



RioTinto

New Zealand's Aluminium Smelter Ltd

Closure Socio-economic Impact Assessment Report

December 2021

Executive summary

Overview

New Zealand's Aluminium Smelter Limited (NZAS) is a joint venture company owned by Rio Tinto New Zealand Limited (Rio Tinto) and Sumitomo Chemical Company of Japan, operating New Zealand's only aluminium smelter which was established in 1971. NZAS is located 25 kilometres from Invercargill and across Bluff Harbour from the township of Bluff, in the Southland region of New Zealand (Figure ES-1).

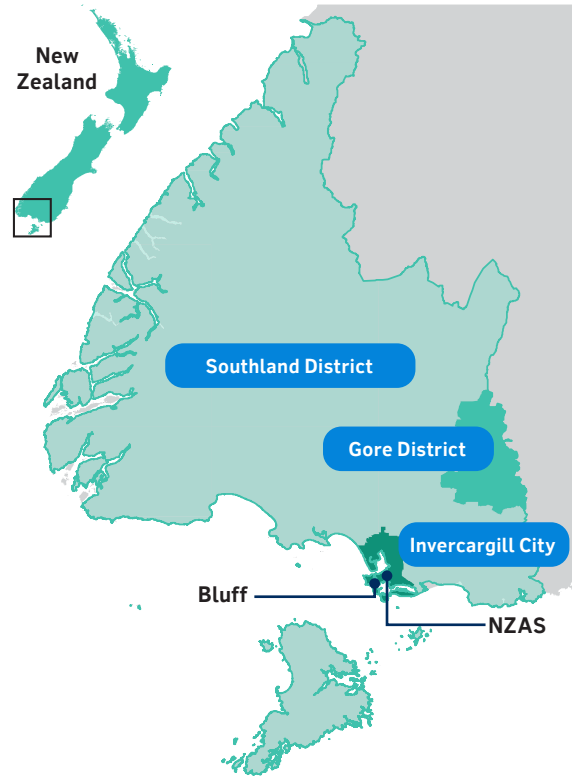
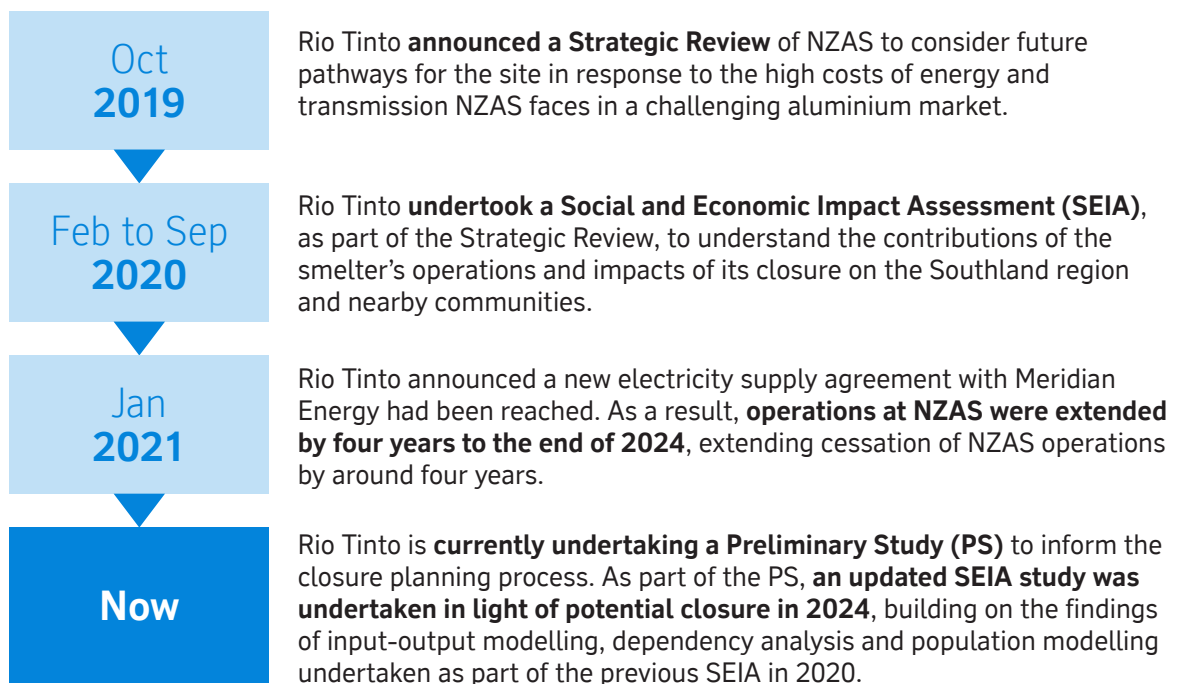


Figure ES-1: Study area – the Southland Region



An overview of the SEIA 2021 methodology is presented in Figure ES-2.

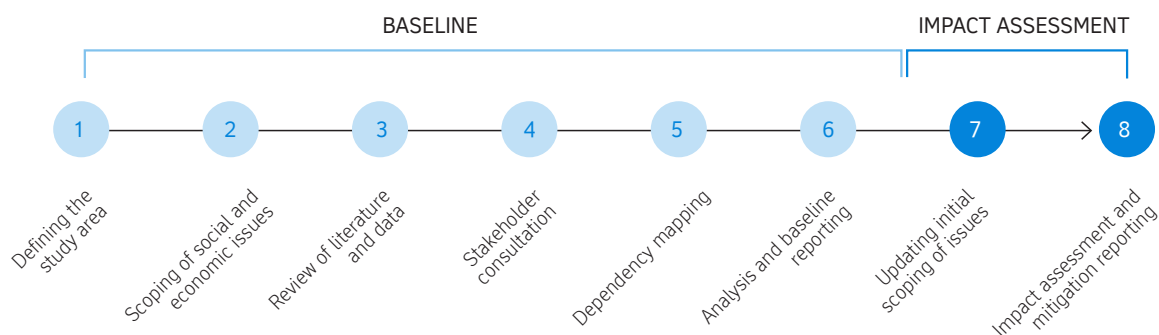


Figure ES-2: SEIA methodology overview

Consultation

A key input into the socio-economic baseline and impact assessment study update was re-engaging with stakeholders consulted during the previous SEIA to identify changes in baseline conditions and discuss impacts of potential closure of NZAS in 2024.

Consultation was undertaken through:



29 telephone and video conference meetings with representatives of government agencies, service providers and organisations and selected businesses.



27 responses to an online survey of Southland-based businesses contracted to NZAS.

Key themes emerging from consultation related to economic, cultural, social and environmental dimensions of impacts and opportunities associated with the cessation of NZAS operations in 2024. Consultation also revealed stakeholder sentiments about extension of the power agreement and revised closure timeframe.

“It was a sigh of relief when they extended the life of the smelter to 2024.”

- SEIA 2021 consultation stakeholder meeting

“The immediacy has gone but the issue remains as to what our future will look like without this industry.”

- SEIA 2021 consultation stakeholder meeting

Socio-economic Baseline

The main findings of the socio-economic baseline for the Southland region are summarised below:

Community values



Rural and affordable lifestyle, with access to stable employment



Proud industrial identity underpinned by the strength of local industries



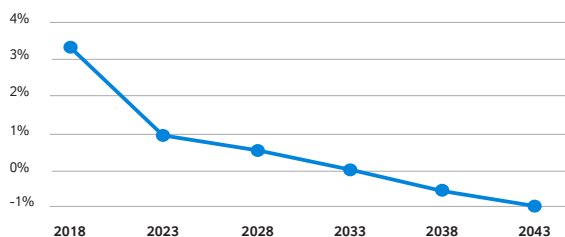
Strong local identity based on a sense of independence and resilience

Demographics¹

Southland's population is projected to decline and the region has an older age profile compared to New Zealand as a whole. SEIA 2021 consultation indicates that young people often leave the region for further education and employment opportunities.

There is potential for COVID-19 to change previous population forecasts for the Southland region. Data from June 2019/2020 shows the region experienced positive population growth (1.1%) due to gains from net internal migration.

Population projections (rate of decline 2018 – 2043)

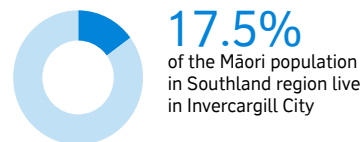
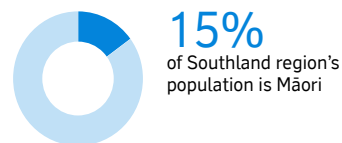


Source: StatsNZ 2018, NZ.Stats



= positive population growth (1.1%)

Māori population

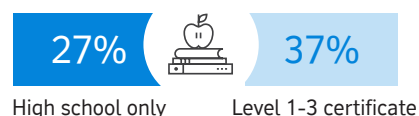


Median age



While the region overall has lower levels of educational attainment, there are higher proportions of students who study at the Southland Institute of Technology and Polytechnic, which is reflective of the strong tertiary education opportunities available in the region.

Education attainment of people aged 15 years and over



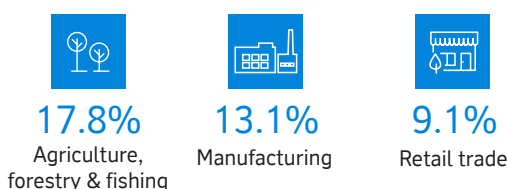
¹All demographic data from Statistics New Zealand. (2018). Census place summaries. Retrieved from <https://www.stats.govt.nz/tools/2018-census-place-summaries>

Industry

Southland region is primarily an agricultural region, with a solid manufacturing industry which is underpinned by NZAS and dairy and meat processing. The region has a high number of people employed as labourers, and together with the region's lower educational attainment rates, the region has a large proportion of unskilled workforce, particularly in the manufacturing industry.

Southland's regional economy performed strongly through the COVID-19 lockdown in 2020 as the agriculture and manufacturing sectors were considered essential industries and permitted to keep operating.

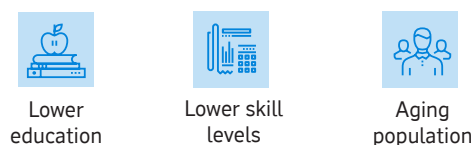
Top three industries of employment



Top three occupation types



Key vulnerabilities



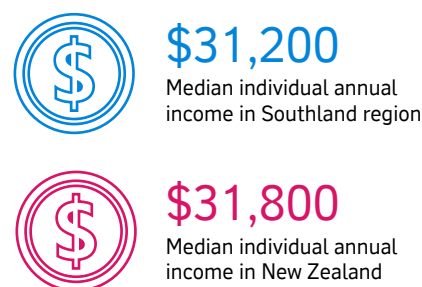
Future economic opportunities



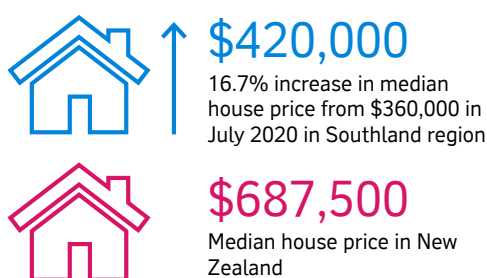
Unemployment June 2021



Income 2018



Housing and accommodation July 2021



Health and wellbeing

The region is generally considered a safe place to live, with both Invercargill City and Southland District accredited as International Safe Communities in 2016. Anecdotal data collected during SEIA 2021 consultation suggested the COVID-19 pandemic has exacerbated many existing health and wellbeing challenges within the Southland community, such as suicide, mental health and drug abuse.

Dependency analysis

Having operated in the region for almost 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. The NZAS workforce mostly live in Invercargill City and Southland District, and many are older workers who have served at NZAS for over twenty years.

NZAS also contributes to the region and particularly Invercargill through direct community contributions to community infrastructure and organisations, and indirectly through its workforce and families who access regional infrastructure and are members of organisations.

NZAS also supports vulnerable community members through its recycling contract with Southland DisAbility Enterprises Limited.

As a conclusion to the baseline, a high-level dependency analysis was undertaken for the various social indicators and stakeholders of NZAS. The methodology applied is a subjective and qualitative analysis using a system of rating ranging between high, medium and low levels of dependence.

An overview of dependency analysis outcomes is presented in Figure ES-3.

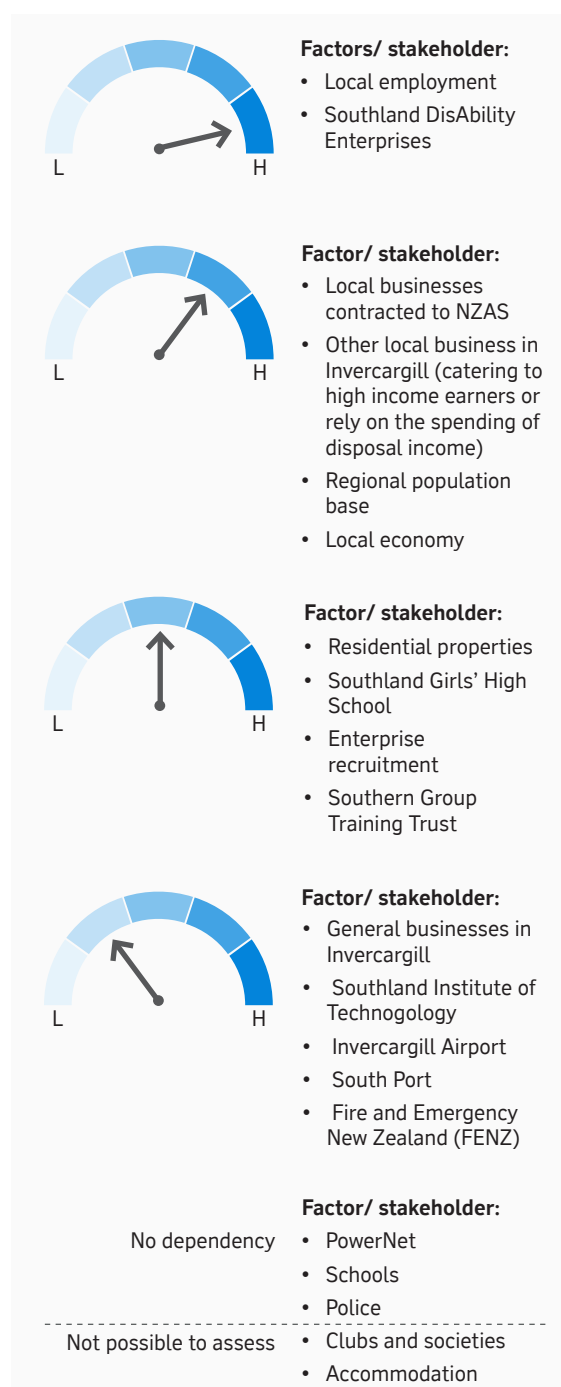


Figure ES-3: NZAS dependency spectrum

Impact Assessment

The main findings of the socio-economic impact assessment are summarised below.

Regional economy and industry

Regional economic studies since 2005 highlight that NZAS is considered a critical and stable anchor for local businesses in the manufacturing and engineering sector in the Southland region.

The potential closure of NZAS in 2024 would result in:

- Gradual reduction in contribution to regional Gross Domestic product (GDP) through the ramp down phase, with loss of 6.1% GDP on cessation of operations at NZAS. Post-closure activities associated with decommissioning, demolition and rehabilitation would continue to make some contribution to the regional GDP over a period of 5-10 years.
- During ramp down demand for goods and services from NZAS's vendors would reduce.

“We need to be thinking strategically as a region about where we want to go – it’s about a just transition and moving to a diversified/low carbon economy that has high quality jobs.”

- SEIA 2021 consultation stakeholder

“People are becoming a lot more serious about planning for alternatives, but Southland is still really yet to come together and decide on a future.”

- SEIA 2021 consultation stakeholder meeting

Risks as a result of potential closure of NZAS in 2024 include:

- Some regional businesses closing or downsizing their operations in response to loss of revenue from NZAS.

The most at-risk businesses would include:

- Businesses which directly contract with NZAS.
- Businesses that rely on the spending of disposable income of the direct and indirect NZAS employees (e.g. retail and consumable consumer goods).
- Some vendors would be able to continue to operate and earn revenue through post-closure activities, reducing the risk of immediate closure or downsizing for some businesses.

There was much discussion during consultation about the about development of other industries in the region such as hydrogen, data storage and aquaculture. However, there is limited progress in advancing these options, no clarity in who should lead the economic diversification of the region, and strong scepticism around these industries as they will not offer the desired employment or business development opportunities for the region.

Employment and income

NZAS is the largest single site employer in the region and is considered a stable and high-income source of employment. Table ES-1 shows the number of direct and indirect NZAS workforce in the Southland region. The majority of the direct and indirect workers are located in Invercargill City with some in Gore and Southland Districts.

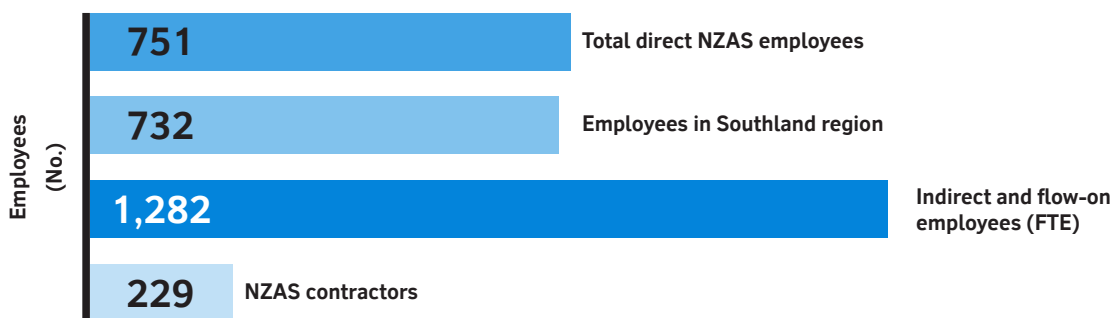
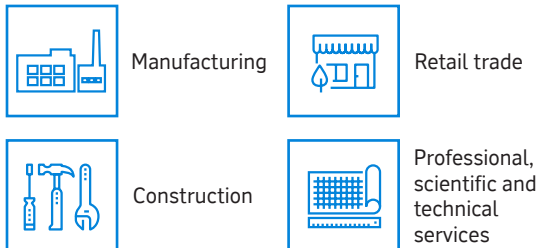


Figure ES-4: NZAS employment contributions (2019)

NZAS supports a number of indirect and flow on employment opportunities, particularly in industries including:



“A lot of people (at the smelter) are leaving as soon as they find a new job. They want certainty in their lives.”

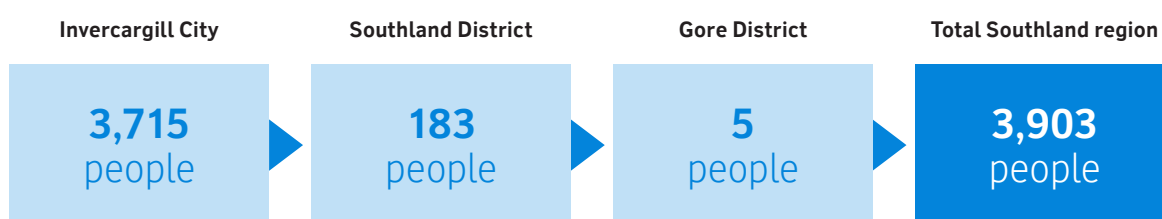
- SEIA 2021 consultation stakeholder meeting

Potential closure of NZAS in 2024 would result in:

- Some direct and indirect employees losing their jobs through the ramp down phase.
- At cessation of operation, approximately 732 direct and 1,282 skilled and semi-skilled full time equivalent (FTE) indirect and flow on employment opportunities (which is equivalent to 1,580 jobs, including full time and part time positions) across Southland region, mainly from the City of Invercargill, would be lost.
- Creation of a small number of employment opportunities through post-closure activities associated with decommissioning, demolition and rehabilitation.
- Loss of direct income for the employees and contractors that lose their jobs during ramp down and at cessation of operations, as well of loss of higher wages paid in the Southland region.
- Increased uncertainty of employment for direct and indirect employees of NZAS leading to potential wellbeing impacts to some employees and their families
- Risk of financial stress for some employees and their families as a result of the loss of direct and indirect employment and income.

Demographic change

According to demographic modelling undertaken for the SEIA 2020, NZAS directly and indirectly supports:



Potential closure of NZAS in 2024 and resulting loss of employment and income may lead to:

- People and their families leaving the area to seek work leading to population decline in the region, with the large majority of population decline occurring in Invercargill City.
- Potential 1.8% and 3.4% decline from the 2018 population as per the three outmigration scenarios assessed in the SEIA 2020.
- If post-closure activities commence immediately after cessation of operations, then it would generate employment opportunities for some existing workers and retain some population.
- Loss of skilled and semi-skilled workforce from the region, as a result of out-migration during ramp down and post closure.

“The impact (of NZAS closure) could be greater given the significant drop in tourism and international student numbers... there is already population decline...we will see a cumulative impact.”

- SEIA 2021 consultation stakeholder meeting

“It’s given people an extra four years to think about what they want to do and look at what else is going on in the community.”

- SEIA 2021 consultation stakeholder meeting

Direct contributions to the community

Community financial and in-kind contributions to local organisations, such as the Southland Girls’ High School and through the Southland Science & Technology Fair, would cease by 2022. While most financial contributions were nominal and unlikely to affect the operation of these recipient organisations, the community places a high value on education and these contributions would be missed by the recipient organisations and the community.

Closure would result in loss of apprentice positions at NZAS and with vendor businesses if they downsize their operations. This would result in loss of income for Southern Group Training Trust.

The skilled volunteer roles filled by NZAS staff with regional organisations would also need to be replaced if NZAS employees leave the region.

Community infrastructure and services

It is likely that closure of NZAS in 2024 and resulting out-migration may lead to:

- A reduction in demand for some services which would not be expected to affect the overall operation and provision of services in the region.
- While rehabilitation phase of NZAS may reduce risk of on-site emergencies, FENZ may have increased response times to emergencies near Tiwai Peninsula due to loss of on-site emergency response team.
- An increase in demand for community wellbeing services such as employment and income assistance, health and mental health services.



Real estate and accommodation facilities

Given the higher wages and stable direct and indirect employment offered by NZAS, it is likely that NZAS related employees/contractors may have invested in real estate in the Southland region or in the surrounding Otago region. Closure of NZAS may lead to:

- Increased housing vacancies and potentially reduced housing prices in Invercargill as a result of out-migration, which may increase housing affordability for some.
- Housing stress for some employees/contractors who may be unable to repay their mortgage due to loss of employment and income, or loss on their real estate investments due to reduction in real estate prices.
- Commercial property vacancies and resultant reduction in commercial property prices in Invercargill, as some businesses that supply goods and services to NZAS may need to downscale or close.
- Minimal changes to demand for accommodation facilities as the existing demand for accommodation facilities and rental housing in Invercargill from non-local direct and indirect NZAS workforce is low.

“Property price impacts will be dependent on the return of tourism and international students. These demand factors may counterbalance negative pressure on house price from population loss associated with smelter closure. But government is talking about changes in immigration uptake....there are too many factors to have any certainty (around impact).”

- SEIA 2021 consultation stakeholder meeting

Community values and wellbeing

The Southland community places a high value on the contribution of NZAS since it was established 50 years ago. NZAS is considered to be the backbone of the manufacturing industry of the Southland region. The potential closure of NZAS in 2024 may lead to:

- Loss of the manufacturing economic identity and a sense of pride in hosting a world class industry/employer for the community.
- Limiting career pathways for young people in the region aspiring to join the manufacturing industry, pursue technical studies and for multi-generational families who work at NZAS.
- Population decline as a result of out-migration, and the potential for young people to not return to the region, is likely to disrupt some community and family ties and networks.
- Financial and emotional stress due to unemployment may result in increased antisocial behaviour such as increase in riskier health behaviour and higher crime rates.
- Loss of employment opportunities for people with intellectual and physical disabilities engaged as contractors at NZAS through businesses like Southland DisAbility Enterprises Limited.

“Closure would not be as traumatic as would have occurred last year as planned. However, there will still be issues in the community associated with lack of employment because Tiwai has a wide-reaching arc across our community.”

- SEIA 2021 consultation stakeholder meeting

Impacts to Iwi culture and wellbeing

NZAS has a strong relationship with the Ngāi Tahu organisations and representatives in the Southland region and Tiwai Peninsula, not only for cultural heritage management and resource consents, but also to increase cultural awareness of NZAS staff and enhance relationships across the business.

Potential closure of NZAS in 2024 and the demolition of site infrastructure may lead to:

- Potential disturbance of the ground at NZAS by closure and decommissioning activities. Any potential disturbance of cultural heritage sites would be managed according to the process outlined in the Cultural Heritage Management System Plan, which includes consultation with Iwi and other stakeholders.
- The out-migration of Māori workers and their families from the region due to limited employment opportunities following NZAS closure, causing disruption to Māori family and community networks (including loss of local leaders) and disconnection from the ‘whenua’ (land) and culture.

Looking forward

NZAS will continue to work collaboratively with communities and stakeholders in Southland to inform planning for closure and develop suitable strategies to manage potential impacts.





Socio-Economic Impact Assessment

New Zealand's Aluminium Smelter Closure 2021

New Zealand's Aluminium Smelter Limited

8 December 2021

→ **The Power of Commitment**



GHD





145 Ann Street, Brisbane City

Brisbane, QLD 4000, Australia

T 61 7 3316 3000 | F 61 7 3316 3333 | E bnemail@ghd.com | ghd.com

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List of abbreviations

Table 1.1 List of abbreviations

Abbreviation	Definition
FENZ	Fire and Emergency NZ
MW	megawatts
NZAS	New Zealand's Aluminium Smelter Limited
PS	Preliminary Study
Rio Tinto	Rio Tinto New Zealand Limited
SDE	Southland DisAbility Enterprises
SEIA	Social and Economic Impact Assessment
SGHS	Southland Girls' High School
SIT	Southland Institute of Technology

1 Introduction

1.1 Background

New Zealand's Aluminium Smelter Limited (NZAS) is a joint venture company owned by Rio Tinto New Zealand Limited (Rio Tinto) and Sumitomo Chemical Company of Japan. NZAS operates New Zealand's only aluminium smelter at Tiwai Point, located 25 kilometres from Invercargill and across Bluff Harbour from the township of Bluff, in the Southland region of New Zealand (Figure 1.1).

NZAS began operating 50 years ago in 1971 and produces low carbon metal, a small percentage of which is ultra-high purity aluminium. The smelter operates 24 hours a day, seven days a week, smelting and casting primary aluminium and its alloys in the form of ingot, billet, rolling block and t-bar.

NZAS is the largest single user of electricity in New Zealand. When it is operating the Potline Line 4 it uses up to 622 megawatts (MW) per year (Rio Tinto, 2019), and without Line 4 it uses 572 MW per year. To put this energy use into context, it is a similar amount to the electricity used by all the residential households in Auckland. NZAS is powered by hydro-electricity from Manapōuri Power Station, which means it has one of the lowest carbon footprints per tonne of aluminium in the world.

In October 2019, Rio Tinto announced a Strategic Review of NZAS, in response to the high costs of energy and transmission NZAS faces in a challenging aluminium market. As part of this process and to inform the Strategic Review, Rio Tinto commissioned GHD to undertake a Social and Economic Impact Assessment (SEIA) in 2020 (referred to hereafter as SEIA 2020). The study assessed the socio-economic contributions of the smelter's operations and potential impacts of its closure on nearby communities and the Southland region, and identified potential impact mitigation initiatives.

In January 2021, Rio Tinto announced that a new electricity supply agreement with Meridian Energy had been reached and that, as a result, operations at NZAS were extended by four years to the end of 2024. This announcement now provides a lead time of around four years until cessation of NZAS operations.

1.2 Study details and purpose of the report

In line with international best practice (*Integrated Mine Closure: Good Practice Guide* [ICMM, 2019]) and Rio Tinto's standards for closure and communities and social performance (*Rio Tinto Closure Standard* (Rio Tinto 2015a), *Rio Tinto Communities and Social Performance Standard* [Rio Tinto, 2015b]), Rio Tinto is currently undertaking a Preliminary Study (PS). Rio Tinto is currently undertaking a Preliminary Study (PS). This SEIA has been prepared by GHD as part of the PS. The study is underpinned by the following assumptions:

- Potential cessation of NZAS operations at the end of 2024.
- There would be a ramp-down of operational activities prior to closure at the end of 2024.
- Post closure activities such as decommissioning, demolition and rehabilitation/repurposing activities would occur over a period of five to 10 years or more after closure.

The objectives of this SEIA were to:

- Re-engage with the stakeholders who were consulted to inform SEIA 2020 to provide them with the outcomes of that study and discuss impacts of potential closure of NZAS in 2024.
- Update SEIA 2020 where relevant, including the baseline, impact assessment and management initiatives, in light of potential closure in 2024.

This report therefore builds on SEIA 2020 and documents the outcomes of the SEIA process undertaken in 2021 (referred to as SEIA 2021). As the SEIA 2021 is part of a suite of technical studies to inform the closure planning process, it is recognised that the findings of this study will be considered in conjunction with those of the PS to inform NZAS closure planning.

1.3 Outline of report

This social and economic impact assessment report is presented in five sections as follows:

- Section 1 – provides an introduction to the SEIA study.
- Section 2 – outlines the methodology followed to prepare the social impact assessment.
- Section 3 – presents the findings of stakeholder consultation undertaken as part of the 2021 SEIA.
- Section 4 – presents the social and economic profile of the study area.
- Section 5 – documents the social and economic impacts of the potential closure of NZAS.
- Section 6 – presents a possible impact management and legacy planning considerations.
- Section 7 – provides broad conclusions.

1.4 Scope and limitations

This report has been prepared by GHD for New Zealand's Aluminium Smelters Limited and may only be used and relied on by New Zealand's Aluminium Smelters Limited for the purpose agreed between GHD and New Zealand's Aluminium Smelters Limited as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than New Zealand's Aluminium Smelters Limited arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer sections 1.2 and 2 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Other limitations include:

- The study relies on the data sets available at the time of undertaking the work May - July 2021 and relies on the findings of SEIA 2020.
- The SEIA study, including stakeholder consultation, is based on the concept of closure in 2024. No specific data and information except year of closure were available at the time of preparation of the study.
- One-on-one stakeholder meetings were conducted via teleconferencing facilities due to COVID-19 international travel restrictions. GHD acknowledges that telephone consultation is not ideal when discussing sensitive topics associated with the closure of an industry and its impacts on people and communities.
- Consultation with some stakeholders could not be undertaken due to their unavailability to participate in SEIA consultation in 2020 and/or 2021.
- Economic modelling was not undertaken for SEIA 2021, and the study relies on the economic data and input-output modelling outcomes of SEIA 2020. This approach was considered suitable because input data for the economic modelling remained unchanged between the two studies.
- The SEIA is reflective of social conditions in the study area at the time when the social baseline was developed and empirical information was collected via SEIA stakeholder consultations (in 2020 and 2021). It is acknowledged that the predicted social impacts and their assessment may change prior to 2024 with changes in the socio-economic and political context, stakeholder perceptions and as more information about closure planning is known.



Figure 1.1 Location of NZAS

2 Methodology

2.1 Overview

The methodology adopted to prepare the SEIA was developed based on the best practice methodologies and requirements established by relevant standards, policies and guidelines, including:

- Rio Tinto Closure Standard (Rio Tinto 2015a)
- Rio Tinto Closure Study Definition Guidance Note (Rio Tinto 2018)
- Rio Tinto Communities and Social Performance Standard Rio Tinto (Rio Tinto 2015b)
- Integrated Mine Closure: Good practice Guide (ICMM 2019)
- International Principles for Social Impact Assessment 2003 (Vanclay 2003)
- Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects (Vanclay et al. 2015).

Overall, the SEIA retains methodological compatibility with the SEIA 2020 prepared by GHD. Table 2.1 presents a summary of the methodology undertaken to inform the SEIA 2021. A detailed description of the methodology is provided in Section 2.5 of Appendix A, with a detailed description of the stakeholder consultation provided in section 2.2 below.

Table 2.1 Summary of 2021 SEIA methodology

Task	Summary
Study area	The study area for the SEIA 2021 includes the communities located near NZAS and those which have ongoing interactions with NZAS. This includes the Southland region, and three Territorial Authorities of Invercargill City, Gore District, Southland District. Invercargill forms the focal point of the study area, being the regional centre closest to NZAS and host to majority of its workforce and supporting businesses.
Review of literature	A literature review of relevant data was undertaken to inform SEIA 2020. Additional documents reviewed as part of SEIA 2021 include: <ul style="list-style-type: none"> – Regional development agency reports on the impact of COVID-19 – Media releases on NZAS operations (i.e. revised announced, environmental management). – This literature review informed the development of the socio-economic baseline and impact assessment.
Stakeholder consultation	The SEIA 2021 re-engaged with government agencies, service providers and organisations and selected business stakeholders who participated in the 2020 consultation. The SEIA 2021 also extended the coverage of the data collection by conducting a business survey. Further information about the 2021 stakeholder consultation activities is provided in section 2.2.
Economic input-output modelling Dependency mapping Population modelling	The SEIA 2021 draws upon the findings of input-output modelling, dependency analysis and population modelling undertaken as part of the SEIA 2020. No revised assessment of this modelling has been undertaken as part of the SEIA 2021. This approach was considered appropriate because the input data for the modelling remained unchanged between the two studies.

Task	Summary
Impact assessment	<p>The SEIA 2021 has adopted the impact rating tool used in the SEIA 2020 to determine the significance of identified impacts.</p> <p>As the SEIA 2021 was undertaken as part of the PS, the identification and assessment of impacts is based on the idea/concept of closure in 2024. This concept assumes ramping down of operational activities in the one to two years prior to closure in 2024 and loss of all NZAS related activities post closure.</p> <p>As described in Section 1.2, activities related to closure such as decommissioning, demolition, rehabilitation and monitoring are expected to occur over a period of approximately five to 10 years or more after 2024. Social and economic impacts during decommissioning, demolition, rehabilitation and monitoring are not considered in the SEIA 2021. High-level qualitative references to potential impacts during the post-closure phase are discussed where relevant.</p> <p>To capture the social and economic impacts appropriately, GHD adopted relevant International Principles for Social Impact Assessment developed by the International Association for Impact Assessment (Vanclay et al. 2015), including the 'precautionary' and 'uncertainty' principles when predicting social and economic impacts. This means that even though some impacts have not been fully confirmed, they were still considered as part of the assessment.</p> <p>The SEIA is reflective of social conditions in the study area at the time when the social baseline was developed and empirical information was collected via SEIA stakeholder consultations (in 2020 and 2021). It is acknowledged that the predicted social impacts and their assessment may change with changes in the socio-economic and political context, changes in stakeholder perceptions and as more information about closure planning is known.</p>
Mitigation management	Impact management considerations have been supplemented with the findings of stakeholder consultation undertaken for this SEIA, along with the outcomes of a workshop undertaken with the Rio Tinto/NZAS team on 1 June 2021.

2.2 Stakeholder consultation

In line with leading practice and the requirements of Rio Tinto's standards, stakeholder consultation was integrated into the SEIA 2021 process. The objectives of stakeholder engagement were to:

- Re-engage with NZAS stakeholders who were consulted for SEIA 2020 share findings from the 2020 SEIA.
- Provide an overview of NZAS' potential closure in 2024
- Discuss any gaps in our knowledge or understanding of the baseline conditions and impacts of closure of NZAS in 2024.
- Identify any further areas to consider in management initiatives and input into the closure planning process.

Consultation was undertaken using the following methods:

- One-on-one meetings via telephone and video conferencing with government agencies, service providers and organisations and selected businesses who participated in an interview in 2020.
- All Southland region-based businesses contracted to NZAS were offered the opportunity to be consulted via an online survey.

These consultation activities were determined as the most effective way in which to meaningfully engage and gain genuine input into the SEIA 2021 process. These activities are described in detail below.

2.2.1 One-on-one meetings

SEIA 2021 stakeholder consultation was undertaken from 18 May to 18 June 2021. A total of 29 one-on-one meetings were held via teleconferencing facilities. Eight (8) stakeholders consulted in 2020 declined to participate in the SEIA 2021 consultation or did not respond to the invitation for participation. Table 2.2 outlines the stakeholders consulted for the SEIA in 2020 and their participation in 2021.

Table 2.2 Stakeholders consulted for SEIA 2020 and 2021

Category	Organisation	Consulted in 2020	Consulted in 2021
Regional Council	Environment Southland	X	X
Territorial Authorities	Invercargill City Council	X	X
	Bluff Community Board (Invercargill City Council)	X	X
Regional development agencies	Great South	X	X
Government department	Department of Conservation	X	Contacted but not available to participate
New Zealand Government representatives	Invercargill Member of Parliament	X	X
	Invercargill Labour Party List Member of Parliament	X	X
Iwi	Te Ao Marama	X	Contacted but not available to participate
Local businesses	Southland Disability Enterprises	X	X
	Sheet Metalcraft	X	Contacted but not available to participate
	Corys Electrical	X	Contacted but not available to participate
	HW Richardson Group	X	X
	EIS	X	X
	Enterprise Recruitment	X	X
	South Coast Security	X	X
	E-Type Engineering	X	Contacted but not available to participate
	H & J Smith – Department store in Invercargill	X	X
	Harcourts Real Estate	X	X
	Invercargill Licensing Trust	X	Contacted but not available to participate
	Elles Road New World	X	X
	Otago Southland Employers Association	X	Contacted but not available to participate
	Inalco	X	X
	NZ Safety Blackwoods	X	Contacted but not available to participate
ANZ Bank – Invercargill branch	Contacted but not available to participate	X	

Category	Organisation	Consulted in 2020	Consulted in 2021
Community service providers	Fire and Emergency New Zealand – Southland District	X	X
	New Zealand Police – Southern District	X	X
	Southland Girls' High School	X	X
	Southern Institute of Technology	X	X
	Southern Group Training Trust	X	X
	Southern District Health Board	Contacted but not available to participate	Contacted but not available to participate
	WellSouth	Contacted but not available to participate	Not contacted due to
Business chamber	Southland Chamber of Commerce	X	X
Regional infrastructure and utilities	South Port	X	X
	Invercargill Airport	X	X
	PowerNet	X	X
NZAS employees (x 4)	NZAS	X	X

2.2.2 Business survey

Businesses identified as key suppliers to NZAS and located within Southland region (32 in total) were invited to participate in a voluntary survey for SEIA 2021. The purpose of the survey was to allow for an inclusive engagement process and a genuine deep dive into potential impacts to businesses resulting from NZAS closure.

The survey was hosted online with notification to stakeholders provided through email communication by the NZAS project team. This was followed by the distribution of a link to the survey by an email from GHD.

The survey period was from 12 May to 2 June 2021. A total of 27 responses were collected. Survey questions related to the following topics:

- type of services and products provided to NZAS
- proportion of business revenue from NZAS
- employee numbers
- concerns and issues associated with closure
- level of dependency on NZAS
- outcome of the business as a result of closure
- suggested measures to manage impacts of closure.

The survey questionnaire and results are provided in Appendix B. Outcomes of the survey are referenced in relevant sections of the report.

3 Consultation findings

This section presents the findings of stakeholder consultation primarily undertaken as part of the 2021 SEIA. The SEIA conversation during the 2021 SEIA consultation was built on the SEIA 2020 consultation. Also some stakeholders such as the local Iwi were not available to participate in the SEIA 2021 consultation, therefore where relevant outcomes of the SEIA 2020 consultation are incorporated to inform the study.

The findings are reported according to overarching themes that emerged during both one-on-one stakeholder meetings and the results of the business survey. These themes relate to economic, cultural, social and environmental dimensions of perceived impacts and opportunities associated with the cessation of NZAS operations in 2024. Consultation also revealed stakeholder sentiments about extension of the power agreement and revised closure timeframe.

3.1 Stakeholder meeting outcomes

3.1.1 Response to revised closure announcement

Relief and improved opportunity to plan: All stakeholders interviewed strongly felt the extension of the power purchase agreement and closure of the smelter to 2024 had brought a sense of *'relief'* to the Southland community. Many noted the revised timeframe would provide employees, businesses and the broader community better opportunity to prepare and plan for social and economic transition as NZAS moves from operations to closure.

Frustration and anger at negotiation process: Accompanying this sense of relief however, some stakeholders reported less positive sentiment including:

- A sense of frustration and anger regarding the perceived cycle of *'brinkmanship'* tactics used by Rio Tinto in power negotiations (i.e. pushing government to agree to a set of conditions or lose the deal entirely) and ongoing uncertainty for the community regarding the closure of Tiwai.
- A sense of cynicism towards NZAS and Rio Tinto that *'they have done it again'* (i.e. delayed closure) and were left to be the *'bystanders'* to a negotiation that was determining their future:

'A lot of social licence was lost during the most recent negotiation. People saw it as a big multi-national playing hardball.'

Uncertainty around closure: There remained clear uncertainty among stakeholders about whether NZAS will in fact close in 2024. Some considered that recent changes in NZAS leadership sends a strong message that this time closure is real and that it marks the beginning of the loss of skilled workforce from the region. Others expressed disbelief that NZAS would in fact close given previous similar negotiations in the past: *'We will believe it when see it.'* *'There's a sense of complacency... NZAS has cried wolf at least three times before.'*

Do not support closure: Despite the extended negotiation process, the strong underlying positive sentiment of Tiwai being the *'identity of the community'*, an *'integral part of the fabric of the community'* and the *'foundation of the economy of the region'* remains. There is a strong sense of hope that Tiwai would/should continue to operate, and its closure *'would be a huge loss to the region'*. Many stakeholders do not support closure and do not understand why NZAS would close given it uses clean energy, produces the world's purest aluminium, and is currently operating at a profit with the high price of aluminium. When asked for any final comments, several interviewees concluded simply by stating *'don't do it'* (i.e., close the smelter).

3.1.2 Impacts to local and regional employment

Job loss: Stakeholders expressed concern there will be a loss of a large number of local jobs, including direct employees and contractors at NZAS, as well as indirect jobs, such as employees of businesses that provide goods and services to NZAS if these businesses downsize or close. Stakeholders also raised concern that job losses would impact negatively on individuals and community members in terms of both income loss and mental health and wellbeing, particularly if there is little support to help people find new work in the region. Concerns were also raised about the potential for job losses to result in higher unemployment rates and increased welfare dependency in the region.

Loss of skilled workers: Feedback from stakeholders indicated that over the last 12-18 months, there has been a visible loss of skilled workers from NZAS as they have taken up opportunities offering 'career longevity' elsewhere. While some NZAS workers were reported to have taken up employment in the region, most were reported to have left the region.

Increase in contractor workforce: Some stakeholders suggested the loss of long-term permanent employment opportunities at Tiwai is discouraging people from applying at NZAS, and there has been an evident increase in the use of a contractor workforce. The increase in contractor workforce was seen as a challenge for the smelter in terms of maintaining worker safety and knowledge retention. Some stakeholders think while this 'employment churn' has stabilised for now following the power agreement extension, it could pick up again 12-18 months prior to closure, as younger workers start to take on suitable employment opportunities elsewhere.

Impacts to employee morale: Ongoing uncertainty around employment and the upcoming closure was cited as currently impacting employee morale at NZAS.

Lack of alternative industries to absorb employees: Nearly every stakeholder stated there is no single alternative industry that could absorb the volume of NZAS employees in Invercargill. It was noted that the alternative industries being considered by organisations like Great South such as aquaculture industry around Stewart Island, production of hydrogen using green electricity, development of a data centre, and production of batteries would only require a short-term workforce for construction and a small long-term operations workforce, while there is also a mismatch in the high technical skills between those of current Tiwai employees and the mostly manual labour type skills likely needed by proposed alternative industries. The higher than average salaries earned by NZAS employees in comparison to the region was cited as a further factor potentially limiting their ability/willingness to find comparable employment in the region.

3.1.3 Regional economic development

Reduction in the regional economy: Feedback from stakeholders also focused on the reduction in the regional economy that would result from the closure of NZAS operations and associated reduction in income stream in the community. Some stakeholders felt that the indirect and flow-on impacts to the economy, particularly the purchasing of goods and services from local businesses and potential for these businesses to close, may be far greater than the direct impacts associated with employment loss.

Changes to regional spending: A loss of employment and associated salary paid by NZAS (and potentially some of their suppliers) was cited as likely to cause changes to household incomes and may cause personal and household economic hardship, particularly for those accustomed to a lifestyle associated with high-income salary.

Future regional development opportunities: There was discussion about the development of other industries that have potential to build resilience in the regional economy. The same opportunities were mentioned in 2021 as in 2020, such as aquaculture, data storage centres, and hydrogen. However, nearly all stakeholders agreed that none of these alternative industries could provide a 'silver bullet' to replace the economic contribution of NZAS in the Southland region and the solution was more likely to come from the development of several smaller industries. According to one NZAS employee: *'To date, the discussion has been focused on finding an alternative to the smelter, rather than a complementary to the smelter'*.

Lack of collaboration in progressing alternative industries: Stakeholders acknowledged there has been limited progress in advancing other industries in the region. There was a lack of clarity amongst stakeholders about who should be leading economic diversification of the region. Many stakeholders felt while it was not the role of NZAS to lead the discussion on ‘what comes next’ for the region’s economy, they saw NZAS as a key partner who could play a facilitative role in empowering the community to have that discussion and decide their own future.

3.1.4 Local and regional population

Population decline: Consistent with SEIA consultation in 2020, stakeholders believe there will be a decline in the number of permanent residents in the region as a result of NZAS closure. However, this population loss was perceived being more likely to occur gradually and over a longer-time frame (i.e., 3-4 years), in contrast to what may have occurred through an abrupt closure in 2020.

According to stakeholders, the upcoming closure will likely see middle-aged NZAS employees and their families leave the region prior to closure as they search for secure opportunities offering career longevity elsewhere. Coupled with a likely high turnover from those nearing retirement, the resulting employee vacuum was described as likely to be filled with temporary contractors and a younger, more mobile working demographic.

Stakeholders felt that upon closure, remaining employees who are unable to find alternative employment in the region would likely pursue other employment and/or income generating opportunities elsewhere, although most would wish to remain in the region. Some stakeholders drew comparison to the population loss that occurred from the closure of the Ocean Beach Freezing Works in Bluff during the early 90s but noted a similar impact in Invercargill would be less pronounced given the diversified economy and larger population base.

Loss of high-income earning population: The loss of high-income earning employees from NZAS was also cited as a key concern for stakeholders, particularly businesses, given a reduction in this population will lead to reduced consumption spending and investment in long-term assets such as houses in the region.

3.1.5 Business and procurement

Improved engagement: Overall, businesses seemed to be more resilient and open to engage in a conversation regarding closure of NZAS than witnessed in the 2020 SEIA consultation. However, two (2) businesses consulted in 2020 declined to participate in the SEIA consultation in 2021 for reasons they could not reveal to GHD.

NZAS dependency NZAS and business resilience: Similar to 2020 SEIA consultation, stakeholders expressed sentiment that businesses who are particularly dependent on providing goods and services to NZAS operations may struggle to extend work beyond being a supplier to NZAS and operate profitably post-closure.

Post-closure opportunities: Several business representatives highlighted there would be opportunities to continue to provide goods and services to NZAS during the post-closure phase. However, whether local and regional businesses can take advantage of these opportunities was seen as largely dependent on the extent to which NZAS provided advance notice of closure planning activities and requirements.

3.1.6 Impacts on community wellbeing and values

In contrast to 2020 consultation, there was greater discussion by stakeholders about potential changes in community health and wellbeing that could result from potential smelter closure. Underlying this discussion was recognition the COVID-19 pandemic has exacerbated existing health and wellbeing challenges within the Southland community. Stakeholders identified the following wellbeing impacts that may result from NZAS closure:

- An increase in mental health issues associated with a loss of employment.
- An increase in household stress, family social problems, alcohol and drug abuse, and crime in the community as a result of increase in unemployment and overall economic decline.
- A decline in community volunteers and services that are supported by volunteers due to loss of NZAS employees.
- A decline in and closure of sports and recreational clubs in town due to population loss and a decline in volunteers, leading to further depletion of community networks and emotional ties.

- The Staff Medical Assistance Scheme provided by NZAS for workers and their families will be lost, which means people will not be able to afford access to health care and these services in town may close.

Many stakeholders also discussed potential changes to the identity of Invercargill and Bluff given that NZAS is central to the industrial and manufacturing character of these communities and they are known for producing the world's purest aluminium.

3.1.7 Cultural / Indigenous community

The local Iwi were not available to meet with GHD during the time SEIA 2021 was being prepared. Key outcomes from the SEIA 2020 consultation are summarised below:

- NZAS has a close relationship with the Iwi for environmental management issues as well as good stakeholder relations.
- There are a range of cultural heritage places mapped at Tiwai Peninsula.
- Several members of the Iwi work at the smelter. If the smelter closed, some people may move away from Southland communities.
- The smelter supports many jobs and businesses, as well as families of employees and contractors.

During SEIA consultation 2021, other stakeholders considered the main concern for the Iwi (from their own engagement with Iwi members) related to the impact on the environment regarding the waste on site.

3.1.8 Environmental management

Some change in community perceptions about NZAS: Some stakeholders described there being a much more positive attitude coming from the NZAS and Rio Tinto leadership regarding management of the peninsula location and waste products (e.g. ouvea), which was not seen 18 months ago. This has reportedly given some stakeholders renewed confidence that NZAS/Rio Tinto will 'do the right thing' and not leave the community with a negative environmental legacy. Others, however, cited they were 'cautious' of the new announcements regarding improved environmental management and would 'wait to see if words are followed with action'.

Improved transparency: Some stakeholders also noted there has been an increase in transparency around the remediation process.

3.1.9 Community services

Reduced demand and associated funding: The potential decline in population following NZAS closure in 2024 was mentioned by some stakeholders as likely to result in a reduction in demand for schools, vocational education (e.g. SIT), health services, and other services that are based on population numbers.

3.1.10 Local housing and accommodation

Resilience of housing market: Stakeholders indicated the resilience of the property market through the COVID-19 pandemic has generated a sense of optimism in the region. There was suggestion that the Invercargill housing market was currently experiencing strong demand for housing, particularly from first home buyers, however there had been a slowing in demand from investors. This was attributed to financial policy changes recently introduced by the New Zealand Government, such as mortgage restrictions and property tax reform, rather than the potential closure of NZAS in 2024. A shortage of rental stock and strong demand was also noted as increasing rental prices in the region over the past six months.

Uncertainty around housing market outlook: No conclusive impressions were gathered through the SEIA 2021 consultation about the impacts of NZAS closure on the housing market. Some stakeholders considered there would be a fall in real estate prices in Invercargill following NZAS closure in 2024 due to population outmigration and associated weakened demand. Others indicated potential impacts to local housing dynamics would be more complex and moderated by other influencing factors, such as interest rates and the return of international migration.

3.1.11 Connectivity

Stakeholders suggested there could also be indirect effects on other businesses through reduced access to vital transport links. A reduction or cessation of contributions port infrastructure, maintenance of roads and other transport infrastructure from NZAS was also perceived as potentially affect access to inputs, stock and markets.

3.1.12 Opportunities to leave a positive legacy

Compared to discussion in 2020, there was increased attention by stakeholders on how positive legacies could be planned and achieved in the renewed timeframe for closure. As summarised by one stakeholder, 'now there is actually time to think and get [closure] right'.

While responses were generally consistent to those received in 2020, there was greater emphasis on the potential for NZAS to help facilitate planning for the economic future of the Southland region. There was also recognition that investments from NZAS should focus on initiatives that build the capacity of the Southland community to meet their own socio-economic needs into the future, rather than contributions to physical infrastructure and assets that may be difficult to sustain without the smelter's involvement.

Further, there was strong support of the current use of the mayoral forum (4 key councils/regulators) as being a key source for information dissemination and ongoing collaboration between NZAS and the community with respect to the closure planning process.

Other suggestions are summarised below:

Support ongoing economic development

- Support programmes for upskilling/retraining of existing smelter workforce to retain experience and build capacity in the region.
- Provide financial assistance towards training and education scholarships in partnership with schools or other education stakeholders. Explore opportunities to continue support with the education partnership programme.
- Provide financial assistance towards the development of an engineering centre at the SIT in partnership with government.
- Invest in research and development programmes to support establishment and growth of other industries in the region.
- Support people to develop sustainable business enterprise in the region through providing funding for business or tech start-ups, or small business management training.
- Explore options to reuse the site for another industry.
- Facilitate a community visioning exercise, both for the future use of the site and future direction of the regional economy. Consider using the mayoral forum to engage communities in a participatory and collaborative way on these issues.
- Explore opportunities to support electricity re-distribution in partnership with utility providers and government.
- Provide early information on opportunities for local businesses through the demolition and rehabilitation phase.

Contribute to stronger communities

- Celebrate the positive contribution of the smelter to Southland's identity and economy by creating memorabilia for the community, such as a film about the smelter, a coffee table book and or museum/mural exhibit to tell the story of the smelter and aluminium.
- Work with established community organisations to support and extend existing community development programs, particularly mental health and family support services, through strategic funding or a trust.
- Investigate opportunities to use redundant physical assets at the smelter for purposes valued by the Southland community and Iwi, such as a training centre.

Protect the land and environment

- Promote a positive environmental legacy by managing the current waste issue and undertake appropriate site rehabilitation and restoration as per legislative requirements and community aspirations.

3.2 Business survey outcomes

As part of the 2021 SEIA, GHD conducted an online survey of all businesses contracted to NZAS within the Southland region. Businesses were invited to participate as per the methodology described in section 2.2.2.

The survey achieved a response rate of 79% (27 businesses). Of those businesses surveyed:

- 96.3% are located in Invercargill and 3.7% are in Southland District. No responses were received from businesses located in Gore District.
- 92.6% had been in operation for over 10 years.
- 37.0% had 1-10 full time direct employees; 48.1% had between 11-30 full time direct employees.
- 33.3% provide supplies and product services to NZAS; 25.9% provide engineering services.
- 55.6% had employees that identified as Māori.

The sections below summarise key findings from the survey.

3.2.1 Reliance of businesses on NZAS and long-term viability

Several questions in the survey sought to understand the reliance of businesses on NZAS and viability of businesses after asset closure. Key findings are summarised below:

- Approximately 29.5% of businesses (8 respondents) indicated their company was established primarily to provide goods and services to NZAS.
- Several businesses indicated they derive a relatively high percentage of revenue from NZAS. Specifically:
 - 37% of businesses (10 respondents) reported having a high dependency on NZAS with over 50% of their revenue derived directly from NZAS; 19% of businesses (five respondents) reported 26-50% of revenue comes from NZAS; and 44% of businesses (12 respondents) reported they receive less than 25% of their revenue from NZAS.
- Of those businesses with 51% or more of their revenue coming from NZAS, four businesses identified they would not be able to operate in the future without assistance from NZAS. Of these businesses, only one was not established specifically to service NZAS, indicating the other three businesses have not diversified beyond this original purpose.
- Two other businesses also indicated their business would not be able to operate despite less than 50% of their revenue coming from NZAS.
- Concerning the impact of NZAS closure on the business:
 - Most respondents (70.4%, 20 businesses) indicated their business may diminish but would continue to operate in Southland region; 11.1% of respondents (3 businesses) indicated their business would close; 11.1% of respondents (3 businesses) indicated they may relocate outside of Southland region; and 3.70% of respondents (1 business) indicated the business will operate as usual because of other clients.
- Concerning the impact of NZAS closure on employees of the business:
 - Most businesses (59.3%, 16 respondents) indicated some employees will lose their jobs, while 25.9% of businesses (7 respondents) indicated all employees will continue to work with the business. No businesses indicated that all employees at the business would lose their jobs.

It is clear there was inconsistency in responses to questions concerning revenue reliance on NZAS and viability of the business after closure. This may reduce survey reliability to some extent. However, relatively consistent responses were received from three businesses across the survey regarding the perceived closure of their business as a result of the cessation of NZAS operations. These businesses should be the focus of targeted engagement moving forward. These businesses are not able to be identified here for confidentiality purposes.

3.2.2 Planning for closure

All businesses who responded indicated they were aware of the revised 2024 NZAS closure timeframe, however only 13 businesses had started to plan for the future of the business after the closure of NZAS.

Of the ten businesses with a high direct dependency on NZAS (i.e., more than 50% of revenue derived from NZAS), only three indicated they had started to plan for the future. Specific actions identified as being undertaken by these businesses include: seeking work outside of NZAS, exploring options to relocate team members within the company, and taking steps to grow the customer base.

Other businesses described similar actions, as well as undertaking steps to:

- Adjust staff numbers or combine with other offices in NZ.
- Develop new clients both within and/or outside of the Southland region.
- Explore new industries, markets and revenue sources beyond NZAS.

3.2.3 Required information

When asked what information businesses need from NZAS to better plan for the future after closure, most participants (11 responses) requested advanced notification of the specific closure timeframes to assist business planning.

'Confirmation of closure dates well in advance'

'Something definite as to what is happening and when'

'Maximum lead time to make decisions that will greatly effect us'

Other participants (6 responses) identified the need for information on the nature of contract arrangements continuing with NZAS before closure, such as confirmation of ordering requirements and the provision of lead timeframes.

'Many raw materials are ordered well in advance - unexplained movement in contracted amounts not only can cause havoc with our delivery, but also the financial viability, given that we have always aimed to keep margins low and ordering in bulk to offer NZAS the best possible pricing models.'

There were also requests (4 responses) for assistance with understanding other opportunities in the region for their business and more information on potential decommissioning and remediation opportunities associated with the closure process.

Several participants (3 responses) reported a high level of satisfaction with the current transparency of communication and information sharing from NZAS on the closure process.

4 Socio-economic baseline summary

This section provides a summary of the socio-economic characteristics of the communities connected to NZAS and identifies changes since the 2020 SEIA based on the results of consultation and desktop data review. Reviewing these socio-economic trends is intended to assist Rio Tinto's ongoing understanding of the social and community context in which NZAS operates. Refer to Appendix C for the full baseline report prepared in 2020.

Key findings of the socio-economic baseline are outlined below:

- Southlanders enjoy a predominantly rural and affordable lifestyle, with access to stable employment opportunities, and feel a strong connection to the region and the community.
- Invercargill hosts around half of the region's population and most of the regional services and infrastructure. Invercargill City is more culturally diverse than other parts of the region, including a higher proportion of Māori residents compared to the national average, with most based in Bluff.
- Like many regional areas, Southland's population is projected to decline, and the region has an older age profile compared to New Zealand as a whole. Stakeholder SEIA 2021 consultation indicates that young people often leave the region for further education and employment opportunities.
- While the region overall has lower levels of educational attainment, there are higher proportions of students who study at the Southern Institute of Technology and Polytechnic, which is reflective of the strong tertiary education opportunities available in the region.
- Southland region is primarily an agricultural region, with a solid manufacturing industry which is underpinned by NZAS and dairy and meat processing. These industries have performed strongly through the COVID-19 pandemic.
- The region has generally had lower unemployment rates compared to the national average, while income levels are generally consistent with New Zealand throughout the region. The region has a high number of people employed as labourers, and together with the region's lower educational attainment rates, the region has a large proportion of unskilled workforce, particularly in the manufacturing industry.
- NZAS contributes to the region and particularly Invercargill through direct community contributions to community infrastructure and organisations, and indirectly through its workforce and families who access regional infrastructure and are members of organisations. NZAS also supports vulnerable community members through its contract with Southland Disability Enterprises.

4.1 Demographics

Table 4.1 Summary of demographic indicators

Population	<ul style="list-style-type: none"> – In 2018, the population of the Southland region was 97,467 people. – Approximately half of the population living in Invercargill City (54,204 people), around a third living in Southland District (30,864 people) and the remainder in Gore District (12,396 people).
Population change	<ul style="list-style-type: none"> – Between 2013 and 2018, the Southland region population increased by 4,128 persons (4%). – Population change during this period in the Southland region was lower than the national average growth rate of 11%. – Invercargill City and Gore District also experienced population growth at 5% and 3%, respectively.
Māori population	<ul style="list-style-type: none"> – The Māori population of Invercargill is the highest in the study area (17.4%), which is slightly higher than the New Zealand average (16.5%). – Both Gore District and Southland District have lower proportions of Māori population compared to the regional and national average at 12.9% and 11.1%, respectively.
Sex profile	<ul style="list-style-type: none"> – The Southland region has a relatively balanced sex ratio at 99.9 males per 100 females. – While there are more males than females in Southland region aged between 15 and 24 years, the proportions of males and females aged between 25 and 64 years is similar.
Age profile	<ul style="list-style-type: none"> – The Southland region characterised by an increasingly ageing population. – Between 2006 to 2018, most age groups between 0 to 44 years decreased. This was accompanied by an overall increase in the population aged over 50 years. – This trend is also reflected in the change in median age for Southland region from 38 years to 40 years between 2006 and 2013, where it has since remained consistent. In contrast, Southland the median age of New Zealand in 2018 was 37 years.
Projected population growth	<ul style="list-style-type: none"> – The population of the Southland region is projected to remain relatively static between 2018 and 2043, with only a slight negative change in population forecasted (-0.2%). Gore District is projected to experience the greatest rate of decline from 2028 (-8.4%). – A decline in population across the study area is largely attributed to the rate of deaths and departures exceeding births and arrivals (Stats NZ, 2021a). – Anecdotal evidence indicates young residents tend to leave the region for greater diversity in education and employment opportunities, but overall have a strong connection with the region and a desire to return to 'settle down' (SEIA Consultation 2021). – There is potential for COVID-19 to change previous population forecasts for the Southland region. For example, estimates of the Southland region population for June 2019/2020 showed the region experienced positive population growth (1.1%) due to gains from net internal migration. Other research (Infometrics, 2021) also suggests regional population growth and internal migration is expected to be strong at least to 2025 due to ongoing economic growth. – Achieving population growth is a key goal of the Southland Regional Development Strategy policy (SoRDS, 2015).
Cultural diversity	<ul style="list-style-type: none"> – The study area is culturally homogenous, with the largest proportions of the population being of European descent, born in New Zealand and English speaking. – Compared to other locations in the study area, Invercargill has the most ethnic diversity, with a quarter of the population identifying as being from non-European origins.
Household size	<ul style="list-style-type: none"> – The study area has lower household sizes on average compared to New Zealand as a whole. – In 2018, the average household size was 2.4 people across the study area except for Southland District, which had an average household size of 2.5 people. – Overall, there are more family households than non-family households across the study areas compared to New Zealand as a whole.

4.2 Economy

Table 4.2 Summary of economic indicators

Regional GDP	<ul style="list-style-type: none"> – In 2019, the Southland region recorded \$6.3 billion in regional Growth Domestic Product (GDP), which equates to approximately \$9.4% of the South Island’s GDP and 2.1% of New Zealand’s total GDP in 2019. – Regional GDP growth in Southland has historically been more volatile compared to the GDP growth in the South Island and New Zealand as a whole, with annual growth being as high as 13% and as low as 4.5%.
Industries of employment	<ul style="list-style-type: none"> – Southland region has a diverse economic structure with a strong primary and food processing foundation. Agriculture, forestry and fishing are the largest business sectors in the Southland region, combined contributing to 30.8% of regional GDP in 2018. This is followed by the manufacturing industry, which contributed 15.3% to regional GDP in 2018. – The most common occupations of employment in Southland region are accordingly managers (20.2%) and labourers (19.5%), which is linked to the prominence of these key industries. – Southland’s regional economy performed strongly through the COVID-19 lockdown in 2020 as the agriculture and manufacturing sectors were considered essential industries and permitted to keep operating (Infometrics, 2021). Moving into the recovery phase, these industries are anticipated to provide continued resilience for the region’s economy (Infometrics, 2021). – Tourism-related industries, such as accommodation and food and beverages services, are also important contributors to Southland’s economy and combined added to 21% of Southland’s regional GDP in 2018. With the COVID-19 pandemic and introduction of national border restrictions, there was a 94.2% drop in international visitor arrivals to New Zealand between February 2020 and February of 2021 (Stats NZ 2021b). – Southland’s accommodation and food services industries are forecasted to experience a reduction in regional GDP by 27% between 2020 and 2022 (Infometrics, 2021). In contrast, growth is expected across a variety of industries, notably health care and social assistance (9%) and public administration and safety (7%). – Business confidence in the construction sector is also generally optimistic with an anticipated growth in regional GDP of 5% between 2020 and 2022 (Infometrics, 2021). This was supported by findings from SEIA 2021 consultation, where stakeholders suggested that the construction and building industry in Southland region is currently ‘booming’ due to a number of major projects (such as the Invercargill city centre redevelopment) and a spike in residential housing construction and home renovations (Kelly, 2020).
Unemployment and labour	<ul style="list-style-type: none"> – Despite economic decline across some industries, the Southland economy remains overall strong with an average unemployment rate of 3.3% in June 2021, which is consistent with 3.3% a year earlier (Stats NZ 2021). The unemployment rate in Southland region is lower than the New Zealand average of 4.0%. – The region continues to experience substantial labor shortages as a result of a sustained construction boom and long-running demographic factors, such as population ageing and outmigration (Infometrics, 2021). – According to labour market research conducted in 2015 (Roskrug and Pawar 2015, p, 4), Southland region is projected to have a labour force shortage of approximately 5,000 people by 2023, rising to over 12,000 by 2031. More recent research identifies the Southland labour shortage will continue over the medium to long-term, with the COVID-19 pandemic intensifying the challenges of the existing labour shortage through a reduction in skilled migration (Infometrics, 2021).
Labour shortage	<ul style="list-style-type: none"> – The median individual annual income in the Southland region was \$31,200 in 2018, which is slightly less than the median annual income for individuals across New Zealand at \$31,800. – The median individual income in Invercargill City and Gore District are also less than the national median income (\$29,900 and \$30,900, respectively), however it is higher in Southland District (\$36,300) (NZ Stats 2018). – Average household income in the Southland region was \$78,000 in 2018 (New Zealand Trade and Enterprise, 2021). – During SEIA 2021 consultation, it was noted that NZAS employees are generally paid higher wages than other employees in the region, and as a result they are likely to have large mortgages and other similar financial commitments.

4.3 Education

Table 4.3 Summary of education and training indicators

Educational attainment	<ul style="list-style-type: none"> – Approximately a quarter of the Southland region population have lower education attainment and identified as having 'no qualification' in the 2018 Census, which means they completed secondary school without an additional certification (30.4% in Gore District, 26.8% in Invercargill and 24.8% in Southland District and an overall of 26.7% for Southland region). – A noteworthy proportion of the population in the study area aged 15 years and over have a Level 1 and Level 2 certificate completion compared to the national average (26.5% in Invercargill City, 29% in Gore District, 28.7% in Southland District compared to 21% in New Zealand). Compared to the national average, there are lower proportions of the population with qualifications at Level 3 and above.
Enrolment in training and/or study	<ul style="list-style-type: none"> – There is a higher proportion of people in Southland region that are studying to obtain a vocation and/or trade. Enrolment figures for Southland region in 2018 show that 91% of students studied at an institute of technology and polytechnic, which is significantly higher compared to the national average (34%). – In comparison, there are lower rates of university and private training establishment enrolment in Southland region (3% and 6% respectively), compared to the national average. – The top fields of vocational study in Southland are engineering and related technologies (30%) and agriculture, environmental and related studies (32%).

4.4 Housing and accommodation

Table 4.4 Summary of housing and accommodation indicators

Dwellings	<ul style="list-style-type: none"> – At the time of the 2018 census, there were a total of 39,330 dwellings in Southland region. Over 90% of these dwellings were separate houses. – Invercargill City and Gore District have higher rates of dwelling occupancy (93.7% and 91.6% respectively) compared to New Zealand on average (88.9%).
Home ownership	<ul style="list-style-type: none"> – Compared to the national average (51.3%), home ownership is relatively high across the study area with Invercargill City, Gore District and Southland region recording rates of 59.2%, 57.4% and 55.8%, respectively.
House prices	<ul style="list-style-type: none"> – House prices price growth in the Southland region surged between 2020//2021. – Southland region recorded a 16.7% increase in median house price from \$360,000 in July 2020 to a new high of \$420,000 in July 2021 (REINZ, 2021). – However, the median house price for the Southland region remains lower than the median house price for New Zealand (excluding Auckland), which increased by 23.3% from \$557,500 in July last year to \$687,500 in July 2021 (REINZ, 2021). – Consistent with findings from SEIA 2021 consultation, the REINZ (2021) indicate demand for housing in Southland, particularly Invercargill, is higher than supply which had led to an increase in property prices. There was reportedly less activity in the market from investors during July 2021 due to recent legislative changes.
Rent	<ul style="list-style-type: none"> – According to the 2018 census, weekly household rent prices were lower on average in the study area compared to New Zealand, with the majority of households paying under \$299 per week. – Average rent prices in the region increased from March 2020 to 2021 by 15.7 per cent to an average rent of \$331 a week (Bell, 2021). This remained lower than the average rent Auckland at \$564 per week.
Visitor accommodation	<ul style="list-style-type: none"> – Southland District has the highest number of facilities and daily capacity for tourists within the study area, as well as the highest occupancy rate. However, the occupancy rate is still under 50% for all regions, which indicates that there is surplus accommodation and potentially room for growth of the tourism industry or visitor travel across the region. – A large proportion of available accommodation in the Southland region are motels (48%). Invercargill City particularly has a high proportion of motel accommodation.

4.5 Health and wellbeing

Table 4.5 Summary of health and wellbeing indicators

General health	<ul style="list-style-type: none"> – According to results of the 2018 NZ Health Survey (Southern Health, 2019), compared to New Zealand the population of the health district area have: <ul style="list-style-type: none"> • similar rates of smoking (13.5% compared to 14.9%) • slightly lower rates of obesity (29.4% compared to 32.2%) • higher rates of acute medical admissions (8,414 per 100,000 people compared to 7,945 per 100,000 people) • lower rates of avoidable hospital admissions (2,957 per 100,000 people compared to 3,905 per 100,000 people) • similar proportions of people aged over 75 years who live at home (88% compared to 89%). – Anecdotal data collected during SEIA 2021 consultation suggested the COVID-19 pandemic has exacerbated many existing health and wellbeing challenges within the Southland community, such as suicide, mental health and drug abuse. This is supported by evidence from the St John Ambulance service in Southland region, indicating the service received an increase in the amount emergency calls for mental health, including suicide attempts, in 2020 (Harding, 2021).
Crime and safety	<ul style="list-style-type: none"> – The region is generally considered a safe place to live, with both Invercargill City and Southland District accredited as International Safe Communities in 2016. Compared to New Zealand, the study area has lower crime rates overall, although Invercargill City and Gore District display higher proportions of assault. – Family violence is a nation-wide issue in New Zealand, with 133,022 investigations into family violence occurring in 2018, and 41% of emergency call responses due to family violence. There were 5,709 investigations into family violence in Southland region in 2018, which was the second lowest of any region in New Zealand (New Zealand Police, 2018). This indicates that compared to the rest of New Zealand, Southland region could be considered to have a lower rate of family violence. – However, caution should be taken when considering this data, as approximately 76% of family violence incidents are not reported to police, which means that actual incidences may be higher than investigated by police (New Zealand Crime and Safety Statistics, 2016).
Community values	<ul style="list-style-type: none"> – The Southland region has a strong agrarian identity defined by its rural landscape, highly productive farmlands, dominance of dairy industry farming activities, and long-running political representation through the conservative National Party (Fornet and Stock, 2013). – The region also has a proud industrial identity underpinned by the strength of its local smelting, manufacturing and resource processing industries. The development of new technology and entrepreneurship in these industries by local Southland people were cited during SEIA 2021 consultation as a significant source of pride for the region, along with the ongoing contributions of NZAS to the region and nation (refer to section 3.1.1). – Living in an area remote from the country's main centres, Southlanders have forged a strong local identity based on a sense of independence and resilience. Stakeholders spoke proudly during SEIA 2021 consultation of their sense of <i>'not expecting people to look after them'</i>. This sentiment is captured by the Southland Regional Development Strategy (2015), which states 'the region is known nationally for its ambition and determination to do well'. – Stakeholders during SEIA 2021 consultation further described the region as being a close-knit community with strong social ties and a good sense of community spirit. This sense of cohesion and connectedness is reflected in the overall higher rates of volunteering in the region compared to the New Zealand average.
Māori heritage and culture	<ul style="list-style-type: none"> – As shown in section 4.1, 15% of the Southland region's population are Māori, with a higher proportion (17.4%) living in Invercargill City – There are 31 Cultural Heritage places identified on Tiwai Peninsula (NZAS, 2014). These places, as well as unknown places impacted by NZAS activities, must be protected to comply with the Resource Management Act 1991 and the Historic Places Act 1993 (NZAS, 2014).

4.6 Community infrastructure and services

Table 4.6 Summary of community infrastructure and services indicators

<p>Community infrastructure connected to NZAS</p>	<ul style="list-style-type: none"> - NZAS has direct connections to community service providers and community organisations in the region through a number of avenues, including the provision of apprenticeships and training, sponsorships and partnerships. - As of May 2021, NZAS had around 16 apprentices which are provided through Southern Group Training Trust. This provider also places apprentices with regional businesses who supply NZAS. - In 2019, NZAS paid \$48,373.75 in direct contributions to community service providers and organisations in the Southland region through sponsorships and donations in line with the Draft Communities and Social Performance Plan 2020. These included: <ul style="list-style-type: none"> • Multi-year partnership – Te Hipoki Iti is a partnership programme with Department of Conservation, Great South and Awarua Rununga to plant indigenous tree species at a scenic reserve near NZAS. NZAS will contribute \$41,000 between 2019 and 2022. • Scholarships – NZAS contributes to various scholarships with the following educational organisations: <ul style="list-style-type: none"> - South Pacific Indigenous Engineering Studies for Māori and Pacific Island engineering students at Auckland University - \$6,000 - Six community tertiary scholarships for students undertaking tertiary study outside the region - \$12,000 • Annual sponsorships: <ul style="list-style-type: none"> - Graeme Dingle Foundation Southland - \$10,000 - Naming rights of Southland Science & Technology Fair - \$7,000 - Local events and awards - \$2,500 • End of year prizes for local education institutions – total \$4,700 in 2019/2020. - NZAS also makes in-kind contributions, primarily through a partnership with Southland Girl's High School and the Southland Science and Technology Fair: <ul style="list-style-type: none"> • The Southland Girl's High School partnership involves four top Year 13 students from the school visiting NZAS for six days to carry out engineering/science projects. The students are mentored by NZAS staff while completing their projects. The programme has been in place for the last thirteen years, with around half of the students going on to study engineering at university. • In addition to being naming rights sponsor of the Southland Science & Technology Fair, several NZAS employees are members of the organising committee and others are on the judging panel. • Some NZAS employees volunteer their time to organisations (such as the FENZ) and are members of organisational boards and committees (e.g. SIT Advisory Committees). - NZAS also has indirect connections to community infrastructure through its workforce and their families accessing services and facilities in the region, such as schools, health services, and sports clubs.
<p>NZAS contribution to vulnerable groups</p>	<ul style="list-style-type: none"> - NZAS supports Southland residents with disability who are employed by Southland Disability Enterprises (SDE). SDE is predominantly a recycling business located in Invercargill, which employs people with disability for sorting recycling material for various businesses across the Southland region. In addition to its contract with NZAS, SDE have contracts with around 60 businesses in the region. SDE employs 100 people, of these around 80 have an intellectual disability. - SDE has had a contract with NZAS for around 31 years. A team of about 12 SDE employees (including about 10 people with disability and 2 mainstream workers) work onsite at NZAS and primarily clean respirators, as well as make wooden corner boards and broom handles. SDE employees who work at NZAS are proud of the work they do and enjoy the tasks which are good for dexterity using mathematical skills (SEIA consultation 2021). Approximately 9% of SDE's total income is from NZAS.

Transport and connectivity	<ul style="list-style-type: none"> – Connectivity to Southland region is provided by road, flights, and port. Travel within the region and surrounds is facilitated through the road network. – A public transport bus service is provided in Invercargill by Bus Smart Invercargill, while intercity bus services are provided by several providers and connect to Te Anau, Christchurch, Dunedin, Gore, Invercargill, Queenstown and Bluff. – Invercargill Airport connects Southland region to other parts of New Zealand via direct flights to Auckland, Wellington and Christchurch. The airport provides passenger services, some freight services (e.g. perishable agricultural products) and private charter services. – South Port is located in Bluff Harbour and is New Zealand’s southernmost commercial deep-water port. South Port services Southland’s import/export industries including aluminium, timber, fisheries, dairy, meat, wood chips, stock food, cement, alumina, fertiliser and petroleum products. SEIA 2021 consultation indicates that about a third of the port’s business is associated with NZAS, a third with forestry, and a third with remaining industries. – The region is well-serviced with mobile phone and telephone access, however access to the internet is lower compared to New Zealand on average. Within the study area, Gore District has a higher proportion of households who have access to a telephone (70%) compared to other locations in the study area and New Zealand on average.
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4.7 Dependency analysis

As a foundation for assessing impacts of the smelter’s closure on social indicators and stakeholders, the baseline concludes with a high-level understanding of their dependence on NZAS. The methodology applied is a subjective and qualitative analysis using a traffic light system of rating ranging between high, medium and low levels of dependence. The application of this scale is based on the professional judgment of the SEIA team based on information available at the time of the preparation of the report. The dependency analysis has been developed based on the information gathered for this report and presented in Table 4.7.

Table 4.7 Social dependency analysis

Indicators/ Stakeholders	Description of dependence	Level of dependence
Demographics		
Population base in study area	Through the direct NZAS jobs and contractors hosted in the study area, it is estimated that approximately 2,311 people (2.4% of population) in the Southland region (2,186 number, 4% in Invercargill) are directly associated with NZAS. Further a total direct and indirect population associated with NZAS includes 3,903 people, 4.0% of population in the Southland region; 3,715 people, 6.9% in Invercargill City.	Population base in study area
Economic		
Local economy	Consistently over the last 15 years NZAS has contributed 18% in 2005 to 6.0% in 2019 of the Southland region’s GDP. In addition there are a number of manufacturing businesses that support NZAS operation, that together maintain manufacturing as the second largest industry in the region.	Medium to Low
Local employment	Largest single site employer in the region, approximately 3% of total jobs in Invercargill. However, when both direct and indirect jobs generated by NZAS are considered, it is estimated that the region has especially the communities of Invercargill and Bluff, a high dependence on NZAS	Medium to Low
Local businesses contracted to NZAS	As the smelter is one of its kind in the country and the region, it is anticipated that most businesses contracted directly or indirectly to NZAS would be providing those types and volume of services only for the smelter.	High to Medium

Indicators/ Stakeholders	Description of dependence	Level of dependence
Other local businesses in Invercargill	Businesses in Invercargill that cater to high income earners or rely on the spending of disposal income would have a high dependence on NZAS employees as they are paid higher wages than average wages in the region. These would include retail, restaurants, entertainment, travel, etc.	High
	Other general businesses in town catering to general population including NZAS related population.	Medium to Low
Utilities		
Power (PowerNet)	Domestic power supply in the region is independent of power supply to NZAS	No dependence
Housing and accommodation		
Residential properties	<p>Based on the number of NZAS direct employees and contractors residing in the study area, it is anticipated that if each employee and contractor with their families occupied one dwelling, then approximately 1,051 dwellings in Southland Region, 911 dwellings in Invercargill (4.29% of the dwelling stock in Invercargill) would be occupied by direct NZAS employees and contractors.</p> <p>It is also understood that some employees from other parts of the region/country rent a house in Invercargill for living during their roster days on.</p> <p>It is estimated that an equal or more number of houses in Invercargill would be occupied by persons indirectly employed by NZAS and businesses that contract to NZAS.</p>	Medium
Commercial/industrial properties	204 businesses which is 1.45% of total businesses in the region (mostly based in Invercargill) are contracted by NZAS and occupy some kind of commercial/industrial premises in town. Similarly businesses that indirectly service NZAS or their contractors also occupy commercial/industrial premises in town.	Low in general but High for industrial use properties
Accommodation	The dependence of accommodation facilities on NZAS was not clearly understood.	Not understood
Emergency services		
Fire and Emergency NZ (FENZ)	These services are provided as part of service to the Invercargill City. There is an MOU between NZAS and FENZ by which the services are supported by NZAS's Tiwai Industrial Fire Brigade to respond to certain emergencies and provision of equipment.	Low
Police	These services are provided as part of service to the Invercargill City are not dependent on NZAS.	No dependence
Education		
Schools	<p>There are a number of primary and secondary schools in Invercargill and it is anticipated that the NZAS related spread throughout the city and access various schools throughout the towns. As such there is no dependence of NZAS related population on any one particular school.</p> <p>It was noted that the Southland Girls' High School (SGHS) in Invercargill has approximately one-third enrolments of children whose parents are employed directly at NZAS and potentially more whose parents would be indirectly employed by NZAS. NZAS annually sponsors student academic prizes for the Southland Girls' and Boys' High Schools and other local high schools. Four Year 13 SGHS students carry out engineering/science projects at NZAS site.</p>	<p>No dependence</p> <p>Medium</p>
SIT	NZAS offers internship and training programmes and offers job prospects for students at SIT.	Medium to Low

Indicators/ Stakeholders	Description of dependence	Level of dependence
	NZAS annually sponsors student academic prizes for the Top Team Project Year 3 Bachelor of Information Technology.	
Employment and training		
SDE	NZAS is one of the main employers for SDE. They also provide direct and indirect waste recycling contracts.	High
Enterprise Recruitment	Recruits short term, part time and casual workers for NZAS, often these workers end up getting full time work opportunities at NZAS. They also provide services to other industries in the region.	Medium
Southern Group Training Trust	Provide apprentices to NZAS.	Medium
Sports and recreation		
Clubs and societies	It is anticipated that the population base directly and indirectly associated to NZAS take up memberships and volunteering at the local sports and recreational clubs, particularly the direct employees due to the family friendly rosters and shifts at NZAS.	Not possible to assess dependence at an aggregate level
Connectivity		
Airport	The passenger services to some extent rely on disposable income of the community (NZAS employees have higher income than average) and NZAS work related (direct and indirect) demand.	Medium to Low
Ports	NZAS have their own shipping facility independent of the port (the smelter leases the Tiwai wharf from South Port New Zealand Ltd).	Low to Medium

5 Impact assessment

This section describes and assesses potential social and economic impacts of the closure of NZAS on the Southland community, more specifically in Invercargill, which hosts the majority of the NZAS workforce, businesses that provide goods and services to NZAS and regional services.

Impacts have been categorised into the following main themes:

- Regional economy, employment and income
- Demographic change
- Community infrastructure and services
- Real estate
- Community values and wellbeing
- Cultural values.

These themes are discussed in sections 5.1 to 5.6.

5.1 Regional economy, employment and income

As outlined in section 2.1, economic modelling was not undertaken for this 2021 SEIA as data from the 2020 SEIA is still considered relevant and valid. The sections below provide an assessment of potential impacts based on findings from the economic modelling in 2020 and stakeholder consultation in 2021. Refer to Appendix A for full details of economic modelling undertaken.

5.1.1 Regional economy

In 2019, NZAS directly contributed \$116 million of expenditure to the Southland region's economy, which was equal to \$55.0 million of value add. Indirectly, NZAS contributed \$164.20 million, which was equal to \$88.4 million of indirect value add. The total value add was around \$135.4 million, which is equivalent to 2.2% of Southland region's GDP. This proportion of regional GDP reflects the level of expenditure and value generated to businesses within the Southland region and excludes the value of aluminum produced at NZAS.

NZAS total contribution to the Southland region in 2019 was \$386.3 million, which accounted for 6.1% of total regional GDP. This included the total value of NZAS expenditure to businesses, employee expenditure and contractor contributions, and the value created by the smelter.

In 2019, NZAS made the largest contributions to the Southland region industries of manufacturing (\$17.86 million); construction (\$14.73 million); transport, postal and warehousing (\$7.58 million); and professional, scientific and technical services (\$6.73 million) (refer to section 3.5 of Appendix A).

5.1.1.1 Reduction in regional economy and GDP

The economic impact of NZAS closure would be experienced primarily in Invercargill City through the loss of direct, indirect and flow on expenditure (including industry expenditure and salaries). This would result in an overall reduction in the Southland region's economy and GDP, along with a reduction in contribution overall by the manufacturing industry to the regional economy.

The reduction in NZAS economic contributions within the Southland region would likely occur gradually during the ramp down phase, with a loss of 6.1% GDP on cessation of operations at the end of 2024.

It is expected there would be some investment in the region following the closure of NZAS associated with decommissioning works and rehabilitation of the land. This investment would occur after operations have ceased at the end of 2024, over an estimated 5-10 year decommissioning and rehabilitation period¹. There may also be expenditure associated with post closure monitoring and maintenance services. While the value of this expenditure is not able to be determined as part of this SEIA, the impact of investment activities associated with post-closure activities on the regional economy would likely be small and unlikely sufficient to offset the total loss of NZAS closure on regional GDP. Despite this, there may be opportunity to achieve regional economic benefits through redevelopment of the site to a productive post-smelter land use, as suggested by stakeholders during SEIA consultation 2021 (refer to section 3.1.12).

5.1.2 Employment and income

In 2019, NZAS directly employed 732 employees and 229 contractors living in the Southland region. As shown in section 4.1 of Appendix A, the IO model identified that NZAS also supports a total of 1,282 FTE through indirect and flow on employment opportunities, which is equivalent to 1,580 jobs (including full time and part time positions). This is based on a total 662 FTE indirect jobs in the region, which can be attributed to NZAS expenditure at local businesses, and a further 620 flow on FTE jobs that can be attributed to the spending from these businesses onto their supply chain. The majority of indirect and flow on jobs supported by NZAS spend are in the following industries:

- Retail trade – 454 equivalent jobs
- Professional, scientific and technical services – 139 equivalent jobs
- Other services – 150 equivalent jobs
- Manufacturing – 120 equivalent jobs
- Construction – 115 equivalent jobs.

Indirect and flow on employment numbers for all geographies considered in the study area are presented in Appendix A.

Wages paid to employees totalled \$74.8 million in 2019² and an estimated \$23.4 million in wages paid to contractors, which is approximately \$102,185 average annual individual income. As the majority of NZAS employees live in Invercargill City, a higher proportion of wages contribute to Invercargill City, with a small proportion in Southland District and Gore District. Anecdotally it was gathered that NZAS employees earn higher wages compared to regional average wages in the Southland region. Although not directly comparable, this is evident when compared to the average household income in the Southland region, where employees and contractors are paid higher than the average household income of \$78,000 (section 4.2).

The sections below discuss the social implications that may result from loss of employment and income.

5.1.2.1 Loss of employment

Workforce numbers are expected to remain steady during ramp down and until production ceases. However, feedback from SEIA 2021 consultation indicates over the last 12-18 months there has been high employee turnover and a change in the workforce profile at NZAS in response to pending closure of the business (refer section 5.1.2.2).

The cessation of NZAS operations by end of 2024 would result in a loss of 732 direct jobs and 229 contractor jobs. There may also be a potential loss of 663 FTE indirect jobs and 619 FTE flow on jobs in the Southland region, with up to 1,580 overall indirect and flow on equivalent employees which are supported by NZAS operations³. The loss of these jobs may increase the rate of unemployment in Southland should displaced employees be unable to secure other jobs within the region. The unemployment impact would be more pronounced in Invercargill City where the majority of direct and indirect jobs are hosted.

¹ The timeframes for decommissioning and rehabilitation are based on other smelter decommissioning examples in Australia

² Source: Pacific Aluminium (New Zealand) Limited, 2019.

³ This accounts for any FTE positions that may be job shared by part time employees.

As reported in a previous study by GHD (Appendix C), almost 50% of the NZAS workforce (353 people) are over 50 years of age and a high proportion of roles (65.8%) do not require professional qualifications. It is estimated that 233 employees over 50 years of age (31.8%) are working in unskilled roles. Further, many employees have worked at NZAS for most of their careers, with the majority of employees between 60 and 65 years of age and over 65 years of age having served at NZAS for over twenty years (79.6% and 83.9% respectively). These employees are likely to be more vulnerable to long term unemployment, with academic literature (Peetz, 2003) showing that:

- workers over 45 years of age have difficulty finding employment once unemployed
- the length of unemployment tends to be greater for older cohort
- the potential for long term unemployment increases with age.

Longer job tenure is also understood to present as a vulnerability for unemployment following redundancy. Specifically, employees with long term tenure in their previous job are disadvantaged because their skill and experience have been specific to a particular employer and may not be readily transferable (Peetz, 2003). Together, these factors indicate that many direct NZAS employees may be at risk of unemployment.

Employees of businesses that supply to NZAS may further be at risk of unemployment if the businesses need to downsize or close (refer to section 5.1.3.1). There is also potential the flow on impact to the economy may lead to unemployment in other businesses which either supply to NZAS vendors, or rely on spending by NZAS employees in the region (e.g. retail, hospitality businesses) (refer to section 5.1.3.2). Anecdotal views of stakeholders gathered through SEIA consultation suggested the indirect economic and unemployment impacts in Invercargill would be equal if not greater than the direct impacts (refer to section 3.1.3).

While there would be an increase in unemployment, the overall net unemployment impact is likely to be lesser than the numbers predicted above because some direct and indirect NZAS employees may be able to find alternate employment in the region, particularly given the region is predicted to experience 'substantial labour shortages over the medium to long-term' (Infometrics, 2021, p.27). There would also continue to be employment for some NZAS staff and contracting opportunities associated with the smelter decommissioning and site rehabilitation phases.

As discussed in section 3.1.2, several consultation participants expressed the opinion that the approximate loss of over 1,500 jobs across the smelter, suppliers and the broader Southland economy would be greater than the local labour market could immediately accommodate. It was anecdotally noted that there is also a mismatch in the high technical skills between those of current Tiwai employees and the mostly manual labour skills likely currently needed in industries with current labour shortages (i.e., construction, agriculture) and those of proposed future alternative industries. NZAS employees also earn higher than average wages for the region and this was cited as a further factor potentially limiting their ability/willingness to find comparable employment in the region.

5.1.2.2 Change in workforce profile

As discussed in section 5.1.2.1, several stakeholders noted the loss of skilled workforce from NZAS over the last 12-18 months. This has reportedly occurred in response to uncertainty around the closure date of NZAS operations and a desire from existing NZAS employees to secure opportunities offering 'career longevity' elsewhere. The effect of this impact is that there has been a high turnover of permanent employees in recent months. According to one interview participant:

'The announcement will lead to a much higher rate of turnover (at NZAS) in the next few years than experienced before' (NZAS employee, SEIA consultation 2021).

Employee turnover in response to the announcement of closure has not been restricted to NZAS, with several business vendors to NZAS also citing difficulty in retaining staff as they look for more secure career employment opportunities into the future: *'I have already lost three long-term serving employees this year because of the announcement but we have a new permanent employee joining in June who understands the upcoming prospect of closure'* (Business vendor, SEIA consultation 2021).

In response to this high turnover and a hiring freeze on FTE staff in 2020 at NZAS due to closure uncertainty, there has been a reported increase in the number of contractors embedded in on-site operational and maintenance crews at NZAS. The use of a contractor workforce and associated change in NZAS workforce profile will likely continue during ramp down and up to the cessation of operations due to anticipated *'ongoing high turnover and the flexibility offered to the business through this tenure'* (NZAS employee, SEIA consultation 2021).

However, it was noted that contractors are still being recruited from the Southland region, with no expected loss in local employment numbers during ramp down: *'It's still jobs within Southland region, just a change in the nature of employment offered'* (NZAS employee, SEIA consultation 2021).

5.1.2.3 Surplus of skilled workforce

The loss of direct and indirect jobs associated with NZAS would lead to a surplus of skilled and semi-skilled workforce in the study area post-2024. This could increase competition in the labor market, potentially further disadvantaging vulnerable people. However, it is more likely that skilled workers will search for employment opportunities relevant to their skills outside of the region, leading to potential decline in the population. This impact is discussed in section 5.2.

5.1.2.4 Loss of income

The cessation of NZAS operations by the end of 2024 will result in direct and indirect job loss in the region (section 5.1.2.1). This would likely result in the loss of income for NZAS employees, through redundancy and consequent unemployment.

Depending on the employment tenure of individual employees, the amount of redundancy payment, age of the employee and individual family circumstances, some employees would be at a greater risk of financial stress. SEIA consultation and other research (Venture Southland, 2017) indicates NZAS employees are generally paid higher wages than other employers in the region, and as a result they are likely to have large mortgages and other similar financial commitments (also refer to section 5.4 for housing stress impacts).

'Tiwai incomes are high in the region, it has provided security and influenced investments and decisions, people won't be able to find similar paying jobs in region, it is possible people won't be able to meet financial commitments' (SEIA consultation stakeholder meeting, March 2020).

A loss of employment and financial stress at individual and household level may have potential health and wellbeing implications for unemployed individuals and their families, including increases in mental stress, family social problems, alcohol and drug abuse (also refer to section 5.5.3).

5.1.2.5 Outmigration from the region

Unemployment generated due to the closure of NZAS would result in potential outmigration of employees and their families to seek alternate employment. This is discussed further in section 5.2.

5.1.3 Local businesses

In 2019, NZAS directly contributed \$58.69 million to 204 regional businesses (refer to Appendix A). Of these, \$58.35 million was spent at the 200 businesses located in Invercargill, and \$265,826 was spent at the four businesses located in Gore. Of the 204 businesses, the top 52 businesses received \$55.1 million, which accounted for 94% of total Southland expenditure. As seen in Table 5.1, a large number of regional businesses also received small average spending in 2019. The total value add to regional businesses was \$65.46 million in 2019, which is estimated to be 0.38% of Southland's regional GDP. There are 14,088 businesses in the region, which means NZAS made purchases at approximately 1.45% of Southland's businesses in 2019.

Table 5.1 Businesses supported by NZAS by annual expenditure range, 2019

Expenditure range	No. of businesses	Average expenditure per business	% of expenditure
<\$25,000	107	\$5,137	0.9%
\$25,000-\$50,000	19	\$34,793	1.1%
\$50,000-\$200,000	38	\$110,621	7.2%
\$200,000-\$500,000	13	\$330,895	7.3%
\$500,000-\$1,000,000	11	\$791,706	14.9%
\$1,000,000-\$2,500,000	10	\$1,760,830	30.0%
>\$2,500,000	6	\$3,764,268	38.5%

This SEIA is not able to determine the current level of dependency of the 204 regional businesses contracted to NZAS. However potential high-level impacts on regional businesses have been identified based on the results of the online business survey, and outcomes of interviews carried out with a small number of NZAS business vendors (refer to section 5.1.3). The outcomes of these consultation activities have informed the assessment of impacts on regional businesses discussed in the sections below.

5.1.3.1 Direct business impacts

From an operational perspective, nearly half of the NZAS businesses (44%) who participated in the online survey reported a direct reduction in workload and business revenue as the most immediate impact of concern regarding the impact of NZAS closure in 2024 on their business⁴. The closure was perceived by these businesses as likely to lead to:

'A massive reduction in profitability and a general downturn'.

'A large loss of income for the business with no potential business opportunity in the Southland region to fill the gap NZAS would leave'.

In response to the potential for reduced revenue and turnover, some NZAS businesses may be at risk of closing down or may need to make changes to their workforce, both in terms of the number of workers and the hours they work. The businesses most at risk of closure would typically be those that have a high level of dependence on NZAS. The online survey found there were ten businesses that derive more than 50% of their income from NZAS. Of these, four businesses identified they would not be able to operate in the future without NZAS assistance. Two other businesses who derive less than 50% of their revenue from NZAS also considered they would not be able to continue post NZAS closure. All six businesses identified they offer very specialised services particular to aluminium processing and/or heavy industries and considered there were limited future business opportunities in the Southland region.

Some businesses who considered themselves at risk of closure indicated the impact on their employees would be tempered by the fact they 'generally have transferrable skills to other industries'. A few also indicated the revised timeframe had provided more time to plan for the impacts of closure in 2024 and noted there may be opportunities for ongoing work with NZAS depending on the length of remediation.

Most other businesses (70.4%, 20 businesses) participating in the online survey indicated that following NZAS closure in 2024, their business may diminish but they would continue to operate in Southland region. However, 59.3% of participants (16 businesses) indicated it was likely that some employees would lose their jobs, while 11.1% of participants (7 businesses) indicated all employees would continue but with reduced hours. Data collected from the online business survey and interviewees during consultation indicate that several businesses have already started planning to transition staff either by offering reskilling training to employees or exploring options to redeploy them to alternative areas of the business.

⁴ In response to the open-ended question, "What are you most concerned about in terms of impacts the closure of NZAS will have on your business?". The next highest theme in responses was 'job loss and reduction in staff' (29.6%), followed by 'reduced regional economy' (22.2%).

5.1.3.2 Indirect business impacts

Regional businesses that receive small or no direct procurement spend from NZAS, such as retail trade, entertainment and accommodation and food services, may be indirectly affected by the out-migration of the NZAS-related population following 2024 and associated decrease in local consumer demand for goods and services.

All retail businesses who participated in 2021 SEIA consultation indicated the loss of NZAS-related population and their spending was a key concern for their business, particularly as NZAS staff typically earn more than average income in the region. Employment losses, changes in direct and indirect employee incomes, economic downturn and potential increased economic hardship among those unemployed were further factors cited as having potential to contribute to decreased consumer spending within the region.

In addition to reduced revenue, changes to demand for these businesses may have potential flow-on impacts for workers, in terms of reduced hours, numbers or overall wage. As expressed by one retail business interviewee:

“The worst-case scenario is the population declines by 5 per cent and there are less shoppers in our store. We might have to reduce our wage dollar in line with that sales drop. But we wouldn’t be worried about closing the shop entirely”.

It is anticipated that demand for regional goods and services would continue through the smelter decommissioning and site rehabilitation phases.

5.1.4 Other industries

The cessation of NZAS operations would impact other industries in the region, particularly those which are the main input suppliers, principally through a withdrawal of expenditure and potential loss of employment. The main industries at risk of these impacts are those that currently experience greater direct, indirect or flow-on spend from NZAS and its direct, indirect and flow-on employees. As discussed in sections 5.1.1 and 5.1.2, these industries are retail trade; professional, scientific and technical services; manufacturing, construction; wholesale and transport and logistics.

As discussed in section 5.1.2.4, the closure of NZAS is also expected to reduce direct and indirect employee household income. This is expected to reduce the disposable income within the community, which may decrease demand for retail, entertainment and hospitality services in Invercargill. However, it is likely that with a large proportion of older age and long tenure workforce at NZAS, a number of employees would receive substantial redundancy payments and may choose to retire, potentially continuing some demand for retail and entertainment services in Invercargill.

5.1.4.1 Energy industry

NZAS makes a significant contribution to the energy industry as the largest single user of electricity in New Zealand. While the impact of closure to the energy sector would not be experienced only within the study area of this SEIA, these impacts are discussed because of the significant contribution made by NZAS to this industry. It should be noted that impacts discussed in this section are high level socio-economic considerations and are not intended to be an analysis of impacts to the energy market. The research that has informed this section is limited to a review of desktop material and SEIA consultation.

Closure of NZAS may lead to the following socio-economic impacts to the energy industry::

- Manapōuri Power Station would continue to operate, under various operation scenarios, and diversion of energy from Manapōuri to the market would be undertaken over a period of time.
- Diversion of energy from Manapōuri to the north would require transmission network upgrade worth approximately \$450 million, spent over 5-8 years (Puller-Strecker, 2019), generating an economic stimulus.
- Due to the diversion of power from Manapōuri, no new generation capacity of renewable energy would need to be built for four years from 2030 onwards (assuming that closure would occur in 2030) (Burroughs, 2016), which would mean that economic stimulus generated through the construction and operation of these new renewable power stations would not occur for a period of time. It is anticipated that the same would occur, even if closure of NZAS was undertaken prior to 2030.

5.2 Demographic change

The predicted loss of employment and income resulting from the cessation of NZAS operations may lead to some employees and their families out-migrating from Southland, particularly if they cannot find alternate or comparable employment requiring similar skills and paying similar wages in the region. The loss of these residents could have a range of flow on impacts.

Accurately predicting when and how many NZAS-related employees and families would leave the region is not possible at this stage given this would be determined by a number of factors including individual circumstances and availability of suitable alternate employment in the region. However, a previous study prepared by GHD (Appendix A) identified that based on three alternative development scenarios, there could be between 390 and 1,951 people who may out-migrate from the Southland region, with the majority (between 372 and 1,858 people) from Invercargill City (Table 5.2).

Table 5.2 Out-migration estimate based on low, medium and high scenarios

Local government area	Total NZAS related population (direct and indirect FTE including contractors) ¹	Low - 10% ²	Medium - 25% ³	High - 50% ⁴
Invercargill City	3,715	372	929	1,858
Southland District	19	183	46	92
Gore District	38	18	1	2
Total	13	390	976	1,951

¹ Includes workforce and contractor data together.

² 10% of direct and indirect FTE workforce (including contractors) and associated population would out-migrate.

³ 25% of workforce direct and indirect FTE workforce (including contractors) and associated population would out-migrate.

⁴ 50% of direct and indirect FTE workforce (including contractors) and associated population would out-migrate.

The social implications of population out-migration from the region due to NZAS closure are discussed below.

5.2.1 Population decline

With the announcement of potential closure of NZAS in 2024, some NZAS employees would seek other employment opportunities and move out of the Southland region. This would continue in the lead up to closure through the ramp down phase. Feedback received during consultation indicated this impact was already occurring, with anecdotal evidence that there has been a loss of skilled workers from NZAS over the last 12-18 months as they have taken up alternative opportunities offering 'career longevity' (refer to section 3.1.4). Most of these opportunities were cited as being outside of the region.

Upon cessation, remaining direct and indirect NZAS employees who are unable to find alternative employment in the region would likely pursue other employment and/or income generating opportunities elsewhere. The potential out-migration of direct and indirect employees and their families would lead to population decline in the region, with the majority of this to occur in Invercargill City. The medium and high scenarios are likely to be most noticeable in Invercargill City, representing a 1.8% and 3.4% decline in the 2018 population (Appendix A).

As discussed in the baseline of this assessment (section 4.1), population decline is an existing trend in the region, and identified by government as a key challenge for the region's development. Given the aspirations for Southland to grow its population, further population decline resulting from out-migration of NZAS-related population could contribute to existing challenges associated with access to services, particularly those funded according to population numbers. This is discussed further in section 5.3.5.

5.2.2 Loss of skilled and semi-skilled workforce

Out-migration of NZAS direct and indirect employees and their families, including partners who may be part of the regional workforce, would generally create a loss of skilled and unskilled workforce from the region. Although a previous study (Appendix A) found that almost two thirds of roles in the NZAS direct employee workforce (65.8% or 494 roles) do not require formal education, it is understood from SEIA consultation that many roles require attributes and skills that are developed on the job. While skills breakdown data was not available for the contractors, it is likely these findings can be applied to the 235 contractors engaged at NZAS.

Out-migration may also lead to a flow-on reduction of the available workforce for other businesses and services in the region. According to the out-migration scenarios (Appendix A), between 390 and 1,951 people could leave the region, of which over 50% would be partners and children of NZAS direct and indirect FTE employees and contractors. It is expected the medium and high scenarios would have the most noticeable impact on the regional economy and workforce

Conversely, as other businesses and industries experience vacancies, there is potential for these roles to be filled by NZAS employees and/or their family members who choose to remain in the region. This is supported by labour market research conducted in 2015 (Roskrug and Pawar 2015, p, 4) which projected that even without the closure of NZAS, Southland will have a labour force shortage of approximately 5,000 people by 2023, rising to over 12,000 by 2031. More recent research identifies the Southland labour shortage will continue over the medium to long-term, with the COVID-19 pandemic intensifying the challenges of the existing labour shortage through a reduction in skilled migration (Infometrics, 2021). As discussed previously in section 5.1.2.1, NZAS employees earn higher than average wages and also may not have transferable skills to those industries with current skill shortage, which may limit their willingness and ability to find comparable employment in the region.

5.3 Community infrastructure and services

NZAS is connected to community infrastructure in Southland in several different ways. These include:

- Direct financial contributions
- In-kind contributions
- Skilled volunteer roles of NZAS staff with local organisations
- Employment and training
- NZAS-related workforce and families using regional infrastructure
- Emergency services
- Transport.

Closure of NZAS is expected to result in a loss of these contributions to the region. These are discussed further below.

5.3.1 Loss of financial contributions

As outlined previously in section 4.6, NZAS provides direct sponsorship to a number of community programs that contribute to social improvements and community wellbeing.

It is anticipated that these financial contributions would remain in place during ramp down and until operations cease at the end of 2024. Following closure, most of these contributions would stop, however there is opportunity to review ongoing financial contributions to programs into partnerships that align with activities undertaken during decommissioning and rehabilitation phase and/or in mitigation of closure impacts. For example, support for land management and environmental activities.

The dependency of each organisation on these financial contributions is not understood as this SEIA did not consult all recipients. While it is assumed recipients would value the contributions, given closure has been discussed several times over the years, it is likely that many recipients would have some awareness that closure is possible and therefore would need to seek replacement funding or partners.

5.3.2 Loss of in-kind contributions

As outlined previously in section 4.6, NZAS also makes in-kind contributions, primarily through a partnership with Southland Girl's High School and through the Southland Science and Technology Fair.

It is anticipated that the partnership would remain in place during ramp down and until operations cease at the end of 2024. While the school is aware NZAS may be closing, given there are no other similar large science and technology employers in the region, they anticipate the programme would cease following closure.

In addition to being naming rights sponsor of the Southland Science & Technology Fair, several NZAS employees are members of the organising committee and others are on the judging panel. It is expected the fair organising committee would need to find replacement volunteers from alternate regional businesses and organisations following NZAS closure in 2024, in addition to seeking alternate sponsorship donations.

5.3.3 Loss of skilled volunteers

As outlined previously in section 4.6, some NZAS employees volunteer their time to organisations (such as the FENZ) and are members of organisational boards and committees (e.g. SIT Advisory Committees).

While these volunteer opportunities would continue where possible during ramp down, the potential out-migration of permanent NZAS-employees and increase in temporary contractor workforce in the lead up to closure may impact employee volunteering behaviour and involvement with organisations. Following the cessation of operations in 2024, the potential out-migration of NZAS-related population would also impact organisations that rely on volunteers.

While it is not known how many employees volunteer with community organisations in the region or how dependent organisations are on NZAS volunteers, SEIA consultation indicates that regional stakeholders are aware about the potential closure of NZAS in 2024, and the potential loss of volunteers it would bring to some organisations. Some volunteer roles filled by NZAS employees would require specific skills and expertise (e.g. board positions, curriculum advisors, Rural Fire Service), and replacement volunteers would need to be found who have similar skills and experience, or could undertake the required training. On the other hand, it is also possible that NZAS employees who choose to retire or continue to stay in Invercargill would take up volunteering at some of these organisations.

5.3.4 Loss of apprenticeships and training

During consultation, a representative of the Southern Group Training Trust indicated that current apprentices at NZAS (or organisations who supply NZAS) would be able to complete their placements (refer to section 4.6). However, there would be a reduction in apprentice positions from 2022 onwards given the two-year period to closure is not long enough for an apprentice to complete their qualification. The representative further indicated they have commenced looking for alternative organisations in the region who could take on apprentices (i.e. beyond 2024) that would usually be placed with NZAS. If alternatives are not able to be found, a reduction in apprentices would result in a loss of income for Southern Group Training Trust. This impact would commence prior to 2024.

At the cessation of operations, it is expected there would be a loss of all apprentice positions at NZAS, as well as the loss of some positions with other regional businesses which supply NZAS. However there may be opportunities for apprentices in organisations involved in providing decommissioning and rehabilitation services during the post-closure phase.

5.3.5 Reduced demand for services and facilities

During the ramp down phase, it is anticipated the NZAS-related population (regardless of if they are contractor or permanent employees) would continue to access a range of services and facilities in the region, and particularly in Invercargill City where most employees live.

Following closure at the end of 2024, there is potential for each of the out-migration scenarios discussed in section 5.2 to directly impact some services through reduced demand, and potentially revenue generation. However, it is understood from SEIA 2021 consultation that local services are already experiencing impacts from NZAS employee turnover, with Southland Girl's High School reporting they had already experienced decreased income because of the loss of approximately 20 students between 2020 and 2021.

The capacity of local government to deliver and maintain essential services may also diminish if rate revenues received from NZAS decrease following closure. If current NZAS employees leave the region, this may also further impact on rates and local government income. However, it is likely there would be ongoing rate revenue contributions made during the decommissioning and rehabilitation phase, given NZAS will still hold ownership/lease of the site.

5.3.6 Impact on Fire and Emergency New Zealand

As reported in Appendix C, NZAS has an industrial fire brigade of around 40 people who are trained in FENZ courses to respond to fire and emergencies. FENZ Southland District rely on the NZAS brigade to respond to emergencies at the smelter and in the surrounding area until FENZ arrive.

Following closure, it is expected the risk of emergencies occurring on site would be reduced, however there may be some ongoing demand for emergency services, particularly during the decommissioning phase. During consultation, stakeholders indicated there may also be risks and/or accidents during the rehabilitation phase associated with vacancy of the site, and the potential for vandalism/trespassing from members of the public.

The loss of the on-site brigade could also increase FENZ response times to emergencies at Tiwai Peninsula.

5.3.7 Impact on Invercargill Airport

NZAS direct and indirect population would likely continue to access passenger flights through Invercargill Airport during ramp down and prior to the cessation of operations.

SEIA consultation in 2021 with a representative of the Invercargill Airport indicated exact estimates of passengers and future demand for airline services following the cessation of NZAS operations in 2024 is uncertain and dependent on a number of factors with respect to COVID-19, such as border controls and reintroduction of international tourism, public behaviour with respect to travel, and airline scheduling. It was suggested a loss of NZAS-related employment and associated income may limit Southland people's ability to travel through reduced spending capacity, with flow on impacts to passenger numbers. However, this impact was not anticipated to likely affect demand for services at the airport in the long-term:

'The changing passenger profile expected over the next few years means we will likely absorb this impact....in four year times we will look like a completely different airport'.

5.3.8 Impact on South Port

As reported in section 4.6, approximately 18 to 20% of South Port's business revenue and 30% of its total bulk cargo volume is associated with NZAS activities. It is anticipated that NZAS would continue to use South Port facilities during the ramp down phase to receive raw material/export aluminium via Tiwai Wharf. While exact future cargo volumes associated with NZAS are uncertain, there may be a reduction in cargo volume following closure of the smelter's fourth potline in 2020. There would be no impact on the port's revenue during this period as NZAS pays a licence fee for the wharf structure which is for a fixed term until 2043.

Following the cessation of NZAS operations in 2024, South Port would continue to operate and is currently undertaking channel widening and infrastructure upgrade activities in anticipation of future growth from other industries, such as forestry (SEIA Consultation 2021). SEIA consultation with a representative of South Port identified confirmed there would be no impact on the revenue of the port as a direct result of NZAS closure until 2043 when the 30-year lease over the Tiwai wharf is terminated. However, there may be some stevedoring businesses located at the port which provide loading/offloading cargo services for NZAS that could be impacted by its closure (refer to section 5.1.3.2).

5.4 Real estate – housing, accommodation and commercial properties

5.4.1 Residential housing

Demographic changes to the region, particularly to Invercargill City (as discussed in section 5.2), are likely to impact on the housing market in Invercargill. Given the stable nature of jobs at NZAS, the long-term tenure of a high proportion of employees and above average salaries, it is highly likely that many employees of NZAS would own a home in the region. Anecdotal information received through SEIA 2020 and 2021 consultation also suggests that some employees may own more than one house in the region as an investment property or may own a second home outside the Southland region in Queenstown or the Central Otago region.

As reported previously by GHD (refer to section 3.5 of Appendix A), it is estimated that NZAS employees occupy either through direct ownership or rental:

- 694 dwellings (3.2% of total dwelling stock) in Invercargill City
- 37 dwellings (0.3% of total dwelling stock) in Southland District
- 1 dwelling (0.01% of total dwelling stock) in Gore District

In addition to the direct employees, it is anticipated that contractors and indirect and flow on NZAS workers combined occupy approximately 1,548 dwellings in Invercargill City (7.2% of total dwellings stock) (refer to section 3.5 of Appendix A).

Impacts during ramp down

As identified in section 5.2.1, with the announcement of potential closure of NZAS in 2024, some NZAS employees would seek other employment opportunities and move out of the Southland region. This would continue in the lead up to closure through the ramp down phase. Outmigration may lead some employees to either rent or sell their homes prior to 2024. Sustained house and rental price growth throughout 2021 in both Invercargill and Southland region may further incentivise NZAS employees to sell or rent their property.

Impacts at cessation of operations

To estimate the impact of NZAS's closure in 2024 on the residential housing market, the out-migration scenarios discussed in section 5.2 are applied to NZAS related occupancy in both Invercargill and Southland region the study area in Table 5.3.

Table 5.3 Estimate of potential housing vacancies in the study area

Location and housing tenure	Number of NZAS employees and contractors (direct and indirect)	Housing vacancy based on out-migration scenario		
		Low - 10%	Medium - 25%	High - 50%
Invercargill City				
Houses owned (fully, partly, family trust) (direct employees only)	579	57	145	289
Rented (direct employees only)	115	11	29	57
Total (direct employees only)	694	69	74	346
Houses owned (fully, partly, family trust) (direct employees + contractors* + indirect workers*)	579 direct +152 contractors* +446 indirect* = 1,177	118	294	588
Rented (direct employees + contractors* + indirect workers*)	115 direct +65 contractors* 191 indirect* = 371	37	93	185

Location and housing tenure	Number of NZAS employees and contractors (direct and indirect)	Housing vacancy based on out-migration scenario		
		Low - 10%	Medium - 25%	High - 50%
Total (direct employees +contractors* +indirect workers*)	1,548	155	387	774
Southland region				
Houses owned (fully, partly, family trust) (direct employees only)	615	61	154	307
Rented (direct employees only)	117	11	29	58
Total (direct employees only)	732	72	183	365
Houses owned (fully, partly, family trust) (direct employees + contractors* + indirect workers*)	1,237	123	309	618
Rented (direct employees + contractors* + indirect workers*)	384	38	96	192
Total (direct employees +contractors* +indirect workers*)	1,623	161	405	810

*Census 2018 proportions of housing tenure in Invercargill City are applied (to total indirect employees as a result of NZAS total spending Appendix A TableA23) where 70% dwellings are owned by individuals or in family trust and 30% are rented.

As shown in Table 5.3 there is a potential that 155 to 774 houses (0.7% to 3.6% to the total private dwelling stock) in Invercargill City (which hosts majority of NZAS direct employees, contractors and indirect workforce) could become vacant following 2024 under the low, medium and high out-migration scenarios respectively.

Due to the higher age profile of NZAS workforce and strong regional connections and community ties of the people living in the region, employees who own their home are more likely to remain in the region. However, there is potential that some employees may leave and would either rent or sell their homes. Also, other factors such as availability of alternate job prospects in the region and choices people make regarding remote employment where some might choose to leave their families in the region and only one person may work elsewhere. This would potentially reduce the number of vacant houses.

It should be noted that this methodology provides indicative 'worst-case' numbers of houses that may become vacant in the study area as a result of the closure of NZAS operations in 2024. The exact timeframes of when this might occur cannot be predicted with accuracy and is dependent on factors including the number of employees, contractors and indirect workforce involved in decommissioning and rehabilitation activities, workers' ability to find alternative employment and remain in the region, as well as broader housing market conditions.

Since the average income of the NZAS employees is higher, it is anticipated that these housing vacancies are likely to be in the mid to high range of the housing market. Given the current market conditions in Invercargill (GHD, 2020) the housing sale and rental prices are likely to reduce, potentially making housing more affordable. However, reduction in housing rental and sale prices and loss of higher income of NZAS employees, could also result in housing stress for some, who may not be able to repay their mortgage or may lose money on their real estate investments.

5.4.2 Commercial property

In addition to housing properties, commercial properties would also be impacted in Invercargill, as some businesses that supply goods and services to NZAS may need to downscale or close resulting in commercial property vacancies and resultant reduction in commercial property prices. These business properties could mainly be in industrial areas associated with manufacturing and wholesale trade type of businesses. Reduced commercial property prices could mean commercial property stress for some, but it could also offer opportunities for some other business development in the region.

5.4.3 Visitor accommodation

In terms of impacts to accommodation facilities, it is anticipated that the 19 direct and some indirect NZAS workers who live over 2 hours of driving distance from Tiwai Point and in other parts of New Zealand, would be living in accommodation facilities or in rental houses in Invercargill during their roster days. These workers would no longer need to visit Invercargill, reducing the demand for local accommodation facilities. As seen in the SEIA Baseline (Appendix C) the occupancy rate for accommodation facilities in 2019 was 43% with average length of stay of 1.6 days, it is likely that the occupancy rate would reduce further. However, the main reason for visitors using accommodation facilities, to come to Invercargill is to access regional facilities and services and for tourism, it is anticipated that these visitors would continue to visit even after the closure of NZAS.

5.5 Community values and wellbeing

Section 4.5 of the social baseline discusses community values as they relate to NZAS. The closure of NZAS in 2024 is likely to create some changes to these values. These impacts are discussed below.

5.5.1 Community identity

SEIA consultation identified that NZAS is central to the identity of the Southland region (refer to 3.1.1). Most people interviewed associated with NZAS either as employees or contractors (or as a family member/friend of one of these) and hold great pride in that association. Stakeholders further acknowledged the high value the community places on the contribution NZAS has made to the region since its establishment 50 years ago. NZAS was described by stakeholders as the 'backbone' of the manufacturing industry of Southland.

All stakeholders reported that the cessation of NZAS operations at the end of 2024 would overall be difficult for the community to accept. There was acknowledgement that some community members, particularly those directly or indirectly employed by NZAS, may experience a loss of their sense of belonging to a world class industry/employer. It was also acknowledged that closure would contribute to the erosion of the region's manufacturing economic identity which started with the closure of the Ocean Beach Freezing Works at Bluff in the 1990s. This loss of identity was also cited as potentially limiting career pathways for young people in the region aspiring to join the manufacturing industry or pursue technical studies in this industry.

However, there may also be opportunity to preserve and promote the region's manufacturing identity, as well as the contributions of NZAS, through redevelopment of the site and other legacy projects during the decommissioning and rehabilitation phase.

5.5.2 Community cohesion

The Southland regional community takes pride in its strong social connectedness, a sense of belonging and positive community networks (refer to section 4.5).

With the potential outmigration of permanent NZAS employees both prior to and following the cessation of NZAS operation (see section 5.2), it is likely that some community and family networks will be disrupted by this change. Outmigration of NZAS employees could also mean a loss of role models for young family members and community members. There may also be fewer volunteers in the community (refer to section 5.3.3), particularly at sports and recreational facilities where community networks are fostered. However, it is likely that a proportion of NZAS employees over the age of 55 years may choose to retire both in the lead up to and following closure in 2024, therefore potentially fill in the void in volunteering services that would be created by the out-migrant population.

Through the SEIA consultation it was also noted that people often left the region for some time in their early years but then returned to settle down into a stable lifestyle. It is likely that the pending closure of a major employer like NZAS in the region, as well as its eventual closure at the end of 2024, would deter some people from returning to the region due to limited employment and career opportunities in the technical/manufacturing industry. This could have consequences for community cohesion and future socio-economic development through reduced diversity.

5.5.3 Health and community wellbeing

SEIA consultation indicated that ongoing uncertainty about smelter closure has the potential to exacerbate existing health and wellbeing challenges within the Southland community. Stakeholders anecdotally reported the COVID-19 pandemic has led to higher levels of anxiety, depression, stress and suicide rates than what was previously seen in the regional population. The recent start/stop announcements regarding NZAS closure, combined with high employee turnover, changes in leadership management and the pending ramp down of operations, were cited as factors impacting NZAS employee morale, as well as broader community mental health. These negative effects on employee and community wellbeing may continue during the ramp down phase and post-closure.

SEIA consultation further identified that job loss and an increase in unemployment (either directly or indirectly) following the cessation of NZAS operations in 2024 would have negative consequences for community health and wellbeing. Job loss was identified as potentially leading to a worsening of domestic violence, crime, substance abuse and mental health issues in Invercargill, as well as a potential increase in household stress and family social problems. This may in turn negatively influence the feeling of safety in the community and the overall image of the community.

The potential for such effects is consistent with the findings of other research which identifies that communities with a higher share of long-term unemployed workers tend to have higher rates of substance abuse, crime and violence (Nichols et al., 2013). Persistent unemployment is also linked to breakdowns in family dynamics and relationships and can negatively influence an individual's physical and mental health (Nichols et al., 2013).

5.5.4 Vulnerable groups

In addition to impacts to vulnerable groups mentioned above in this section, as seen in the baseline (refer to section 4.6), NZAS makes meaningful contribution to the Southland DisAbility Enterprises (SDE) by providing employment opportunities to people with mental and physical disabilities. The cessation of NZAS operations at the end of 2024 would reduce available opportunities for such vulnerable groups in the community, further increasing their vulnerabilities and wellbeing risks for individuals and their families/care takers. However there may be ongoing opportunity to provide employment positions to this organisation and the persons it supports through potential recycling activities associated with decommissioning and rehabilitation phase.

5.6 Impacts to Iwi culture and wellbeing

Note: No consultation was undertaken with Iwi representatives as part of the 2021 SEIA (refer to section 2.2). The assessment of impacts on Iwi cultural values is based on consultation undertaken in 2020.

NZAS has a strong relationship with Ngāi Tahu organisations and representatives in the Southland region and Tiwai Peninsula, not only for cultural heritage management and resource consents, but also to increase cultural awareness of NZAS staff, and enhance relationships across the business (NZAS, 2020).

Closure of NZAS has the potential to impact tangible cultural heritage at the NZAS site, as well as intangible cultural and community values (refer to section 4.5). During the decommissioning and rehabilitation phase of closure, demolition of site infrastructure and other related activities have the potential to cause ground disturbance at the NZAS site. Any potential disturbance of cultural heritage places would be managed according to the process outlined in the Cultural Heritage Management System Plan (NZAS, 2014), which includes consultation with Iwi and other stakeholders. SEIA 2020 consultation found that Iwi representatives would prefer that all infrastructure was removed from the site so there would not be a risk of any abandoned and derelict infrastructure left on the site which could lead to future legacy issues.

SEIA 2020 consultation further indicated that Iwi representatives value NZAS as an important contributor to the regional economy and community. There are a number of NZAS employees and contractors who are Māori, including those who represent Ngāi Tahu, and people who are known as leaders and role models in the Iwi community. Loss of these direct and indirect employees and their families due to out-migration in the ramp down phase and post-closure may lead to a loss of family connections, a loss of role models and community leaders, as well as lead to people living away from the land they are culturally connected to (SEIA consultation, 2020).

The Iwi are strong supporters of Tiwai” (SEIA 2020 consultation stakeholder meeting).

If the smelter closed, we would need to build our (Iwi community) resilience” (SEIA 2020 consultation stakeholder meeting).

6 Management measures and next steps

6.1 Impact summary and management considerations

The value of an impact assessment study is in its ability to develop measures to manage the negative effects, with the view to avoid and minimise the impacts and at the same time have in place measures to enhance the potential benefits that may arise from the change. This section presents an overview of the social and economic impact management initiatives for NZAS to consider as part of closure planning. These initiatives have been developed to address the potential impacts of NZAS closure on the Southland community. It is acknowledged that the social and economic impact management initiatives included in this section will be considered in conjunction with findings of other closure studies and closure planning initiatives that are underway.

The social and economic impact management considerations outlined in this section have been informed by:

- Leading best practice guidelines for social impact assessment (Vanclay, et al., 2015)).
- Relevant Rio Tinto standards (including the Communities and Social Performance Standard (2014) and Closure Standard (2015) and Closure Standard Definitions (2018).
- NZAS Closure SEIA 2020 Baseline Report (Appendix C) and NZAS Closure SEIA Report (Appendix A).
- SEIA consultation 2020 and 2021.

It is acknowledged that these considerations will need to be further developed into specific strategies or action plans and a sense of priority will need to be developed around their implementation in consultation with relevant stakeholders. It is noted that development of some detailed strategies and action plans may take time due to the process that may be involved, and should therefore be prioritised to allow sufficient time for development and implementation. Detailed timeframes, along with responsible parties and a reporting framework, could be outlined in individual strategies and action plans developed by NZAS.

Further, as several impacts would occur in the lead up to closure at the end of 2024 and post closure, it is important to adopt an adaptive management approach. As people constantly adapt to overall socio-economic and political changes, it will be essential to be flexible when considering the management measures, which should be underpinned by ongoing monitoring of impacts and regularly checking the relevance of the management measures (Kaplan-Hallam and Bennett, 2017; Vanclay et al., 2015).

Impact summary, management considerations and impact monitoring indicators as they correspond with each impact category are presented in Table 6.1, followed by details to be considered within the initiatives.

Table 6.1 Summary of impacts, monitoring indicators and management strategies

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
Regional economy							
Regional economy – Gradual reduction in contribution to regional GDP through the ramp down phase, with loss of 6.1% GDP on cessation of operations at NZAS.	Ramp down Closure	Spend value at national and regional level	Regional development agencies Regional and local government Local businesses	Medium	Low	Medium	Regional economic transition initiatives Stakeholder engagement strategy
Regional economy – Post-closure activities associated with decommissioning, demolition and rehabilitation would continue to make some contribution to the regional GDP over a period of 5-10 years.	Post-closure	Spend value at national and regional level	Regional community	-	-	-	Regional economic transition initiatives Stakeholder engagement strategy
Employment and income							
Loss of jobs – Some direct and indirect employees would lose their jobs through the ramp down phase and at cessation of operation approximately 961 direct and 1,580 indirect skilled and semi-skilled jobs across Southland region, mainly from the City of Invercargill would be lost. If post-closure activities commence immediately after cessation of operations, then the number of direct and indirect job losses would likely be less.	Ramp down Closure	Number of direct and indirect local/regional jobs	NZAS Regional workforce Regional community	Medium	Medium	Medium	Workforce planning and demographic impact management initiatives
Employment opportunities – Post-closure activities associated with decommissioning, demolition and rehabilitation would create employment opportunities. It is likely that some of the existing NZAS employees would be able to continue to be employed through the post closure phase.	Post-closure	Number of direct and indirect local/regional jobs		-	-	-	Workforce planning and demographic impact management initiatives

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
Uncertainty of jobs - Increased uncertainty of employment for direct and indirect employees of NZAS leading to potential wellbeing impacts to some employees and their families.	Ramp down	Number of permanent roles Number of long term contract roles Number of short term contract roles		Medium	Medium	Medium	Workforce planning and demographic impact management initiatives
Loss of higher incomes – Job losses during ramp down and at cessation of operations would bring loss of higher wages earned by NZAS employees, potentially leading to financial stress for some employees and their families.	Ramp down Closure	Number of direct and indirect jobs		Medium	Medium	Medium	Workforce planning and demographic impact management initiatives
Local businesses							
Reduced revenue for NZAS vendors – During ramp down demand for goods and services from NZAS’s vendors would reduce, resulting in reduced revenue for some businesses.	Ramp down	Spend value at regional vendors	Local businesses Southland Chamber of Commerce Regional development agencies Regional and local government	High	Medium	High	Local business support initiatives or Regional economic transition initiatives Stakeholder engagement strategy
Reduced revenue for NZAS vendors - At cessation of operation demand for goods and services from NZAS vendors would terminate, reducing revenue for all vendors.	Closure	Spend value at regional vendors	Regional community	High	Medium	High	Local business support initiatives Stakeholder engagement strategy
Potential closure of local businesses - Some businesses that have a high reliance on revenue from NZAS or NZAS vendors would be at the risk of closing and some may need to downsize.	Closure	Number of regional vendors that close		High	High	Very High	Local business support initiatives Stakeholder engagement strategy

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
Business opportunities through post closure – Some vendors would be able to continue to operate and earn revenue through post-closure activities, reducing the risk of immediate closure or downsizing for some businesses.	Post-closure	Number of regional businesses contracted Spend value at regional vendors		-	-	-	Local business support initiatives Stakeholder engagement strategy
Other industries							
Reduced revenue for local businesses - Businesses that rely on the spending of higher disposal income of NZAS and related employees may experience reduced revenue during ramp down and after closure if employees leave the region and/or gain lower paid employment.	Ramp-down Closure	Input-output modelling information	Local businesses Southland Chamber of Commerce Regional development agencies Regional and local government Regional community	Medium	Medium	Medium	Local business support initiatives Stakeholder engagement strategy
Demographic change							
Loss of skilled and semi-skilled workforce – Direct and indirect employees may leave the region during ramp down and post closure, resulting in gradual loss of skilled and semi-skilled workers.	Now to closure	Population data Number of staff resignations	General community in Invercargill City General community in Southland region Local government and development agencies in the region	Medium	Medium	Medium	Workforce planning and demographic impact management initiatives Stakeholder engagement strategy
Population decline - The loss of direct and indirect employment opportunities would lead to some people seeking suitable employment opportunity elsewhere outside the region, leading to out-migration of the workers and their families. This would contribute to a decline in the regional population.	Now to closure	Population data Number of NZAS workers leaving town		High	Low	Medium	Workforce planning and demographic impact management initiatives Stakeholder engagement strategy

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
Population retention – It is likely that if post-closure activities commence immediately after cessation of operations, then it would generate employment opportunities for some existing workers and retain some population.	Post-closure	Number of jobs during post-closure activities Number of NZAS operations staff offered jobs for post-closure activities by Rio Tinto/primary contractor					Workforce planning and demographic impact management initiatives Stakeholder engagement strategy
Community infrastructure and services							
Loss of financial contributions - Community financial contributions to local organisations would cease by 2022. While most financial contributions were nominal and unlikely to affect the operation of these recipient organisations, the community places a high value on the educational scholarships and these would be missed by the recipient organisations and the community.	Now	Value of community contributions	Community contribution recipients	Medium	Low	Medium	Stakeholder engagement strategy Legacy planning
Loss of in-kind contributions – The partnership programme with Southland Girl's High School may cease given that there will be reduced demand for similar technical qualifications in the region.	Now	In kind community contributions	Southland Girl's High School	Medium	Low	Medium	Stakeholder engagement strategy Legacy planning
Contributions of NZAS employees as volunteers to Southland Science & Technology Fair would need to be replaced if these employees out-migrate from the region.	Closure	NZAS employee volunteers	Southland Science & Technology Fair	Low	Low	Medium	Stakeholder engagement strategy Legacy planning

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
Loss of skilled volunteers – The skilled volunteer roles filled by NZAS staff with regional organisations (e.g. Rural Fire Services, board positions, curriculum advisors) would need to be replaced if NZAS employees leave the region. Replacement volunteers would need to be found who have similar skills or could undertake required training.	Now to closure	NZAS employee volunteers	Regional organisations/sporting clubs FENZ	Medium	Low	Medium	Stakeholder engagement strategy Legacy planning
Loss of apprenticeships - Closure would result in loss of apprentice positions at NZAS and with vendor businesses if they downsize their operations. This would result in loss of income for Southern Group Training Trust.	Closure	Number of trainees and apprentices	Southern Group Training Trust	Medium	Medium	Medium	Workforce planning and demographic impact management initiatives Stakeholder engagement strategy
Reduced demand for services - Some community infrastructure services may be impacted by population decline, e.g. regional schools may lose students and therefore student fees.	Ramp-down Closure	Number of NZAS employees leaving region	Regional community infrastructure	Medium	Low	Medium	Stakeholder engagement strategy Legacy planning
Impact on FENZ - While rehabilitation phase of NZAS may reduce risk of on-site emergencies, FENZ may have increased response times to emergencies near Tiwai Peninsula due to loss of on-site emergency response team.	Closure	-	FENZ Southland District	Medium	Low	Medium	Stakeholder engagement strategy Legacy planning
Impact on Invercargill Airport - Population decline is not expected to affect passenger services at Invercargill Airport.	Closure	-	Invercargill Airport	Low	Low	Low	Regional economic transition initiatives Workforce planning and demographic impact management initiatives

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
Impact on South Port - South Port may lose up to 30% of its revenue due to closure, however NZAS has a 30-year licence to use the Tiwai wharf and causeway at Tiwai Point, therefore the source of revenue generated from NZAS is not expected to be lost until 2043. Opportunities for third party uses of this asset are possible.	Post-closure	Spend value with South Port	South Port	Low	Medium	Medium	Regional economic transition initiatives
Real estate – housing, accommodation and commercial properties							
Vacant houses and housing prices - Potential out-migration of direct and indirect NZAS employees from the Southland region, particularly from Invercargill City, would create 155 to 774 vacant houses that, would become available for rent or sale. Such increase in supply of housing stock is likely to reduce housing prices for both rent and sale.	Ramp down Closure	Number of NZAS employees leaving the region	Real estate agents and investors General community in Invercargill Housing financial institutions	High	Medium	High	Regional economic transition initiatives Stakeholder engagement strategy Workforce planning and demographic impact management initiatives Local business support initiatives
Mortgage repayment - Loss of employment and income would impact on people’s ability to repay mortgage leading to housing stress.	Ramp down Closure	Regional jobs Regional vendor spend value Number of regional businesses contracted	Owners of houses Housing financial institutions	High	Low	High	Regional economic transition initiatives Stakeholder engagement strategy Workforce planning and demographic impact management initiatives Local business support initiatives

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
Increase in supply of housing and reduction in housing prices, would improve housing affordability in Invercargill.	Ramp down	Regional jobs Regional vendor spend value Number of regional businesses contracted	General community in Invercargill	-	-	Positive	Regional economic transition initiatives Stakeholder engagement strategy Workforce planning and demographic impact management initiatives Local business support initiatives
Commercial properties - It is likely that some industrial or wholesale businesses may need to downsize or close down, leading to vacant commercial/industrial properties.	Closure	Regional jobs Regional vendor spend value Number of regional businesses contracted	Local businesses in Invercargill	High	Low	High	Regional economic transition initiatives Stakeholder engagement strategy Local business support initiatives
Potential reduction in demand and occupancy rate of accommodation facilities, as the direct and indirect NZAS workers from outside the region would no longer need to visit Invercargill for work.	Ramp down	Regional jobs Regional vendor spend value Number of regional businesses contracted	Accommodation providers in Invercargill	Low	Low	Low	Regional economic transition initiatives Stakeholder engagement strategy
Community values and wellbeing							
Community identity - Potential loss of manufacturing economic identity of the region and a sense of pride in working for a world class industry/employer.	Post closure	Community sentiment	General community in Invercargill	Medium	Medium	Medium	Community cohesion and wellbeing initiatives
Community cohesion - Disruption and erosion of community and family networks and ties due to outmigration of workers and their families and potentially young people choosing not to return to the region due to limited employment opportunities.	Post closure	Community sentiment Number of NZAS employees leaving the region	General community in Invercargill	Medium	Low	Medium	Community cohesion and wellbeing initiatives
Community cohesion - Out-migration of direct and indirect NZAS workers	Post closure	Population data	General community in Invercargill	Medium	Low	Low	Community cohesion and wellbeing initiatives

Summary of impacts	Phase	Monitoring indicators	Stakeholders involved	Sensitivity	Intensity	Rating	Impact management initiatives
and their families would result in loss of role models in the community.							
Anti-social behaviour - Potential increase in domestic violence, unemployment related crime and mental health issues in Invercargill. This could also negatively influence the feeling of safety in the community and the image of the community.	Ramp down Closure	Domestic violence data	General community in Invercargill Emergency services – Police Mental health service providers	Medium	Low	Medium	Community cohesion and wellbeing initiatives
Vulnerable groups - Closure of NZAS would directly and indirectly reduce available opportunities for people with disabilities in the community, further increasing vulnerabilities and wellbeing risks of individuals and their families/care takers.	Ramp down Closure	Loss of jobs of SDE employees	People with disabilities and their families and care takers	High	Medium	High	Community cohesion and wellbeing initiatives
Impacts to Iwi culture and wellbeing							
Impacts to cultural heritage - Cultural heritage places could be disturbed by closure and decommissioning activities, but would be managed according to Cultural Heritage Management System.	Post closure	Cultural heritage surveys	Local Māori community	High	Medium	High	Cultural heritage management
Loss of cultural and community connections – Māori workers and their families may move away from Southland region due to limited employment opportunities following NZAS closure. Iwi representatives indicated during 2020 SEIA consultation that outmigration may cause disruption to Māori family and community networks (including loss of local leaders) and disconnection from the 'whenua' (land) and culture.	Ramp down Closure	Loss of Māori jobs	Local Māori community	Medium	Low	Medium	Workforce planning and demographic impact management initiatives

6.2 Social and economic impact management initiatives

To address the impacts arising from NZAS closure, this section outlines a number of considerations to avoid, manage and mitigate potential impacts.

6.2.1 Stakeholder reference group

Element	Detail
Initiative	<p>Rio Tinto’s standards for closure and communities and social performance require inclusive consultation with local communities throughout the project asset life-cycle – including closure transition. Accordingly, a key aspect of informing, developing and implementing measures to manage impacts associated with the cessation of NZAS operations is the need for continual and meaningful engagement with stakeholders.</p> <p>As part of a suite of actions to be implemented under a stakeholder engagement strategy and plan (refer to section 6.2.3), the SEIA recommends the formation of a stakeholder reference group as the key avenue for participation by multiple stakeholders in the planning, development, coordination and implementation of various closure management strategies.</p> <p>The stakeholder reference group would provide opportunity for community representatives and leaders to:</p> <ul style="list-style-type: none"> – inform closure planning studies and options – inform the planning and coordination of responsibilities for implementation of impact management initiatives, including opportunities to leverage existing or planned projects and plans in the community – receive updates on the implementation of NZAS closure initiatives and provide feedback – participate in monitoring and evaluating progress towards achieving closure criteria and positive social transition – have a voice in planning for an eventual post-NZAS future and the pathways to it. <p>It may also offer a forum for broader discussion about regional economic diversification and future industry options in the Southland region and the long-term sustainability of the community.</p> <p>Participation in the stakeholder reference group should be extended to appropriate representatives from relevant stakeholder groups, such as (but not limited to):</p> <ul style="list-style-type: none"> – NZAS and Rio Tinto executives – Just Transition’ unit of the New Zealand Ministry of Business, Innovation and Employment – Great South – Southland Mayoral Forum – Invercargill City Council – Gore District Council – Southland District Council – Southland Chamber of Commerce – Bluff Community Board – Iwi representatives – Police – FENZ – Local schools – Health and community service providers – Employment and training organisations.
Responsibility	<ul style="list-style-type: none"> – NZAS may actively convene, lead and facilitate the reference group meetings and provide adequate financial and/or in-kind resources, staff, material and information resources to support open and respectful deliberation between all members. – NZAS may further consider engaging an external facilitator to encourage neutral facilitation. – There is opportunity to link community reference group sessions into the existing ‘Southland Mayoral Forum’ to avoid community representatives and leaders experiencing ‘consultation fatigue’ and multiple demands.
Timeframes	<ul style="list-style-type: none"> – A stakeholder reference group could commence as soon as possible and continue until post-closure activities are reasonably concluded. – Meeting frequency would be determined by members (e.g. quarterly). However, they may become more frequent in line with number and complexity of issues warranting attention.

6.2.2 Regional economic transition initiatives

Element	Detail
Initiatives	<p>Engage with various local and regional development agencies to:</p> <ul style="list-style-type: none"> – support regional economic transition through collaboration and leveraging existing regional economic development initiatives which will enable economic diversification, population retention, upskilling and deployment of skilled local workforce from NZAS and its vendors to other industries in the region. – support site repurposing discussion and initiatives. <p>This would include engaging with (but not limited to):</p> <ul style="list-style-type: none"> – ‘Just Transition’ unit of the New Zealand Ministry of Business, Innovation and Employment – Great South – Southland Mayoral Forum – Invercargill City Council – Gore District Council – Southland District Council – Southland Chamber of Commerce – Bluff Community Board – Iwi representatives <p>Consider funding an economic development/transition officer in one of the regional development agencies to support development and coordination of a regional economic diversification strategy.</p>
Responsibility	Regional economic diversification and transition is a collective responsibility of national and regional development agencies. NZAS’s role would be that of collaboration and facilitation to promote economic transition.
Timeframes	Commence pre-closure and continue through initial period post closure.

6.2.3 Stakeholder engagement strategy

Element	Detail
Initiatives	<ul style="list-style-type: none"> – All stakeholders consulted for the SEIA expressed a high level of satisfaction with the ongoing engagement by NZAS. The SEIA has identified that there is a strong need for ongoing engagement with stakeholders about closure to keep stakeholders informed, seek their inputs in closure planning, and assist them to plan for and manage potential impacts of closure. Given the complexity of managing closure related impacts, NZAS would need to consider developing a closure specific stakeholder engagement strategy and plan. – The type of information each stakeholder will need about closure is likely to hinge on their dependence on NZAS and their role in managing impacts to them or the community. Therefore, an overarching stakeholder engagement strategy that provides a broad framework for engaging and communicating with stakeholders about closure is required. The strategy would include: <ul style="list-style-type: none"> – Principles for engagement and communication with stakeholders and community – Identify all stakeholders through a robust stakeholder analysis, including external and internal stakeholders – Identify matters/topics, methods, two-way communication channels, feedback loops and timeframes of engagement with each stakeholder – Roles and responsibilities in engaging with stakeholders – Update about activities related to closure (closure planning, ramp down, cessation, decommissioning, demolition and rehabilitation) and timeframes – Identify and recommend establishment of appropriate forums to communicate with all stakeholder groups, such as the potential formation of a stakeholder reference group (refer to section 6.2.1). – Processes for reporting on and measuring outcomes of engagement and communication. – The topics of engagement for each stakeholder that have been identified by the SEIA are provided in Table 6.2.
Responsibility	NZAS could engage consultants to develop a stakeholder engagement strategy and plan. The implementation of the strategy and plan would be NZAS’ responsibility.

Element	Detail
Timeframes	The strategy and plan should be developed over the next 12 months and should be iteratively monitored and updated by NZAS.

Table 6.2 Stakeholder matters of engagement

Stakeholder	Engagement topics
Employees	<ul style="list-style-type: none"> – Timeframes associated with each key phase of closure e.g. closure planning, ramp down of operations, cessation of operations, decommissioning, demolition, rehabilitation and post closure monitoring. – Internal processes for NZAS staff retention, transition and opportunities prior to and post-closure. – Relevant support services available to employees e.g. financial planning, relocation providers, up-skilling and re-skilling and wellbeing counselling.
Local businesses	<ul style="list-style-type: none"> – Timeframes associated with each key phase of closure e.g. closure planning, ramp down of operations, cessation of operations, decommissioning, demolition, rehabilitation and post closure monitoring. – Procurement opportunities associated with each key phase of closure e.g. closure planning, ramp down of operations, cessation of operations, decommissioning, demolition, rehabilitation and post closure monitoring. – Support for local businesses to manage impacts of closure
Community infrastructure service providers	<ul style="list-style-type: none"> – Timeframes associated with each key phase of closure e.g. closure planning, ramp down of operations, cessation of operations, decommissioning, demolition, rehabilitation and post closure monitoring. – Timeframes for partnerships and indirect/direct contributions. – Collaboration and planning around legacy opportunities/investments.
Iwi	<ul style="list-style-type: none"> – Timeframes associated with each key phase of closure e.g. closure planning, ramp down of operations, cessation of operations, decommissioning, demolition, rehabilitation and post closure monitoring. – Planning around ongoing collaborative environmental management, site remediation and the investigation of opportunities to return the site to purposes valued by Iwi. An archaeological survey in collaboration with Iwi will be carried out on the site.
General community	<ul style="list-style-type: none"> – Timeframes associated with each key phase of closure e.g. closure planning, ramp down of operations, cessation of operations, decommissioning, demolition, rehabilitation and post closure monitoring. – Planning of opportunities to leave a positive legacy and timeframes/responsibilities/process for implementations.

6.2.4 Employee transition and demographic impact management initiatives

Element	Detail
Initiatives	<p>The key to management of demographic impacts as a result of closure would be through regional economic diversification and NZAS' workforce management.</p> <p>Employee transition could include the following initiatives:</p> <ul style="list-style-type: none"> – Early engagement with employees and contract workers to promote employee retention in the lead up to closures – Early engagement with employees and contract workers about employment opportunities through post-closure activities – Develop employee plans with every individual employees/contract worker – Provide financial advisory service for workers of NZAS and its contractors to manage redundancy payments and financial stress – Ensure employees and contractor workers are aware of and can easily access Employee Assistance Programme for wellbeing counselling services for themselves and their families – Undertake skills and competency audit for all employees and provide formal recognition of skills and competencies particularly for unskilled employees/contract workers – Map skills with available job opportunities in the region, sponsor job fairs

Element	Detail
	<ul style="list-style-type: none"> – Run a programme in entrepreneurship to assist employees in establishing own start-ups/businesses. – Provide access to relevant skills and training programmes through local training providers for employees/contract workers to reskill or upskill if required – Explore ways to recognise the long service of relevant employees and contribution to the business – Work with Southern Group Training Trust to provide early information about closure and plan for reduction in apprentice positions at NZAS – Work with SDE to access relevant government support programmes and alternate employment opportunities for their employees who may be made redundant.
Responsibility	NZAS and Rio Tinto would be responsible for implementing employee transition initiatives, with support from regional development stakeholders listed in regional economic transition initiatives (Section 6.2.2).
Timeframes	Initiatives related to employee wellbeing, retention and post-closure opportunities should commence as soon as possible, with other initiatives commencing in 12-24 months prior to cessation of operation.

6.2.5 Local business support initiatives

Element	Detail
Initiatives	<p>Develop a contractor/local business assistance programme which would include the following:</p> <ul style="list-style-type: none"> – Early engagement with all NZAS contractors and general business community in Southland region regarding closure planning and timeframes – Engage with businesses regarding procurement opportunities during post-closure activities of decommissioning, demolition and rehabilitation – Give preference to local businesses for work during post-closure activities – Identify businesses that are most dependent on NZAS and support such businesses through transition, provide information on available transition/assistance programs through government initiatives such as 'Just Transition' – Include local business support as part of the regional economic transition initiatives – NZAS makes significant contribution to unique businesses like SDE, work with SDE to support identify opportunities through post-closure activities and business diversification. – Assistance to local vendors in understanding other opportunities in the region for their business.
Responsibility	Responsibilities could be shared with regional development agencies listed in regional economic transition initiatives (section 6.2.2).
Timeframes	Engagement with local businesses should commence at the earliest, with other support initiatives commencing in 12-24 months prior to cessation of opportunities.

6.2.6 Community cohesion and wellbeing initiatives

Element	Detail
Initiatives	<p>To manage impacts to community cohesion and wellbeing, consider the following initiatives:</p> <ul style="list-style-type: none"> – Support development of an alumni style ex-employee/retired employee network. – Work with Invercargill City Council and Great South to support local events and programs to contribute to local social cohesion activities. – Engage with regional stakeholders such as Police, health services, mental health services, local government, and relevant state agencies about closure timeframes and impacts of closure. – Work with FENZ Southland to coordinate resources in line with closure and timing of exit of on-site emergency response teams. – Ensure employees, contract workers, contractors and their employees are aware and can easily access Employee Assistance Programme counselling services and extend these services to their families.
Responsibility	Responsibilities could be shared with participants of the recommended stakeholder reference group.
Timeframes	Initiatives related to workforce wellbeing and community visioning should commence as soon as possible, with other initiatives commencing in 12-24 months prior to cessation of operation.

6.2.7 Legacy planning

Element	Detail
Initiatives	<p>The SEIA consultation have identified that NZAS legacy means different things to different stakeholders. To capture these differences consider developing a legacy plan, which would include the following:</p> <ul style="list-style-type: none"> – Explore partnering with local and regional government agencies and other stakeholders to undertake a 'post closure of NZAS operation visioning exercise for the city/region and for the future use of the site. – Explore options for continuing the legacy of NZAS as a contributor to the community post-closure of NZAS operations (e.g. continue educational scholarship with schools and technical partnership with SIT). – Support an alumni style ex-employee/retired employee network. <p>Develop legacy programmes in line with inputs from the visioning exercise and stakeholder inputs received as part of the SEIA consultation 2020 and 2021. Stakeholder inputs regarding NZAS legacy from SEIA consultation 2020 and 2021 are summarised below:</p> <p>Support economic development</p> <ul style="list-style-type: none"> – Support programs for upskilling/retraining of existing smelter workforce to retain experience and build capacity in the region – Investment in training and scholarships, continue with the scholarship programme for girls in engineering, engineering centre at the SIT, leave behind parts of the smelter site and convert it into a training centre – Investment in research and development programs for other industries in the region – Support the development of another industry in the region, reuse the site for another industry – Support people to develop sustainable business enterprise in the region through providing funding for business or tech start-ups, or small business management training. – Explore options to reuse the site for another industry. <ul style="list-style-type: none"> – Facilitate a community visioning exercise, both for the future use of the site and future direction of the regional economy. – Consider using the mayoral forum to engage communities in a participatory and collaborative way. – Assist electricity re-distribution through the country – Opportunities for local businesses through the demolition and rehabilitation phase. <p>Contribute to stronger communities</p> <ul style="list-style-type: none"> – Create memorabilia, such as - make a film about the smelter, coffee table book, museum exhibit to tell the story of the smelter and aluminium, street art/murals – Support and extend existing community development programs, particularly mental health and family support services, through strategic funding or a trust. – Investigate opportunities to use redundant physical assets at the smelter for purposes valued by the Southland community and Iwi, such as a training centre. <p>Protect the land and environment</p> <ul style="list-style-type: none"> – Positive environmental legacy by managing the current waste issue – Positive environmental legacy by appropriate site rehabilitation and restoration as per legislative requirements – return land to its original form. – Continue to engage with the local Māori community for future of the site.
Responsibility	Responsibilities could be shared with participants of the recommended stakeholder reference group.
Timeframes	Initiatives related to workforce wellbeing and community visioning should commence as soon as possible, with other initiatives commencing in 12-24 months prior to cessation of operation.

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Appendices

Appendix A

**NZAS Socio-Economic Impact Report
2020**



pure kiwi mettle

New Zealand Aluminium Smelter Socio-Economic Impact Assessment

Socio-Economic Impact Report

2020



Introduction

New Zealand’s Aluminium Smelter Limited (NZAS) is a joint venture company owned by Rio Tinto New Zealand Limited (Rio Tinto) and Sumitomo Chemical Company of Japan, operating New Zealand’s only aluminium smelter which was established in 1971. NZAS is located 25 kilometres from Invercargill and across the harbour from the township of Bluff, in the Southland region of New Zealand.

In October 2019, Rio Tinto announced a Strategic Review of NZAS, to consider future pathways for the site, in response to the high costs of energy and transmission NZAS faces in a challenging aluminium market.

As part of the Strategic Review and closure planning, Rio Tinto engaged GHD to undertake a Social and Economic Impact Assessment (SEIA) to assess the socio-economic contributions of the smelter’s operations and impacts of its closure on communities including Invercargill City, the town of Bluff, Gore District, Southland District and the overall Southland region (Figure ES-1).

In January 2021, Rio Tinto announced that a new electricity supply agreement with Meridan Energy had been reached and that, as a result, operations at NZAS were extended by four years to the end of 2024.

Rio Tinto also stated that detailed closure studies will continue, as well as discussions with stakeholders on the future of the smelter.

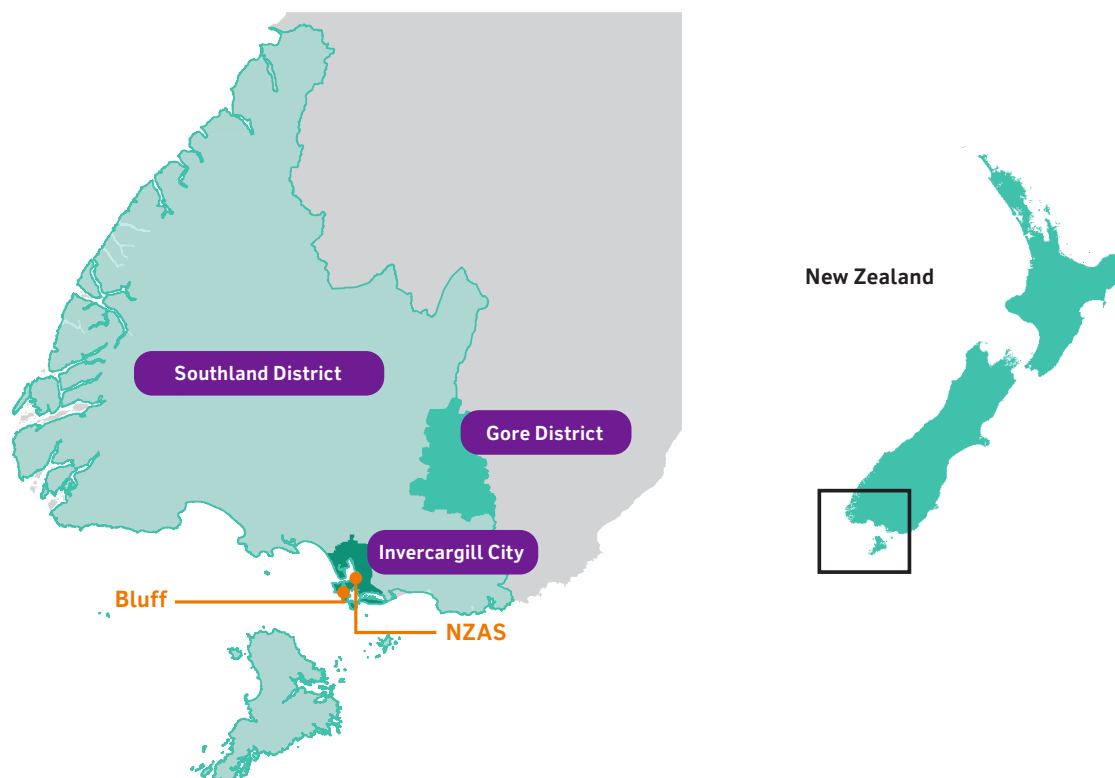


Figure ES-1: Study area - the Southland Region

An overview of the SEIA methodology is presented in Figure ES-2.

The purpose of this socio-economic impact assessment is to build an understanding of the social, economic and demographic trends within the communities that surround NZAS, and articulate the smelter’s contribution to those communities at the local and regional level. The potential range of impacts of the Closure of NZAS have been assessed, and importantly responses of those impacted gathered to inform planning.

A key input to the SEIA was in-depth consultation with representatives from 33 regional and local organisations, including regional council, territorial authorities, regional development agencies, New Zealand government representatives, Iwi, local businesses, community service providers, community organisations, business chamber, regional infrastructure and utilities and NZAS employees. Figure ES-3 shows the relevance of these stakeholders and their influence in the region.

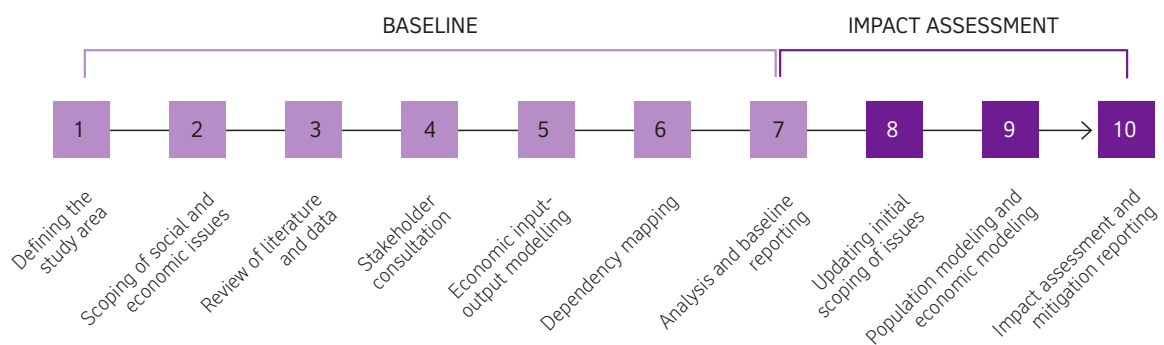


Figure ES-2: SEIA methodology overview

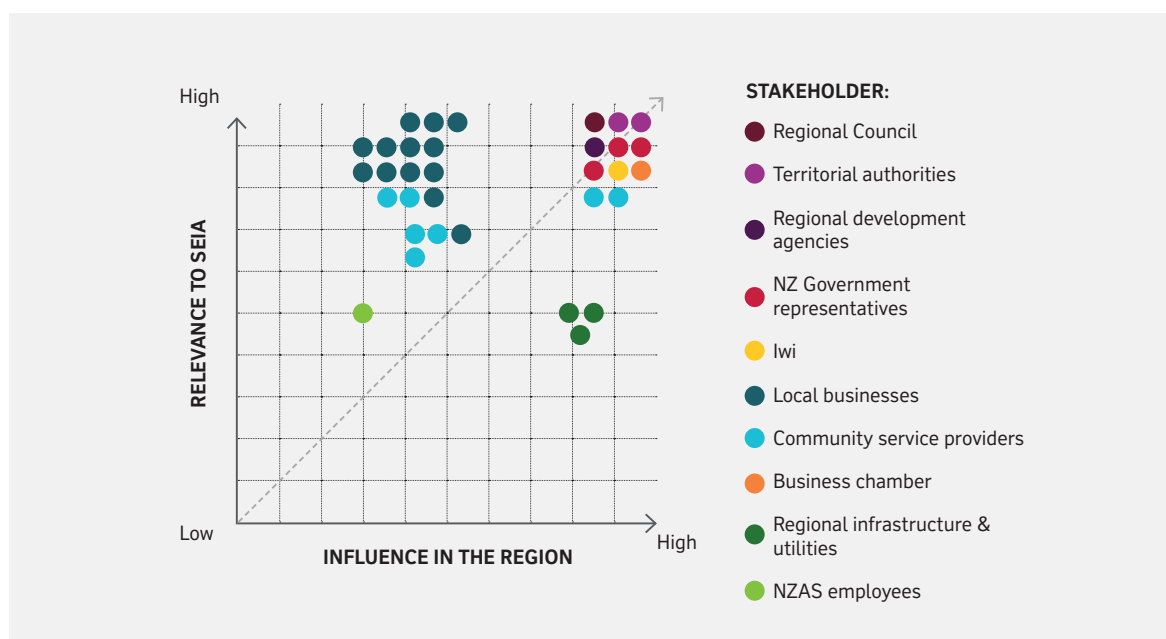


Figure ES-3: SEIA stakeholder analysis

Impact Assessment

The main findings of the socio-economic impact assessment are summarised below:

Regional economy and industry

Regional economic studies since 2005 highlight that NZAS is considered a critical and stable anchor for local businesses in the manufacturing and engineering sector in the Southland region.

In the short term, closure of NZAS would result in:

- Overall reduction in Southland's economy and regional GDP
- Reduction in contribution overall by the manufacturing industry to the regional economy

"It (closure of NZAS) would have a significant impact on the local economy, several businesses have been set up for the smelter, we don't have another obvious replacement business in the short term, so these businesses will be severely impacted"

- SEIA consultation stakeholder meeting

"Not just the businesses that work with the smelter, but all other businesses in town even like the dry cleaners would be affected, that is how ingrained Tiwai is with the region"

- SEIA consultation stakeholder meeting

Risks as a result of the closure of NZAS would include:

- Some regional businesses closing down or downsizing their operations in response to loss of revenue from NZAS

The most at risk businesses would be:

- Businesses which directly contract with NZAS
- Businesses that rely on the spending of disposable income of the direct and indirect NZAS employees (e.g. retail and consumable consumer goods).

The most impacted industry sectors would include:



Manufacturing



Construction



Transport



Postal and warehousing



Retail trade



Professional, scientific and technical services

NZAS contributions

In 2019, NZAS contributed \$386.3 million to Southland Region, accounting for, 6.1% of the region's total Gross Domestic Product (regional GDP).

This includes contributions outlined in Table ES-1.

As part of its industry and business contribution, in 2019 NZAS made significant contributions to the following industries in Southland²:

- \$17.86 million to manufacturing
- \$7.58 million to transport, postal and warehousing
- \$14.73 million to construction
- \$6.73 million to professional, scientific and technical services.

Table ES-1: NZAS contributions breakdown





	 Contributions (\$M)	 Value Add (\$M)
Direct Expenditure	\$116.0	\$55.0
Indirect Expenditure	\$164.2	\$80.4
Total Value Direct and Indirect	\$280.2	\$135.4

Table ES-2: NZAS contributions to regional businesses

	 Contributions (\$M)	 Business (No.)
Direct Expenditure	\$58.35	200
Indirect Expenditure	\$0.266	4
Total Value Direct and Indirect	\$58.7	204

²All dollar amounts in NZD

Employment and income

NZAS is the largest single site employer in the region and is considered a stable and high income source of employment. It is estimated that:

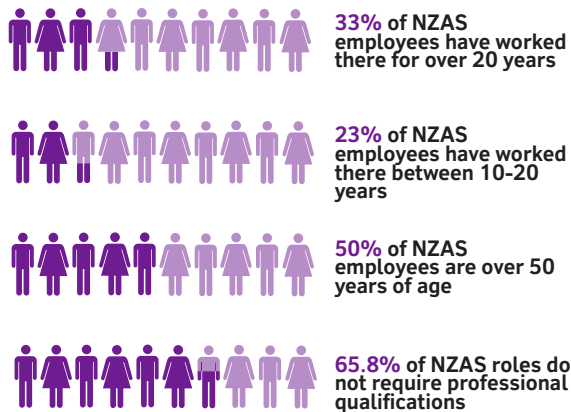
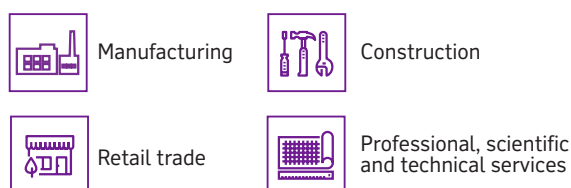


Table ES-3: NZAS employment contributions (2019)

	Total direct NZAS employees	Employees in Southland	Indirect and flow on impacts (FTE)	NZAS contractors
Employees (No.)	751	732	1,282	229

Table ES-3 shows the number of direct and indirect NZAS workforce in the Southland region. The majority of the direct and indirect workers are located in Invercargill City with some in Gore and Southland Districts.

NZAS supports a number of indirect and flow on employment opportunities, particularly in industries including:



Closure of NZAS would result in:

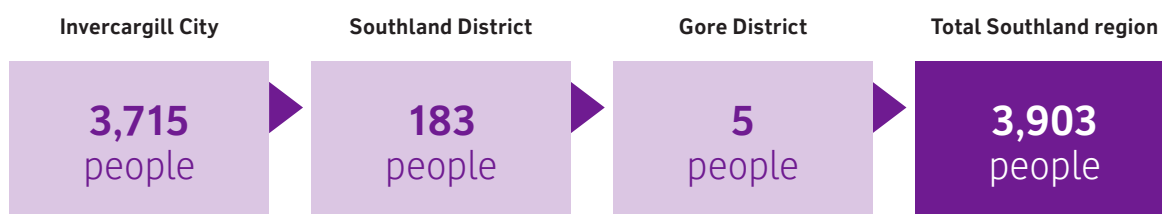
- Loss of 751 direct jobs of which 732 would be from the Southland region and 235 contractors of which 229 would be from the Southland region. This results in a total of 980 jobs (direct and contractors).
- Potential loss of 663 indirect and 619 additional flow on jobs from the Southland region, totaling 1,282 indirect and flow on jobs.
- Loss of direct income for the employees and contractors that lose their jobs, loss of higher wages paid in the Southland region.
- Risk of financial stress for some employees and their families as a result of the loss of direct and indirect employment and income. This will depend on the employment tenure of individual direct NZAS employees, the amount of redundancy payment, age of the employee and individual family circumstances, and ability of employees to find alternate employment.
- Potential health repercussions, strain on family relationships and wellbeing of individuals, families and community as a result of unemployment and financial stress.

“Tiwai incomes are high in the region, it has provided security and influenced investments and decisions, people won’t be able to find similar paying jobs in region, it is possible people won’t be able to meet financial commitments”

- SEIA consultation stakeholder meeting

Demographic change

According to demographic modelling undertaken for the SEIA 2020, NZAS directly and indirectly supports:



Closure of NZAS and resulting loss of employment and income would lead to:

- People and their families leaving the area to seek work leading to population decline in the region, with the large majority of population decline occurring in Invercargill City.
- Young people who have left the region deterred from returning to the region due to loss of employment opportunities. This would exacerbate an already existing trend of population decline in the region.
- Potential 1.8% and 3.4% decline from the 2018 population as per the three out-migration scenarios assessed in the SEIA, medium and high scenarios are likely to be more noticeable in Invercargill City.
- Loss of skilled and semi-skilled workforce from the region, as a result of out-migration.

“We will lose 2000 to 3000 people across the region”

“The region will halve in size”

- SEIA consultation stakeholder meeting

Direct contributions to the community

As part of its community contributions, NZAS directly contributed \$48,373 in multi-year partnerships, scholarships, sponsorships, donations and in-kind contribution through a partnership programme with Southland Girls' High School and through the Southland Science & Technology Fair. These contributions are valued by the recipients and noted to 'add value' to their services.

Community infrastructure services

It is likely that closure of NZAS and resulting out-migration may lead to:

- Negligible reduction in demand for some services which would not be expected to affect the overall operation and provision of services in the region.
- Increase in demand for community wellbeing services such as employment and income assistance, health and mental health services.

Community values & wellbeing

The Southland community has placed a high value on the contribution of NZAS since it was established 50 years ago. NZAS is considered to be the backbone of the manufacturing industry of the Southland region.

“Lots of it (contribution by the smelter) isn’t necessarily quantifiable”

- SEIA consultation stakeholder meeting

The closure of NZAS may lead to:

- Loss of the manufacturing economic identity and a sense of pride in hosting a world class industry/employer for the community.
- Limiting career pathways for young people in the region aspiring to join the manufacturing industry, pursue technical studies and for multi-generational families who work at NZAS.
- Population decline as a result of out-migration, and the potential for young people to not return to the region, is likely to disrupt some community and family ties and networks.
- Financial and emotional stress due to unemployment may result in increased antisocial behaviour such as increase in riskier health behaviour and higher crime rates.
- Loss of employment opportunities for people with intellectual and physical disabilities engaged as contractors at NZAS through businesses like Southland DisAbility Enterprises Limited (SDE). These employment opportunities at NZAS were reported to be highly valued by these employees, which could further increase their vulnerabilities and wellbeing risks for individuals and their families/care takers.

Real Estate & accommodation facilities

Given the higher wages and stable direct and indirect employment offered by NZAS, it is likely that NZAS related employees/contractors may have invested in real estate in the Southland region or in the surrounding Otago region.

Closure of NZAS may lead to:

- Housing stress for some employees/contractors who may be unable to repay their mortgage due to loss of employment and income, or loss on their real estate investments due to reduction in real estate prices.
- Increased housing vacancies and potentially reduced housing prices in Invercargill as a result of out-migration, which may increase housing affordability for some.

“Property prices will drop, they are currently high which is the first time this has happened”

- SEIA consultation stakeholder meeting

- Commercial property vacancies and resultant reduction in commercial property prices in Invercargill, as some businesses that supply goods and services to NZAS may need to downscale or close. These business properties would mainly be in industrial areas associated with manufacturing and wholesale trade types of businesses. Reduced commercial property prices could mean commercial property stress for some, but it could also offer opportunities for other business development in the region.
- Minimal changes to demand for accommodation facilities as the existing demand for accommodation facilities and rental housing in Invercargill from non-local direct and indirect NZAS workforce is low. As the primary reason for visitors to come to Invercargill is to access regional facilities and services, and for tourism it is anticipated that these visitors would continue to visit even after the closure of NZAS.

Cultural values

NZAS has established a strong relationship with Ngai Tahu as the iwi with mana whenua over Tiwai Peninsula, not only for cultural heritage and resource consents, but also to increase cultural awareness of NZAS staff, and enhance relationships.

Closure of NZAS and the demolition of site infrastructure may lead to:

- Potential disturbance of the ground at NZAS. Any potential disturbance of cultural heritage sites would be managed according to the process outlined in the Cultural Heritage Management System Plan (NZAS, 2014), which includes consultation with iwi and other stakeholders.
- Loss of family connections and role models as a result of potential out-migration of local iwi NZAS (direct and indirect) employees, similar to community cohesion impacts.

“If the smelter closed, we would need to build our (Iwi community) resilience”

- SEIA consultation stakeholder meeting

“The Iwi are strong supporters of Tiwai”

- SEIA consultation stakeholder meeting

Next steps

NZAS is committed to work with stakeholders in the planning for closure to consult, develop and implement impact management strategies. The SEIA recommends preliminary mitigation strategies and further studies to inform the development of the impact management strategies, including:



Closure specific stakeholder engagement



Community visioning for post NZAS community



Community and workforce perception surveys



Legacy planning



Contractor and local business surveys



Rio Tinto New Zealand Limited

New Zealand's Aluminium Smelter

Socio-Economic Impact Assessment

Socio-Economic Impact Report

April 2021

**COMMERCIAL AND CONFIDENTIAL
FOR RIO TINTO INTERNAL REVIEW ONLY
THIS REPORT INCLUDES SENSITIVE
INFORMATION**



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Appendices

Appendix A – Outputs of the IO modelling

Glossary

Acronym / term	Definition
COVID-19	COVID-19 is the infectious disease caused by the most recently discovered coronavirus. Due to the global spread of COVID-19 it was declared a Public Health Emergency of International Concern on 30 January 2020 (World Health Organisation, 2020)
FENZ	Fire and Emergency New Zealand
FTE	Full Time Equivalent
GDP	Gross Domestic Product
Regional GDP	Regional Gross Domestic Product
IAIA	International Association for Impact Assessment
NZAS	New Zealand's Aluminum Smelter
Rio Tinto	Rio Tinto New Zealand Limited
SEIA	Social and Economic Impact Assessment
SIT	Southern Institute of Technology

1. Introduction

1.1 Background

New Zealand's Aluminium Smelter Limited (NZAS) is a joint venture company owned by Rio Tinto New Zealand Limited (Rio Tinto) and Sumitomo Chemical Company of Japan. NZAS operates New Zealand's only aluminium smelter at Tiwai Point, located 25 kilometres from Invercargill and across Bluff Harbour from the township of Bluff, in the Southland region of New Zealand (Figure 1-1).

NZAS began operating 50 years ago in 1971 and produces low carbon metal, a small percentage of which is ultra-high purity aluminium. The smelter operates 24 hours a day, seven days a week, smelting and casting primary aluminium and its alloys in the form of ingot, billet, rolling block and t-bar. The smelter currently has annual plan capacity of 370,000 tonnes of aluminium per annum (Rio Tinto, 2019). Approximately 90% of the aluminium produced is exported, with the largest market being Japan (NZAS, 2020b).

NZAS is the largest single user of electricity in New Zealand. When it is operating the quarter potline Line 4 it uses up to 622 MW per year (Rio Tinto, 2019), and without Line 4 572 MW per year. To put this energy use into context, it is a similar amount to the electricity used by all the residential households in Auckland. NZAS is powered by hydro-electricity from Manapōuri Power Station, which means it has one of the lowest carbon footprints per tonne of aluminium in the world (NZAS, 2020b).

In October 2019, Rio Tinto announced a Strategic Review of NZAS, in response to the high costs of energy and transmission NZAS faces in a challenging aluminium market. The Strategic Review considers future pathways for the site:

- To continue operating with more competitive power arrangements to allow the smelter to run at its current full capacity
- To partially curtail operations
- To cease operations and permanently close the smelter.

In January 2021, Rio Tinto announced that a new electricity supply agreement with Meridian Energy had been reached and that, as a result, operations at NZAS were extended by four years to the end of 2024.


Rio Tinto also stated that detailed closure studies will continue, as well as discussions with stakeholders on the future of the smelter.

1.2 Study details and purpose of the report

To meet the requirements of Rio Tinto's standards (refer to section 2.1), Rio Tinto has commenced the NZAS Closure Preliminary Study. As part of this process and to inform the Strategic Review and future study phases, Rio Tinto decided to undertake a Social and Economic Impact Assessment (SEIA) to gauge the socio economic contributions of the smelter's operations and impacts of its closure on nearby communities, the Southland region and the New Zealand economy. This will support development of further closure planning and impact mitigation strategies.

Rio Tinto engaged GHD to undertake a SEIA for the potential closure of NZAS. This SEIA is based on the following underlying considerations:

- Closure of NZAS is dealt with at a conceptual level only, with no reference to specific timeframes and workforce scenarios. However, it is recognised that if closure were to occur



prior to 2030, a 12 month notice period would need to be served by NZAS due to contractual energy agreements.

- A relevant contextual consideration was the COVID-19 (coronavirus) outbreak, which was declared a Public Health Emergency of International Concern on 30 January 2020 (World Health Organisation, 2020). In response to the global spread of COVID-19, the New Zealand Government declared a state of national emergency on 25 March 2020 to slow the spread and reduce its impact in New Zealand. The New Zealand Government introduced a 4-level Alert System for COVID-19, starting with Level 4 – Lockdown. This included instructing people to remain in their homes, severely restricting travel, cancelling gatherings and closing public venues, closing businesses (except for essential services) and educational facilities, and reprioritising healthcare services (New Zealand Government, 2020). New Zealand moved to Level 3 – Restrict on 28 April 2020, which continued to restrict the movement of people and many businesses from usual operations (e.g. retail, hospitality, tourism, accommodation).
- The Government announced 11 May 2020 that New Zealand would move to Level 2 in stages on 13 May, and many businesses would be expected to re-open by 21 May 2020. On 9 June 2020 the country moved to a Level 1 alert, where people could return to work, school, sport and domestic travel without restrictions.

This study was prepared in the midst of New Zealand's Level 4, Level 3 and Level 2 Lockdown. During the preparation of this study it was not known how long these restrictions would be in place, and as the situation was still unfolding the full social and economic effects as a result of the lockdown measures for COVID-19 were also not known. Relevant and reliable data was not yet available to inform this study, however where possible, qualitative discussion has been incorporated into relevant sections of the study.

The SEIA has been undertaken in two phases:

- **Phase 1** – A social and economic baseline to understand the current situation and socio-economic dynamics of the Southland region, to provide the basis for assessment of impacts and identified mitigation measures.
- **Phase 2** – A SEIA for the proposed closure of NZAS.

This report presents the social and economic impact assessment undertaken as part of Phase 2 of the study. Phase 1 of the study is documented in a separate report called *NZAS Socio-economic Baseline Report* (GHD 2020) hereafter referred to as the Baseline Report (GHD 2020).

1.3 Structure of the report

This social and economic impact assessment report is presented in five sections as follows:

- Section 1 – provides an introduction to the SEIA study.
- Section 2 – outlines the methodology followed to prepare the impact assessment.
- Section 3 – documents the social and economic impacts of the potential closure of NZAS.
- Section 4 – presents a possible impact management and legacy planning considerations.
- Section 5 – provides a list of reference used to inform the study.



**Rio Tinto Pacific Aluminium
 NZAS Socio-Economic Impact Assessment**

Project No. **12526765**
 Revision No. **A**
 Date **01 May 2020**



Location of NZAS

FIGURE 1-1

G:\210101219\Current Projects\Jahni Design Stuff\12526765 - NZAS SEIA\Maps\12526765_Location_of_NZAS_in_NZ.jpg - LINZ 2020: Territorial Authority and Regional Council boundaries - Stats NZ; Aerial imagery - LINZ 2020 (Sourced from the LINZ Data Service and licensed for re-use under the Creative Commons Attribution 4.0 New Zealand licence). Created by: jprice/jlesby

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2. Methodology

2.1 Overview

This SEIA has been guided by the following requirements and leading practice:

- *Rio Tinto NZAS Scope of work: Social and Economic Impact Assessment*, December 2019.
- Rio Tinto (2015a). *Rio Tinto Closure Standard*.
- Rio Tinto (2015b). *Rio Tinto Communities and Social Performance Standard*.
- International Association for Impact Assessment (IAIA) specifically the *International Principles for Social Impact Assessment 2003* (Vanclay, 2003) and *Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects* (Vanclay et al, 2015).

An overview of the methodology followed to prepare the SEIA is shown in Figure 2-1. These steps are described in sections 2.2 to 2.10.

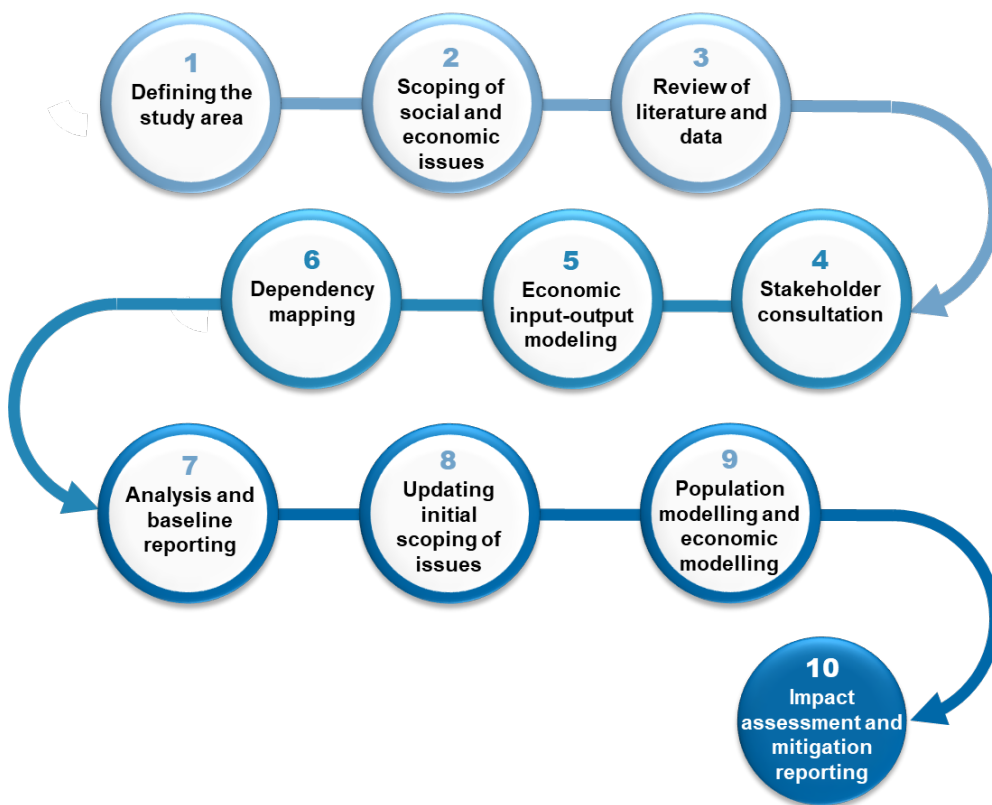


Figure 2-1 Overview of SEIA baseline and impact assessment methodology

2.2 Defining the study area

The study area determined for the SEIA has taken into consideration NZAS' social, economic and cultural area of influence. The primary focus for the SEIA includes the communities located near NZAS and those which have ongoing interactions with NZAS. This includes the Southland region, and three Territorial Authorities. These are described and shown in Table 2-1 and Figure 2-2. Invercargill forms the focal point of the study area, being the regional centre near NZAS and host to majority of its workforce and supporting businesses.

Table 2-1 Definition of SEIA study area

Catchment	Name	Description and relevance to NZAS
Region	Southland	Southland is the southernmost region in New Zealand and incorporates three districts as described below.
Territorial Authority	Invercargill City	Invercargill City includes the city of Invercargill, which is the commercial centre for the Southland region, and the town of Bluff which is the closest town to NZAS
	Gore District	Gore District incorporates the town of Gore and surrounds.
	Southland District	Southland District incorporates primarily agricultural land, Fiordland and Stewart Island.

2.3 Scoping of socio-economic issues

At the outset of the study a preliminary scoping of potential social and economic issues associated with the operation of NZAS and its potential closure was completed to understand the areas of inquiry that would need to be explored in the SEIA. This exercise assisted in determining the scope of the study, information requirements and the stakeholders to be consulted. The scoping exercise was informed by:

- Review of literature providing context for the region and NZAS
- A scoping workshop with the Rio Tinto/NZAS team
- GHD's knowledge about the social and economic implications of industry closures.

2.4 Review of literature and data

A detailed review of literature was undertaken to inform the study. The literature review included research for the analysis of the following:

- Demographic profile
- Economic profile
- Community values, infrastructure and services, and
- Socio-economic development related opportunities and challenges for the study area.

The review included a range of relevant documents and data sets including:

- Government strategies and policies
- Regional development agency reports
- Previous social and economic studies prepared for NZAS
- New Zealand Census data from the 2013 and 2018 Census and population projections
- Information from relevant websites.

A full list of references is provided in section 5.

LEGEND

- NZAS
- Key locations
- Main road network

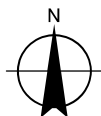
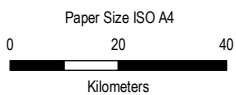
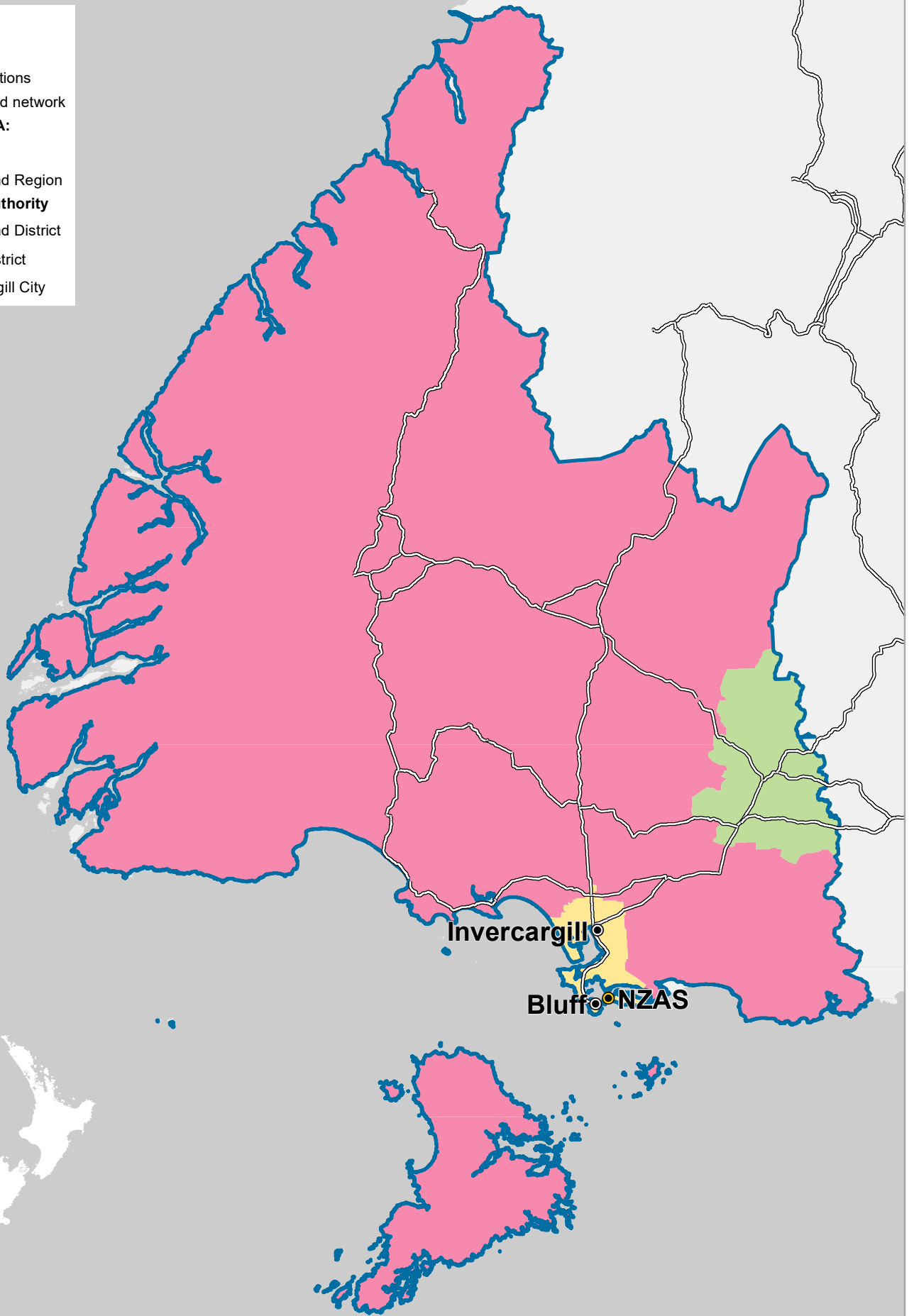
STUDY AREA:

Region

Southland Region

Territorial Authority

- Southland District
- Gore District
- Invercargill City



Rio Tinto Pacific Aluminium
NZAS Socio-Economic Impact Assessment

Project No. 12526765
Revision No. A
Date 01 May 2020

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

SEIA study area

FIGURE 2-2

2.5 Stakeholder consultation

Stakeholder consultation is an integral part of the SEIA process to inform both the baseline and impact assessment phases. In collaboration with the NZAS project team and based on the scoping of issues, stakeholder analysis was undertaken to identify stakeholders that would need to be consulted for the SEIA. Table 2-2 and Figure 2-3 present the list of stakeholders consulted for the SEIA and stakeholder analysis.

Purposive sampling and a semi-structured interview method was determined to be appropriate for the primary data collection. Stakeholders consulted included a cross section of representatives from the study area primarily located in Invercargill and Bluff, through face to face and telephone interviews during March and April 2020. To allow for open and honest feedback from stakeholders, the meetings were held only between the stakeholder representatives and GHD representatives.

A total of 33 meetings were held with representatives from local and central government agencies, regional development agencies, local businesses in Invercargill including those contracted to NZAS, community service providers, community organisations, regional infrastructure and utilities providers, and NZAS employees. Meetings with some service providers could not be undertaken during March – April 2020 due to the outbreak of COVID-19 and constraints to their availability for this consultation. They are identified in the table below. A brief report on the main outcomes from the SEIA consultation was prepared and is included in Baseline Report at Appendix A (GHD, 2020).

Table 2-2 Stakeholders consulted for the SEIA

Category	Sr No	Organisation
Regional Council	1	Environment Southland
Territorial Authorities	2	Invercargill City Council
	3	Bluff Community Board (Invercargill City Council)
Regional development agencies	4	Great South
New Zealand Government representatives	5	Department of Conservation
	6	Invercargill Member of Parliament
	7	Invercargill Labour Party List Member of Parliament
Iwi	8	Te Ao Marama
Local businesses	9	Southland Disability Enterprises
	10	Sheet Metalcraft
	11	Corys Electrical
	12	HW Richardson Group
	13	EIS
	14	Enterprise Recruitment

Category	Sr No	Organisation
	15	South Coast Security
	16	E-Type Engineering
	17	H & J Smith – Department store in Invercargill
	18	Harcourts Real Estate
	19	Invercargill Licensing Trust
	20	Elles Road New World
	21	Otago Southland Employers Association
● Community service providers	22	Fire and Emergency New Zealand – Southland District
	23	New Zealand Police – Southern District
	24	Southland Girls' High School
	25	Southern Institute of Technology
	26	Southern Group Training Trust
	27	Inalco
	28	NZ Safety Blackwoods
● Business chamber	29	Southland Chamber of Commerce
● Regional infrastructure and utilities	30	South Port
	31	Invercargill Airport
	32	PowerNet
● NZAS employees	33	NZAS
Other stakeholders contacted for the SEIA		
Community service providers	1	Southern District Health Board (contact was made with these services, however unable to meet with them due to outbreak of COVID 19 and constraints to their availability for this consultation)
Community service providers	2	WellSouth (contact was made with these services, however unable to meet with them due to outbreak of COVID 19 and constraints to their availability for this consultation)
Local businesses	3	ANZ Bank – Invercargill branch (questions were sent via email upon their request, but no response received)



Figure 2-3 Stakeholder analysis

2.6 Economic input-output modeling

Estimates of economic change presented in this SEIA are based on the use of an input output (IO) modelling method from REMPLAN. IO assessments identify inter-industry relationships within an economy through identifying which purchases by one industry go into producing an output for another industry. IO modelling identifies the direct and indirect (flow-on) impacts of one industry on other industries and the economy. IO modelling can therefore be used to assess the economic impact of an industry on the overall economy and how much the economy relies on the identified industry. IO modelling can also be used to examine a change in final demand of any one industry and the resultant change in activity of its supporting industries. The impacts are measured through:

- **Direct impacts**, which are the first round of effects from direct operational expenditure on goods and services.
- **Indirect (flow-on) impacts**, the second and subsequent round of effects of the increased level of purchases by suppliers in response to increased sales. Indirect (flow-on) impacts are disaggregated to:

- **Supply chain effects (type I)**, which represent the production induced support activity as a result of additional expenditure on goods and services, and subsequent round effects of increased purchases by suppliers in response to increased sales.
- **Consumption effects (type II)**, which represent the consumption induced activity from additional household expenditure on goods and services resulting from additional wages and salaries being paid within the economy.

The effects can be identified through the examination of three key measures:

- **Output:** The total value of all goods and services produced within the year (the final value of the good / service). This measure results in an overestimate of the economic contribution as it results in double counting of goods/services throughout the supply chain.
- **Value Add:** The value of output after deducting the cost of goods and services inputs in the production process.
- **Incomes:** Level of wages and salaries paid to employees in each industry.
- **Employment:** Level of employment supported by the industry, and is expressed as full time equivalent (FTE) positions.
- Detailed workings and outputs of the IO modelling are presented in Appendix A.

2.7 Social and economic baseline

A detailed SEIA baseline report was prepared to form the basis for the impact assessment. This included a relevant discussion on the socio-economic conditions in the study area and dependency analysis of the region on the existing NZAS operation. This SEIA must be read in conjunction with the Baseline Report (GHD 2020).

2.8 Updating scoping of issues

The initial scoping of issues register was revisited and updated based on the stakeholder consultation and baseline study.

2.9 Demographic modelling

To understand the potential population change as a result of closure of NZAS, a tailored methodology was developed to estimate the potential out-migration of direct and indirect NZAS employees, contractors and their families from Invercargill City, which hosts majority of NZAS workforce. This was based on the base case for 2019, when the total number of NZAS employees in Invercargill City were 694, and contractors were 217.

The estimate was derived by applying the proportion of household structure, family composition and average family size as per the 2018 Census to the direct and indirect number of employees.

2.10 Impact description, assessment and management

The identification and description of impacts has been informed by tasks 2.2 to 2.9. The SEIA has adopted a two-pronged approach to assessing impacts:

1. Assess stakeholder perceptions about potential impacts
2. Assess likely intensity and implications of potential impacts based on data triangulation.

It is important to understand the difference between perceptions and likely impacts, as it then helps to develop appropriate perception management as well as impact management strategies. The perceptions gathered in this study are based on the SEIA stakeholder consultation undertaken in March-April 2020, and the intensity of the impacts are based on a

qualitative assessment of impacts using various sources of information (refer to tasks 2.4 to 2.9).

A prioritisation tool has been developed to assess perceptions and impacts. As per this tool:

- Perceptions have been rated based on the level of interest to the SEIA stakeholders and their judgement on the level of change that would occur to the study area particularly in Invercargill City with respect to specific issues (Figure 2-4).
- Impacts have been rated based on the sensitivity of underlying socio-economic values (Table 2-3) and the intensity of the impact (Table 2-4) and as per impact significance rating shown in Figure 2-5.

A positive impact rating scale has not been developed as no positive impacts were identified during the study for regional communities resulting from closure of NZAS.

Due to the qualitative and subjective nature of the assessment tool, it is recommended that the assessment is used only as a guide to understand the significance and prioritisation of impacts. It is also important to understand that while impacts may show a low rating at a regional level, their implications may be higher for some individuals or groups of stakeholders.

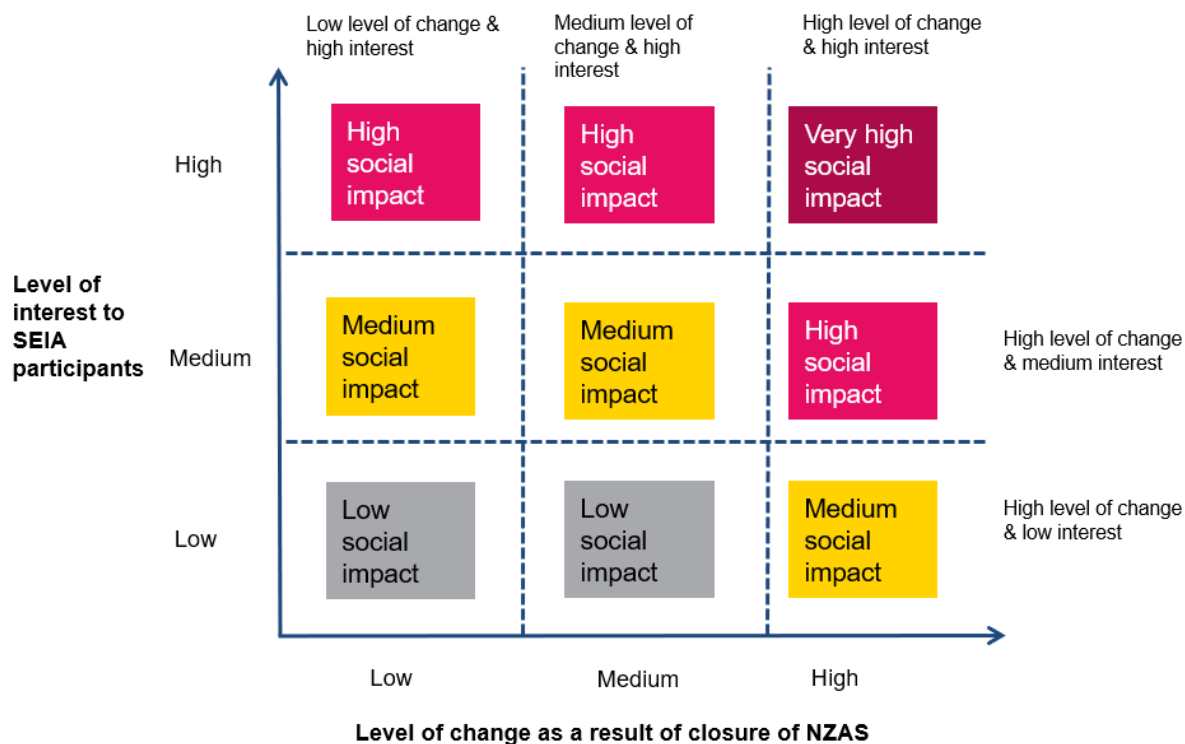


Figure 2-4 Perception assessment tool

Table 2-3 Sensitivity of underlying socio-economic value

Rating	Definition
Low	The community has substantial capacity to adapt to the change, with limited vulnerability.
Medium	The impacts have small but limited flow-on to other social domains, or the community has some capacity to adapt to the change, with limited vulnerability.

Rating	Definition
High	The impacts have considerable flow-on to other social domains, or the community has extremely limited capacity to adapt to change, with high levels of vulnerability.

Table 2-4 Intensity of impact

Rating	Definition
Low	A small but measurable change from the existing socio-economic conditions noted in the baseline. Changes are expected to be temporary. Quick functional recovery is expected within a few months and those affected could be expected to easily adapt or cope.
Medium	Noticeable and relatively substantial change from the existing socio-economic conditions noted in the baseline. Changes may be longer term or temporary. A functional recovery is expected within 1-2 years and those affected could be expected to have some capacity to adapt or cope with the change and some modification/adjustment to way of life would be required.
High	A substantial change from the existing socio-economic conditions noted in the baseline. Changes may be longer term or temporary. A functional recovery is expected within five years and those affected could be expected to have limited capacity to adapt or cope with the change and notable modification/adjustment to way of life would be required.

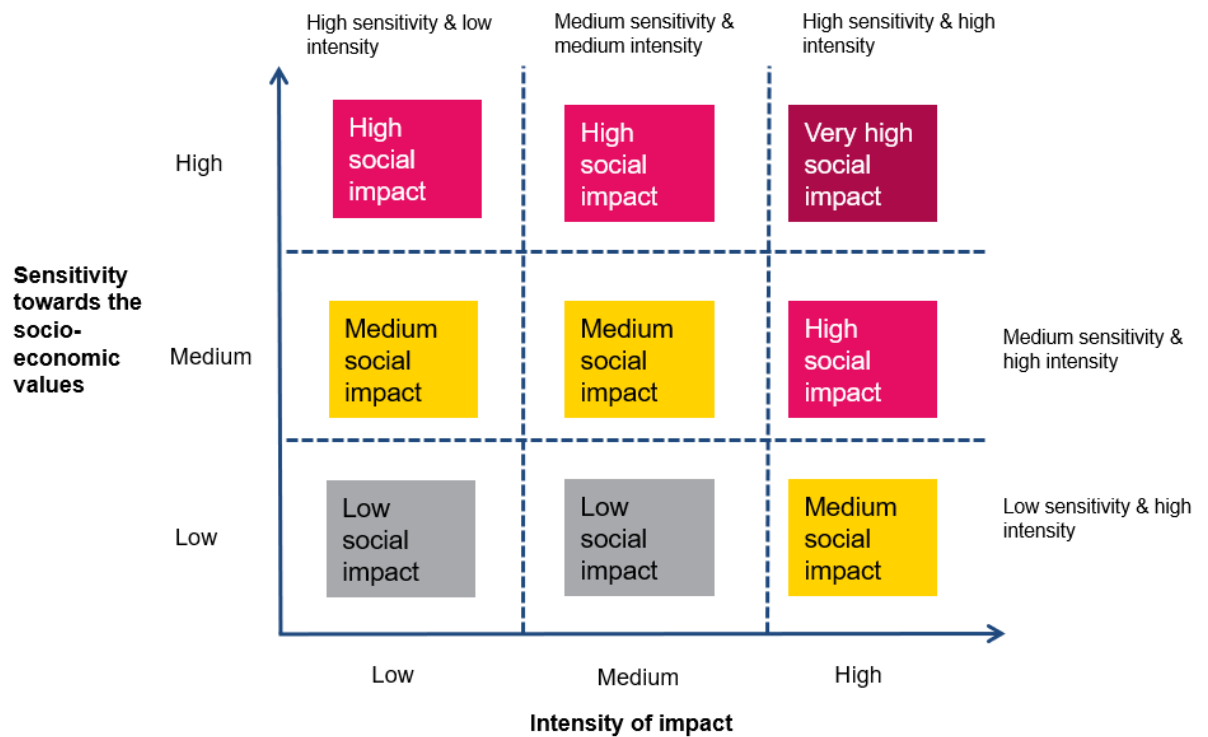


Figure 2-5 Significance of impact tool

High level impact management considerations were developed based on the stakeholder inputs from the SEIA consultation in 2020, review of opportunities and challenges for the region and regional development plans. It is recognised that the impact management considerations would be supplemented with the findings and processes of other closure technical studies and further stakeholder inputs.

2.11 Scope and limitations


This report has been prepared by GHD for Rio Tinto Aluminium Pacific Operations and may only be used and relied on by Rio Tinto Aluminium Pacific Operations for the purpose agreed between GHD and the Rio Tinto Aluminium Pacific Operations as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Rio Tinto Aluminium Pacific Operations arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 2 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.



GHD has prepared this report on the basis of information provided by Rio Tinto Aluminium Pacific Operations and other sources of information included in the reference list and information provided by stakeholders during the SEIA consultation, which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Other limitations include:

- The study relies on the data sets available at the time of undertaking the work February – April 2020.
- The SEIA study including the consultation was based on the concept of closure. No specific data and information including timeframes of closure were available at the time of preparation of the study.
- Consultation with some stakeholders could not be undertaken due to the outbreak of COVID-19 during the preparation of the study and their unavailability to participate in SEIA consultation due to increased workload within their organisations.
- It is recognised that economic multipliers used in the IO modelling are based on limited assumptions that can result in multipliers being a biased estimator of the benefits or costs of a project. Shortcomings and limitations of multipliers for economic impact analysis include:
 - **Lack of supply-side constraints:** The most significant limitation of economic impact analysis using multipliers is the implicit assumption that the economy has no supply-side constraints. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
 - **Fixed prices:** Constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. Prices are assumed to be unaffected by policy and any crowding out effects are not captured. In summary, IO modelling assumes that prices remain fixed and do not change as a result of the increased demand for a good or service.
 - **Fixed ratios for intermediate inputs and production:** Economic impact analysis using multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. As such, impact analysis using multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount.
 - **No allowance for purchasers' marginal responses to change:** Economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production.
 - **Absence of budget constraints:** Assessments of economic impacts using multipliers that consider consumption induced effects (type two multipliers) implicitly assume that household and government consumption is not subject to budget constraints.
 - **Not applicable for small regions:** Multipliers that have been calculated from the national input output table are not appropriate for use in economic impact analysis of



projects in small regions. For small regions multipliers tend to be smaller than national multipliers since their inter–industry linkages are normally relatively shallow. Inter–industry linkages tend to be shallow in small regions since they usually don’t have the capacity to produce the wide range of goods used for inputs and consumption, instead importing a large proportion of these goods from other regions.

3. Assessment of potential social and economic impacts

3.1 Overview

Based on the scoping of issues, this section describes and assesses potential impacts of the closure of NZAS on the Southland community, more specifically in Invercargill, which hosts the majority of the NZAS workforce, businesses that provide goods and services to NZAS and regional services. Impacts have been categorised into the following main themes:

- Regional economy, employment and income
- Demographic change
- Community infrastructure and services
- Real estate
- Community values and wellbeing
- Cultural values.

These themes are discussed in sections 3.2 to 3.7.

3.2 Regional economy, employment and income

3.2.1 Regional economy

As presented in the Baseline Report (GHD 2020) NZAS' economic contribution to the study area was measured through:

- Direct and indirect industry expenditure on purchases of goods and services from local businesses
- Direct and indirect employment (including contractors) and salaries
- Direct and indirect community contributions made via community investment programmes.

A summary of these contributions is provided in Table 3-1, Table 3-2 and Table 3-3 and details are provided in Appendix A. In 2019, NZAS directly contributed \$116 million of expenditure to the Southland region's economy, which is equal to \$55.0 million of value add, with the total value add equivalent to around \$135.4 million as shown in Table 3-1.

Table 3-1 NZAS contribution to the Southland regional economy through local purchases, 2019

	Direct contribution in 2019 (\$M)	Indirect contribution in 2019 (\$M)	Total contribution in 2019 (\$M)
Industry expenditure			
Expenditure (\$M)	\$58.62	\$85.19	\$144.30
Value-added (\$M)	\$24.21	\$41.25	\$65.46
Employee expenditure			
Expenditure (\$M)	\$43.64	\$60.21	\$103.85
Value-added (\$M)	\$23.44	\$29.85	\$53.29
Contractor expenditure			
Expenditure (\$M)	\$13.65	\$18.83	\$32.49

	Direct contribution in 2019 (\$M)	Indirect contribution in 2019 (\$M)	Total contribution in 2019 (\$M)
Value-added (\$M)	\$7.33	\$9.34	\$16.67
Community contributions			
Expenditure	\$0.05		
Total contribution			
Expenditure (\$M)	\$115.96	\$164.23	\$280.64
Value-added (\$M)	\$54.98	\$80.44	\$135.42

Source: GHD based on data provided by NZAS and IO model

NZAS' total value added contribution of \$135.4 million is equivalent to 2.2% of Southland region's GDP, as shown in Table 3-2. This proportion of regional GDP only reflects the level of expenditure and value generated to businesses within the Southland region, and excludes the value of aluminum produced at NZAS.

To identify the total amount of value add generated by NZAS to the Southland region, the total value of NZAS expenditure to businesses, employee expenditure and the value created by the smelter have been combined. This identifies the total proportion of regional GDP generated as a result of NZAS' operation in the Southland region. Based on this, NZAS' contribution to Southland region's GDP can be broken into two different categories:

- The value generated within the Southland region as a result of purchases made by NZAS employees and contractors.
- The value of aluminium produced at the NZAS facility, which is then exported or sold to local manufacturers.

Based on this as shown in Table 3-2, NZAS contributed \$386.3 million to the Southland region's GDP in 2019, accounting for 6.1% of total regional GDP.

Table 3-2 NZAS overall contribution to Southland regional GDP, 2019

	Total impact (\$M)	% regional GDP
Total vendor, employee and contractor contribution		
Expenditure (\$M)	\$280.64	
Value-added (\$M)	\$135.42	2.2%
Value of NZAS production (2019)		
Sales (\$M)	\$837.77	
Value-added (\$M)	\$250.87	3.9%
Total NZAS contribution to regional GDP		
Total regional spend including sales and expenditure by NZAS (\$M)	\$1,118.41	
Value-added (\$M)	\$386.29	6.10%

Source: GHD based on data provided by NZAS and IO Model

“Opportunities are very far off, if Tiwai leaves soon Southland will face hardship, there will be a wind down period, and some opportunities that come with it, but once lose those jobs and lose high levels of skills it is hard to attract people to stay in the region or come here” (SEIA consultation stakeholder meeting, March 2020).

“Our concern is that businesses will shut up shop, growth opportunity will be lost for Southland. It’s been a tough 12 months, a lot of business and community confidence has been lost” (SEIA consultation stakeholder meeting, March 2020).

As reported in the Baseline Report (GHD, 2020) and shown in Table 3-3, the economic impact of NZAS closure would be experienced primarily in Invercargill City through the loss of direct, indirect and flow on expenditure (including industry expenditure and salaries). This would result in an overall reduction in the Southland region’s economy and GDP, along with a reduction in contribution overall by the manufacturing industry to the regional economy. This would likely occur over a very short-term period, with NZAS only being required to give twelve (12) months notice of closure. Because of this, the existing NZAS economic contributions within the Southland region would not be gradually decreased over several years, but almost cease immediately.

Table 3-3 Summary of total NZAS economic contribution to each district, 2019

	Expenditure (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Invercargill City				
Direct impact	\$112.74	\$53.30	\$29.65	638
Indirect impact	\$81.05	\$36.63	\$16.64	281
Flow on impact	\$78.61	\$41.56	\$16.29	321
Total	\$272.40	\$131.49	\$62.57	1,241
Southland District				
Direct impact	\$2.93	\$1.56	\$0.87	23
Indirect impact	\$1.92	\$0.88	\$0.37	6
Flow on impact	\$2.12	\$1.11	\$0.44	9
Total	\$6.95	\$3.56	\$1.68	38
Gore District				
Direct impact	\$0.33	\$0.12	\$0.07	1
Indirect impact	\$0.30	\$0.13	\$0.06	1
Flow on impact	\$0.23	\$0.12	\$0.05	1
Total	\$0.85	\$0.37	\$0.18	4

Source: GHD based on data provided by NZAS and IO Model

There would be some additional economic contributions after the closure of NZAS as a result of decommissioning the smelter and rehabilitation of the land, over an estimated 3 to 4 year decommissioning period, once decommissioning commences and 8 to 10 years rehabilitation period, once rehabilitation commences¹.

3.2.2 Local businesses

In 2019, NZAS directly contributed \$58.69 million to 204 regional businesses, of which 200 businesses are located in Invercargill with NZAS spending \$58.35 million at these businesses

¹ The timeframes for decommissioning and rehabilitation are based on other smelter decommissioning examples in Australia

and four businesses are located in Gore with NZAS spending \$265,826 at these businesses. Of the 204 businesses, the top 52 businesses received \$55.1 million, which accounted for 94% of total Southland expenditure (this is similar to the findings from Venture Southland 2017). As seen in Table 3-4 a large number of regional businesses received small average spending in 2019.

As seen in Table 3-1 the total value add to regional businesses was \$65.46 million in 2019, which is estimated to be 0.38% of Southland's regional GDP. There are 14,088 businesses in the region, which means NZAS made purchases at approximately 1.45% of Southland's businesses in 2019.

Table 3-4 Businesses supported by NZAS by annual expenditure range, 2019

Expenditure range	No. of businesses	Average expenditure per business	% of expenditure
<\$25,000	107	\$5,137	0.9%
\$25,000-\$50,000	19	\$34,793	1.1%
\$50,000-\$200,000	38	\$110,621	7.2%
\$200,000-\$500,000	13	\$330,895	7.3%
\$500,000-\$1,000,000	11	\$791,706	14.9%
\$1,000,000-\$2,500,000	10	\$1,760,830	30.0%
>\$2,500,000	6	\$3,764,268	38.5%

As discussed in the Baseline Report (GHD, 2020) and shown in Table 3-5, in 2019 NZAS made the largest contributions to the Southland region industries of manufacturing (\$17.86 million); construction (\$14.73 million); transport, postal and warehousing (\$7.58 million); and professional, scientific and technical services (\$6.73 million).

“30% of local businesses had plans to invest and grow their businesses based on existing contracts with Tiwai, with closure this will be a lost opportunity for regional growth” (SEIA consultation stakeholder meeting, March 2020).

Table 3-5 Businesses and business expenditure by industry, in Southland, 2019

Industry	NZAS expenditure (\$M)	Number of businesses
Agriculture, Forestry & Fishing	\$0.00	0
Mining	\$0.00	0
Manufacturing	\$17.86	46
Electricity, Gas, Water & Waste Services	\$1.51	2
Construction	\$14.73	33
Wholesale Trade	\$5.10	24
Retail Trade	\$0.00	0

Industry	NZAS expenditure (\$M)	Number of businesses
Accommodation & Food Services	\$0.85	9
Transport, Postal & Warehousing	\$7.58	11
Information Media & Telecommunications	\$0.02	2
Financial & Insurance Services	\$0.00	0
Rental, Hiring & Real Estate Services	\$0.53	9
Professional, Scientific & Technical Services	\$6.73	37
Administrative & Support Services	\$0.01	2
Public Administration & Safety	\$2.59	9
Education & Training	\$0.69	4
Health Care & Social Assistance	\$0.31	16
Arts & Recreation Services	\$0.00	0
Other Services	\$0.20	0

Note: Expenditure by industry has been allocated based on the spend type. For business by industry, some businesses may provide services which extend across industries. Where this does occur, the business has been allocated to the industry which recorded the largest expenditure.


Impacts on regional businesses

This SEIA is not able to determine the current level of dependency of the 204 regional businesses contracted to NZAS as a detailed business survey has not been undertaken. This section discusses the potential high level impacts on regional businesses based on interviews with a small number of businesses in Invercargill in 2020. In addition, several surveys and consultations have been undertaken with businesses that supply NZAS to inform previous investigations into the economic and social contribution of NZAS. These include:

- 2005 study by Infometrics & Business Training Services, Southern Institute of Technology – interviews with 14 Invercargill-based businesses
- 2012 study by Infometrics Ltd – survey of 15 businesses
- 2017 study by Venture Southland - survey of 52 businesses.

Given the variation in the number of businesses consulted in the 15 years between 2005 and 2020, only high level conclusions can be drawn. The 2017 study by Venture Southland found that NZAS is considered a stable anchor for businesses in the manufacturing and engineering sector. This is reflected in the findings of the GHD IO model as well, which shows that NZAS operations support 120 equivalent jobs (7.6%) in the Southland region’s manufacturing sector and 139 in professional services sector (8.8%) (Table 3-6). Given that closure-related studies have occurred with some level of frequency over the 15 year period from 2005 to 2020, it can be assumed that the majority of businesses that supply to NZAS would be aware of its potential closure, and would have some ideas about how their business would need to respond and adapt. The SEIA consultation in 2020 indicated there was a high level of awareness amongst businesses about the Strategic Review. Although many stakeholders commented about closure being discussed over the past year as well, there was a sense that the Strategic Review consideration of closure this time around was the most serious investigation into closure.

Overall, the SEIA research indicated that there are businesses that may be at risk of closing down or may need to downsize their operations and reduce staff numbers in response to loss of revenue from NZAS closure. The businesses most at risk of these impacts would typically be



those that have a high level of dependence on NZAS. In particular, those top 52 businesses that have a high annual contract value, those that were specifically established to service NZAS or those that have been servicing NZAS for the long term, may have a high level of dependence on NZAS.

Further, the 2017 study by Venture Southland found that regional businesses may also be affected by the overall impact on the economy and out-migration of the NZAS-related population (section 3.3), which may lead to an overall reduction in local demand for some businesses that receive small or no direct procurement spend from NZAS, for example, retail and hospitality businesses. SEIA consultation indicated these types of businesses in Invercargill are particularly likely to notice the loss of NZAS-related population and their spending, particularly as they earn more than average income in the region.

Stakeholder perceptions of impacts on businesses are captured below:

“It (closure of NZAS) would have a significant impact on the local economy, several businesses have been set up for the smelter, we don’t have another obvious replacement business in the short term, so these businesses will be severely impacted” (SEIA consultation stakeholder meeting, March 2020).

“The city is proposing to invest in the city centre block, closure would lead to uncertainty among the business community and the tenants of that building, Invercargill community would feel disheartened to see that falter” (SEIA consultation stakeholder meeting, March 2020).

“Not just the business that work with the smelter, but all other businesses in town even like the dry cleaners would be affected, that is how ingrained Tiwai is with the region” (SEIA consultation stakeholder meeting, March 2020).

It is anticipated that some demand for regional goods and services may continue through the smelter decommissioning and site rehabilitation phases.

3.2.3 Employment and income

In 2019, NZAS directly employed 732 employees and 229 contractors living in the Southland region. It is anticipated that these direct regional jobs would be foregone after closure. However, it is expected there would be some regional employment opportunities through the smelter decommissioning and site rehabilitation phases.

As shown in Table 3-6, the IO model found that NZAS supports a total of 1,282 FTE through indirect and flow on employment opportunities, which is equivalent to 1,580 jobs (including full time and part time positions). This is based on a total 662 FTE indirect jobs in the region, which can be attributed to NZAS expenditure at local businesses, and a further 620 flow on FTE jobs that can be attributed to the spending from these businesses onto their supply chain. The majority of indirect and flow on jobs supported by NZAS spend are in the following industries:

- Retail trade – 454 equivalent jobs
- Professional, scientific and technical services – 139 equivalent jobs
- Other services – 150 equivalent jobs
- Manufacturing – 120 equivalent jobs
- Construction – 115 equivalent jobs.

Indirect and flow on employment numbers for all geographies considered in the study area are presented in Appendix A Table A21 to Table A35.

Table 3-6 Total indirect and flow on employment supported from NZAS operations in the Southland region by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	26	26	31
Mining	0	1	1	1
Manufacturing	39	57	97	120
Electricity, Gas, Water & Waste Services	10	12	22	27
Construction	51	42	94	115
Wholesale Trade	21	39	61	75
Retail Trade	284	86	371	454
Accommodation & Food Services	56	41	97	119
Transport, Postal & Warehousing	27	39	67	83
Information Media & Telecommunications	4	12	15	19
Financial & Insurance Services	8	33	41	52
Rental, Hiring & Real Estate Services	1	14	14	17
Professional, Scientific & Technical Services	37	76	113	139
Administrative & Support Services	0	35	35	43
Public Administration & Safety	0	7	7	9
Education & Training	11	19	29	36
Health Care & Social Assistance	25	36	59	73
Arts & Recreation Services	0	10	10	13
Other Services	86	35	121	150
Total	663	619	1,282	1,580

Wages paid to employees totalled \$74.8 million in 2019², and an estimated \$23.4 million in wages paid to contractors which would be foregone after closure. As the majority of NZAS employees live in Invercargill City, a higher proportion of wages contribute to Invercargill City, with a small proportion in Southland District and Gore District. Anecdotally it was gathered that NZAS employees earn higher wages compared to regional average wages in the Southland region.

² Source: Pacific Aluminium (New Zealand) Limited, 2019.

The sections below discuss the social implications that may result from loss of employment and income.

Loss of employment

The closure of NZAS would result in a loss of 732 direct jobs and 229 contractor jobs, and the potential loss of 663 FTE indirect jobs and 619 FTE flow on jobs in the Southland region, with up to 1,580 overall indirect and flow on equivalent employees (this accounts for any FTE positions that may be job shared by part time employees) which are supported by NZAS' operation. The loss of these jobs may increase the rate of unemployment in Southland should displaced employees be unable to secure other jobs within the region. The unemployment impact would be more pronounced in Invercargill City where the majority of direct and indirect jobs are hosted.

As reported in the Baseline Report (GHD, 2020), almost 50% of the NZAS workforce (353 people) are over 50 years of age and a high proportion of roles (65.8%) do not require professional qualifications. It is estimated that 233 employees over 50 years of age (31.8%) are working in unskilled roles. Further, many employees have worked at NZAS for most of their careers, with the majority of employees between 60 and 65 years of age and over 65 years of age having served at NZAS for over twenty years (79.6% and 83.9% respectively). These employees are likely to be more vulnerable to long term unemployment, as there is near unanimous agreement in academic literature that:

- Workers over 45 years of age have difficulty finding employment once unemployed
- The length of unemployment tends to be greater for older cohorts
- The potential for long term unemployment increases with age (Peetz, 2003).

Longer job tenure is also understood to present as a vulnerability for unemployment following redundancy. Specifically, employees with long term tenure in their previous job are disadvantaged because their skill and experience have been specific to a particular employer and may not be readily transferable (Peetz, 2003). Together, these factors indicate that many direct NZAS employees may be at risk of unemployment.

Employees of businesses that supply to NZAS may also be at risk of unemployment if the businesses need to downsize or close. As discussed in section 3.2.2, the current level of dependency of regional businesses on NZAS is not known. There is also potential the flow on impact to the economy may lead to unemployment in other businesses which either supply to NZAS' vendors, or rely on spending by NZAS employees in the region (e.g. retail, hospitality businesses). Anecdotal views of stakeholder gathered through SEIA consultation 2020 suggested that the indirect economic and unemployment impacts in Invercargill would be equal if not greater than the direct impacts.

"Its very hard to understand impacts on jobs – they will be significant or profound impacts" (SEIA consultation stakeholder meeting, March 2020).

However, while there would be an increase in unemployment, the overall net unemployment impact is likely to be lesser than the numbers predicted above, because some direct and indirect NZAS employees may be able to find alternate employment in the region, particularly given a 2015 study which found the region was likely to experience a labor market shortage predicted to occur till 2031 (Roskrug & Pawar, 2015).

During the SEIA consultation undertaken in March 2020, stakeholders described NZAS' contribution to employment as:

Surplus of skilled workforce

Loss of direct and indirect jobs associated with NZAS would lead to a surplus of skilled and semi-skilled workforce in the study area, this could increase competition in the labor market, potentially further disadvantaging vulnerable people.

“Tiwai has been good investor in skills development, it uses same inputs as other smelters around Australasia but produces purest aluminium, they have a highly skilled workforce” (SEIA consultation stakeholder meeting, March 2020).

Loss of income

The closure of NZAS would result in direct and indirect job loss in the region. This is likely to reduce the income of NZAS employees, including through unemployment, and through a reduction in wages, as it is understood that NZAS employees earn higher wages than the regional average. Depending on the employment tenure of individual employees, the amount of redundancy payment, age of the employee and individual family circumstances, some employees would be at a greater risk of financial stress. SEIA consultation and the 2017 Venture Southland study also indicate that NZAS employees are generally paid higher wages than other employers in the region, and as a result they are likely to have large mortgages and other similar financial commitments (also refer to section 3.5 for housing/mortgage stress).

“Tiwai incomes are high in the region, it has provided security and influenced investments and decisions, people won’t be able to find similar paying jobs in region, it is possible people won’t be able to meet financial commitments” (SEIA consultation stakeholder meeting, March 2020).

Loss of employment and financial stress at individual and household level can lead to mental stress further resulting in health repercussions, putting strain on family relationships and wellbeing of individuals, families and community (also refer to section 3.6).

Outmigration from the region

Unemployment generated due to the closure of NZAS would result in potential outmigration of employees and their families to seek alternate employment. This is discussed further in section 3.3.

3.2.4 Other industries

The overall economic implications from the closure of NZAS would impact other industries in the region. The main industries that would experience withdrawal of expenditure and loss of employment are those that currently experience greater direct, indirect or flow on spend from NZAS and its direct, indirect and flow on employees. As discussed in sections 3.2.2 and 3.2.3 these industries are retail trade; professional, scientific and technical services; manufacturing, construction; wholesale and transport and logistics.

As discussed in section 3.2.3, the closure of NZAS is expected to reduce direct and indirect employee household income. This is expected to reduce the disposable income within the community, which may decrease demand for retail, entertainment and hospitality services in Invercargill. However, it is likely that with a large proportion of older age and long tenure workforce at NZAS, a number of employees would receive substantial redundancy payments and may choose to retire, potentially continuing some demand for retail and entertainment services in Invercargill.

Energy industry

NZAS makes a significant contribution to the energy industry as the largest single user of electricity in New Zealand. While the impact of closure to the energy sector would not be

experienced only within the study area of this SEIA, these impacts are discussed because of the significant contribution made by NZAS to this industry. It should be noted that impacts discussed in this section are high level socio-economic considerations and are not intended to be an analysis of impacts to the energy market. The research that has informed this section is limited to a review of desktop material.

Closure of NZAS would lead to the following socio-economic impacts to the energy industry:

- Manapōuri Power Station would continue to operate, under various operation scenarios, and diversion of energy from Manapōuri to the market would be undertaken over a period of time.
- Diversion of energy from Manapōuri to the north would require transmission network upgrade worth approximately \$450 million, spent over 5-8 years (Puller-Strecker, 2019), generating an economic stimulus.
- Due to the diversion of power from Manapōuri, no new generation capacity of renewable energy would need to be built for four years from 2030 onwards (assuming that closure would occur in 2030) (Burroughs, 2016), which would mean that economic stimulus generated through the construction and operation of these new renewable power stations would not occur for a period of time. It is anticipated that the same would occur, even if closure of NZAS was undertaken prior to 2030.
- Reduction in demand for energy and redistribution of energy would likely impact on price of energy and share value, potentially impacting shareholders.
- As the energy market adjusts due to closure of NZAS, with reduced baseload demand, existing baseload fossil fuel power plants will be utilised less, forcing their retirement, such as the Huntly Power Station or the Taranaki Combined Cycle Power Station also known as Stratford Power Plant (Ministry of Business and Innovation and, no date, and Burroughs, 2016).

It is known that Genesis Energy (operators of Huntly) plan to stop using coal to generate electricity except in exceptional circumstances by 2025 and to completely stop use of coal for power generation by 2030 (Frykberg, 2018). It is also known that Taranaki Combined Cycle Plant is used only three to five months of the year as a result of new renewable energy stations, which means that older gas powered stations are less used (Burroughs, 2016 and Frykberg, 2017). However, it may be possible that early closure of NZAS would result in early closure of Huntly Power Plant and potential closure of Taranaki Combined Cycle Power Station.

- The impacts would mainly be experienced in communities near the power stations where their workforce and contractors are mainly located, namely Stratford District in the Taranaki Region and Waikato District and Waikato Region.
- Based on desktop research it is understood that Taranaki Combined Cycle Power Station employs 250 to 300 staff after the fifth refurbishment of the station occurred in 2017 and it is assumed that the workforce would be located mainly in Stratford (3.3 km west of the power station), but could also be spread across other nearby communities such as Wharehuia (5.4 km north of the power plant), Bird Road (5.6 km south east of the power station), Midhurst (8.6 km north west of the power station), Pembroke (8.6 km west of the power station), Toko (9.0 km east of the power station), Cardiff (9.1 km south west of the power station), Ngaere (9.7 km south of the power station) and Eltham (13 km south of the power station). The number of employees at Huntly Power Station was not found through desktop research, however it is assumed it provides employment to a few hundred people in the town of Huntly and potentially other surrounding towns of Te Ohaki (3.2 km from the power plant), Rotongaro (5.8 km from the power plant), Ohinewai (5.9 km from the power

plant), Rotowaro (7.2 km from the power plant), Waikokowai (8.6 km from the power plant), Taupiri (8.2 km from the power plant) and Ngaruawahia (13.2 km from the power plant).

- Socio-economic impacts of the potential closure of Huntly Power Plant and Taranaki Combined Cycle Power Station would be similar to the impacts of the closure of NZAS as described in this report, however the magnitude of the impacts at Taranaki Combined Cycle Power Station would be low given the station already operates at limited capacity, which likely means the workforce at Taranaki Combined Cycle Power Station is either working on an ad hoc basis when the plant is operational or potentially already working on other projects/power stations operated by Contact Energy.

3.3 Demographic change

The predicted loss of employment and income resulting from the closure of NZAS may lead to some employees and their families out-migrating from Southland, particularly if they cannot find alternate or comparable employment requiring similar skills and paying similar wages in the region. The loss of these residents could have a range of flow on impacts.

Accurately predicting when and how many NZAS-related employees and families would leave the region is not possible at this stage given this would be determined by a number of factors including individual circumstances and availability of suitable alternate employment in the region. However to develop some understanding of potential population changes, this SEIA includes a methodology that provides an indicative prediction of population changes resulting from closure of NZAS.

As discussed in section 3.2.3 and the Baseline Report (GHD, 2020), the IO model estimates there are a total 663 FTE indirect jobs in the region which can be attributed to NZAS. For the purpose of estimating the population that is most associated with NZAS and therefore most likely to be impacted by its closure, the 663 indirect FTE jobs have been used to estimate the NZAS-related population.

The total NZAS-related population in the Southland region is estimated to be 3,903 people, as shown in Table 3-7. The majority of this population live in Invercargill City (3,715 people), followed by Southland District (187people) and Gore District (5 people).

Table 3-7 Direct and indirect NZAS related population

Local government area	Number of employees/contractors	Indirect FTE*	Total direct and indirect FTE	Average household size (people)	Total NZAS related population
Invercargill City	694 employees + 217 contractors = 911	637	1,548	2.4	3,715
Southland District	37 employees + 12 contractors = 49	24	73	2.5	183
Gore District	1 employee (no contractor)	1	2	2.4	5
Total	732 employees + 229 contractors = 961	663	1,623		3,903

*Note: This number is the indirect FTE employment estimated by the IO model because of NZAS industry expenditure (i.e. its suppliers). Numbers may not sum due to rounding

Source: GHD based on NZ Stats, 2018 and GHD IO model 2020

To provide an indicative estimate of how many people may out-migrate from the region resulting from NZAS closure, three out-migration scenarios have been developed, based on the following assumptions:

- According to migration data for the Southland region in 2017/2018, net migration for Southland was 752 people (Statistics New Zealand, 2020), which is 0.8% of the regional population. This is the baseline migration rate.
- High scenario – almost half the NZAS employee workforce are under 50 years of age. It is assumed that this cohort would be more likely to leave the region in search of other employment. Therefore, for the ‘high’ scenario it is assumed that at worst case 50% of direct and indirect FTE workforce (including contractors data) and associated population would out-migrate.
- Medium scenario – the medium scenario assumes half of the population presented in worst case scenario may out-migrate, therefore in the ‘medium’ scenario it is assumed that 25% of workforce direct and indirect FTE workforce (including contractors data) and associated population would out-migrate.
- Low scenario – at best case, if workforce finds alternate employment in the region and retired workforce continues to live in the region, in the ‘low’ scenario it is assumed that 10% of direct and indirect FTE workforce (including contractors data) and associated population would out-migrate.

As shown in Table 3-8, there could be between 390 and 1,951 people who may out-migrate from the Southland region, with the majority (between 372 and 1,858 people) from Invercargill City.

Table 3-8 Out-migration estimate based on low, medium and high scenarios

Location	Total NZAS related population (direct and indirect FTE including contractors)*	Low - 10%	Medium - 25%	High - 50%
Invercargill City	3,715	372	929	1,858
Southland District	183	18	46	92
Gore District	5	0	1	2
Total	3,903	390	976	1,951

*Note: Includes workforce and contractor data together.

The social implications of population out-migration from the region due to NZAS closure are discussed below.

Population decline

The closure of NZAS and potential out-migration of direct and indirect employees and families would lead to population decline in the region, with the large majority of population decline occurring in Invercargill City. The medium and high scenarios are likely to be most noticeable in

Invercargill City, representing a 1.8% and 3.4% decline in the 2018 population. Stakeholder perceptions of loss of population indicated that the following:

“The region will halve in size” (SEIA consultation stakeholder meeting, March 2020).

“We will lose 2000 – 3000 people across the region” (SEIA consultation stakeholder meeting, March 2020).

“Without Tiwai, it will be a ghost town, we have the plant, we have electricity, can they (politicians) sort their shit out, so they (NZAS) can keep doing what they are doing” (SEIA consultation stakeholder meeting, March 2020).

As discussed in the Baseline Report (GHD, 2020), population decline is an existing trend in the region, and noted as a key challenge for the region’s development. Given the aspirations for Southland to grow its population, further population decline resulting from out-migration of NZAS-related population could contribute to existing challenges associated with access to services, particularly those funded according to population numbers. This is discussed further in section 3.4.

Loss of skilled and semi-skilled workforce from the region

Out-migration of NZAS direct and indirect employees and their families, including partners who may be part of the regional workforce, would generally create a loss of skilled and unskilled workforce from the region. Although the Baseline Report (GHD, 2020) found that almost two thirds of roles in the NZAS direct employee workforce (65.8% or 494 roles) do not require formal education, it is understood from SEIA consultation that many roles require attributes and skills that are developed on the job. While, skills breakdown data was not available for the contractors, similar findings can be applied to the 235 contractors engaged at NZAS.

Out-migration is expected to lead to a flow-on reduction of the available workforce for other businesses and services in the region. According to the out-migration scenarios (Table 3-8), between 390 and 1,951 people could leave the region, of which over 50% would be partners and children of NZAS direct and indirect FTE employees and contractors. It is expected the medium and high scenarios would have the most noticeable impact on the regional economy and workforce

Conversely, as other businesses and industries experience vacancies, there is potential for these roles to be filled by NZAS employees and/or their family members who choose to remain in the region. This is supported by the findings of the *Southland Region Labour Market Assessment 2014-2031* (Roskrugge and Pawar, 2015) which found that even with closure of NZAS, there would be a labour shortage in the region, and therefore it is likely there would be positions NZAS employees and their families could take up. However, the study also noted that NZAS employees earn higher than average wages, and also may not have transferable skills, which may limit their willingness and ability to find comparable employment in the region (discussed in section 3.2.3).

3.4 Community infrastructure and services

NZAS is connected to community infrastructure in Southland in a number of different ways. These include:

- Direct financial contributions
- In-kind contributions
- Skilled volunteer roles of NZAS staff with local organisations
- Employment and training

- NZAS-related workforce and families using regional infrastructure
- Emergency services
- Transport.

Closure of NZAS is expected to result in a loss of these contributions to the region. These are discussed further below.

Loss of financial contributions

As reported in the Baseline Report (GHD, 2020) NZAS paid \$48,373.75 in direct contributions in 2019 to community service providers and organisations in the Southland region and outside the region through sponsorships and donations in line with the *Draft Communities and Social Performance Plan 2020*. These include:

- Multi-year partnership – *Te Hipoki Iiti* is a partnership programme with Department of Conservation, Great South and Awarua Rununga to plant indigenous tree species at a scenic reserve near NZAS. NZAS will contribute \$41,000 between 2019 and 2022.
- Scholarships – NZAS contributes to various scholarships with the following educational organisations:
 - South Pacific Indigenous Engineering Studies for Māori and Pacific Island engineering students at Auckland University - \$6,000
 - Six community tertiary scholarships for students undertaking tertiary study outside the region - \$12,000
- Annual sponsorships
 - Graeme Dingle Foundation Southland - \$10,000
 - Naming rights for Southland Science and Technology Fair - \$7,000
 - Local events and awards - \$2,500
- End of year prizes for local education institutions – total \$4,700 in 2019/2020

The dependency of each organisation on these financial contributions is not understood as this SEIA did not consult all recipients. While it is assumed recipients would value the contributions, given closure has been discussed several times over the years, it is likely that many recipients would have some awareness that closure is possible and therefore would need to seek replacement funding.

Loss of in-kind contributions

NZAS also makes in-kind contributions, primarily through a partnership with Southland Girl's High School and through the Southland Science & Technology Fair.

The Southland Girl's High School partnership involves four top Year 13 students from the school visiting NZAS for six days to carry out engineering/science projects. The students are mentored by NZAS staff while completing their projects. The programme has been in place for the last twelve years, with around half of the students going on to study engineering at university. The partnership was acknowledged by many stakeholders during SEIA consultation in 2020 as an important programme for encouraging women to pursue careers in science and technology. While the school is aware NZAS may be closing, given there are no other similar large science and technology employers in the region, it is expected the programme may cease following closure.

In addition to being naming rights sponsor of the Southland Science & Technology Fair, several NZAS employees are members of the organising committee and others are on the judging panel. It is expected the fair organising committee would need to find replacement volunteers

from alternate regional businesses and organisations, in addition to seeking alternate sponsorship donations.

Loss of skilled volunteers

The potential out-migration of NZAS-related population would also impact organisations that rely on volunteers. As discussed in the Baseline Report (GHD, 2020) it is understood that some NZAS employees volunteer their time to organisations such as the FENZ, and are members of organisational boards and committees (e.g. SIT Advisory Committees). While it is not known how many employees volunteer with community organisations in the region or how dependent organisations are on NZAS volunteers, SEIA consultation indicates that regional stakeholders are aware about the potential closure of NZAS, and the potential loss of volunteers it would bring to some organisations. However some volunteer roles filled by NZAS employees would require specific skills and expertise (e.g. board positions, curriculum advisors, Rural Fire Service), and replacement volunteers would need to be found who have similar skills and experience, or could undertake the required training. On the other hand it is also possible that NZAS employees who choose to retire or continue to stay in Invercargill would take up volunteering at some of these organisations.

Loss of apprenticeships

The closure of NZAS would result in a loss of apprenticeship positions for the region's young people. As discussed in the Baseline Report (GHD, 2020), NZAS had around 16 apprentices in March 2020 which are provided through Southern Group Training Trust. This provider also places apprentices with regional businesses who supply NZAS. It is expected that closure would not only result in loss of the apprentice positions at NZAS, but there would also be loss of some positions with other regional businesses which supply NZAS. This is expected to result in a loss of income for Southern Group Training Trust. The loss of training opportunities for young people is discussed in section 3.6.

Impact on facilities due to out-migration

The NZAS-related population would access a range of services and facilities in the region, and particularly in Invercargill City where the majority of employees live. This SEIA did not consult with all service providers therefore it is not known how the out-migration scenarios would affect various services. However, there is potential for all out-migration scenarios to directly impact some services. For example, it is understood from SEIA consultation in 2020 that Southland Girl's High School estimate 30% of their students to be children of NZAS employees, and out-migration of these families may reduce the income received from student fees.

Impact on Fire and Emergency New Zealand

As reported in the Baseline Report (GHD, 2020), NZAS has an industrial fire brigade of around 40 people who are trained in FENZ courses to respond to fire and emergencies. FENZ Southland District rely on the NZAS brigade to respond to emergencies at the smelter and in the surrounding area until FENZ arrive, which on average occurs three to four times a year. Once NZAS is decommissioned, it is expected the risk of emergencies occurring on site would be low, however loss of the on-site brigade could also increase FENZ response times to emergencies at Tiwai Peninsula.

Impact on Invercargill Airport and South Port

NZAS direct and indirect population would access passenger flights through Invercargill Airport. However, SEIA consultation in 2020 indicated that population decline resulting from closure is not expected to affect services at the airport.

As reported in the Baseline Report (GHD, 2020), a third of South Port’s business revenue is associated with NZAS, with the remaining two thirds attributed to other industries. SEIA consultation in 2020 found that while closure would reduce the port’s revenue, the port would continue to operate. Further, NZAS has a 30 year lease over the Tiwai wharf and causeway, therefore closure is not expected to impact this source of revenue for South Port until 2043. However there may be some stevedoring businesses located at the port which could be impacted by closure. It is understood from SEIA consultation this business directly contracts to NZAS, the impacts on this business are therefore discussed in section 3.2.2.

3.5 Real estate – housing, accommodation and commercial properties

Demographic changes to the region and particularly to Invercargill City as discussed in section 3.3, are likely to impact on the housing market in Invercargill. Given the stable nature of jobs at NZAS, long term tenure of a high proportion of employees and higher than average salaries, it is highly likely that many employees of NZAS would own a home in the region. Anecdotal information also suggests that some may own more than one house in the region as an investment property or may own a second home outside the Southland region in Queenstown or the Central Otago region. The baseline (GHD, 2020) suggests that the housing market in the study area is buoyant with high housing occupancy rate (93.7% in Invercargill and 91.6% in Gore District), low housing construction rate (Invercargill City 0.2% and Gore District 0.3%) and a 20% rise in the housing market value in Southland in 2019 (16% rise in Invercargill during the same period).

Given the likelihood of a higher housing ownership of NZAS employees, to estimate potential impacts to the housing market in the study area, the following assumptions are made:

- One regional employee is equal to one occupied dwelling in their place of residence
- Employees with more than 4 years of tenure with NZAS would own the dwelling they occupy either fully, partly or in family trust
- Employees with less than 4 years of tenure with NZAS and more than 34 years of age would own the dwelling they occupy either fully, partly or in family trust
- Employees with less than 4 years of tenure with NZAS and less than 34 years of age would occupy a rental property.

These assumptions have been applied to the private housing stock in the study area, as shown in Table 3-9.

Table 3-9 Housing status of NZAS employees* in study area

Assumption	Invercargill City	Gore District	Southland District	Total Southland Region
Number of employees with more than 4 years of tenure with NZAS of all age groups would own the dwelling they occupy either fully, partly or in family trust	468	1	28	497
Number of employees with less than 4 years of tenure with NZAS and more than 34 years of age would own the dwelling they occupy either fully, partly or in family trust	111	-	7	118

Assumption	Invercargill City	Gore District	Southland District	Total Southland Region
Number of employees with less than 4 years of tenure with NZAS and less than 34 years of age would occupy a rental property	115	-	2	117
Total occupied dwellings				
Owned	579	1	35	615
Rental	115	0	2	117
Total	694	1	37	732
Total occupied dwellings as a proportion of total private dwelling stock	3.2%	0.01%	0.3%	1.88%

*Note – does not include contractors as years of service data for contractors was not available.

As seen in Table 3-9, 694 dwellings (3.2% of total dwelling stock) in Invercargill City, 37 dwellings (0.3% of total dwelling stock) in Southland District and 1 dwelling (0.01% of total dwelling stock) in Gore District are estimated to be occupied in ownership or rental by direct NZAS employees.

In addition to the direct employees, it is anticipated that the contractors and indirect and flow on NZAS workers together in Invercargill City occupy 1,548³ dwellings (7.2% of total dwellings stock). In this analysis, indirect workers and contractors are only considered for Invercargill City because almost all regional businesses supplying goods and services to NZAS and a large majority of workers and contractors associated with NZAS are located in Invercargill City.

To estimate the impact of NZAS' closure on housing, the out-migration scenarios are applied to NZAS related occupancy in the study area in Table 3-10.

Table 3-10 Estimate of potential housing vacancies in the study area

Location and housing tenure	Number of NZAS employees and contractors (direct and indirect)	Housing vacancy based on out-migration scenario		
		Low	Medium	High
Invercargill City				
Houses owned (fully, partly, family trust) (direct employees only)	579	57	145	289
Rented (direct employees only)	115	11	29	57
Total (direct employees only)	694	69	74	346
Houses owned (fully, partly, family trust) (direct employees + contractors* + indirect workers*)	579 direct +152 contractors* +446 indirect* = 1,177	118	294	588

³ Applying the assumption that 1 indirect employee occupies 1 dwelling with their family.

Location and housing tenure	Number of NZAS employees and contractors (direct and indirect)	Housing vacancy based on out-migration scenario		
		Low	Medium	High
Rented (direct employees + contractors* + indirect workers*)	115 direct +65 contractors* 191 indirect* = 371	37	93	185
Total (direct employees +contractors* +indirect workers*)	1,548	155	387	774
Southland District				
Houses owned (fully, partly, family trust) (direct employees only)	35	3	8	17
Rented (direct employees only)	2	0	0	1
Total (direct employees only)	37	3	8	18
Houses owned (fully, partly, family trust) (direct employees + contractors* + indirect workers*)	35 direct + 8 contractors* + 17 indirect* = 60	6	15	30
Rented (direct employees + contractors* + indirect workers*)	2 direct + 4 contractors* + 7 indirect* = 13	2	3	7
Total (direct employees +contractors* +indirect workers*)	73	8	18	37
Gore District				
Houses owned (fully, partly, family trust)	1	0	0	0
Rented	0	0	0	0
Total	1	0	0	0
Total for the Southland region				
Houses owned (fully, partly, family trust) (direct employees only)	615	61	154	307

Location and housing tenure	Number of NZAS employees and contractors (direct and indirect)	Housing vacancy based on out-migration scenario		
		Low	Medium	High
Rented (direct employees only)	117	11	29	58
Total (direct employees only)	732	72	183	365
Houses owned (fully, partly, family trust) (direct employees + contractors* + indirect workers*)	1,237	123	309	618
Rented (direct employees + contractors* + indirect workers*)	384	38	96	192
Total (direct employees + contractors* + indirect workers*)	1,623	161	405	810

*Census 2018 proportions of housing tenure in Invercargill City are applied (to total indirect employees as a result of NZAS total spending Appendix A TableA23) where 70% dwellings are owned by individuals or in family trust and 30% are rented.

As shown in Table 3-10 there is a potential that 155 to 774 houses (0.7% to 3.6% to the total private dwelling stock) in Invercargill City which hosts majority of NZAS direct employees, contractors and indirect workforce could become vacant under the low, medium and high out-migration scenarios respectively.

Due to the higher age profile of NZAS workforce and due to the strong regional connections and community ties of the people living in the region, employees who own their home are more likely to remain in the region, however there is potential that some may leave and would either rent or sell their homes. Also, other factors such as availability of alternate job prospects in the region and choices people make regarding remote employment where some might choose to leave their families in the region and only one person may work elsewhere, this would potentially reduce the number of vacant houses.

It should be noted that this methodology provides indicative worse case numbers of houses that may become vacant in the study area as a result of NZAS closure. The timeframes of when this might occur cannot be predicted in the SEIA as the closure timeframes were not known at the time of the study.

Since the average income of the NZAS employees is higher, it is anticipated that these housing vacancies are likely to be in the mid to high range of the housing market. Given the current market conditions in Invercargill (GHD, 2020) the housing sale and rental prices are likely to reduce, potentially making housing more affordable. However, reduction in housing rental and sale prices and loss of higher income of NZAS employees, could also result in housing stress for some, who may not be able to repay their mortgage or may lose money on their real estate investments.

“Property prices will drop, they are currently high which is the first time this has happened” (SEIA consultation stakeholder meeting, March 2020)

“Tiwai gives secure income for homes and most have investment properties. Salary are above the norm, that allows them to invest in property in the country. They have a more disposal income. Southland is the best region to have an investment property” (SEIA consultation stakeholder meeting, March 2020).

In addition to housing properties, commercial properties would also be impacted in Invercargill, as some businesses that supply goods and services to NZAS may need to downscale or close resulting in commercial property vacancies and resultant reduction in commercial property prices. These business properties could mainly be in industrial areas associated with manufacturing and wholesale trade type of businesses. Reduced commercial property prices could mean commercial property stress for some, but it could also offer opportunities for some other business development in the region.

In terms of impacts to accommodation facilities, it is anticipated that the 19 direct and some indirect NZAS workers who live over 2 hours of driving distance from Tiwai Point and in other parts of New Zealand, would be living in accommodation facilities or in rental houses in Invercargill during their roster days. These workers would no longer need to visit Invercargill, reducing the demand for local accommodation facilities. As seen in the SEIA Baseline (GHD, 2020) the occupancy rate for accommodation facilities in 2019 was 43% with average length of stay of 1.6 days, it is likely that the occupancy rate would reduce further. However, the main reason for visitors using accommodation facilities, to come to Invercargill is to access regional facilities and services and for tourism, it is anticipated that these visitors would continue to visit even after the closure of NZAS.

3.6 Community values and wellbeing

The SEIA Baseline (GHD, 2020) discusses community values as they relate to NZAS. The closure of NZAS would impact on these values. These impacts are discussed below.

Community identity

The SEIA consultation 2020 indicated that people associated with NZAS either as employees or contractors or their families, take great pride in that association, and all stakeholders acknowledged the high value the community places on the contribution NZAS has made to the community since its establishment 50 years ago. NZAS is considered to be the backbone of the manufacturing industry of Southland. A number of stakeholders mentioned that with the closure of NZAS, the manufacturing economic identity and a sense of pride in working for a world class industry/employer would be lost. This loss of identity and opportunity would also limit career pathways for young people in the region aspiring to join the manufacturing industry, pursue technical studies and for multi-generational families who work at NZAS.

During the SEIA consultation undertaken in March 2020, stakeholders described NZAS' contribution to community identity as:

“That's (smelter) at the core of Invercargill and Bluff, Tiwai is very important for opportunities for people, it is knitted into the fabric of Invercargill” (SEIA consultation stakeholder meeting, March 2020).

“We are proud of Tiwai - it is part of our identity. They make purist aluminium. They are involved in many aspects of the community. Its part of our DNA. We use Tiwai as part of our sales and jargon. It is a huge contributor in the region” (SEIA consultation stakeholder meeting, March 2020).

“As a city of 50K people everyone is going to be connected to Tiwai somehow” (SEIA consultation stakeholder meeting, March 2020).

“Lots of it (contribution by the smelter) isn’t necessarily quantifiable” (SEIA consultation stakeholder meeting, March 2020).

“Without Tiwai, we will be nothing on the map” (SEIA consultation stakeholder meeting, March 2020).

Community cohesion

As described in the SEIA Baseline (GHD, 2020), the Southland regional community takes pride in its strong social connectedness, a sense of belonging and community networks. With the outmigration triggered (see section 3.3) due to the closure of NZAS, it is likely that some community and family networks would be disrupted, there would be fewer volunteers in the community particularly at sports and recreational facilities where community networks are fostered. Outmigration of NZAS employees could also mean a loss of role models for young family members and community members.

Through the SEIA consultation it was noted that people often left the region for some time in their early years but then returned to settle down into a stable lifestyle. It is likely that the loss of a major employer like NZAS from the region would deter some people from returning to the region due to limited employment and career opportunities in the technical/manufacturing industry and overall economic downturn in the region, which could further erode family ties.

However, on the other hand, it is likely that a proportion of NZAS employees over the age of 55 years who have worked at NZAS for over 20 years, may choose to retire and potentially fill in the void in volunteering services that would be created by the out-migrant population.

Anti-social behaviour


Unemployment has the potential to result in an increase in antisocial behaviour such as increase in riskier health behaviour, and higher crime rates, resulting in higher arrest rates for workers affected by redundancy (Rege, Telle, Votruba, 2011; Nichols, Mitchell, Lindner, 2011). It was noted in the SEIA Baseline (GHD, 2020) that the region has the highest incidences of domestic violence in the country and SEIA consultation indicated that the direct and indirect unemployment implications of the closure of NZAS, would increase domestic violence, unemployment related crime and mental health issues in Invercargill. This could also negatively influence the feeling of safety in the community and the image of the community.

Vulnerable groups

In addition to impacts to vulnerable groups mentioned above in this section, as seen in the baseline (GHD, 2020), NZAS makes meaningful contribution to businesses like Southland DisAbility Enterprises (SDE) by providing employment opportunities to people with mental and physical disabilities. Closure of NZAS would reduce available opportunities for such vulnerable groups in the community, further increasing their vulnerabilities and wellbeing risks for individuals and their families/care takers.

3.7 Cultural values

NZAS has established a strong relationship with the Iwi associated with the Southland region and Tiwai Peninsula, not only for cultural heritage and resource consents, but also to increase cultural awareness of NZAS staff, and enhance relationships (NZAS, 2020a). Closure of NZAS has the potential to impact tangible cultural heritage at the NZAS site, as well as intangible cultural values.



There are 31 Cultural Heritage Sites that have been identified on Tiwai Peninsula, and these sites, as well as unknown sites impacted by NZAS activities, must be protected to comply with the *Resource Management Act 1991* and the *Historic Places Act 1993* (NZAS, 2014). Closure of NZAS and demolition of site infrastructure have the potential to disturb the ground at NZAS. Any potential disturbance of Cultural Heritage sites would be managed according to the process outlined in the Cultural Heritage Management System Plan (NZAS, 2104), which includes consultation with Iwi and other stakeholders. SEIA consultation found that Iwi representatives would prefer that all infrastructure was removed from the site so there would not be a risk of any abandoned and derelict infrastructure left on the site which could lead to future legacy issues (SEIA consultation, 2020).

SEIA consultation also indicated Iwi representatives value NZAS as an important contributor to the regional economy and community. There are a number of NZAS employees and contractors who are Māori, including those who are associated with the local Iwi, and some who are known as leaders and role models in the Iwi community. Loss of these direct and indirect employees and their families due to out-migration could lead to a loss of family connections, a loss of role models and community leaders, as well as people living away from the land they are culturally connected to (SEIA consultation, 2020).

The Iwi are strong supporters of Tiwai” (SEIA consultation stakeholder meeting).

If the smelter closed, we would need to build our (Iwi community) resilience” (SEIA consultation stakeholder meeting).

3.8 Summary and assessment of impacts

The impacts described above in sections 3.1 to 3.7 are summarised and assessed in Table 3-11. The two pronged assessment scale to assess perceptions about an impact and the actual impact are applied to each impact type, this allows comparison of the rating of perception about versus the actual impact.

Table 3-11 Summary of social and economic impacts

Impact theme	Impact summary	Stakeholders involved	Rating of perceptions			Rating of impacts		
			Interest	Level of change	Rating	Sensitivity	Intensity	Rating
Regional economy, employment and income								
Regional economy	NZAS employment, employee contributions and the value of aluminium export and local sales results in a total regional GDP contribution of 6.1%. Closure would result in an overall reduction in Southland region's economy and GDP. This would likely occur over a very short period, with NZAS only being required to give one year's notice of closure. Because of this, the existing NZAS economic contributions within the Southland region would not be gradually decreased over several years, but almost cease immediately.	Southland community	High	High	Very high	Medium	Low	Medium
Local businesses	Top 52 businesses that have a high annual contract value, those that were specifically established to service NZAS or those that have been servicing NZAS for the long term, may have a high level of dependence on NZAS, would be at the risk of closing down or would need to downsize their operations and reduce staff numbers in response to loss of revenue due to closure of NZAS. These businesses would mainly represent the manufacturing; construction; transport, postal and warehousing; and professional, scientific and technical services industries.	Local businesses in Invercargill	High	High to Medium	Very high to high	High	Medium	High
	The overall impact on the economy and the out-migration of NZAS-related population (section 3.3) may reduce demand for businesses that receive small or no direct	Local businesses in Invercargill	High	Medium	High	Medium	Medium	Medium

Impact theme	Impact summary	Stakeholders involved	Rating of perceptions			Rating of impacts		
			Interest	Level of change	Rating	Sensitivity	Intensity	Rating
	procurement spend from NZAS. This may include retail and hospitality businesses.							
Employment	Increase in unemployment in the region.	Labour force in the region, especially Invercargill	High	High	Very high	Medium	Medium	Medium
	Surplus of labour, leading to increase in competition in the labour market further disadvantaging the vulnerable.	Labour force in the region, especially Invercargill	Medium	Medium	Medium	Medium	Medium	Medium
Income	Reduction in disposable income in the community and further reduction in average income, leading to financial and mortgage stress for some.	Labour force in the region, especially Invercargill	High	Medium	High	Medium	Medium	Medium
Demographic change								
Population decline	The loss of direct and indirect employment opportunities, would lead to some people seeking suitable employment opportunity elsewhere outside the region, leading to out-migration of the workers and their families. This would contribute to the projected decline in the regional population.	General community in Invercargill City General community in Southland region Local government and development agencies in the region	High	Medium	High	High	Low	Medium
Loss of skilled and semi-skilled	Reduction in available workforce for businesses and services in Southland region.	Regional businesses and industry	High	Medium	High	Medium	Medium	Medium

Impact theme	Impact summary	Stakeholders involved	Rating of perceptions			Rating of impacts		
			Interest	Level of change	Rating	Sensitivity	Intensity	Rating
workforce from the region	Potential for NZAS employees to fill vacancies created by out-migration.	NZAS workforce Regional businesses	High	Medium	High	Low	Low	Low
Community infrastructure								
Loss of financial contributions to organisations in the region for a range of programmes and activities.	Many community contribution recipients are expected to have some awareness about possible closure and the need to seek replacement funding.	Community contribution recipients	High	Low	Low	Medium	Low	Medium
Loss of in-kind contributions to organisations.	Partnership programme with Southland Girl's High School may cease given there are not likely to be similar businesses in the region.	Southland Girl's High School	High	High	High	Medium	High	High
	Contributions of NZAS staff as volunteers to Southland Science & Technology Fair would need to be replaced.	Southland Science & Technology Fair	High	Medium	High	Medium	Medium	Medium
Loss of skilled volunteers due to out-migration of NZAS employees	Skilled volunteer roles filled by NZAS staff with regional organisations (e.g. FENZ, board positions, curriculum advisors) would need to be replaced if NZAS employees leave the region. Replacement volunteers would need to be found who have similar skills or could undertake required training.	Regional organisations	High	Medium	High	Medium	Medium	Medium
Loss of apprenticeships	Closure would result in loss of apprentice positions at NZAS and with businesses which supply NZAS if they downsize their operations. This would result in loss of income for Southern Group Training Trust.	Southern Group Training Trust	High	High	High	Medium	Medium	Medium

Impact theme	Impact summary	Stakeholders involved	Rating of perceptions			Rating of impacts		
			Interest	Level of change	Rating	Sensitivity	Intensity	Rating
Impact on facilities due to out-migration of NZAS-related population	Some community infrastructure services may be impacted by population decline, e.g. regional schools may lose students and therefore student fees.	Regional community infrastructure	High	Medium	High	Medium	Medium	Medium
Loss of NZAS industrial fire brigade	While decommissioning of NZAS may reduce risk of on-site emergencies, FENZ may have increased response times to emergencies near Tiwai Peninsula.	FENZ Southland District	High	Low	Medium	Medium	Low	Medium
Impact on Invercargill Airport	Population decline is not expected to affect passenger services at Invercargill Airport	Invercargill Airport	Medium	Low	Low	Low	Low	Low
Impact on South Port	South Port may lose up to 30% of its revenue due to closure, however NZAS has a 30 year lease over the Tiwai wharf and causeway at Tiwai Point, therefore this source of revenue is not expected to be lost until 2043.	South Port	High	Low	Medium	Medium	Medium	Medium
Real estate – housing, accommodation and commercial properties								
Vacant houses and housing prices	Potential out-migration of direct employees, contractors and indirect workers from the Southland region, particularly from Invercargill City, would create 155 to 774 houses (0.7% to 3.6% to the total private dwelling stock) that would become available for rent or sale. Such increase in supply of housing stock is likely to reduce housing prices for both rent and sale.	Real estate agents and investors General community in Invercargill Housing financial institutions	High	High	Very high	High	Medium	High
Mortgage repayment	Loss of employment and income would impact on people's ability to repay mortgage leading to housing stress.	Owners of houses	High	Medium	High	High	Low	High

Impact theme	Impact summary	Stakeholders involved	Rating of perceptions			Rating of impacts		
			Interest	Level of change	Rating	Sensitivity	Intensity	Rating
		Housing financial institutions						
Housing affordability	Increase in supply of housing and reduction in housing prices, would improve housing affordability in Invercargill.	General community in Invercargill	-	-	-	-	-	Positive
Vacant commercial properties	It is likely that some industrial or wholesale businesses may need to down size or close down, leading to vacant commercial/industrial properties.	Local businesses in Invercargill	-	-	-	High	Low	High
Accommodation facilities	Potential reduction in demand and occupancy rate of accommodation facilities, as the direct and indirect NZAS workers from outside the region would no longer need to visit Invercargill for work.	Accommodation providers in Invercargill	Low	Low	Low	Low	Low	Low
Accommodation facilities	Potential reduction in demand and occupancy rate of accommodation facilities, as the direct and indirect NZAS workers from outside the region would no longer need to visit Invercargill for work.	Accommodation providers in Invercargill	Low	Low	Low	Low	Low	Low
Community values								
Community identity	Potential loss of manufacturing economic identity of the region and a sense of pride in working for a world class industry/employer. Limit career pathways for young people in the region aspiring to join the manufacturing industry, pursue technical studies and for multi-generational families who work at NZAS.	General community in Invercargill	High	High	Very High	Medium	Medium	Medium
Community cohesion	Disruption and erosion of community and family networks and ties due to out-migration of workers and their families and young people	General community in Invercargill	Medium	Medium	Medium	Medium	Low	Medium

Impact theme	Impact summary	Stakeholders involved	Rating of perceptions			Rating of impacts		
			Interest	Level of change	Rating	Sensitivity	Intensity	Rating
	not returning to the region due to limited employment opportunities.							
	Out-migration of direct and indirect NZAS workers and their families would result in loss of role models in the community.	General community in Invercargill	Medium	Medium	Medium	Medium	Low	Low
Anti-social behaviour	Potential increase in domestic violence, unemployment related crime and mental health issues in Invercargill. This could also negatively influence the feeling of safety in the community and the image of the community.	General community in Invercargill Emergency services – Police Mental health service providers	Medium	High	High	Medium	Low	Medium
Vulnerable groups	Closure of NZAS would direct and indirectly reduce available opportunities for people with disabilities in the community, further increasing vulnerabilities and wellbeing risks of individuals and their families/care takers.	People with disabilities and their families and care takers	High	Medium	High	High	Medium	High
Cultural values								
Heritage sites	Cultural heritage sites could be disturbed by closure and decommissioning activities, but would be managed according to Cultural Heritage Management System Plan (NZAS, 2104).	Local Māori community	High	High	Very High	High	Medium	High
Community cohesion	Disruption of Māori family and community networks, loss of role models, and loss of connection to community due to out-migration of workers and their families and young people not returning to the region due to limited employment opportunities.	Local Māori community	High	Medium	High	High	Low	Medium

3.9 Implications of the impacts from COVID-19

This section examines at a high level implications of the social impacts of COVID-19, on the potential closure of NZAS. Each one of the closure impact topics are discussed in Table 3-12.

Table 3-12 Implications of COVID-19 on social and economic impacts of NZAS closure in the Southland region

Summary of impact	Implications of COVID-19 on impact
Regional economy, employment and income	
Reduction in regional GDP – Closure of NZAS would lead to a loss of 6.1% GDP of the Southland region as a whole including a total value added contribution of 135.4 million which is equivalent to 2.2% of Southland’s GDP.	The economic impact of COVID-19 means the closure of NZAS may exacerbate economic decline in the Southland region, and particularly Invercargill. However as discussed in the Baseline Report (GHD, 2020), the agricultural sector is more recession proof than others, which may help the region through the economic downturn.
Increase in unemployment – 732 direct, 229 contractors and 1,548 indirect and flow on job positions are generated due to NZAS, which would be lost as a result of closure.	NZAS closure could further increase the unemployment rate in the region, which is likely to increase due to COVID-19.
Local businesses – some businesses that have a high reliance on NZAS or NZAS’ contractors would be at the risk of closing down and some may need to down size. Businesses that rely on the disposal income spending would also experience similar impacts.	Government restrictions have led to many New Zealand businesses decreasing their operations and reduced income. This is likely to have impacted businesses which contract to NZAS. Closure may increase pressure on these businesses and further the economic impact from COVID-19.
Demographic change	
Population decline - The loss of direct and indirect employment opportunities, would lead to some people seeking suitable employment opportunity elsewhere outside the region, leading to out-migration of the workers and their families. This would contribute to the projected decline in the regional population.	The impacts of COVID-19 on the economy mean there may be less jobs available in other parts of New Zealand or in other countries for NZAS employees. This could lead to less people leaving the region, but also increase rates of unemployment if there are less jobs available in Southland. On the other hand it is possible that loss of employment due to COVID -19 may instigate some people to return to the region during this period to be with their families and potentially continue to remain in the region.
Loss of skilled and semi-skilled workforce Reduction in available workforce for businesses and services in Southland. Potential for NZAS employees to fill vacancies created by out-migration.	There may be less jobs available in the Southland region as previous vacancies are taken up by others who become unemployed due to COVID-19.

Summary of impact	Implications of COVID-19 on impact
Community infrastructure and services	
Loss of financial contributions - Many community contribution recipients are expected to have some awareness about possible closure and the need to seek replacement funding.	Organisations may rely on contributions from other businesses who could reduce or stop their contributions due to cost-cutting measures.
Loss of in-kind contributions - Partnership programme with Southland Girl's High School may cease given there are not likely to be similar businesses in the region. Contributions of NZAS employees as volunteers to Southland Science & Technology Fair would need to be replaced if these employees out-migrate from the region.	No implications identified
Loss of skilled volunteers - Skilled volunteer roles filled by NZAS staff with regional organisations (e.g. Rural Fire Services, board positions, curriculum advisors) would need to be replaced if NZAS employees leave the region. Replacement volunteers would need to be found who have similar skills or could undertake required training.	No implications identified
Loss of apprenticeships - Closure would result in loss of apprentice positions at NZAS and with businesses which supply NZAS if they downsize their operations. This would result in loss of income for Southern Group Training Trust.	Overall reduction in the economy due to COVID-19 may lead to businesses reducing their apprentice intake or letting apprentices go, therefore further impacting Southern Group Training Trust.
Population decline - Some community infrastructure services may be impacted by population decline, e.g. regional schools may lose students and therefore student fees.	No implications identified
Impact on FENZ - While decommissioning of NZAS may reduce risk of on-site emergencies, FENZ may have increased response times to emergencies near Tiwai Peninsula due to loss of on-site emergency response team.	No implications identified
Impact on South Port - South Port may lose up to 30% of its revenue due to closure, however NZAS has a 30 year lease over the Tiwai Wharf and causeway at Tiwai Point, therefore this source of revenue is not expected to be lost until 2043.	The closure of international markets may impact import/export industries and therefore South Port's income. NZAS closure may further reduce income for South Port.
Real estate – housing, accommodation and commercial properties	
Potential out-migration of direct and indirect NZAS employees from the Southland region, particularly from Invercargill City, would create 134 to 613 houses (0.6% to 2.8% to the total private dwelling housing stock) vacant houses	The economic impact on COVID-19 is expected to reduce property prices and have a negative impact on property markets. NZAS closure is expected to exacerbate this in Invercargill City in particular.

Summary of impact	Implications of COVID-19 on impact
that, would become available for rent or sale. Such increase in supply of housing stock is likely to reduce housing prices for both rent and sale.	
Loss of employment and income would impact on people's ability to repay mortgage leading to housing stress.	Those who lose employment and/or income due to COVID-19 are expected to be under financial and housing stress. Closure may increase the number of people under housing stress.
Increase in supply of housing and reduction in housing prices, would improve housing affordability in Invercargill.	No implications identified
It is likely that some industrial or wholesale businesses may need to down size or close down, leading to vacant commercial/industrial properties.	Businesses may close down due to economic impact of COVID-19, and NZAS closure could exacerbate this.
Potential reduction in demand and occupancy rate of accommodation facilities, as the direct and indirect NZAS workers from outside the region would no longer need to visit Invercargill for work.	Travel restrictions have impacted the tourism and accommodation industries. NZAS closure may slightly exacerbate this.
Community values	
Community identity - Potential loss of manufacturing economic identity of the region and a sense of pride in working for a world class industry/employer.	Economic impact of COVID-19 including unemployment is expected to place stress on community connections and reduce social cohesion. Closure may exacerbate this broader community sentiment.
Community cohesion - Disruption and erosion of community and family networks and ties due to outmigration of workers and their families and potentially young people choosing not to return to the region due to limited employment opportunities.	Economic impact of COVID-19 including unemployment is expected to place stress on community connections and reduce social cohesion. Closure may exacerbate this broader community sentiment. On the other hand, broader unemployment due to COVID-19, may limit NZAS related employees from out-migrating in search of alternate suitable employment opportunities; it is also likely that COVID-19 related unemployment may instigate people to return to the region, which could possibly contribute positively to community cohesion.
Community cohesion - Out-migration of direct and indirect NZAS workers and their families would result in loss of role models in the community.	As above.
Anti-social behaviour - Potential increase in domestic violence, unemployment related crime and mental health issues in Invercargill. This could also negatively influence the feeling	Unemployment due to COVID-19 may increase anti-social behaviour and reduce wellbeing, which could be exacerbated by closure.



Summary of impact	Implications of COVID-19 on impact
of safety in the community and the image of the community.	
<p>Vulnerable groups - Closure of NZAS would direct and indirectly reduce available opportunities for people with disabilities in the community, further increasing vulnerabilities and wellbeing risks of individuals and their families/care takers.</p>	<p>Vulnerable groups are likely to be more vulnerable to the social impacts from COVID-19 restrictions, such as increased social isolation. Potential loss of employment for SDE employees due to closure could further exacerbate vulnerabilities.</p>
<p>Cultural values</p>	
<p>Impacts to cultural heritage - Cultural heritage sites could be disturbed by closure and decommissioning activities, but would be managed according to Cultural Heritage Management System Plan (NZAS, 2104)</p>	<p>No implications identified</p>
<p>Loss of cultural and community connections - Disruption of Māori family and community networks, loss of role models, and loss of connection to country due to outmigration of workers and their families and young people not returning to the region due to limited employment opportunities.</p>	<p>The impacts of COVID-19 on the economy mean there may be less jobs available in other parts of New Zealand or in other countries for NZAS employees. This could lead to less people leaving the region, but also increase rates of unemployment if there are also less jobs in the Southland region.</p>



4. Impact management considerations

4.1 Impact management considerations

A range of potential strategies and actions have been identified to help manage and mitigate the social and economic impacts discussed in section 3 which could result from NZAS' closure. These management considerations are discussed in Table 4-1.

Given this SEIA has been prepared in the early stages of the COVID-19 pandemic and government restrictions, implementation of the recommended management considerations would need to consider how stakeholders and community members have been affected by the pandemic. It is recommended that once timing of closure is established, the management considerations be revisited in light of the sensitivity of stakeholders based on the effects of the pandemic.

Table 4-1 Impact mitigation considerations

Summary of impact	Stakeholders involved	Mitigation recommendations
Regional economy, employment and income		
<p>Reduction in regional GDP – Closure of NZAS would lead to a loss of 6.1% regional GDP of the Southland Region as a whole including a total value added contribution of \$135.4 million which is equivalent to 2.2% of Southland’s GDP.</p>	<p>Regional development agencies Regional and local government Local businesses Regional community</p>	<ul style="list-style-type: none"> • Continue to provide regular updates to regional and local governments and development agencies about future of NZAS. • Plug into existing regional economic development initiatives, which will enable economic diversification and therefore assist in maintaining regional GDP. Examples of such initiatives are provided in section 3.7 of the Baseline Report (GHD, 2020). • SEIA consultation 2020 and review of strategic plans for the region identify a number of potential future industries that could be developed in the region, such as aquaculture, tourism and international education which have action plans to develop these industries. Other ideas such as silica processing, data storage and hydrogen energy production were also mentioned as future industries, however it was acknowledged these were only ideas which would need to be further investigated and their feasibility was yet to be assessed.
<p>Increase in unemployment – 732 employees and 229 contractors direct and 1,580 indirect and flow on job positions are generated due to NZAS, which would be lost as a result of closure.</p>	<p>Regional development agencies Regional and local government Local businesses Regional community</p>	<ul style="list-style-type: none"> • Undertake skills and competency audit for all employees and provide formal recognition of skills and competencies particularly for unskilled workforce. • Map skills with available job opportunities in the region. • Provide access to relevant skills and training programs through local training providers for employees to reskill or upskill if required.
<p>Local businesses – some businesses that have a high reliance on NZAS or NZAS’ contractors would be at the risk of closing down and some may need to down size. Businesses that rely on the disposal income spending would also experience similar impacts.</p>	<p>Local businesses Invercargill City Chamber of Commerce Regional development agencies</p>	<ul style="list-style-type: none"> • Early engagement with all NZAS contractors and general business community in Invercargill regarding closure plan and timeframes. • Provide information to businesses to prepare to avail of business opportunities through the decommissioning and rehabilitation phases. • Give preference to local businesses for work during the decommissioning and rehabilitation phases.

Summary of impact	Stakeholders involved	Mitigation recommendations
	Regional and local government Regional community	<ul style="list-style-type: none"> Identify businesses that are most dependent on NZAS and work with these businesses to access relevant government support programs and employment opportunities for their employees who would likely be made redundant. NZAS makes a significant contribution to unique businesses like SDE: work with these businesses to diversify their client base.
Demographic change		
Population decline - The loss of direct and indirect employment opportunities, would lead to some people seeking suitable employment opportunity elsewhere outside the region, leading to out-migration of the workers and their families. This would contribute to the projected decline in the regional population.	General community in Invercargill City General community in Southland region Local government and development agencies in the region	<ul style="list-style-type: none"> Explore partnering with local and regional government agencies and other stakeholders to undertake a 'Life after NZAS' visioning exercise. Engage with the local and regional development agencies to plug into existing local and regional economic development initiatives which will enable economic diversification, population retention, upskilling and deployment of skilled local workforce from NZAS to other new industries in the region, skills mapping to fulfil existing job vacancies in other industries.
Loss of skilled and semi-skilled workforce Reduction in available workforce for businesses and services in Southland. Potential for NZAS employees to fill vacancies created by out-migration.	Regional businesses and industry NZAS workforce	<ul style="list-style-type: none"> Undertake skills and competency audit for all employees and provide formal recognition of skills and competencies particularly for unskilled workforce. Map skills with available job opportunities in the region, host job fairs. Provide relevant skills and training programs for employees to re-skill and upskill if required.
Community infrastructure and services		
Loss of financial contributions - Many community contribution recipients are expected to have some awareness about possible closure and the need to seek replacement funding.	Community contribution recipients	<ul style="list-style-type: none"> Stakeholder engagement strategy to provide early information to recipients about timing of closure and cessation of contributions programme.
Loss of in-kind contributions - Partnership programme with Southland Girl's High School may cease given there are not likely to be similar businesses in the region.	Southland Girl's High School	<ul style="list-style-type: none"> Explore options to continue NZAS legacy in contributing to women in science and technology careers e.g. establish an educational scholarship with a university and/or Southern Institute of Technology.

Summary of impact	Stakeholders involved	Mitigation recommendations
Contributions of NZAS employees as volunteers to Southland Science & Technology Fair would need to be replaced if these employees out-migrate from the region.	Southland Science & Technology Fair	<ul style="list-style-type: none"> Stakeholder engagement strategy to provide early information to partners about timing of closure.
Loss of skilled volunteers - Skilled volunteer roles filled by NZAS staff with regional organisations (e.g. Rural Fire Services, board positions, curriculum advisors) would need to be replaced if NZAS employees leave the region. Replacement volunteers would need to be found who have similar skills or could undertake required training.	Regional organisations	<ul style="list-style-type: none"> Stakeholder engagement strategy to provide early information to partners about timing of closure.
Loss of apprenticeships - Closure would result in loss of apprentice positions at NZAS and with businesses which supply NZAS if they downsize their operations. This would result in loss of income for Southern Group Training Trust.	Southern Group Training Trust	<ul style="list-style-type: none"> Work with Southern Group Training Trust to provide early information about closure and plan for reduction in apprentice positions at NZAS. Stakeholder engagement strategy to provide early information to Southern Group Training Trust and businesses contracted to NZAS about closure.
Population decline - Some community infrastructure services may be impacted by population decline, e.g. regional schools may lose students and therefore student fees.	Regional community infrastructure	<ul style="list-style-type: none"> Stakeholder engagement strategy to provide regular updates to regional stakeholders including community infrastructure providers about closure timeframes.
Impact on FENZ - While decommissioning of NZAS may reduce risk of on-site emergencies, FENZ may have increased response times to emergencies near Tiwai Peninsula due to loss of on-site emergency response team.	FENZ Southland District	<ul style="list-style-type: none"> Work with FENZ Southland to coordinate resources in line with closure and timing of exit of on-site emergency response teams.
Impact on South Port - South Port may lose up to 30% of its revenue due to closure, however NZAS has a 30 year lease over the Tiwai Wharf and causeway at Tiwai Point, therefore this source of revenue is not expected to be lost until 2043.	South Port	<ul style="list-style-type: none"> Provide regular updates to South Port about timing of closure.

Summary of impact	Stakeholders involved	Mitigation recommendations
Real estate – housing, accommodation and commercial properties		
Potential out-migration of direct and indirect NZAS employees from the Southland region, particularly from Invercargill City, would create 155 to 774 vacant houses that, would become available for rent or sale. Such increase in supply of housing stock is likely to reduce housing prices for both rent and sale.	Real estate agents and investors General community in Invercargill Housing financial institutions	<ul style="list-style-type: none"> Engage with relevant stakeholders about timing of closure so they can plan for the impacts to the housing market. Plug into existing regional economic development initiatives, which will enable population retention and therefore maintain the housing property market. Examples of such initiatives are provided in section 3.7 of the Baseline Report (GHD, 2020).
Loss of employment and income would impact on people's ability to repay mortgage leading to housing stress.	Owners of houses Housing financial institutions	<ul style="list-style-type: none"> Early engagement with workforce and contractors regarding the timing of closure. Provide financial advisory service for workers of NZAS and its contractors to manage redundancy payments and housing/mortgage stress. Plug into existing regional economic development initiatives which will enable population retention and therefore maintain the housing property market. Examples of such initiatives are provided in section 3.7 of the Baseline Report (GHD, 2020).
Increase in supply of housing and reduction in housing prices, would improve housing affordability in Invercargill.	General community in Invercargill	N/A
It is likely that some industrial or wholesale businesses may need to down size or close down, leading to vacant commercial/industrial properties.	Local businesses in Invercargill	<ul style="list-style-type: none"> Engage with the relevant stakeholders about timing of closure so they can plan for the impacts to commercial properties. Plug into existing regional economic development initiatives, which will enable economic diversification and therefore maintain a demand for commercial properties. Examples of such initiatives are provided in section 3.7 of the Baseline Report (GHD, 2020).
Potential reduction in demand and occupancy rate of accommodation facilities, as the direct and indirect	Accommodation providers in Invercargill	<ul style="list-style-type: none"> Engage with the relevant stakeholders about timing of closure.

Summary of impact	Stakeholders involved	Mitigation recommendations
<p>NZAS workers from outside the region would no longer need to visit Invercargill for work.</p>		<ul style="list-style-type: none"> • Plug into existing regional economic development initiatives, which will enable economic diversification and therefore maintain the demand for accommodation facilities. Examples of such initiatives are provided in section 3.7 of the Baseline Report (GHD, 2020).
Community values		
<p>Community identity - Potential loss of manufacturing economic identity of the region and a sense of pride in working for a world class industry/employer.</p>	<p>General community in Invercargill</p>	<ul style="list-style-type: none"> • Explore partnering with local and regional government agencies and other stakeholders to undertake a 'Life After NZAS' visioning exercise. • Develop legacy plan in line with inputs from the visioning exercise and stakeholder inputs received as part of the SEIA consultation 2020 which are summarised in Appendix A of Baseline Report (GHD, 2020) (also refer to Table 4-2).
<p>Community cohesion - Disruption and erosion of community and family networks and ties due to outmigration of workers and their families and potentially young people choosing not to return to the region due to limited employment opportunities.</p>	<p>General community in Invercargill</p>	<ul style="list-style-type: none"> • Work with local governments to support local events and programmes to contribute to local social cohesion. • Plug into existing regional economic development initiatives to identify areas and actions to support regional economic diversification and sustainability. Examples of such initiatives are provided in section 3.7 of the Baseline Report (GHD, 2020).
<p>Community cohesion - Out-migration of direct and indirect NZAS workers and their families would result in loss of role models in the community.</p>	<p>General community in Invercargill</p>	<ul style="list-style-type: none"> • Explore ways to recognise the long service of relevant employees and their contribution to the business. • Explore ways to create and support an alumni style ex-employee/retired employee network. • Explore options for continuing the legacy of NZAS as a contributor to the community e.g. continue educational scholarship with schools and technical partnership with SIT. • Develop legacy programmes in line with inputs from the visioning exercise and stakeholder inputs received as part of the SEIA consultation 2020 (refer to Table 4-2).

Summary of impact	Stakeholders involved	Mitigation recommendations
<p>Anti-social behaviour - Potential increase in domestic violence, unemployment related crime and mental health issues in Invercargill. This could also negatively influence the feeling of safety in the community and the image of the community.</p>	<p>General community in Invercargill Emergency services – Police Mental health service providers (Social Development)</p>	<ul style="list-style-type: none"> Engage with regional stakeholders such as Police, health services, local government, and relevant state agencies about closure timeframes and impacts of closure. Ensure employees and contractors are aware and can easily access Employee Assistance Programme counselling services and extend these services to their families and continue to offer these services for a period of time after closure.
<p>Vulnerable groups - Closure of NZAS would direct and indirectly reduce available opportunities for people with disabilities in the community, further increasing vulnerabilities and wellbeing risks of individuals and their families/care takers.</p>	<p>People with disability who are employed by SDE and their carers/families</p>	<ul style="list-style-type: none"> Work with SDE to access relevant government support programmes, employment opportunities for their employees who may be made redundant.
Cultural values		
<p>Impacts to cultural heritage - Cultural heritage sites could be disturbed by closure and decommissioning activities, but would be managed according to Cultural Heritage Management System Plan (NZAS, 2104)</p>	<p>Local Māori community</p>	<ul style="list-style-type: none"> Engage with Iwi regarding future use of the NZAS site and potential disturbance of cultural sites in line with Cultural Heritage Management System Plan (NZAS, 2104).
<p>Loss of cultural and community connections - Disruption of Māori family and community networks, loss of role models, and loss of connection to community due to outmigration of workers and their families and young people not returning to the region due to limited employment opportunities.</p>	<p>Local Māori community</p>	<ul style="list-style-type: none"> Work with local governments to support local events and programmes to contribute to local social cohesion. Plug into existing regional economic development initiatives to identify areas and actions to support regional economic diversification and sustainability. Examples of such initiatives are provided in section 3.7 of the Baseline Report (GHD, 2020). Explore ways to recognise the long service of employees and their contribution to the business. Explore ways to create and support an alumni style ex-employee/retired employee network.



Summary of impact	Stakeholders involved	Mitigation recommendations
		<ul style="list-style-type: none">• Explore options for continuing the legacy of NZAS as a contributor to the community e.g. continue educational scholarship with schools and technical partnership with SIT.

4.2 Summary of impact management strategies

Key considerations in developing social and economic impact management strategies were:

- Since the city of Invercargill is the host to majority of the workforce and businesses that support NZAS the city has a higher reliance on NZAS for economic/employment opportunities, it is important for the impact management strategies to have a special emphasis on managing impacts in Invercargill.
- Community feedback gained through the SEIA consultation of maintaining open and honest communication with the community and stakeholders, investment in education and training, maintaining a better social and environmental performance, contribute positively to community.
- The highest intensity of impacts will be experienced in the short term when redundancies will be made and contracts will be terminated resulting in further indirect redundancies, therefore it will be pertinent to have strong strategies in place to address impacts over the short term.

The impact mitigation measures suggested in Table 4-1 are summarised under management strategy headings Table 4-2. These strategies have been developed to:

- Manage direct and indirect impacts on employees and their families
- Ensure a positive legacy for NZAS in Invercargill and Bluff
- Encourage communication and collaboration with key stakeholders in the region
- Manage impacts on local and regional businesses, and local service providers.

Table 4-2 Impact management strategies

Strategy	Actions
Stakeholder engagement strategy	<p>Develop a closure specific stakeholder engagement strategy, including the following:</p> <ul style="list-style-type: none"> • Understand closure related information requirements of all stakeholders. • Provide regular updates on the strategic review and future of NZAS, timing of closure to all stakeholders. • Engage with contractors regarding decommissioning and rehabilitation work opportunities. • Engage with the local and regional development agencies to plug into existing local and regional economic development initiatives. • Engage with community infrastructure providers about closure timeframes and impacts to their service provision. • Engage with recipients of community contribution programmes and partnerships about timing of closure and cessation of contributions.
Regional economic development strategy	<ul style="list-style-type: none"> • Engage with the local and regional development agencies to plug into existing local and regional economic development initiatives which will enable economic diversification, population retention, upskilling and deployment of skilled local workforce from NZAS to other new industries in the

Strategy	Actions
	<p>region, skills mapping to fulfil existing job vacancies in other industries.</p>
Employee transition and assistance programme	<ul style="list-style-type: none"> • Early engagement with workforce and contractors regarding the timing of closure. • Provide financial advisory service for workers of NZAS and its contractors to manage redundancy payments and housing/mortgage stress. • Ensure employees and contractors are aware and can easily access Employee Assistance Programme wellbeing counselling services for themselves and their families. • Undertake skills and competency audit for all employees and provide formal recognition of skills and competencies particularly for unskilled workforce. • Map skills with available job opportunities in the region, host job fairs. • Provide access to relevant skills and training programmes through local training providers for employees to reskill or upskill if required, example Life after Argyle program. • Explore ways to recognise the long service of relevant employees and contribution to the business.
Contractor/local business assistance programme	<p>Develop a contractor/local business assistance programme which would include the following:</p> <ul style="list-style-type: none"> • Early engagement with all NZAS contractors and general business community in Invercargill regarding closure plan and timeframes. • Provide information to businesses to prepare to avail of business opportunities through the decommissioning and rehabilitation phases. • Give preference to local businesses for work during the decommissioning and rehabilitation phases. • Identify businesses that are most dependent on NZAS and work with these businesses to access relevant government support programmes, employment opportunities for their employees who would likely be made redundant. • NZAS makes significant contribution to unique businesses like SDE, work with these businesses to diversify their client base.
Community cohesion and wellbeing strategy	<ul style="list-style-type: none"> • Support an alumni style ex-employee/retired employee network. • Work with Invercargill City Council to support local events and programs to contribute to local social cohesion activities. • Engage with regional stakeholders such as Police, health services, local government, and relevant state agencies about closure timeframes and impacts of closure.

Strategy	Actions
	<ul style="list-style-type: none"> • Ensure employees and contractors are aware and can easily access Employee Assistance Program counselling services and extend these services to their families.
Legacy plan	<p>Develop a legacy plan, which would include the following:</p> <ul style="list-style-type: none"> • Explore partnering with local and regional government agencies and other stakeholders to undertake a ‘Life After NZAS’ visioning exercise for the city/region and for the future use of the site. • Explore options for continuing the legacy of NZAS as a contributor to the community e.g. continue educational scholarship with schools and technical partnership with SIT. • Support an alumni style ex-employee/retired employee network. • Develop legacy programmes in line with inputs from the visioning exercise and stakeholder inputs received as part of the SEIA consultation 2020, which will include future of the NZAS site and story telling about NZAS. Stakeholder inputs regarding NZAS legacy from SEIA consultation 2020 are summarised below: <ul style="list-style-type: none"> –Investment in training and scholarships, continue with the scholarship programme for girls in engineering, engineering centre at the SIT, leave behind parts of the smelter site and convert it into a training centre –Investment in research and development programs for other industries in the region –Support the development of another industry in the region, reuse the site for another industry –Support programs for upskilling/retraining of existing smelter workforce –Positive environmental legacy by managing the current waste issue –Positive environmental legacy by appropriate site rehabilitation and restoration as per legislative requirements – return land to its original form. –Continue to engage with the local Māori community for future of the site. –Create memorabilia, such as - make a film about the smelter, coffee table book, museum exhibit to tell the story of the smelter and aluminium –Electricity re-distribution through the country –Opportunities for local businesses through the demolition and rehabilitation phase.

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Appendices

Appendix A – Assumptions and outputs of IO modelling

Model Assumptions

The following section outlines the processes and assumptions used to develop the inputs and drivers for the current economic contribution of New Zealand Aluminium Smelter on the Southland Region's economy. The values identified in the following sections have been used in developing the current economic contribution of NZAS for the region.

Industry Impacts

The industry impacts can be defined as the contribution NZAS has on local businesses through purchases within the local economy to sustain operations.

To assess these contributions, GHD reviewed the total expenditure of NZAS during the 2019 calendar year and allocated the total expenditure to the relevant regions and ANZSIC industry classifications. The expenditure of NZAS in businesses within the Southland Region, by ANZSIC classification can be found in the table below.

Table A1 NZAS Industry Expenditure in the Southland Region (2019)⁴

ANZSIC Industry Classification	Expenditure 2019 (\$M)
Agriculture, Forestry and Fishing	\$0.00
Manufacturing	\$17.86
Construction	\$14.73
Transport, postal, and warehousing	\$7.58
Rental, hiring, and real estate services	\$0.53
Health care and social assistance	\$0.31
Retail trade	\$0.00
Information media and telecommunications and other services	\$0.02
Professional, scientific, and technical services	\$6.73
Education and training	\$0.69
Wholesale trade	\$5.09
Financial and insurance services	\$2.59
Public administration, defence, and safety	\$0.85
Accommodation and Food Services	\$0.00
Administrative and support services	\$0.01
Electricity, Gas, Water and Waste Services	\$1.51
Other Services	\$0.20
Total Spend by Industry	\$58.62

⁴ Data provided by Rio Tinto

Employment Impacts

In 2019, NZAS directly employed 751 employees. Of these 751 employees, 732 of these employees resided within the Southland Region, with the remaining 19 employees residing throughout New Zealand.

In addition, NZAS supported 235 contractors, with 229 of these contractors residing within the Southland Region, with the remaining 6 contractors residing throughout New Zealand.

In order to determine the contribution within the Southland Region by NZAS employees, the NTStat household expenditure survey for the by region was utilised to identify the average expenditure on goods, services and other payments.

This dataset was utilised due to the lack of data around the specific expenditure profiles of employees at NZAS. As such, this dataset provides the averages of total expenditure within the South Island, and is a sound benchmark for identifying the contributions of employees within the region.

For the purpose of this assessment, transfer payments (such as housing rental costs), mortgage repayments, income tax, superannuation and life insurance have been excluded from this assessment. A full breakdown of the household expenditure survey can be found in the table below.

Table A2 Total Expenditure by NZAS Employees by ANZSIC Industry Classifications

Expenditure Group	Average weekly expenditure
Food	\$202.40
Alcoholic beverages, tobacco, and illicit drugs	\$35.10
Clothing and footwear	\$28.20
Housing and household utilities	\$265.60
Household contents and services	\$42.80
Health	\$53.80
Transport	\$198.70
Communication	\$35.40
Recreation and culture	\$115.60
Education	\$9.30
Miscellaneous goods and services	\$105.80
Other expenditure	\$91.60
Total gross expenditure	\$1,184.20
Sales, trade-ins, and refunds	-\$35.90
Total net expenditure	\$1,148.30

The overview of the average weekly expenditure utilised in this assessment, by allocated ANZSIC industry classification is outlined in the table below.

Table A3 South Island Household Expenditure Survey by ANZSIC Industry Classifications⁵

ANZSIC industry classifications	Average weekly expenditure
Retail Trade	\$526.98
Electricity, Gas, Water and Waste Services	\$257.55
Healthcare and Social Assistance	\$52.17
Other Services	\$179.53
Information media and telecommunications and other services	\$34.33
Education and Training	\$9.02
Accommodation and Food Services	\$88.82
Total weekly expenditure	\$1,148.30

Based on the number of NZAS employees residing within the Southern Region, and the average annual expenditure by ANZSIC industry classification, total estimates of the annual expenditure by NZAS employees within the Southland Region are identified in the table below.

Table A4 Total Expenditure by NZAS Employees by ANZSIC Industry Classifications

ANZSIC industry classifications	Total annual expenditure
Retail Trade	\$20,059,009
Electricity, Gas, Water and Waste Services	\$9,803,337
Healthcare and Social Assistance	\$1,985,766
Other Services	\$6,833,731
Information media and telecommunications and other services	\$1,306,620
Education and Training	\$343,264
Accommodation and Food Services	\$3,380,970
Total weekly expenditure	\$43,712,698

Limitations in Modelling Assumptions

There are a number of key limitations within this report, and the modelling results, these include:

- The modelling results and reporting has been developed in this way due to the information which was available to GHD at the time of reporting
- No future NZAS operational estimates have been provided
- It is acknowledged that there will be rehabilitation activity at NZAS beyond the smelter operations ceasing. These closure impacts have not been assessed due to the data around this closure expenditure not being available at the time

⁵ ABS (2017), Household Expenditure Survey, Australia: Summary of Results, 2015-16, Gross Income Quintiles, NT, Cat. No. 6530.0, Australian Bureau of Statistics, Canberra.

- Employee expenditure impacts have been benchmarked on publicly available NZ Stat Household Expenditure Data
- Information relating to the mine closure, including capital expenditure was not available at the time of modelling and reporting.

These limitations have been factored into the modelling and reporting of this report.

Equivalent Employee Conversion Approach

Results from the IO Modelling provide estimates based on full time equivalent employees (i.e. a person working full time for one year). These results do not necessarily translate to the number of people in jobs, as it converts part time/ casual positions up to their full time equivalent jobs. For example, two part time employees working 20 hours per week would only be captured as one full time equivalent employee. To account for this, and to identify the potential number of employees, the following conversion approach has been used to convert full time equivalent employees to number of employees in jobs:

- NZ Stat's Household Labour Force Survey was used to identify the number of full time, and part time employees.
- From here, NZ Stat's publication on People employed, unemployed and not in the labour force, and total actual hours worked was used as the basis to identify the splits between full time and part time employees.
- Total actual hours worked was used as the baseline.
- The number of full time employees identified was multiplied by 38 hours, to identify the number of full time hours worked by employees. The remainder of these hours (from the total actual hours worked) were applied to part time employees.
- The estimated number of part time employee hours was divided by the number of part time employees, to identify the average number of hours worked by part time employees.
- This average number of part time employee hours was then divided by 38 hours, to identify the number of part time employees required to equal one full time equivalent employee.
- This was then converted into a ratio to identify the number of part time employees per full time equivalent employee and applied to the modelling results to estimate the actual number of employees impacted, when accounting for part time and casual employees.

Community Contributions

Table A5 NZAS Community Contributions (2019)

Contribution	Value	Location
Invercargill/Auckland direct flights - marketing contribution	\$5,000	Invercargill
Rakiura Rubbish Run 2019	\$1,250	Titi Islands
Masters prize in Engineering, Undergrad prize Chemical Engineering & Undergrad prize in Electrical	\$2,000	Auckland
Chemistry prize 2018	\$500	Dunedin
Armistice Day event (commemorating 100 years - 2018)	\$1,000	Bluff
Koha for performing at NZAS Pioneer Mural blessing	\$500	Bluff
Alumni Reunion sponsorship	\$1,000	Christchurch
Tradequal sponsorship	\$1,000	Invercargill

Chemical & Process and Electrical & Electronic engineering prizes 2019	\$1,000	Christchurch
End of year award for prize giving - Bluff School	\$100	Bluff
End of year award for senior prize giving - Verdon College	\$100	Invercargill
End of year award for senior prize giving - Southland Boys' High School	\$100	Invercargill
End of year award for senior prize giving - James Hargest College	\$100	Invercargill
Top Team Project - Year 3 Bachelor of Information Technology prize	\$200	Invercargill
Environmental Action in the Community Award	\$1,000	Invercargill
Best exhibit relating to industry prize	\$200	Invercargill
Home Services end of year party	\$500	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Community tertiary scholarship	\$2,000	Invercargill
Te Hipoki Iti	\$7,573.75	Invercargill
Southland Science and Technology Fair	\$7,000	Invercargill
Kiwi Can Programme	\$10,000	Invercargill

Economic Contribution Summary Tables

Table A6 Summary of NZAS Economic Contribution to Southland through Vendor Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$58.69	\$24.21	\$13.49	208
Indirect Type 1 Impact	\$45.70	\$20.37	\$9.76	169
Indirect Type 2 Impact	\$39.48	\$20.87	\$8.18	162
Total Impact	\$143.87	\$65.46	\$31.43	539

Table A7 Summary of NZAS Economic Contribution to Southland through Employee Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$43.64	\$23.44	\$13.03	346
Indirect Type 1 Impact	\$28.62	\$13.15	\$5.57	91
Indirect Type 2 Impact	\$31.59	\$16.70	\$6.55	129
Total Impact	\$103.85	\$53.29	\$25.15	566

Table A8 Summary of NZAS Economic Contribution to Southland through Contractor Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$13.65	\$7.33	\$4.08	109
Indirect Type 1 Impact	\$8.95	\$4.11	\$1.74	28
Indirect Type 2 Impact	\$9.88	\$5.22	\$2.05	40
Total Impact	\$32.49	\$16.67	\$7.87	177

Table A9 Summary of Total NZAS Economic Contribution to Southland

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$115.98	\$54.99	\$30.59	663
Indirect Type 1 Impact	\$83.27	\$37.63	\$17.07	288
Indirect Type 2 Impact	\$80.95	\$42.80	\$16.78	331
Total Impact	\$280.21	\$135.42	\$64.44	1,282

Table A10 Summary of NZAS Economic Contribution to Invercargill City through Industry Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$58.42	\$24.12	\$13.43	207
Indirect Type 1 Impact	\$45.44	\$20.26	\$9.71	168
Indirect Type 2 Impact	\$39.30	\$20.78	\$8.14	161
Total Impact	\$143.16	\$65.16	\$31.28	536

Table A11 Summary of NZAS Economic Contribution to Invercargill City through Employee Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$41.37	\$22.23	\$12.35	328
Indirect Type 1 Impact	\$27.13	\$12.46	\$5.28	86
Indirect Type 2 Impact	\$29.95	\$15.83	\$6.21	122
Total Impact	\$98.45	\$50.52	\$23.84	537

Table A12 Summary of NZAS Economic Contribution to Invercargill City through Contractor Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$12.94	\$6.95	\$3.86	103
Indirect Type 1 Impact	\$8.48	\$3.90	\$1.65	27
Indirect Type 2 Impact	\$9.36	\$4.95	\$1.94	38
Total Impact	\$30.78	\$15.80	\$7.45	168

Table A13 Summary of Total NZAS Economic Contribution to Invercargill City

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$112.73	\$53.30	\$29.65	638
Indirect Type 1 Impact	\$81.06	\$36.63	\$16.64	281
Indirect Type 2 Impact	\$78.61	\$41.56	\$16.29	322
Total Impact	\$272.40	\$131.48	\$62.58	1,240

Table A14 Summary of NZAS Economic Contribution to Southland District through Industry Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$0.00	\$0.00	\$0.00	0
Indirect Type 1 Impact	\$0.00	\$0.00	\$0.00	0
Indirect Type 2 Impact	\$0.00	\$0.00	\$0.00	0
Total Impact	\$0.00	\$0.00	\$0.00	0

Table A15 Summary of NZAS Economic Contribution to Southland District through Employee Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$2.21	\$1.18	\$0.66	17
Indirect Type 1 Impact	\$1.45	\$0.66	\$0.28	5
Indirect Type 2 Impact	\$1.60	\$0.84	\$0.33	7
Total Impact	\$5.25	\$2.69	\$1.27	29

Table A16 Summary of NZAS Economic Contribution to Southland District through Contractor Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$0.72	\$0.38	\$0.21	6
Indirect Type 1 Impact	\$0.47	\$0.22	\$0.09	1
Indirect Type 2 Impact	\$0.52	\$0.27	\$0.11	2
Total Impact	\$1.70	\$0.87	\$0.41	9

Table A17 Summary of Total NZAS Economic Contribution to Southland District

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$2.92	\$1.57	\$0.87	23
Indirect Type 1 Impact	\$1.92	\$0.88	\$0.37	6
Indirect Type 2 Impact	\$2.11	\$1.12	\$0.44	9
Total Impact	\$6.95	\$3.57	\$1.68	38

Table A18 Summary of NZAS Economic Contribution to Gore District through Industry Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$0.27	\$0.09	\$0.05	1
Indirect Type 1 Impact	\$0.26	\$0.11	\$0.06	1
Indirect Type 2 Impact	\$0.18	\$0.10	\$0.04	1
Total Impact	\$0.71	\$0.29	\$0.15	3

Table A19 Summary of NZAS Economic Contribution to Gore District through Employee Expenditure

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$0.06	\$0.03	\$0.02	0
Indirect Type 1 Impact	\$0.04	\$0.02	\$0.01	1
Indirect Type 2 Impact	\$0.04	\$0.02	\$0.01	0
Total Impact	\$0.14	\$0.07	\$0.03	1

Table A20 Summary of Total NZAS Economic Contribution to Gore District

	Output (\$M)	Value-Added (\$M)	Wages and Salaries (\$M)	Employment (FTE)
Direct Impact	\$0.33	\$0.12	\$0.07	1
Indirect Type 1 Impact	\$0.30	\$0.13	\$0.06	2
Indirect Type 2 Impact	\$0.23	\$0.12	\$0.05	1
Total Impact	\$0.85	\$0.37	\$0.18	4

Employment by Industry Tables

Table A21 Employment supported from NZAS industry expenditure in Southland by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	19	19	23
Mining	0	1	1	1
Manufacturing	39	35	75	92
Electricity, Gas, Water & Waste Services	1	4	5	6
Construction	51	30	82	101
Wholesale Trade	21	22	44	54
Retail Trade	0	43	43	52
Accommodation & Food Services	9	20	29	36
Transport, Postal & Warehousing	27	23	51	63
Information Media & Telecommunications	0	5	5	7
Financial & Insurance Services	8	16	24	30

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	1	7	7	9
Professional, Scientific & Technical Services	37	39	76	93
Administrative & Support Services	0	15	15	19
Public Administration & Safety	0	3	3	4
Education & Training	7	9	16	19
Health Care & Social Assistance	3	16	18	23
Arts & Recreation Services	0	5	5	6
Other Services	2	18	20	25
Total	208	331	539	664

Table A22 Employment supported from NZAS employee expenditure in Southland by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	5	5	6
Mining	0	0	0	0
Manufacturing	0	17	17	21
Electricity, Gas, Water & Waste Services	7	6	13	16
Construction	0	9	9	11
Wholesale Trade	0	13	13	16
Retail Trade	217	33	250	307
Accommodation & Food Services	36	16	52	63
Transport, Postal & Warehousing	0	12	12	15
Information Media & Telecommunications	3	5	7	9
Financial & Insurance Services	0	13	13	17

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	5	5	6
Professional, Scientific & Technical Services	0	28	28	35
Administrative & Support Services	0	15	15	18
Public Administration & Safety	0	3	3	4
Education & Training	3	7	10	13
Health Care & Social Assistance	17	15	31	38
Arts & Recreation Services	0	4	4	5
Other Services	64	13	77	95
Total	346	220	566	697

Table A23 Employment supported from NZAS contractor expenditure in Southland by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	2	2	2
Mining	0	0	0	0
Manufacturing	0	5	5	7
Electricity, Gas, Water & Waste Services	2	2	4	5
Construction	0	3	3	3
Wholesale Trade	0	4	4	5
Retail Trade	67	10	78	95
Accommodation & Food Services	11	5	16	20
Transport, Postal & Warehousing	0	4	4	5
Information Media & Telecommunications	1	2	3	3
Financial & Insurance Services	0	4	4	5

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	2	2	2
Professional, Scientific & Technical Services	0	9	9	11
Administrative & Support Services	0	5	5	6
Public Administration & Safety	0	1	1	1
Education & Training	1	3	3	4
Health Care & Social Assistance	5	5	10	12
Arts & Recreation Services	0	1	1	2
Other Services	20	4	24	30
Total	108	69	177	219

Table A24 Total employment supported from NZAS operations in Southland by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	26	26	31
Mining	0	1	1	1
Manufacturing	39	57	97	120
Electricity, Gas, Water & Waste Services	10	12	22	27
Construction	51	42	94	115
Wholesale Trade	21	39	61	75
Retail Trade	284	86	371	454
Accommodation & Food Services	56	41	97	119
Transport, Postal & Warehousing	27	39	67	83
Information Media & Telecommunications	4	12	15	19
Financial & Insurance Services	8	33	41	52

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	1	14	14	17
Professional, Scientific & Technical Services	37	76	113	139
Administrative & Support Services	0	35	35	43
Public Administration & Safety	0	7	7	9
Education & Training	11	19	29	36
Health Care & Social Assistance	25	36	59	73
Arts & Recreation Services	0	10	10	13
Other Services	86	35	121	150
Total	662	620	1,282	1,580

Table A25 Employment supported from NZAS industry expenditure in Invercargill City by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	19	19	23
Mining	0	1	1	1
Manufacturing	39	34	74	91
Electricity, Gas, Water & Waste Services	1	4	5	6
Construction	50	29	80	99
Wholesale Trade	21	22	44	54
Retail Trade	0	43	43	52
Accommodation & Food Services	9	20	29	36
Transport, Postal & Warehousing	27	23	51	63
Information Media & Telecommunications	0	5	5	7
Financial & Insurance Services	8	16	24	30

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	1	7	7	9
Professional, Scientific & Technical Services	37	39	76	93
Administrative & Support Services	0	15	15	19
Public Administration & Safety	0	3	3	4
Education & Training	7	9	16	19
Health Care & Social Assistance	3	16	18	23
Arts & Recreation Services	0	5	5	6
Other Services	2	18	20	25
Total	207	329	536	661

Table A26 Employment supported from NZAS employee expenditure in Invercargill City by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	5	5	6
Mining	0	0	0	0
Manufacturing	0	16	16	20
Electricity, Gas, Water & Waste Services	7	5	12	15
Construction	0	9	9	11
Wholesale Trade	0	12	12	15
Retail Trade	204	32	236	290
Accommodation & Food Services	34	15	49	59
Transport, Postal & Warehousing	0	11	11	14
Information Media & Telecommunications	3	5	8	9
Financial & Insurance Services	0	12	12	16

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	5	5	6
Professional, Scientific & Technical Services	0	28	28	34
Administrative & Support Services	0	14	14	17
Public Administration & Safety	0	3	3	4
Education & Training	3	7	10	12
Health Care & Social Assistance	16	14	30	36
Arts & Recreation Services	0	4	4	5
Other Services	61	12	73	90
Total	328	209	537	661

Table A27 Employment supported from NZAS contractor expenditure in Invercargill City by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	2	2	2
Mining	0	0	0	0
Manufacturing	0	5	5	6
Electricity, Gas, Water & Waste Services	2	2	4	5
Construction	0	3	3	3
Wholesale Trade	0	4	4	5
Retail Trade	64	10	74	91
Accommodation & Food Services	11	5	15	19
Transport, Postal & Warehousing	0	3	3	4
Information Media & Telecommunications	1	2	3	3
Financial & Insurance Services	0	4	4	5

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	2	2	2
Professional, Scientific & Technical Services	0	9	9	11
Administrative & Support Services	0	4	4	5
Public Administration & Safety	0	1	1	1
Education & Training	1	2	3	4
Health Care & Social Assistance	5	4	9	11
Arts & Recreation Services	0	1	1	2
Other Services	19	4	23	28
Total	103	65	168	207

Table A28 Total employment supported from NZAS operations in Invercargill City by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	26	26	31
Mining	0	1	1	1
Manufacturing	39	55	95	117
Electricity, Gas, Water & Waste Services	10	11	21	26
Construction	50	41	92	113
Wholesale Trade	21	38	60	74
Retail Trade	268	85	353	433
Accommodation & Food Services	54	40	93	114
Transport, Postal & Warehousing	27	37	65	81
Information Media & Telecommunications	4	12	16	19
Financial & Insurance Services	8	32	40	51

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	1	14	14	17
Professional, Scientific & Technical Services	37	76	113	138
Administrative & Support Services	0	33	33	41
Public Administration & Safety	0	7	7	9
Education & Training	11	18	29	35
Health Care & Social Assistance	24	34	57	70
Arts & Recreation Services	0	10	10	13
Other Services	82	34	116	143
Total	638	603	1,241	1,529

Table A29 Employment supported from NZAS industry expenditure in Southland District by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	0	0	0	0
Electricity, Gas, Water & Waste Services	0	0	0	0
Construction	0	0	0	0
Wholesale Trade	0	0	0	0
Retail Trade	0	0	0	0
Accommodation & Food Services	0	0	0	0
Transport, Postal & Warehousing	0	0	0	0
Information Media & Telecommunications	0	0	0	0
Financial & Insurance Services	0	0	0	0

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	0	0	0
Professional, Scientific & Technical Services	0	0	0	0
Administrative & Support Services	0	0	0	0
Public Administration & Safety	0	0	0	0
Education & Training	0	0	0	0
Health Care & Social Assistance	0	0	0	0
Arts & Recreation Services	0	0	0	0
Other Services	0	0	0	0
Total	0	0	0	0

Table A30 Employment supported from NZAS employee expenditure in Southland District by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	0	1	1	1
Electricity, Gas, Water & Waste Services	0	1	1	1
Construction	0	0	0	0
Wholesale Trade	0	1	1	1
Retail Trade	11	1	12	16
Accommodation & Food Services	2	1	3	4
Transport, Postal & Warehousing	0	1	1	1
Information Media & Telecommunications	0	0	0	0
Financial & Insurance Services	0	1	1	1

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	0	0	0
Professional, Scientific & Technical Services	0	1	1	1
Administrative & Support Services	0	1	1	1
Public Administration & Safety	0	0	0	0
Education & Training	0	1	1	1
Health Care & Social Assistance	1	1	2	2
Arts & Recreation Services	0	0	0	0
Other Services	3	1	4	5
Total	17	12	29	35

Table A31 Employment supported from NZAS contractor expenditure in Southland District by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	0	0	0	0
Electricity, Gas, Water & Waste Services	0	0	0	0
Construction	0	0	0	0
Wholesale Trade	0	0	0	0
Retail Trade	4	0	4	5
Accommodation & Food Services	1	0	1	1
Transport, Postal & Warehousing	0	0	0	0
Information Media & Telecommunications	0	0	0	0
Financial & Insurance Services	0	0	0	0

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	0	0	0
Professional, Scientific & Technical Services	0	0	0	0
Administrative & Support Services	0	0	0	0
Public Administration & Safety	0	0	0	0
Education & Training	0	0	0	0
Health Care & Social Assistance	0	0	1	1
Arts & Recreation Services	0	0	0	0
Other Services	1	0	1	2
Total	6	4	9	12

Table A32 Total employment supported from NZAS operations in Southland District by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	0	1	1	1
Electricity, Gas, Water & Waste Services	0	1	1	1
Construction	0	0	0	0
Wholesale Trade	0	1	1	1
Retail Trade	15	1	16	21
Accommodation & Food Services	3	1	4	5
Transport, Postal & Warehousing	0	1	1	1
Information Media & Telecommunications	0	0	0	0
Financial & Insurance Services	0	1	1	1

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	0	0	0
Professional, Scientific & Technical Services	0	1	1	1
Administrative & Support Services	0	1	1	1
Public Administration & Safety	0	0	0	0
Education & Training	0	1	1	1
Health Care & Social Assistance	1	1	3	3
Arts & Recreation Services	0	0	0	0
Other Services	4	1	5	7
Total	23	16	38	47

Table A33 Employment supported from NZAS industry expenditure in Gore District by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	0	1	1	1
Electricity, Gas, Water & Waste Services	0	0	0	0
Construction	1	1	2	2
Wholesale Trade	0	0	0	0
Retail Trade	0	0	0	0
Accommodation & Food Services	0	0	0	0
Transport, Postal & Warehousing	0	0	0	0
Information Media & Telecommunications	0	0	0	0
Financial & Insurance Services	0	0	0	0

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	0	0	0
Professional, Scientific & Technical Services	0	0	0	0
Administrative & Support Services	0	0	0	0
Public Administration & Safety	0	0	0	0
Education & Training	0	0	0	0
Health Care & Social Assistance	0	0	0	0
Arts & Recreation Services	0	0	0	0
Other Services	0	0	0	0
Total	1	2	3	3

Table A34 Employment supported from NZAS employee expenditure in Gore District by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	0	0	0	0
Electricity, Gas, Water & Waste Services	0	0	0	0
Construction	0	0	0	0
Wholesale Trade	0	0	0	0
Retail Trade	0	1	1	1
Accommodation & Food Services	0	0	0	0
Transport, Postal & Warehousing	0	0	0	0
Information Media & Telecommunications	0	0	0	0
Financial & Insurance Services	0	0	0	0

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	0	0	0
Professional, Scientific & Technical Services	0	0	0	0
Administrative & Support Services	0	0	0	0
Public Administration & Safety	0	0	0	0
Education & Training	0	0	0	0
Health Care & Social Assistance	0	0	0	0
Arts & Recreation Services	0	0	0	0
Other Services	0	0	0	0
Total	0	1	1	1

Table A35 Total employment supported from NZAS operations in Gore District by industry

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Agriculture, Forestry & Fishing	0	0	0	0
Mining	0	0	0	0
Manufacturing	0	1	1	1
Electricity, Gas, Water & Waste Services	0	0	0	0
Construction	1	1	2	2
Wholesale Trade	0	0	0	0
Retail Trade	0	1	1	1
Accommodation & Food Services	0	0	0	0
Transport, Postal & Warehousing	0	0	0	0
Information Media & Telecommunications	0	0	0	0
Financial & Insurance Services	0	0	0	0

Industry	Indirect Employment (FTE)	Flow on employment (FTE)	Total Employment (FTE)	Equivalent Employees
Rental, Hiring & Real Estate Services	0	0	0	0
Professional, Scientific & Technical Services	0	0	0	0
Administrative & Support Services	0	0	0	0
Public Administration & Safety	0	0	0	0
Education & Training	0	0	0	0
Health Care & Social Assistance	0	0	0	0
Arts & Recreation Services	0	0	0	0
Other Services	0	0	0	0
Total	1	3	4	4

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Level 9

145 Ann Street

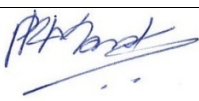
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Appendix B

Survey questionnaire

NZAS Closure SEIA 2021 - Business Survey

NZAS Closure SEIA 2021 - Business Survey

As you are aware, in January Rio Tinto reached a new electricity supply agreement with Meridian Energy and as result, operations at New Zealand's Aluminium Smelter (NZAS) will now be extended by four years to the end of 2024.

NZAS is currently undertaking a number of technical studies to inform its Closure Study. To inform this planning, Rio Tinto is undertaking a social and economic baseline and impact assessment (SEIA) study for the Southland region. The SEIA will assess potential economic and social impacts of cessation of NZAS operations in 2024, which will be used to inform Rio Tinto's closure planning.

As part of the SEIA, Rio Tinto is inviting regional businesses that provide goods and services to NZAS to participate in an online survey. The purpose of the survey is to understand potential impacts of NZAS' closure in 2024 on your business operations.

We understand that as a valued local business vendor to NZAS, you would have received an email regarding this survey.

Participation in this survey is voluntary and providing a response to all questions is also voluntary. Your responses will remain strictly confidential and only be used for the purposes of the SEIA.

We appreciate you taking the time to respond to this survey. It should only take about 15-20 minutes to complete, so let's get started.

1. Are you the owner of the business?

Yes

No

NZAS Closure SEIA 2021 - Business Survey

2. If no, what is your position in the business

NZAS Closure SEIA 2021 - Business Survey

3. Name of the business

NZAS Closure SEIA 2021 - Business Survey

4. Location

- Invercargill City
- Gore District
- Southland District

NZAS Closure SEIA 2021 - Business Survey

5. How many years has the business been in operation?

- 1-2 years
- 3-5 years
- 5-10 years
- >10 years

NZAS Closure SEIA 2021 - Business Survey

6. What type of goods and services do you provide?

NZAS Closure SEIA 2021 - Business Survey

7. How many direct employees do you have?

	Number
Total	<input type="text"/>
Full time	<input type="text"/>
Part time	<input type="text"/>
Casual	<input type="text"/>
Apprentices	<input type="text"/>
Trainees	<input type="text"/>

NZAS Closure SEIA 2021 - Business Survey

8. Where do your employees come from (where do they live)?

	Number
Invercargill City	<input type="text"/>
Gore District	<input type="text"/>
Southland District	<input type="text"/>

Other (please specify)

NZAS Closure SEIA 2021 - Business Survey

9. Do any of your employees identify as Māori?

Yes

No

NZAS Closure SEIA 2021 - Business Survey

10. Approximately what percentage of your business revenue comes from the NZAS?

- 0-25%
- 26-50%
- 51-75%
- 76-100%

NZAS Closure SEIA 2021 - Business Survey

11. Did you establish your business primarily to provide goods and services to NZAS?

- Yes
- No

NZAS Closure SEIA 2021 - Business Survey

12. How long have you been doing business with NZAS?

- Less than 5 years
- Between 5 and 10 years
- Over 10 years

NZAS Closure SEIA 2021 - Business Survey

13. Over time, have you received any financial or in-kind business development or community contribution support for your business from NZAS?

- Yes
- No

NZAS Closure SEIA 2021 - Business Survey

14. If yes, please provide details on what assistance was received and when?

NZAS Closure SEIA 2021 - Business Survey

15. In the future, would you be able to operate without any assistance from NZAS?

Yes

No

NZAS Closure SEIA 2021 - Business Survey

16. Are you aware of the announcement of the future closure of NZAS operations?

Yes

No

NZAS Closure SEIA 2021 - Business Survey

17. What impact would the closure of NZAS have on your business?

Business as usual because of other clients

Business may diminish, but continue to operate in Southland region

Business may relocate outside of Southland region

Business may close

Other (please specify)

NZAS Closure SEIA 2021 - Business Survey

18. Have you started to plan for the future of your business after the closure of NZAS?

- Yes
- No

NZAS Closure SEIA 2021 - Business Survey

19. If yes, what steps have you taken?

NZAS Closure SEIA 2021 - Business Survey

20. What are you most concerned about in terms of impacts the closure of NZAS will have on your business?

NZAS Closure SEIA 2021 - Business Survey

21. Based on the anticipated impact of NZAS closure on your business, what future business opportunities would you have in the Southland region?

NZAS Closure SEIA 2021 - Business Survey

22. How would NZAS closure impact on your employees?

- All employees will continue to work with the business
- All employees will continue but with reduced hours
- Some employees will lose their jobs
- All employees will lose their jobs

NZAS Closure SEIA 2021 - Business Survey

23. What information and assistance would you need to plan for the future of your business during and post closure of NZAS?

NZAS Closure SEIA 2021 - Business Survey

24. Is there anything else that you feel is important for us to know?

Appendix C

SEIA 2020 baseline report



pure kiwi mettle

New Zealand Aluminium Smelter Socio-Economic Impact Assessment

Baseline Report

2020

Introduction

New Zealand’s Aluminium Smelter Limited (NZAS) is a joint venture company owned by Rio Tinto New Zealand Limited (Rio Tinto) and Sumitomo Chemical Company of Japan, operating New Zealand’s only aluminium smelter which was established in 1971. NZAS is located 25 kilometres from Invercargill and across the harbour from the township of Bluff, in the Southland region of New Zealand.

In October 2019, Rio Tinto announced a Strategic Review of NZAS, to consider future pathways for the site, in response to the high costs of energy and transmission NZAS faces in a challenging aluminium market.

As part of the Strategic Review and closure planning, Rio Tinto engaged GHD to undertake a Social and Economic Impact Assessment (SEIA) to assess the socio-economic contributions of the smelter’s operations and impacts of its closure on communities including Invercargill City, the town of Bluff, Gore District, Southland District and the overall Southland region (Figure ES-1).

In January 2021, Rio Tinto announced that a new electricity supply agreement with Meridan Energy had been reached and that, as a result, operations at NZAS were extended by four years to the end of 2024.

Rio Tinto also stated that detailed closure studies will continue, as well as discussions with stakeholders on the future of the smelter.

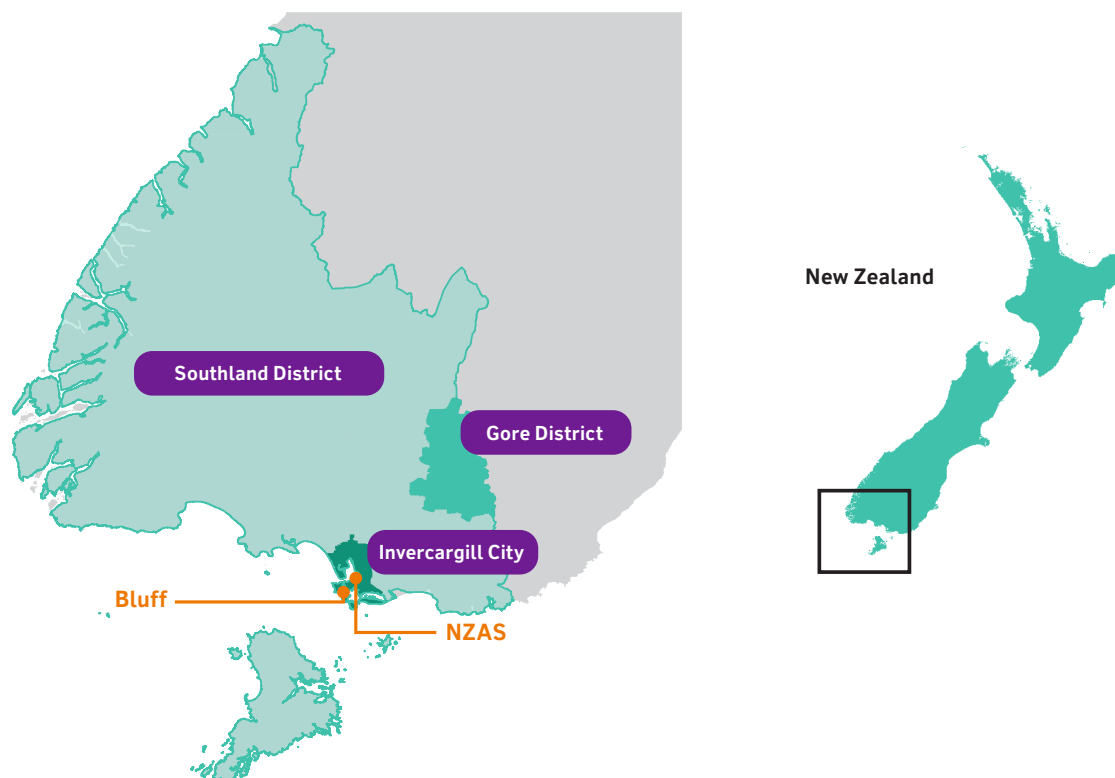


Figure ES-1: Study area - the Southland Region

The purpose of this SEIA is to understand the social and economic baseline and contribution of NZAS to the communities identified in Figure ES 1; assess potential socio-economic impacts of the closure of NZAS to these communities; and gain feedback from stakeholders to inform closure planning.

An overview of the SEIA methodology is presented in Figure ES-2.

A key input to the SEIA was in-depth consultation with representatives from 33 regional and local organisations, including regional council, territorial authorities, regional development agencies, New Zealand government representatives, Iwi, local businesses, community service providers, community organisations, business chamber, regional infrastructure and utilities and NZAS employees. Figure ES-3 shows the relevance of these stakeholders and their influence in the region.

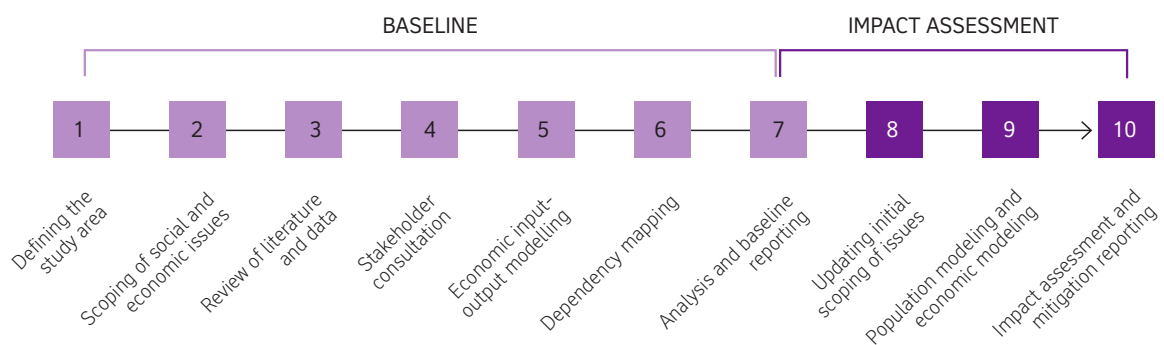


Figure ES-2: SEIA methodology overview

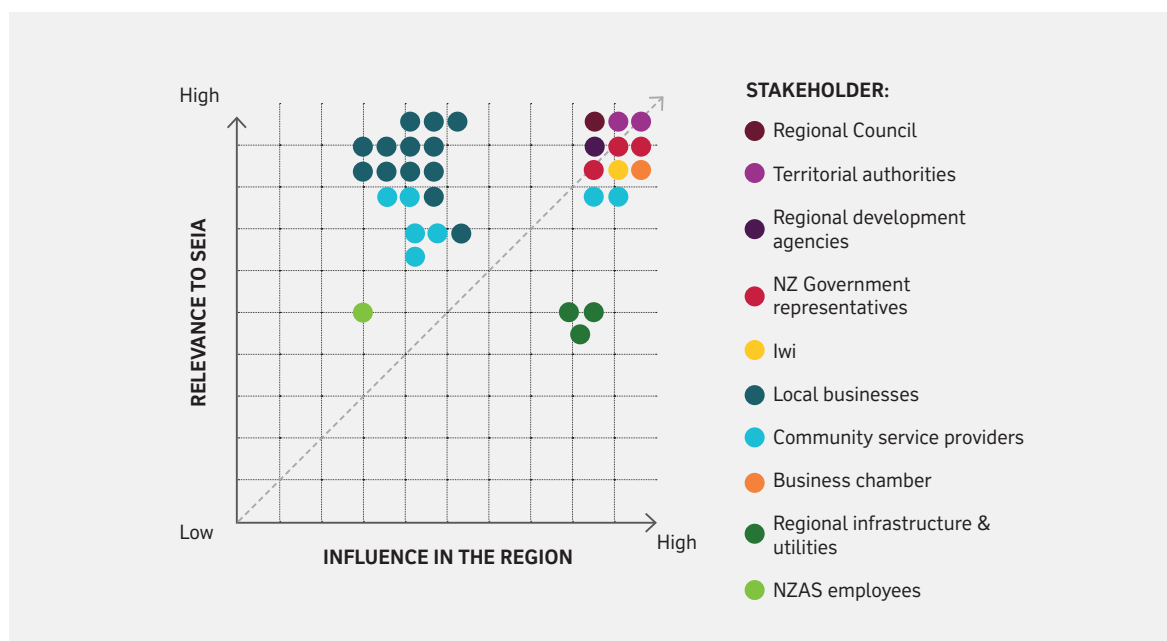


Figure ES-3: SEIA stakeholder analysis

Southland

The main findings of the socio-economic baseline are summarised below:

Community values



Rural and affordable lifestyle



Access to stable employment opportunities



Strong connection to the region and the community

Demographics¹

Southland's population is projected to decline, and the region has an older age profile compared to New Zealand as a whole. Stakeholder consultation indicates that young people often leave the region for further education and employment opportunities.

While the region overall has lower levels of educational attainment, there are higher proportions of students who studied at an institute of technology and polytechnic, which is reflective of the tertiary education opportunities available in the region, specifically Southern Institute of Technology (SIT) as well as employment opportunities available in the region in manufacturing.

Median age



40

Southland Region



37

New Zealand

Education attainment of people aged 15 years and over

27%

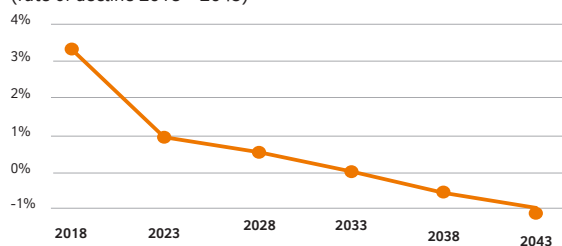


37%

High school only

Level 1-3 certificate

Population projections (rate of decline 2018 – 2043)



Source: StatsNZ 2018, NZ.Stats

Economic

Key vulnerabilities



Lower education



Housing tenure²



Lower skill levels



Aging population

Economic opportunities including



Aquaculture



International education



Tourism

Diverse economic opportunities are at different stages of development, and various socio-economic and political factors (including the current COVID-19 pandemic) will influence their ability to grow.

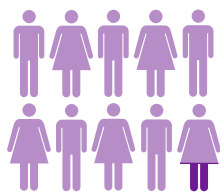
¹All demographic data from Statistics New Zealand. (2018). *Census place summaries*. Retrieved from <https://www.stats.govt.nz/tools/2018-census-place-summaries>

²Housing tenure is a key vulnerability in the region with Invercargill City and Gore District having higher rates of dwelling occupancy and lower rates of dwellings being constructed than the New Zealand average, indicating that housing availability in Invercargill and Gore district is limited. The property market value in Invercargill has grown by 16% in 2019, which is lower than the average for Southland Region.

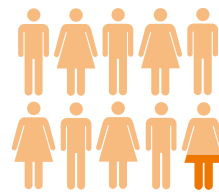
Industry

Southland is primarily an agricultural region, with a solid manufacturing industry which is underpinned by NZAS, and dairy and meat processing. The region has a high number of people employed as labourers, and together with the region's lower educational attainment rates, the region has a large proportion of unskilled workforce, particularly in the manufacturing industry.

Unemployment rate



Southland Region
3.3%



New Zealand
4%

Top three industries of employment



Top three occupation types

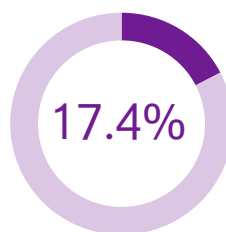


Invercargill City

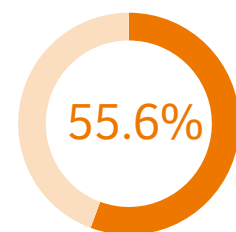
Invercargill City hosts around half of Southland's population and most of the regional services and infrastructure. Invercargill is also more culturally diverse than other parts of the region, including a higher proportion of Māori residents compared to the national average.



Southland's civic, commercial and services hub



17.4% Invercargill City's total population are Māori residents



Home to 55.6% of Southland's total population

Having operated in the region for 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. The NZAS workforce mostly live in Invercargill City and Southland District, and many are older workers who have served at NZAS for over twenty years.

NZAS also contributes to the region and particularly Invercargill through direct community contributions to community infrastructure and organisations, and indirectly through its workforce and families who access regional infrastructure and are members of organisations. NZAS also supports vulnerable community members through its recycling contract with Southland Disability Enterprises Limited.

As a foundation for assessing impacts of the smelter’s closure on social indicators and stakeholders, a high level analysis of their dependence on NZAS was undertaken. The methodology applied is a subjective and qualitative analysis using a system of rating ranging between high, medium and low levels of dependence. The application of this scale is based on the professional judgment of the SEIA team based on information available at the time of the preparation of the report.

An overview of the dependency analysis outcomes is presented in Figure ES-4.

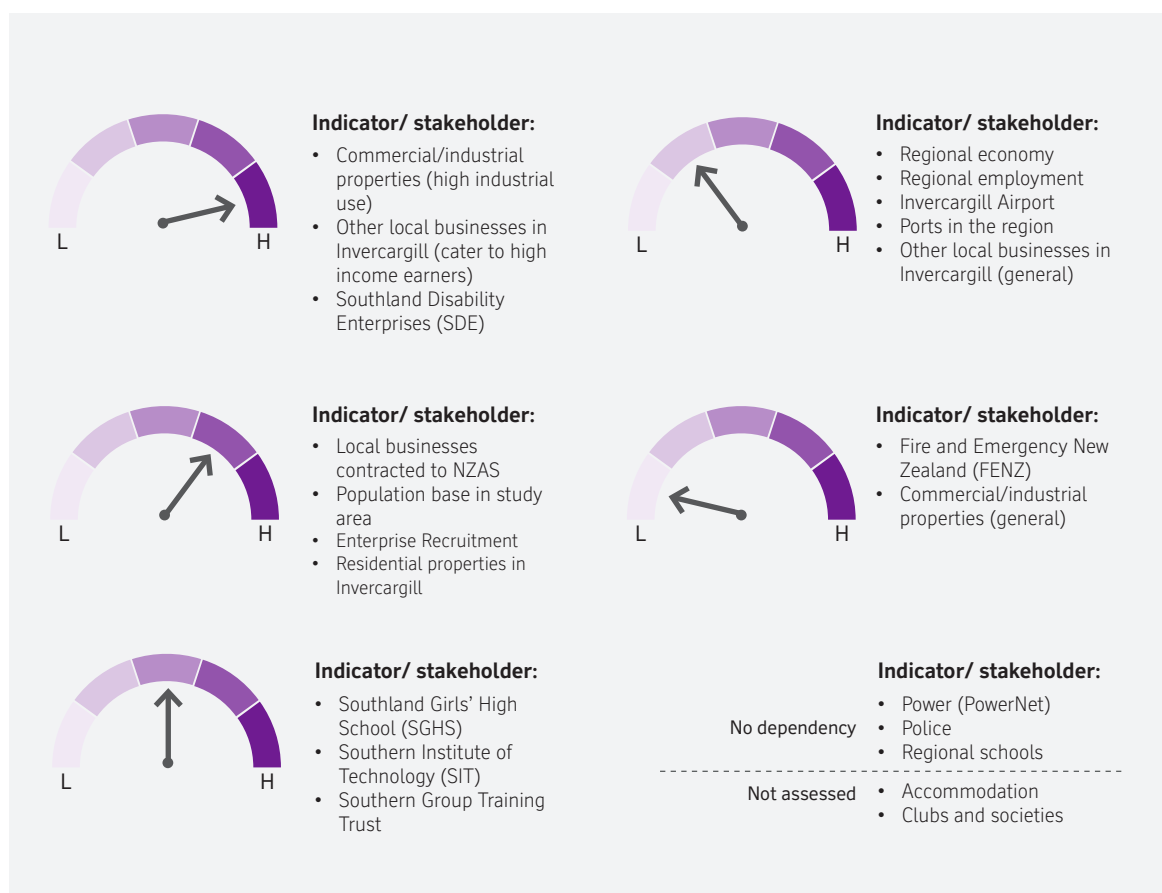
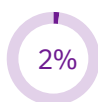


Figure ES-4: NZAS dependency spectrum

Southland regional socio-economic profile



2% of New Zealand's total population
97,467 total people in Southland Region



14.9% of Southland Region's total population
14,484 Māori people in Southland Region

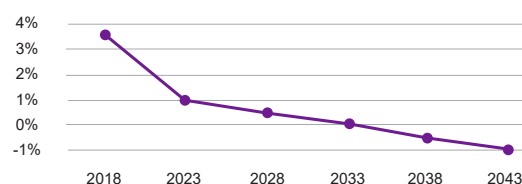
Median age

40 years - Southland Region 37 years - New Zealand

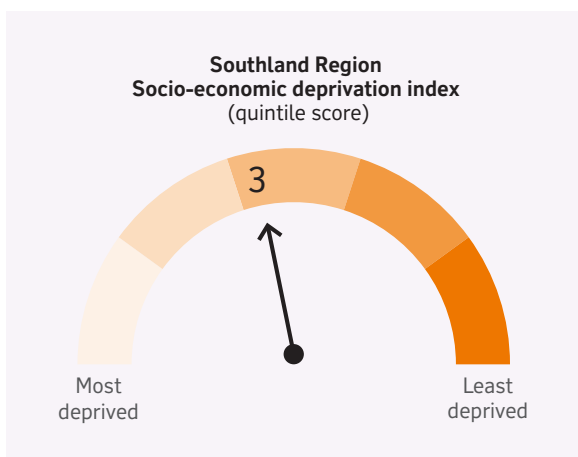
Population trend
(growth rate 2013-2018)



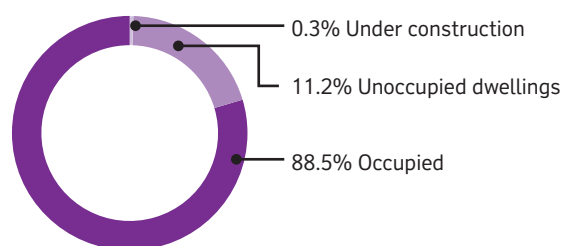
Population projections (rate of decline 2018 – 2043)



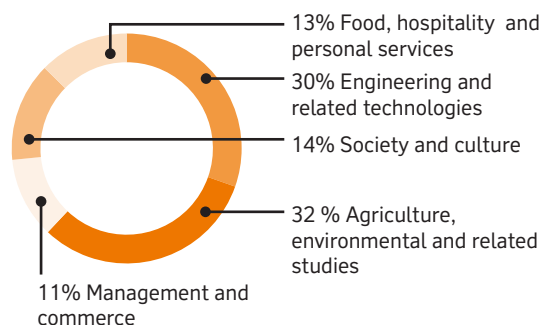
Source: StatsNZ 2018, NZ.Stats



Housing occupancy rates



Fields of vocational study



Education attainment of people aged 15 yr and over



Top five industries of employment



Unemployment rate



Top three occupation types



Median individual annual income

\$31,200

Invercargill City socio-economic profile



55.6% of New Zealand's total population
54,204 total people in Invercargill City

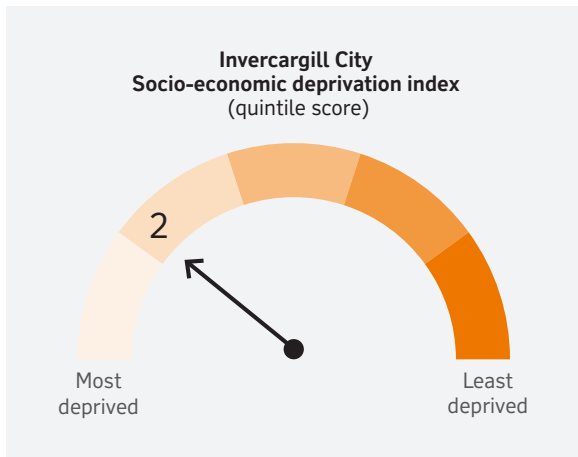


17.4% of Invercargill City's total population
9,444 Māori people in Invercargill City

Median age

39 - Invercargill City

37 - New Zealand



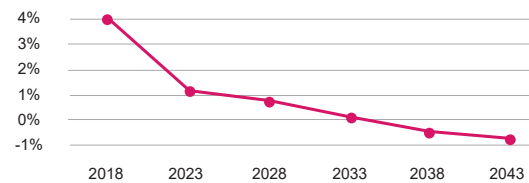
Education attainment of people aged 15 yr and over



Population trend (growth rate 2013-2018)

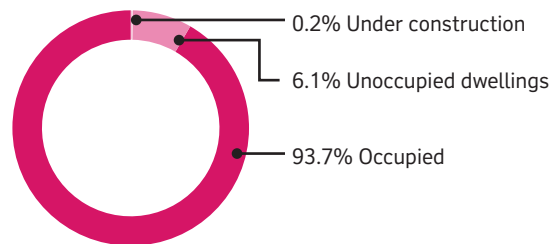


Population projections (rate of decline 2018 - 2043)

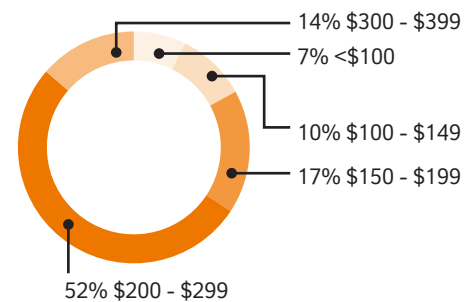


Source: StatsNZ 2018, NZ.Stats

Housing occupancy rates



Weekly household rent



Top five industries of employment



Unemployment rate



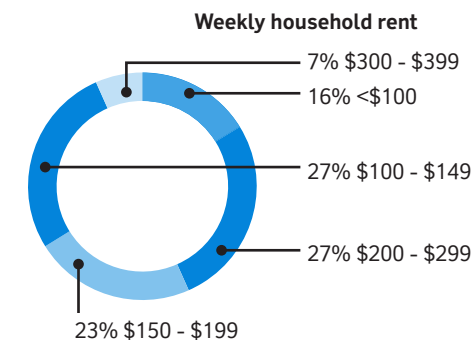
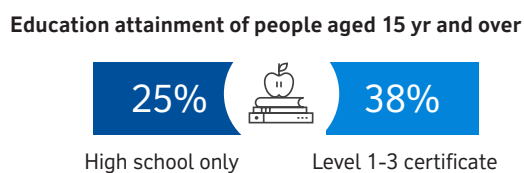
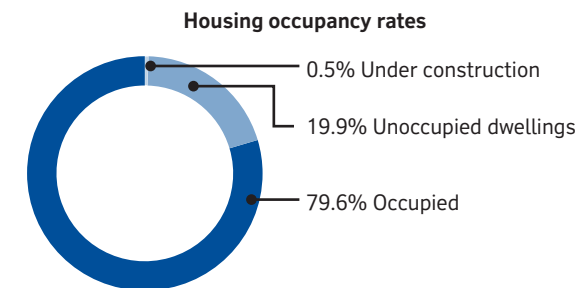
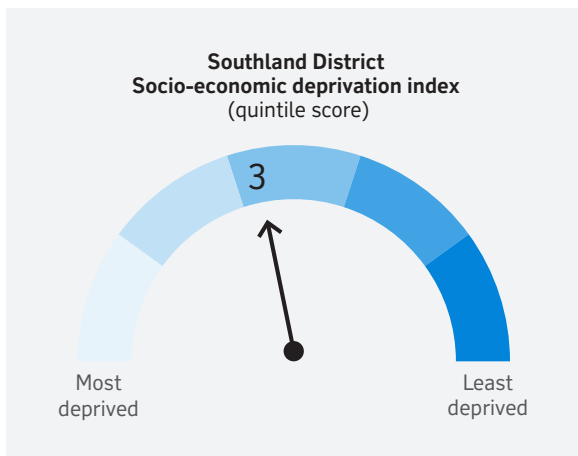
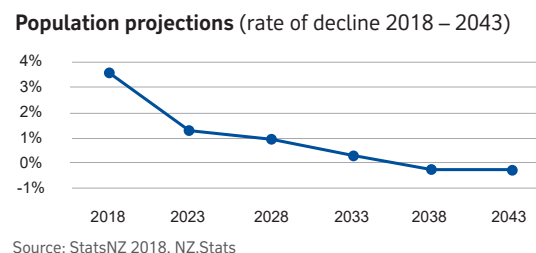
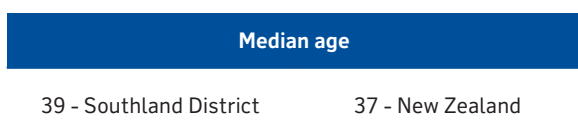
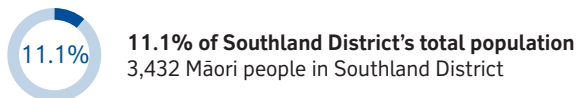
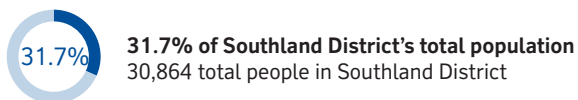
Top three occupation types



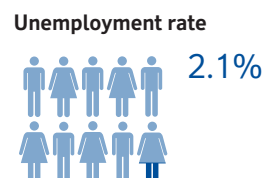
Median individual annual income

\$31,200

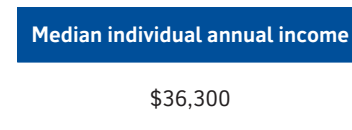
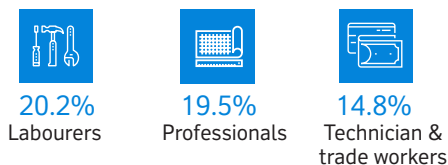
Southland District socio-economic profile



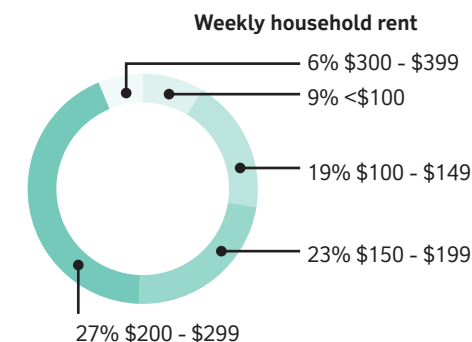
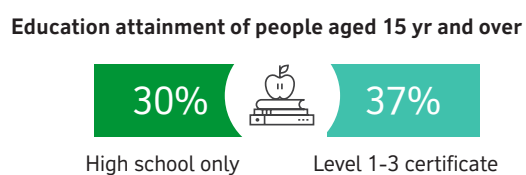
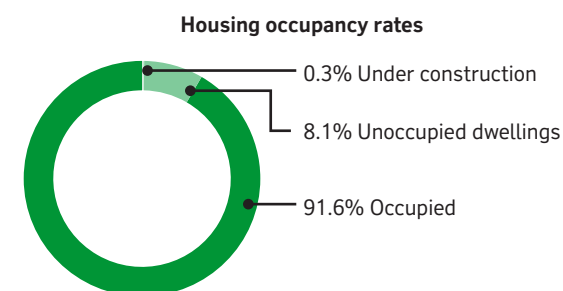
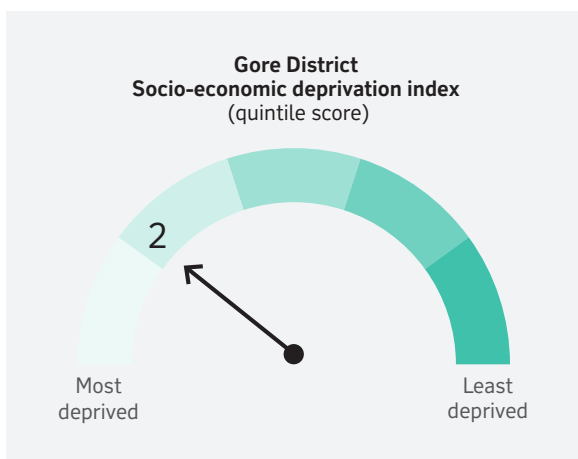
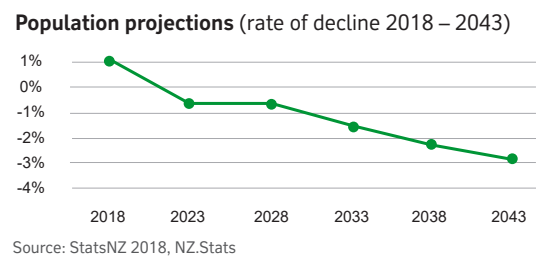
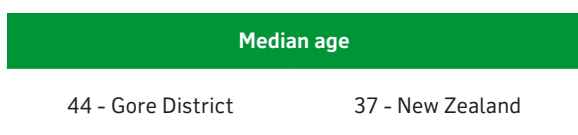
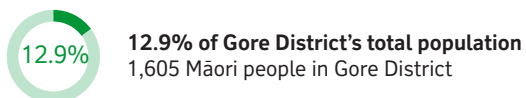
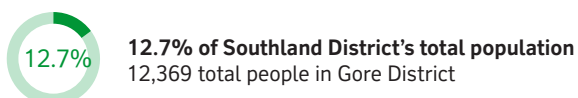
Top five industries of employment



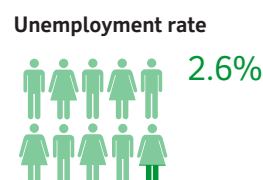
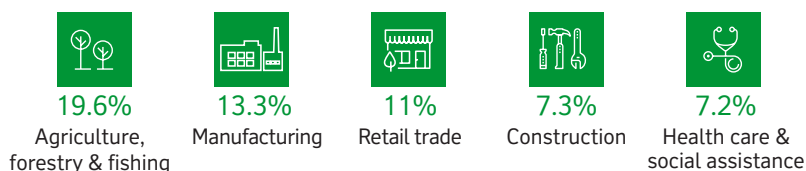
Top three occupation types



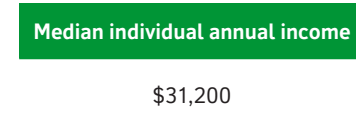
Gore District socio-economic profile



Top five industries of employment



Top three occupation types





Rio Tinto New Zealand Limited

New Zealand Aluminium Smelter

Socio-Economic Impact Assessment

Baseline Report

April, 2021

**COMMERCIAL AND CONFIDENTIAL
FOR RIO TINTO INTERNAL REVIEW ONLY
THIS REPORT INCLUDES SENSITIVE
INFORMATION**



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Appendices

Appendix A – Key findings of SEIA stakeholder consultation

Glossary

Acronym / term	Definition
COVID-19	COVID-19 is the infectious disease caused by the most recently discovered coronavirus. Due to the global spread of COVID-19 it was declared a Public Health Emergency of International Concern on 30 January 2020 (World Health Organisation, 2020)
FENZ	Fire and Emergency New Zealand
FTE	Full Time Equivalent
Regional GDP	Regional Gross Domestic Product
GDP	Gross Domestic Product
IAIA	International Association for Impact Assessment
NZAS	New Zealand's Aluminium Smelter
Rio Tinto	Rio Tinto New Zealand Limited
SEIA	Social and Economic Impact Assessment
SIT	Southern Institute of Technology

1. Introduction

1.1 Background

New Zealand Aluminium Smelters Limited (NZAS) is a joint venture company owned by Rio Tinto New Zealand Limited (Rio Tinto) and Sumitomo Chemical Company of Japan. NZAS operates New Zealand's only aluminium smelter at Tiwai Point, located approximately 25 kilometres from Invercargill and across Bluff Harbour from the township of Bluff, in the Southland region of New Zealand (Figure 1-1).

NZAS began operating 50 years ago in 1971 and produces low carbon metal a small percentage of which is ultra-high purity aluminium. The smelter operates 24 hours a day, seven days a week, smelting and casting primary aluminium and its alloys in the form of ingot, billet, rolling block and t-bar. The smelter currently has annual plan capacity of 370,000 tonnes of aluminium per annum (Rio Tinto, 2019). Approximately 90% of the aluminium produced is exported, with the largest market being Japan (NZAS, 2020b).

NZAS is the largest single user of electricity in New Zealand. When it is operating the quarter potline Line 4 it uses up to 622 MW per year (Rio Tinto, 2019), and without Line 4 572MW. To put this energy use into context, it is a similar amount to the electricity used by all the residential households in Auckland. NZAS is powered by hydro-electricity from Manapōuri Power Station, which means it has one of the lowest carbon footprints per tonne of aluminium in the world (NZAS, 2020b).

In October 2019, Rio Tinto announced a Strategic Review of NZAS, in response to the high costs of energy and transmission NZAS faces in a challenging aluminium market. The Strategic Review considers future pathways for the site:

- To continue operating with more competitive power arrangements to allow the smelter to run at its current full capacity
- To partially curtail operations, or
- To cease operations and permanently close the smelter.

In January 2021, Rio Tinto announced that a new electricity supply agreement with Meridian Energy had been reached and that, as a result, operations at NZAS were extended by four years to the end of 2024.

Rio Tinto also stated that detailed closure studies will continue, as well as discussions with stakeholders on the future of the smelter.

1.2 Study details and purpose of the report

To meet the requirements of Rio Tinto's standards (refer to section 2.1), Rio Tinto has commenced the NZAS Closure Preliminary Study. As part of this process and to inform the Strategic Review and future study phases, Rio Tinto decided to undertake a Social and Economic Impact Assessment (SEIA) to gauge the socio economic contributions of the smelters operations and impacts of its closure on nearby communities, the Southland region and the New Zealand economy. This will support development of further closure planning and impact mitigation strategies.

Rio Tinto engaged GHD to undertake a SEIA for the potential closure of NZAS. The SEIA is on the basis of the following underlying considerations:

- Closure of NZAS is dealt with at a conceptual level only, with no reference to specific timeframes, but recognising that if closure were to occur prior to 2030 a 12 month

notice period would need to be served by NZAS due to contractual energy agreements and with no reference to closure related workforce scenarios.

- A relevant contextual consideration was the COVID-19 (Coronavirus) outbreak which was declared a Public Health Emergency of International Concern on 30 January 2020 (World Health Organisation, 2020). In response to the global spread of COVID-19, the New Zealand Government declared a state of national emergency on 25 March 2020 to slow the spread and reduce its impact in New Zealand. The New Zealand Government introduced a 4-level Alert System for COVID-19, starting with Level 4 – Lockdown. This included instructing people to remain in their homes, severely restricting travel, cancelling gatherings and closing public venues, closing businesses (except for essential services) and educational facilities, and reprioritising healthcare services (New Zealand Government, 2020). New Zealand moved to Level 3 from 28 April 2020 which continued to restrict the movement of people and restrict many businesses from usual operations (e.g. retail, hospitality, tourism, accommodation).

The Government announced 11 May 2020 that New Zealand would move to Level 2 in stages on 13 May, and many businesses would be expected to re-open by 21 May 2020. On 9 June 2020 the country moved to a Level 1 alert, where people could return to work, school, sport and domestic travel without restrictions. The timing of each phase of lockdown has been determined by the New Zealand Government and with loss of income due to business closures, the economic and social effects of COVID-19 are likely to be widespread and enduring.

This study was prepared in the midst of New Zealand's Level 4, Level 3 and Level 2 Lockdown. During the preparation of this study it was not known how long these restrictions would be in place and as the situation was still unfolding, the full social and economic effects as a result of the lockdown measures for COVID-19 were also not known. Relevant and reliable data was not yet available to inform this study, however where possible, qualitative discussion has been incorporated into relevant sections of the study. In this SEIA Baseline report, COVID-19 is discussed in section 3.7.2.4.

The SEIA was undertaken in two phases:

- **Phase 1** – A social and economic baseline to understand the current situation and socio-economic dynamics of the Southland region, to provide the basis for assessment of impacts and identified mitigation measures.
- **Phase 2** – A SEIA for the proposed closure of NZAS.

This report presents the social and economic baseline for Phase 1 of the study. Phase 2 of the study is documented in a separate report called the *NZAS Socio-Economic Impact Report* (GHD 2020) hereafter referred to as the Socio-Economic Impact Report (GHD 2020).

1.3 Structure of the report

This social and economic baseline report is structured according to the following sections:

- Section 1 – provides an introduction to the study.
- Section 2 – outlines the methodology followed to prepare the baseline.
- Section 3 – documents the social and economic profile of the study area as it relates to NZAS activities in the region, including current regional development opportunities and challenges.
- Section 4 – outlines NZAS' economic and social contributions to the region in 2019 – 2020.



- Section 5 – summarises key findings from the baseline and identifies dependencies of key stakeholders on NZAS' contributions.



**Rio Tinto Pacific Aluminium
NZAS Socio-Economic Impact Assessment**

Project No. **12526765**
Revision No. **A**
Date **01 May 2020**

Location of NZAS

FIGURE 1-1

2. Methodology

2.1 Overview

This social and economic baseline has been guided by the following requirements and leading practice:

- Rio Tinto (2015a). *Rio Tinto Closure Standard*.
- Rio Tinto (2015b). *Rio Tinto Communities and Social Performance Standard*.
- International Association for Impact Assessment (IAIA) specifically the International Principles for Social Impact Assessment 2003 (Vanclay, 2003) and Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects (Vanclay et al, 2015).

An overview of the methodology followed to prepare the social and economic baseline is shown in Figure 2-1. These steps are described in sections 2.2 to 2.8.

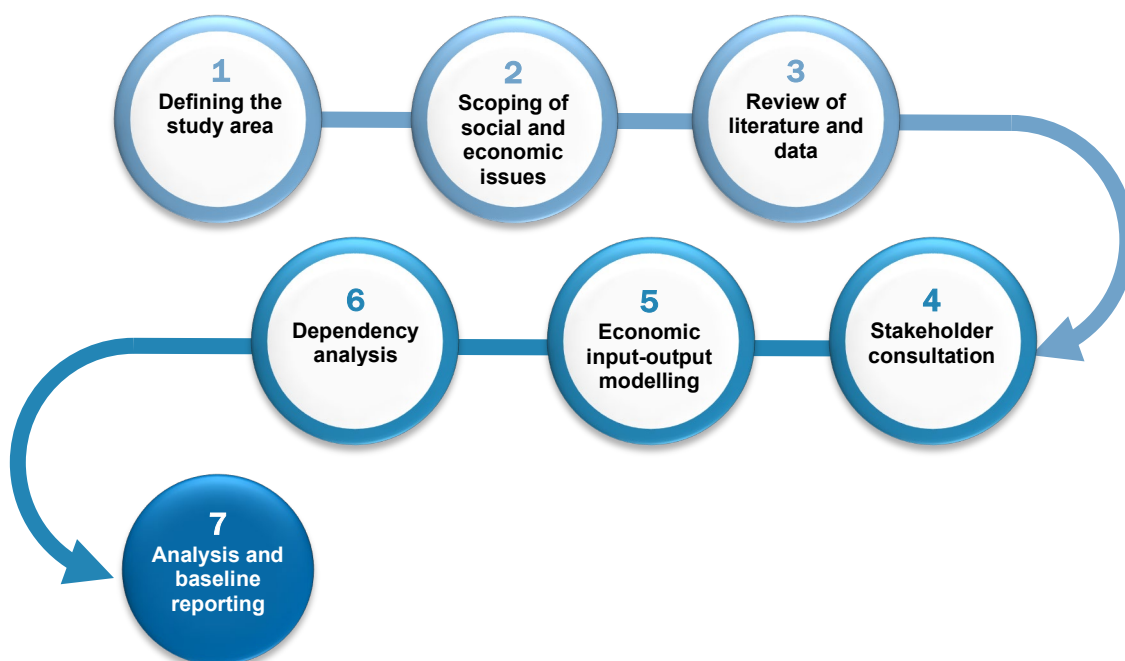


Figure 2-1 Overview of SEIA baseline methodology

2.2 Defining the study area

The study area determined for the SEIA has taken into consideration NZAS' social, economic and cultural area of influence. The primary focus for the SEIA includes the communities located near NZAS and those which have ongoing interactions with NZAS. This includes the Southland region, and three Territorial Authorities. These are described and shown in Figure 2-2. Invercargill forms the focal point of the study area, being the regional centre near NZAS and host to majority of its workforce and supporting businesses.

Table 2-1 Definition of SEIA study area

Catchment	Name	Description and relevance to NZAS
Region	Southland	Southland is the southernmost region in New Zealand and incorporates three districts as described below.
Territorial Authority	Invercargill City	Invercargill City includes the city of Invercargill, which is the commercial centre for the Southland region, and the town of Bluff which is the closest town to NZAS.
	Gore District	Gore District incorporates the town of Gore and surrounds.
	Southland District	Southland District incorporates primarily agricultural land, Fiordland and Stewart Island.

LEGEND

- NZAS
- Key locations
- Main road network

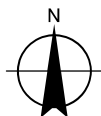
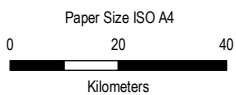
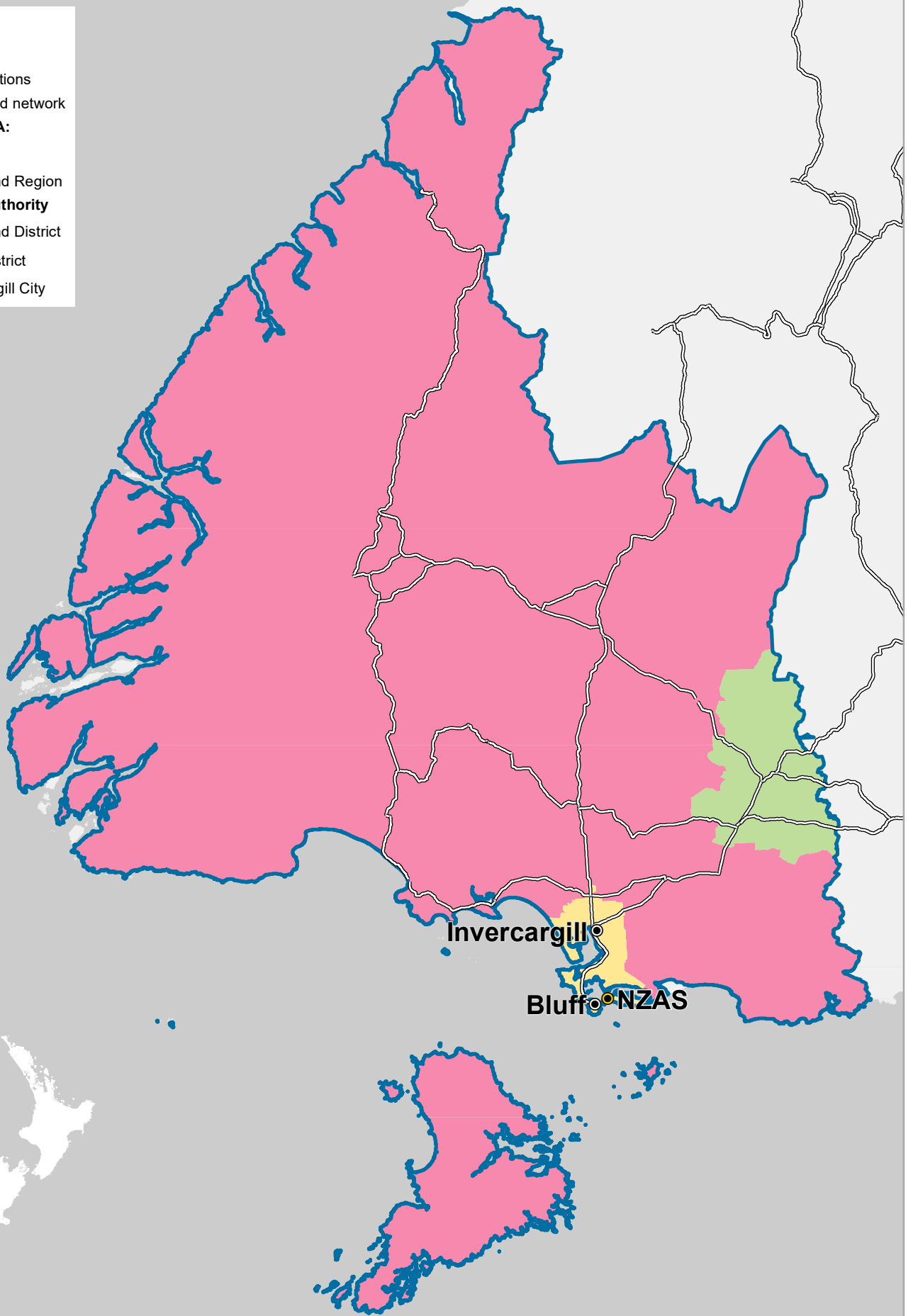
STUDY AREA:

Region

Southland Region

Territorial Authority

- Southland District
- Gore District
- Invercargill City



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Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

SEIA study area

FIGURE 2-2

2.3 Scoping of social and economic issues

Before undertaking the detailed baseline study, a preliminary scoping of potential social and economic issues associated with the operation of NZAS and its potential closure was completed to understand the areas of inquiry that would need to be explored in the SEIA. This exercise assisted in determining the scope of the social and economic baseline, the information requirements of the study, and the stakeholders to be consulted. The scoping exercise was informed by:

- Review of literature providing context for the region and NZAS
- A scoping workshop with the Rio Tinto/NZAS team
- GHD's knowledge about the social and economic implications of industry closures.

2.4 Review of literature and data

A detailed desktop review of literature was undertaken to inform the social and economic baseline for the study area. The literature review included research for the analysis of the following:

- Demographic profile
- Economic profile
- Community values, infrastructure and services, and
- Socio-economic development related opportunities and challenges for the study area.

The review included a range of relevant documents and data sets including:

- Government strategies and policies
- Regional development agency reports
- Previous social and economic studies prepared for NZAS
- New Zealand Census data from the 2013 and 2018 Census and population projections
- Information from relevant websites.

A full list of references is provided in section 6.

2.5 Stakeholder consultation

Stakeholder consultation is an integral part of the SEIA process to inform both the baseline and impact assessment phases. In collaboration with the NZAS project team and based on the scoping of issues, stakeholder analysis was undertaken to identify stakeholders that would need to be consulted for the SEIA. Figure 2-3 and Table 2-2 presents the list of stakeholders consulted for the SEIA and stakeholder analysis.

Purposive sampling and a semi-structured interview method was determined to be appropriate for the primary data collection. Stakeholders consulted included a cross section of representatives from the study area primarily located in Invercargill and Bluff, through face to face and telephone interviews during March and April 2020. A total of 33 meetings were held with representatives from local and central government agencies, regional development agencies, local businesses in Invercargill including those contracted to NZAS, community service providers, community organisations, regional infrastructure and utilities providers, and NZAS employees. Meetings with some service providers could not be undertaken during March – April 2020 due to the outbreak of COVID19 and constraints to their availability for this consultation. They are identified in the table below. A brief report on the main outcomes from the SEIA consultation was prepared and is included in Appendix A.

Table 2-2 Stakeholders consulted for the SEIA

Category	Sr No	Organisation	
Regional Council	1	Environment Southland	
Territorial Authorities	2	Invercargill City Council	
	3	Bluff Community Board (Invercargill City Council)	
Regional development agencies	4	Great South	
New Zealand Government representatives	5	Department of Conservation	
	6	Invercargill Member of Parliament	
	7	Invercargill Labour Party List Member of Parliament	
Iwi	8	Te Ao Marama	
Local businesses	9	Southland Disability Enterprises	
	10	Sheet Metalcraft	
	11	Corys Electrical	
	12	HW Richardson Group	
	13	EIS	
	14	Enterprise Recruitment	
	15	South Coast Security	
	16	E-Type Engineering	
	17	H & J Smith – Department store in Invercargill	
	18	Harcourts Real Estate	
	19	Invercargill Licensing Trust	
	20	Elles Road New World	
	21	Otago Southland Employers Association	
	Community service providers	22	Fire and Emergency New Zealand – Southland District
		23	New Zealand Police – Southern District
		24	Southland Girls' High School
		25	Southern Institute of Technology
		26	Southern Group Training Trust

Category	Sr No	Organisation
	27	Inalco
	28	NZ Safety Blackwoods
● Business chamber	29	Southland Chamber of Commerce
● Regional infrastructure and utilities	30	South Port
	31	Invercargill Airport
	32	PowerNet
● NZAS employees	33	NZAS
Other stakeholders contacted for the SEIA		
Community service providers	1	Southern District Health Board (contact was made with these services, however unable to meet with them due to outbreak of COVID 19 and constraints to their availability for this consultation)
Community service providers	2	WellSouth (contact was made with these services, however unable to meet with them due to outbreak of COVID 19 and constraints to their availability for this consultation)
Local businesses	3	ANZ Bank – Invercargill branch (questions were sent via email upon their request, but no response received)

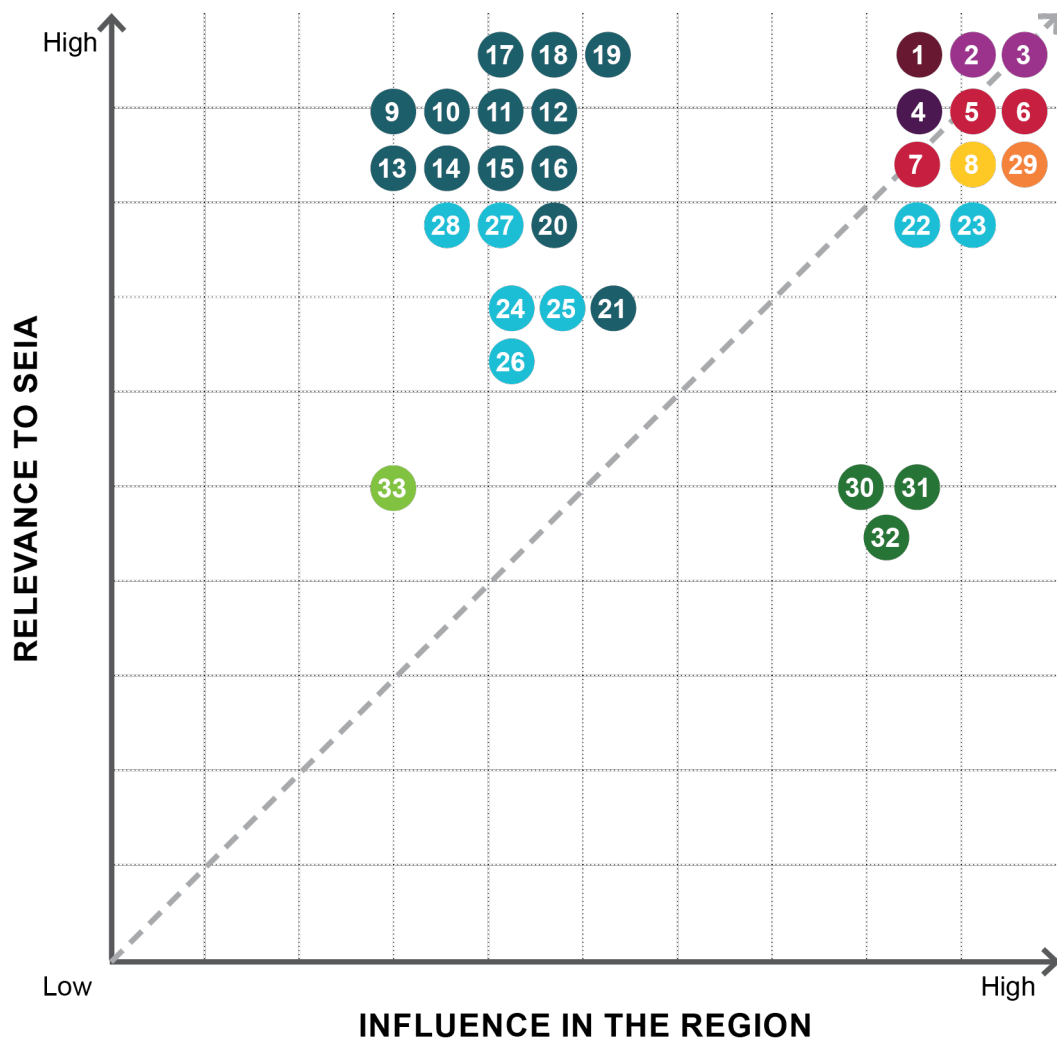


Figure 2-3 Stakeholder analysis

2.6 Economic input-output modeling

Estimates of economic change associated with the Project are based on the use of an input output (IO) modelling method from REMPLAN. IO assessments identify inter-industry relationships of industries within an economy, identifying which purchases by one industry go into producing an output for another industry. IO analysis identifies the direct and indirect (flow-on) impacts of one industry on other industries and the economy. IO modelling can therefore be used to assess the economic impact of an industry on the overall economy and how much the economy relies on the identified industry. IO modelling can also be used to examine a change in final demand of any one industry and the resultant change in activity of its supporting industries. The impacts are measured through:

- **Direct impacts**, which are the first round of effects from direct operational expenditure on goods and services.
- **Indirect (Flow-on) impacts**, the second and subsequent round effects of the increased level of purchases by suppliers in response to increased sales. Indirect (Flow-on) impacts are disaggregated to:
 - **Supply chain effects (type I)**, which represent the production induced support activity as a result of additional expenditure on goods and services, and subsequent round effects of increased purchases by suppliers in response to increased sales.

- **Consumption effects (Type II)**, which represent the consumption induced activity from additional household expenditure on goods and services resulting from additional wages and salaries being paid within the economy.

The effects can be identified through the examination of three key measures:

- **Output:** The total value of all goods and services produced within the year (the final value of the good/ service). This measure results in an overestimate of the economic contribution as it results in double counting of goods/services throughout the supply chain.
- **Value Add:** The value of output after deducting the cost of goods and services inputs in the production process.
- **Incomes:** Level of wages and salaries paid to employees in each industry.
- **Employment:** Level of employment supported by the industry, and is expressed as full time equivalent (FTE) positions.

2.7 Dependency analysis

It is critical to understand regional and community dependencies on the social and economic contribution of NZAS during the baseline phase to inform the impact assessment. Dependency analysis and evaluation helps to understand which stakeholders and social indicators are dependent on the NZAS operation, the dependency pathways and the level of dependence. This was informed through a review and analysis of economic data provided by NZAS and information gained through stakeholder consultation. The main parameters for assessing dependency were:

- The level of dependence on income or funding and in kind support received from NZAS
- Whether other sources of income or funding are available
- Dependence on the population base in town supported by the presence of NZAS operations

The dependency mapping is a subjective analysis based on the available quantitative and qualitative information for each stakeholder and inputs from the SEIA 2020 consultation. An indicative traffic light rating scale of high, medium and low has been applied to gauge the dependence of activities or stakeholders on NZAS.

2.8 Data analysis and baseline report writing

Analysis of all the information and data collected through literature review, stakeholder consultation and economic modelling was mainly undertaken during this task. Data triangulation was the underpinning method applied throughout the study using both qualitative and quantitative data analysis techniques, such as thematic analysis, trend analysis, input-output analysis, force field analysis and dependency analysis. The outcomes of previous steps were documented in this social and economic baseline report.

2.9 Scope and limitations

This report: has been prepared by GHD for Rio Tinto Aluminium Pacific Operations and may only be used and relied on by Rio Tinto Aluminium Pacific Operations for the purpose agreed between GHD and Rio Tinto Aluminium Pacific Operations as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Rio Tinto Aluminium Pacific Operations arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.


The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 2 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Rio Tinto Aluminium Pacific Operations and other sources of information included in the reference list and information provided by stakeholders during the SEIA consultation, which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Other limitations include:

- The baseline study relies on the data sets available at the time of undertaking the work February – April 2020.
- The SEIA study including the consultation was based on the concept of closure. No specific data and information about closure was available at the time of preparation of the study.
- Consultation with some stakeholders could not be undertaken due to the outbreak of COVID-19 during the preparation of the baseline and their unavailability to participate in SEIA consultation due to increased workload within their organisations.
- It is recognised that economic multipliers used in the IO modelling are based on limited assumptions that can result in multipliers being a biased estimator of the benefits or costs of a project. Shortcomings and limitations of multipliers for economic impact analysis include:
 - **Lack of supply-side constraints:** The most significant limitation of economic impact analysis using multipliers is the implicit assumption that the economy has no supply-side constraints. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
 - **Fixed prices:** Constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. Prices are assumed to be unaffected by policy and any crowding out effects are not captured. In summary, IO modelling assumes that prices remain fixed and do not change as a result of the increased demand for a good or service.
 - **Fixed ratios for intermediate inputs and production:** Economic impact analysis using multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. As such, impact analysis using multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a



product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount.

- **No allowance for purchasers' marginal responses to change:** Economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production.
- **Absence of budget constraints:** Assessments of economic impacts using multipliers that consider consumption induced effects (type two multipliers) implicitly assume that household and government consumption is not subject to budget constraints.
- **Not applicable for small regions:** Multipliers that have been calculated from the national input output table are not appropriate for use in economic impact analysis of projects in small regions. For small regions multipliers tend to be smaller than national multipliers since their inter-industry linkages are normally relatively shallow. Inter-industry linkages tend to be shallow in small regions since they usually don't have the capacity to produce the wide range of goods used for inputs and consumption, instead importing a large proportion of these goods from other regions.

3. Socio-economic profile of the study area

3.1 Overview of the study area

The Southland region is located in the far south of New Zealand's South Island, covering approximately 34,000km², and including the communities of Invercargill City, Gore District and Southland District.

The region is governed by Southland Regional Council, known as 'Environment Southland' and by the following three territorial authorities that fall within the Region:

- Invercargill City Council - governs Invercargill, Bluff and surrounds
- Gore District Council – governs Gore and the Mataura areas
- Southland District Council – governs the remaining areas which include Stewart Island.

The Southland region was home to 97,467 people in 2018, which was about 2% of New Zealand's population. Around half of the region's population lives in Invercargill City, which is the largest city in the region and also the region's commercial and civic hub. Southland's economic contributions are approximately 2% of the national Gross Domestic Product (GDP) and 14% of national exports, driven by a number of different industries, namely agriculture (red meat and dairy products), manufacturing (aluminium), retail, health care and social assistance, education and training (including international education) and tourism (Census, 2018 and Venture Southland, 2017).

'Lifestyle' is a main drawcard for liveability in the region, driven by rural living, strong sense of belonging to the community, access to stable employment opportunities, access to community services and proximity to Queenstown and the Otago region.

The region is well connected to other larger centres by road, with Queenstown located 187 kilometres to the north, and Dunedin located 200 kilometres to the north-east, both around 2.5 hours' drive. Invercargill Airport connects the region to Wellington, Auckland and Christchurch by passenger flights, and provides freight services for regional industries. A commercial deep water port is located in Bluff Harbour, which provides a full range of marine services to support export and import industries in Southland including aluminium, timber, fisheries, dairy, meat, wood chips, stock food, cement, fertiliser and petroleum products.

NZAS has been an important part of Southland and Invercargill's socio-economic fabric, since it was established in 1971. The main reasons for locating the smelter at Tiwai Peninsula were:

- Baseload industry for reliable and large supply of hydro electricity from Manapouri Power Station which is part of New Zealand's national electricity grid
- Proximity to the deep sea port at Bluff (owned and operated by South Port New Zealand Ltd and referred to as 'South Port')
- Proximity to the city of Invercargill to meet housing needs of works, and services and supplies for the smelter
- Favourable environmental and climatic conditions (NZAS, 2020b).

The future of the smelter and its potential closure has been investigated several times over the last decade. NZAS undertook a detailed closure study in 2011, with a revision in 2014, an environmental liabilities review of the closure plan in 2018 and a Strategic Review and a Closure Review in 2019 (NZAS, 2020b). Similarly a number of Social and Economic Impact

Studies were commissioned by NZAS and Venture Southland in 2004, 2008, 2012 and 2017 to track the social and economic contributions of the smelter to the Southland region.

3.2 Demographic profile

3.2.1 Population

In 2018 the population of the Southland region was 97,467 people, with around half living in Invercargill City (54,204 people), around a third living in Southland District (30,864 people) and the remainder in Gore District (12,396 people).

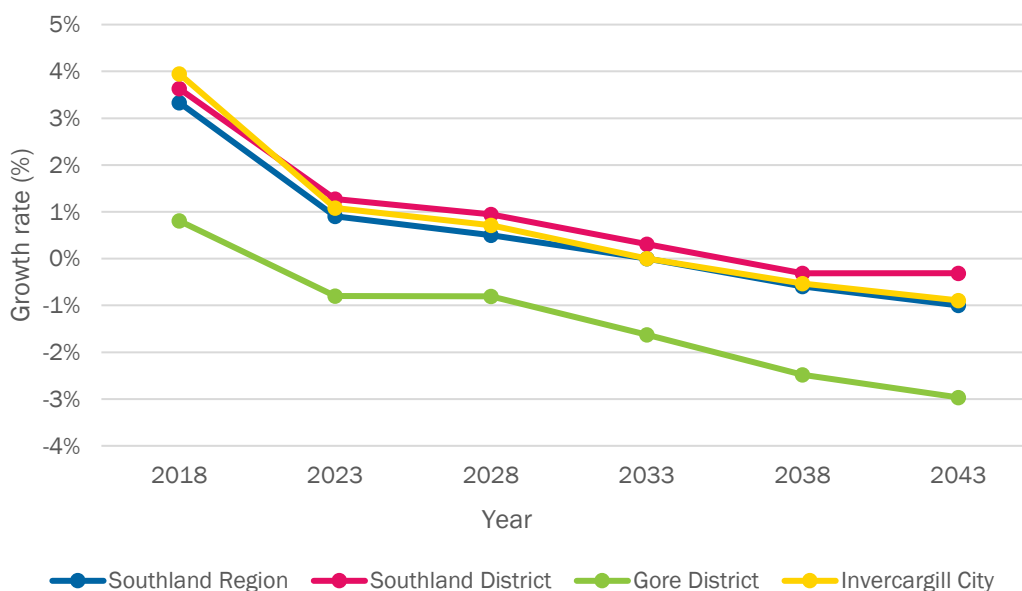
As shown in Table 3-1, regional population increased slightly between 2013 and 2018. However compared to the national average, the Southland region has experienced a lower rate of growth at 4% compared to 11%. Invercargill City experienced a slightly higher growth rate at 5%, with only 3% in Gore District.

Table 3-1 Population profile, 2013, 2018

Location	2013	2018	Growth 2013-2018	Annual change rate, 2013-2018
Invercargill City	51,696	54,204	5%	1%
Gore District	12,033	12,396	3%	0.6%
Southland District	29,613	30,864	4%	0.8%
Southland region	93,339	97,467	4%	0.9%
New Zealand	4,242,048	4,699,755	11%	2.1%

Source: StatsNZ 2018, Census place summaries

As shown in Figure 3-1, the population of the study area is projected to decline between 2018 and 2043, with Gore District projected to experience the greatest rate of decline from 2028 (StatsNZ, 2018).



Source: StatsNZ 2018, NZ.Stats

Figure 3-1 Projected population between 2018-2043

In 2018 Invercargill had the highest proportion of Māori population in the study area (17.4%), which is slightly higher than New Zealand average (16.5%) (see Table 3-2). Both Gore District and Southland District had lower proportions of Māori population compared to the regional and national average (12.9% and 11%).

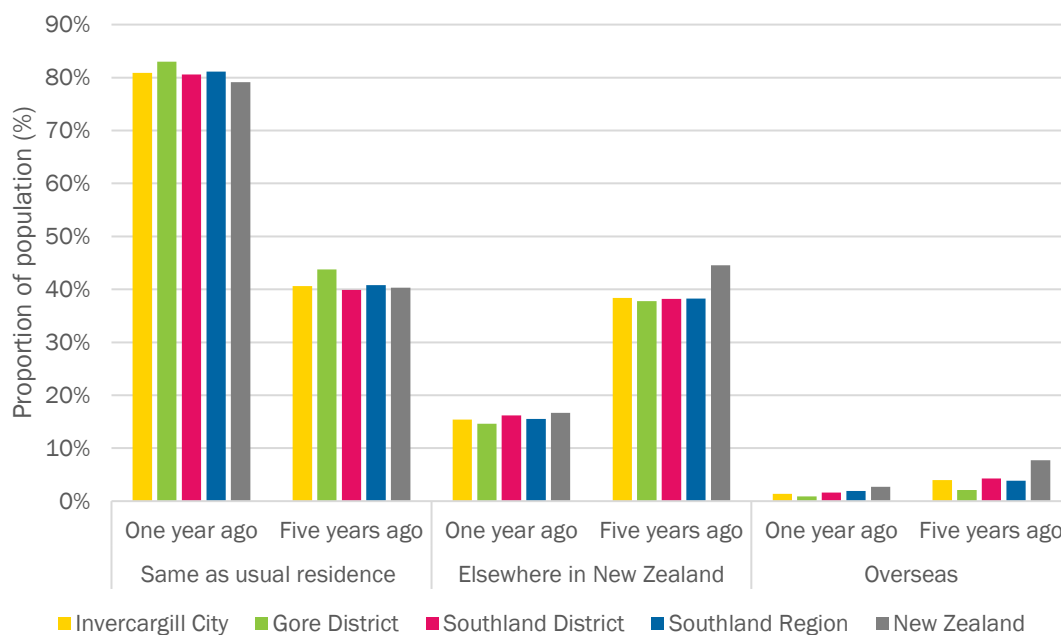
Table 3-2 Māori population, 2018

Location	Māori population	Percentage of total population
Invercargill City	9,444	17.4%
Gore District	1,605	12.9%
Southland District	3,432	11.1%
Southland region	14,484	14.9%
New Zealand	775,836	16.5%

Source: StatsNZ 2018, Census place summaries

3.2.2 Population mobility

Population mobility at one year and five year periods across the study area, is generally consistent with the national average. As shown in Figure 3-2, large proportions of the population of the study area lived at the same address one year ago and approximately 40% of the total population stayed at the same address five years ago.



Source: StatsNZ 2018, Census place summaries

Figure 3-2 Place of residence one and five years ago, 2018

3.2.3 Age and sex profile

As seen in Table 3-3 in 2018, the study area as a whole had a fairly balanced sex ratio.

Table 3-3 Sex profile, 2018

Location	Male	Female
Invercargill City	48.9%	51.1%
Gore District	49.6%	50.4%
Southland District	51.9%	48.1%
Southland region	50.0%	50.0%

Source: StatsNZ 2018, Census place summaries

The population pyramid showing age and sex distribution in Figure 3-4 for Southland region shows there are more males than females in Southland region aged between 15 and 24 years, however the proportions of males and females aged between 25 and 64 years is similar.

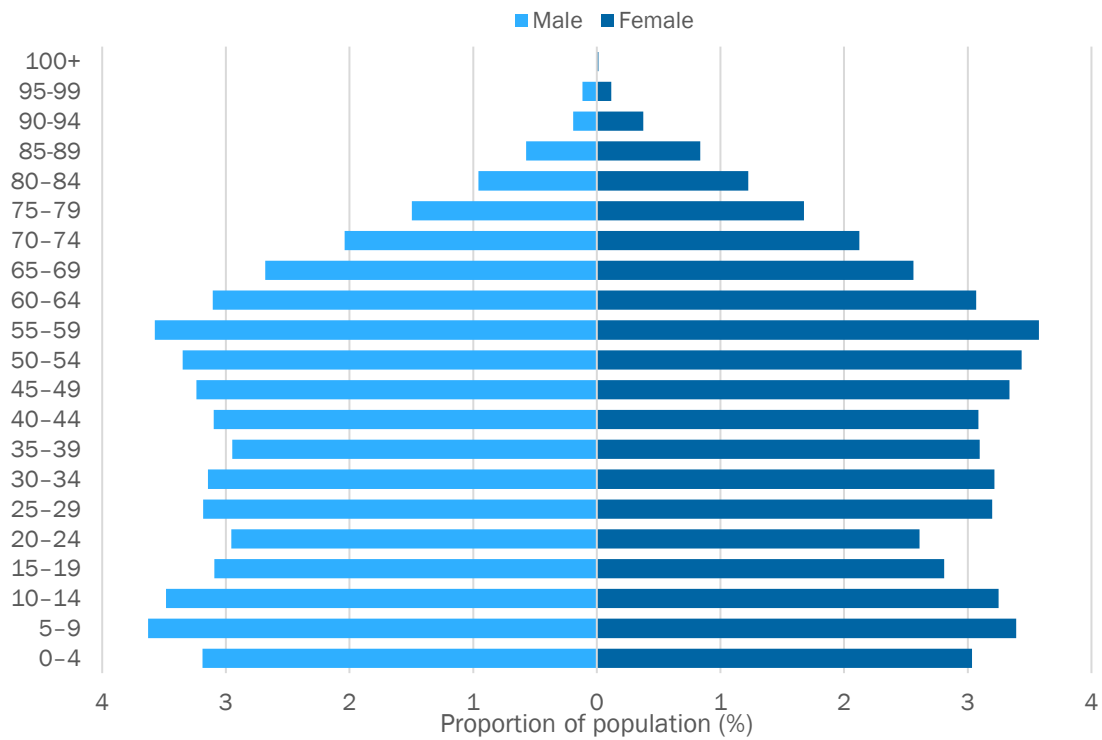


Figure 3-3 Southland region population pyramid, 2018

The population pyramid for Invercargill City indicates there are more males aged between 15 and 24 years, and more females aged 25 years and over.

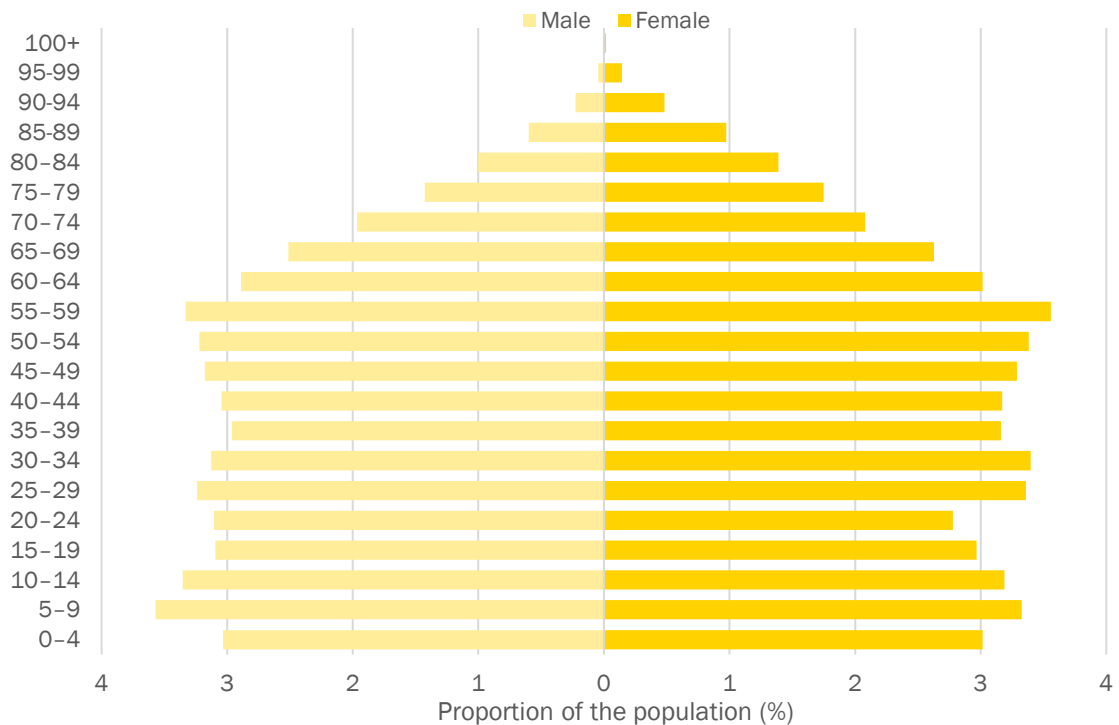
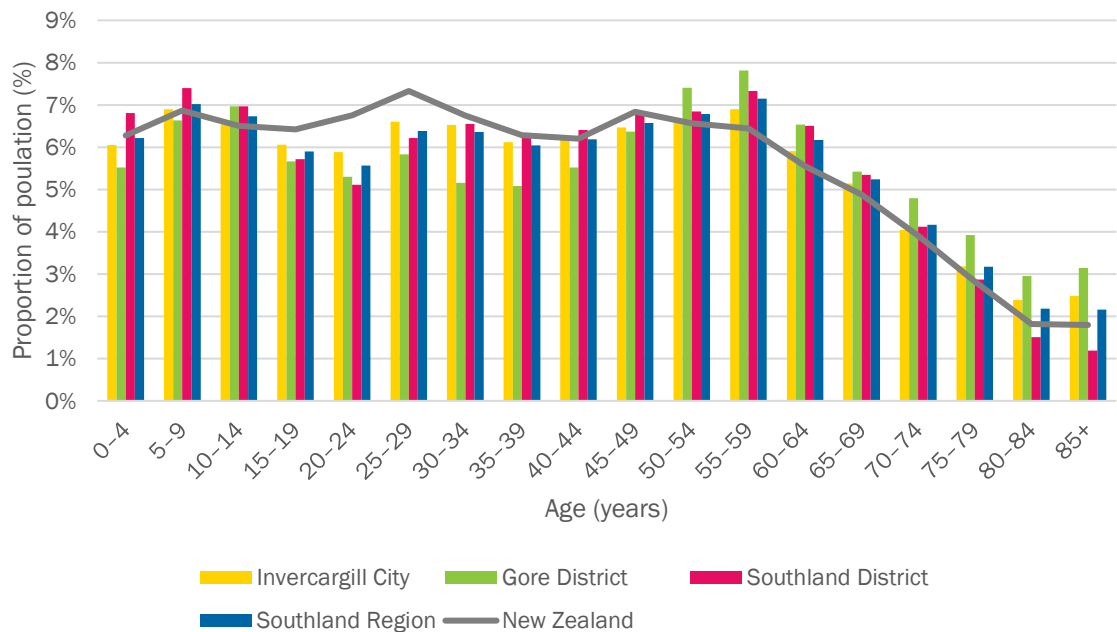


Figure 3-4 Invercargill City population pyramid, 2018

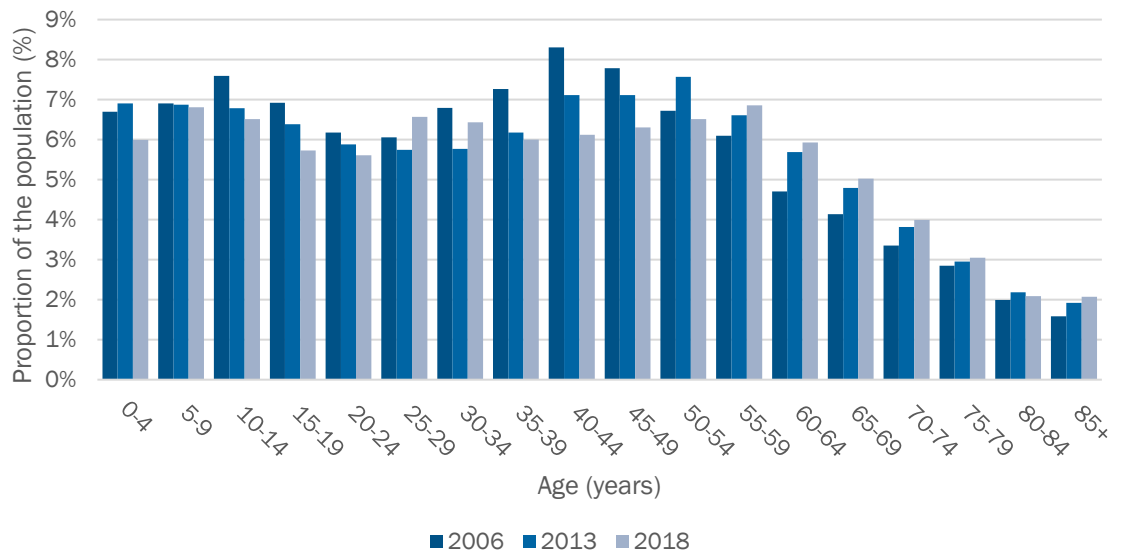
Southland region has an older median age compared to New Zealand, at 40 years of age in 2018 compared to 37 years. Within the region, Gore District has the oldest median age at 44 years, while both Invercargill City and Southland District have a median age of 39 years. As seen in Figure 3-5 there is a smaller proportion of the population aged 15 to 24 years in the study area compared to the national average, with larger proportions aged 5 years to 14 years and 45 years to 59 years old. Gore District in particular has higher proportions of residents over 50 years, while Southland District has more young children and less elderly people over 80 years.



Source: StatsNZ 2018, Census place summaries

Figure 3-5 Age profile, 2018

The Southland region age profile has changed from 2006 to 2018. As seen in Figure 3-8 there was a decrease in most age groups 0 to 44 years. The most significant decrease was noted between the 35 to 49-year age groups, however there has also been an increase between 2006 and 2018 in the population aged 25 to 29 years. There has been an overall increase in the population aged over 50 years. This trend was also reflected in the change in median age for Southland region from 38 years to 40 years between 2006 and 2013, where it has remained at 40 years until 2018 (NZ Stats 2018).

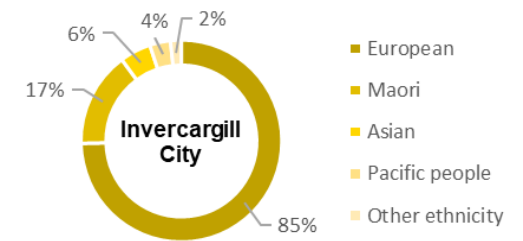
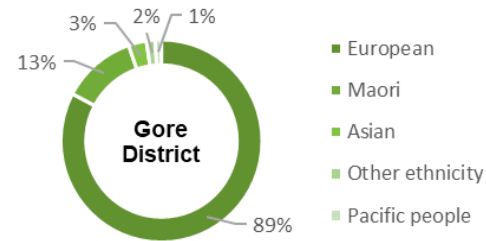
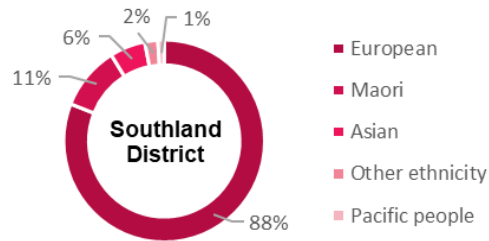
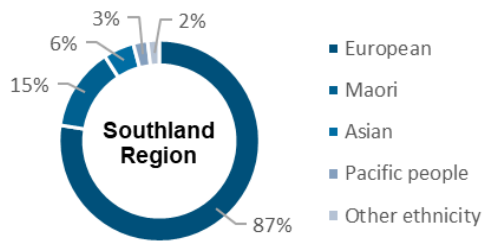


Source: StatsNZ 2006, 2013 and 2018

Figure 3-6 Southland region age profile, 2006, 2013, 2018

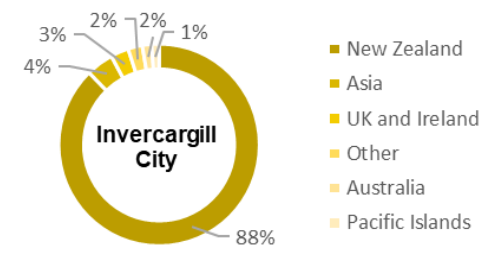
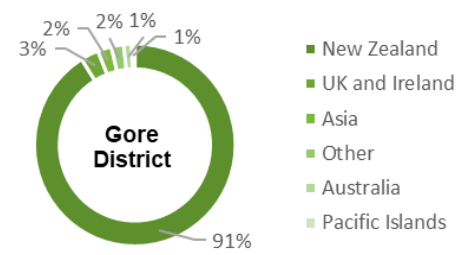
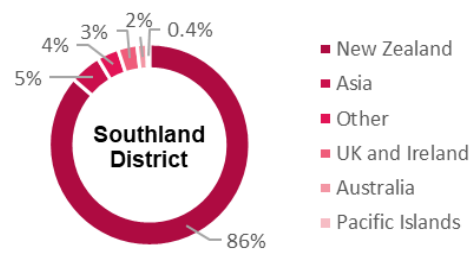
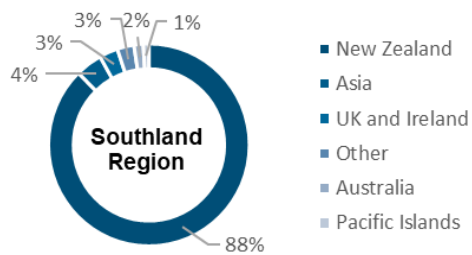
3.2.4 Cultural and linguistic diversity

To understand the cultural diversity of the study area the following indicators were examined: ethnic diversity (Figure 3-7), country of birth (Figure 3-8) and languages spoken (Figure 3-9). Based on a correlation of these indicators it is understood that overall, the study area is culturally homogenous, with the largest proportions of the population being of a European background, born in New Zealand and English speaking. Compared to other locations in the study area, Invercargill has the most ethnic diversity, with a quarter of the population not identifying as European.



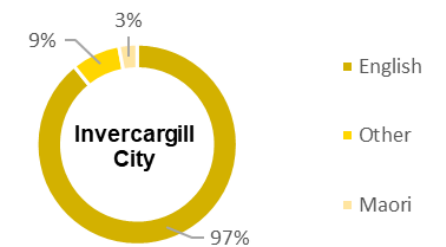
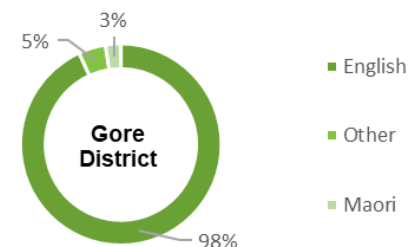
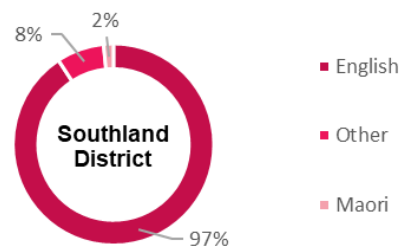
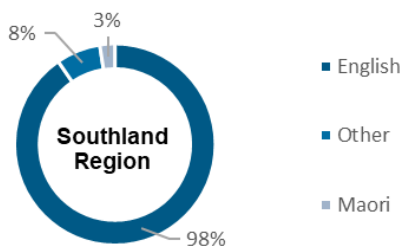
Source: StatsNZ 2018, Census place summaries

Figure 3-7 Ethnic diversity, 2018



Source: StatsNZ 2018, Census place summaries

Figure 3-8 Country of birth, 2018

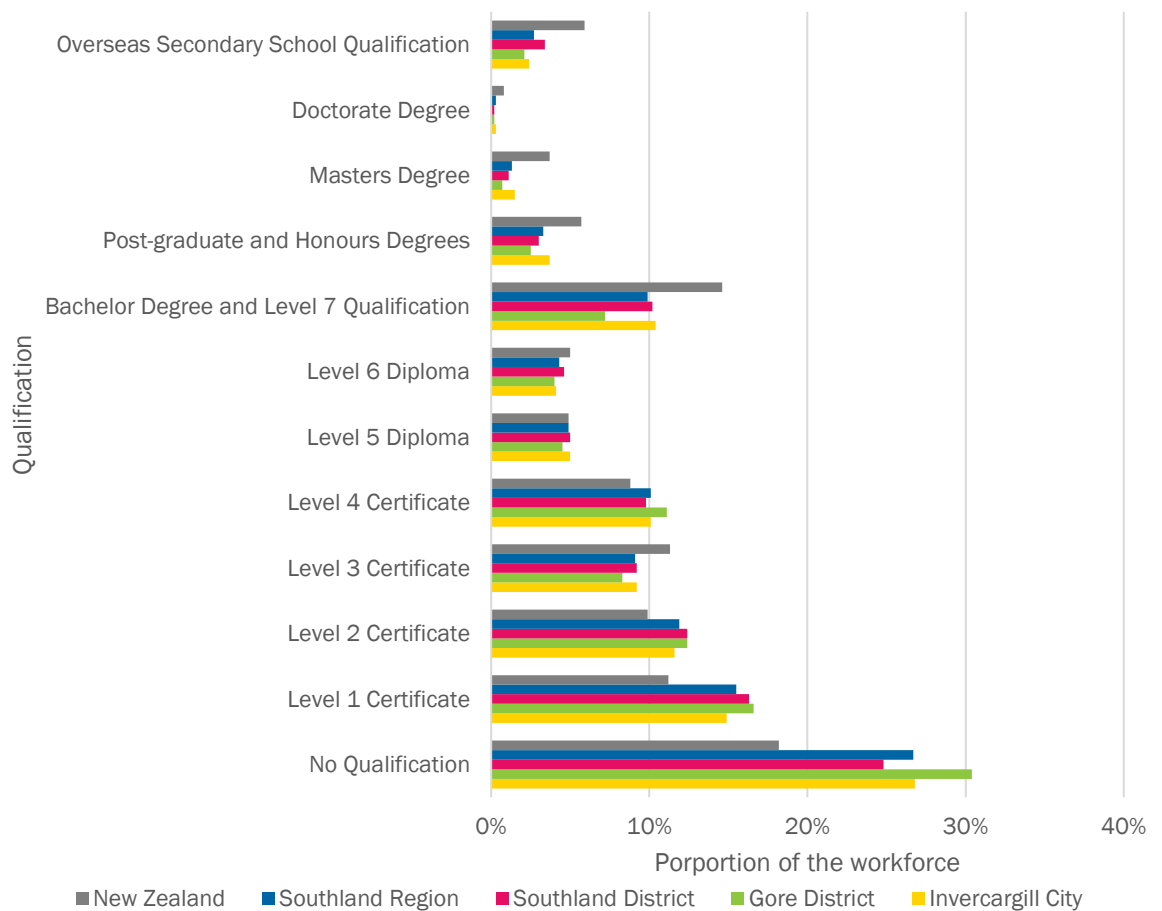


Source: StatsNZ 2018, Census place summaries

Figure 3-9 Languages spoken, 2018

3.2.5 Education levels

As show in Figure 3-10, approximately a quarter of the population have lower education attainment, and identified as having 'no qualification' in the 2018 Census, which means they completed secondary school without an additional certification (30.4% in Gore District, 26.8% in Invercargill and 24.8% in Southland District and an overall of 26.7% for Southland region). This is significantly higher than the proportion of the population who identified as having no post-school qualification in New Zealand on average (18.2%). A noteworthy proportion of the population in the study area aged 15 years and over have a Level 1 and Level 2 certificate¹ completion compared to the national average (26.5% in Invercargill City, 29% in Gore District, 28.7% in Southland District compared to 21% in New Zealand). Compared to the national average, there are lower proportions of the population with qualifications at Level 3 and above.



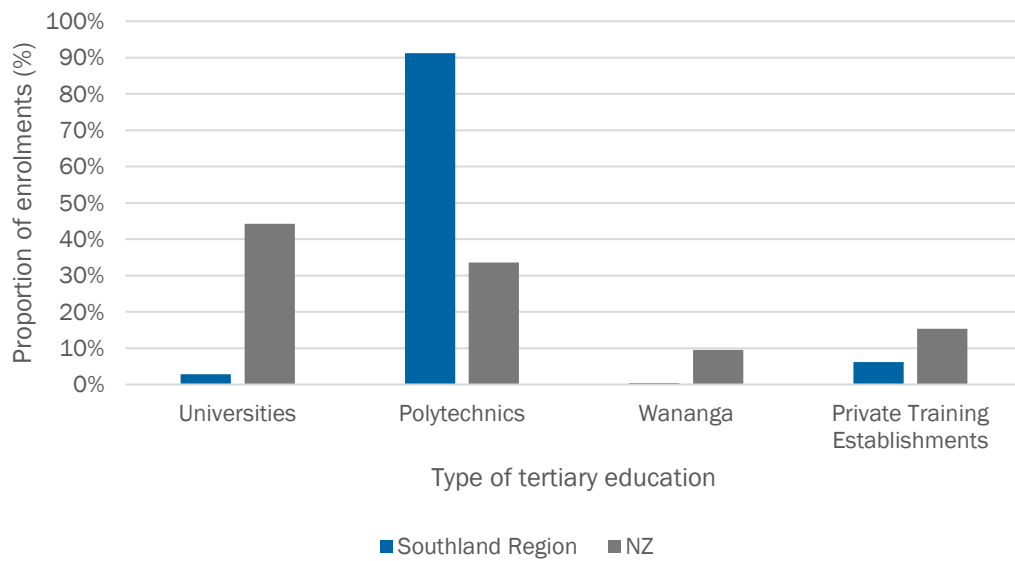
Source: StatsNZ 2018, Census place summaries

Figure 3-10 Highest level of qualification, 2018

Enrolment figures for Southland region in 2018 show that 91% of students studied at an institute of technology and polytechnic, which is significantly higher compared to the national average (34%). There are lower rates of university and private training establishment enrolment in Southland region (3% and 6% respectively) compared to the national average, and in 2018

¹ Certificates from Level 1 to Level 3 are gained during secondary school. Levels 4 and above are gained through post-school qualification.

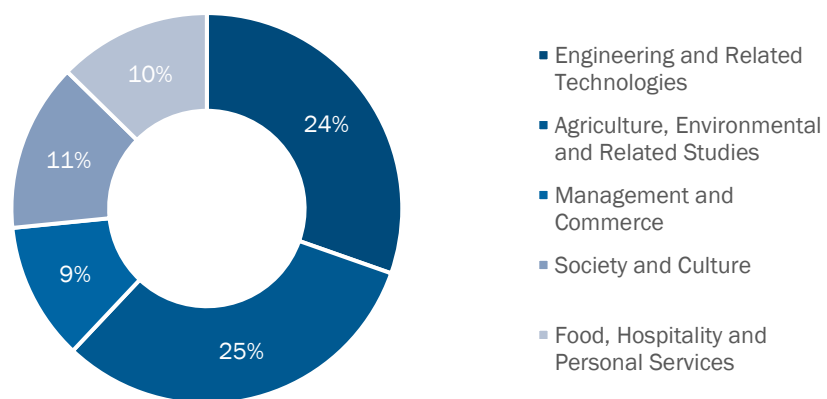
there were no enrolments at a wānaga². This indicates that most people in the study area have vocational and trades qualifications.



Source: Education Counts NZ, 2019, Participation rates

Figure 3-11 Enrolment in tertiary education sub-sector, 2018

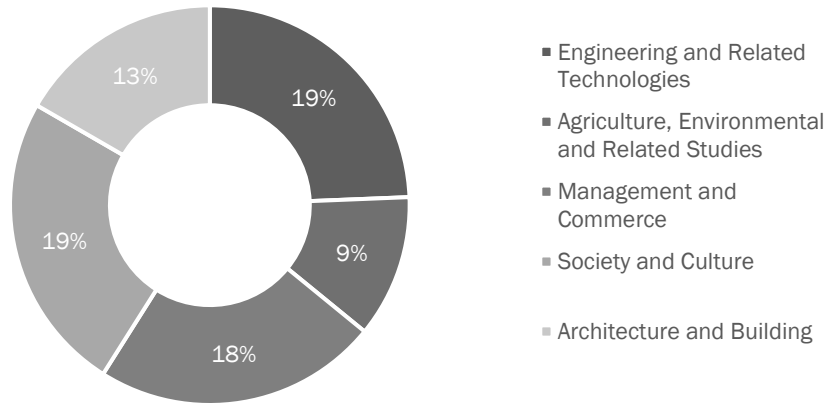
As shown in Figure 3-12, the top fields of vocational study in Southland are engineering and related technologies (30%) and agriculture, environmental and related studies (32%). There a higher rates of enrolments in these fields compared to New Zealand as a whole (see Figure 3-13), where instead there is a greater focus on society and culture and management and commerce. There is also a greater uptake of people taking courses in food, hospitality and personal services in Southland, compared to New Zealand.



Source: EducationCountsNZ, 2018, Vocational study

Figure 3-12 Top five fields of vocational study in Southland, 2018

² A wānaga is a government operated tertiary institution that provides education in Māori cultural context.



Source: EducationCountsNZ, 2018, Vocational study

Figure 3-13 Top five fields of vocational study in New Zealand, 2018

3.2.6 Households and families

At the time of the 2013 Census³, the study area had lower household sizes on average compared to New Zealand as a whole. The average household size was 2.4 people across the region except for Southland District which had an average household size of 2.5 people (Table 3-4).

Table 3-4 Average household size, 2013

Location	Average household size (people)
Invercargill City	2.4
Gore District	2.4
Southland District	2.5
Southland region	2.4
New Zealand	2.7

Overall, there are more family households than non-family households across the region compared to New Zealand as a whole. As shown in Figure 3-17, Southland District in particular has more one-family households than one-person households, while compared to other parts of the region, Invercargill City has more other multi-person households, which is indicative of single persons living in Invercargill for employment and travelling to their family homes during weekends or roster days off.

³ Data on average household size was not available for 2018 census

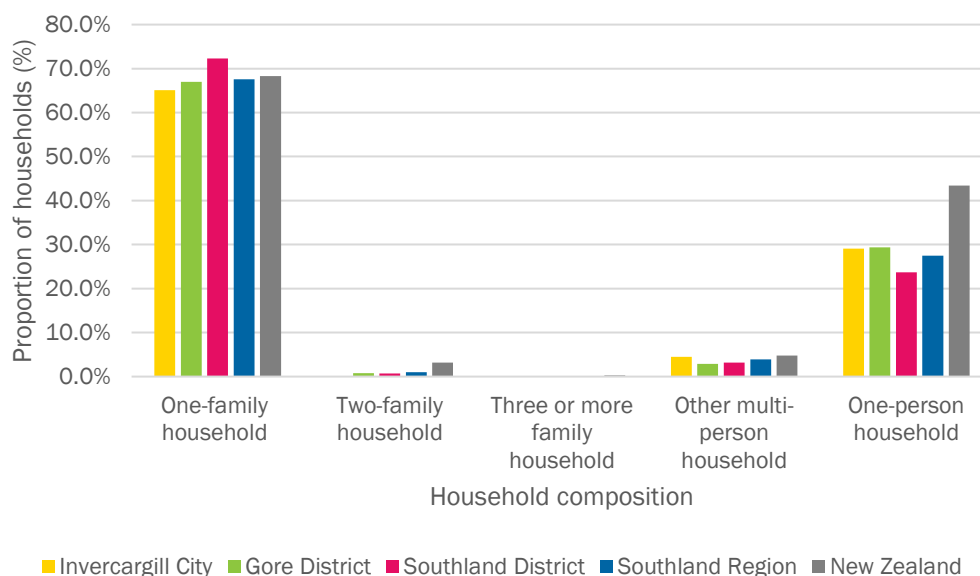


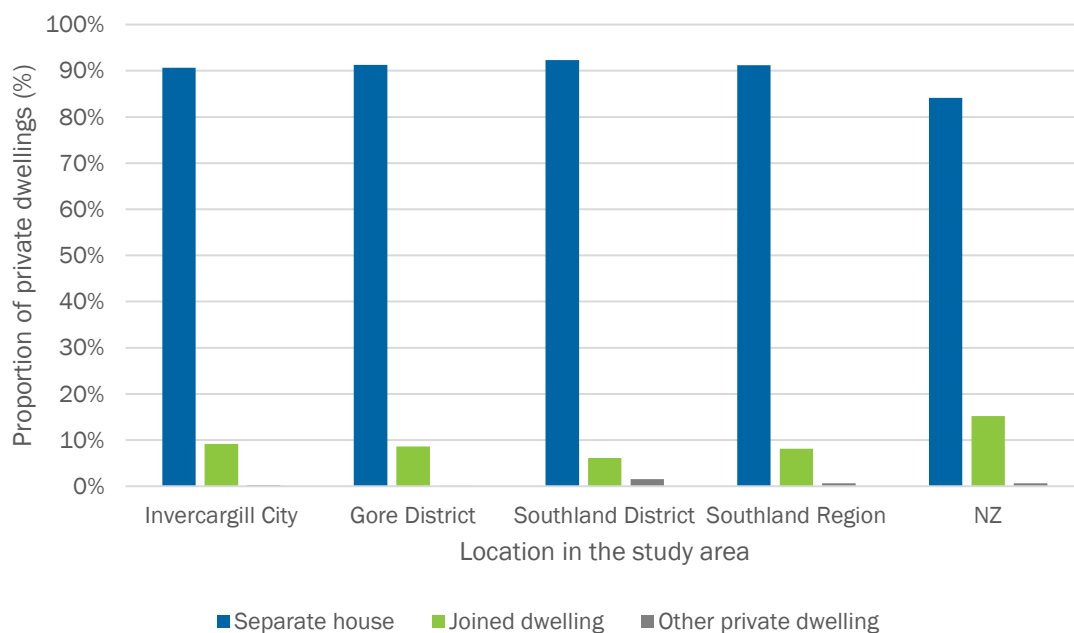
Figure 3-14 Household composition, 2013

At the time of the 2018 census, there were a total of 39,330 dwellings in Southland (Table 3-5). The table also shows that there is a higher number and proportion of government owned housing in Southland District than in Invercargill and Gore. As shown in Figure 3-15, over 90% of these dwellings were separate houses. This is higher than the national average, where 84% of dwellings are separate and 15% are joined. The large proportion of separate dwellings in the study area is indicative of the regional and rural environment.

Table 3-5 Number of dwellings, 2018

Location	Private dwellings	Non-private dwellings	Total
Invercargill City	21,645	78	21,216
Gore District	5,109	21	4,962
Southland District	12,165	180	11,967
Southland region	38,931	402	39,330
New Zealand	1,664,313	9,567	1,673,880

Source: StatsNZ 2018, Census place summaries



Source: StatsNZ 2018, Census place summaries

Figure 3-15 Dwelling type, 2018

As shown in Table 3-6, Invercargill City and Gore District have higher rates of dwelling occupancy (93.7% and 91.6% respectively) compared to New Zealand on average (88.9%). There are also lower rates of dwellings being constructed in Invercargill City (0.2%) and Gore District (0.3%) compared to New Zealand (0.9%), which may indicate greater demand for housing and consequently a strong property market in these areas. This is consistent with reports by realestate.co.nz, which state that property market value in Invercargill has grown by 16% during 2019, and the property market value in Southland region as a whole has grown by 20% (Realestate.co.nz, 2020). SEIA consultation in March 2020 indicated that in Invercargill, the demand for housing was higher than supply which had led to an increase in property prices in the city.

In 2018, housing occupancy in Invercargill City and Gore District was much higher than the regional and national average and much lower than the regional and national average in Southland District (Table 3-6), indicating that housing availability in Invercargill and Gore district is limited.

Table 3-6 Housing occupancy, 2018

Location	Occupied dwellings	Unoccupied dwellings	Dwellings under construction
Invercargill City	93.7%	6.1%	0.2%
Gore District	91.6%	8.1%	0.3%
Southland District	79.6%	19.9%	0.5%
Southland region	88.5%	11.2%	0.3%
New Zealand	88.9%	10.2%	0.9%

Source: StatsNZ 2018, Census place summaries

Compared to the national average (51.3%), Invercargill City and Gore District have higher rates of home ownership (59.2% and 57.4% respectively). As seen in Table 3-7, there are also lower proportions of dwellings not owned or held in a family trust (e.g. rental properties) in Invercargill City (29.6%) and Gore District (22.7%) compared to New Zealand (35.5%).

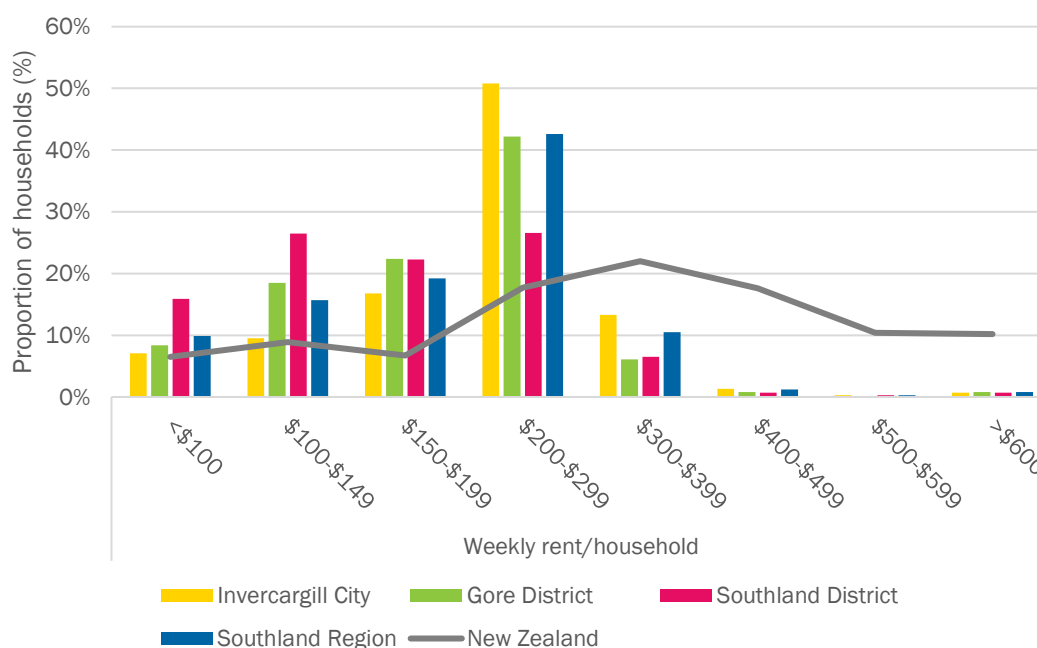
Table 3-7 Household tenure, 2018

Location	Dwelling owned or partly owned	Dwelling not owned and not held in family trust	Dwelling held in family trust
Invercargill City	59.2%	29.6%	11.2%
Gore District	57.4%	27.7%	15.0%
Southland District	49.0%	32.9%	18.1%
Southland region	55.8%	30.4%	13.8%
New Zealand	51.3%	35.5%	13.3%

Source: StatsNZ 2018, Census place summaries

Weekly household rent prices are lower on average in the study area compared to New Zealand, with the majority of households paying under \$299 per week (see Figure 3-16). According to the New Zealand Home Loan Affordability Index, lower housing prices are also reflected in lower mortgage repayments throughout Southland, compared to New Zealand overall (Interest.co.nz, 2020).

As indicated in Figure 3-16, compared to the rest of the study area weekly rental prices are highest in Invercargill City, with over 50% of households paying between \$200 and \$299 per week, and a median household rent price of \$200 per week. Rental prices are the lowest in Southland District, with about a quarter of households paying under \$149 per week, and a median weekly household rental price of \$150 per week.



Source: StatsNZ 2018, Census place summaries

Figure 3-16 Rental prices, 2018

3.2.7 Accommodation and tourism

Stats NZ monitors commercial accommodation occupancy and capacity throughout New Zealand, with Table 3-8 showing the use of available commercial accommodation in the study area as of April 2019. Southland District has the highest number of facilities and daily capacity for tourists within the study area, as well as the highest occupancy rate. However the occupancy rate is still under 50% for all regions, which indicates that there is surplus accommodation and potentially room for growth of the tourism industry or visitor travel across the region.

Table 3-8 Use of commercial accommodation, 2019

Location	Number of establishments	Daily Capacity (units)	Average length of stay (days)	Occupancy rate
Invercargill City	40	1,252	1.65	43.4%
Gore District	8	181	1.61	35.2%
Southland District	72	3,421	1.8	47.1%

Source: StatsNZ 2018, Commercial Accommodation Monitor – Southland 2019

As shown in Figure 3-17, a large proportion of available accommodation in the Southland region are motels (48%). Invercargill City particularly has a high proportion of motel accommodation. According to reports from the Ministry of Business, Innovation and Employment, 40% of guests travelling to the Southland region are international visitors, and the remaining 60% are domestic visitors (Ministry of Business, Innovation and Employment, 2019). Great South reports also found that most international tourists visit Fiordland and Milford Sound from Queenstown and do not explore Southland further (Great South, 2019b).

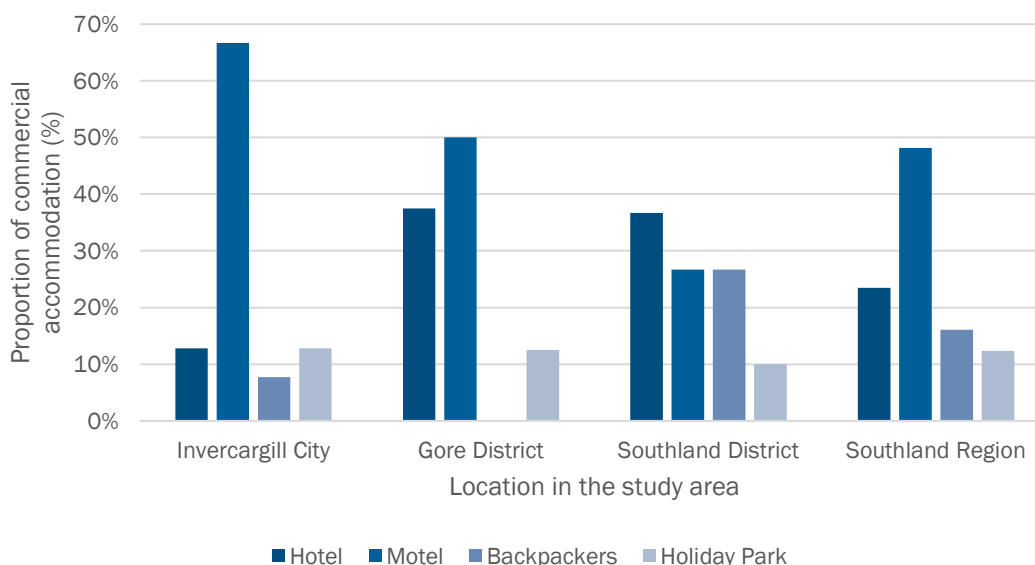


Figure 3-17 Type of commercial accommodation, 2019

Source: Ministry of Business, Innovation and Employment 2019, Commercial Accommodation Monitor – Southland 2019

Airbnb are not included in the monitoring of commercial accommodation, however as shown in Table 3-9, there has been an increase in the number of listings in parts of the study area between August 2018 and August 2019 (Great South, 2019b). This has been most significant in

Gore District, where there has been a 41.4% increase in the number of available Airbnb's. Conversely, there has been no growth in the number of Airbnb listings in Invercargill City.

Table 3-9 Airbnb listings, 2019

Location	Listings	Annual growth
Invercargill City	180	0%
Gore District	40	41.4%
Southland District	484	37.9%
Southland region	705	10.5%

Source: Great South, 2019

3.2.8 Health

Health indicators are reported using areas defined by district health boards and primary health networks. The study area falls within the Southern Health district, which also includes other areas in New Zealand not part of this study (eg Dunedin). Relevant health indicators for this health district are summarised in this section.

According to results of the 2018 NZ Health Survey (Southern Health, 2019), compared to New Zealand the population of the health district area have:

- similar rates of smoking (13.5% compared to 14.9%)
- slightly lower rates of obesity (29.4% compared to 32.2%)
- higher rates of acute medical admissions (8,414 per 100,000 people compared to 7,945 per 100,000 people)
- lower rates of avoidable hospital admissions (2,957 per 100,000 people compared to 3,905 per 100,000 people)
- similar proportions of people aged over 75 years who live at home (88% compared to 89%).

As identified in section 3.2.3, the population in the study area is older than New Zealand on average. Reports by Southern Health identify the older population as a focus for health care in the region. More older people received home-based support between 2018 and 2019, which has decreased the length of stay for older person's rehabilitation by 37%. At home care has also improved access to health care, which is however limited to some parts of the region.

3.3 Community infrastructure and services

Community infrastructure includes the facilities and services that support individuals, families and groups to meet their social needs and enhance community wellbeing. Community infrastructure in this report includes education facilities and services, child care, arts and cultural facilities, emergency services, libraries, health care facilities and services, sport and recreation facilities, transport and communication.

This section presents an overview of community infrastructure in the region, a summary of community infrastructure with a direct connection to NZAS, and a description of transport infrastructure and communication infrastructure in the region.

3.3.1 Overview

This section presents a high level overview of community infrastructure available in Southland rather than an audit of all facilities and services. Given Invercargill is the region's civic and service centre, most regional community infrastructure and services are located there. A

summary of facilities and services identified based on various online sources are presented in Table 3-10.

Table 3-10 Overview of community infrastructure in Southland

Category	Invercargill	Gore District	Southland District	Southland region
University	University of Otago education campus and health science campus	-	-	2 campuses
Polytechnic	SIT - 1 campus	SIT - 1 campus	-	2
Training and employment providers	Various providers located throughout the region and primarily focused in Invercargill			
Secondary and primary education	30	12	41	83
Child care	62	15	28	105
Emergency services	Police, Fire and Emergency NZ, St John Ambulance stations throughout the region			
Hospitals	1 public and 1 private hospital	1 public hospital	-	3 hospitals
Allied health	Various services throughout the region and primarily focused in Invercargill. These are provided by a range of public and private providers, non-government organisations and trusts, and iwi providers.			
Mental health				
Sport and recreation	Various sport facilities and clubs throughout the region and primarily focused in Invercargill			
Libraries (public)	1	1	1	3
Arts and culture	4 museums 3 galleries 2 theatres	2 museums 1 gallery 1 theatre	1 arts centre	Several spaces and facilities
Community centres	Various community centres through the region			

3.3.2 Community infrastructure connected to NZAS

NZAS has direct connections to community service providers in the region through a number of avenues. Examples of these include:

- Employment and training – apprenticeships and internships to students
- Emergency services – response to emergencies on site or near site, and employees volunteering with rural fire brigades
- Education - scholarships, education partnerships
- Environment – partnership programme to plant Indigenous tree species
- End of year prizes for educational facilities – including universities, SIT, and several Invercargill secondary schools.

NZAS also has indirect connections to community infrastructure through its workforce and their families accessing services and facilities, such as schools, health services, sports clubs etc.

Table 3-11 provides a summary of the direct connections NZAS has with community service providers in the region. More information about the contributions of NZAS to these recipients is provided in section 4.5.

Table 3-11 Summary of regional community infrastructure with connection to NZAS, 2020

Category	Name of organisation / service	Description of connection to NZAS
Employment and training providers	Southern Institute of Technology (SIT)	NZAS offers potential employment opportunities to SIT students Several NZAS staff sit on SIT curriculum advisory boards
	Southern Group Training Trust	16 apprentices at NZAS in March 2020 Several also with businesses that contract to NZAS
Emergency services	Fire and Emergency New Zealand (FENZ)	NZAS has an industrial fire brigade of around 40 people who are trained in FENZ courses to respond to fire and emergencies. FENZ rely on NZAS brigade to respond to emergencies at the smelter and in the surrounding area until FENZ arrive, which on average occurs three to four times a year. Several NZAS employees volunteer with rural fire brigades.
Education	Southland Girl's High School	Education partnership programme (in-kind) – each year four top Year 13 students visit NZAS for six days to carry out engineering/science projects
	South Pacific Indigenous Engineering Students (SPIES)	Sponsor of programme to support Māori and Pacific Island engineering students at Auckland University
	Southland Science & Technology Fair	Naming rights sponsor of annual Southland Science & Technology Fair. NZAS has members on the organising committee and also provides the majority of the judges
	Graeme Dingle Foundation Southland	Kiwi Can programme sponsorship
	Community tertiary scholarships	Six scholarships given each year to Southland students who will be undertaking tertiary student outside the region
Environment	Te Hipoki Iti	Partnership with the Department of Conservation, Great South and Awarua Rununga

Category	Name of organisation / service	Description of connection to NZAS
Annual sponsorship	Invercargill City Libraries	Cash donation for Annual Home Services Christmas Party
	Southland Environment Awards	Cash donation sponsorship of Environmental Action in the Community category
	Southland Chamber of Commerce	Bronze level sponsorship of TradeQual event
End of year prizes for education institutions	Southern Institute of Technology	Cash donations for top team project prize (Year 3 Bachelor of Information Technology) and top student (Certificate in Mechanical Engineering Semester 2)
	Otago University	Cash donation for chemistry prize
	Auckland University	Cash donations for prizes: Masters prize in Engineering Undergraduate prize in Chemical Engineering Undergraduate prize in Electrical Engineering
	Canterbury University	Cash donations for prizes: Chemical & Process Engineering Electrical & Electronic Engineering Mechanical Engineering
	James Hargest College Southland Boys' High School Verdon College Southland Girls' High School Aurora College	Cash donation to end of year senior award ceremony prize

Source: NZAS. (2020a). *Draft Communities and Social Performance Plan*; SEIA Consultation 2020

3.3.3 Transport

Connectivity to Southland is provided by road, flights, and port. Travel within the region and surrounds is facilitated through the road network.

A public transport bus service is provided in Invercargill by Bus Smart Invercargill, while intercity bus services are provided by several providers and connect to Te Anau, Christchurch, Dunedin, Gore, Invercargill, Queenstown and Bluff (Southland New Zealand, 2020).

As discussed in section 3.1, Invercargill Airport connects Southland region to other parts of New Zealand via direct flights to Auckland, Wellington and Christchurch. The airport provides passenger services, some freight services (e.g. perishable agricultural products) and private charter services.

South Port is located in Bluff Harbour and is New Zealand's southernmost commercial deep water port. South Port services Southland's import/export industries including aluminium, timber, fisheries, dairy, meat, wood chips, stock food, cement, alumina, fertiliser and petroleum products (South Port, 2020). SEIA consultation indicates that about a third of the port's business is associated with NZAS, a third with forestry, and a third with remaining industries.

3.3.4 Communications

The region is well-serviced with mobile phone and telephone access, however access to the internet is lower compared to New Zealand on average (Table 3-12). Within the study area, Gore District has a higher proportion of households who have access to a telephone (70%) compared to other locations in the study area and New Zealand on average.

Table 3-12 Access to telecommunications

Location	No access to telecommunication systems	Access to a cellphone/mobile phone	Access to telephone	Access to internet
Invercargill City	1.1%	91.5%	64.3%	80.3%
Gore District	1.2%	90.4%	70%	79.4%
Southland District	1.3%	91.9%	64.7%	81.2%
Southland region	1.1%	91.5%	65.2%	80.5%
New Zealand	1.1%	91.9%	62.5%	86.1%

Source: StatsNZ 2018, Census place summaries

Findings from the 2018 Southland Business Survey (Venture Southland, 2018) indicate that some businesses were concerned about the quality of broadband and mobile services and the impact this has on their businesses. This issue was highlighted as the top priority when businesses were asked what would improve ease of doing business in Southland (28% of respondents mentioned this issue), and over a third of businesses (37%) said they expected the quality of communications services to impact their business within the next three years.

3.4 Community values

This section provides a summary of the values of Southland communities as they relate to the SEIA. These have been identified based on the outcomes of the SEIA consultation in 2020 and review of relevant literature.

3.4.1 Identity, cohesion and connectedness

Southlanders have a strong connection to and pride in the region. The majority of stakeholders consulted for the SEIA consultation were proud of the fact that they were ‘born and bred’ in Southland, and while many had spent some time away for further education, employment opportunities and travel, they came back to Southland. The reasons given for people returning to Southland related to the lifestyle in the region including its location and proximity to the Otago region, stable employment opportunities, affordable living especially for raising families, and connections to family and community. With more family households across the region compared to New Zealand as a whole and high rates of home ownership (section 3.2.6), Southland region is considered a great place to raise a family while living a more affordable and relaxed lifestyle (SEIA consultation 2020).

Southlanders take pride in the region’s sense of community and sense of belonging. The socio-economic and political context of Southland has led to a sense of identity that is independent and resilient. As noted in the Southland Regional Development Strategy (2015), “*The region is known nationally for its ambition and determination to do well*”.

This sense of cohesion and connectedness is reflected in the overall higher rates of volunteering in the region. As shown in Table 3-13, compared to New Zealand, the study area communities generally have higher rates of unpaid activities outside the household.

Table 3-13 Unpaid activities outside the household, 2018

Location	Looking after a child who does not live in own household	Helping someone who is ill or has a disability who does not live in own household	Other helping or voluntary work through any organisation or group	No activities
Invercargill City	34.8%	19.2%	30.5%	23.2%
Gore District	32.4%	19.8%	36.1%	23.9%
Southland District	32.7%	16%	41.2%	21.8%
Southland region	33.8%	18.3%	34.6%	22.9%
New Zealand	27.7%	16.2%	30.2%	23.5%

Source: StatsNZ, 2018

The region is generally considered a safe place to live, with both Invercargill City and Southland District accredited as International Safe Communities in 2016. Compared to New Zealand, the study area has lower crime rates overall, although as shown in Table 3-14 Invercargill City and Gore District display higher proportions of assault.

Table 3-14 Incidences of crimes between March 2019 and February 2020

Location	Reported crimes	Rate per 1,000 people	Crime type					
			Assault	Sexual assault	Abduction	Robbery	Burglary	Theft
Invercargill City	1,944	35.8	14%	1%	0%	1%	34%	50%
Gore District	339	27.3	19%	0%	0%	0%	43%	38%
Southland District	615	19.9	6%	0%	0%	0%	46%	48%
New Zealand	245,198	52.1	9%	1%	0%	1%	28%	61%

Source: New Zealand Police, 2020

Family violence is a nation-wide issue in New Zealand, with 133,022 investigations into family violence occurring in 2018, and 41% of emergency call responses due to family violence. There were 5,709 investigations into family violence in Southland region in 2018, which was the second lowest of any region in New Zealand (New Zealand Police, 2018). This indicates that compared to the rest of New Zealand, Southland region could be considered to have a lower rate of family violence. However caution should be taken when considering this data, as approximately 76% of family violence incidents are not reported to police, which means that actual incidences may be higher than investigated by police (New Zealand Crime and Safety Statistics, 2016).

3.4.2 Cultural values

Māori culture and heritage is well recognised across New Zealand. As shown in section 3.2.1, 15% of the Southland region's population are Māori, with a higher proportion (17.4%) living in Invercargill City.

Te Ao Marama Inc is the recognised Iwi organisation regarding cultural heritage management at Tiwai Peninsula. Four Runaka are represented by Te Ao Marama Inc which covers the Murihiku region (Southland). Connections to the land and history of the area, and to family, are strongly held values by the Iwi (SEIA consultation 2020).

NZAS consults with this group about cultural heritage and resource consents. NZAS also regularly engages with this group as well as Te Rau Aroha Marae which is located at Bluff (NZAS, 2020a). Te Rau Aroha Marae was originally established in the late 1800s as a hostel for local Māori who lived on islands off the Southland coast, while the current building in Bluff opened in 2003. (Te Runanga o Ngai Tahu, n.d.). NZAS maintains a strong relationship with Iwi through engagement about cultural heritage management, cultural awareness training, and general stakeholder relations (SEIA consultation 2020).

There are 31 Cultural Heritage Sites that have been identified at Tiwai Peninsula. These include Māori sites such as middens/ovens, burial and an adze workshop, and European burials and structures. There are also sacred, treasured and food resource sites on Tiwai Peninsula (NZAS, 2014; SEIA consultation 2020).

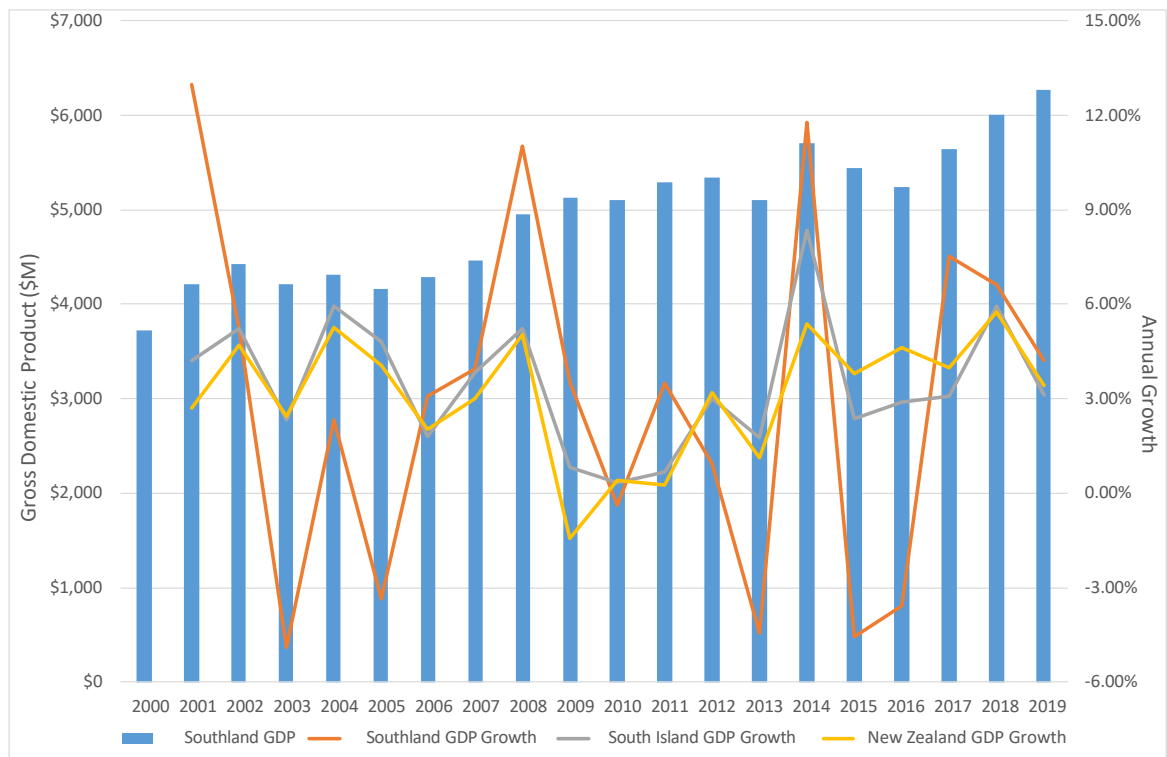
In addition to advising about cultural heritage, Te Ao Marama also provides social and wellbeing support programmes for Māori community members. These programmes are funded by the

New Zealand Government. At the time of writing this report, Te Ao Marama were working with their communities to respond to the COVID-19 pandemic, and prepare for managing its implications (SEIA consultation 2020).

3.5 Economic profile

3.5.1 Key industries

In 2019, Southland recorded \$6.3 billion in regional Gross Domestic Product (regional GDP), which equates to approximately 9.4% of the South Island’s regional GDP and 2.1% of New Zealand’s total regional GDP in 2019. As shown in Figure 3-18, regional GDP growth in Southland has historically been more volatile compared to the regional GDP growth in the South Island and New Zealand as a whole, with annual growth being as high as 13%, and as low as 4.5% annually.

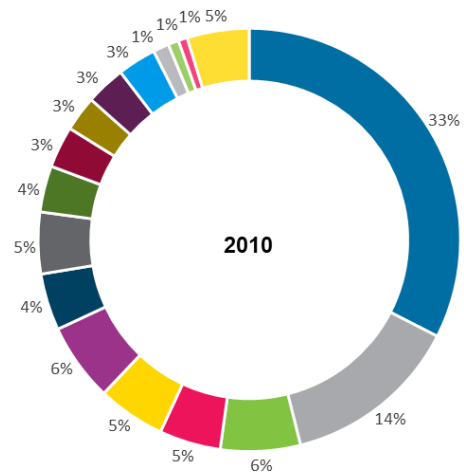
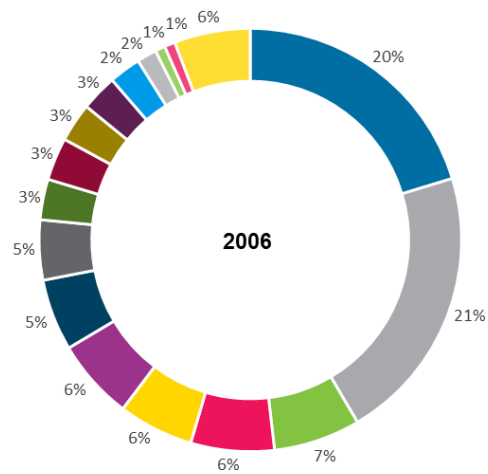


Source: Compiled by GHD using StatsNZ Gross Domestic Product by Industry, By Region in Current Prices, converted to Chain Volume using \$2018 as a base for more accurate comparisons using Stats NZ CPI growth

Figure 3-18 Southland region GDP Growth, 2000 to 2019

Agriculture, forestry and fishing has historically been Southland’s largest contributor to regional GDP, contributing to 30.8% of regional GDP in 2018, followed by the manufacturing industry which contributed 15.3% to the Southland region GDP in 2018.

As shown in Figure 3-19, the contribution of manufacturing to Southland’s regional GDP has decreased since 2006 when it accounted for 21.2% of regional GDP, compared to 15.3% of regional GDP in 2018. This decrease in contribution is due to the growth in manufacturing output being relatively flat between 2006 and 2016, as shown in Figure 3-19. Once adjusted for inflation, the Southland region’s manufacturing industry produced \$844 million in 2006 (in 2018 dollars), slightly higher than the \$839 million manufacturing produced in 2018. In contrast, over this time Southland’s regional GDP has grown by 38.1%.



- Agriculture, Forestry and Fishing
- Manufacturing
- Construction
- Transport, postal, and warehousing
- Rental, hiring, and real estate services
- Health care and social assistance
- Retail trade
- Information media and telecommunications and other services
- Professional, scientific, and technical services
- Education and training
- Wholesale trade
- Financial and insurance services
- Public administration, defence, and safety
- Food and beverage services
- Accommodation
- Administrative and support services
- Owner-occupied property operation

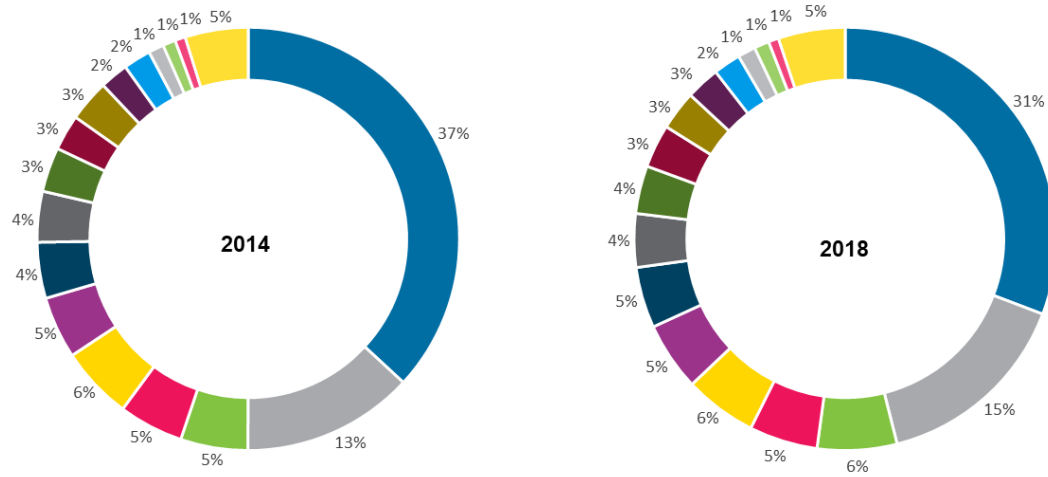


Figure 3-19 Southland region GDP, 2006, 2010, 2014, 2018

Other industry sectors in Southland have also experienced growth in the period from 2006 to 2018. As shown in Table 3-15, after agriculture (6.4%), sectors which have experienced the highest average annual growth rate during this period include accommodation (6.3%) and professional services (4.2%).

Table 3-15 Southland Value Add by Industry (2006-2018)

Industry (\$M)	2006	2010	2014	2018	Average Annual Growth Rate (2006-2018)
Agriculture, Forestry and Fishing	\$807.8	\$1,538.9	\$1,926.8	\$1,692.0	6.4%
Manufacturing	\$844.3	\$641.8	\$687.3	\$839.0	-0.1%
Construction	\$264.2	\$289.3	\$269.3	\$335.0	2.0%
Transport, postal, and warehousing	\$254.2	\$222.6	\$258.9	\$288.0	1.0%
Rental, hiring, and real estate services	\$229.0	\$245.2	\$291.2	\$305.0	2.4%
Health care and social assistance	\$245.4	\$282.5	\$248.5	\$288.0	1.3%
Retail trade	\$217.7	\$205.6	\$223.6	\$256.0	1.4%
Information media and telecommunications and other services	\$182.5	\$222.6	\$202.8	\$225.0	1.8%
Professional, scientific, and technical services	\$123.3	\$167.2	\$177.8	\$201.0	4.2%
Education and training	\$129.6	\$150.3	\$142.5	\$182.0	2.9%
Wholesale trade	\$118.3	\$127.7	\$166.4	\$165.0	2.8%
Financial and insurance services	\$110.7	\$143.5	\$113.3	\$142.0	2.1%
Public administration, defence, and safety	\$96.9	\$140.1	\$110.2	\$115.0	1.4%
Food and beverage services	\$60.4	\$57.6	\$61.4	\$75.0	1.8%
Accommodation	\$30.2	\$38.4	\$51.0	\$63.0	6.3%
Administrative and support services	\$32.7	\$32.8	\$41.6	\$43.0	2.3%
Owner-occupied property operation	\$231.5	\$224.8	\$252.7	\$282.0	1.7%

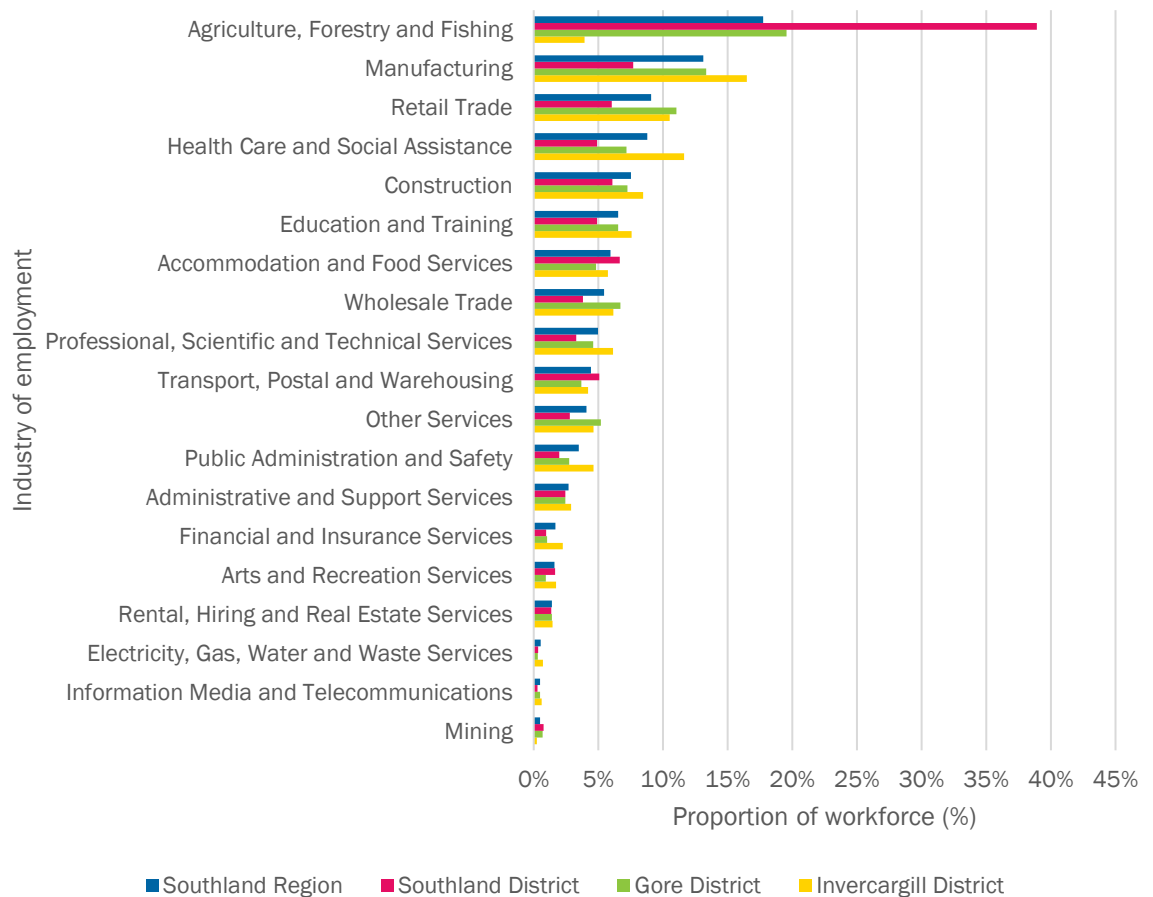
Source: Stats NZ Gross Domestic Product by Industry, By Region in Current Prices, converted to Chain Volume using 2018 as a base for more accurate comparisons using Stats NZ CPI growth

Findings from the *2018 Southland Business Survey Report* (Venture Southland, 2018) reflect these trends, with business confidence remaining strong in the agriculture, forestry and fishing industry which was noted to be a result of consistency in dairy prices.

The top industries by regional GDP also reflect the top two industries of employment in the region, as shown in Figure 3-20, with agriculture, forestry and fishing employing 17.8% of the workforce, followed by manufacturing at 13.1%.

The largest industries of employment for each district in 2018 were:

- Invercargill City - manufacturing (16.5%), followed by health care and social assistance (11.6%) and retail trade (10.5%).
- Gore District - agriculture, forestry and fishing (19.6%), followed by manufacturing (13.3%) and retail trade (11%).
- Southland District - agriculture, forestry and fishing (38.9%), followed by manufacturing (7.7%) and accommodation and food services (6.7%).



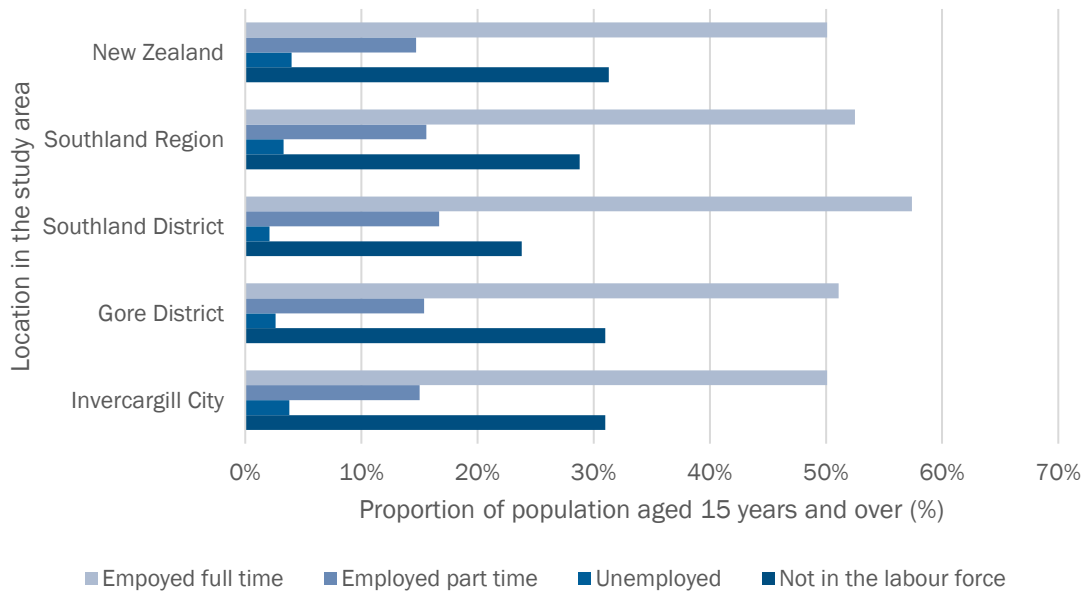
Source: StatsNZ 2018, Census place summaries

Figure 3-20 Industry of employment

3.5.2 Employment, occupation and incomes

Labour force

The labour force in the study area is overall consistent with the national average, as shown in Figure 3-21. There are higher rates of full time employment in Southland District 57.4%, and lower rates of people in Southland District who are not in the labour force (24%).



Source: StatsNZ, 2018, Census place summaries

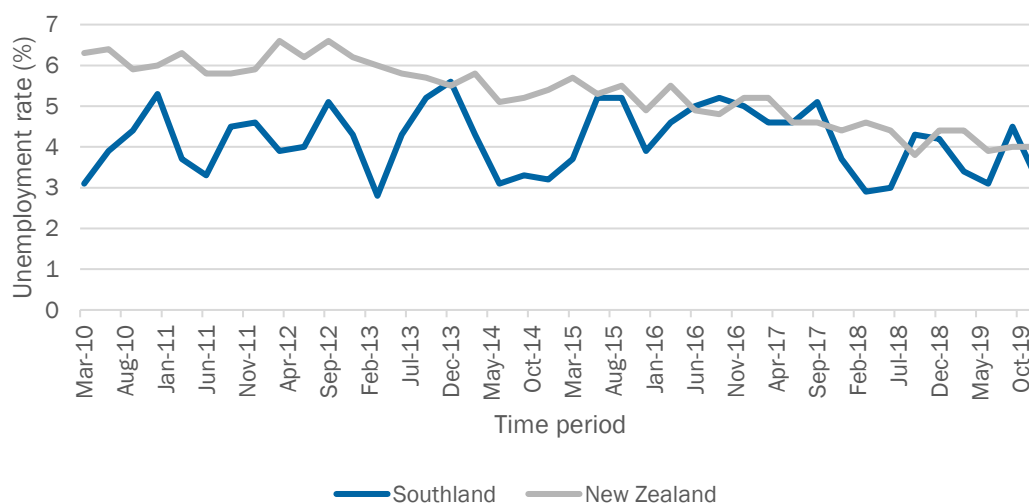
Figure 3-21 Labour force

The *Southland region Labour Market Assessment 2014-2031* (Roskrug and Pawar, 2015) estimated that depending on the region's population projections, labour demand would rise by 4,000 and 12,000 new positions by 2030. Together with population ageing, there would be an estimated labour force shortage of approximately 5,000 people by 2023, and 12,000 by 2031.

Unemployment

Within the region, the unemployment rate varies across the three districts, with Invercargill City having the highest unemployment rate in 2018 (3.1%), followed by Gore District (2.6%) and Southland District (2.1%) (Stats NZ 2018).

Unemployment in Southland has generally been lower than New Zealand as shown in Figure 3-22. As of December 2019, Southland had an unemployment rate of 3.2%, compared to 4.0% for New Zealand as a whole. While the data from the past decade shows generally lower unemployment in Southland compared to New Zealand, it also demonstrates a higher rate of volatility in the unemployment rate over that period, often shifting from 3% to 5% in half a year. This is likely due to industries such as agriculture and tourism which are seasonal employers.



Source: StatsNZ, 2020, *Infoshare Labour Force Status by Sex by Regional Council (Qrtly-Mar/Jun/Sep/Dec)* and *Infoshare Labour Force Status by Sex by Age Group (Qrtly-Mar/Jun/Sep/Dec)*.

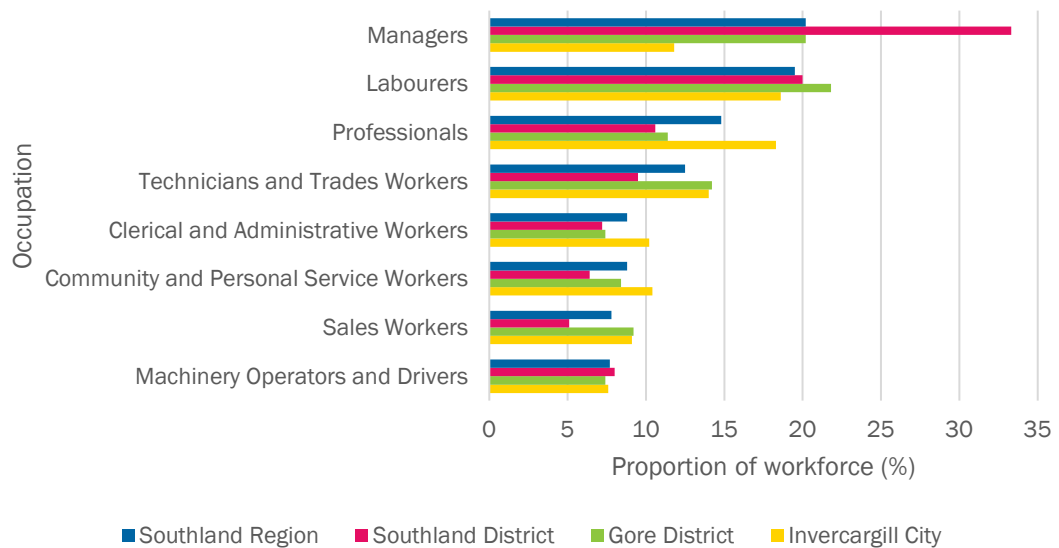
Figure 3-22 Quarterly unemployment rate for Southland compared to New Zealand, 2010 - 2019

Income

The median individual annual income in the Southland region was \$31,200 in 2018, which is consistent with the median annual income for individuals across New Zealand, which was \$31,800. The median individual income in Invercargill City and Gore District compared to the national median income (\$29,900 and \$30,900 respectively), whereas the median income is significantly higher in Southland District (\$36,300) (NZ Stats 2018).

Occupation

The main occupation of the largest number of residents in the Southland region are managers (20.2%), followed by labourers (19.5%) and professionals (14.8%). The largest number of residents in Invercargill City are labourers (18.3%) and professionals (18.3%), followed by technicians and trade workers (14%). The largest number of residents in Gore District are labourers (21.8%), followed by managers (20.2%) and technicians and trade workers (14.2%). The largest number of residents in Southland District are managers (33.3%), followed by labourers (20%) and professionals (10.6%) (NZ Stats 2018). Figure 3-4 below identifies the main occupation of workers across the three districts, expressed as a percentage.



Source: StatsNZ, 2018, Census place summaries

Figure 3-23 Main occupation, 2018

Southland District has high proportions of managers (Figure 3-23), which is consistent with a large agricultural industry (see Figure 3-20) which requires farm operation and management. The high full-time employment rates and high median annual individual income for Southland District reflect the presence of a strong agricultural industry.

As noted in section 3.2.5, education attainment levels are low across the study, with more focus on labour and trade type of vocational areas. As shown in Figure 3-23, there are large numbers of people employed as labourers in the study area. This combined with the low educational attainment, indicates that there is a large proportion of unskilled workforce in the study area. An unskilled workforce may influence life, health and wellbeing outcomes, as well as the prospects of re-employability due to non-transferable skills and may also limit the ability of the region to meet future workforce demand or current workforce shortages.

Education is therefore a high priority for the Southland Region, in order to upskill current and prospective workforce. A strong education sector is integral to future economic diversification and sustainability.

Occupations within the manufacturing industry

Based on Stats NZ, within the Southland region the largest occupation within the manufacturing industry was labourers, representing over 40% of manufacturing employees between 2006 and 2013, with technicians and trade workers accounting for approximately 20% of employees and machinery operators and drivers approximately 10% of employees. Based on the qualifications

required for labourers, approximately 40% of employees within the Southland manufacturing industry are likely low skilled workers.

Table 3-16 Occupations within the manufacturing industry

Occupation	Proportion of Employee Occupations, 2006 census	Proportion of Employee Occupations, 2013 census
Managers	8.4%	10.3%
Professionals	4.7%	5.8%
Technicians and trades workers	21.9%	21.8%
Community and personal service workers	0.8%	1.0%
Clerical and administrative workers	6.4%	6.6%
Sales workers	2.8%	3.0%
Machinery operators and drivers	12.2%	11.3%
Labourers	42.8%	40.2%

3.6 Summary of vulnerability in the region

Vulnerability is defined as the inability of people to withstand or adapt to change due to their socio-economic characteristics. Specifically, it relates to how a group will be impacted by a change due to their *sensitivity to change* and their *ability to adapt to change* (adaptability) including access to socio-economic resources to cope with a change (Cinner et al., 2012; Rakauskiene & Strunz, 2016).

A selection of demographic indicators of vulnerability are presented in Table 3-17. The data shows that lower education attainment, lower levels of skills, housing tenure and age are some of the key vulnerabilities in the study area.

Table 3-17 Vulnerability indicators

Indicator	Invercargill City	Gore District	Southland District	Southland region
<p>One parent families (% 2013)</p> <p>One parent families are understood to have a high potential for intersecting vulnerabilities. Further, they typically have fewer economic resources than other families.</p>	12.2	8.5	5.2	9.5
<p>Low educational achievement (% 2018)</p> <p>People with no post-school qualifications are more likely to be unemployed (Bailey et al., 2012).</p>	26.8	30.4	24.8	26.7
<p>Low skilled workers (% 2018)</p>	26.2	29.2	28	27.2

Indicator	Invercargill City	Gore District	Southland District	Southland region
Unskilled and low skilled workers experience higher levels of unemployment, (Bailey et al., 2012). Unskilled workers are defined as labourers and machinery operators and drivers (ABS, 2009)				
Housing tenure (% 2018) Home owners have historically faced greater barriers to finding new work following retrenchment compared to tenants (Beer, 2008).	59.2	57.4	49.0	55.8
Older workers (% 2013) Workers over 45 years of age have greater difficulty finding employment once unemployed. The length of unemployment tends to be greater for older cohorts and the potential for long term unemployment increases with age (Peetz, 2003).	48.3	52.8	49.6	49.3

Source: StatsNZ 2018; 20133, Census place summaries

3.6.1 Socioeconomic deprivation

The New Zealand Index of Deprivation (NZDep) is an area-based measure of socio-economic deprivation in New Zealand that is based on census data. Socio-economic deprivation is defined broadly by the NZDep as an individual or group who is in a state of demonstrable disadvantage *relative* to the local or broader community to which they belong (Salmond & Crampton, 2012). In order to capture this broad definition, the NZDep includes a range of data points, including:

- People with no access to the internet at home
- People aged 18-64 receiving a means tested benefit
- People aged 18-64 unemployed
- People aged 18-64 without any qualifications
- People not living in their own home (e.g. renting)
- People in equivalised households with income below an income threshold
- People <65 years living in a single parent family
- People living in an equivalised household below a bedroom occupancy threshold
- People living in dwellings that are always damp and / or always have mould greater than an A4 size paper (Atkinson et al., 2019).

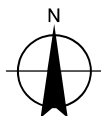
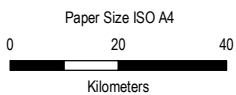
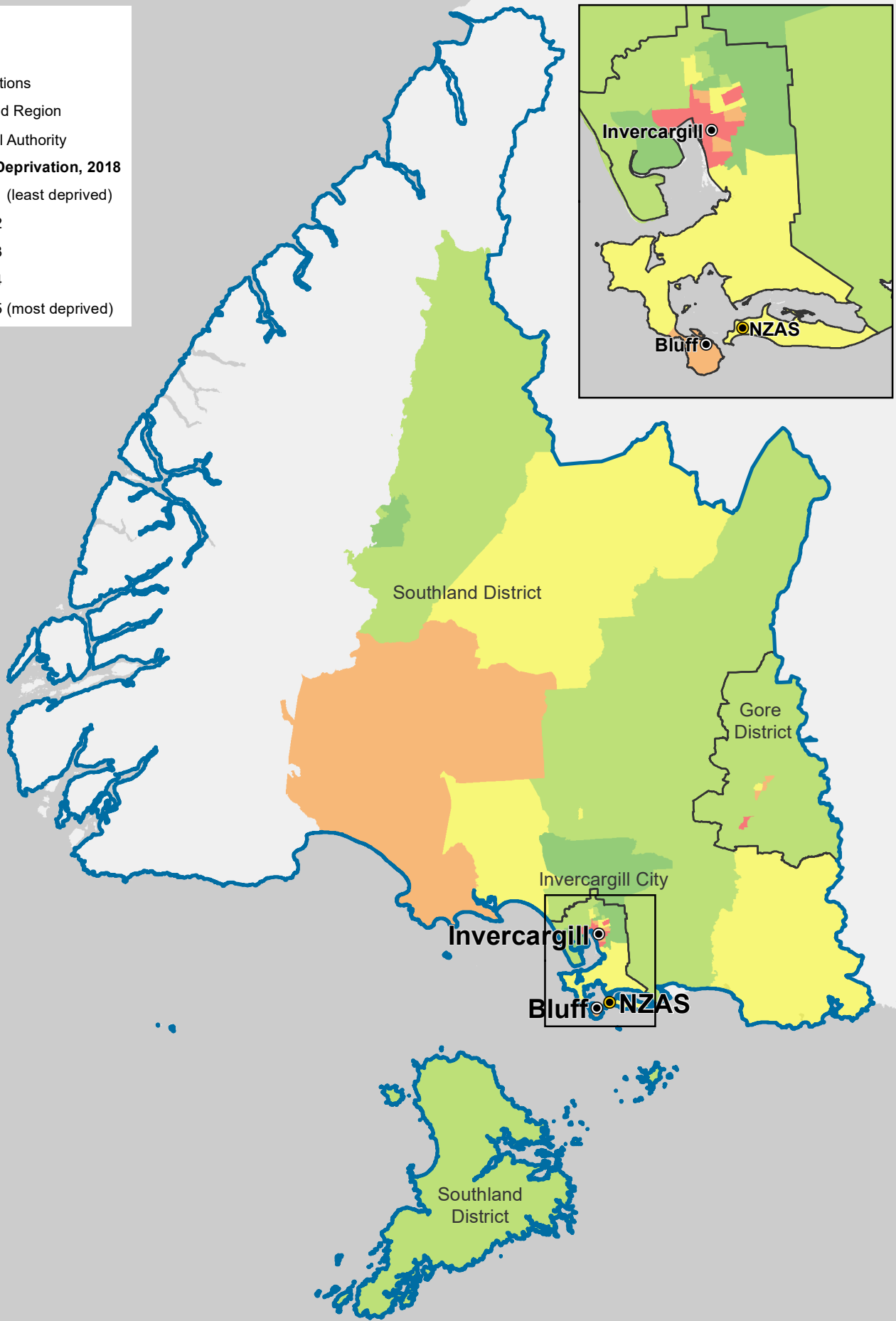
According to the results of the 2018 NZDep (see Figure 3-24) most of the study area fall into the first two quintiles, meaning they are in 40% of the least deprived areas in New Zealand.



However, areas in Invercargill City are in quintile four and five. This means that they are in the most deprived areas compared to the rest of New Zealand. This indicates that communities living in parts of Invercargill City may have lower incomes, lower educational achievement, higher rates of unemployment, less access to communication infrastructure, lower rates of home ownership, more single parent families, more overcrowding in houses or poorer living conditions.

LEGEND

- NZAS
- Key locations
- Southland Region
- Territorial Authority
- NZ Index of Deprivation, 2018**
- quintile 1 (least deprived)
- quintile 2
- quintile 3
- quintile 4
- quintile 5 (most deprived)



Rio Tinto Pacific Aluminium
NZAS Socio-Economic Impact Assessment

Project No. 12526765
Revision No. A
Date 01 May 2020

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

**New Zealand Index
of Deprivation, 2018**

FIGURE 3-24

3.7 Regional development

Many regional stakeholders and organisations contribute to Southland's economic and social development, including the regional and district/city councils, businesses and industry, and other community services and organisations.

Great South is the regional development agency for Southland (previously known as Venture Southland), and is particularly focused on driving economic growth in the areas of economic and business development, tourism and events (Great South, 2020).

This section discusses the strategies that guide the Southland region's development, government funding programmes available for regional projects, and opportunities and challenges for the region.

3.7.1 Regional development strategies and programmes

Southlands development is generally guided by the regional strategies outlined in Table 3-18.

Table 3-18 Regional development strategies for Southland Region

Strategy	Overview
<p><i>Southland Regional Development Strategy</i> (Southland Regional Development Strategy, 2015a)</p> <p><i>Southland Regional Development Strategy. Te Iwi Me Oranga Rauemi. Action Plan 2015 – 2025</i> (Southland Regional Development Strategy, 2015b).</p>	<p>In 2014, the Southland Mayoral Forum⁴, initiated the Southland Regional Development Strategy. The strategy has one key goal – to increase the population of Southland by 10,000 people by 2025. To achieve this goal, the Action Plan identifies three challenges: grow population, diversify the regional economy and strengthen local business.</p> <p>The Action Plan acknowledges that Southland has a narrow economy with reliance on a small number of products, such as dairy and aluminium. It identifies three focus areas to diversify the regional economy: aquaculture, tourism and international students.</p>
<p><i>Southland Murihiku Welcoming Plan</i> (Great South, 2019a)</p>	<p>'Welcoming Communities' is a pilot programme by Immigration New Zealand, Office of Ethnic Communities, and New Zealand Human Rights Commission that has been developed in recognition of the need to welcome newcomers and ensure they participate fully in society.</p> <p>The plan recognises that developing a welcoming environment will help to attract more people to the region, retain those who already live there, and help to counter projected workforce shortages.</p>
<p><i>Southland Workforce Strategy 2014-2031</i> (Roskrige and Pawar, 2015)</p>	<p>This strategy was commissioned by Venture Southland (now Great South) in recognition that workforce factors are one of the most significant areas of economic limitation for Southland, with a 2015 study showing Southland was facing significant labour market contraction due to population ageing, and changing skill requirements in the workforce.</p>

⁴ The Southland Mayoral Forum brings together the mayors of each district council and the chairman of Environment Southland to discuss regional issues.

Strategy	Overview
	While Southland has high labour force participation, there is potential to increase participation amongst some groups: younger workers, older workers, female workers and migrant workers. The strategy recommends actions related to attraction, retention, utilisation and upskilling, and these are focused at the employer level, and includes a governance structure to track implementation.

The Provincial Growth Fund is a New Zealand Government programme which has allocated \$3 billion over a three year term to invest in regional economic development. Projects that are eligible for funding include projects that support job creation in key sectors and regions, and that enhance prosperity and productivity in more than one region. (Provincial Development Unit, 2020b). Southland projects which have received funding since 2018 and are relevant to this SEIA include are summarised in Table 3-19.

Table 3-19 Selected programmes in Southland that have received funding via Provincial Growth Fund 2018 - 2019

Programme description	Amount announced	Year announced
Business case to establish state of the art land-based hatcheries for salmon and mussels to expand Southland's aquaculture industry	\$424,976	2018
Feasibility funding for Invercargill City centre development	\$995,000	2018
Investment in Invercargill City centre development	\$19,500,00	2019
Career development advice, pre-employment skills training and career exploration opportunities for young Southlanders aged 14 – 20 years	\$1,500,000	2019
Increased capacity of Invercargill Airport to enable trial of Airbus A320 freight and passenger service between Invercargill and Auckland from August 2019	\$500,000	2019

Source: Provincial Development Unit. (2020a). *Announced Projects – Southland*.

3.7.2 Opportunities and challenges

The regional development strategies outlined above identify several opportunities and challenges for the Southland region's development, which were confirmed during SEIA consultation and the literature review. The sections below discuss opportunities and challenges relevant to the SEIA.

3.7.2.1 Population decline and labour force constraints

The Southland region faces challenges common to regional areas including ageing of the population, projected population decline, and lower income levels. Increasing the regional population by 10,000 people was set as the primary goal in the Regional Development Strategy in 2015 to secure Southland's development and ensure it would not 'fall behind' the rest of New Zealand.

A 2015 study (Roskrug and Pawar, 2015) also found that the Southland region would be facing a labour shortage of around 5,000 people by 2023, and up to 12,000 by 2031. The 2018 *Southland Business Survey* found that recruitment and retention are key challenges for businesses, and attraction of staff was identified as the top challenge for businesses in the next three years (Venture Southland, 2018).

Despite these challenges, Southland generally had a lower unemployment rate compared to the national average over the last decade (section 3.5.2). The region is also an affordable place to live, with generally lower rental payments and mortgage repayments compared to New Zealand overall (section 3.2.6).

3.7.2.2 Access to infrastructure and services

Although the region, and particularly Invercargill, are well serviced by a range of community infrastructure and services (section 3.3), Southland's location and predicted population decline presents challenges for service provision and access to services as seen in the deprivation index ranking in section 3.6.1.

Improving access to education and health care services have been consistent regional priorities for respondents to surveys administered by NZAS in the past (Comalco, 2003; NZAS, 2006). The 2006 survey of community stakeholders, employees and contractors found the top issues of concern related to health, social services, crime and safety, drug and alcohol abuse and education. Responses indicated there were concerns related to lack of healthcare workers and resources, lack of mental health facilities and support, use of drugs and alcohol, lack of activities for young people, and loss of young people from the region seeking further education. Many of these issues continue to be concerns raised by stakeholders during SEIA consultation in 2020. Access to communication infrastructure is also recognised as a constraint, particularly for businesses (section 3.3.4).

The region's connectivity to the rest of the country has recently improved, with a new direct Air New Zealand jet service to Auckland introduced as a trial in December 2019. However local provision of services is expected to continue to be a challenge, particularly if the region experiences population decline, and associated loss of funding for population-based services.

3.7.2.3 Diversifying the regional economy

As discussed in section 3.5.1, Southland region has a strong economy, particularly supported by the agriculture and manufacturing industries which have consistently provided a stable economic base for many years. However it is broadly understood that new industries need to be developed to reduce the region's reliance on commodity cycles and support the region's growth (Southland Regional Development Strategy 2015a; SEIA consultation 2020).

Several industries and sectors have been identified as having potential for the Southland region, which are discussed in Table 3-20.

Table 3-20 Emerging and growth industries in Southland Region

Industry	Discussion
Aquaculture	<p>Aquaculture is identified in the Action Plan as the region's greatest opportunity for a new comparative advantage for Southland, which would counter the region's dependence on commodities. Southland has the right climatic conditions to support an efficient and highly productive, internationally significant industry.</p> <p>Although there has been investment in the development of aquaculture in recent years (refer to Table 3-19), SEIA consultation indicated that further investment is required to realise the industry's full potential.</p>
Tourism	<p>Tourism is already a significant industry in Southland, which is primarily focused on Milford Sound and Fiordland, with tourism spend increasing by 7.5% in the year up to August 2019 (Great South, 2019b). However most international tourists visit Milford Sound from Queenstown and do not explore Southland further, with the majority of Southland's international tourists visiting Fiordland, and domestic tourists more likely to visit other parts of Southland (Great South, 2019b).</p> <p>The Action Plan identifies opportunities to extract greater economic value from tourists visiting Milford Sound, and to increase tourism on Stewart Island and the Catlins. To do this, the region needs several 'big tourism ideas' that unite the tourism offering for Southland, and extensive tourism infrastructure development.</p>
International students	<p>SIT is recognised as a pioneer of international education, and has successfully attracted many international students and their families to live in Southland. Increasing the number of international students is identified in the Action Plan as an opportunity to increase the region's population whilst increasing the number of younger families, and increasing cultural diversity.</p> <p>However SEIA Consultation revealed concern amongst several stakeholders about the New Zealand Government's review of the polytech sector. From 1 April 2020, 16 institutes of technology and polytechnics will be centralised under a single national institute called the NZ Institute of Skills and Technology. Stakeholders indicated that this centralisation may impact on the ability of the SIT in Invercargill to tailor its programmes for the regional context, which to date have allowed them to successfully attract local and international students.</p>
Other industries	<p>SEIA consultation indicated a number of other potential industries that could be developed in the region in the future. These include:</p> <ul style="list-style-type: none">• Silica processing• Data storage• Hydrogen plant <p>However all stakeholders acknowledged these were only ideas that needed further investigation to understand their feasibility.</p>

Source: *Southland Regional Development Strategy. Te Iwi Me Oranga Rauemi. Action Plan 2015 – 2025* (Southland Regional Development Strategy, 2015b); SEIA consultation 2020; *Southland Tourism Key Indicators. August 2019* (Great South, 2019).


3.7.2.4 COVID-19 (Coronavirus) pandemic

It is widely reported that economic and financial systems around the world including in New Zealand are being dramatically affected by the COVID-19 pandemic. Although the impact on the New Zealand economy is highly uncertain, the New Zealand Government released several economic scenarios on 14 April 2020 to consider several alternate paths that the economy may take. These scenarios are based on several different assumptions about the time spent at different Alert Level lockdown phases. The first five scenarios assume no further fiscal support measures beyond the approximate \$20 billion already announced by the New Zealand Government. These scenarios discuss potential falls in GDP between 13% up to over 30%, and peaks in unemployment from 13% to 26%. Scenarios were also developed which include additional \$20 billion or \$40 billion in fiscal support which would cushion the decline in output and lower the unemployment rate (New Zealand Government Treasury, 2020).

Regardless of the scenario, all community members will be impacted to some degree by the social and economic effects of COVID-19. The lockdown has had an almost immediate impact on service sectors such as tourism, hospitality and leisure (including bars, restaurants, gyms, airlines and hotels), and it is now clear that all industry sectors in New Zealand are expected to be affected by the pandemic over time. KPMG prepared a *Guide for New Zealand business executives and directors* in March 2020 which includes analysis of the industry/sector implications of COVID-19 (KPMG, 2020e). Those industries/sectors most relevant to the economic opportunities and challenges discussed in this section include:

- Agri-food – this sector is more recession proof than many, however closure of international markets, reduced demand from the hospitality industry, and loss of seasonal visitors to undertake fruit picking all present challenges. Exporters reliant on air-freight are likely to be most disrupted, while domestic demands are likely to be affected by community perceptions about food safety (KPMG, 2020a).
- Tourism – travel restrictions on international flights and cruises have resulted in huge reductions in tourist numbers across New Zealand. All tourism operators will be impacted and the sector is unlikely to recover for some time. However there may be an increase in domestic tourism which would offer much needed support to the sector (KPMG, 2020c).
- Leisure and hospitality – the decline in tourism, social distancing and working from home has reduced foot traffic, and events have been cancelled. Many businesses will need to seek concessions from their banks, and many privately-owned cafes, bars and restaurants will need access to funding to survive. There is potential for widespread closures and insolvencies, although those businesses that do survive may benefit from less competition (KPMG, 2020b).
- Transport – domestic transport and logistic services have been in heavy demand; however the overall economic downturn will impact this sector due to its reliance on other sectors. International air freight capacity is also being affected due to grounding of passenger planes. It is expected that a number of private airlines will fail, and small transport operators will struggle to survive. The long term impacts will depend on how long borders remain closed (KPMG, 2020d).

The New Zealand Government has provisioned up to \$52 billion in support packages to help manage the impacts of COVID-19 on businesses and communities. These include wage subsidies, changes to the business tax system, and working with banks to defer mortgages and encourage lending to small and medium sized businesses (Hon Grant Robertson, 2020). At the



time of writing this report, sectors that have been identified for specific support include banking, exporters and importers, aviation, construction, health, arts, and sports organisations (Salmond and Davies, 2020).

The implications of the pandemic are highly uncertain. However it is likely the economic development opportunities discussed in this section would be affected in some way, which could mean they take longer to come to fruition. Alternately, other opportunities could become apparent.

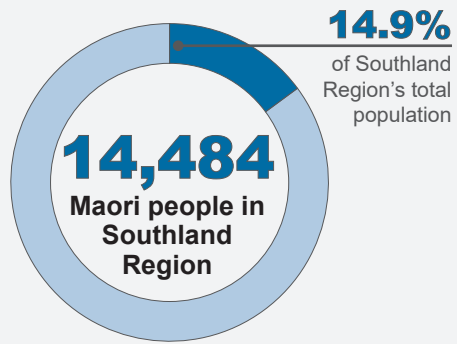
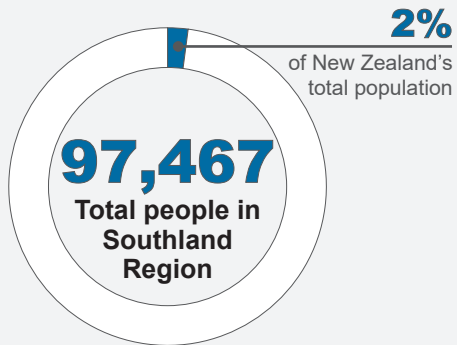
Implications of COVID-19 on NZAS and related economy in Southland is anticipated to be minimal, as the operation of the smelter has continued through this period, retained all its current employees, at a reduced production capacity, which may have had implications for local businesses that supply goods and services to the smelter.

3.8 Summary of socio-economic profile

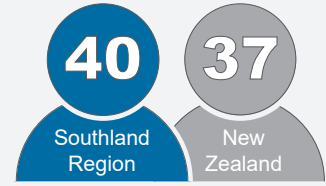
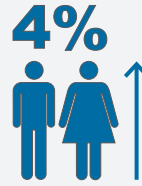
The socio-economic profile of the study area and its localities is summarised in Figure 3-25 Figure 3-26 Figure 3-27 Figure 3-28.

Figure 3-25 Summary of socio-economic profile of Southland region

SOUTHLAND REGION

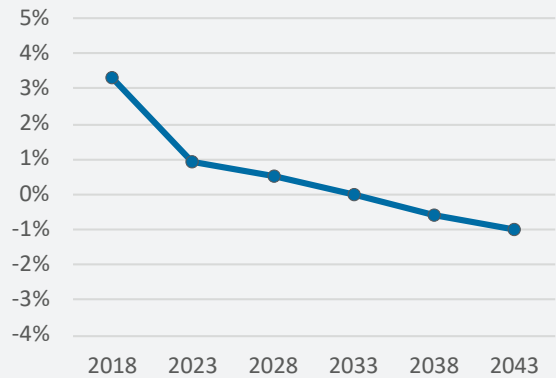


Population trend
(growth rate 2013-2018)

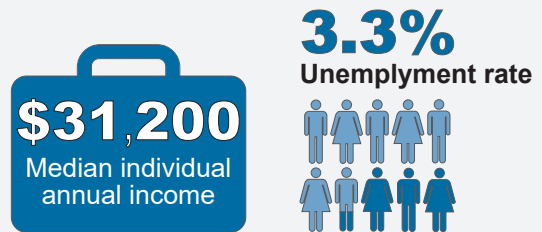
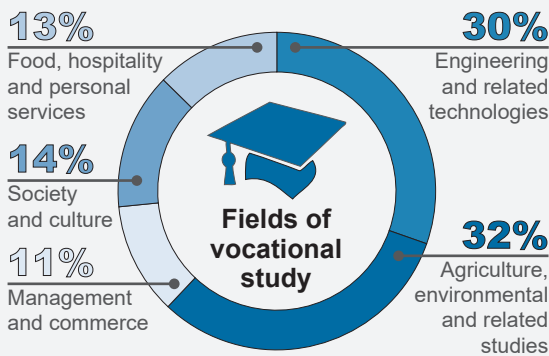
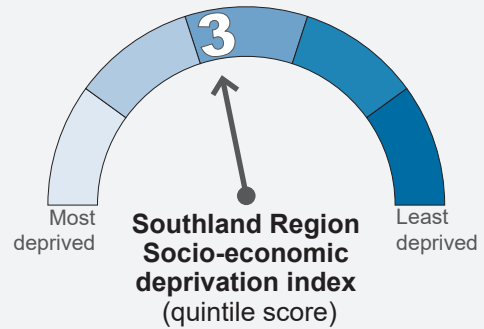
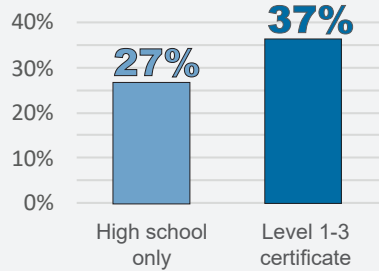


Median age

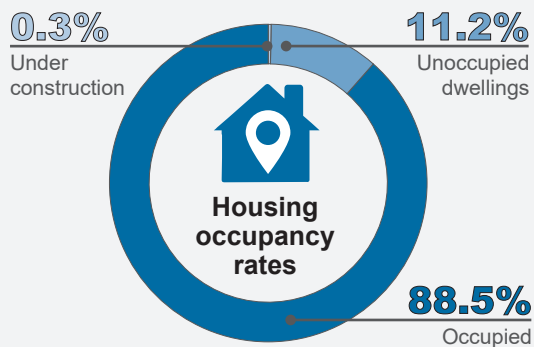
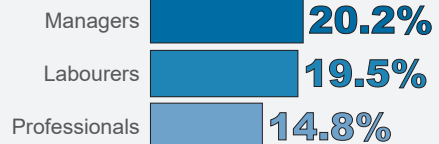
Population projections
(rate of decline 2018 – 2043)



Education attainment of people aged 15 years and over



Top three occupation types



Top five industries of employment

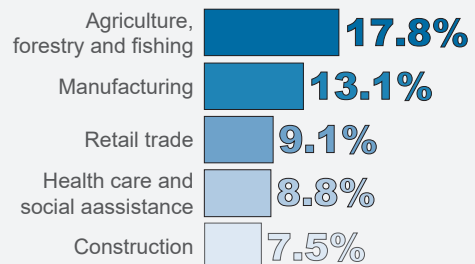
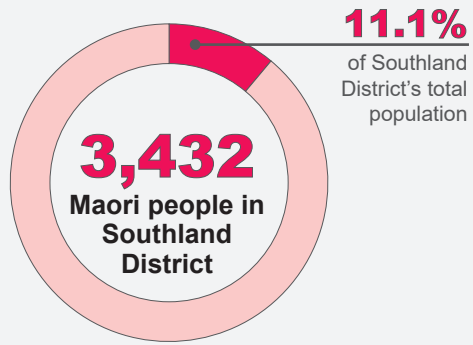
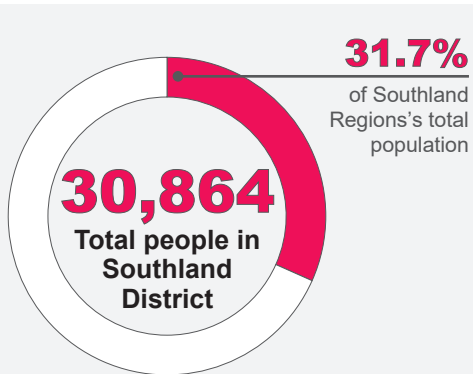
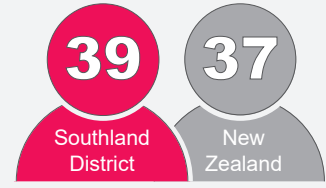


Figure 3-26 Summary of socio-economic profile of Invercargill City

SOUTHLAND DISTRICT

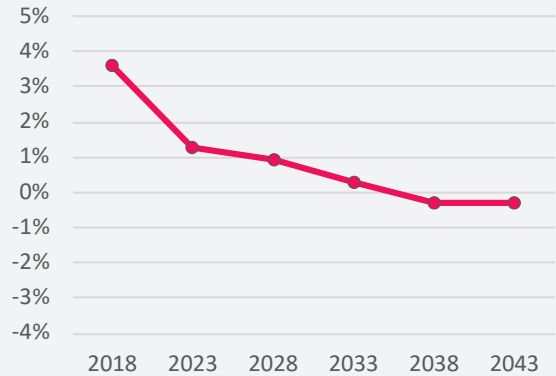


Population trend
(growth rate 2013-2018)

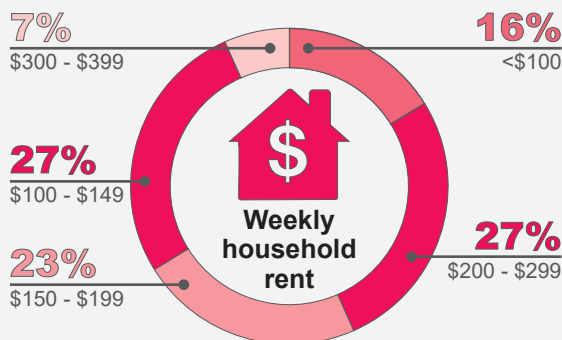
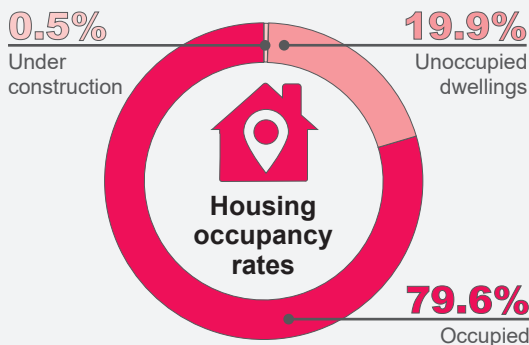
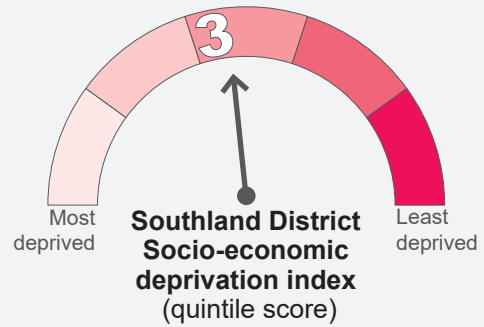
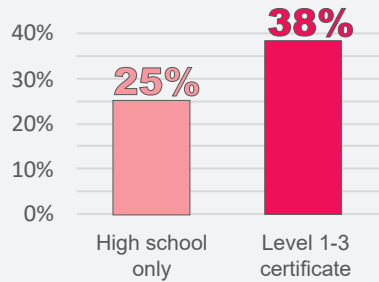


Median age

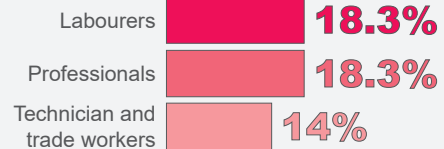
Population projections
(rate of decline 2018 – 2043)



Education attainment of people aged 15 years and over



Top three occupation types



Top five industries of employment

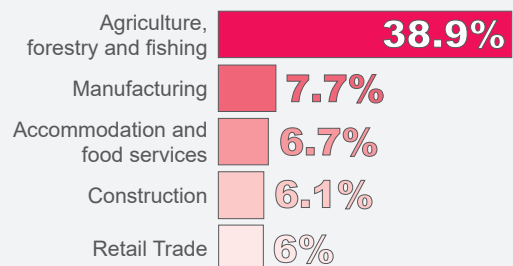
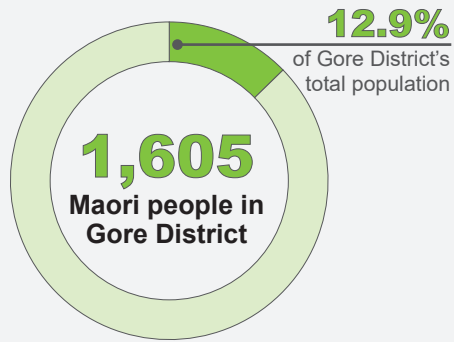
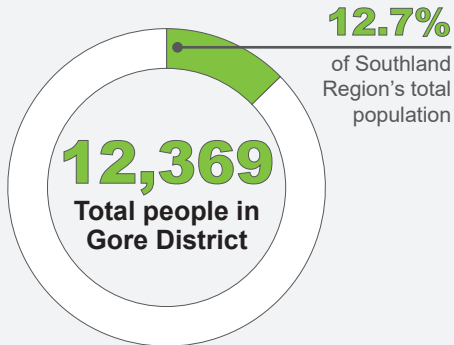
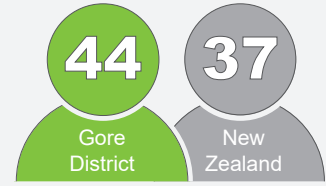


Figure 3-27 Summary of socio-economic profile of Gore District

GORE DISTRICT

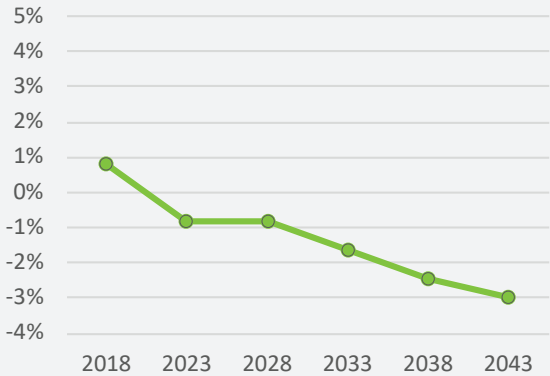


Population trend
(growth rate 2013-2018)

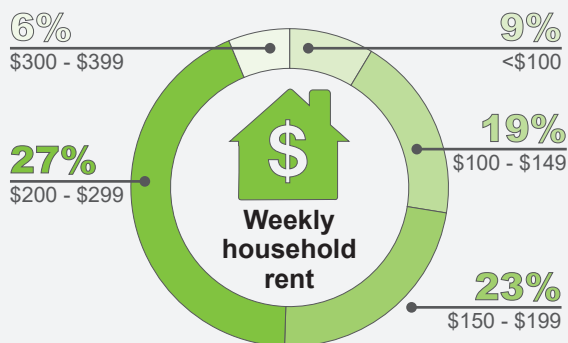
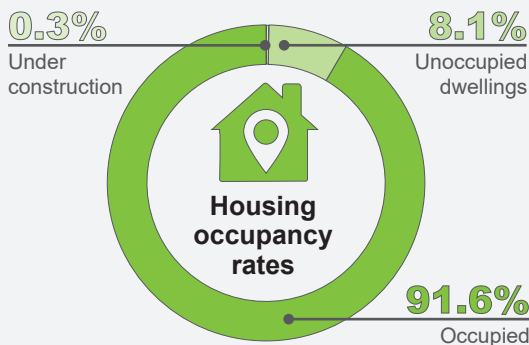
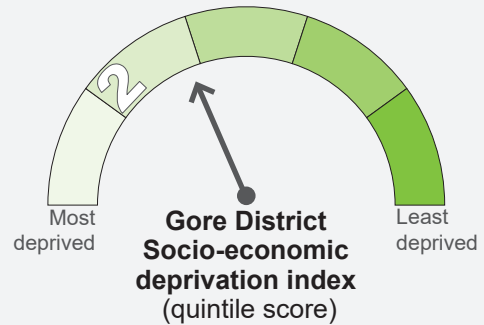
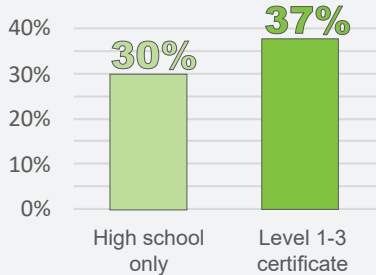


Median age

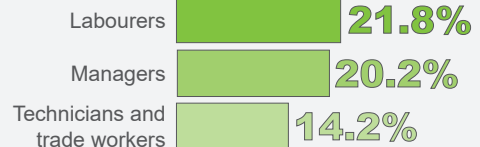
Population projections
(rate of decline 2018 – 2043)



Education attainment of people aged 15 years and over



Top three occupation types



Top five industries of employment

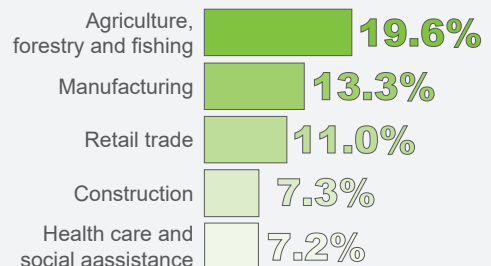
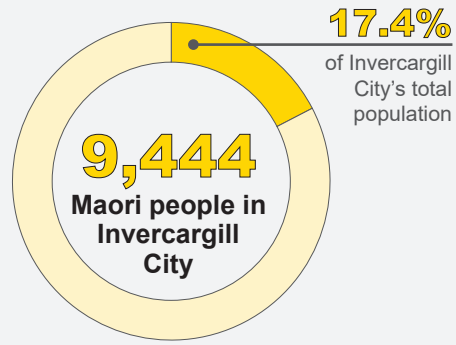
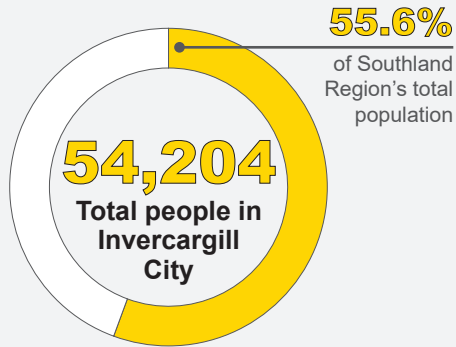
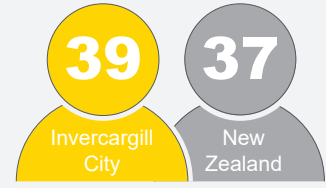
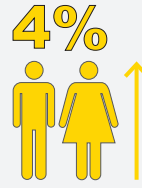


Figure 3-28 Summary of socio-economic profile of Southland District

INVERCARGILL CITY

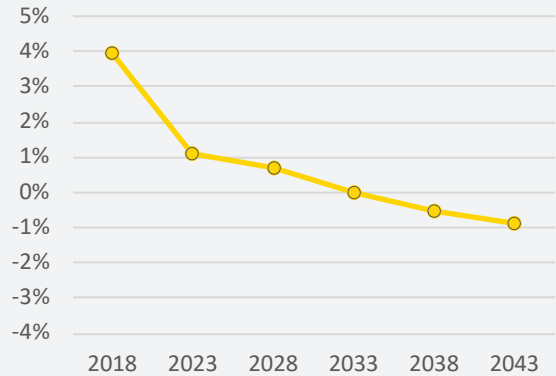


Population trend
(growth rate 2013-2018)

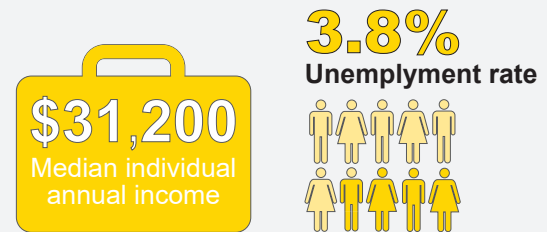
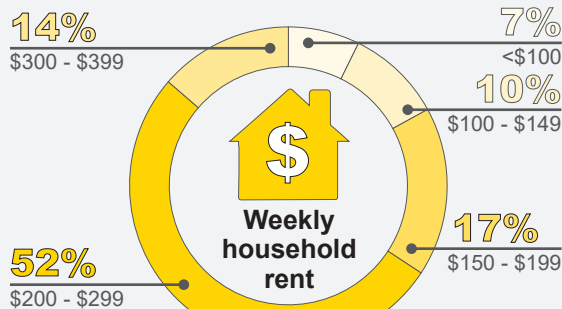
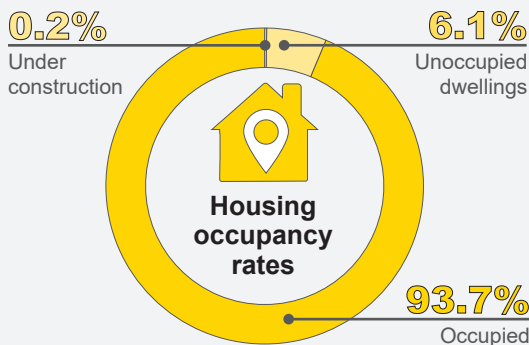
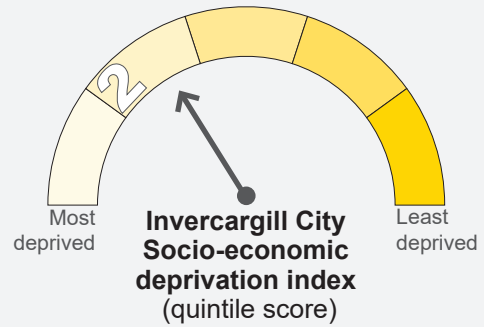
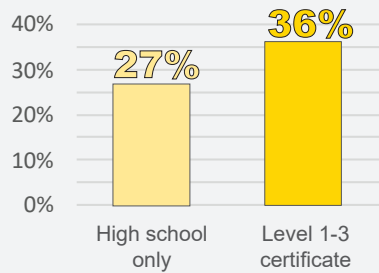


Median age

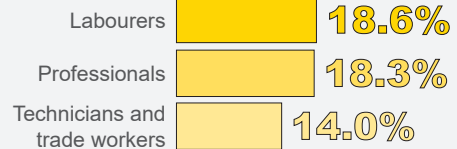
Population projections
(rate of decline 2018 – 2043)



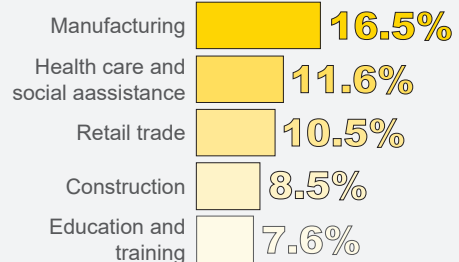
Education attainment of people aged 15 years and over



Top three occupation types



Top five industries of employment



4. Contribution by NZAS to the Southland region

4.1 NZAS workforce

Workforce location

As per the workforce data provided by NZAS (Table 4-1), in 2019 NZAS workforce was primarily located in Southland, including 92.4% in Invercargill City (694 employees and 217 contractors), 5.0% in Southland District (37 employees and 12 contractors) and one employee located in Gore District. The remaining 2.5% of employees are located in other local government areas in New Zealand (19 employees and 6 contractors).

Table 4-1 NZAS workforce by place of residence (2019)

Territorial Authority area	Number of employees/contractors	Proportion of NZAS employees and contractors	NZAS employees and contractors as a proportion of the labour force
Invercargill City (includes communities of Invercargill, Bluff, Clifton, Newfield, Otatara, Waikiwi)	694 employees	70.4%	2.3%
	217 contractors	22.0%	0.7%
	Sub-total - 911	92.4%	3.0%
Southland District	37 employees	3.8%	0.3%
	12 contractors	1.2%	0.1%
	Sub-total - 49	5.0%	0.4%
Gore District	1 employee	0.1%	NA
	0	0.0%	NA
	Sub-total - 1	0.1%	NA
Subtotal of Southland (region)	732 employees	74.3% employees	2.6% employees
	229 contractors	23.2% contractors	0.8% contractors
	Total - 961	Total - 97.5%	Total - 3.4%
Other	19 employees	1.9%	NA
	6 contractors	0.6%	NA
	Sub-total - 25	2.5%	-
Total	751 employees + 235 contractors = 986	NA	NA

Notes. 1. Based on the number of employees in the Territorial Authority areas against the labour force as at 2018 NZ Census

Workforce demographic profile

A demographic profile of the NZAS employee workforce (does not include contractors) has also been prepared based on data provided to GHD by NZAS (2020). The age profile of the NZAS employee workforce is shown in Figure 4-1. The NZAS employee workforce is older, with almost 60% of the workforce above 45 years of age. The highest proportions of the employee workforce are aged 55 to 59 years (17%) and 60 to 64 years (13.7%).

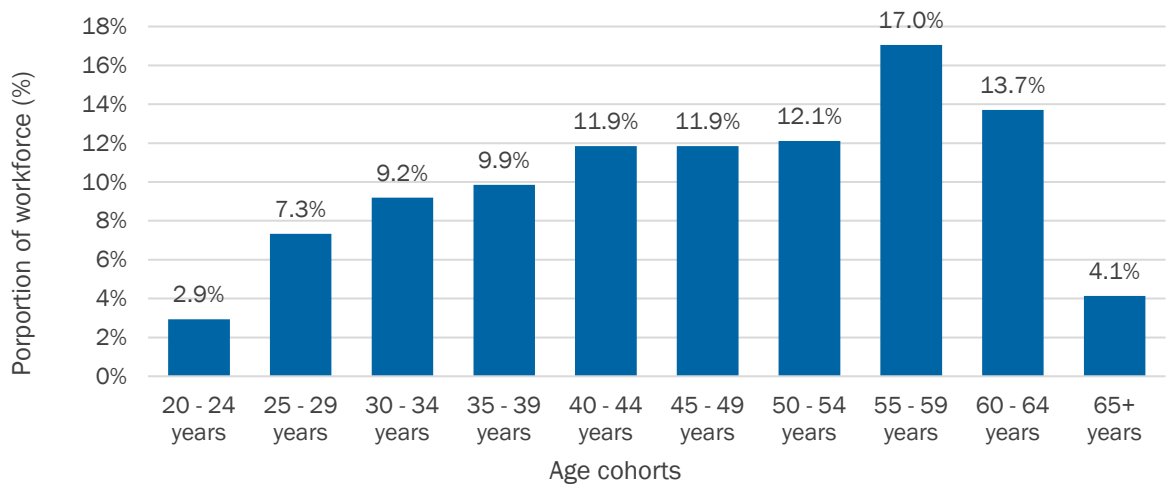


Figure 4-1 NZAS age employee workforce profile (does not include contractors)

As shown in Figure 4-2 there is a strong relationship between age and length of service. The majority of employees between 60 and 65 years of age and over 65 years of age have served at NZAS for over twenty years (79.6% and 83.9% respectively). Cohorts between 55 and 59 years have similar years of employment, with around 68.8% having served 20 years and a further 21.9% serving between 10 and 19 years. Although the proportion of those who have served over 20 years reduces as the age of the cohorts reduce, older cohorts maintain long periods of employment. For example:

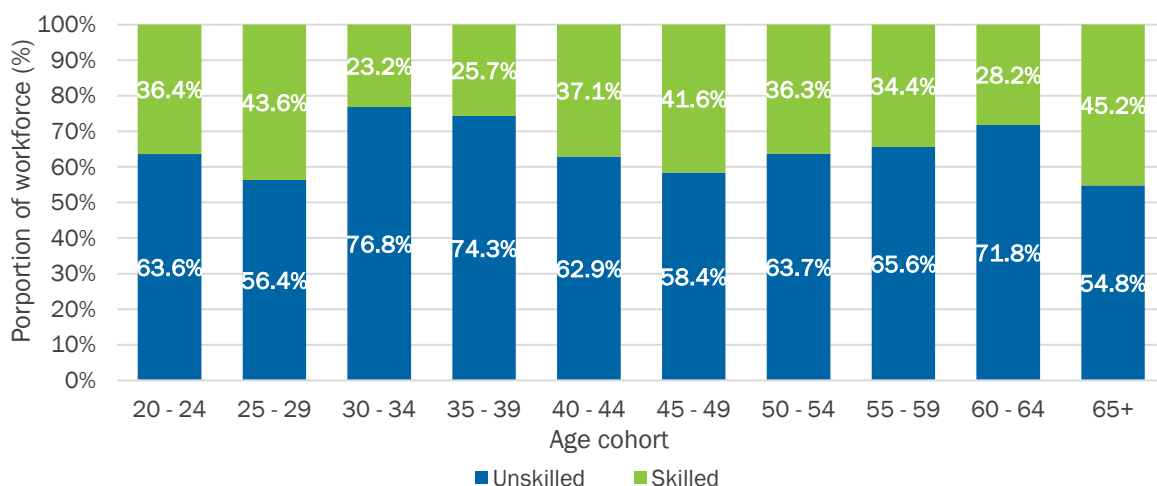
- 42.9% of employees aged between 50 and 55 years have served between 10 and 19 years
- 49.4% of employees aged between 45 and 49 years have served between 10 and 19 years.

In the younger age cohorts presented in Figure 4-2, the majority of employees have been employed by NZAS for less than 10 years (100.0% for employees aged between 20 and 24 years, and 89.1% for employees aged between 25 and 29 years).

Cohorts	Years of employment									
	<1 year %	1 to 4 %	5 to 9 %	10 to 14 %	20 to 24 %	30+ %				
20 - 24 years	100	0	0	0	0	0	0	0	0	0
25 - 29 years	89	11	0	0	0	0	0	0	0	0
30 - 34 years	8	47	9	5	0	0	0	0	0	0
35 - 39 years	6	36	20	8	0	0	0	0	0	0
40 - 44 years	7	30	18	15	1	0	0	0	0	0
45 - 49 years	4	15	4	18	11	2	0	0	0	0
50 - 54 years	6	11	4	19	6	11	1	0	0	0
55 - 59 years	1	10	1	8	17	59	8	0	0	0
60 - 64 years	1	2	2	6	5	71	9	0	0	0
65+ years	0	1	0	1	1	24	3	0	0	0

Figure 4-2 NZAS employee workforce - age and years of employment

A breakdown of the workforce's age and skilled work status as indicated by employee category is provided in Figure 4-3. Almost two thirds (65.8%) of the roles in the NZAS workforce require no formal education.



Source: Rio Tinto, 2020

Skilled and unskilled employees were calculated through an assumption of the qualifications required for each global employee category: Skilled global employee categories: trades, technical, supervisor, superintendent, specialist, senior manager, professional, principal, manager, and graduate; Unskilled global employee categories: administrator, intern, apprentice, operator, and supervisor

Figure 4-3 NZAS employees workforce - age and skill required for current role

4.2 Economic contribution

NZAS' current economic contribution to Southland region can be measured through:

- Direct and indirect industry expenditure on purchases of goods and services from local businesses
- Direct and indirect jobs in the region
- Direct and indirect employment and salaries
- Direct and indirect community contributions made via community investment programmes.

NZAS' total economic contribution to Southland region in 2019 is shown in Table 4-2.

Table 4-2 Summary of NZAS' total economic contribution to the Southland region, 2019

Categories of NZAS spend	Direct expenditure in 2019	Direct Value Add 2019	Indirect value add in 2019	Total value add in 2019	% of direct expenditure to Southland region GDP
Industry expenditure	\$58,618,576	\$24,212,456	\$41,245,726	\$65,458,182	0.38%
NZAS employee expenditure from salaries spent in Southland	\$43,649,180 (indicative average annual expenditure of \$59,711)	\$23,443,090	\$29,846,735	\$53,289,825	0.36%
NZAS contractor expenditure from salaries spent in Southland	\$13,673,819 (indicative average annual)	\$7,333,972	\$9,337,298	\$16,671,271	0.12%

	expenditure of \$59,711)				
Community contributions	\$48,373.75	n/a	n/a	n/a	n/a
Total spend	\$115,989,949	\$54,989,518	\$80,429,759	\$135,419,278	00.86%
Employment	732 employees plus 229 contractors	n/a	1,281 (663 FTE from direct expenditure and 619 from indirect expenditure)	n/a	2.3%
Number of businesses	204	n/a	n/a	n/a	1.45%

Source: GHD based on data provided by NZAS and IO Model

Note: Direct expenditure and indirect value add do not sum. This is because the direct expenditure reflects the actual value of purchases made within the economy, whereas the indirect value add and total value add values reflect the contribution to gross regional product.

Note: due to the types of community contributions made by NZAS in 2019, comprising of scholarships, awards and prizes, it is difficult to estimate the indirect impacts of these community contributions. In addition, due to the smaller value of community contributions compared to industry expenditure and employee expenditure, the indirect values of community contributions are likely to be small when compared to the other expenditure by NZAS in the region

Anecdotal evidence through the SEIA consultation 2020 and the average annual individual salary data in section 3.5.2 compared with average salary in Table 4-2 shows that NZAS pays higher than average wages to its employees in the region.

NZAS contributed a total of \$115,968,535 to the regional economy in 2019, and as shown in Table 4-3, the majority of this (\$112,598,836 or 97%) was spent in Invercargill City, with over half spent on industry expenditure, and just under half spent on wages. NZAS did not contract to any businesses in Southland District in 2019.

Table 4-3 Summary of NZAS' direct economic contribution to Territorial Authorities within the Southland region, 2019

Categories of NZAS spend	Invercargill City	Southland District	Gore District
Industry expenditure	\$58,352,751	0	\$265,826
NZAS employee expenditure from salaries spent in Southland	\$41,260,716	\$2,328,752	\$59,712
NZAS contractor expenditure from salaries	\$12,936,995	\$715,410	\$0

Categories of NZAS spend	Invercargill City	Southland District	Gore District
spent in Southland			
Community contributions	\$48,373.75	n/a	n/a
Total spend	\$112,598,836	\$3,044,162	\$325,538
Direct Full time equivalent (FTE)	694 employees plus 217 contractors	37 employees plus 12 contractors	1 employee
Indirect employment	1,239 (637 FTE from direct expenditure and 602 from indirect expenditure)	39 (24 FTE from direct expenditure and 15 FTE from indirect expenditure)	4 (2 FTE from direct expenditure and 2 FTE from indirect expenditure)
Number of Businesses	200	0	4

Note: this table includes sensitive information and caution should be taken if sharing this information outside of NZAS
Note: Direct expenditure and indirect value add do not sum. This is because the direct expenditure reflects the actual value of purchases made within the economy, whereas the indirect value add and total value add values reflect the contribution to gross regional product.

Source: GHD based on data provided by NZAS and IO Model

4.2.1 Detailed summary of economic contribution to each Territorial Authority

As shown in Table 4-4, NZAS contributed a total of \$65,163,697 to Invercargill City in direct and indirect industry expenditure value add in 2019. Total direct and indirect salary expenditure in 2019 was \$66,321,081 (comprised of \$50,523,414 from employee and \$15,797,667 from contractors). In total, \$131,484,778 direct and indirect value was spent in Invercargill City in 2019.

Table 4-4 Summary of NZAS' economic contribution to Invercargill City, 2019

Categories of NZAS spend	Direct expenditure in 2019	Indirect value add in 2019	Total value add in 2019
Industry expenditure	\$58,352,751	\$41,039,868	\$65,163,697
NZAS employee expenditure from salaries spent in Southland	\$41,260,716	\$28,297,314	\$50,523,414
NZAS contractor expenditure from salaries spent in Southland	\$12,936,995	\$8,848,007	\$15,797,667
Community contributions	\$48,373.75	n/a	n/a
Total spend	\$112,598,835.75	\$78,185,189.00	\$131,484,778.00
Direct Full time equivalent (FTE)	694 employees plus 217 contractors	1,239 (637 FTE from direct expenditure and 602 from indirect expenditure)	n/a
Number of Businesses	200	n/a	n/a

Note: this table includes sensitive information and caution should be taken if sharing this information outside of NZAS

Note: Direct expenditure and indirect value add do not sum. This is because the direct expenditure reflects the actual value of purchases made within the economy, whereas the indirect value add and total value add values reflect the contribution to gross regional product.

Source: GHD based on data provided by NZAS and IO Model

The total direct and indirect spend in Southland District in 2019 was \$3,567,215 of which \$2,693,611 accounted for salary expenditure from NZAS employees and \$873,604 from salary expenditure from NZAS contractors. NZAS did not engage any businesses from Southland District in 2019 (Table 4-5).

Table 4-5 Summary of NZAS' direct economic contribution to Southland District, 2019

Categories of NZAS spend	Direct expenditure in 2019	Indirect value add in 2019	Total value add in 2019
Industry expenditure	\$0	\$0	\$0
NZAS employee expenditure from salaries spent in Southland	\$2,328,752	\$1,508,646	\$2,693,611
NZAS contractor expenditure from salaries spent in Southland	\$715,410	\$489,291	\$873,604
Community contributions	n/a	n/a	n/a
Total spend	\$3,044,162	\$1,997,937	\$3,567,215

Categories of NZAS spend	Direct expenditure in 2019	Indirect value add in 2019	Total value add in 2019
Employment	37 employees plus 12 contractors	39 (24 FTE from direct expenditure and 15 FTE from indirect expenditure)	n/a
Number of Businesses	0	n/a	n/a

Note: this table includes sensitive information and caution should be taken if sharing this information outside of NZAS

Note: Direct expenditure and indirect value add do not sum. This is because the direct expenditure reflects the actual value of purchases made within the economy, whereas the indirect value add and total value add values reflect the contribution to gross regional product.

Source: GHD based on data provided by NZAS and IO Mode

The total direct and indirect spend in Gore District in 2019 was \$367,285 which primarily accounted for industry expenditure as NZAS employed one person in Gore District in 2019 (Table 4-8).

Table 4-6 Summary of NZAS' direct economic contribution to Gore District, 2019

Categories of NZAS spend	Direct expenditure in 2019	Indirect value add in 2019	Total value add in 2019
Industry expenditure	\$265,826	\$205,858	\$294,484
NZAS employee expenditure from salaries spent in Southland	\$59,712	\$40,774	\$72,800
Community contributions	n/a	n/a	n/a
Total spend	\$325,537	\$246,632	\$367,285
Employment	1	4 (2 FTE from direct expenditure and 2 FTE from indirect expenditure)	n/a
Number of Businesses	4	n/a	n/a

Note: this table includes sensitive information and caution should be taken if sharing this information outside of NZAS

Note: Direct expenditure and indirect value add do not sum. This is because the direct expenditure reflects the actual value of purchases made within the economy, whereas the indirect value add and total value add values reflect the contribution to gross regional product.

Source: GHD based on data provided by NZAS and IO Model

4.2.2 Change in contribution to the Southland region over time

As discussed throughout this report, there have been several studies in the past to understand NZAS' economic and social contributions to the Southland region. A review of the findings of these studies demonstrates that NZAS' total contribution to Southland's GDP and economy has reduced over time, from 18% in 2005 to 6.0% in 2019 (Table 4-6). Although caution should be taken when comparing the findings of these studies given they have been prepared by different authors and methodologies are likely to vary somewhat, however the reduction in NZAS' contribution to GDP does reflect the findings in section 3.5.1 which demonstrates that the manufacturing industry's contribution to the regional GDP has reduced over time, and that of other sectors have experienced growth.

Table 4-7 Indicative summary of NZAS contribution to the Southland region 2005, 2012, 2017, 2019

Categories of NZAS spend	2005	2012	2017	2019
Total contribution to Southland GDP	18%	10%	5.6% (2016)	6.0%
Total contribution to Southland region economy (direct and indirect)	\$500 million	\$460 million	\$287 million	\$385.4 million
Direct FTE employment	792	750	642 (plus 142 FT contractors)	732 employees plus 229 contractors
Total direct and indirect employment	2,600	3,200	1,870	1,281 (663 FTE from direct expenditure and 619 from indirect expenditure)

Source: Infometrics & Business Training Services, Southern Institute of Technology. (2005). Assessment of the Economic and Social Impacts of Tiwai Point Aluminium Smelter on the Southland Economy; Infometrics Ltd. (2012). Estimation of the Economic Impacts of the Tiwai Point Aluminium Smelter of the Southland Economy; Venture Southland. (2017). The New Zealand Aluminium Smelter Social and Economic Impact Study November 2017; GHD based on 2019 data provided by NZAS and IO Model (2020).

4.3 NZAS contribution to regional demographic profile

Of the total 751 employees and 235 contractors (986), 961 (97%) live in the Southland region, with 694 employees and 217 contractors (911) living in Invercargill, and 37 employees and 12 contractors (49) living in Southland District and 1 in Gore District. The I/O model estimates there are 663 FTE indirect jobs created by business and employee and contractor spending by NZAS.

An estimate of the total population (i.e families) related to NZAS direct and indirect employees and contractors living in the Southland region is shown in Table 4-8 based on the average household size for Invercargill City, Southland District and Gore District⁵. The indirect employment has been estimated by the I/O model and includes the jobs that can be attributed to NZAS spend with its suppliers⁶.

The total NZAS-related population in Southland is estimated to be 3,903 people, as shown in Table 4-8. The majority of this population live in Invercargill City (3,715 people), followed by Southland District (183 people) and Gore District (5 people).

⁵ Average household size was not available for 2018 census at the time this report was prepared.

⁶ The I/O model also estimates flow on employment resulting from expenditure of NZAS' suppliers through their own supply chain. However this has not been included for the purpose of estimating the population most related to NZAS.

Table 4-8 Estimate of NZAS related population in the Southland region

Local government area	Number of employees and contractors	Indirect FTE*	Total direct and indirect FTE	Average household size (people)	Total NZAS related population
Invercargill City	694 employees + 217 contractors = 911	637	1,548	2.4	3,715
Southland District	37 employees + 12 contractors = 49	24	73	2.5	183
Gore District	1 employee (no contractor)	1	2	2.4	5
Total	732 employees + 229 contractors = 961	663	1,623		3,903

The NZAS related population comprise approximately 4.0% of the Southland region's population, as shown in Table 4-9. While the NZAS related population make up only 0.6% of Southland District's population and 0% of Gore District's population, they comprise 6.9% of Invercargill City's total population.

Table 4-9 NZAS related population as a proportion of total population within study area

Location	Total population (2018)	Total NZAS related population	NZAS related population as
Invercargill City	54,204	3,715	6.9%
Southland District	30,864	183	0.6%
Gore District	12,396	5	0.0%
Southland Region	97,467	3,903	4.0%

4.4 NZAS and local businesses

NZAS made purchases at 204 businesses within the Southland region in 2019, with 200 of these based in Invercargill City and four based in Gore District (Table 4-10). Based on the NZ Stats Business Demographic Statistics, there were a total of 14,088 businesses in the Southland region, which means NZAS made purchases at approximately 1.45% of Southland's total businesses in 2019.

Overall, NZAS made the largest contributions to the Southland region industries of manufacturing (\$17.86 million); construction (\$14.73 million), transport, postal and warehousing (\$7.58 million), and professional, scientific and technical services (\$6.73 million). When considering New Zealand as a whole, industries which have the highest contributions are:

- Manufacturing - \$37.73 million
- Professional, scientific and technical services - \$65.13 million
- Electricity, Gas, Water and Waste Services - \$278.71 million.

Table 4-10 NZAS business expenditure by industry, 2019 (\$M)

Industry (\$M)	Invercargill City	Gore District	Southland District	Southland Region	New Zealand
Agriculture, Forestry and Fishing	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Manufacturing	\$17.81	\$0.05	\$0.00	\$17.86	\$37.73
Construction	\$14.51	\$0.22	\$0.00	\$14.73	\$15.99
Transport, postal, and warehousing	\$7.58	\$0.00	\$0.00	\$7.58	\$14.53
Rental, hiring, and real estate services	\$0.53	\$0.00	\$0.00	\$0.53	\$1.14
Health care and social assistance	\$0.31	\$0.00	\$0.00	\$0.31	\$0.73
Retail trade	\$0.00	\$0.00	\$0.00	\$0.00	\$0.05
Information media and telecommunications and other services	\$0.02	\$0.00	\$0.00	\$0.02	\$0.10
Professional, scientific, and technical services	\$6.73	\$0.00	\$0.00	\$6.73	\$65.13
Education and training	\$0.69	\$0.00	\$0.00	\$0.69	\$0.75
Wholesale trade	\$5.09	\$0.00	\$0.00	\$5.09	\$27.43
Financial and insurance services	\$2.59	\$0.00	\$0.00	\$2.59	\$0.24
Public administration, defence, and safety	\$0.85	\$0.00	\$0.00	\$0.85	\$2.84
Accommodation and Food Services	\$0.00	\$0.00	\$0.00	\$0.00	\$0.93
Administrative and support services	\$0.01	\$0.00	\$0.00	\$0.01	\$0.42
Electricity, Gas, Water and Waste Services	\$1.51	\$0.00	\$0.00	\$1.51	\$278.71
Other Services	\$0.20	\$0.00	\$0.00	\$0.20	\$0.90
Total Spend by Industry	\$58.35	\$0.27	\$0.00	\$58.62	\$447.62

SEIA consultation in 2020 involved interviews with eight businesses who supply goods and services to NZAS. These included engineering and manufacturing businesses, recruitment, recycling and wholesale. Many of these businesses were local businesses, and had been established to support NZAS. Overall, these businesses reported a high level of reliance on NZAS for the business income.

Businesses that contract to NZAS have been consulted in the past to inform previous investigations into the potential closure of NZAS. Most recently, Venture Southland (now known as Great South) surveyed 52 businesses that contracted to NZAS in 2017. These businesses provided 95% of NZAS' goods and services at that time. Of those businesses, 50% were wholly based in Southland, and a further 21% had their head office in Southland. In terms of the amount of business income related to NZAS, the survey found:

- 54% of businesses attributed 1 to 25% of business to NZAS
- 17% attributed 26 to 50% to NZAS
- 8% attributed 51 to 75% to NZAS
- 12% attributed 76 to 100% to NZAS

Prior to the 2017 study, suppliers were also surveyed in 2012 and interviewed in 2005.

4.5 NZAS and community infrastructure

As discussed in section 3.3.2, NZAS makes direct and indirect contributions to community infrastructure in Southland Region. NZAS direct contributions comprise sponsorships, donations and in-kind contributions in line with the *Draft Communities and Social Performance Plan 2020*. The plan identifies an annual budget of \$50,000, and in 2019 NZAS made \$48,373.75 in direct community contributions (Table 4-2). The inclusion of in-kind support took the total NZAS 2019 community investment through sponsorships, donations and in-kind contributions to \$54,124.

NZAS community contributions range from multi-year partnerships (e.g. Te Hipoki Iti, an Indigenous tree planting programme) to small cash contributions each year (e.g. academic prizes for end of year senior award ceremony at local high schools). Table 4-11 details the recipients of community funds from NZAS as outlined in the *Draft Communities and Social Performance Plan 2020*.

As discussed in section 3.3.2, NZAS also contributes indirectly to regional community infrastructure through the workforce and their families using services and facilities and as members or volunteers of organisations, including as board members. As discussed in section 4.3, the majority of NZAS' workforce lives in Invercargill City, and it is estimated that around 1,627 people or 3% of Invercargill City's population are associated with NZAS. Given the size of Invercargill City and the range of services and facilities available, it is likely the NZAS population are accessing a variety of community infrastructure. The NZAS population also accesses flights through Invercargill Airport.

NZAS has a direct connection to South Port New Zealand Ltd which owns the port and causeway at Tiwai wharf/ causeway. A third of South Port's business can be attributed to NZAS (SEIA consultation 2020).

Other connections NZAS has to community infrastructure (e.g. training providers) is discussed in section 3.3.2.

Table 4-11 Recipients of NZAS community contributions

Category	Name of organisation / service	Description of connection to NZAS	Amount and/or type of contribution
Education	Southland Girl's High School	Education partnership programme (in-kind) – each year four top Year 13 students visit NZAS for six days to carry out engineering/science projects	In kind support
	South Pacific Indigenous Engineering Students (SPIES)	Sponsor of programme to support Māori and Pacific Island engineering students at Auckland University	\$6,000 (2020)
	Southland Science & Technology Fair	Naming rights sponsor of annual Southland Science & Technology Fair. NZAS has members on the organising committee and also provides the majority of the judges	\$7,000 (2020)
	Graeme Dingle Foundation Southland	Kiwi Can programme sponsorship (final year in 2020)	\$10,000 (commitment to 2020)
	Community tertiary scholarships	Six scholarships given each year to Southland students who will be undertaking tertiary student outside the region	\$12,000
Environment	Te Hipoki Iti	Partnership with Department of Conservation, Great South and Awarua Rununga	\$41,000 (2019 – 2022)
Annual sponsorship	Invercargill City Libraries	Cash donation for Annual Home Services Christmas Party	\$500
	Southland Environment Awards	Cash donation for sponsorship of Environmental Action in the Community category	\$1,000
	Southland Chamber of Commerce	Bronze level sponsorship of TradeQual event	\$1,000

Category	Name of organisation / service	Description of connection to NZAS	Amount and/or type of contribution
End of year prizes for education institutions	Southern Institute of Technology	Cash donations for top team project prize (Year 3 Bachelor of Information Technology) and top student (Certificate in Mechanical Engineering Semester 2)	\$300
	Otago University	Cash donation for chemistry prize	\$500
	Auckland University	Cash donations for prizes: Masters prize in Engineering Undergraduate prize in Chemical Engineering Undergraduate prize in Electrical Engineering	\$2,000
	Canterbury University	Cash donations for prizes: Chemical & Process Engineering Electrical & Electronic Engineering Mechanical Engineering	\$1,500
	James Hargest College Southland Boys' High School Verdon College Southland Girls' High School Aurora College	Cash donation to end of year senior award ceremony prize	\$400

4.6 NZAS and community values

NZAS is widely recognised for its contribution not only to Southland Region's economy, but also to the community more broadly. Overall, regional communities, particularly in Invercargill and Bluff, take great pride in their association with NZAS. A summary of outcomes from SEIA consultation which demonstrate this community sentiment is provided below:

- NZAS is viewed as a good employer which offers higher incomes, stable and long term employment, and opportunities for learning and development. NZAS is also recognised as the largest employer in the region providing direct employment and income for many regional residents, and indirect employment through its suppliers.
- Many stakeholders were proud to say that NZAS produces aluminium that is 'the purest in the world'.
- While recent environmental issues⁷ were raised during some discussions, most stakeholders felt that NZAS was committed to environmental sustainability and had a strong sustainability record, particularly due to the site being powered by hydro-electricity which allows NZAS to have a low carbon footprint (NZAS, 2017).
- Several stakeholders also recognised the contribution of NZAS to learning and development of the region's young people, both through apprenticeships and traineeships taken up at NZAS and its suppliers, as well as for students from Southland Girl's High School through the partnership programme (refer to section 4.5).

4.7 NZAS contribution to vulnerable groups

NZAS supports Southland residents with disability who are employed by Southland Disability Enterprises (SDE). SDE is predominantly a recycling business located in Invercargill, which employs people with disability for sorting recycling material for various businesses across the Southland region. In addition to its contract with NZAS, SDE have contracts with the three Territorial Authorities in Southland (Invercargill City Council, Southland District Council and Gore District Council), and around 60 businesses in the region. SDE employs 100 people, of these around 80 have an intellectual disability.

SDE has had a contract with NZAS for around 30 years. A team of about 12 SDE employees (including about 10 people with disability and 2 mainstream workers) work onsite at NZAS and primarily clean respirators, as well as make wooden corner boards and broom handles. SDE employees who work at NZAS are proud of the work they do and enjoy the tasks which are good for dexterity using mathematical skills (SEIA consultation 2020). Approximately 10% of SDE's total income is from NZAS.

⁷ In February 2020, floods in the Southland town of Mataura came close to buildings which stored ouvea premix waste from NZAS, leading to media attention and community concern about potential environmental impacts (Young, 2020).

5. Conclusions

5.1 Key findings

Key findings of the socio-economic baseline are outlined below:

- Southlanders enjoy a predominantly rural and affordable lifestyle, with access to stable employment opportunities, and feel a strong connection to the region and the community.
- Invercargill is the region's civic, commercial and service hub, and the City hosts around half of the region's population and most of the regional services and infrastructure. Invercargill City is more culturally diverse than other parts of the region, including a higher proportion of Māori residents compared to the national average, with most based in Bluff.
- Like many regional areas, Southland's population is projected to decline, and the region has an older age profile compared to New Zealand as a whole. Stakeholder consultation indicates that young people often leave the region for further education and employment opportunities. While the region overall has lower levels of educational attainment, there are higher proportions of students who studied at an institute of technology and polytechnic, which is reflective of the tertiary education opportunities available in the region, specifically SIT as well as employment opportunities available in the region in manufacturing.
- Southland region is primarily an agricultural region, with a solid manufacturing industry which is underpinned by NZAS and dairy and meat processing. The region has generally had lower unemployment rates compared to the national average, while income levels are generally consistent with New Zealand throughout the region. The region has a high number of people employed as labourers, and together with the region's lower educational attainment rates, the region has a large proportion of unskilled workforce, particularly in the manufacturing industry. Lower education, lower skill levels, housing tenure and age are identified as some of the key vulnerabilities in the region.
- Several industries have been identified as economic opportunities for the Southland region. These include aquaculture, tourism and international education. Each one of these opportunities are at different stages of development, and various socio-economic and political factors, including the current COVID-19 pandemic, will influence the ability of these sectors to grow.
- Having operated in the region for 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. The NZAS workforce mostly live in Invercargill and Southland District, and many are older workers who have been employed at NZAS for over twenty years.
- NZAS also contributes to the region and particularly Invercargill through direct community contributions to community infrastructure and organisations, and indirectly through its workforce and families who access regional infrastructure and are members of organisations. NZAS also supports vulnerable community members through its contract with Southland Disability Enterprises.

5.2 Dependency analysis

As a foundation for assessing impacts of the smelter's closure on social indicators and stakeholders, the baseline concludes with a high level understanding of their dependence on NZAS. As discussed in section 2.7, the methodology applied is a subjective and qualitative analysis using a traffic light system of rating ranging between high, medium and low levels of dependence. The application of this scale is based on the professional judgment of the SEIA

team based on information available at the time of the preparation of the report. The dependency analysis has been developed based on the information gathered for this report during March – April 2020 and presented in Table 5-1.

Table 5-1 Social dependency analysis

Indicators/ Stakeholders	Description of dependence	Level of dependence
Demographics		
Population base in study area	<p>Through the direct NZAS jobs and contractors hosted in the study area, it is estimated that approximately 2,311 people (2.4% of population) in the Southland region (2,186 number, 4% in Invercargill) are directly associated with NZAS. Further a total direct and indirect population associated with NZAS includes 3,903 people, 4.0% of population in the Southland region; 3,715 people, 6.9% in Invercargill City.</p> <p>In addition to this, it is anticipated that an equal or higher proportion of the population in Southland mainly in Invercargill would be indirectly involved with NZAS through the second and third order contracts and businesses that service NZAS.</p>	High to Medium
Economic		
Local economy	Consistently over the last 15 years NZAS has contributed 18% in 2005 to 6.0% in 2019 of the Southland region's GDP. In addition there are a number of manufacturing businesses that support NZAS operation, that together maintain manufacturing as the second largest industry in the region.	Medium to Low
Local employment	<p>Largest single employer in the region, approximately 3% of total jobs in Invercargill.</p> <p>However, when both direct and indirect jobs generated by NZAS are considered, it is estimated that the region has especially the communities of Invercargill and Bluff, a high dependence on NZAS</p>	Medium to Low
Local businesses contracted to NZAS	As the smelter is one of its kind in the country and the region, it is anticipated that most businesses contracted directly or indirectly to NZAS would be providing those types and volume of services only for the smelter.	High to Medium
Other local businesses in Invercargill	Businesses in Invercargill that cater to high income earners or rely on the spending of disposal income would have a high dependence on NZAS employees as they are paid higher wages than average wages in the region. These would include retail, restaurants, entertainment, travel, etc.	High

Indicators/ Stakeholders	Description of dependence	Level of dependence
	Other general businesses in town catering to general population including NZAS related population.	Medium to Low
Utilities		
Power (PowerNet)	Domestic power supply in the region is independent of power supply to NZAS	No dependence
Housing and accommodation		
Residential properties	<p>Based on the number of NZAS direct employees and contractors residing in the study area, it is anticipated that if each employee and contractor with their families occupied one dwelling, then approximately 1,051 dwellings in Southland Region, 911 dwellings in Invercargill (4.29% of the dwelling stock in Invercargill) would be occupied by direct NZAS employees and contractors.</p> <p>It is also understood that some employees from other parts of the region/country rent a house in Invercargill for living during their roster days on.</p> <p>It is estimated that an equal or more number of houses in Invercargill would be occupied by persons indirectly employed by NZAS and businesses that contract to NZAS.</p>	Medium
Commercial/industrial properties	204 businesses which is 1.45% of total businesses in the region (mostly based in Invercargill) are contracted by NZAS and occupy some kind of commercial/industrial premises in town. Similarly businesses that indirectly service NZAS or their contractors also occupy commercial/industrial premises in town.	Low in general but High for industrial use properties
Accommodation	The dependence of accommodation facilities on NZAS was not clearly understood.	Not understood
Emergency services		
Fire and Emergency NZ (FENZ)	These services are provided as part of service to the Invercargill City. There is an MOU between NZAS and FENZ by which the services are supported by NZAS to respond to certain emergencies and provision of equipment.	Low
Police	These services are provided as part of service to the Invercargill City are not dependant on NZAS.	No dependence
Education		
Schools	There are a number of primary and secondary schools in Invercargill and it is anticipated that the NZAS related spread throughout the city and access various schools throughout the towns. As such there	No dependence

Indicators/ Stakeholders	Description of dependence	Level of dependence
	<p>is no dependence of NZAS related population on any one particular school.</p> <p>It was noted that the Southland Girls' High School (SGHS) in Invercargill has approximately one-third enrolments of children whose parents are employed directly at NZAS and potentially more whose parents would be indirectly employed by NZAS. NZAS annually sponsors student academic prizes for the Southland Girls' and Boys' High Schools. Four Year 13 SGHS students carry out engineering/science projects at NZAS site.</p>	Medium
SIT	<p>NZAS offers internship and training programmes and offers job prospects for students at SIT.</p> <p>NZAS annually sponsors student academic prizes for the Top Team Project Year 3 Bachelor of Information Technology.</p>	Medium to Low
Employment and Training		
SDE	NZAS is one of the main employers for SDE. They also provide direct and indirect waste recycling contracts.	High
Enterprise Recruitment	Recruits short term, part time and casual workers for NZAS, often these workers end up getting full time work opportunities at NZAS. They also provide services to other industries in the region.	Medium
Southern Group Training Trust	Provide apprentices to NZAS .	Medium
Sport and Recreation		
Clubs and societies	It is anticipated that the population base directly and indirectly associated to NZAS take up memberships and volunteering at the local sports and recreational clubs, particularly the direct employees due to the family friendly rosters and shifts at NZAS.	No possible to assess dependence at an aggregate level
Connectivity		
Airport	The passenger services to some extent rely on disposable income of the community (NZAS employees have higher income than average) and NZAS work related (direct and indirect) demand.	Medium to Low
Ports	NZAS have their own shipping facility independent of the port (the smelter leases the Tiwai wharf from South Port New Zealand Ltd).	Low to Medium

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Appendices

Appendix A – Key findings of SEIA stakeholder consultation

Overview of the SEIA stakeholder consultation

The SEIA consultation focused on understanding the baseline conditions, social and economic contribution of NZAS, regional socio-economic dependency on NZAS and impacts of the closure of NZAS. The SEIA consultation was undertaken from 10 to 19 March 2020. A total of 33 one on one meetings were held which were attended by approximately 70 representatives from the following stakeholder groups:

- Regional development agencies
- Political leaders
- Local government
- Local businesses contracted to NZAS
- Local service providers with direct or indirect relationship to NZAS
- NZAS staff
- Local Indigenous community

Key themes

The key issues that may arise as a result of the closure of the smelter identified during the SEIA consultation, are categorised into the following themes:

- Overall sentiment about closure of the smelter
- Overall perceptions about NZAS
- Regional economic development – direct and indirect
- Local and regional employment – direct and indirect
- Local and regional business/procurement – direct and indirect
- Local and regional population change– direct and indirect
- Local housing and accommodation – direct and indirect
- Community values (Identity, cohesion)
- Community services
- Community investment – by NZAS and overall
- Cultural / Indigenous community
- Connectivity
- Other industries
- Future regional development opportunities
- NZAS Legacy

Table A1 Issues and opportunities noted

Themes	Stakeholder views - Issues and opportunities	Quotes
Overall sentiment about closure of the smelter	<p>Strong stakeholder sentiment:</p> <ul style="list-style-type: none"> • A strong sense of hope that Tiwai would/should continue to operate • Closure of NZAS will be detrimental to Invercargill and Southland region • Anger towards central government around inability to support the continuation of NZAS • The resolution of the problem lies in the hands of the government around the price of electricity. 	<p>‘Don’t want to see them go’</p> <p>‘Closure is not an option’</p> <p>‘There is no Invercargill without Tiwai’</p> <p>‘Very very detrimental to Southland, the effects of closure are not being considered fully. We have a very angry and upset community’ (anger towards national government)</p> <p>‘Will be sad for New Zealand to lose a smelter and a whole industry of that reputation’.</p> <p>‘We want them to stay’</p> <p>‘Sad to see them go’</p> <p>‘Let’s fight for it first, then prepare for its closure’</p> <p>‘They have been there forever, it will be a sad day when they announce closure’.</p>
Overall perceptions about NZAS	<ul style="list-style-type: none"> • The community is very proud of NZAS and its reputation of ‘purest aluminium producer in the world’. • NZAS is part of Invercargill’s identity. • NZAS is an integral part of Invercargill community and Southland’s economy. • There is a strong recognition that the lifestyle in Invercargill is a result of the higher wages paid by NZAS. • There is a high reliance of the Southland economy on NZAS (on a scale of 1 to 10, most stakeholders thought that the community reliance on NZAS is around 8-9). • All stakeholders had high regard and respect for the senior management at NZAS. 	<p>‘Lots of it (contribution by the smelter) isn’t necessarily quantifiable’</p> <p>‘What’s at the core of Invercargill and Bluff, Tiwai is very important for opportunities for people, it is knitted into the fabric of Invercargill’.</p> <p>‘Very proactive in local activities e.g. decarbonizing local region, conservation and education, very low carbon emissions’.</p> <p>‘From a global lens aluminium is infinitely recyclable, it’s a circular</p>

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		<p>economy, also this one is a clean refinery, we would want to save it'</p> <p>Have been responsible corporate citizen</p>
Impacts to regional economic development – direct and indirect	<ul style="list-style-type: none"> • There will be a reduction in the regional GDP contribution of the region. • The local engineering and manufacturing industry and several small businesses would reduce in size or close. • Indirect and flow on impacts to the economy would be far greater than the direct impacts. • The regional economy will take a strong hit at closure of NZAS and it will continue to decline over a period of time. 	'We and the whole town are beneficiaries of the wealth accumulated in town due to NZAS, the impact of closure will be a significant, catastrophic'
Impacts to local and regional employment – direct and indirect	<ul style="list-style-type: none"> • Loss of a large number of local jobs which includes direct employees, contractors at NZAS as well as indirect jobs such as employees of businesses that provide goods and services to NZAS if these businesses downsize or close. • Over a period of time as the economy shrinks after closure of NZAS, more job losses will be experienced as other businesses in town that rely on the disposable income generated by NZAS is no longer available. 	<p>'Its very hard to understand impacts on jobs – they will be significant or profound impacts'.</p> <p>"Tiwai has been good investor in skills development, uses same inputs as other smelters around Australasia but produces purest aluminium, they have a highly skilled workforce".</p>
Local and regional business/procurement – direct and indirect	<ul style="list-style-type: none"> • Businesses that contract to NZAS would reduce in size or close. 	-
Local and regional population – direct and indirect	There would be a significant direct and indirect decline in population, as people who lose jobs would leave the region with their families to pursue other employment/income generating opportunities.	<p>'The region will halve in size'.</p> <p>'We will lose 2000 – 3000 people across the region'</p> <p>'Without Tiwai, it will be a ghost town, we have the plant, we have electricity, can they (politicians) sort their shit out, so they</p>

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		(NZAS) can keep doing what they are doing’.
Local housing and accommodation – direct and indirect	<ul style="list-style-type: none"> • Reduction in property values • Increase in housing vacancy • Mortgage stress for people who may lose their jobs • Currently the supply cannot meet demand, there is potential that this would change • Demand for tourism accommodation facilities would reduce. 	-
Impacts on community wellbeing and values (Identity, cohesion)	<ul style="list-style-type: none"> • Potential mental health impacts – stress, anxiety, depression due to anticipation of closure of NZAS, loss of jobs and income. Most NZAS workers have been there for a long time and do not have skills to work elsewhere, loss of emotional ties with other co-workers, friends and members of the community. • Decline in and closure of sports and recreational clubs in town, leading to further depletion of community networks and emotional ties. • Decline in community volunteers and services that are supported and run due to volunteers. • Loss of pride in the identity of Invercargill and Bluff as industrial towns that produce the world’s purest aluminium. • Potential increase in domestic violence and crime in the community as a result of economic decline. • The health insurance provided by NZAS for workers and their families will be lost, which means people wont be able to afford health care and these services in town may close. 	‘We will be nothing on the map’
Community services	The decline in population will result in reduction in demand for schools, vocational education (e.g. SIT), health services, and other services that are based on population numbers.	-

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Community investment – by NZAS and overall	<ul style="list-style-type: none"> Overall there will be a reduction in community investment in Invercargill. Direct loss of community investment by NZAS such as the scholarship programme. The investment in the city centre re-development will continue on but may slow down as not all of the funding for the re-development is currently secure. The operation and occupancy of the centre would be challenging due to decline in the local population and economy. 	Once people know that this is a declining economy, community overall interest in investment dies down (<i>this is paraphrased, not a direct quote</i>).
Cultural / Indigenous community	NZAS has a close relationship with the Iwi, for environmental management issues as well as good stakeholder relations. There are cultural heritage sites at Tiwai Peninsula. Several members of the Iwi work at the smelter, if the smelter closed, people would move away from living on their land. The smelter supports a lot of jobs and businesses, as well as families of employees and contractors	The Iwi are strong supporters of Tiwai. If the smelter closed, we would need to build our (Iwi community) resilience
Connectivity	The road, air and port services will continue to offer the current level of connectivity to Southland. However over time, there may be a reduction in the number of flights due to reduced demand if the population declines.	-
Other industries	Engineering, manufacturing, retail, restaurants and tourism industries will be impacted due to population decline and decline in the regional economy.	-
Future regional development opportunities	<p>A number of future regional development opportunities were mentioned by the stakeholders, such as:</p> <ul style="list-style-type: none"> Tourism Aquaculture Ideas for alternate use of the site such as silica processing, data farming centres, hydrogen plant Agriculture, dairy, meat <p>However it was also mentioned that other than agriculture, meat processing and fertilizer industries, all other future regional</p>	

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	development ideas are not mature or are uncertain, and would need lead time and background preparation to come to fruition.	
NZAS Legacy	<p>It was noted to be very difficult for all stakeholders to respond to questions on the legacy of NZAS, mainly because they had not thought that far regarding the closure of the smelter and because there is a strong hope that the smelter would not close. Despite this, some suggestions were made which are summarised below:</p> <ul style="list-style-type: none"> • Investment in training and scholarships – <ul style="list-style-type: none"> – continue with the scholarship programme for girls in engineering – Engineering centre at the SIT – Leave behind parts of the smelter site and convert it into a training centre • Investment in research and development programmes for other industries in the region • Support the development of another industry in the region, reuse the site for another industry • Support programmes for upskilling/retraining of existing smelter workforce • Positive environmental legacy by managing the current waste issue • Positive environmental legacy by appropriate site rehabilitation and restoration as per legislative requirements – return land to its original form. • Create memorabilia, such as: <ul style="list-style-type: none"> – make a film about the smelter – coffee table book – museum exhibit to tell the story of the smelter and aluminium • Electricity re-distribution • Opportunities for local businesses through the demolition and rehabilitation phase 	<p>‘It’s a hard question’</p> <p>‘Not sure’</p> <p>‘Don’t know’</p> <p>‘Not thought about it’</p> <p>‘We hope rest of the conditions around it change so it (the smelter) is viable for longer’</p> <p>‘Return the land to its original form’</p> <p>‘No expectation really, they have contributed a lot, for a long time’</p> <p>‘They don’t have to leave anything’</p> <p>‘No one has worked it out really, what it will be like if Tiwai were not there’</p> <p>‘It is hard to know what it will be until it actually happens’</p> <p>‘The legacy question is a very difficult question; we first need to get past the anger (caused because of circumstances that have lead Tiwai to consider closure)’.</p> <p>‘Difficult to talk about legacy, people don’t know what to expect’</p>



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