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Tauriko West | Tupenga

Construction Air Discharge Assessment

Prepared for NZ Transport Agency Waka Kotahi

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Prepared by:

Chris Bender

Air Quality Consultant

Reviewed and approved by:

Peter Stacey

Managing Director

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Air Quality Consulting NZ Limited
9A Cajero Place, Green Bay
Auckland
New Zealand
Telephone: s9(2)(a)
Email: s9(2)(a)

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Glossary of Abbreviations

AADT	Annual Average Daily Traffic
AEE	Assessment of Environmental Effects
AQCNZ	Air Quality Consulting NZ Limited
BOPRC	Bay of Plenty Regional Council
CAU	Census Area Unit
CAQMP	Construction Air Quality Management Plan
E	East
EWS	Electronic Weather Station
FIDOL	Frequency, Intensity, Duration, Offensiveness and Location
GPG	Good Practice Guide
GPG Dust	Good Practice Guide for Assessing and Managing Dust
HAIL	Hazardous Activities and Industries List
HCV	Heavy Commercial Vehicle
IAQM	Institute of Air Quality Management
LINZ	Land Information New Zealand
MfE	Ministry for the Environment
N	North
NES-AQ	National Environmental Standards for Air Quality
NES-CS	National Environmental Standard for Assessing and Managing Contaminants in Soil
NO_2	Nitrogen dioxide
NZAAQG	New Zealand Ambient Air Quality Guidelines
NZTM	New Zealand Transverse Mercator
NZTA	NZ Transport Agency Waka Kotahi
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 µm
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 µm
RMA	Resource Management Act 1991
RNRP	Regional Natural Resources Plan
S	South
SH29	State Highway 29
SH29A	State Highway 29A
W	West
WHO	World Health Organisation

Glossary of Abbreviations for Unit of Measurement

km	Unit of Distance: kilometre
µm	Unit of Length: micrometre or microns
µg/m^3	Unit of Concentration: micrograms per cubic metre
%	Percentage
m	Unit of Distance: metre
m/s	Unit of Speed: metre per second

Report Author

My name is Peter Stacey. I am the Managing Director of Air Quality Consulting NZ Limited (AQCNZ), a specialist air quality consulting practice.

I hold a Bachelor of Science from The University of Auckland and a Graduate Diploma in Business from Auckland University of Technology. I am also accredited by the Clean Air Society of Australia and New Zealand (CASANZ) as a Certified Air Quality Professional (CAQP). I have over 20 years' experience specialising in air quality and have worked in a consultancy capacity for the last ten years.

I was responsible for reviewing the Construction Air Quality Assessment prepared in support of the substantive resource consent application for the SH29 Tauriko West Project.

My experience on similar transport infrastructure projects includes:

- Auckland Council City Rail Link (CRL) early works (C1, C2, C3 and C5) (Air Quality Assessment)
- Auckland Transport AMETI Expressway (Air Quality Assessment)
- NZTA Peka Peka to Ōtaki Expressway (Air Quality Assessment)
- NZTA Ōtaki to Levin Highway Project (Regional Council Peer Reviewer)
- NZTA Victoria Tunnel Upgrade Project (Air Quality Assessment)
- NZTA Waikato Expressway Cambridge to Piarere (C2P) (Regional Council Peer Reviewer for fast-track consent application)
- NZTA State Highway 1 Cambridge to Piarere Intersection Improvements (Regional Council Peer Reviewer)

I have also been involved in assessing applications for regulatory bodies and have been called upon to provide expert evidence at the Environment Court and at Council resource consent hearings.

Although this application is not before the Environment Court, I confirm that I have read the Code of Conduct for expert witnesses as contained in section 9 of the Environment Court Practice Note 2023. I agree to comply with that Code. My qualifications as an expert are set out above. I am satisfied that the matters which I address in this Construction Air Quality Assessment are within my area of expertise, except where I state that I am relying on information provided by another person or expert. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Approved by: s9(2)(a)

Date: 20 July 2026

Peter Stacey

Managing Director, AQCNZ

Executive Summary

This technical report assesses the potential effects of discharges to air associated with the construction of Tauriko West - Tupenga (the Project).

The primary potential air discharge from construction of the Project will be nuisance dust, which has the potential to affect local amenity values in surrounding areas. For the purposes of this assessment, potential dust effects on sensitive receptors within 200 metres of the proposed designation boundary have been considered. Sensitive areas identified within the assessment area include residential properties, schools and educational facilities, businesses, and public amenity areas.

Key sensitive receptors include the future Tauriko School site and established residential neighbours within the developing Tauriko West community, recreational users within the Kōpūrererua Valley including Puketoromiro Pā, and residential properties in the established Greerton and Pyes Pā suburbs. A total of 660 sensitive receptors has been identified within 200 m of the designation, with 197 receptors within 50 m.

The Project will involve approximately 5.3 million m^3 of cut and fill earthworks. Given the scale of earthworks, the duration of the construction programme, and the proximity of sensitive receptors to construction activities, the overall potential for nuisance dust effects without mitigation is assessed as high. Earthworks of this scale are typical of major road infrastructure projects, and the associated dust effects are well understood and routinely managed.

A number of management and mitigation measures have been recommended to reduce the potential for dust construction effects on sensitive receptors, and these will be incorporated into a Construction Air Quality Management Plan (CAQMP).

With appropriate management and mitigation in place, the risk of offensive or objectionable dust effects at receptors more than 50 m from construction activities is considered low. Some residual risk of dust effects remains for receptors located within 50 m of active earthworks. However, appropriate management and mitigation measures will minimise the likelihood of effects being offensive or objectionable beyond the Proposed Designation boundary.

1 Purpose of the Report

This technical report assesses the potential air quality effects associated with discharges to air during construction of the SH29 Tauriko West Project (the Project). It also sets out management and mitigation measures to minimise any potential adverse effects. These measures will be recorded in a management plan to be implemented during construction.

A comprehensive description of the Project is provided in the Substantive Application Report (SAR).

2 Assessment Methodology

This construction air quality assessment has been undertaken in accordance with the:

- Ministry for the Environment (MfE) Good Practice Guide for Assessing and Managing Dust (GPG Dust) (November 2016);
- Guide to Assessing Air Quality Impacts from State Highway Projects Version 3.0 (Waka Kotahi Guide v3.0) (Waka Kotahi NZ Transport Agency); and
- Bay of Plenty Regional Natural Resources Plan (RNRP).

2.1 Assessment Approach

The primary pollutant of concern from a road construction project is dust. There may also be some locations where odour associated with construction activities, such as the placement of asphalt or the exposure of odorous material during excavation, is a concern. Combustion emissions from heavy machinery and vehicles operating during construction constitute a permitted activity, and are therefore not relevant to this assessment

In determining whether there is potential for nuisance effects, consideration has been given to:

- the nature of the activity being undertaken;
- how long the activity is likely to occur;
- the volume and nature of soils or other material being cut or placed;
- management measures implemented to control the potential for dust effects;
- how close receptors are to the work areas;
- the nature of the receptors and their sensitivity to dust;
- the prevailing meteorological conditions; and
- effectiveness of management measures.

The MfE GPG Dust and RNRP Policy AIR-P4(10) recommend explicit consideration of all FIDOL factors (Frequency, Intensity, Duration, Offensiveness and Location) for any qualitative dust assessment.

A qualitative receptor-based assessment has been adopted, focused on sensitive receptors within 200 m of the Proposed Designation as recommended by Table 6-5 of the Waka Kotahi Guide v3.0.

2.2 Assessment Zones

The Project corridor has been divided into five assessment zones based on construction phasing, geographic character, and receptor distribution: Figure 1.

Zone 1: Ōmanawa Road to Redwood Lane Interchange - Southern section of the new SH29 alignment, characterised by the Belk Road rural-residential pocket and Tauriko Business Estate development.

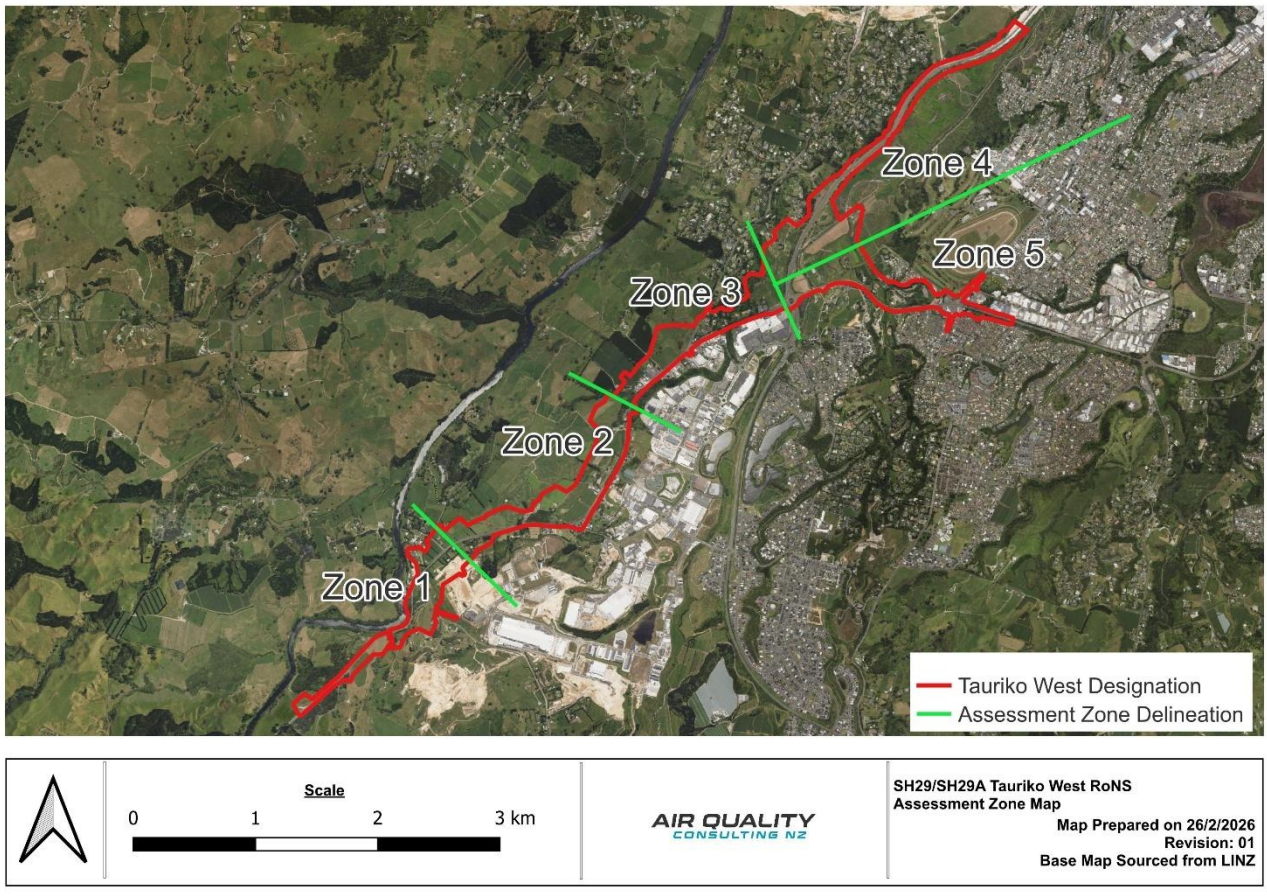
Zone 2: Redwood Lane Interchange to Tauriko Village Bridge - Transitional zone forming part of the Tauriko West Urban Growth Area, with mixed commercial (Tauriko Business Estate) and rural-residential land use currently transitioning from pastoral uses to residential development. Some residential properties may be established within this zone prior to completion of the Project.

Zone 3: Tauriko Village Bridge to Takitimu Drive Interchange - Tauriko commercial corridor with intensive mixed-use development, including the northern portion of the developing Tauriko West residential community. The new Tauriko School will be constructed within this zone adjacent to the Project Designation.

Zone 4: Takitimu Drive Interchange to Northern Project Limits - Transition to residential suburbs. Puketoromiro Pā, a site of significant cultural importance, is located immediately adjacent to the designation boundary in this zone.

Zone 5: SH29A Corridor, Takitimu Drive Interchange to Barkes Corner - The highest receptor density zone, encompassing the SH29A offline works through established Greerton and Pyes Pā suburbs. Greenpark School and Greenpark Playcentre are located in this zone.

Figure 1: Assessment Zones for Construction Air Quality Assessment



3 Existing Environment

The following section provides a description of the surrounding land use, topography, meteorology, and air quality environment in which the Project will be constructed.

3.1 Land Use and Zoning

The Project traverses land administered by both Tauranga City Council and Western Bay of Plenty District Council. A detailed description of land use and zoning within and surrounding the Project is provided in the Substantive Application Report (SAR).

3.2 Topography

The topography across the construction area is undulating, with notable topographic change associated with the Ōmanawa Valley at the southern end of the Project where the new Ōmanawa Bridge replacement is located.

The Wairoa River and its associated riparian areas form a significant natural feature along the western boundary of Zone 1. Other waterways within or adjacent to the designation include the Nanako Stream and Kōpūrererua Stream.

3.3 Meteorology

BOPRC operates an electronic weather station (EWS) at Ōtūmoetai School on Ōtūmoetai Road, approximately 10 km north-east of the Project corridor. This station is the nearest full-time station to the site and is considered representative of likely meteorological conditions during construction. The data has been reviewed for the period 1 January 2010 to 31 December 2025.

The wind rose for the Ōtūmoetai School EWS is presented in Figure 2. The average wind speed recorded over the monitoring period was 2.3 metres per second (m/s). There is a higher occurrence of winds from the west and south-west, but winds are relatively evenly distributed across the remaining directions (Table 1). The dominant wind directions where wind speeds are greater than 5 m/s are from the west and south-west and south-east. Properties on both the east and west of the designation are therefore likely to be downwind for longer periods of time. However, strong winds (greater than 5 m/s) are most likely to cause dust, and occur infrequently, representing approximately 3.6% of all recorded wind conditions.

Given the distance between the Ōtūmoetai School EWS and the Project corridor, site-specific meteorological monitoring may be required during construction to support real-time dust management decisions, particularly in areas of elevated receptor sensitivity. If required, this monitoring will be set out in the CAQMP.

Figure 2: Ōtūmoetai School EWS Wind Rose, 1 January 2010 to 31 December 2025 (Source: BOPRC)

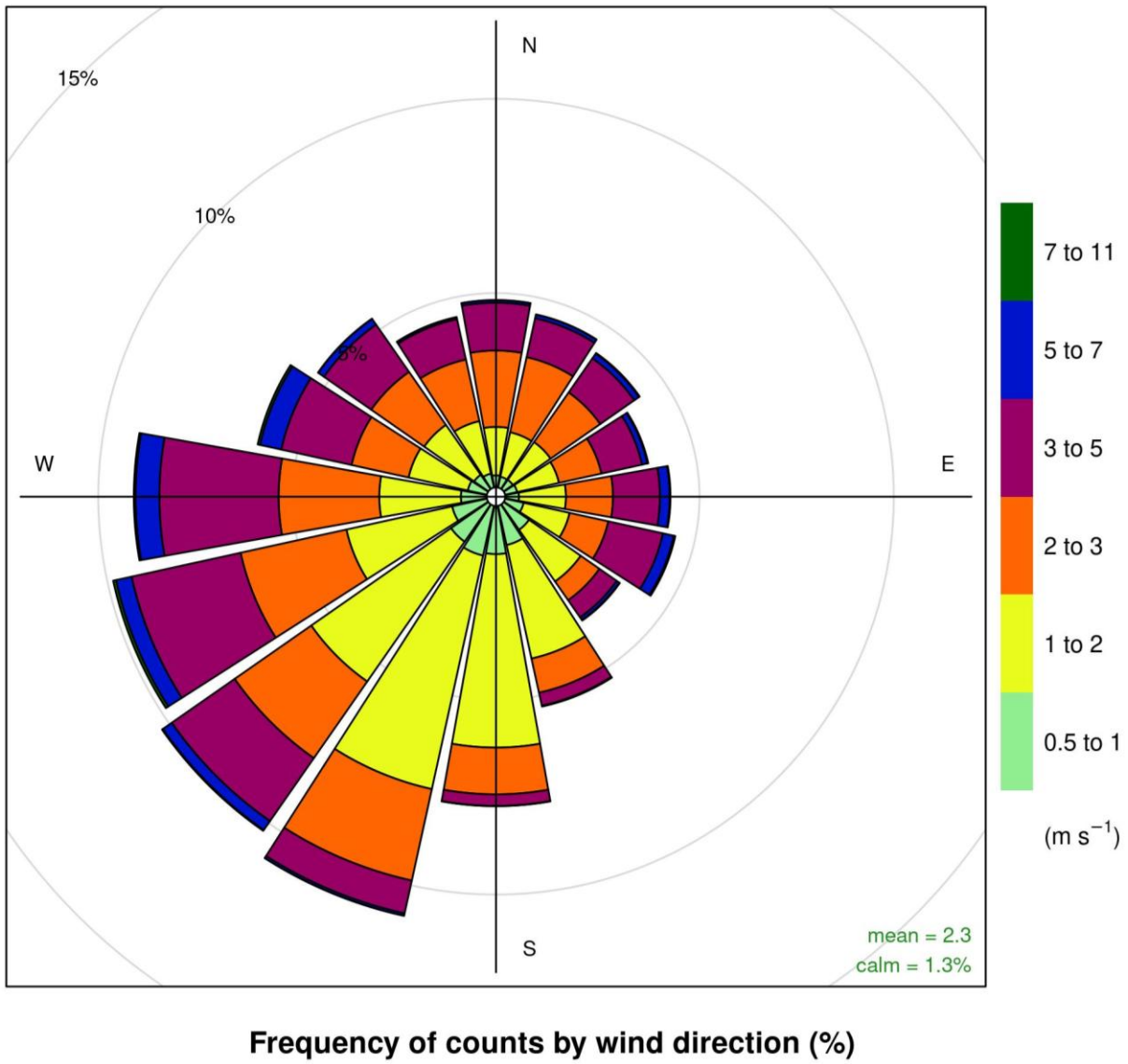


Table 1: Wind Speed Frequency Distribution - Ōtūmoetai School EWS (2010–2025)

Direction	Windspeed (m/s)					
	0.5–1	1–2	2–5	5–7	7–11	Total
N	0.3	1.2	2	0.1	0	4.8
NNE	0.3	1.2	2	0.1	0	4.6
NE	0.3	1.2	1.6	0.1	0	4.3
ENE	0.3	1.1	1.1	0.1	0	3.8
E	0.4	1.2	1.2	0.3	0	4.3
ESE	0.5	1.2	1	0.3	0	4.5
SE	0.8	1.6	0.6	0.1	0	3.6
SSE	1	3	0.9	0	0	5.3
S	1.2	5	1.2	0	0	7.7
SSW	1.3	6.2	2.4	0.1	0	10.8
SW	1.2	4.4	2.4	0.3	0	10.2
WSW	0.9	2.8	2.8	0.4	0.1	9.9
W	0.7	2.1	2.6	0.6	0	9.1
WNW	0.5	1.6	1.5	0.6	0.1	6
NW	0.4	1.6	1.7	0.2	0	5.3
NNW	0.4	1.4	1.6	0.1	0	4.5
Calm	-	-	-	-	-	1.3
Total	***10.5***	***36.7***	***26.5***	***3.3***	***0.3***	***100***

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3.4 Background Air Quality

The Project area is located outside any Gazetted airshed under the NES-AQ. The nearest Gazetted airsheds in the Bay of Plenty region are Mt Maunganui and Rotorua. Background air quality across the Project corridor is therefore expected to be good, consistent with the predominantly rural and semi-rural character of the area southwest of Tauranga.

The Tauriko Business Estate adjoins the southern portion of the Project corridor and includes light and heavy industrial and commercial activities with point source emissions. These activities may contribute to localised elevated background concentrations of PM_{10} and NO_2 at sensitive receptors in the vicinity of Zones 1 and 2, though concentrations are not expected to be significant relative to the NES-AQ standards across the broader corridor.

Background concentrations of PM_{10}, $PM_{2.5}$, and NO_2 have been obtained from the NZTA background air quality tool for the Bethlehem Census Area Unit (CAU), which is the most representative CAU for the Project corridor. The Bethlehem CAU covers the northern portion of the corridor and is considered a conservative (slightly higher) estimate of background concentrations for the more rural southern zones (Zones 1–2), which are likely to have lower background concentrations given their greater distance from urban development. The background values are presented in Table 2 below.

Table 2: Background Air Quality - Bethlehem Census Area Unit (Source: NZTA Background Air Quality Tool)

Pollutant	Averaging period	Background concentration	Relevant standard/guideline
NO_2	Annual average	4.5 µg/m^3	40 µg/m^3 (NES-AQ) - 11% of standard
PM_{10}	24-hour average	24.9 µg/m^3	50 µg/m^3 (NES-AQ) - 50% of standard
	Annual average	9.5 µg/m^3	20 µg/m^3 (NZAAQG) - 48% of guideline
$PM_{2.5}$	24-hour average	11.9 µg/m^3	25 µg/m^3 (Proposed MfE guideline) - 48% of guideline
	Annual average	5.5 µg/m^3	10 µg/m^3 (Proposed MfE guideline) - 55% of guideline

All background concentrations are well below the relevant NES-AQ standards and MfE ambient air quality guidelines. None of the background concentrations exceed the 90% threshold identified in the Waka Kotahi Guide v3.0 as indicating elevated air quality risk, confirming that the Project area is not in a degraded airshed. The construction dust assessment is focused on short-term nuisance dust effects rather than chronic pollutant exposure.

3.5 Sensitive Receptors

The RNRP defines a sensitive area as an area that is particularly sensitive to adverse effects associated with air contaminant discharges, either due to the vulnerability of the population or area exposed to the contaminant, or due to the potential for people to be exposed for prolonged periods. Sensitive areas include, but are not limited to:

- residential buildings and areas (including marae);
- childcare centres, schools, and educational facilities;
- hospitals, nursing homes, and aged care facilities;
- public amenity areas;
- incompatible crops or farming systems (e.g., organic farms, greenhouses); and
- household water supplies (including roofs from which a water supply is obtained).

During the preliminary stages of this assessment, sensitive areas were identified using the above criteria where there was the potential for air quality impacts to occur during construction of the Project. Sensitive areas were identified using GIS analysis of land parcels within 200 m of the Proposed Designation boundary, incorporating LINZ parcel data, BOPRC land use mapping, and recent aerial photography. Only land parcels within 200 m of the Project Designation were considered.

In addition to standard residential and commercial sensitive receptors, the following receptors of particular note have been identified within the assessment area:

- Tauriko School (Zone 3) - to be constructed within the assessment area and will be adjacent to the Project Designation. Classified as very high sensitivity once operational.
- Greenpark School and Greenpark Playcentre (Zone 5) - institutional receptors with very high sensitivity due to children's vulnerability to air quality impacts and intensive outdoor activity use.
- Puketoromiro Pā (Zone 4) - a pā site of significant cultural importance associated with mana whenua, located immediately adjacent to the designation boundary.

- Various waterways - including the Omanawa River, Wairoa River, Nanako Stream, and Kōpūrererua Stream and their associated riparian areas.

A total of 660 sensitive receptors were identified within 200 m of the Proposed Designation. The distribution of receptors by land use type and distance from the designation boundary is discussed further in Section 4.

4 Assessment of Effects

4.1 Dust Generating Activities

During the construction phase of the Project there is potential for nuisance dust to affect the surrounding environment. Nuisance dust means there is visible evidence of suspended matter in the air beyond the construction site boundary and/or visible evidence of suspended matter settling on water, land, or structures on a neighbouring site.

Nuisance dust can include effects such as:

- visual soiling of clean surfaces such as cars, window ledges, and household washing; and
- dust deposits on flowers, fruit, or vegetables.

Construction activities with the potential to result in dust generation if not appropriately controlled or mitigated include:

- stripping and stockpiling of topsoil;
- excavation of cut material;
- placement of fill;
- stockpiling of soil and cut material;
- traffic movements on haul roads; and
- rehabilitation of completed areas.

4.1.1 Earthworks Volumes

The total earthworks for the Project comprise approximately 2.2 million m^3 of cut and 3.1 million m^3 of fill, representing a total material movement of approximately 5.3 million m^3. The earthworks balance shows a significant fill requirement, necessitating import of approximately 2.0 million m^3 of fill material from external sources, with approximately 0.8 million m^3 of waste material to be disposed of off-site.

The anticipated earthworks volumes by zone are summarised in Table 3. These volumes are based on estimates provided by the design team and have been adapted to align with the five assessment zones used in this report. The zone-specific volumes should be considered approximate, as the design earthworks breakdown does not correspond exactly to the air quality assessment zone boundaries. Given that these volumes are based on consenting level design, they should be treated as indicative only and are subject to change as design is refined.

Table 3: Anticipated Earthworks Volumes by Assessment Zone

Zone	Description	Cut (m^3)	Fill (m^3)	Import Required (m^3)	Waste (m^3)
Zone 1	Ōmanawa Road to Redwood Lane Interchange	579,000	631,000	341,000	273,000
Zone 2	Redwood Lane Interchange to Tauriko Village Bridge	547,000	488,000	215,000	165,000
Zone 3	Tauriko Village Bridge to Takitimu Drive Interchange	687,000	1,335,000	992,000	309,000
Zone 4	Takitimu Drive Interchange to northern Project limits	44,000	79,000	57,000	42,000
Zone 5	SH29A, Takitimu Drive Interchange to Barkes Corner	374,000	551,000	364,000	10,000
Total		**2,231,000**	**3,084,000**	**1,969,000**	**799,000**

4.1.2 Heavy Vehicle Movements

The import and export of material, combined with aggregate delivery for pavement construction, will generate substantial heavy commercial vehicle (HCV) traffic during the construction programme. Peak HCV movements are anticipated to reach up to 1,000 movements per day during the six summer earthworks seasons, comprising:

- 666 movements/day for fill material import (average 5,000 m^3/day at 15 m^3 per truck);
- 200 movements/day for waste material disposal (average 1,500 m^3/day);
- 100 movements/day for aggregate delivery for pavement construction (2,600 tonnes/day); and
- additional movements for other materials, drainage blankets, and miscellaneous deliveries.

These movements are significant and result in a high construction air quality risk if the effects are not appropriately managed.

4.1.3 Haul Roads

To minimise dust tracking onto public roads and reduce the number of site access points, haul roads will be used where possible to eliminate the need for construction vehicles to use public roads. This internal haul road will eliminate the need for construction vehicles to use public roads to travel between different work zones within the Project designation. The haul road will be subject to active dust suppression measures including water cart application, speed restrictions, and vehicle wheel washing at exit points.

Materials moving to and from the site will utilise four primary access points:

- West (SH29): Aggregate import from western quarries;
- East (SH29A) and South (SH36): Fill material import and waste disposal to eastern and southern facilities;
- North (Takitimu Drive): Earthworks materials and aggregates.

4.1.4 Construction Programme

The construction programme is anticipated to span approximately six years, with the exact timing to be confirmed once funding has been secured. Earthworks will be concentrated during six summer construction seasons, though construction activities will continue year-round. Zone overlap will occur, with multiple zones potentially under construction simultaneously, depending on contractor

sequencing and resource availability. The extended construction duration and zone overlap create the potential for cumulative dust exposure at receptors located between zones or near zone boundaries.

4.1.5 Water Availability

The application of water is an important component of dust control. This assessment has been made on the basis that there will be sufficient water available for dust suppression throughout the construction programme.

4.2 Scale of Dust Effects

Receptors more than 200 m from construction activities are unlikely to experience construction dust related nuisance, as dust typically settles within this distance. With mitigation measures in place, the potential distance reduces to 50 m.

4.3 Sensitivity of the Receiving Environment

The sensitivity of receptors to dust nuisance is primarily determined by the land use type and the receptor's distance from construction activities. Different land uses have varying tolerances to dust impacts based on their function, occupancy patterns, and amenity expectations.

4.3.1 Sensitivity by Land Use Type

Residential receptors have high sensitivity to dust effects due to their primary role as sensitive land uses in dust assessments. Dwelling occupants have legitimate expectations of amenity at their homes and typically spend extended periods at these locations, engaging in outdoor activities and maintaining features (washing, gardens) susceptible to dust soiling. The presence of vulnerable population groups (children, elderly, those with respiratory conditions) within residential areas further elevates sensitivity.

Institutional receptors (schools, childcare centres, rest homes) have very high sensitivity to dust effects because they serve vulnerable populations and involve outdoor activities that increase airborne dust exposure. The heightened sensitivity reflects children's developmental vulnerability, intensive outdoor use, and elevated breathing rates during active play.

Commercial and industrial receptors typically have low to medium sensitivity depending on the nature of the activity. General commercial and light industrial uses are more tolerant of construction impacts than residential properties, as occupancy patterns differ, and amenity expectations are lower.

Rural receptors (pastoral farming, forestry) generally have low sensitivity to dust effects, as these land uses commonly experience dust generation from agricultural activities and tolerate temporary construction impacts.

4.3.2 Sensitivity by Distance

Receptors within 50 m of construction activities face the highest risk of dust nuisance effects. Even with mitigation measures in place, there remains potential for dust deposition on properties, visual soiling of surfaces, and indoor intrusion through open windows. The intensity and frequency of dust exposure at this distance can result in effects that occupants find genuinely objectionable, particularly during dry, windy conditions when earthworks are occurring.

Receptors between 50 m and 200 m face lower dust exposure risk. Standard dust mitigation measures (water suppression, surface stabilisation, speed controls) are generally effective at preventing offensive or objectionable effects at these distances. While nuisance dust may occasionally be

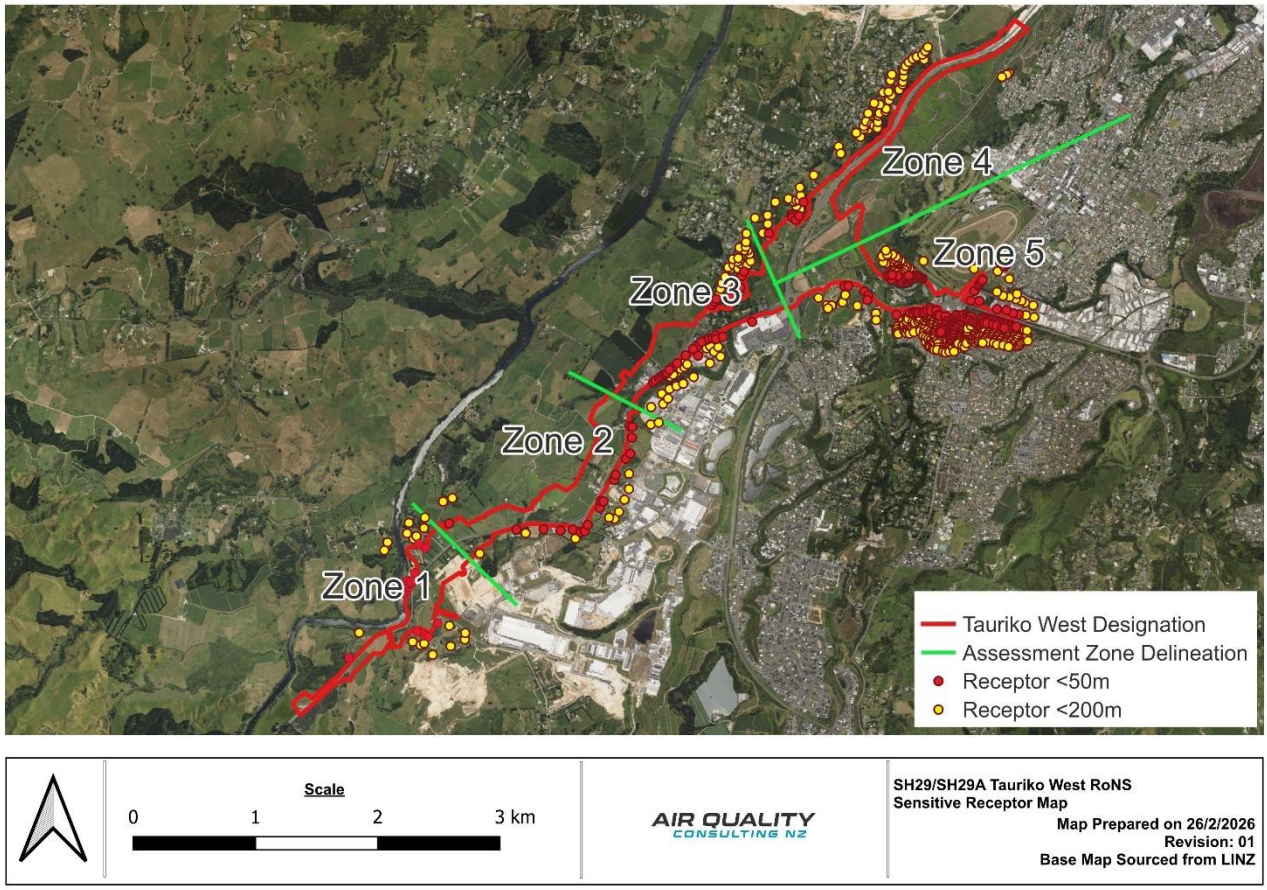
perceptible during adverse meteorological conditions, the intensity and frequency are typically manageable through active dust control.

Receptors beyond 200 m are unlikely to experience significant construction dust effects, as particulate matter settles within this distance under normal conditions.

4.3.3 Receptor Identification Methodology

Receptors identified in Section 3.5 were classified by land use type and assigned to one of the five assessment zones (Section 2.3) based on their location relative to the Project Designation. The resulting distribution by zone, distance band, and sensitivity rating is summarised in Table 4. Figure 3 shows the spatial distribution of receptors by distance band (within 50 m and within 50–200 m of the Project Designation).

Figure 3: Project Map Showing Distribution of Nearest Sensitive Receptors



4.4 Zone-Specific Assessment

The corridor is divided into five assessment zones as identified in Section 2.3. Each assessment describes receptor distribution, construction activities, and sensitivity classification. The FIDOL framework is applied in Section 4.5. Table 4 summarises receptor distribution and sensitivity ratings by zone; sensitivity ratings reflect the highest sensitivity areas within each zone.

Table 4: Sensitive Receptor Distribution by Assessment Zone

Zone	Description	<50m Total	50-200m Total	Zone Total	Sensitivity Rating
Zone 1	Ōmanawa Road to Redwood Lane	16	16	32	Low to High
Zone 2	Redwood Lane to Tauriko Village	19	12	31	High
Zone 3	Tauriko Village to Takitimu Drive Interchange	32	43	75	High to Very High
Zone 4	Takitimu Drive Interchange to northern Project limits	6	55	61	High
Zone 5	SH29A corridor	124	337	461	High
Total		197	463	660	High

Detailed zone-specific assessments, including receptor counts, construction activities, and sensitivity ratings for each zone, are provided in Appendix A.

4.5 Assessment of Effects Using FIDOL Factors

The MfE GPG Dust and RNRP Policy AIR-P4(10) recommend explicit consideration of all FIDOL factors for any qualitative dust assessment. This section assesses the unmitigated construction dust effects of the Project using the FIDOL framework, synthesising the zone-specific findings presented in Section 4.4, and identifies where mitigation measures are required. The assessment recognises that actual dust generation will be influenced by local soil characteristics and seasonal weather conditions across the Project.

4.5.1 Frequency of Exposure

Receptors along the Project corridor have the potential for frequent exposure to dust-generating activities throughout the construction programme. Within each construction season, earthworks occur regularly as construction progresses through different zones and activities. However, dust transport is most significant during winds exceeding 5 m/s, which occur approximately 3.6% of the time (refer Section 3.3). Receptors may therefore experience significant dust exposure only when strong winds coincide with active earthworks. Haul road operations throughout the construction programme generate continuous low-level dust exposure from vehicle movements, though actual dust transport toward receptors depends on wind conditions.

4.5.2 Intensity of Exposure

Dust exposure intensity is primarily determined by receptor proximity to construction activities. As detailed in Table 4, 197 receptors are located within 50 m of the designation boundary across all zones, potentially experiencing high dust intensity. Zone 5 has the highest concentration of near-proximity receptors with 124 within 50 m, followed by Zones 3 and 2 with 32 and 19, respectively. The scale of earthworks (approximately 5.3 million m^3 total) creates substantial dust generation potential, with Zone 1 representing the largest single source. At distances between 50 m and 200 m, 463

receptors experience medium to low intensity exposure generally manageable through standard dust mitigation measures.

4.5.3 Duration of Exposure

The full construction programme spans approximately six years, creating a medium-to-long-term duration exposure context. Dust-generating activities will be most intensive during summer construction seasons when earthworks are at their peak, dry conditions reduce natural dust suppression from rainfall, and stronger winds increase the potential for dust transport toward receptors. Winter periods will see reduced earthworks activity and higher rainfall, providing natural attenuation of dust generation, though construction activities will continue year-round. For individual receptors, high-intensity exposure during active adjacent earthworks is measured in months, while lower-intensity exposure from more distant works extends across the construction period.

4.5.4 Offensiveness of Emissions

Construction dust from the Project will primarily comprise inert mineral material from cut and fill operations and is not expected to present toxicity concerns. However, dust soiling of washing, vehicles, outdoor furniture, and building surfaces, deposition on gardens and outdoor recreation areas, and indoor intrusion through open windows would be considered offensive. Greenpark School and Greenpark Playcentre are particularly sensitive because dust could affect children's outdoor activities. Puketoromiro Pā will require appropriate management in consultation with Ngāi Tamarawhao and mana whenua.

4.5.5 Location Sensitivity

Location sensitivity is the primary differentiating factor across the Project corridor, with receptor distribution and density determining where significant adverse effects require targeted management. Zone 5 has the highest location sensitivity, with 461 receptors including Greenpark School and Greenpark Playcentre concentrated in established suburban areas. Zones 3 and 4 also present very high sensitivity, driven by concentrated residential receptors and, in Zone 4, the cultural significance of Puketoromiro Pā. Zone 1 has low to high sensitivity reflecting the balance between low-sensitivity rural and industrial areas and high-sensitivity residential concentration around the Redwood Lane Interchange. Refer Table 4 for sensitivity ratings by zone.

4.5.6 FIDOL Assessment Summary

The FIDOL assessment confirms that location sensitivity is the primary differentiating factor across the corridor. Zone 5 presents the most challenging dust management environment, combining very high location sensitivity, high exposure intensity, and the duration of linear earthworks within established suburbs. Zones 3 and 4 also present elevated sensitivity, while Zones 1 and 2 require targeted management at specific high-sensitivity locations.

Across all zones, 197 receptors within 50 m face high-intensity frequent exposure during active earthworks, while 463 receptors between 50 m and 200 m experience medium to low intensity exposure manageable through standard dust control. The mitigation measures in Section 5 directly address each FIDOL factor, with the CAQMP providing the framework for implementation and adaptive management throughout the construction programme.

4.6 Construction Dust Effects on Roof Collected Water

The construction of the Project has the potential to result in dust being transported beyond the designation boundary and settling on residential roofs. Household water supplies (including roofs from which a water supply is obtained) are defined as a sensitive area under the RNRP.

It is unlikely that properties located more than 200 m from construction activities will experience any measurable impact on their roof-collected drinking water systems. As the distance between a property and the construction works reduces, the potential for dust deposition on roofs increases, with the greatest risk for properties within 50 m.

Based on our experience with similar linear infrastructure projects and the implementation of dust mitigation measures detailed in Section 5, construction dust is unlikely to impact roof-collected water quality. Where roof water collection systems incorporate features such as first flush diverters, roof screens, and tank inlet filters in accordance with Ministry of Health guidance (Ministry of Health, Water collection tanks and safe household water, revised January 2022), the risk of dust affecting water quality is low. However, older dwellings may not have such features, and the potential for dust deposition to affect roof-collected water cannot be discounted for properties within 50 m of active earthworks. The CAQMP management measures will minimise the amount of dust reaching roof surfaces across all properties within the assessment area.

4.7 Odour from Construction

Potential odour may arise during construction activities associated with the Project. The most likely sources are the laying of asphalt or asphaltic products, and the potential disturbance of buried organic material during excavation works, or organically enriched soils.

Odour generated during asphalt laying is comparable to that experienced during normal road maintenance or resurfacing activities. These emissions are short lived and localised and are not expected to result in significant off-site odour The likelihood of encountering odorous material during excavation is considered to be low. No geotechnical or contaminated land investigations reviewed for the Project have identified the presence of odorous materials within the alignment.

4.8 Summary of Construction Air Quality Effects

Construction of the Project has the potential to cause nuisance dust emissions due to the scale and linear extent of earthworks activities. Without mitigation, dust effects are likely to be high at sensitive receptors within 50 m of construction activities, including established and future residential properties within the Tauriko West community, the future Tauriko School, Greenpark School and Greenpark Playcentre, and recreational users within the Kōpūrererua Valley including Puketoromiro Pā.

The potential for construction dust to cause offensive or objectionable nuisance effects at receptors more than 50 m from construction activities is considered low. It is also unlikely that construction dust will result in significant effects on roof-collected drinking water quality, provided mitigation measures are implemented in accordance with the CAQMP. Odour effects, from construction activities, are expected to be transient and at a low level.

5 Mitigation Measures

The mitigation measures set out below are consistent with the MfE GPG Dust, the Waka Kotahi Guide v3.0, and current best practice for major highway construction projects in New Zealand.

The CAQMP will include provisions for adapting mitigation measures to real-time meteorological conditions, with weather data from the on-site weather station (refer Section 5.3) informing operational decisions and supporting compliance monitoring.

The CAQMP will set out the methods, procedures, and responsibilities for implementing dust and air quality management. Complaints relating to construction dust will be managed through the Project's centralised complaints process, rather than through a procedure specific to construction dust.

5.1 Earthworks

The CAQMP will address dust effects from earthworks activities through measures that include:

- Defining areas around construction activities where there is the potential to create dust effects and putting in place appropriate mitigation such as operating water trucks along haul roads and timely stabilisation of open areas.
- Using weather forecast information, including predicted dry and windy conditions, to ensure sufficient mitigation equipment (e.g., water carts) is available on site and to schedule lower-dust-generating activities on high-risk days.
- Identifying activities that have the potential to generate airborne dust and adjusting works scheduling or implementing additional controls where sensitive receptors are downwind and conditions are unfavourable.
- Developing procedures for the operation of construction vehicles in areas within 100 m of sensitive receptors.
- Developing specific procedures for the removal of potentially dusty cut material or placement of fill material (such as sand and silts) at locations close to sensitive receptors.
- Vegetating or covering all finished cut batters with hydroseed or mulch as soon as practicable after completion.
- Applying dust suppression chemicals to haul roads or open areas using water carts, as appropriate.

5.1.1 Stockpiled Materials

The CAQMP will address dust emissions from stockpiles. Management measures to be considered include:

- Developing procedures to manage movement of stockpiled topsoil and other potentially dusty materials during windy conditions at locations close to sensitive receptors.
- Keeping the size and height of stockpiles to a minimum.
- Using water as required to control dust from stockpile surfaces.
- Installing windbreaks around large stockpiles where practicable.
- Locating stockpiles as far as practicable from sensitive receptors.

5.1.2 Construction Yards

Construction yards are likely to have metalled surfaces and will require periodic dust management. The CAQMP will address yard dust management, through measures that include:

- Using water carts on metalled yard surfaces during dry conditions.

- Placing fresh metal on yard surfaces to reduce dust generation.
- Locating construction yards as far as practicable from sensitive receptors and screening where appropriate.

5.1.3 Haul Roads

Vehicle movements on haul roads are typically the most significant dust source on a highway construction project. The CAQMP will address haul road dust management, through:

- Wet suppression of unpaved haul road surfaces using water carts or fixed sprinklers during dry conditions.
- Metalling or chemical stabilisation of haul road surfaces.
- Revegetation of haul road surfaces once construction is complete.
- Washing down vehicles after travelling through unpaved haul road sections, to minimise tracking of mud and dust onto public sealed roads.
- Ensuring vehicles transporting potentially dusty material are covered where practicable.

5.2 Applying location-specific speed controls dependent on proximity to sensitive receptors Location-Specific Measures

In addition to the management measures above, the CAQMP will consider the following to higher-sensitivity locations.

5.2.1 Educational Facilities

Tauriko School (Zone 3), and to a lesser extent Greenpark School and Greenpark Playcentre (Zone 5), represent high sensitivity receptors due to children's vulnerability to dust effects. Enhanced mitigation measures for these facilities may include:

- Adjusting high-dust activities where practicable when wind conditions are directed toward these facilities.
- Implementing enhanced dust suppression for works within 100 m.

5.2.2 Tauriko West Urban Growth Area

The western portions of Zones 2 and 3 are zoned Medium Density Residential and Rural Residential as part of the Tauriko West Urban Growth Area. Residential development of the growth area may occur concurrently with SH29 construction. Both activities have the potential to generate dust at receptors located along the western boundary of the Project Designation. The CAQMP will include dust controls along the western boundary, adjusted as adjacent land changes from rural to occupied residential.

5.3 Construction Monitoring

Monitoring to verify that dust management measures are being effectively implemented will occur, through:

- Installation of at least one weather station in a representative location within the Proposed Designation, to monitor wind speed, wind direction, and rainfall to inform operational dust management decisions.

- A visual dust monitoring programme, implemented during construction and undertaken as frequently as necessary to confirm that dust is not leaving the site at levels likely to cause nuisance.

Real-time particulate monitoring is not proposed, as visual dust monitoring is considered sufficient and appropriate for a project of this nature.

5.4 Odour

The following measures will manage odour during construction:

- Controlling the temperature of asphalt during placement and managing application time to reduce odour.
- Transporting odorous material from the site to an appropriate facility for disposal as soon as practicable.
- Minimising open areas of excavation where odorous material is encountered and ensuring odorous sources are covered or temporarily backfilled when not actively excavating.
- Considering wind direction and downwind receptors when scheduling excavation of potentially odorous materials.
- Using an odour masking agent or deodoriser on the surface of odorous material as it is encountered, where appropriate.

6 Conclusion

Potential construction air quality effects of the Project have been assessed using best practice methods and adopting the recommendations of relevant good practice guides.

The primary potential air discharge from the construction of the Project is dust. The scale of earthworks required (approximately 5.3 million m^3), the linear extent of the designation, the duration of the construction programme across six construction seasons, and the proximity of sensitive receptors means the potential for nuisance dust effects without mitigation is high in several zones. A total of 660 sensitive receptors has been identified within 200 m of the designation, with 197 within 50 m.

Well-tested management measures will be implemented and detailed in a Construction Air Quality Management Plan (CAQMP). With appropriate management, the potential for dust nuisance effects at sensitive receptors more than 50 m from construction activities is considered low. Some residual risk remains for receptors within 50 m of the designation boundary; however, the recommended measures will minimise the likelihood of effects being offensive or objectionable beyond the designation.

Odour is unlikely to be a concern, and any effects would be minor and transient. Effects on dust on roof-collected water are similarly unlikely, provided appropriate mitigation is implemented.

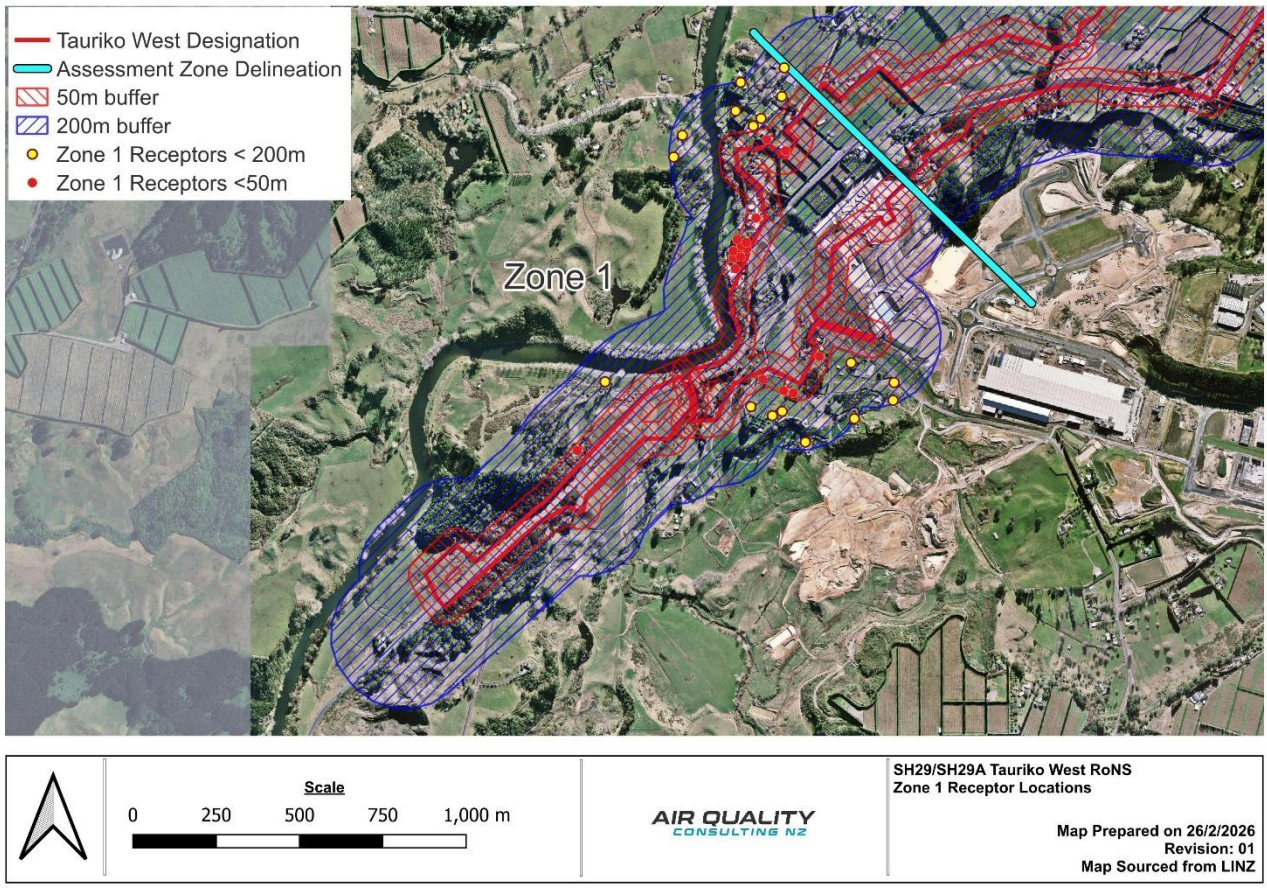
Appendix A Zone-Specific Assessments

A-1 Zone 1: Ōmanawa Road to Redwood Lane Interchange

Zone 1 extends from Ōmanawa Road northward to the Redwood Lane Interchange, straddling the boundary between Tauranga City Council and Western Bay of Plenty District Council. The eastern side is characterised by the Tauriko Business Estate, with rural land use and rural residential properties to the west extending toward the Wairoa River.

Receptors: Zone 1 contains an estimated 32 sensitive receptors comprising 31 rural residential properties and 1 commercial receptor. Of these, 16 receptors (50%) are located within 50 m of the designation boundary. A map of Zone 1 sensitive receptors is provided as Figure 4.

Figure 4: Zone 1 Sensitive Receptor Map



Construction Activities: Major construction activities include the Redwood Lane Interchange, bridge approach works for the Belk Road crossing, and establishment of the southern haul road access point. Earthworks volumes total approximately 579,000 m^3 cut and 631,000 m^3 fill, requiring import of approximately 341,000 m^3 of fill material, making this the largest earthworks zone by total volume.

Sensitivity: Low to high. Sensitivity ranges from low in the rural land, river corridor, and Tauriko Industry areas, to high where the 16 receptors within 50 m are concentrated around the Redwood

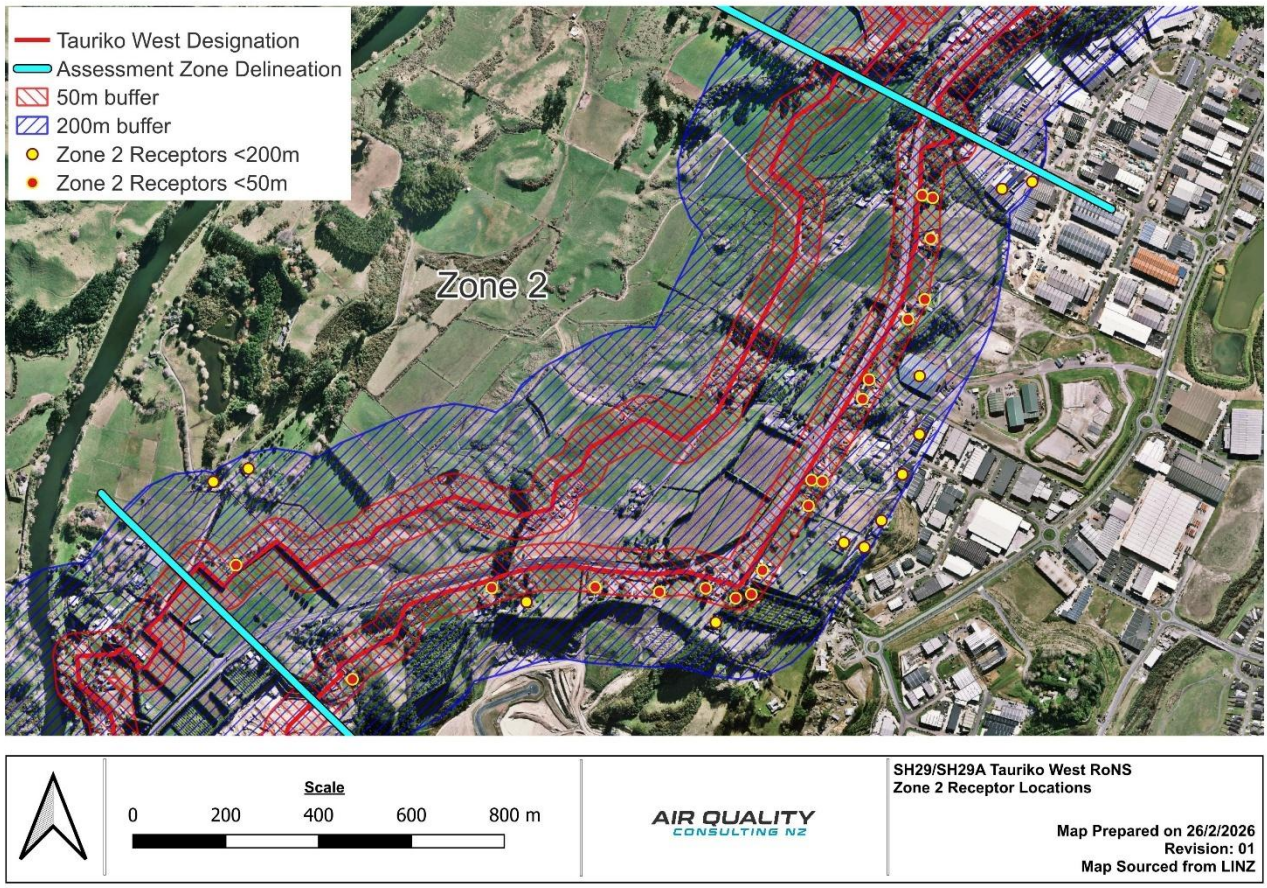
Lane Interchange. Sustained dust management will be required in that location over the interchange construction period.

A-2 Zone 2: Redwood Lane Interchange to Tauriko Village Bridge

Zone 2 forms part of the Tauriko West Urban Growth Area, with mixed commercial (Tauriko Business Estate) and rural-residential land use currently transitioning from pastoral uses to residential development. Some residential properties may be established within this zone prior to completion of the Project, with the southern portion of the Tauriko West residential community being developed concurrently with Project construction.

Receptors: Zone 2 contains 31 sensitive receptors comprising 24 residential properties and 7 commercial receptors. Of these, 19 receptors (61%) are located within 50 m of the designation boundary. A map of Zone 2 sensitive receptors is provided as Figure 5.

Figure 5: Zone 2 Sensitive Receptor Map



Construction Activities: Construction includes earthworks for the SH29 alignment and Tauriko Village Bridge structure. Earthworks volumes total approximately 547,000 m^3 cut and 488,000 m^3 fill, requiring import of approximately 215,000 m^3 of fill material.

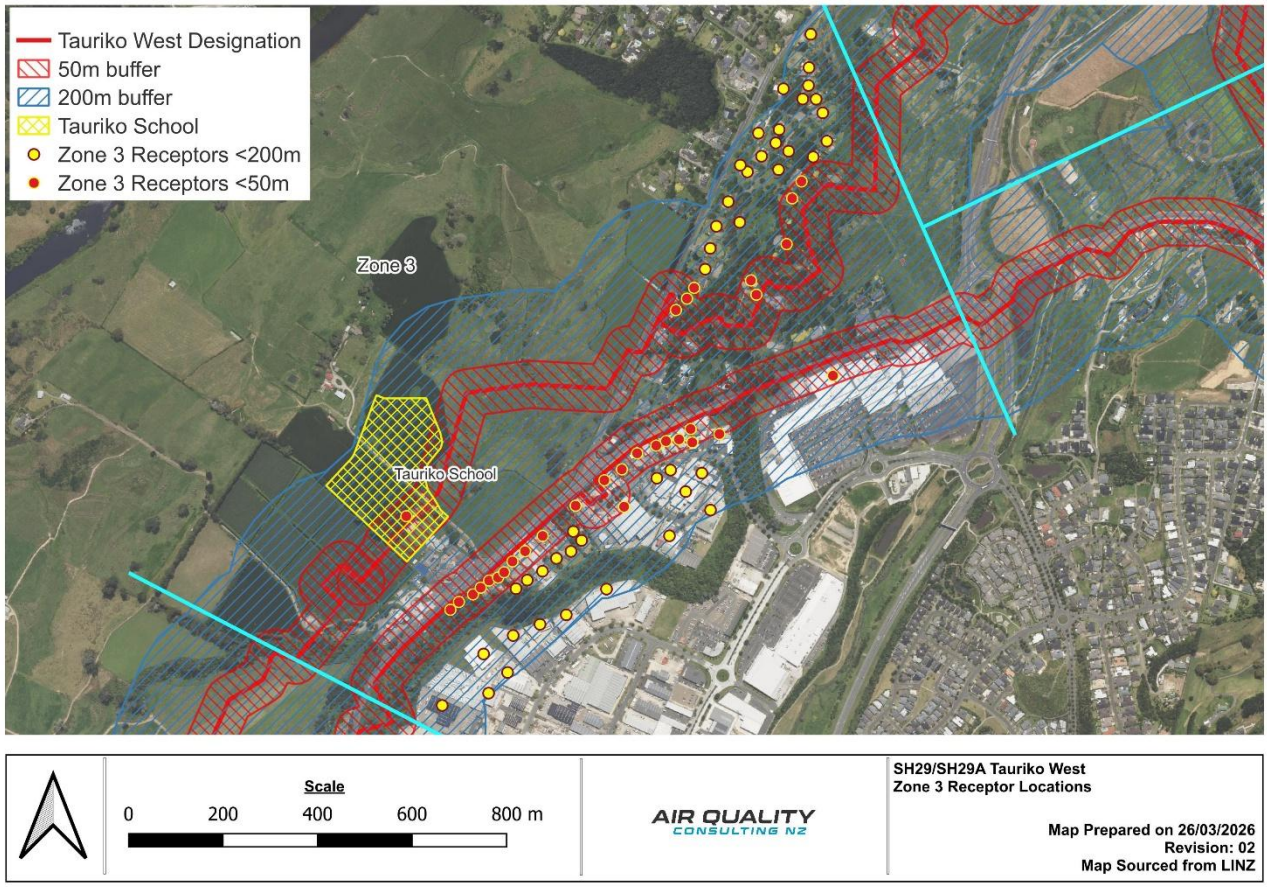
Sensitivity: High sensitivity. The high proportion of receptors within 50 m (68%) creates localised high-sensitivity conditions requiring intensive dust management. Sensitivity will increase as Tauriko West residential development progresses and homes become occupied.

A-3 Zone 3: Tauriko Village Bridge to Takitimu Drive Interchange

Zone 3 extends from Tauriko Village Bridge northward to the Takitimu Drive Interchange, representing the core of the Tauriko commercial corridor. The zone encompasses the Cambridge Road Bridge and the Takitimu Drive Interchange construction areas, with a complex mix of industrial, commercial, and residential development. The western side includes an established Rural Residential neighbourhood in the northern portion, with the remainder zoned for future Medium Density Residential development as part of the Tauriko West Urban Growth Area.

Receptors: Zone 3 contains an estimated 75 sensitive receptors comprising 45 residential properties and 29 commercial receptors. The future Tauriko School is also located adjacent to the designation in this zone. Of these, 32 receptors (43%) are located within 50 m of the designation boundary, the highest absolute number of any SH29 corridor zone. A map of Zone 3 sensitive receptors is provided as Figure 6.

Figure 6: Zone 3 Sensitive Receptor Map



Construction Activities: Construction activities include the Takitimu Drive Interchange, Cambridge Road Bridge, and the SH29 alignment through the commercial corridor. Earthworks volumes total approximately 687,000 m^3 cut and 1,335,000 m^3 fill. Import of approximately 992,000 m^3 of fill material is required.

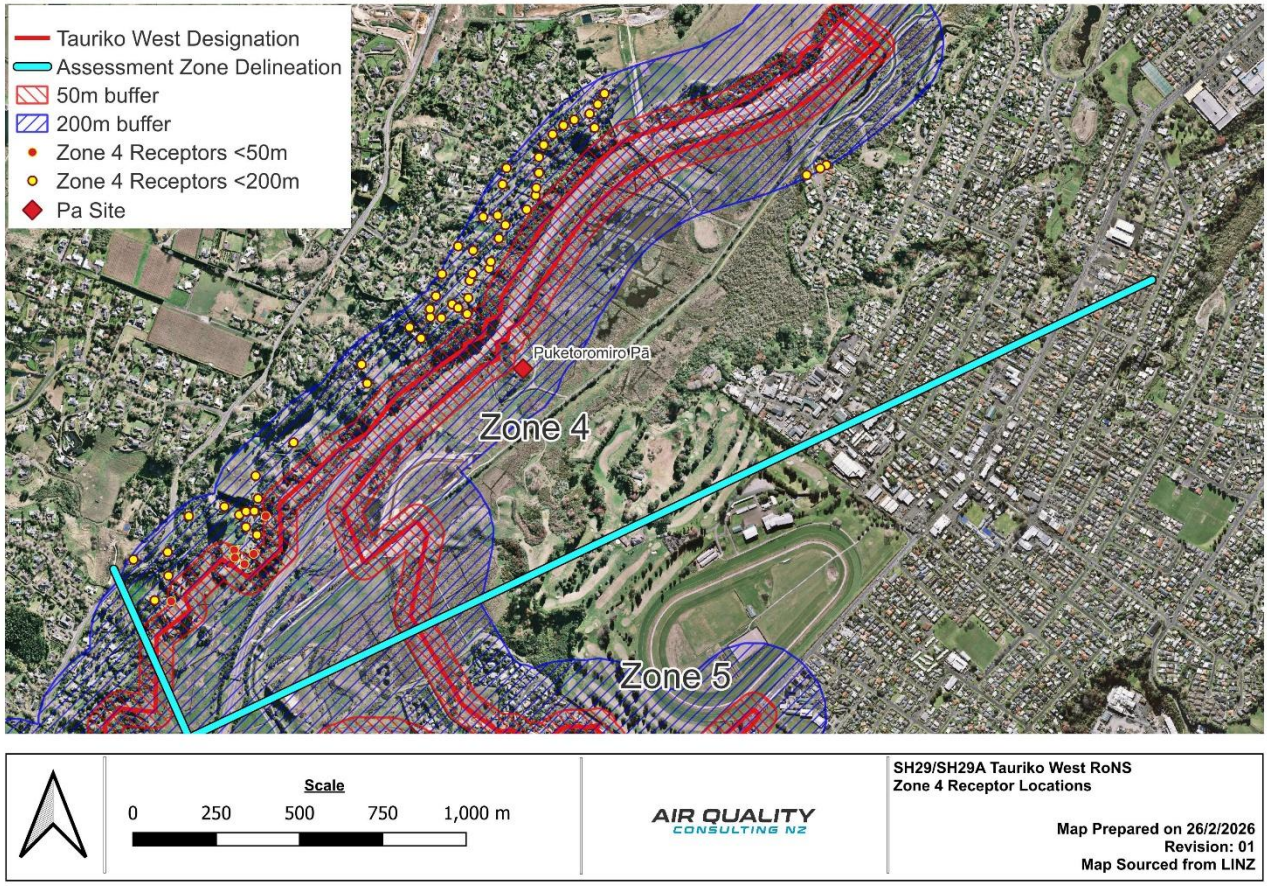
Sensitivity: High to very high. Sensitivity ranges from low in undeveloped and industrial areas to very high where the 32 receptors within 50 m are concentrated, particularly around the Takitimu Drive Interchange where large-scale semi-stationary construction activities occur over multiple seasons. As noted for Zone 2, sensitivity will increase as the Tauriko West residential development progresses and homes become occupied.

A-4 Zone 4: Takitimu Drive Interchange to Northern Project Limits

Zone 4 extends from the Takitimu Drive Interchange northward to the northern extent of the Project Designation, representing a short transitional section of the new SH29 alignment. The zone is characterised by Rural Residential development to the west, with Passive Open Space to the east including Puketoromiro Pā, a site of significant cultural importance to Ngāi Tamarawhao and mana whenua.

Receptors: Zone 4 contains 61 sensitive receptors, all residential properties. Only 6 receptors (10%) are located within 50 m of the designation boundary, reflecting the Rural Residential character with larger lot sizes and Passive Open Space zoning on the eastern boundary. Puketoromiro Pā is located immediately adjacent to the designation boundary. A map of Zone 4 sensitive receptors is provided as Figure 7.

Figure 7: Zone 4 Sensitive Receptor Map



Construction Activities: Zone 4 has the smallest earthworks requirement of any zone, with approximately 44,000 m^3 cut and 79,000 m^3 fill. Standard dust management measures are appropriate given the modest scale of earthworks and low receptor density.

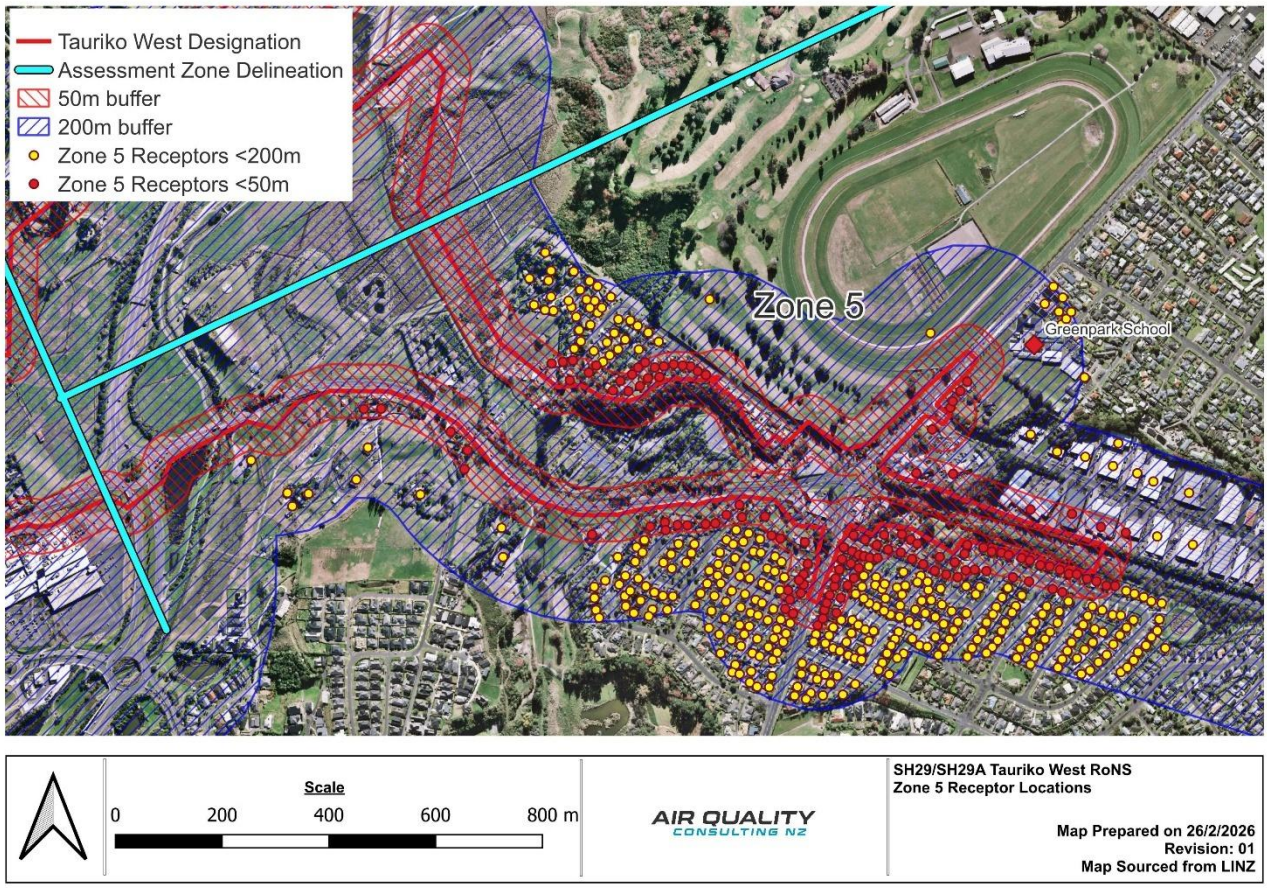
Sensitivity: Low to High. Sensitivity ranges from low in the extensive Passive Open Space areas to high in the Rural Residential areas and at Puketoromiro Pā. The low proportion of receptors within 50 m (10%) creates lower intensity management requirements than zones with denser development, with standard dust management measures appropriate for the zone.

A-5 Zone 5: SH29A Corridor, Takitimu Drive Interchange to Barkes Corner

Zone 5 encompasses the new offline SH29A corridor from the Takitimu Drive Interchange to Barkes Corner, running through the established Greerton and Pyes Pā suburbs. Unlike the SH29 zones involving new construction through predominantly rural and transitional areas, Zone 5 involves construction of a new offline corridor through dense, fully built-out residential areas, with development on both sides of the Project Designation throughout. The existing SH29A will be retained as a local road.

Receptors: Zone 5 contains 461 sensitive receptors comprising 435 residential properties, 22 commercial receptors, and 2 institutional receptors (Greenpark School and Greenpark Playcentre). Of these, 124 receptors (27%) are located within 50 m of the designation boundary, more than double any other zone. Greenpark School and Greenpark Playcentre are classified as very high sensitivity. A map of Zone 5 sensitive receptors is provided as Figure 8.

Figure 8: Zone 5 Sensitive Receptor Map



Construction Activities: Construction involves the new offline SH29A corridor between the Takitimu Drive Interchange and Barkes Corner, including the new Barkes Corner Interchange. Earthworks volumes total approximately 374,000 m^3 cut and 551,000 m^3 fill, requiring import of approximately 364,000 m^3 of fill material. While earthworks volumes are lower than the SH29 zones, the works occur in immediate proximity to dense residential development throughout the zone length.

Sensitivity: Very high. Zone 5 has the most consistently high sensitivity of any zone, with 461 receptors representing 70% of the corridor total, 124 receptors within 50 m, and institutional receptors at Greenpark School and Greenpark Playcentre. Dust management will be required throughout the zone length given the concentration of receptors.