninsula. It covers an area of some 2,315 hectares and extends to an average depth of 20 metres below sea level. It is surrounded to the north and south by sea. To the east is the Waituna Wetland, which is not linked hydraulically with the aquifer. Groundwater moves more readily along the peninsula than across it due to the sand and gravel deposits parallel to the coastline. Permeability within the aquifer decreases from west to east along the peninsula.

NZAS discharges from multiple sources via three drains (North drain, West drain and South drain), including, process wastewater, cooling water, stormwater and treated effluent to the local receiving environments of Bluff harbour, and the Foveaux Strait, which are both marine environments. Sewage (including toilets, washrooms, showers, laboratories, canteen and kitchens) is treated and discharged onto the land-based sewage field. Groundwater is a potential receiving environment for seepage through some drain sections and waste storage locations.

NZAS has measures in place to manage, monitor and mitigate its discharges to water, and water usage, to achieve compliance with its authorised discharge consent. NZAS holds multiple resource consents issued by Environment Southland in relation to water withdrawal and discharge, these are available on the regulator's website[9].



Sunset over Tiwai

Water objectives

NZAS aims to:

- Ensure safe, efficient and sustainable use and protection of water resources and ecosystems in and around the NZAS operations by understanding the water resource and quality.
- Ensure NZAS meets all Rio Tinto standards and regulatory requirements.
- Protect the continued purity of the Tiwai Aquifer.

Controlling water use and discharges to water

NZAS has in place a range of controls to ensure potential impacts are minimised, managed, and monitored accordingly.

Some of the critical controls include:

- Asset design & engineered controls:
    - Water usage is performed through sequenced pumping controls to ensure even withdrawal from aquifer bores.
    - Washings from specific processes are treated at the effluent plant prior to discharging. The treated effluent ready for discharge is sampled each time before a discharge is performed.
    - Drains have oil trap structures in place, for spill control and response.
    - Sewage treatment is performed onsite, with discharge metered and recorded.
    - Diesel tanks are installed above ground for rapid leak/spill detection.
- Water balance:
    - This is maintained to enable water inputs, outputs, and usage to be managed in the most effective way.
- Water monitoring program:
    - Water abstraction and use:
        - Water abstraction flow meter monitoring is performed routinely.
        - Physical inspection monitoring of bores for levels routinely performed.
        - Regular water supply and reticulation reporting.
        - Drinking water - Quality control of the potable water is undertaken to ensure that consumption of water at NZAS meets Drinking Water Standards for New Zealand.
    - NZAS discharge and receiving environment water quality monitoring programs includes:
        - Marine monitoring program:
            - Coastal waters near the exit of drains are routinely sampled for fluoride, pH and visually monitored for possible oil residue. The discharges from the drains are also sampled for total suspended solids.
            - Monitoring is performed in the coastal water near the treated effluent discharge point for fluoride, total cyanide, conductivity, pH, clarity, temperature, dissolved oxygen and per cent oxygen saturation.
        - Groundwater monitoring program:
            - Approximately two hundred monitoring bores are strategically placed around NZAS to detect any possible adverse effect on the quality of the groundwater located under the plant.
            - Routine monitoring schedule is maintained by the laboratory.
        - Sewage discharge monitoring:
            - Discharge – monitored for carbonaceous biochemical oxygen demand (CBOD5) and suspended solid levels.
            - Discharge and groundwater - monitored for bacteria, phosphorus, ammonia, nitrogen, pH and conductivity.
            - Land based sewage disposal to the surrounding groundwater is monitored by sampling from one upstream and one downstream bore.

Waste management

NZAS waste context

There are multiple waste streams generated during the aluminium smelting process at NZAS.

Material hazardous waste streams	Other Wastes
• Dross (mineral waste). • Spent cell liner (SCL) (non-mineral waste). • Bath (non-mineral waste).	• Carbon waste. • Refractory bricks. • Burn-off anode butts. • Filter bags. • Domestic waste.

NZAS stores some waste or by-product streams onsite prior to offsite disposal, recycling or reuse. Some waste streams are housed in onsite storage facilities while viable long term beneficial reuse pathways are established. The onsite waste and by-product storage areas include:

- Onsite landfill (closed to additional use since May 2022).
- Dross residue storage.
- SCL storage.
- Bath storage.
- Carbon waste storage.
- Refractory bricks storage.
- Burn-off anode butt storage.
- Aluminium rich by-products storage.

NZAS (and Rio Tinto) continually investigate more sustainable pathways for all waste and by-product streams. This includes working on research and development projects for waste valorisation.

NZAS waste segregation area

NZAS's waste objectives

NZAS aims to:

- Ensure that wastes are safely and appropriately stored, handled, treated, and disposed.
- Ensure that active and historical waste areas are managed in a planned and environmentally responsible manner.
- Ensure that NZAS complies with all relevant legal and other requirements.
- Drive continuous improvement.

Waste management

NZAS aims to ensure that wastes generated onsite are segregated at point of generation and that wastes are securely contained and monitored. There are several ways that NZAS manages the different waste streams:

Some of the critical controls include:

- Waste valorisation pathways for major waste streams, such as SCL and dross.
- Waste segregation processes to minimize cross contamination.
- Inspections to ensure compliance of landfill.
- Storage of waste and by-product streams undercover.
- Monitoring of groundwater for detection of potential leachate.
- Administrative processes, including: recording inventories, records management, segregation practices, supply management, and a NZAS waste management matrix, including the category of waste, disposal point and methodology.

Communities and Social Performance (CSP)

NZAS communities context

NZAS plays a significant role in the local and regional economy. We know that the strength of our relationships with the communities where we operate, and broader society, is fundamental to our business. Without the support from host communities, we cannot operate successfully.

NZAS is located at Tiwai Point on the Tiwai Peninsula in the Murihiku Southland region of New Zealand. The manawhenua indigenous community in the Murihiku Southland region are Ngāi Tahu iwi/tribe. There are four recognised Ngāi Tahu sub-tribes (known as Rūnaka or Rūnanga) in Murihiku Southland – with Awarua Rūnaka the manawhenua community of Tiwai Peninsula. Te Ao Marama Inc represents the four Murihiku Rūnaka for environmental services and resource management, including cultural heritage management.

Connections to the land and history of the area, and to family / whānau, are strongly held iwi values. Southland covers a land area of approximately 34,000 square kilometres. As of the last census in 2023, Southland's regional population of 100,143 people, is approximately 19 per cent of Māori descent[10]. Although there are no residents on the Tiwai peninsula, the township of Bluff has approximately 1,700 residents. Lifestyle is an important factor for those living in the region, driven by rural living, a strong sense of belonging to the community, access to stable employment opportunities, access to community services and proximity to Fiordland, Queenstown Lakes and the Otago regions.

Having operated in the region for over 50 years, NZAS is recognised as an important employer and part of the community, particularly in Invercargill, and contributes to the economy as well as the social fabric of the region. In 2024, around 800 employees and 200 contractors worked on the Tiwai Point site.

In late 2022, Rio Tinto and NZAS signed a memorandum of understanding (MoU) with Ngāi Tahu which lays a path to work together on a shared goal of progressive remediation to protect Te Ao Tūroa (natural environment), and mahinga kai (food gathering) practices and principles, and whānau undertaking them, at

[10] https://www.stats.govt.nz/infographics/2023-census-national-and-regional-data/#southland

or near the Awarua/Tiwai peninsula coastal environment. The MoU also captures the aspirations of NZAS and mana whenua to work together to create long term mutual value, laying the foundation for sustainable economic, cultural, social and environmental outcomes.

The Murihiku Rūnaka and Rio Tinto/NZAS community development fund was part of the MoU commitments, with $2 million allocated across 2023 and 2024, which went to 23 worthy projects.

In addition to Ngāi Tahu, there are other important groups and stakeholders we seek to develop relationships with. Although not exhaustive, they include:

- Local residents, businesses and community organisations in Bluff, Invercargill and the broader region.
- Invercargill City Council (including Bluff Community Board).
- Environment Southland Regional Council.
- Southland Business Chamber.
- Department of Conservation.
- Community service providers.
- NZAS employees.

NZAS regularly engages with all stakeholders and also undertakes socio-economic impact assessments to understand the benefits and impacts of our activities. The latest assessments were completed in 2020 and 2021, and identified key impacts and opportunities across the following areas:

- Closure.
- Economic dependency.
- Amenity (inc. dust, waste management and remediation of land).
- Population and housing.
- Employment.
- Community services.
- Social investment and regional economic development.
- Management of cultural heritage and values.

In 2025 NZAS plans to prepare an updated socio-economic impact assessment.

NZAS sponsorships & donations programme

Community and Social Performance objectives

NZAS aims to build respectful, enduring relationships to enable delivery of the business plan and create long term shared benefits of with the communities where we operate. To achieve this, NZAS's key objectives are to:

- Effectively manage social risks and impacts.
- Work in partnership with Ngāi Tahu.
- Engage with local communities and workforce to develop and maintain robust relationships.
- Make a positive contribution to our local communities.

Working with communities

NZAS has various processes in place for managing impacts and maximising benefits to local communities as well as achieving the objectives outlined above. The Rio Tinto Communities and Social Performance Standard[11] is the overarching control and requires detailed stakeholder mapping, regular community engagement and social and human rights impact and risk assessments.

More information is available in the table below and annual sustainable development scorecards.

Objective	Key activities	Future priorities
Effectively manage social risks and impacts	• Actively maintain cultural heritage management system (CHMS) to ensure appropriate oversight of cultural heritage sites and archaeology	• Update the NZAS social and economic impact assessment (SEIA) • Develop cultural heritage history stories to share with community
Work in partnership with Ngāi Tahu	• Engage with the scope of MoU signed with Ngāi Tahu which lays a path to work together on a shared goal	• Continue the implementation of the MoU with Ngāi Tahu
Engage with local communities and workforce to develop and maintain robust relationships	Ensure open communication pathways with stakeholders, including: • Regular formal and informal engagement with community and other stakeholders • Holding community forums • Community feedback and complaints mechanism	• Undertake Local Voices community perception monitoring[12] • Develop and implement actions based on community feedback provided through the SEIA and Local Voices
Make a positive contribution to our local communities	• Murihiku Rūnaka – NZAS / Rio Tinto community development fund • Biannual sponsorships and donations programme • Community assistance funding (inc. one off payments, in-kind payments and 'other' contributions) • Tertiary education scholarship • Southland Girls' High School educational partnership • Local and Māori procurement	• Continue to identify and develop strategic partnerships based on identified community needs and priorities including regional economic development and diversity • Increase local and Māori procurement.

[11] Rio Tinto communities and Social Performance Standard is available at https://www.riotinto.com/en/sustainability/policies

[12] https://voconiqlocalvoices.com/en/

Environment and disclosures

NZAS provides data for disclosures as part of the following programs:

Program	Link
Rio Tinto Annual Report	https://www.riotinto.com/en/invest/reports
Rio Tinto water risk	https://www.riotinto.com/en/sustainability/environment/water
Rio Tinto surface water disclosures	https://www.riotintowaterdashboard.com

NZAS publishes annual and non-routine environmental data on its website, including:

Program	Link
Sustainable development reports	https://nzas.co.nz/sustainability
Closure Study Data - Planning and Results	
Specific environmental reports commissioned by independent requirement or regulator request	
Environmental monitoring reports	https://nzas.co.nz/environmental-monitoring-reports

NZAS reports to regulatory authorities the following:

Regulatory Agency	Scope
Environment Southland	Environmental performance within consents issued by Environment Southland for discharges to air, land and water.
New Zealand Environmental Protection Agency (NZEPA)	NZAS' greenhouse gas (GHG) emissions. Calculated using an agreed methodology approved by the Intergovernmental Panel on Climate Change.
Department of Conservation (DOC)	Annual DOC Compliance Report.

NZAS is committed to sharing of data to aid in benchmarking and industry learning. NZAS provides data for this purpose as part of the following program:

Program	Contents	Link
International Aluminium Institute (IAI) periodic reports and/or surveys	• Safety sharing information (quarterly) • Sustainable development indicators (annual) • Safety performance benchmarking (annual) • Refining energy (annual) • Life cycle inventory (LCI) data and environmental metrics (5 yearly)	https://international-aluminium.org/ https://international-aluminium.org/resource/life-cycle-inventory-lci-data-and-environmental-metrics/

Complaints and Feedback Mechanism

NZAS Community Feedback and Complaints

We value community feedback as it helps us to improve how we operate and work. We encourage the community to provide feedback or report any concerns or complaints that arise as a direct result of our operations. We are willing to learn from our mistakes by listening to understand and through working together, we will deliver better long-term outcomes for everyone.

How you can provide feedback or make a complaint

Call 021 174 1138 to speak to our Manager Communities & Social Performance (Monday to Friday, 8am to 5pm)

Send a message via our website contact form: *https://nzas.co.nz/contact*

Email: *NZASCommunityFeedback@riotinto.com*

Write to us: Communities & Social Performance, NZAS, Private Bag 90110, Invercargill 9840

To make a complaint or notify Environment Southland about an environmental issue:

Call the Pollution Response Hotline 0800 768 845

Online feedback form: *https://online.es.govt.nz/do-it-online/problems-requests-submissions/ContactUs?ed-step=1*

Antenno app: *https://www.es.govt.nz/about-us/antenno*

What happens after you have made a complaint?

- Every complaint will be carefully considered, and a written response will be provided. We encourage open communication and collaboration to work towards a satisfactory resolution for all involved.
- Your complaint, contact details and resolution will be recorded in accordance with our privacy and complaints management policies.

Your feedback or complaint can be made anonymously, please let us know if you wish to remain anonymous.

What happens if your issue isn't resolved?

If a resolution cannot be reached, your complaint will be escalated to Rio Tinto leadership who will reassess the issue and undertake an internal investigation to confirm the next steps. An independent tribunal may be considered for complaints of a serious or complex nature.

RioTinto NZAS

myVoice

myVoice is Rio Tinto's confidential whisteblower programme.

myVoice is available to anyone who has concerns or information relating to misconduct or improper circumstances or behaviours connected to Rio Tinto.

What happens after a myVoice report is made differs from the process on the left. Details are available at *https://www.riotinto.com/en/sustainability/ethics-compliance*

Call 0800 425 448

Or scan

Internal document references

The below table references the NZAS internal documents used to create this summary environment and social management plan.

Related Documents
• Air Quality Control Management Plan • Dust Containment and Protection • Water Quality and Protection Management Plan • LUMP - Land Use Management Plan • NZAS Landfill Management Plan • NZAS Waste Management Plan and Matrix • NZAS Community Complaints Procedure