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NZ STEEL LTD
AIR DISCHARGE PERMIT

Assessment of Landscape and Visual Effects
March 2021

Document History and Status

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1.0 INTRODUCTION

1.1 New Zealand Steel Ltd (NZ Steel) owns and operates a steel mill at Mission Bush Road, Glenbrook. They are currently seeking replacement consents for two existing air discharge permits for this facility. These include:

- Main air discharge permit which relates to the discharge of air from the production of iron and steel and associated activities (Auckland Council reference DIS80296529 (NRIS-14317))
- Another permit which authorises discharge to air for commercial iron plating (Auckland Council reference DIS60363772)

These are replacement consents for the continuation of the discharges authorised by the existing Air Permit and Commercial Iron Plating Permit. No change is proposed in relation to the current air discharges consented for the Site.

1.2 This assessment forms part of the Assessment of Effects on the Environment (AEE) report and application for the re-consenting of both of these activities to allow the continuation of these operations on Site.

1.3 This assessment evaluates these air discharges in terms of their landscape, natural character and visual amenity values in the context of the wider environment likely to be exposed to these activities.

1.4 The report is structured into the following sections:

- **Landscape Context**
 - A detailed description and evaluation of the Site and landscape setting with an emphasis on landscape character and visual amenity considerations.
- **Description of the Proposal**
 - Description of the activities associated with the Site and the specific activities related to this assessment
- **Planning Context**
 - Description of the relevant statutory context of the Site and surrounding area
 - Overview of relevant non-statutory studies/assessments that have relevance to the Site.
- **Evaluation of the Proposal**
 - A detailed assessment of the landscape and visual effects of the proposal and their significance.
- **Summary and Conclusions**
 - Conclusions in relation to the key landscape and visual amenity effects.

- 1.5 Investigations of the Site and surrounding area as part of the preparation of this assessment were carried out during the period of October 2020 to March 2021. These were supplemented with desktop analysis.
- 1.6 For an understanding of terms and definitions specifically associated with the NZ Steel Site, refer to the Glossary of the Assessment of Environmental Effects (AEE). The 'Operational Area' and 'Site' are outlined in the AEE and indicated in Figure 4 of this report.

2.0 LANDSCAPE CONTEXT

- 2.1 This section describes the wider landscape setting and the application Site and considers the landscape values, character and quality of the landscape.



Figure 1. Regional Setting

(Source: GeoMaps)

The Landscape Setting (Refer to Figures 1 & 2)

- 2.2 The Glenbrook Steel Mill is located at Mission Bush Road, Glenbrook approximately 65 km to the south-west of central Auckland, near the southern end of the Waiuku Inlet which is an

estuarial arm of the Manukau Harbour. The nearest significant settlement is Waiuku, which is 2.3km from the site as the bird flies.

- 2.3 The landscape setting and the main area of potential influence relating to the air discharges associated with the Site from a landscape and visual perspective broadly encompasses the central and north-western parts of the former Franklin District. This is defined by Awhitu Peninsula to the west, the Manukau Harbour to the north, the Hunua foothills and elevated land associated with the Bombay Hills to the east, continuing west to the ranges associated with the southern edge of the Waikato River to the mouth near Port Waikato in the south.
- 2.4 Within this area the nature of the landscape varies significantly, with its form and character most strongly influenced by the localised geological underpinnings and in turn the geomorphology evident at the surface. Consequently, together with other influences, particularly landuse and settlement patterns, this wider area can be broken down into relatively distinct landscape types or character areas:
- Awhitu Peninsula
 - Manukau Harbour Lowlands
 - South Auckland Volcanic
 - Waikato River Alluvial
 - Hunua Foothills
 - Waikato Uplands

Awhitu Peninsula

- 2.5 The Awhitu Peninsula is a narrow landmass (approximately 8-10km wide) that extends from the Waikato River Mouth, northwards to the Manukau Heads. It is formed from consolidated remnant sand dunes which create an elevated spine with numerous perched lakes along the length of the peninsula towards the western coast, from where the land falls gently toward the Manukau Harbour. The higher parts of the peninsula are characterised by a distinctive hummocky landform with steep complex gully systems.
- 2.6 On the eastern side of the peninsula the landform is more low-lying and gently undulating with an extensive network of streams flowing into the multitude of small inlets along the harbour coastline. These inlets combine with a multiflorous number of intervening headlands, which together create the characteristic sheltered, serrated, harbour edge. By contrast, the west coast is strongly linear, exposed to the considerable forces of the Tasman Sea with steep sandy scarps arising from the black sand beaches.
- 2.7 It is an open pastoral landscape mainly supporting beef and dairy farming. There are consolidated areas of exotic forestry at both the northern and southern ends of the peninsula and scattered horticultural production, mainly associated with sheltered low-lying areas. Indigenous vegetation is largely confined to steep gullies and parts of the Manukau coastline.

2.8 Apart from connections to the west coast which are limited, the roading network is extensive, albeit comprised of relatively narrow and twisty roads suited mainly for access to the low density scattered permanent rural population and rural servicing.

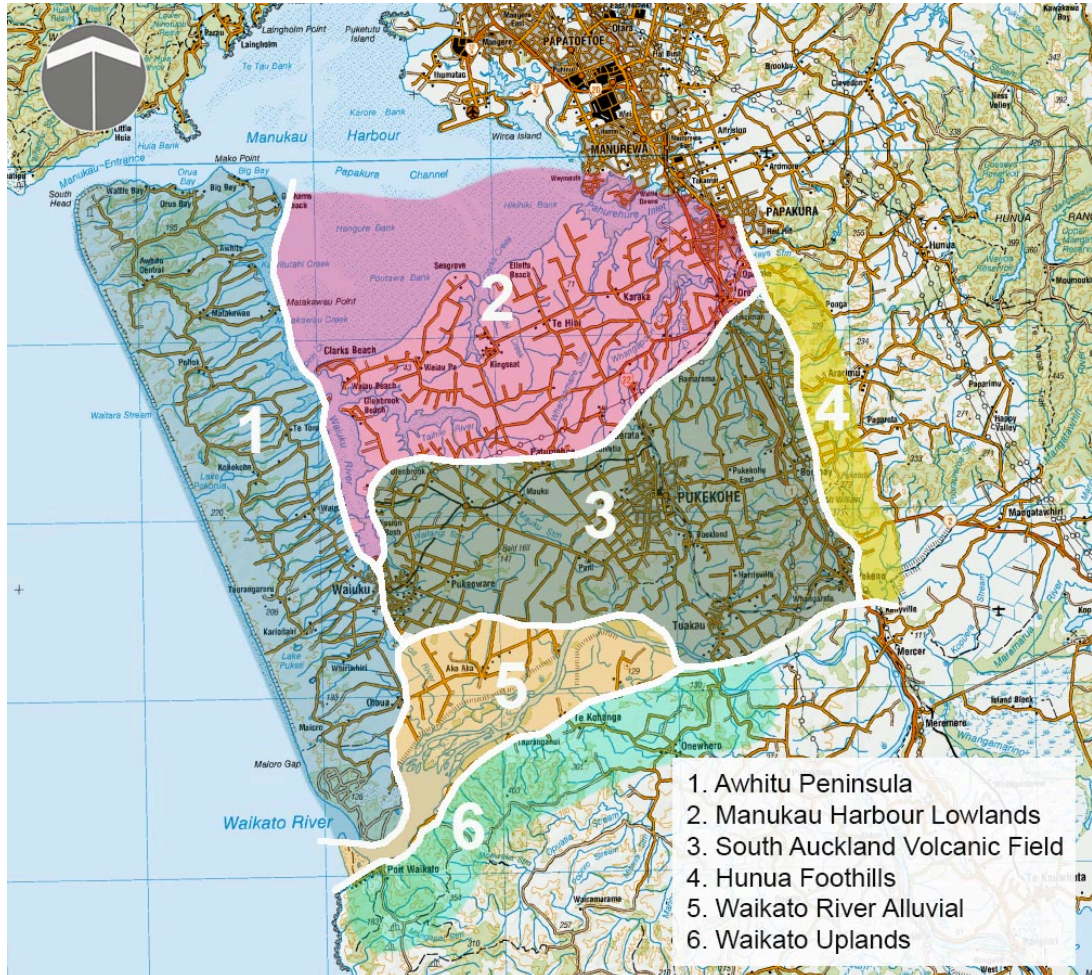


Figure 2. Landscape Character Areas

(Source: NZ Topo)

2.9 Despite the variability in the experience of the landscape and physical contrast between the east and west coasts, enduring attributes that provide a semblance of homogeneity to the character of the Awhitu Peninsula include the dominant sense of rural character and remoteness in most areas, together with the relative openness and unencumbered distant views.

Manukau Harbour Lowlands

2.10 This area includes the northern part of the former Franklin District from the Manukau Harbour south to the northern extent of the South Auckland Volcanic Field, and from the eastern side of the Waiuku Inlet to Drury Creek. This area is characterised by low-lying, gently undulating to rolling countryside and is strongly influenced by its proximity to the harbour. Notably, the deeply indented coastline that has been formed by the sequence of extensive estuarine inlets created by the Waiuku River, Taihiki Creek, Clarks Creek,

Pahurehure Inlet and Drury Creek. The broad intertidal areas of the harbour adjoin the low sedimentary terraces that define the exposed harbour coastline, with mangroves and shallow sandy banks in the sheltered inlets. Landward beyond, it is a strongly horizontal landscape with a distinctive geometric layout of roads shelterbelts as a result of relatively limited topographical constraints.

- 2.11 Because of the extensive pastoral landuse and cropping there is limited native vegetation evident throughout this area, with that present largely confined to parts of the coastal fringe/headlands and stream gullies. Although exotic shelterbelts, roadside vegetation and small woodlots are relatively common throughout the area and provide a sense of depth and layering in the landscape, these are often fragmented and consequently for the most part the wider landscape retains a sense of expanse and relative openness.
- 2.12 While most of the area remains primarily a working landscape, it is relatively densely settled with notable increases in rural settlement /lifestyle development in recent times. Further, areas such as Clarks Beach, Kingseat, Glenbrook Beach and Karaka North have also been identified as areas for consolidated future rural residential growth. Evidence of such development is already well underway which is progressively influencing the character and quality of these localised areas, as well as the wider area, with increased traffic volumes and general upgrades to infrastructure which are combining to have a transformative influence on the existing rural character in many parts.

South Auckland Volcanic

- 2.13 The South Auckland Volcanic Field covers around 300km² with over 80 volcanic features and extends from the Hunua Ranges to south-eastern edge of the Waiuku River. To the south it continues beyond the Waikato River. Its northern extent is loosely defined by a sinuous line that runs from Glenbrook through to around Drury. The Steel Mill is located at the western edge of this character area.
- 2.14 The Volcanic Field represents the complete history of a basaltic monogenetic volcanic field. It was active 1.59-0.51 million years ago and is young enough that erosion has not removed it from the geological record.¹ Consequently, the area is scattered with many visible volcanic features, including scoria cones, tuff rings, basaltic lava flows and maars, many of which create distinctive local features interplaying with the wider local landform. Some notable examples include the East Pukekohe and Ravensthorpe Tuff rings and Pukekohe Hill. As a result of the geological origins the area comprises a rich diversity of landforms ranging from elevated hill country to rolling mid-slopes and undulating to flat lowlands.
- 2.15 Favourable topography and climate together with high-quality volcanic soils mean that the land within this area is suited to a wide range of productive landuses, ranging from grazing, forestry, poultry farming to horticulture and market gardening. Consequently, large parts of

¹ Gibson A.C 2011. Volcanology of Tuff Rings at Kellyville, Onewhero and Bombay, South Auckland Volcanic Field. University of Waikato Thesis.

this area are characterised by intensive primary production. Despite this, overall it generally retains a relatively open spatial character.

- 2.16 To the north of the Waikato River the area includes numerous towns and settlements including Bombay, Pukekohe, Tuakau, Paerata, Patamahoe and Glenbrook. The *Auckland Future Urban Land Supply Strategy*² (FULSS) identifies a programme to sequence future urban land in the Auckland Region over the next 30 years. Within this, the towns of Pukekohe, Paerata and Patamahoe are all identified as key growth areas in this part of the region. Compared with some of the adjacent character areas discussed herein, the South Auckland Volcanic area is already comparatively intensely settled and developed. It is a rural landscape overlaid with a comprehensive road network, a rail link to Auckland, an urban centre (Pukekohe), burgeoning new development (Pukekohe and Paerata), and intensive rural settlement patterns associated with the high intensity and diversity of productive landuse.



Figure 3. Aerial Photograph – Pukekohe Landscape Patterns

(Source: Geo Maps)

- 2.17 So, in many respects the landscape and landscape character is already heavily modified by human influences which create distinctive patterns and significantly erode natural character. Despite this, the underlying formative processes that have shaped this area remain prevalent and influential on the wider landscape character due to the retention of key features and the considerable influence on patterns of landuse and settlement.

² Auckland Council 2017. *Auckland Future Urban Land Supply Strategy*

Hunua Foothills

- 2.18 This character area includes the east-facing slopes of the Hunua Foothills extending from Bombay to Drury. To the west it is defined by the Auckland Southern Motorway. Drury and nearby Runicman are currently the main areas of concentrated settlement and development along SH1 to the north of the Bombay Hills. Drury township has traditionally functioned as a small rural service centre.
- 2.19 The two main landforms in this area are the foothills and the low-lying alluvial land between SH1 which ranges from flat to rolling. This area is largely comprised of flood plains formed by alluvium deposited by streams flowing from the Hunua Ranges westward to the Manukau Harbour.
- 2.20 The vegetation associated with the land between the motorway and the foothills features assemblages of lineal hedgerows and shelterbelts interspersed with more organic fragmented ribbons of vegetation along riparian corridors, as well as established mixed planting associated with rural residential gardens. Ascending the foothills to the east vegetation patterns change considerably with comparatively large areas of indigenous vegetation often associated with gullies, contrasting with more open areas along ridgelines, spurs and highpoints.
- 2.21 Although most of the local land currently remains in some form of productive landuse, relatively concentrated rural residential development is also a notable feature of the area. There is also a considerable amount of other types of built development associated with productive landuse, including a relatively high concentration of glasshouses and other large structures associated with horticultural production. Lower density rural residential settlement also extends into the foothills in many locations.
- 2.22 Key infrastructural elements have a strong influence on the character of this area with the nearby SH1 motorway corridor creating a strong linear feature within the landscape. This is further reinforced by the 220kV AC transmission line (Huntly to Otahuhu line), which runs parallel with the motorway.
- 2.23 Although productive landuse and lifestyle development remain the predominant uses currently, considerable landscape change is anticipated for large parts of this character area with much of the land identified within the Auckland Unitary Plan (Operative in Part) (AUPOP) as Future Urban Zone (FUZ). Such change is already well underway at Drury South Crossing, which is a 361ha mixed-use precinct.

Waikato River Alluvial

- 2.24 This landscape character area encompasses the low-lying area to the south of the Glenbrook Steel Mill associated with the Waikato River Delta. The main area of potential influence from the Steel Mill on the northern side of the river is contained by the low hill country and elevated terrain extending from the southern end of the Awhitu Peninsula around to the south of Waiuku and eastward to Puni. In this area are the two small

settlements of Otatau and Aka Aka. This landscape type also extends to the southern side of the Waikato River in a westerly direction, where it is defined by the elevated land to the south and east. Here there are a number of volcanic features interspersed with the river flats which provide some topographical variation and interest. These include the Onepoto and Tikorangi scoria cones and the Te Kohunga Tuff Ring.

- 2.25 Historically these areas were part of large wetlands associated with the mouth of the Waikato River which have been drained to create pasture for agricultural landuse. This mainly includes dairying on the northern side of the river, with cropping and horticulture also occurring on the southern side. There is a considerable amount of mixed vegetation associated with the river edges, but beyond the river, it is a flat, open landscape largely devoid of significant vegetation. The river flats extend inland up to around 5km on the northern side but are smaller and more contained to the south. The areas are criss-crossed by the geometric layout of a comprehensive network of drainage channels, and to the north also by local roading network. Throughout this area there is currently a low density of settlement. The local primary schools on either side of the river both have a role of fewer than 50 children.

Waikato Uplands

- 2.26 This area includes the elevated land running west to east along the southern side of the Waikato River from near Port Waikato on the Tasman Coast eastward to the area to the South of Tuakau. This is dissected hill country that ascends from the edge of the river to a height of around 400m. These ranges are characterised by a patchy matrix of pine forestry, native vegetation and fragmented pasture. There are few local roads and settlement is very low with the area evoking a remote rural character.

The Site and Immediate Surroundings *(Refer to Figure 4)*

- 2.27 The NZ Steel Site comprises approximately 550ha of land at Glenbrook, with the Operational Area occupying around 200ha. The NZ Steel facility was established on the Site in 1968. It uses locally sourced iron sand from the nearby coastline and coal to produce steel and steel products. The iron and steel operation broadly consists of:
- Iron Plant
 - Steel/Slab Making Plant
 - Rolling Mill
 - Finishing Plant
- 2.28 In addition to the buildings and infrastructure associated with the steel production and finishing, the Operational Area also includes a large area in the northern part of the Site used

for storage and handling of the raw materials associated with the processes as well as the processing of ferrous scrap, co-products (for sale and material recovery) and waste.

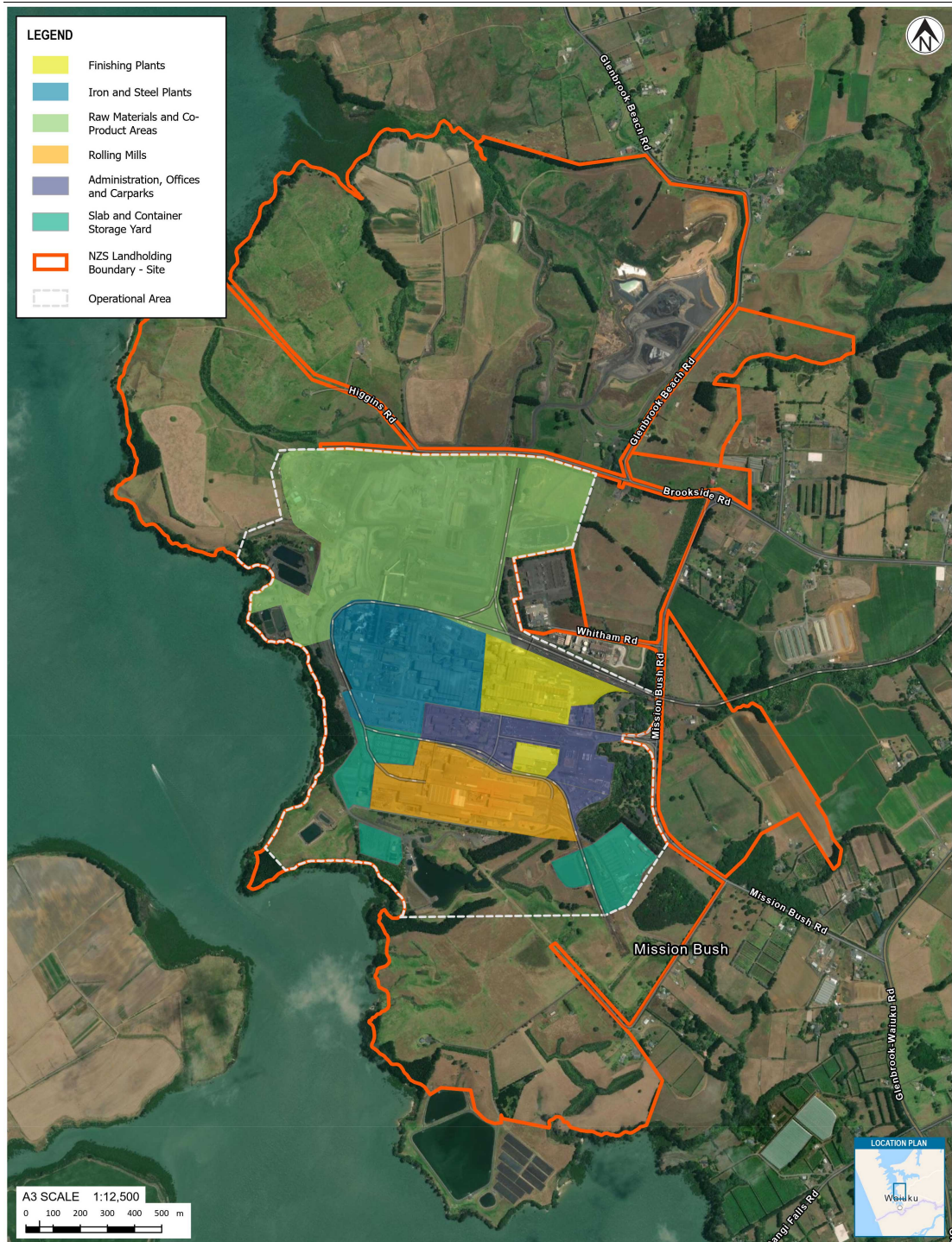


Figure 4. Aerial Photograph – NZ Steel Site (Plant & Processing Areas Highlighted) (Source: Tonkin & Taylor)

2.29 Aside from the Brookside Landfill³ in the northern part of the landholding (which is used for disposal of waste material generated at the Site), the Operational Area is surrounded by a greenbelt that encompasses extensive areas of open farmland, much of which benefits from

³ The Landfill is subject to a separate suite of Resource Consents and does not form part of the scope of the resource consent sought

productive agricultural soils⁴. These areas are fragmented by established stands of tall exotic woodlots, shelterbelts and scattered areas of remnant and planted indigenous riparian vegetation. As well as a valuable resource for agricultural production this area provides a significant buffer zone between the heavy industrial operations of the Steel Mill and the surrounding countryside.

- 2.30 The coastline forms the western boundary of the Site. Along this edge the land rises steeply from the intertidal zone up to extensive areas of farmland on variable terrain which is traversed by a number of stream gullies and low ridges that define the catchment area. The most elevated parts of the Site are in the north and east associate with the Brookside Landfill.
- 2.31 The wider area surrounding the Steel Mill is a low-lying undulating to rolling rural landscape characterised by extensive pastured areas with intermittent horticultural landuse divided by scattered woodlots and shelterbelts. The local landform is delineated by the meandering coastline of the Waiuku River Inlet, with the Manukau Harbour providing the most significant natural influence on the character of the landscape setting.
- 2.32 The development inside the operational part of the Site presents a significant contrast within this setting, with the large industrial complex with associated stockpiles and multiple tall chimney stacks rising above the landform and vegetation to create a distinctive and prominent landmark in the area.

Wider Landscape Values (Refer to Figure 6)

- 2.33 Section 6 of the Resource Management Act (RMA) identifies the protection of the natural character of the coastal environment, outstanding natural features and landscapes from *inappropriate subdivision, use, and development*. Areas of *high natural character*, *outstanding natural landscapes* (ONLs) and *outstanding natural features* (ONFs) in the wider area associated with the Site are identified in the AUPOP maps. The nearest areas identified as outstanding natural landscapes to the Site are located on the western side of the Awhitu Peninsula. These include:

Outstanding Natural Landscapes

Area 55 – West Coast Awhitu Peninsula

Area 56 – Whatihua, Rotoiti and Puketi Lakes (perched lakes)

Area 57 – Kariotahi Coastline

- 2.34 There are also numerous outstanding natural features in the wider area, including:

Outstanding Natural Features

ID 9 – Baldhill Road Tuff Ring and Cone

⁴ *Erosion Management Ltd. NZ Steel Landuse Capability Classification. December 2010*

- ID 19 - Cochranes Gap Quaternary Sands
- ID 20 - Cochranes Gap Accretionary Lapilli
- ID 65 – Kidds Beach Pliocene Conglomerates
- ID 66 – Kidds Beach Shell Spit
- ID 160 – Pokorua Dune Dammed Lake
- ID 175 – Rangiriri Spit (unmodified example of an active shell pit)
- ID 217 – Te Toro Quaternary Sands
- ID 240 – Waitangi Falls (low basalt lava waterfall)
- ID 16552 – Waikato River and Wetlands (Waikato District)

2.35 There are no areas of outstanding natural character in the area, but there are three areas identified as exhibiting high natural character, including:

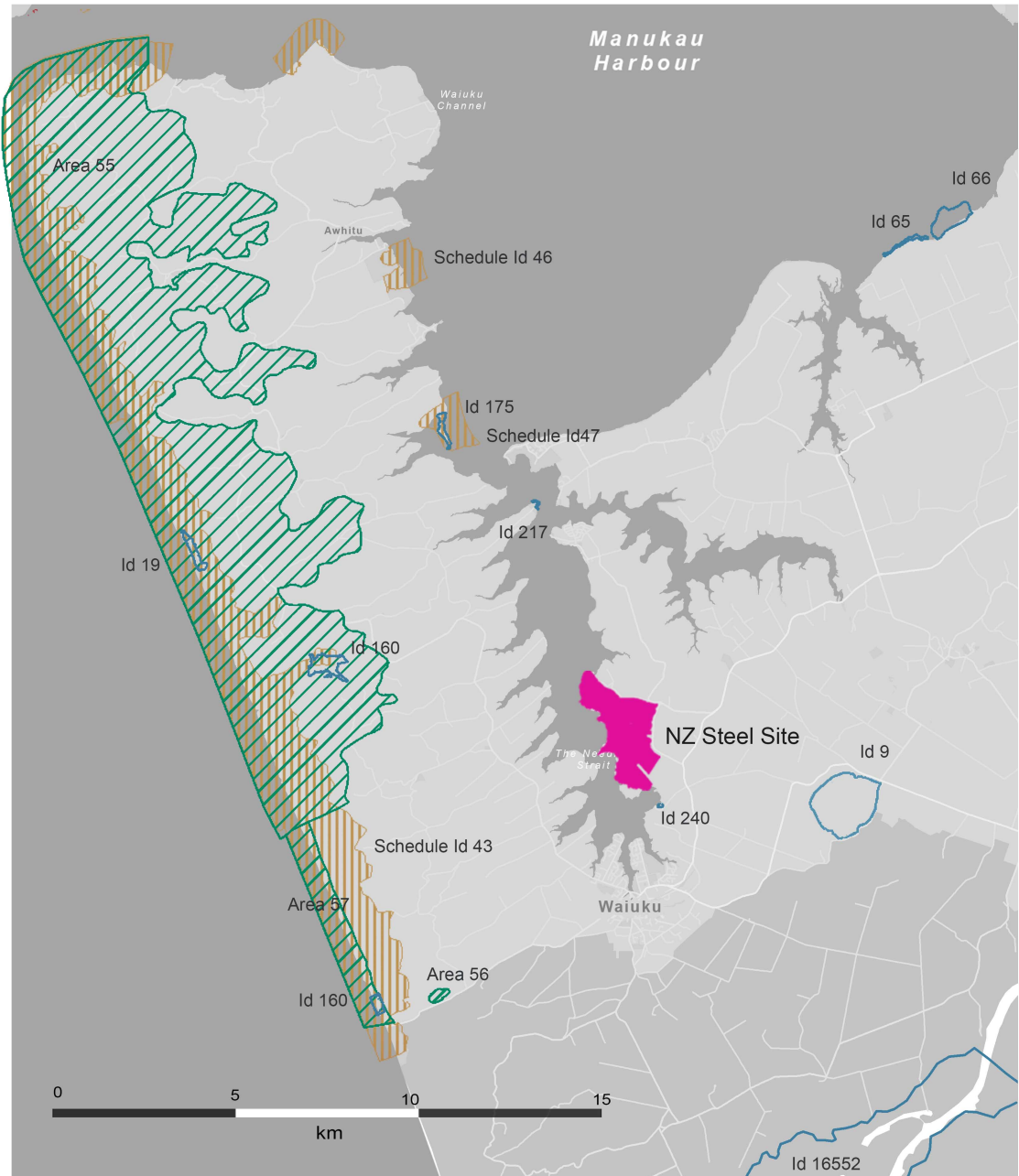
High Natural Character Areas

Schedule Id 43 – Awhitu Peninsula

Schedule Id 46 – Awhitu Regional Park

Schedule Id 47 - Rangiri Spit

Excluding the Waitangi Falls (ID240), none of the areas listed above are located within 5km of the Steel Mill (Refer to Figure 5 below).






- | | | |
|---|--|--|
| <p> ONL- Outstanding Natural Landscape</p> <ul style="list-style-type: none"> Area 55 – West Coast Awhitu Peninsula Area 56 – Whatihua, Rotoiti and Puketia Lakes Area 57 – Kariotahi Coastline <p> High Natural Character</p> <ul style="list-style-type: none"> Schedule ID - 43 Awhitu Peninsula Schedule ID - 46 Awhitu Regional Park Schedule ID 47 - Rangiri Spit | <p> ONF- Outstanding Natural Feature</p> <ul style="list-style-type: none"> ID 9 – Baldhill Road Tuff Ring and Cone ID 19 - Cochranes Gap Quaternary Sands ID 20 - Cochranes Gap Accretionary Lapilli ID 65 – Kidds Beach Pliocene Conglomerates ID 66 – Kidds Beach Shell Spit | <ul style="list-style-type: none"> ID 160 – Pokorua Dune Dammed Lake ID175 – Rangiri Spit ID 217 – Te Toro Quaternary Sands ID240 – Waitangi Falls ID 16552 – Waikato River and Wetlands (Waikato District) |
|---|--|--|

Figure 5. Outstanding natural landscapes (Outstanding natural landscapes (ONLs)) and ONF & High Natural Character Areas (Base Source: Geo Maps & AUPOP)

3.0 DESCRIPTION OF THE PROPOSAL

3.1 A full description of the proposal is contained within the AEE associated with this application. However, in summary it seeks replacement consents for the existing air discharge permit, which relates to air discharge from the iron and steel production and another permit associated with the commercial iron plating activities. The replacement consents do not seek any changes to the nature and scale of the existing discharges to air.

Iron and Steel Production

3.2 As part of the manufacturing process of iron and steel, waste gases are treated through the use of pollution control devices/mechanisms (such as filters, scrubbers and combustion) to remove particulates and clean the gases as far as practicable. The resultant discharges after processing mainly consist of water vapour (steam) and carbon dioxide, although there are small quantities of particulate matter and other gases⁵.

3.3 The most visible air discharges from the plant are associated with the tall stacks, notably the largest associated with the **Iron Plant**, which include (refer to Figure 7 to cross-reference locations):

- Iron Plant Multi-hearth Furnaces Wet Scrubber Stacks - 4 x 60m tall (IP1-IP4)
- Iron Plant Rotary Kilns Wet Scrubber Stacks – 4x 60m tall (IP 23-IP26)
- Melter Charging Floor Wet Scrubber Stack*– 1 x 60m (SP31)

(* steam from this stack is significantly less than the 8 main stacks and sometimes not visible)

In the **Steel Plant** visible emissions are steam and flaring which are from:

- KOBM Flare Stack - 1 x 69m (SP1)

In the southern portion of the Site the **other sources** of visible air emissions are much less significant than the Iron and Steel Plants. Many have emissions that are not visible. The stacks with visible emissions in the Rolling Mills and Finishing Plants include:

- Acid regeneration Line Stack - 1 x 25.5m (CSM1)
- Pickle Line Stack – 1 x 25.5m (CSM3)
- Metal Coating Line 1 x 15.3m (MCL3)

3.4 The following produce particulate emissions only, and not steam. Generally, such emissions would not be visible from the surrounding area if the processes are working correctly. Further, from most angles these are likely to be obscured by the surrounding buildings which are higher than the baghouses:

- Melter Slagside baghouse – 1 x 12m stack (IP32)
- Melter Metalside Baghouse – 2 x 22m stack (IP33/34)

⁵ *Tonkin & Taylor 2021 NZ Steel Air Quality Assessment*

- Steel Plant Baghouse – 17m (vents only) (SP4)



Photograph 1. KOBM Flare Stack

(Source: NZ Steel Ltd)

Iron Plant

- 3.5 The steam plumes generated by the 8 tallest stacks associated with the Iron Plant operate continuously with the same output and velocity. The only occasion when there is any variation to this is when a 'stream' (1 multi-hearth furnace and 1 kiln) is shut down for maintenance so that no plume will be generated. Shut down periods can range from one day to many weeks. Usually, the annual shutdowns only involve a single stream at a time (lasting 2-4 weeks).
- 3.6 Other infrequent emissions from the Iron Plant occur when emergency flaps are automatically lifted releasing unburnt emissions. This process is a safety mechanism to release pressure for health and safety reasons (including to avoid explosions). It is caused by various factors including power outages. These are of short duration (usually several minutes) and are likely to be very visible from the local area.
- 3.7 The Melters have two small stacks which have small flares when the melter gas is not being directed to the co-generation plant (where electricity is generated). This flaring is minimised as the gas is recovered to generate power. On average since late 2018 flaring is intermittent, occurring less than 10% of the time.
- 3.8 In addition to steam emitting from stacks on Site there are large cooling towers where steam is continuously emitted at a lower level (cogeneration and water treatment plants).

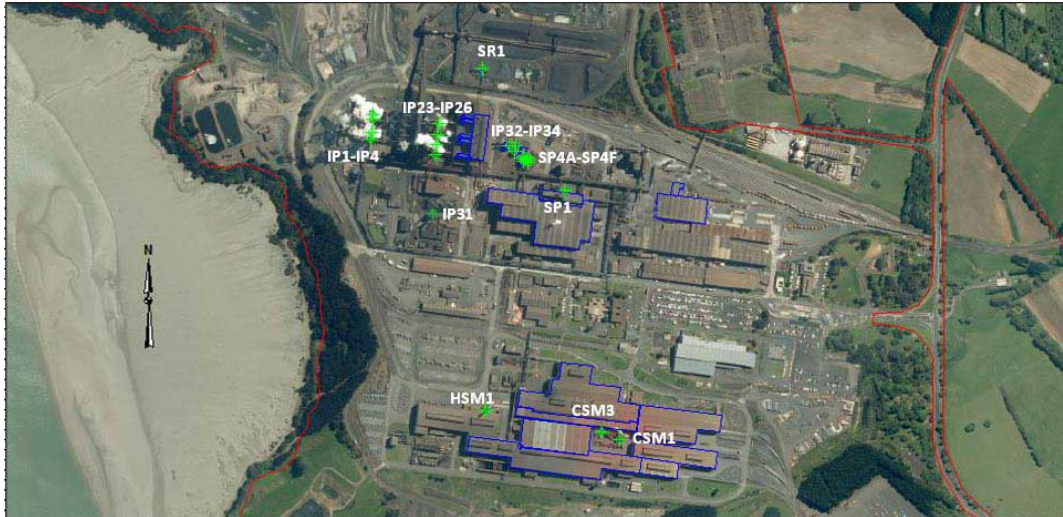


Figure 7. Main Emission Sources – visible and gaseous

(Source: NZ Steel Ltd)

Steel Plant

- 3.8 The only visible emission from the stack associated with the Steel Plant is with the KOBM (steelmaking) vessel. This is a batch process where at the start volatile gases are burnt off, which is visible as a flare from the stack. For the remainder of the process (approximately 30 minutes) a steam plume is visible.

Other Plants

- 3.9 The Rolling Mills and Metal Coating Line both have small steam plumes associated with stacks that are much lower than the main stacks associated with the Iron and Steel plants. So they are unlikely to be visible off the Site.

RPCC Tipping

- 3.10 Reduced Primary Concentrate and Char (RPCC) is a product produced and used as part of the iron making process. Although a 700 tonne storage hopper can hold RPCC for later feed to the Melters, periodically RPCC does not meet the product specification or the storage hopper is full. Accretions are large boulder formations of RPCC, which cannot be accepted into the Melters due to their size. So accretions, prime and off-specification RPCC must then be tipped into specially prepared pits to be cooled before crushing and recovery into the Iron Plant. Water sprays are added to the pit which results in the formation of a steam plume and fine particulates at the time of tipping. The associated plume is quite visible from the local area but dissipates quickly.

Iron Plating (refer to Appendix C)

- 3.11 Molten iron which cannot be placed into the Oxygen Steelmaking Furnace (KOBF) for conversion to steel is periodically poured into specially prepared pits in a process called 'plating'. The plating process involves a ladle containing approximately 70 tonnes of molten iron being poured into specially prepared excavated beds. During this process the rapid oxidation of the ore creates an iron oxide fume which is lifted into the air by the associated

hot air to create a distinctive brown-orange plume. Although the associated cloud is not large in comparison to some of the plumes created by the main stacks, it can be quite visible from the surrounding area due to its colour. Depending on the weather conditions the cloud dispersion can take anywhere up to 5-15 minutes. Until recently this process only occurred on a sporadic basis when there was a disruption to the process with tipping rates varying between 25 000 to 35 000 tonnes/annum (around 4% of hot metal produced at the Melters).

3.12 In addition to the sporadic iron plating NZ Steel now undertakes iron plating on a commercial basis to plate iron as a product for sale and reuse. In October 2020 a consent was granted which allows such commercial plating operations to occur at a rate of no more than 7 ladles/day, and no more than 3 ladles/hour. The consents being sought seek to enable that commercial iron plating activity to continue.

3.13 Recently NZ Steel has developed new equipment to be used during the iron plating process. This will suppress the plume generated during the pour stage. The fume suppression is achieved by slowly pouring the molten ore into a specially designed refractory brick lined launder into which nitrogen is released to displace the oxygen, thereby preventing the oxidation process that creates the distinctive iron oxide plume. There are intended to be two pits fully commissioned with this equipment by early 2022. Provision has been made for a third launder (as a 'spare') to provide for maintenance of the launder. However, there are likely to be periods where for operational reasons the fume suppression cannot occur in order to avoid damaging the suppression equipment. As such, NZ Steel anticipates that after full commissioning (expected early 2022) less than 1% of hot metal tapped at the Melters will be visible when plated. This is down from the long-term average of 4%.

Dust

3.14 In addition to the point source air emissions described, other fugitive sources of discharge to air generated on the Site include mainly:

- windblown dust from stockpiles and handling of raw materials, dry co-products and dry wastes; and
- dust generated by vehicles using the network of roads and yards within the Site

Air Quality

3.15 NZ Steel undertakes air quality monitoring of key stacks (point sources) in and within the community, as a condition of the existing main Air Permit. This monitoring is proposed to continue as set out in the AQA (Section10).

4.0 PLANNING CONTEXT

RELEVANT STATUTORY DOCUMENTS

- 4.1 An assessment of the proposal against statutory provisions is contained within the planners report as part of the AEE. This report is primarily concerned with the landscape and visual effects and is written to facilitate an assessment against the statutory framework. The provisions most relevant to landscape and visual matters include:

Resource Management Act (RMA)

- 4.2 The relevant sections addressed in this assessment will be in respect of:

Section 6(a) – The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development

Section 7(c) - the maintenance and enhancement of amenity values

Section 7(f) - the maintenance and enhancement of the quality of the environment.

New Zealand Coastal Policy Statement

- 4.3 The New Zealand Coastal Policy Statement (NZCPS) relates to the land and water contained within the coastal environment. Policies 13 and 15 within the NZCPS address the preservation of natural character and the protection of natural features and natural landscapes within the coastal environment.

Policy 13 of the NZCPS addresses the preservation of natural character and seeks to:

- (1) To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:*
 - (a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and*
 - (b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;*

Policy 15 of the NZCPS addresses natural features and natural landscapes:

To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:

- (a) avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment; and*
- (b) avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment;*

Auckland Unitary Plan (Operative in Part)

- 4.4 Under the Auckland Unitary Plan Operative in Part (AUPOP), the majority of the NZ Steel landholdings, including all of the Operational Area of the Site is located within the *Business* –

Heavy Industry Zone. This zone specifically provides for industrial activities that may produce objectionable odour, dust and noise emissions. A low level of air quality amenity applies to this zone and buildings are expected to have a mainly functional standard of amenity. To address the specific place-based considerations relating to the Site further provisions are set out in the *Glenbrook Steel Mill Precinct* which is applicable to the Operational Area. The purpose of the precinct is to support and enable the continued operation of the existing Steel Mill and associated facilities. The provisions recognise the importance of the Site as a significant industrial resource on a regional and national level.

- 4.5 Consistent with most of the adjacent areas (excluding the local areas of concentrated settlement), the remainder of the greenfield parts of the Site are located in either the Rural Production, Mixed Rural or Rural Coastal Zones.

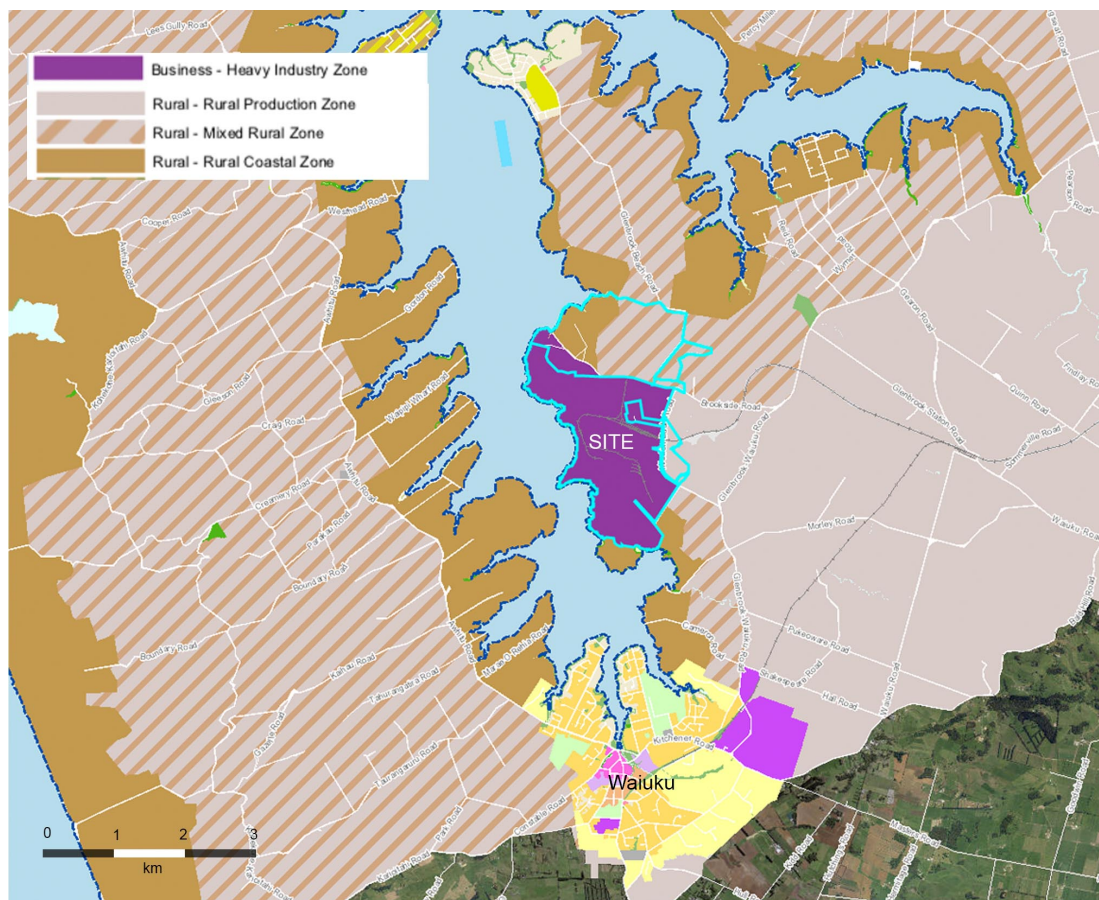


Figure 7. Zone Map

(Source: AUPOP)

RELEVANT NON-STATUTORY DOCUMENTS

- 4.6 The following reports, which were used to inform the AUPOP, have been considered in the preparation of this assessment:

Auckland Regional Landscape Assessment

- 4.7 During 2003-2004 as part of the Auckland Regional Policy Statement Proposed Plan Change 8, a Regional Landscape Assessment was undertaken for the Auckland Regional

Council⁶. This updated an earlier assessment prepared a decade earlier. The new assessment adopted a public preference methodology and a focus on identifying *outstanding natural landscapes* (ONLs) and *outstanding natural features* (ONFs) within the region. During 2008 a second landscape review⁷ was undertaken, which applied nationally accepted landscape assessment criteria ('WESI' criteria)⁸ to the study area and provided further information on the areas of the Auckland Region that had formally been identified as outstanding. As stated, there are no outstanding natural features or outstanding natural landscapes associated directly with the Steel Mill, although there are some, as noted earlier, within the wider area.

Natural Character Assessment Auckland Regional (2009) (Refer to Appendix D)

- 4.8 This assessment was prepared to give effect to Section 6(a) of the RMA to identify those parts of the Region's coastal environment that display high levels of Natural Character. Neither the Site nor any coastal areas within 8km of the Site were identified as having high natural character values within this assessment.

5.0 EVALUATION OF THE PROPOSAL

- 5.1 The Resource Management Act (1991) outlines in the Fourth Schedule a number of matters that should be considered when preparing an assessment of effects on the environment, including:

(7)(1)(b) Any physical effect on the locality including landscape and visual effects.

- 5.2 This assessment relates to visual emissions that already exist as part of the operational Steel Mill, however for the purposes of the new air discharge permit sought, it is appropriate to consider the air discharges subject to the resource consent application as new activities. Therefore, the effects of these emissions are required to be assessed in the context of the environment as it exists currently, including the wider landscape setting and the existing landuse (including the Steel Mill infrastructure), but excluding the existing visual emissions that this resource consent application is seeking to authorise.

Methodology

LA4's Assessment of effects uses the recognised New Zealand Institute of Landscape Architects⁹ (NZILA) 7-point scale assessment rating, as follows:

Negligible - Very Low - Low - Moderate - High - Very High - Extreme

⁶ Auckland Regional Authority, 1984. *An Assessment of the Auckland Region's Landscape*.

⁷ Auckland Regional Council, 2008. *Landscape Review of Outstanding Natural Landscapes*.

⁸ *Wakatipu Environmental Society Inc and others vs Queenstown Lakes District Council C180/99{2000} NZRMA 59*

⁹ NZILA Best Practice Guide 10.1– Landscape Assessment and Sustainable Management

The *Best Practice Guide* does not comment on how the suggested NZILA effects ratings relate to RMA terminology, however for this assessment, the following are proposed with respect to the RMA sections 95A(a) and 104D. Effects that are *moderate* or greater would be considered more than minor, *low to moderate* would be minor, and *low or negligible* less than minor.

- 5.3 This assessment process has involved field investigations, photographic recording of the Site and surrounding environment, a desktop assessment utilising aerial photographs/maps, and a landscape character analysis and visibility assessment.

a. Visual Effects

- 5.4 The assessment of visual effects analyses the perceptual response that any of the identified changes to the landscape may have in relation to visual amenity or people's visual appreciation of the surrounding landscape. Visual effects are influenced by the sensitivity of the audience and the receiving environment combined with the qualitative changes that a proposal may bring, such as visual intrusion and the type and magnitude of visual change.

- 5.5 Initially, I identified the physical area or 'catchment' from which any air discharges from the Site would potentially be visible. This was accomplished through observations from the Site and surrounding area.

- 5.6 To assist with my assessment, in addition to multiple Site visits, photographs were then taken from various locations throughout the visual catchment identified at locations that would give a fair representation of the likely audience potentially affected by the proposal. Photographs were taken in both the day and at night time.

- 5.7 The day time photographs were taken from the following locations. The locations of the photo-viewpoints are depicted in Figure 8 with the photographs attached as Appendix A.

1. 20 Andrew Pye Road, Manukau Heads
2. 48 Pollok Wharf Road, Pollok
3. 69 Waipipi Wharf Road, Pollok
4. 345 Boundary Road, Pollok
5. Marae Orehia Road, Waiuku (Eastern end)
6. 114 Racecourse Road, Waiuku
7. 319 Bothwell Park Road, Otaua
8. Tauranganui Marae, Tuakau Bridge- Port Waikato Road, Te Kohunga
9. 168 Baldhill Road, Waiuku
10. 110 Hilltop Road, Pukekohe Hill
11. 82 Batty Road, Patamahoe
12. 579 Drury Hills Road, Drury
13. 115 Laing Road, Karaka
14. Ronald Ave, Glenbrook Beach (end of the road)
15. 40 Brookside Road, Glenbrook

- 5.8 For each of the photo-viewpoints listed above there are two photographs. These are identical except that in the first any existing noticeable air emissions have been deleted from the image to effectively depicting before and after scenarios (with and without discharge to air).
- 5.9 Finally, evaluation of the likely visual effects were determined using the following base criteria:
- i) *Sensitivity of the view* – the relative quality of the views, values attached to a view, and their vulnerability to change.
 - ii) *Viewpoint / perceptual factors* – visibility of the activity and the type and size of the population exposed to views, including the viewing distance, focus and level of exposure, and context from which they experience the view.
 - iii) *Context* – the degree to which the proposed development would fit into the existing landscape context
 - iv) *Extent and Magnitude of Change* – including consideration relating to prominence and legibility, size/scale, visual intrusion/contrast, the impact upon key landscape elements and patterns, geographical extent and duration.

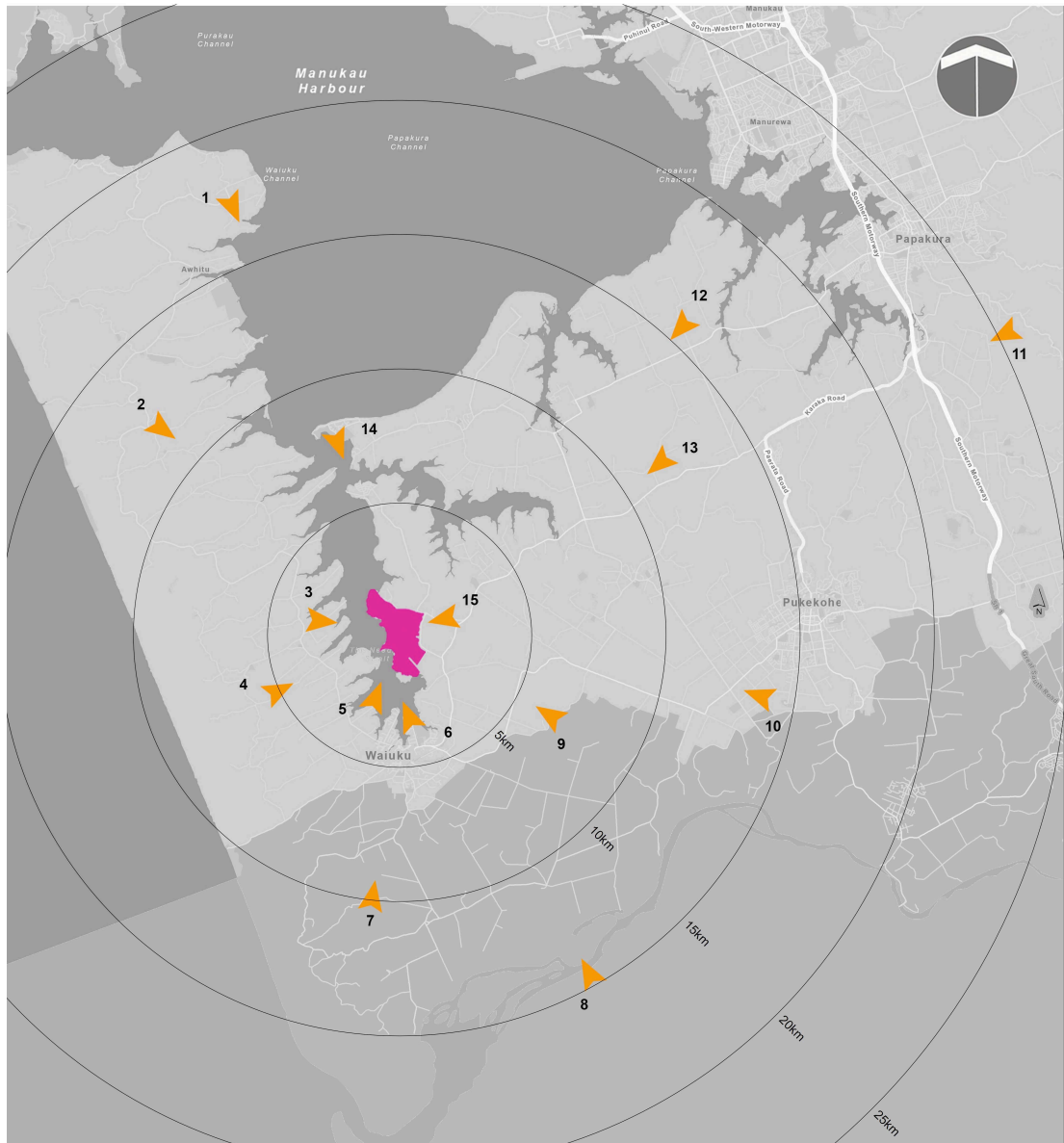


Figure 8. Viewpoint Locations (Day Time Photographs – refer to Appendix A) (Base Source: GeoMaps)

5.10 It became apparent after several site visits how the visibility of the existing air emissions is strongly influenced by weather conditions. For instance, warm air and windy conditions see the main plumes from the Iron Plant dissipating quite readily. Whereas, I understand anecdotally, (as I did not observe this due to the time of year) that in cool, clear, calm conditions (as may occur during winter), the plumes can converge to form their own cloud which sits low and dense in the sky. This is caused by thermal inversion when cooler temperatures near the ground are overlain by a warmer layer that caps the upward movement of air. These considerations affect the form, density and longevity of the plumes. Visibility by day is also determined to a significant degree by the amount of cloud cover. The emission plumes can readily blend into the backdrop of sky, in some instances even with relatively scattered cloud. Conversely, on clear days, the billowing white steam plumes are accentuated against a vivid blue backdrop. Other conditions such as the low natural haze

that develops on summer days can also significantly affect the conspicuousness of the air emissions. I have taken all of these matters into account in my assessment.

- 5.11 From site observations it is apparent that the main plumes emitted from the Site can be seen at a distance from the Site of up to 25km and beyond depending on weather conditions. This encompasses almost the entire northern part of the former Franklin District (including all the landscape character areas identified) as described previously in this assessment and depicted in Figure 8. This is a considerable area, and despite the varying density of settlement throughout, comprises a potential audience of significant size.
- 5.12 Even so, from distances beyond around 10km from the Steel Mill, although the main components of the air emissions generated on the Site are generally visible to various degrees (dependent on the types of conditions discussed), the nature and scale of the plumes are such that they are a very minor visual component in the wider landscape and consequently have negligible implications on the existing visual amenity.
- 5.13 This is clearly demonstrated by the photographs from photo-viewpoint locations 1/2/8/10/11/12/13 and 16. Even from within distances under 10km from the Site, it is not really until about around 5km from the Steel Mill (as demonstrated by the photographs from Photo-viewpoints 3/4/5/6 and 15) that the plumes emitted from the Site really start to become visual features of any prominence in the context of the setting. Further, within this 5-10km zone the ability to see the Site and any existing air discharges is often quite limited from many publicly accessible locations due to the topography and intervening vegetation. Consequently, elevated locations in most instances were needed to be sought for photo-viewpoints used. From nearby, the Site is mostly viewed from within the context of the rural or coastal environment, although a significant component of the population in this area is located in Waiuku township.
- 5.14 Therefore the audience largely consists of a permanent residential population, as well as the likes of farmworkers, those at the local Glenbrook School and recreational users of the Waiuku Inlet. All of who could be considered relatively sensitive audiences. The largest audience is the population of Waiuku township. It is therefore of note that when the Steel Mill is viewed from an urban context it appears less incongruous than it does when viewed from a rural context, or from the harbour (as demonstrated in the photograph from Viewpoint 6).
- 5.15 Also, the sensitivity of these audiences is tempered somewhat by the fact that the existing Steel Mill has been an established component of the local area for over 50 years. Naturally, such a large and overtly industrial facility will inevitably create considerable contrast and a degree of tension in relation to local landscape values. Nonetheless, the plant has become an integral component of the character of the wider area, to a point where it is a key part of the local identity as well as the social fabric of the area, with many locals or family members either currently, or have been previously, employed at (or in employment associated with) the Site.

- 5.16 The associated air discharges therefore need to be considered in this context and the long-established industrial use of the Site. When framed in this manner, the visual air emissions generated from the Site are almost expected and incidental, and serve just to simply reinforce the industrial nature of the Site. Further, in terms of visual amenity, essentially it is only the emissions from the main stacks that attract attention. Also, the fact that they generate white steam (as opposed to smoke that generates a continuous haze), is likely to reduce the otherwise potential negative associations with 'pollution'.
- 5.17 Observations of the Site were also made at night time to determine the nature and extent of visual effects. The photographs in Appendix B depict views of the Site from a number of nearby locations (ranging from 750m to 3km from the Site). When viewed at twilight from east to west against the backdrop of the setting sun, the main plumes tend to be accentuated by the contrast created (refer to Photograph B.1). This changes quickly however as night sets in. Once the sun has set the area lighting associated with the operational part of the Steel Mill combines to create a relatively intense yellow glow which spills locally into the night sky (refer to Photograph B.2). The extent and intensity of this varies considerably depending on where the Site is viewed from. However, where the glow appears relatively intense it has the effect of accentuating the steam plumes from below. From locations where the light spill is not particularly noticeable the plumes tend to fade into the darkness (refer to photograph B.3). As for the daytime the visibility is likely to vary considerably also depending on the weather conditions. Generally the effect of the visual influence of the steam plumes at night on the landscape is of a very low order as the wider landscape is assimilated by the darkness.

Gas Flares

- 5.18 There are several gas flare sources associated with the Site. Although these appear quite dramatic when viewed in close proximity their influence quickly diminishes with distance from the Site. Further, they are intermittent occurrences and simply underline the industrial nature of the Steel Mill.
- 5.19 Although I did not witness any of the gas flaring at nighttime from the surrounding area, from my observations I anticipate that they would be assimilated by the appreciable light-spill emitted from the Site and the scattering of more intense point sources of light visible from the surrounding area.
- 5.20 Taking into account these considerations, it is my assessment that the visual amenity effects of the main air discharges from the Site would be generally of a low to low-moderate for most of the affected local audience.

Iron Plating

- 5.21 In contrast to the main plumes generated at the Site, the iron plating activities have resulted in periodic, smaller scale, brown emissions. This is demonstrated in Appendix C.1, which shows an unsuppressed 70 tonne ladle being poured. The following photograph (C.2)

shows the same view around 4 minutes after the pour with the resultant plume largely dispersed. Although these are periodic and dissipate comparatively quickly, where visible they are likely to elicit a more negative response due to the associations of the colour with perceived 'pollution'. This type of discharge will now however be largely mitigated for most of the time by the introduction of new suppression techniques that effectively eradicates the oxidation process that creates the visible plume when the plating occurs.

- 5.22 I witnessed the testing of this on the morning 03.03.2021. Photograph C.3 depicts a suppressed 70 tonne ladle pour from a similar location to Photograph C.1 on another occasion. At the time of the pour there is still evidence of discharge to air, albeit very minor, and considerably less than the unsuppressed pour in Photograph C.1. This ladle had only been partially suppressed (no nitrogen in the launder) for the purpose of this visual assessment. This demonstrates the effectiveness of the suppression techniques developed. Photograph C.4 shows the last 5 tonnes of this ladle (C.3) being poured unsuppressed to assist in demonstrating the effectiveness of the suppression in comparison.
- 5.23 As is evident from Photograph C.3, the suppression methods adopted are very effective at reducing the visual effects of the iron plating. On the occasions when suppression cannot be undertaken the associated plume would be a distinctive feature from the local area in many instances. However, such occurrences would be infrequent and the effects lasting for a short duration. This should ensure that they would not add significantly to the overall visual effects of the air emissions from the Site (particularly as the fume does not result in deposited particulate).

General/Fugitive Emissions

- 5.24 Due to the nature of the raw materials utilised, stockpiling and transportation of co-products, wastes, coal, iron sand material on sealed and unsealed roads and yards within the Operational Area invariably generates dust. Nonetheless this is also to be anticipated with industrial use. Similarly, it could also be expected, as a result of the agricultural activities in the vicinity, particular when for example fields are cultivated under certain weather conditions. There are also some key mitigating circumstances associated with the Site that go a considerable way to alleviating any potential visual effects of dust. One of these is the extensive greenbelt around the Steel Mill. This provides effective separation or a buffer from adjacent areas, which in most instances would allow dust to settle within the Site. This would be assisted to a significant degree also by the extensive tall-established vegetation around much of the Site boundary. This vegetation would not only act as a partial physical barrier to wind-blown dust. It would also provide suitable visual screening from much of the surrounding area. From my observations at various times during the summer period, I saw no significant visible signs of dust being generated on the Site from the adjacent areas.
- 5.25 Additionally, NZ Steel monitors ambient air quality from several sites in the surrounding area, as a requirement of their existing air discharge consent. The consent sets trigger levels which require NZ Steel to investigate what may be causing elevated dust levels on Site. If

these levels are determined to be the result of Steel Mill activities (sometimes they are the result of agricultural or domestic fires), NZ Steel staff will initiate additional preventative actions to reduce dust.

- 5.26 Based on the assessment of these matters, I consider that the combined effects of the air emission from the Site on local visual amenity values would be of a low order.

b. Landscape Effects

- 5.27 The assessment of landscape effects takes into consideration physical changes to the landscape as a resource which may give rise to changes to its character and in turn the perceived value of the landscape.

- 5.28 An assessment of landscape effects therefore considers the sensitivity of the landscape (receiving environment) and the type and magnitude of change the proposal will bring. Landscape sensitivity is influenced by landscape quality and vulnerability, or the extent to which the biophysical (natural science), landscape character and values are at risk to change. Landscape values relate to people's perceptions and the importance that they place on particular attributes of a landscape.

- 5.29 Landscape character results from an amalgamation of physical elements with aesthetic and perceptual aspects that combine to make an area distinct. Landscape character is influenced by natural and built elements as well as types, patterns and intensity of landuse, historic, cultural and other intangible qualities.

- 5.30 A distinctive feature of the wider area is the contrast in landscape character locally, with a spectrum encompassing the natural setting of the harbour, through rural, urban, to heavy industry. All of which can be experienced from a single vantage point locally. This juxtaposition creates an inevitable tension, with the Steel Mill presenting an obviously discordant influence on the character and quality of the more natural and rural areas in particular. Nonetheless, it is a long-established component of the local landscape character, and it is within this context that the air discharges need to be examined. When considered in this manner, the air emissions would not significantly alter the ingrained influence the existing Steel Mill has on the landscape character and values associated with the setting. Rather they would present a secondary almost incidental phenomena, which could reasonably be anticipated to be associated with what is one of New Zealand's most significant industrial complexes. Furthermore, the magnitude of change resulting from the air discharges, given the current situation described, would have little additional effect on the existing landscape character and values associated with the area.

- 5.31 Although the nearby Waiuku Inlet exhibits considerable visual amenity and landscape value, largely as a result of the natural features and relationship between the open channel, the wide inter-tidal area and the indented coastline, the areas of greatest value in landscape terms are largely remote from the Site. These include outstanding natural landscapes (ONLs) located on the Awhiti Peninsula. These are however, for the most part, strongly

associated with Tasman Sea Coast, so their key attributes cannot really be experienced to any significant degree from the wider area. Further, the closest parts of any of the outstanding natural landscapes are located from 5-10km from the Site. Consequently, the air discharges would have an insignificant influence on the character and qualities or appreciation of these areas.

- 5.32 As highlighted, there are also a number of outstanding natural features in the vicinity. The nearest is Waitangi Falls (low basalt lava waterfall). However this would not be influenced by the air discharges from the Site in any way, as even though it is located within a few kilometers of the Site, it is strongly enclosed by landform and vegetation at the interface with the coast.
- 5.33 Similarly, the remainder of the outstanding natural features are all at least 5km or more away from the Steel Mill. In addition to the physical separation, due to the nature of these features, all, excluding Baldhill are experienced from the locality rather than from the wider setting. Baldhill presents a distinctive local volcanic landform, which can be appreciated from much of the nearby area. Yet, it is also located at a distance from the Site with intervening landform and vegetation, whereby the air emissions would not have any significant influence on views of this feature.
- 5.34 In consideration of these matters, I am of the view that the proposed air discharge effects concerning the local and wider landscape to be very low from the wider area and low from proximities closer to the Site.

c. Natural Character Effects

- 5.35 Natural character in landscape terms relates to the degree of 'naturalness' of a landscape. Natural character is primarily determined by the nature and extent of modification to a landscape and comprises natural elements appearing in natural patterns, underpinned by natural processes. Section 6(a) of RMA considers the preservation of the natural character of the coastal environment as a matter of *national importance*.
- 5.36 Although largely rural, the landscape setting has still undergone significant modification as part of settlement and historic productive landuse. As a result, the parts of the wider area that retain the highest natural character values are generally the more remote parts of the Awhitu Peninsula, as discussed previously, which would not be significantly influenced by this proposal.
- 5.37 As shown in the AUPOP maps there are no areas of *outstanding natural character* in the wider area. There are however three areas identified as having high natural character, but none are within 8 km of the Site (refer to Figure 5).
- 5.38 Although the seascape of the nearby harbour remains largely unencumbered by modification and the natural processes that formed the area continue to be evident along much of the coastline, the Waiuku Inlet coastal area is generally highly modified and characterised by

farmland extending down to the water's edge with isolated fragments of indigenous vegetation and scattered settlement patterns. The effect of human influences on natural character becomes increasingly evident toward the southern part of the inlet, particularly due to the influence of the Steel Mill and the urban characteristics associated with Waiuku Township.

- 5.39 The extent to which a proposal impacts on natural character depends to a large extent on the existing level of modification of the surrounding area. Within this context the air emissions would reinforce the established character of the Site without appreciably exacerbating the influence the heavy industry already has on the perception of natural character in the vicinity. Further, the air emissions would have no direct effect on the bio-physical components that contribute to the natural character of the coastal area nor significantly further affect the sense of 'naturalness' that currently exists in this area. Consequently, I consider that any additional adverse effects on natural character, either in the local or wider area, generated by the proposal would also be low.

6.0 PLANNING CONSIDERATIONS

- 6.1 The key relevant planning provisions in relation to this assessment from the AUPOP which give effect to the higher level documents such as the RMA and NZCPS as discussed in Section 4.0 of this report are located in Appendix E:
- 6.2 In light of the preceding assessment and in response to the intent of these provisions, I consider that:
- The proposed emissions to air would result in no significant effects on the outstanding natural landscapes (ONLs) or outstanding natural features (ONFs) identified in the vicinity, mostly because of the physical separation which would mean that the influences of the emissions from the Steel Mill are negligible.
 - Any consequential effects of the proposal would only potentially be evident within a radius of approximately 5km from the Site. Within this area the existing visual amenity, landscape character, values and natural character is already significantly influenced by the major industrial facility, which is a signature feature of the area and therefore already a pervasive influence. The proposed air discharge emissions would not further add to this influence in any significant manner.
 - Although I do not consider the main operational part of the plant to be within the coastal environment¹⁰, it nonetheless has significant visual connections and clearly influences the character and quality of the nearby Waiuku Inlet. However this part of the coast has not been identified as an area of high natural character. This is partially due to the

¹⁰ The relevant map from the Natural Character Assessment for the Auckland Region 2009 also indicates most of the operational part of the Site to outside the extent of the coastal environment. (refer to Appendix D)

existing influences of the Steel Mill but also a wide range of other anthropomorphic influences that have occurred over a long period. *Preserving natural character in the coastal environment* expresses the need to maintain the existing state. This part of the coastal environment is already significantly modified and the proposed emissions to air would do little to exacerbate this.

- A number of the provisions, in addition to those listed under the *Precinct* (refer to E.14.2.4/ E.14.3.5 (a)/ E14.3.6(a)&(c) / E19.3.2(j)) also recognise the need for this type of industrial use, which would naturally include associated activities such as discharges to air, to be accommodated and the necessity for it to be located in specific locations as long as effects can be avoided and where possible remedied or mitigated.

6.3 Based on these points, I consider that the proposal is consistent with the relevant statutory objectives and policies relating to landscape and visual considerations.

7.0 SUMMARY AND CONCLUSIONS

7.1 The landscape setting and area of potential influence of the Steel Mill is diverse, ranging from wild remote coastal landscapes to areas of intensive urban settlement. Similarly varied is the audience who occupy or transit through this area.

7.2 The Glenbrook Steel Mill was established in 1968 and is one of the largest industrial complexes in New Zealand. Since its establishment, it has become an integral part of the local area both in terms of its role in the local economy, social fabric as well as its influence on the landscape character of the area.

7.3 The Heavy Industrial zoning and Precinct overlay anticipate outcomes associated with the type of activity on the Site, such as a potentially utilitarian standard of amenity, along with noise and other effects such as discharges to air. For the Steel Mill the emissions to air consist of a variety of forms, from numerous sources. The most notable in relation to this assessment however are those associated with the main visible source of emissions from the Site - the main stacks of the Iron Plant.

7.4 While these main emissions are for the most part continuous, their prominence varies considerably with the seasons, weather conditions, distance, and the effect of screening elements within the landscape. And although they can be visible from as far away as 25km and beyond, it is only from locations relatively nearby where they attain any notable prominence. Within this 'zone of influence,' the audience could for the most part be considered a sensitive audience. Nonetheless, it is one that has been conditioned to a large degree to the presence of the industrial complex as a feature within the local landscape. Within this context the air discharges present as almost incidental to the wider influences of the Site, something that could reasonably be expected with this type of activity and a phenomenon that would not fundamentally alter the prevailing influence the steelmaking

facility has on the local area to any significant degree. Notably, (excluding Waitangi Falls) there are also no areas identified with high landscape value within the 'area of influence'.

- 7.5 It is therefore my conclusion based on this assessment that the proposed discharges to air associated with the Site would have low to low moderate overall landscape and visual effects.

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APPENDICES