

A worker in safety gear, including a hard hat and safety glasses, is shown in profile on the right side of the image, looking out over a large body of water. The sun is setting or rising in the distance, creating a bright reflection on the water's surface. The sky is a mix of orange and blue, suggesting a clear evening or morning. The worker's gear includes a hard hat with a light and a safety vest with reflective stripes. The overall scene is serene and professional.

RioTinto

Detailed Site Investigation at Tiwai Point

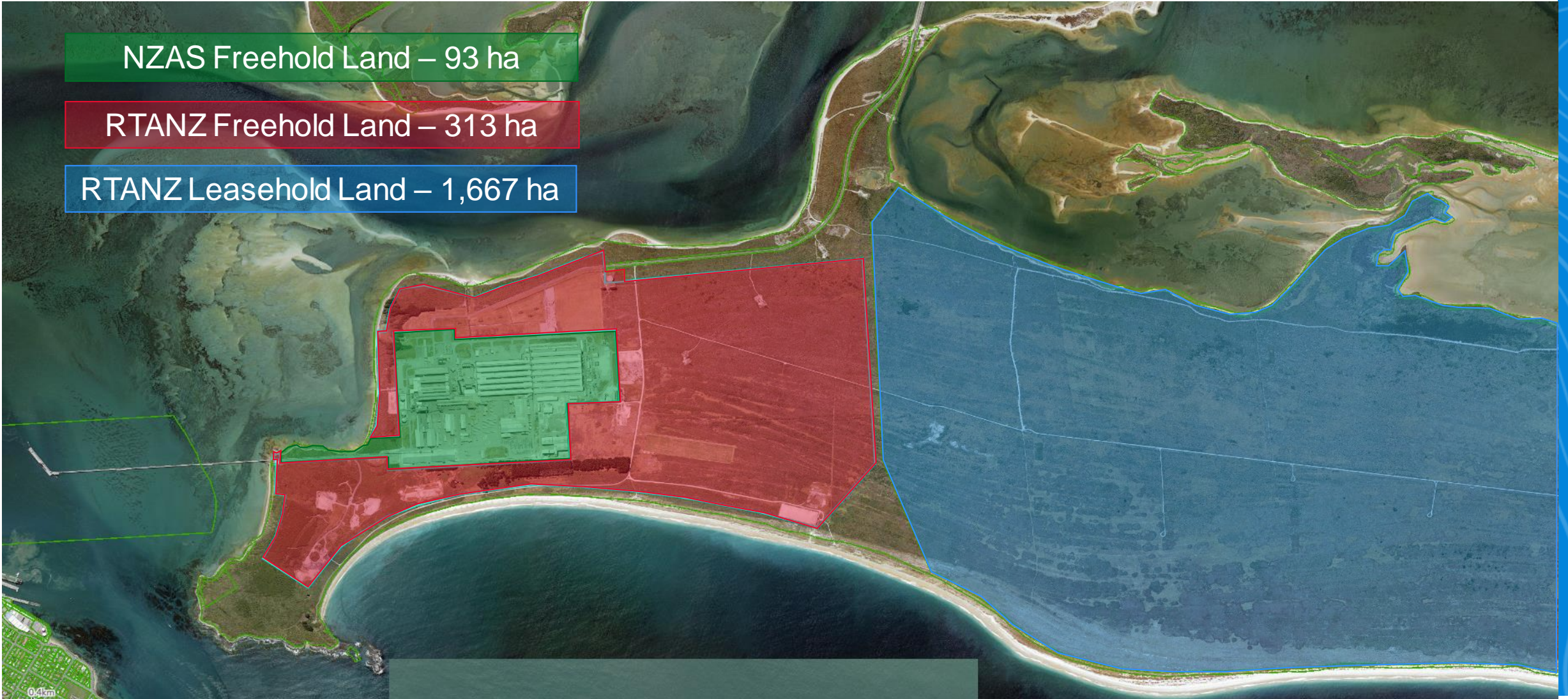
Date: October 2021

Land tenure

NZAS Freehold Land – 93 ha

RTANZ Freehold Land – 313 ha

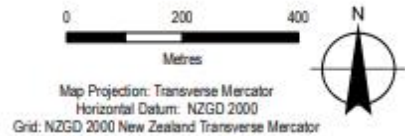
RTANZ Leasehold Land – 1,667 ha





LEGEND

Key Site Feature



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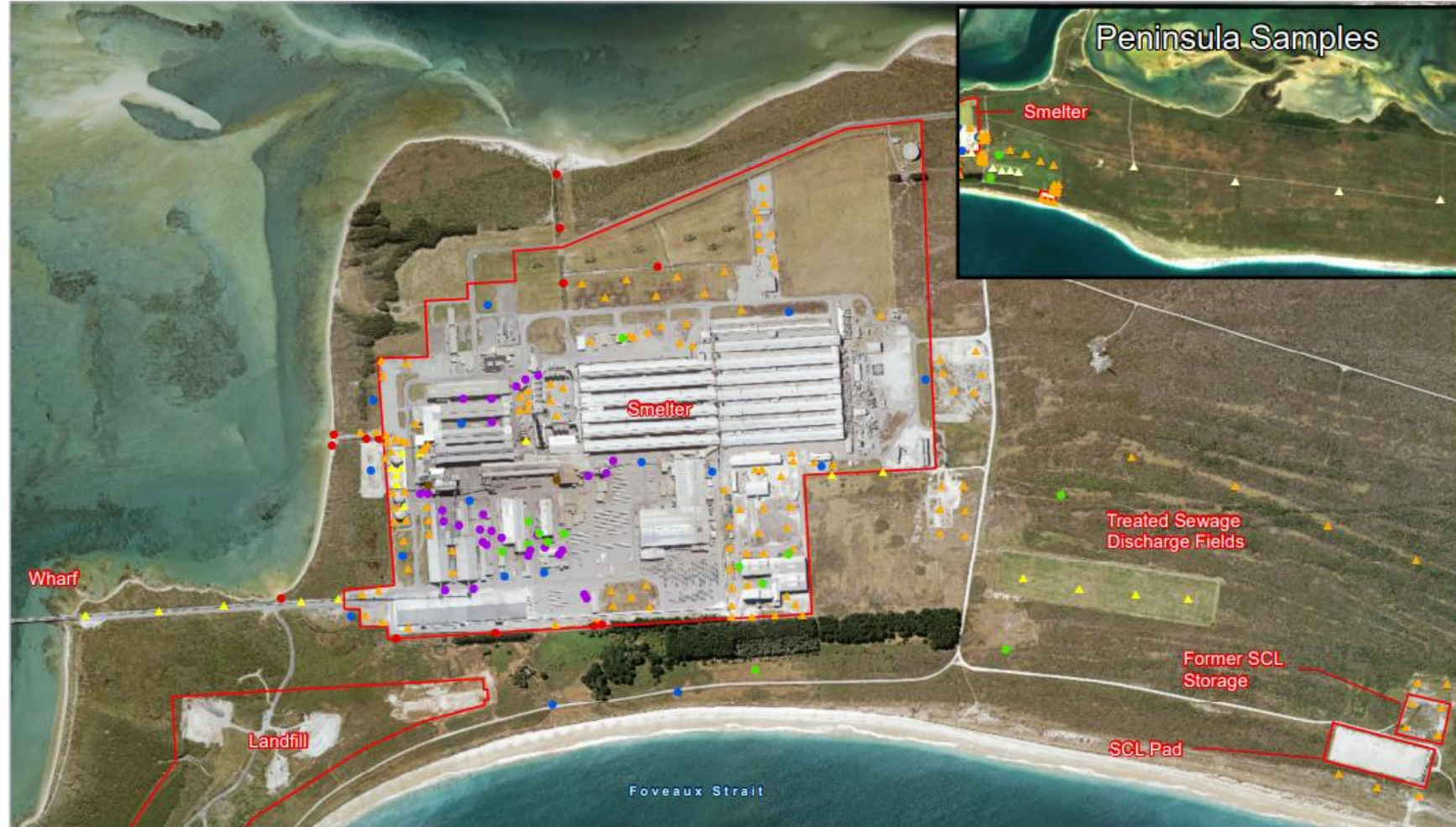
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Key Site Features

FIGURE A2

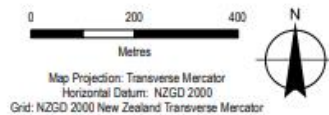
Test sites

- 238 test sites across the Smelter, SCL Pad and Peninsula



LEGEND

- | | |
|-----------------------------------|----------------------------|
| ● Monitoring Well - Not Installed | ● Machine Soil Bore |
| ● Sediment Sample | ● Monitoring Well |
| ▲ Hand Auger | ● Existing Monitoring Well |
| ▲ Test Pit | □ Key Site Feature |



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All Sample Locations

FIGURE A4



Comparison Criteria

Results have been compared against the following broad criteria based on potential future land uses:

1. Future industrial use - commercial/industrial criteria; and
2. Return to a recreational use – recreational criteria (or residential criteria for comparative purposes where no recreational criteria exist).

Soil Guideline Selection

Guideline	Analyte
National Environmental Standard - Soils (NZ)	Arsenic, cadmium, chromium, lead, mercury, PAH, SVOC, PCB
Ministry for Evt – Petroleum Guidelines (NZ)	TPH, BTEX, PAH
Heads of Environmental Protection Agencies (Aust and NZ)	Per- and Polyfluoroalkyl substances
Guidelines for Assessing and Managing Asbestos in Soil (NZ)	Asbestos
None available – site specific data gathered	Background Concentrations – Trace Elements
National Environment Protection Measure (Aust)	Beryllium, boron, cobalt, copper, nickel, zinc, cyanide, SVOC
United States Environmental Protection Agency	Aluminium, fluoride and vanadium

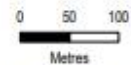
Groundwater Guideline Selection

Guideline	Analyte
Ministry for Evt – Petroleum Guidelines (NZ)	TPH, BTEX, PAH
Southland Water and Land Plan (NZ)	Aluminium, arsenic, ammonia, boron, cadmium, chromium, cobalt, lead, mercury, nickel, vanadium, ammonia, cyanide, manganese, zinc, nitrate-N
New Zealand Drinking Water Standard	Aluminium, arsenic, ammonia, boron, cadmium, chromium, cobalt, lead, mercury, nickel, vanadium, fluoride, ammonia, cyanide, E.coli, iron, manganese, pH, zinc, nitrate-N, calcium, chloride, magnesium, sulphate
Heads of Environmental Protection Agencies (Aust and NZ)	Per- and Polyfluoroalkyl substances
United States Environmental Protection Agency	Beryllium, chromium



LEGEND

- Contaminant Exceedance Area for Sediment
- Contaminant Exceedance Area for Soil



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



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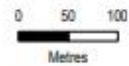
Site Wide
 Industrial Criteria Exceedances

FIGURE A23



LEGEND

- Contaminant Exceedance Area for Sediment
- Contaminant Exceedance Area for Soil



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



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**Site Wide
 Recreational
 Criteria Exceedances**

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FIGURE A24



LEGEND

- Monitoring Well
 - Existing Monitoring Well
 - Investigation Zones
- All units are presented as mg/L
 Monitoring wells 32, 2, 17, MW2, MW4 and MW5 are all <math><1.5</math> mg/L but are not shown due to spatial constraints

$<1.5</math> mg/L$
1.5 - 4 mg/L (1.5 mg/L - Drinking-Water Standards for New Zealand 2005 (Revised 2008))
4 - 10 mg/L (4 mg/L - es rule 46 - Environmental Guideline)
$>10</math> mg/L$



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**Fluoride Concentrations
 for Groundwater**

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FIGURE A20



LEGEND

- Monitoring Well
- Existing Monitoring Well
- Investigation Zones

All units are presented as mg/L

<0.1 mg/L

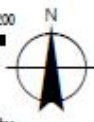
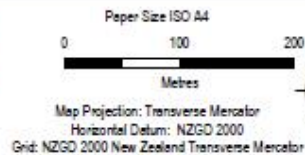
0.1 - 0.15 mg/L (0.1 mg/L - Drinking-Water Standards for New Zealand 2005 (Revised 2008))

0.15 - 1.0 mg/L (0.15 mg/L - es rule 46 Environmental Guideline)

1.0 - 5.0 mg/L

5.0 - 10 mg/L

>10 mg/L



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Aluminium Exceedances
for Groundwater

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FIGURE A19

Remediation - Next Steps

- NZAS will be conducting further testing to better understand the areas of identified contamination and impact on the environment
- We will also work with key stakeholders, including Ngāi Tahu to identify options and develop plans to remediate the contaminated areas

