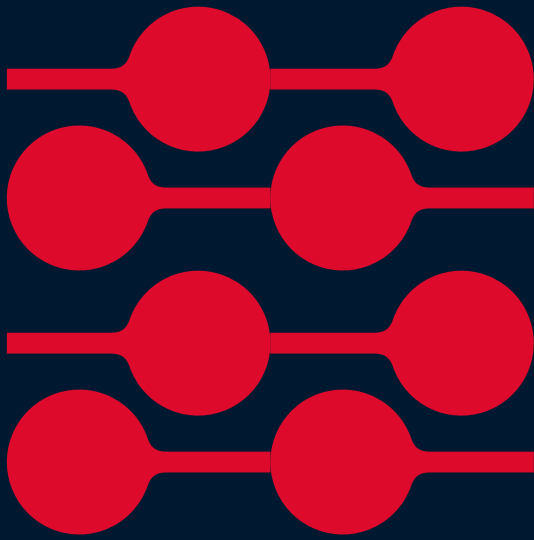




Te Aroturukitanga o  
te Mahere ā-Wae ki  
Tāmaki Makaurau

**Auckland  
Unitary Plan  
Resource  
Management  
Act 1991  
Section 35  
Monitoring:  
B7.5 Air**

July 2025

Technical Report







# Auckland Unitary Plan Resource Management Act 1991 Section 35 Monitoring:

## B7.5 Air

July 2025

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Planning and Resource Consents Department, Auckland Council

Auckland Council

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# Executive summary

The Auckland Unitary Plan (AUP) (the Plan) became operative in part in November 2016. This report considers how effective and efficient the objectives, policies, rules and other methods of the AUP have been in meeting the outcomes intended by the Regional Policy Statement (RPS) – Chapter B7.5 Air.

This monitoring work will contribute to our knowledge base, to understand what is working in the Plan and where there may be challenges. This knowledge will help to inform future plan changes and contribute to the policy cycle. Additionally, this report will address the Section 35(2)(b) plan monitoring requirements of the Resource Management Act 1991 (RMA).

It is recommended that this report is read in conjunction with its summary report. Published reports are available on the [Auckland Unitary Plan monitoring](#) webpage.

The primary focus of this report is to evaluate the contribution that the AUP and its implementation has towards achieving the RPS objectives for air quality management. This is done by examining available information on records of resource consent decisions, Auckland's emissions and air quality, and air pollution complaints.

The AUP seeks to maintain and enhance air quality by managing discharges to air, enable industry by providing for reduced air quality amenity in particular locations, and to manage the adverse effects of discharges to air on human and environmental health. This is to be achieved by controlling the location of activities (both those that cause emissions that are expected to reduce air quality and those activities sensitive to reduced air quality), and by managing some air discharges by requiring a resource consent.

Domestic fires and mobile sources of emissions including motor vehicles and ships are managed by mechanisms outside of the AUP. As motor vehicle emissions, which are not regulated under the RMA, are the leading cause of air pollution in Auckland, this regulatory gap limits the AUP's ability to achieve its highest order of air quality objectives – the improvement of air quality. Implementing actions to reduce motor vehicle emissions, such as those set out in Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan (Auckland Council, 2020), are also likely to improve air quality.

The operative date of the AUP predates the changes introduced to the RMA in 2022, removing prior prohibitions on considering greenhouse gas emissions and introduced a requirement to consider the national emission reduction plan and national adaptation plan. The implementation strategies of these documents is a matter to be addressed through the upcoming review of the AUP.

## Findings

The AUP has shown partial success in meeting RPS objectives, particularly in regulating discharges that require resource consent and allowing industry and infrastructure to operate without undue constraints from reverse sensitivity effects.

However, current Ambient Air Quality Standards (under the National Environmental Standard for Air Quality 2004) and AUP air quality targets no longer reflect internationally agreed upon levels, limiting the AUP's effectiveness in protecting human health.

The report makes recommendations for Auckland Council across several areas:

- Reviewing AUP air quality targets for consistency with current World Health Organization (WHO) Guidelines 2021.

- Considering dividing the Auckland airshed into smaller units that better reflect Auckland's geography.
- Strengthening management of construction dust for health protection.
- Improving oversight of outdoor processing activities involving aggregates and metals.
- Provide greater protection for the function of the Business – Light Industry Zone.
- Consider measures to manage the risk of exposure to air pollution such as buffers, in order to:
  - manage health risks in areas with poor air quality (e.g. busy road corridors)
  - avoid reverse sensitivity effects at the rural/urban interface.
- Ensuring consistency and proportionality in the rigour of assessments required to determine activity status and when applying for a resource consent for discharges to air.

Beyond the AUP itself other measures that should be considered include:

- Advocating to Government for transport policies that support the transition to low or zero-emission vehicles.
- Urban planning and transport network interventions that encourage the use of public transport and active modes generally, and avoid high concentrations of motor vehicle traffic (particularly diesel vehicles) in areas where there are high concentrations of people and sensitive activities.

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Abbreviations in this report include:

| Abbreviation               | Meaning                                                                                                                            |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| AAQS                       | Ambient Air Quality Standards, as per the Resource Management (National Environmental Standards for Air Quality) Regulations 2004. |
| AUP                        | Auckland Unitary Plan Operative in Part                                                                                            |
| AQA                        | Air Quality Area as defined by the Auckland Unitary Plan.                                                                          |
| CAA                        | Clean Air Act 1972                                                                                                                 |
| GeoOps                     | The information technology system used by Auckland Council to record pollution complaints and responses.                           |
| NESAQ                      | Resource Management (National Environmental Standards for Air Quality) Regulations 2004                                            |
| resource consents database | Planning and Resource Consents Department resource consent decision tracking database                                              |
| RMA                        | Resource Management Act 1991                                                                                                       |
| RPS                        | Regional Policy Statement                                                                                                          |
| the council                | Auckland Council                                                                                                                   |
| WHO                        | World Health Organisation                                                                                                          |

# 1 Introduction

This report considers how effective and efficient the objectives, policies, rules and other methods of the AUP have been in meeting the outcomes intended by the Regional Policy Statement – Chapter B7.5 Air, and where challenges may be. With monitoring being a key link in the policy development cycle, the data can also provide the evidence base for taking appropriate action where necessary. The monitoring is in accordance with section 35(2)(b) of the Resource Management Act 1991 (RMA) and the results have been made available in accordance with s35(2A), as the AUP became operative in part in November 2016 and by June 2024, the most recent operational data considered in this review, had been operative in part for just under eight years.

Section 35(2A) specifies that monitoring results are to be published every five years. The AUP became operative in part in November 2016 and by November 2021 had been operative in part for five years.

The findings seek to tell a story of what the AUP is achieving and where challenges may be. With monitoring being a key link in the policy development cycle, the data can also provide the evidence base for taking appropriate action where necessary.

The terms ‘effectiveness’ and ‘efficiency’ are not explicitly defined in the RMA. For the purposes of this monitoring report the terms are generally interpreted as<sup>1</sup>:

*Effectiveness is the contribution that the provisions make towards achieving the objective, and how successful they are likely to be in solving the problem they were designed to address when compared with alternatives. The difficulty when assessing effectiveness is to be able to answer the question ‘how do we know that implementing the policy, rule or method led or contributed to the outcome?’*

*Efficiency is an assessment of whether the provisions will be likely to achieve the objectives at the lowest total cost to all, or achieves the highest net benefit relative to cost to all.*

The steps undertaken in this monitoring work are briefly summarised in Figure 1.

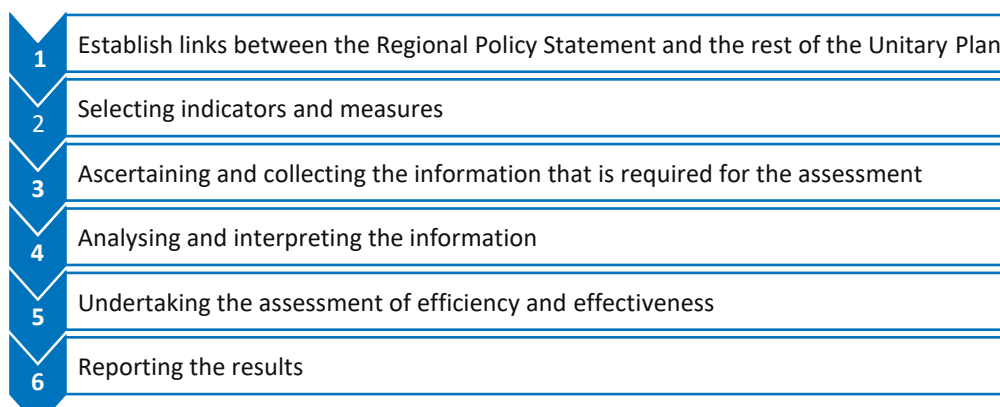


Figure 1: Steps in the monitoring process

<sup>1</sup> Auckland Unitary Plan Monitoring Strategy (2018).

## 1.1 RPS Chapter B7.5 overview

The RPS direction is to maintain and enhance air quality by managing air discharges, enable industry by providing for reduced air quality amenity in particular locations, and to manage adverse effects of reduced air quality on human and environmental health. This is to be achieved by controlling the location of activities (both those that cause emissions that are expected to reduce air quality and those activities sensitive to reduced air quality), and by controlling some emissions themselves.

The emissions caused by domestic fires and mobile sources of emissions including motor vehicles and ships are managed by mechanisms outside of the AUP<sup>2</sup>. This reliance on tools outside the AUP to manage the discharge of contaminants to air is reflected in policy B7.5.2, which notes that implementation is by way of regulatory and non-regulatory methods.

The RPS objectives and policies for regional air quality (B7.5) are reinforced by B2.5 - Commercial and Industrial Growth and B9 -Rural Environment. Together they enable commercial and industrial growth and rural production to locate in specific areas and seek to avoid reverse sensitivity effects that could constrain the function and operation of those activities. There is also a relationship with B3.2 - Infrastructure where infrastructure is to be enabled while managing adverse effects on the environment, health and safety, where reduced ambient air quality amenity is provided for in appropriate locations.

The full text is available here: [B7 Natural resources.pdf](#).

### 1.1.1 Connections with other parts of the plan

The AUP uses the concept of ‘air quality areas’ (AQAs) to differentiate between areas with different air quality expectations and standards. Different AQAs correspond to different zones as set out in Table 1 below and determine the activity status for the discharge of contaminants into air from different activities anticipated under the AUP. The different air discharge generating activities can be found in Chapter E14 – Air Quality of the AUP which captures the regulatory provisions as they relate to the management of air quality.

Table 1: Air quality areas and corresponding zones.

| Air Quality Area                                    | Corresponding zones                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low air quality – dust and odour area (Quarry)      | <ul style="list-style-type: none"><li>Special Purpose – Quarry Zone</li><li>Auckland Council District Plan – Hauraki Gulf Islands Section Commercial 6 Zone</li></ul>                                                                                                                              |
| Low air quality – dust and odour area (Industry)    | <ul style="list-style-type: none"><li>Business – Heavy Industry Zone.</li></ul>                                                                                                                                                                                                                    |
| Medium air quality – dust and odour area (Industry) | <ul style="list-style-type: none"><li>Business – Light Industry Zone</li><li>Coastal – Minor Port Zone, Port Precinct, Gabador Place Precinct, Boat Building Precinct, Auckland Airport Precinct</li><li>Auckland Council District Plan – Hauraki Gulf Islands Section Commercial 5 Zone</li></ul> |

<sup>2</sup> Resource Management (National Environmental Standards for Air Quality) Regulations 2004 and Land Transport Rule: Vehicle Exhaust Emissions 2003.

| Air Quality Area                                       | Corresponding zones                                                                                                                                                                                                                                                              |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Medium air quality – dust and odour rural area (Rural) | <ul style="list-style-type: none"> <li>Rural – Rural Production Zone</li> <li>Rural – Mixed Rural Zone</li> <li>Rural – Rural Coastal Zone</li> <li>Future Urban Zone</li> <li>Auckland Council District Plan – Hauraki Gulf Islands Section Rural 13 and Landform 17</li> </ul> |
| High air quality – dust and odour area                 | <ul style="list-style-type: none"> <li>All other zones (including all coastal zones and Auckland Council District Plan – Hauraki Gulf Islands Section other zones)</li> </ul>                                                                                                    |

The relationship between AQAs and zones enables a mutually supportive and easily referenced relationship at the district and regional plan levels of the AUP. Each AQA has more detailed policies giving effect to RPS directions with parallel policies in the corresponding zones. An example of this is given in Figure 2 adjacent. In this instance, the Heavy Industry Zone objectives and policies are supportive of the *Low air quality – dust and odour area (Industry)* and vice versa.

Within zone rules, different levels of constraint are placed on activities that are sensitive to reduced air quality. For example, in the Heavy Industry Zone which is classified as *Low air quality – dust and odour area (Industry)*, table H16.4.1 prohibits *dwelling*s and *comprehensive residential development* while *care centres* are non-complying activities. On the other hand, in the *Residential – Mixed Housing zones*, which are in the *High air quality – dust and odour area*, *dwelling*s and *care centres* are enabled while industrial activities are, by omission, non-complying activities.

The rules pertaining to discharges to air contained in Chapter E14 of the AUP also have some similarities with the historical Clean Air Act 1972 (CAA).

In particular, Section 7 of the CAA contained general obligations for emissions, including those that have been subject to a permitting process. Among other things, discharges must be “harmless and inoffensive” (CAA, s7). This approach has been retained over time and is now echoed by the general standards for permitted discharges to air that must, among other things, not be “dangerous, offensive or objectionable” (E14.6.1.1(3)). These

#### **Air Quality Policy E14.3(5)**

*Support the use and development in the Business – Heavy Industry Zone, Special Purpose – Quarry Zone and Auckland Council District Plan - Hauraki Gulf Islands Commercial 6 Zone by:*

- providing for higher levels of dust and odour provided that any adverse effects on human health are avoided, remedied or mitigated;*
- avoiding the establishment of activities sensitive to air discharges in these zones; and*
- discouraging the establishment of activities sensitive to air discharges in areas adjacent to these zones.*

#### **Heavy Industry Zone Objective H16.2**

*(1) Heavy industry operates efficiently and is not unreasonably constrained by other activities.*

*(2) Business – Heavy Industry Zone zoned land, and activities that are required to locate there because of the nature of their operation, are protected from the encroachment of:*

- (a) activities sensitive to air discharges and activities sensitive to noise; and ...*

#### **Heavy Industry Zone Policy H16.3 (1)**

*Avoid activities which do not support the primary function of the zone.*

*Figure 2 Example of mutually-supporting policies in the regional plan provisions and district plan zone provisions.*

standards provide the basis for determining the activity status of an activity that may otherwise be permitted, as well as the main standard that unconsented discharges are assessed against in the field by staff responding to air pollution complaints.

Similar again to the CAA, Chapter E14 of the AUP contains a list of specific activities that trigger different classes of resource consent. While much terminology has changed, some activities remain recognisable as shown in the excerpt provided as Figure 3 below.

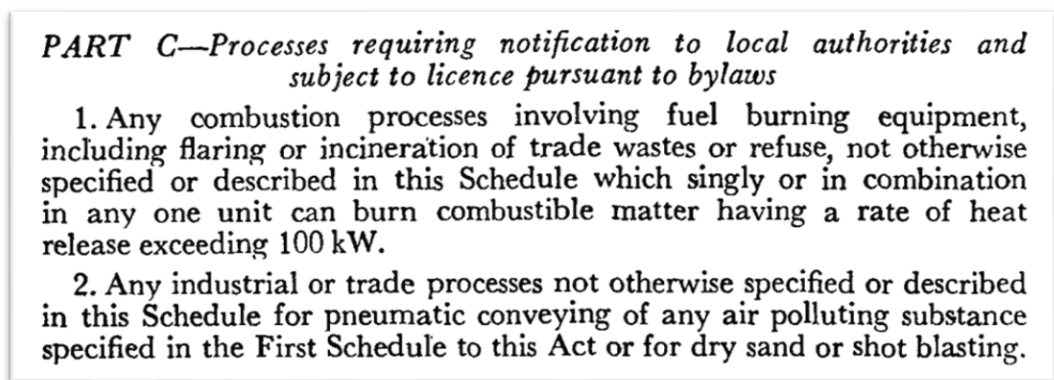


Figure 3: Excerpt - Clean Air Act 1972 Part C.

The AUP's Chapter E14 provisions, relative to the CAA, reflect modern standards, technologies, and assessment methods. It also covers a range of new activities and industries of concern. The AUP currently specifies 13 discharge types, within which there are 168 individual activities. Each activity is assigned an activity status for each AQA (Table E14.4.1). The number and range of activities in Chapter E14 both shows the diversity of discharge types in the Auckland region and the consequences of an additive approach to previous reviews.

### 1.1.2 Relationship with the National Environmental Standards for Air Quality

The Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NESAQ) plays an important role alongside the AUP, in both directly regulating some activities and by setting ambient air quality standards (AAQS).

Under section 15 of the RMA discharges to air from any industrial or trade process is not allowed unless expressly allowed by a National Environmental Standard (NES) or rule in a regional plan. An NES or regional plan can also place restrictions on other discharges to air that are not industrial or trade processes. A regional plan can be more stringent than the NES, but cannot be less stringent.

The NESAQ, does not expressly allow any activities, but does impose some general prohibitions (e.g. burning of bitumen on a road under clause 8). Activities that are not covered by the NESAQ then fall to the AUP to deal with. The AUP in turn, does expressly permit some activities subject to performance standards, and has tiered requirements for resource consents, ranging from controlled activities to non-complying activities, depending on the nature of the discharge being considered.

The NESAQ also sets ambient air quality standards (AAQS) for a range of contaminants that must be monitored and reported by regional and unitary councils. These standards set a regulatory envelope for air quality, where a resource consent must generally be declined if the discharge will cause the air quality standards to be breached.

While the AUP sets more stringent Ambient Air Quality Targets than the AAQS, as targets that are to be ‘taken into account’ they do not have the same regulatory force as the strict limits imposed by the AAQS.

## 1.2 Scope

This report provides an analysis of the efficacy of the AUP in achieving RPS Objectives B7.5 – Air. It draws on existing available state of the environmental monitoring and reporting, resource consents issued under the AUP from May 2017 until April 2023 and records of complaints between January 2019 and June 2024. More detailed descriptions of the scope and limitations of data used in this analysis are provided in the relevant sections of this report.

## 1.3 Auckland context

### 1.3.1 Physical geography

The jurisdiction of Auckland Council, referred to in this report as Auckland, has a land area of 4,941km<sup>2</sup> including the Hauraki Gulf Islands. It is less than two kilometres wide at its narrowest and has 3,200km of coastline (Statistics New Zealand, 2018a). It has a subtropical climate with mean annual temperatures between 14 °C and 16 °C (Chappel, 2014). Sea breezes occur on approximately 20 per cent of days during the summer months (McGill, 1987).

Its northern-most point on the mainland, just south of Mangawhai on the East Coast, is at 36 degrees latitude, marginally south of the top of Great Barrier Island. Its southern-most point is on the West Coast, west of Waiuku, and has a latitude of 37.3 degrees (Auckland Council, 2024).

### 1.3.2 Population

In the ten years to 2023, Auckland’s population grew on average just under 1.6 per cent per annum from 1.42 million in 2013 (Statistics New Zealand, 2013) to 1.66 million people occupying 216,222 dwellings. The population is also younger in comparison to the national population (Figure 4). The size of Auckland’s population and its age profile are relevant because of the relationship between demographics and health impacts of air pollutants (Namdeo et al, 2011). This includes hospitalization for asthma and wheezing in children attributed to NO<sub>2</sub> exposure and the over-all magnitude of the health burden (Kushall, 2022, p. 11). For Auckland the HAPNIZ 3.0 report attributes a social cost of \$4.451 Billion of a national burden of \$15.613 Billion (Kushall, 2022, p. 44,45).

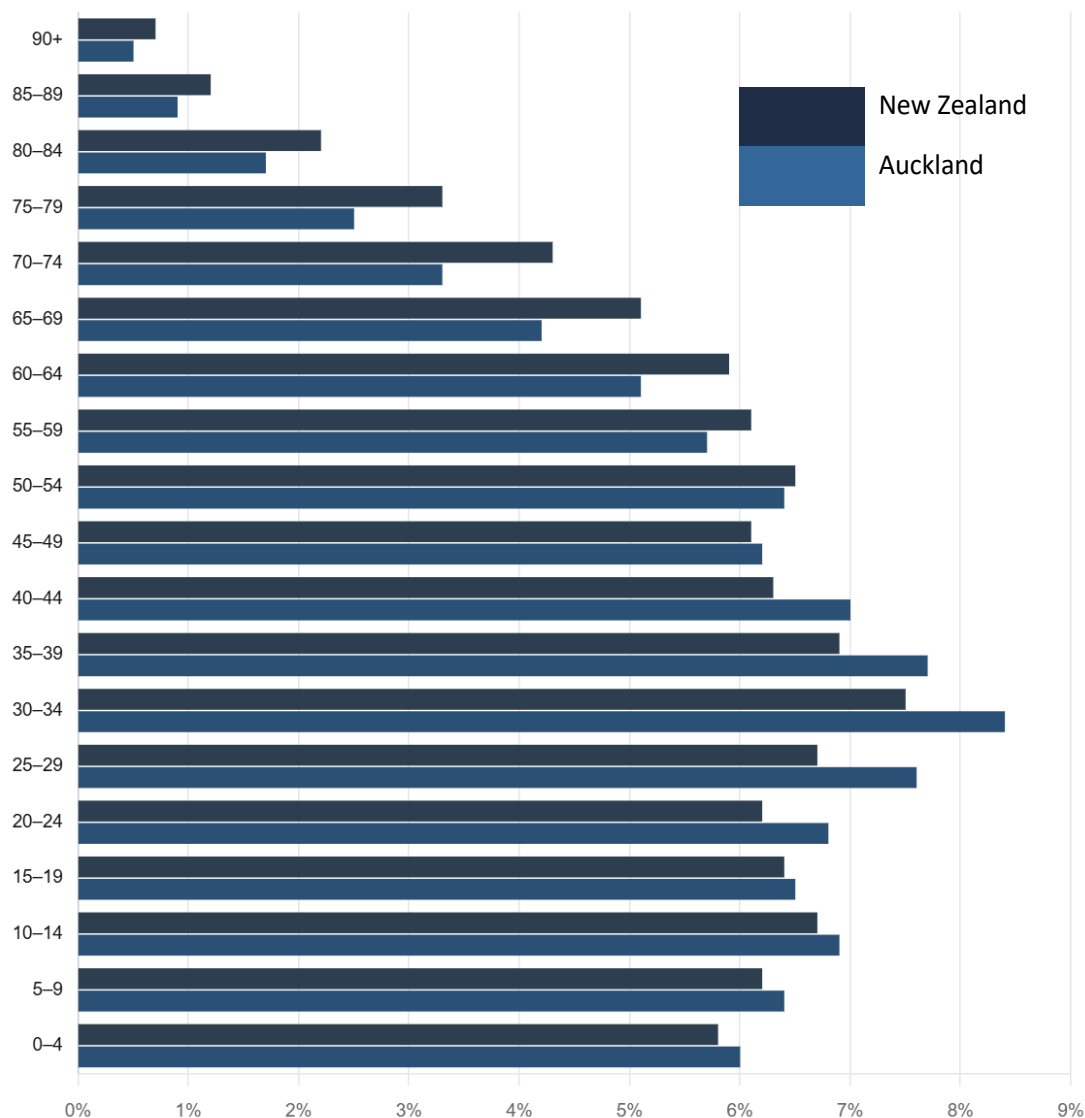


Figure 4: Statistics New Zealand: New Zealand and Auckland Population distribution by age (Statistics New Zealand, 2018a)

### 1.3.3 Transport and industry

At a regional scale, in 2016, transport was the largest contributor to PM10 (57 per cent), Carbon monoxide (66.8 per cent), carbon dioxide (59.1 per cent), oxides of nitrogen (85.6 per cent) and sulphur dioxide (59.2 per cent). The contribution of industry was greatest in carbon dioxide (34.3 per cent) and sulphur dioxide (29.3 per cent)(Auckland Council, 2019).

Eight per cent of the region’s GDP in the year to March 2023 was attributed to *manufacturing*. While *goods producing industries*, comprised of manufacturing, electricity, gas, water, waste services and construction, make up just under 15 per cent (Infometrics, 2023). This is relevant given that these activities are both sought to be enabled by the AUP, and (aside from motor vehicles and home heating) have the greatest potential impact on air quality.



Figure 5: Infometrics: Auckland Economic Structure by broad sector, percentage of total, year to March 2023.

As at September 2023 there were approximately 1.2 million passenger vehicles registered in Auckland and over 226,000 thousand goods vans, trucks and utes. With an estimated population at September 2023 of approximately 1.7 million this equates to 70 light passenger vehicles per 100 people in Auckland and 84 vehicles per 100 people (New Zealand Transport Agency, 2023).

The Ministry of Transport's 2022 fleet data estimates 15.06 billion vehicle kilometres travelled within Auckland for that year (Ministry of Transport, 2023).

A 2019 Auckland Transport report noted a 22 per cent increase in diesel consumption since 2017 while petrol consumption had remained relatively constant (Auckland Transport, 2019). In reference to national statistics, the Ministry of Transport in public information discussing their work to reduce noxious vehicle emissions from road transport state:

*Both petrol and diesel vehicles release pollution harmful to our health. However, while diesel vehicles make up a small part (23 percent) of our vehicle fleet, they produce most (82 percent) of the harm, because their engines produce higher levels of nitrogen oxides and particulate pollution. Exposure to nitrogen oxides causes respiratory and cardiovascular damage and can contribute to smog. Particulates can cause lung cancer, and both forms of pollution contribute to asthma (Ministry of Transport, 2024).*

This is echoed in the HAPINZ 3.0 report which assigns a social cost of \$9.5 Billion in 2016 from NO<sub>2</sub> pollution which it assumes results solely from motor vehicles (Kushall et al 2022, p vii).

NO<sub>2</sub> is not the only pollutant of concern from motor vehicles. In addition to other pollutants from vehicle exhaust, a multi-part research project for the New Zealand Transport Agency Waka Kotahi is working to improve the understanding of human health and ecological impacts of particulate matter from vehicle brake, tyre wear and road-surface dust. Work so far shows that more particulates are generated from these sources than from tailpipe emissions (Somervell 2025).State of the Environment

As discussed in more detail in section 4.1.2 of this report, in the decade up until 2018, Auckland's air quality had gone through a period of gradual overall improvement. Consistent with national trends that have continued through to 2024 (MfE & Stats NZ, 2024), this was largely a result of improving vehicle emission quality and changes to how people heat their homes. This enabled the 'polluted' air shed classification under the National Environmental Standards for Air Quality (NESAQ), first given in 2013, to be lifted in 2018. This followed a five-year period during which there was on average less than one exceedance annually of AAQS limits for particles less than 10 microns (PM<sub>10</sub>).

The effect of the 'polluted' status under the NESAQ is that new discharges could not be consented unless they proved that their emissions would not increase the particulate air pollution level in their receiving environment by more than 2.5µg per m<sup>3</sup> (Auckland Council, 2019). This requirement under the NESAQ was in addition to the AUP rules.

Auckland's air quality has deteriorated by some measures in recent years. In 2016, while there were improvements in overall air quality, there were locations where some measures of air quality were deteriorating (Auckland Council, 2019; Talbot & Crimmins, 2020):

*In most locations, PM<sub>10</sub> and PM<sub>2.5</sub> had statistically significant decreasing monotonic trends for both short- and long-term timeframes. Queen Street is not following this trend. This city centre site has shown significant increases in PM<sub>2.5</sub> and PM<sub>10</sub> for the short-term analysis (P<0.001 and P<0.1, respectively).*

*Nitrogen dioxide (NO<sub>2</sub>) shows marked decreases in concentration over the long-term; however, short-term trends are starting to show increases in concentration at several sites near major roads. Queen Street has shown a statistically significant increase in NO<sub>2</sub> since 2013 (P<0.001) and has for the past two years exceeded Auckland's ambient air quality target for NO<sub>2</sub> of 40 µg/m<sup>3</sup> per annum.*

The Ministry for the Environment and Stats NZ 2024 Our Air report, drawing on data from 2016 and 2019, shows that nationally PM<sub>2.5</sub> and NO<sub>2</sub> decreased and that this was generally reflected in Auckland, there was a worsening trend for PM<sub>2.5</sub> in Auckland's Queen Street and Patumāhoe (Ministry for the Environment & Stats NZ, 2024).

Following further short-term improvements in air quality resulting from COVID-19 restrictions, air quality in some locations is continuing to deteriorate, and can be largely associated with motor vehicle emissions.

### 1.3.4 Other activities to manage emissions

#### Air Quality Bylaw for Indoor Domestic Fires 2017

Auckland's Air Quality Bylaw for Indoor Domestic Fires 2017 was introduced to address:

*public health and safety risks from increased air pollution in winter, nuisance from smoke, a regulatory gap in the national legislation (the NESAQ) about the design standard of indoor domestic fires other than wood burners, and the types of materials that cannot be burnt in indoor domestic fires (Auckland Council, 2022).*

Air quality nuisances can be responded to as potential breaches of the AUP's permitted activity standards. The AUP also regulates materials being burned in outdoor fires. Further, the NESAQ regulates the design of over 99 per cent of indoor domestic fires. As such the benefits of the bylaw were considered marginal and it was allowed to lapse in May 2024 (Auckland Council, 2023).

## Regulation of mobile sources

Motor vehicle emissions are regulated by the Land Transport Rule: Vehicle Exhaust Emissions 2007 under the Land Transport Management Act 2003. These set standards for emissions for vehicles newly entering the vehicle fleet.

Emissions from ships are regulated by Part 199 of the Marine Protection Rules under the Maritime Transport Act 1994. Part 199 brings Annex VI of the International Convention for the Prevention of Pollution from Ships 1993 (MARPOL) into effect for ships in New Zealand and for New Zealand flagged vessels abroad. Adopting Annex VI introduces fuel quality requirements, limits on nitrogen oxides emissions, carbon intensity reduction targets for large vessels (400 gross tonnage), as well as controls on other pollutants including VOCs and ozone depleting substances.

### 1.3.5 Greenhouse gas emissions

At the time that the AUP was developed, local authorities were prohibited under the RMA from considering the effects of greenhouse gas emissions when preparing policy statements, plans, and when considering resource consent applications. Accordingly, chapter B7.5 and chapter E14 of the AUP were silent on this matter.

The RMA has since undergone changes to address greenhouse gas emissions with amendments in 2020 now requiring local authorities to have regard to emissions reduction plans and national adaptation plans, under the Climate Change Response Act 2002, when preparing policy statements and plans.

This was followed by the release of a National Policy Statement and National Environmental Standard for Greenhouse Gas Emissions from Industrial Process Heat in 2023. The NPS and NES together introduce tests for industrial process heat that relies on fossil fuels, to demonstrate that there are no practicable alternatives that would achieve lower emissions. The NPS also inserted policies into regional plans (and the AUP as policies E14(12) and E14(13)) to ensure councils consider the cumulative effects of discharges of greenhouse gasses from a site and that holders of resource consents for discharges to air of greenhouse gases from heat devices update emissions plans to reflect technological developments and best practice.

Meanwhile, in 2020 Auckland Council published Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. This includes transport actions and targets that, as the largest single source of both greenhouse gas emissions and air pollutants, would also improve air quality.

While the NPS and NES focus explicitly on industrial process heat, the removal of the limitations to consider greenhouse gas emissions and the requirement to consider emission reduction plans may cause councils to consider whether activities other than those covered by the NPS and NES should be subject to similar requirements. This may also enable integration of regulatory and non-regulatory initiatives to improve health outcomes and reduce greenhouse gas emissions as anticipated by B7.5.2(2).

## 1.4 Recent developments

### 1.4.1 Significant WHO guidelines change in 2021

The 2021 update to the World Health Organisation Air Quality Guidelines marked the first major revision since 2005, reflecting substantial advances in understanding air pollution's health impacts. The guidelines lowered recommended maximum levels for key pollutants, with the annual PM<sub>2.5</sub> exposure threshold cut in half from 10

$\mu\text{g}/\text{m}^3$  to  $5 \mu\text{g}/\text{m}^3$  and  $\text{PM}_{10}$  reduced from  $20 \mu\text{g}/\text{m}^3$  to  $15 \mu\text{g}/\text{m}^3$ . The revision also strengthened limits for nitrogen dioxide, sulfur dioxide, carbon monoxide, and ozone.

Significantly, the 2021 guidelines established a paradigm shift by recognizing that no safe threshold exists for many air pollutants - any exposure carries some health risk. This moved away from the concept of "safe levels" toward a continuous risk model where further reductions below even the new thresholds would yield additional health benefits.

### 1.4.2 HAPINZ 3.0

The 2022 report Health and Air Pollution in New Zealand (HAPINZ 3.0) (Kushal et al 2022) is the third such report evaluating the effects of air pollution on human health across New Zealand and the resulting social costs.

While previous HAPINZ studies focused on  $\text{PM}_{10}$  as a proxy for all air pollution resulting in a significant focus on addressing emissions from domestic fires, HAPINZ 3.0 which uses  $\text{PM}_{2.5}$  and  $\text{NO}_2$  as indicators enabling the contributions of domestic fires and motor vehicles to be better distinguished.

The HAPINZ report estimates that in 2016, exposure to PM and  $\text{NO}_2$  air pollution from anthropogenic sources in New Zealand contributed to over 3,300 premature deaths, more than 13,000 hospital admissions for respiratory and cardiac illnesses, over 13,200 cases of childhood asthma, and over 1.7 million restricted activity days. The total social costs associated with these health impacts amounted to \$15.6 billion, with \$10 billion attributed to motor vehicle emissions alone (Kushal, 2022, p.18).

In Auckland, over 80 per cent of the anthropogenic health costs of air pollution are attributed to motor vehicles, more than 15 per cent attributed to domestic fires and less than five percent attributed to other sources (Kushal, 2022, p.23)

## 2 Indicators

Indicators and measures have been developed to assess the progress toward achieving the objectives and outcomes intended by the RPS.

An indicator (for the purposes of this report) is a qualitative or quantitative gauge that displays degrees of progress to determine whether or not the AUP is moving in the right direction toward meeting its objectives. An indicator should be used to assess the condition of the environment, to identify changes to that condition, to diagnose problems and then to guide future changes to objectives, policies or methods (via plan change or plan review).

A measure is the selected information that enables evaluation of the indicator. Methods of measurement will differ depending on the indicator.

The selected indicators for this topic have been shaped by limitations. It was not possible to develop a set of indicators which encompassed all facets of the topic – this is due to constraints on time, resource, and data availability. For further details, see the data and information section.

## 2.1 B7.5 indicators and measures

Indicators and measures used to gauge the effectiveness of the AUP in the RPS B7.5 Air objectives were developed for each of the three RPS objectives, with the environmental results anticipated as set out in chapter B11 being used as a starting point.

### 2.1.1 Chapter B11 Monitoring and environmental results anticipated

Chapter B11 in the AUP sets out the monitoring and environmental results anticipated (ERA) of the regional policy statement. B11 is not exhaustive, an ERA is not listed for every objective in the RPS. Chapter B11 explains:

*Environmental results anticipated identify the outcomes expected as a result of implementing the policies and methods in the regional policy statement and provide the basis for monitoring the efficiency and effectiveness of those policies and methods as required by section 35 of the Resource Management Act 1991.*

*Environmental results anticipated are not additional objectives, policies or rules: they are indicators to be used when assessing progress towards achieving the objectives in the regional policy statement. These indicators should be used:*

- *to assess the condition of the environment;*
- *to identify changes to that condition;*
- *to diagnose the causes of environmental problems; and*
- *to guide future changes to objectives, policies and methods.*

B11 does include ERAs relevant to B7.5 Air specifically as well as indicators for *urban growth and form* (B2) and *infrastructure, transport and energy* (B3). Together these indicators manage discharges to air as well as those provisions that are intended to ensure a separation of those activities that may give rise to lower air quality (e.g. via emissions from transport and industry) from those activities sensitive to air discharges.<sup>3</sup> These ERAs and their corresponding indicators are set out in

Table 2 below.

Table 2: AUP B11 Environmental Results Anticipated, relevant indicators.

| RPS reference | Objective                                                                                                                                                                                                                        | Indicators [relevant indicators in bold]                                                        |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| B7.5.1(1)     | The discharge of contaminants to air from use and development is managed to improve region-wide air quality, enhance amenity values in urban areas and to maintain air quality at appropriate levels in rural and coastal areas. | <b>Identified air quality is protected from inappropriate subdivision, use and development.</b> |

<sup>3</sup> Activities sensitive to air discharges: Activities sensitive to reduced air quality. Include: dwellings; care centres; hospitals. (AUP J1.4 Definitions).

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                              |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B2.5.1(3) | Industrial growth and activities are enabled in a manner that does all of the following: <ul style="list-style-type: none"> <li>(a) promoted economic development</li> <li>(b) provides for the efficient use of buildings, land and infrastructure in industrial zones</li> <li>(c) managed conflicts between incompatible activities; and</li> <li>(d) recognises the particular locational requirements of some industries</li> </ul> | Land area zoned for industrial activities, including for land extensive industrial activities and for heavy industry, increases over time.<br><br><b>Reverse sensitivity complaints against industry decrease over time.</b> |
| B3.2.1(5) | Infrastructure is protected from reverse sensitivity effects caused by incompatible subdivision, use and development.                                                                                                                                                                                                                                                                                                                    | <b>Reverse sensitivity complaints against infrastructure reduce over time.</b>                                                                                                                                               |

The above indicators have been expanded upon to provide more detailed insights into the effectiveness of AUP air quality provisions in achieving the three RPS objectives. Some attention has also been paid to efficiency.

Firstly, the intended outcome of the plan's methods were considered, from which indicators and measures were able to be developed. These have been mapped and are shown in Figure 6, including where indicators and measures are relevant to more than one objective.

Section 4 – *findings and analysis*, is structured by RPS objective. Despite measures and indicators often being relevant to more than one objective, to avoid repetition, they are reported under the objective that they most strongly relate to.

In summary, three aspects were examined. The extent to which the AUP is:

- 1) Contributing to the intended air quality outcomes, as demonstrated through ambient air quality monitoring;
- 2) Enabling industry, rural production and infrastructure by managing the location of activities to prevent reverse sensitivity effects from constraining these activities as demonstrated by council records of public complaints; and
- 3) Resulting in the adverse effects of discharges on human health and the environment being appropriately managed, as demonstrated by records of the assessments and management of authorised air discharges.

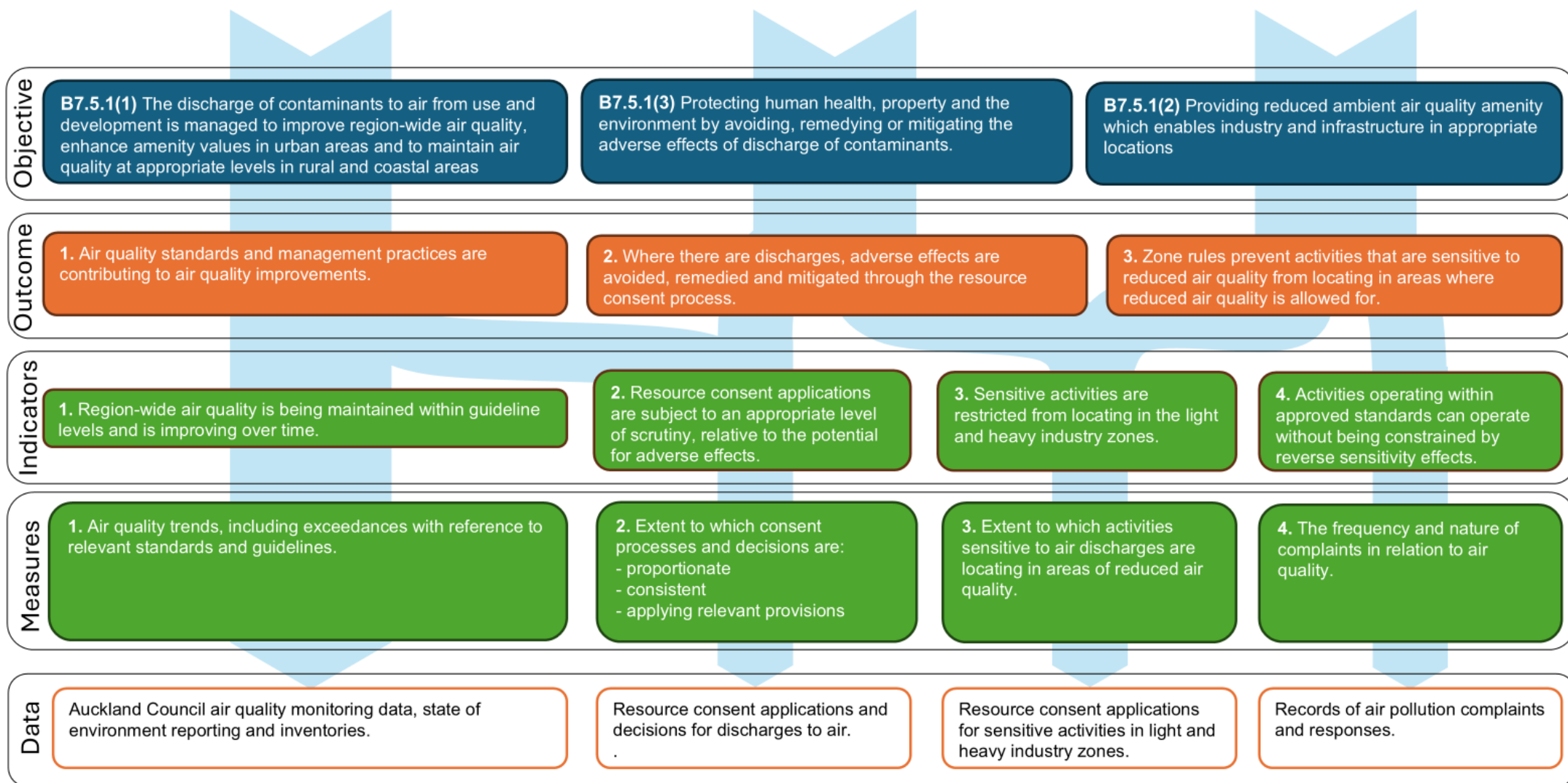


Figure 6: Objectives, indicators and measures

## 3 Data and information

The following data sources were relied upon in preparing this report:

- Records of resource consents issued under the Auckland Unitary Plan from May 2017 until April 2022.
- State of the environment monitoring reports, and related air quality monitoring reports and data.
- Records of pollution complaints responded to by the council between January 2019 and June 2024.
- Meetings with Auckland Council staff with responsibilities in the following areas:
  - Air Quality science.
  - Pollution response.
  - Specialist technical advice on resource consent applications.

### 3.1.1 Resource consents

Measures 2 and 3 rely on records of resource consents issued under the AUP as recorded in the resource consents database, to determine:

**Measure 2.** *Extent to which consent processes and decisions are:*

- *Consistent*
- *Proportionate*
- *Applying relevant standards.*

**Measure 3.** *Extent to which activities sensitive to air discharges are located in areas of reduced air quality.*

The database was filtered to identify resource consents applications for discharges to air under chapter E14 of the AUP and resource consent applications for sensitive activities in the Heavy and Light Industry zones. For the samples selected for detailed review, records related to the applications, including Assessments of Environmental Effects (AEE), expert reports and resource consent decisions were retrieved from the council's document management system.

It is noted that this will omit cases where the requirement for a resource consent is triggered for other reasons, but where a planner forms the view that air quality is a relevant consideration.

The manual recording of consent details into the database has resulted in a number of errors and omissions. As the errors are infrequent and random, this is not considered to affect the validity of the report's findings, however all references to the number of resource consent decisions and rule triggers should be treated as indicative.

For measure 2, the database of resource consents was filtered to identify all resource consents issued with a consent decision under chapter E14 of the AUP. 142 consents for air discharges were identified resulting from a combined total of 173 rule triggers – noting that one activity can trigger several different rules requiring a resource consent. As shown in Figure 7 the most common consent triggers were dust generating processes (39 per cent), waste processes (e.g. composting, refuse

transfer stations, landfills) (23 per cent) and combustion activities (11 per cent). There were no records of consents triggered for outdoor burning, emergency services and NZ Defence Force, motor fuel storage or other processes.

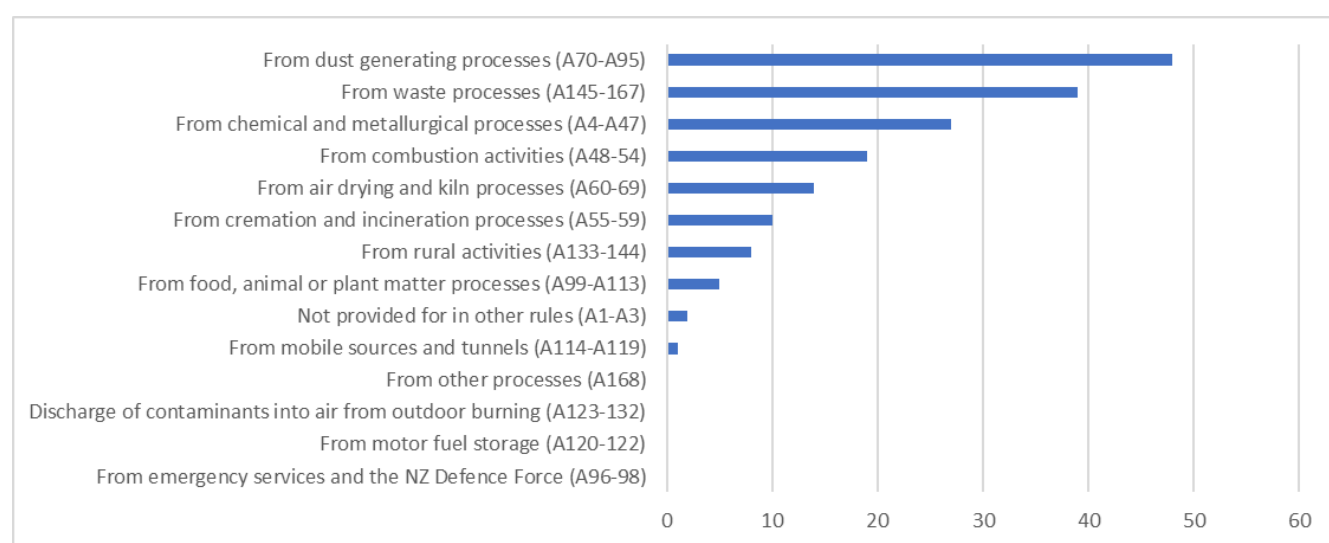


Figure 7: Consents under E14 by discharge type

The zone identified in the resource consent database was used to determine the corresponding Air Quality Area (AQA). For the purpose of the analysis undertaken for this report, where consents applied to land across different zones, the record was allocated to the more intensive zone before determining the AQA. For example, if a record was an application across both Heavy and Light Industry zones, the record would be allocated to the Heavy Industry Zone. If the record was across the Quarry and Rural Production zones, the record would be allocated to the Quarry Zone. Where there was no zone recorded, the information from the resource consent application or Assessment of Environmental Effects (AEE) was relied upon.

Figure 8 below shows the distribution of resource consents by AQA.

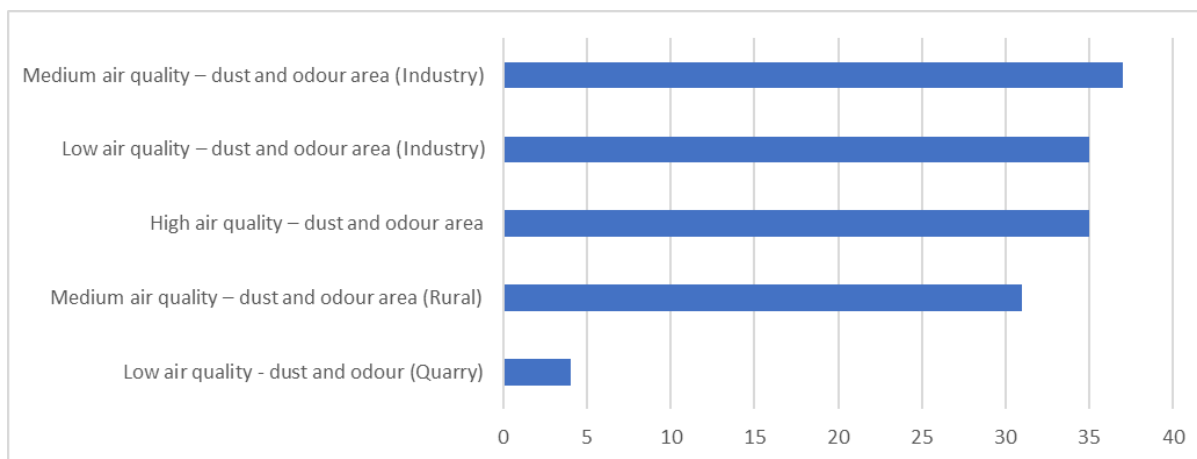


Figure 8: Resource consents by Air Quality Area

The sample was stratified on the basis of AQA and a random 15 per cent sample (between 5 and 6 records) were selected from each air quality area except for *low air quality area – dust and odour (quarry)* where two were randomly selected due to the small total number of records.

The sample was not stratified on the type of discharge (consent trigger). This is because one proposal can require a consent under several different rules and therefore a subset of consents selected on the basis of consent trigger will appear in another subset selected on the basis of a different discharge type.

The sample size of 23 resource consents from the total of 142 resource consents is considered a representative sample (gives a reasonably good picture of what's happening) with a standard error of 20 (noting that there is a 20% margin of uncertainty) (Australian Bureau of Statistics, 2024). The sample size also enabled a more in-depth document review than a larger sample size would have permitted.

To ensure the representativeness of the sample in respect of discharge type, the mix of discharge types for both the full dataset and sample was determined using the classification provided by the table of activities in E14.4.1.<sup>4</sup> The comparison is shown in Figure 9 below. While broadly representative, it is noted that no consents for discharges to air from rural activities (e.g. intensive farming) were within the sample. This is not considered to materially affect the findings of this review given its high-level nature.

<sup>4</sup> *Discharges of contaminants into air from other processes* has been excluded as a discharge type because it includes only rule A168 for nuclear power generation which is a prohibited activity (i.e. a resource consent cannot be applied for).

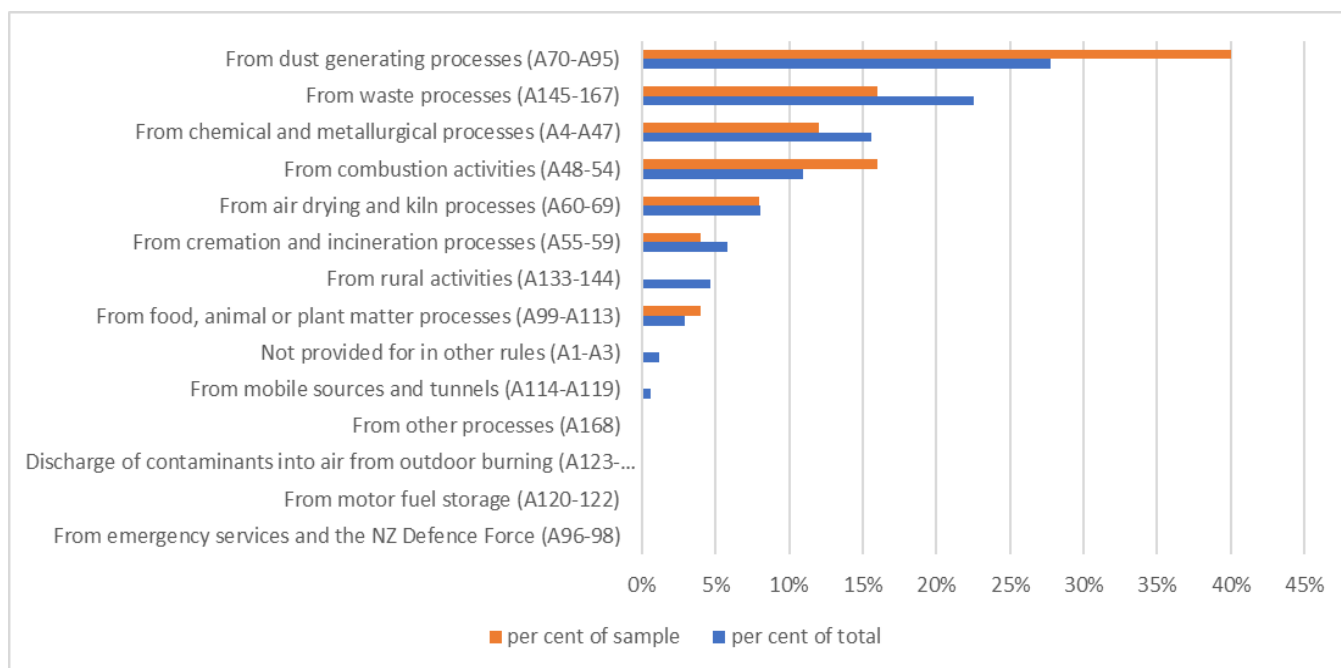


Figure 9: Representatives of sample of resource consents by discharge type

With respect to measure 3 – *Extent to which activities sensitive to air discharges are located in areas of reduced air quality* – using the resource consent data, consents for activities that meet the AUP’s definition of Activities Sensitive to Air Discharges (Sensitive Activities)<sup>5</sup> within the Heavy and Light Industry zones were identified.

In the Heavy Industry Zone, only three sensitive activities were recorded in total, those being an industry training facility and two health care facilities. In the Light Industry Zone, 81 sensitive activities were identified. This includes rule H17.4.1(A1) – a catch-all rule for activities not otherwise specified in the activity table for the zone. Of those, an unstratified random sample of 15 were selected for review. This is likely to contain some errors because the zone activity tables do not all identify sensitive activities using the same terms used in the definition of sensitive activities. This is because some specific land use activities are gathered into general groups (Commerce, Community, Industry, Residential, and Rural) and are given a generalised activity status. In some instances, activities are omitted from activity tables where they are not anticipated by the zone and are then assessed under a default activity status, as required by Chapter C1.7(1) of the AUP.

### 3.1.2 Air quality and emissions data

Measure 1 – *Air quality trends, including exceedances with reference to AUP targets and NES Air Quality thresholds* relies on published analyses of air quality and emissions inventories.

Auckland’s air quality monitoring network undertakes continuous air quality monitoring across ten fixed permanent sites. The majority of sites operate continuously, monitoring a range of parameters

<sup>5</sup> Activities Sensitive to Air Discharges: Activities sensitive to reduced air quality. Includes: Dwellings; care centres; hospitals; healthcare facilities with an overnight stay facility; educational facilities; marae; community facilities; entertainment facilities; and visitor accommodation (AUP definitions, J1.4).

in different environments – while some measure several contaminants, others measure a single contaminant (Talbot and Crimmins, 2020).



Figure 10: Map of Auckland's permanent air quality monitoring network

The reports also draw on data from a joint New Zealand Transport Agency Waka Kotahi and Auckland Council programme to monitor NO<sub>2</sub> concentrations at 35 sites across Auckland as part of the national nitrogen dioxide (NO<sub>2</sub>) monitoring network.

### 3.1.3 Complaints database

Measure 4 - *The frequency and nature of complaints in relation to air quality*, relies on an analysis of records of complaints. Data on air quality complaints comes from the Auckland Council's GeoOps database. The data includes all complaints that were responded to between 3 January 2019 and 30 June 2024.

The data does not include complaints received that were not responded to. While it is standard practice to give some response to all complaints, there were periods where only higher risk cases were being responded to due to periodic operational constraints during the COVID-19 pandemic

response and the need to divert resource to emergency response and recovery following the 2023 Auckland Anniversary Day weather event and Cyclone Gabrielle. Outside of these times records are understood to be comprehensive.

From 3 January 2019 to 30 June 2024, there were 3962 records for complaints and responses. 1590 related to dust, 2372 to odour.

Due to short timeframes over which data is available and the disruptions to complaint responses due to the prioritisation decisions discussed, no trends can be discerned other than seasonal variation, with dust and odour complaints peeking through the warmer and dryer summer months from October to April (Leersnyder et al., 2023). This is likely attributed to the prevailing weather conditions enabling dust to more easily mobilise, more earthworks being undertaken, and warmer conditions aiding the decomposition of organic matter giving rise to odour complaints.

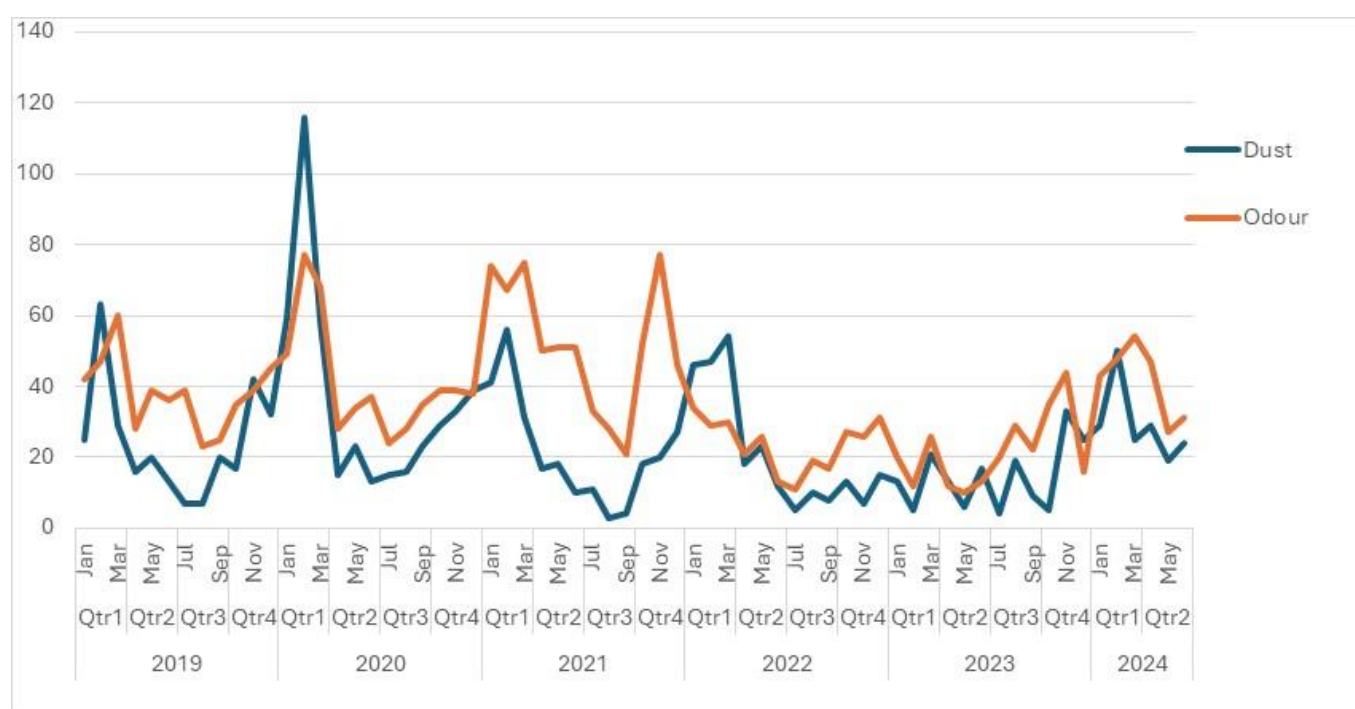


Figure 11: Dust and odour pollution responses 2019-2024

In some cases, several complaints were made against activities at the same address often by the same complainants. This was most apparent with large-scale and long-standing activities such as quarries and some industrial activities. While there were often repeat complaints about construction dust, this was typically short lived (i.e. the duration of construction activities). Only one record for each address was retained for the purpose of drawing a sample for analysis. This avoided revisiting the same cases, often with the same issue arising. There were 2586 unique addresses.

All records of dust and odour complaints against addresses in zones that equated to medium and low air quality areas were selected. This was in order to focus analysis on the extent to which industry and infrastructure is enabled by providing for reduced ambient air quality amenity in appropriate locations (i.e. medium and low air quality areas) as per RPS objective B7.5.1 (2). As shown in Figure 12 below there were 635 records that met these criteria.

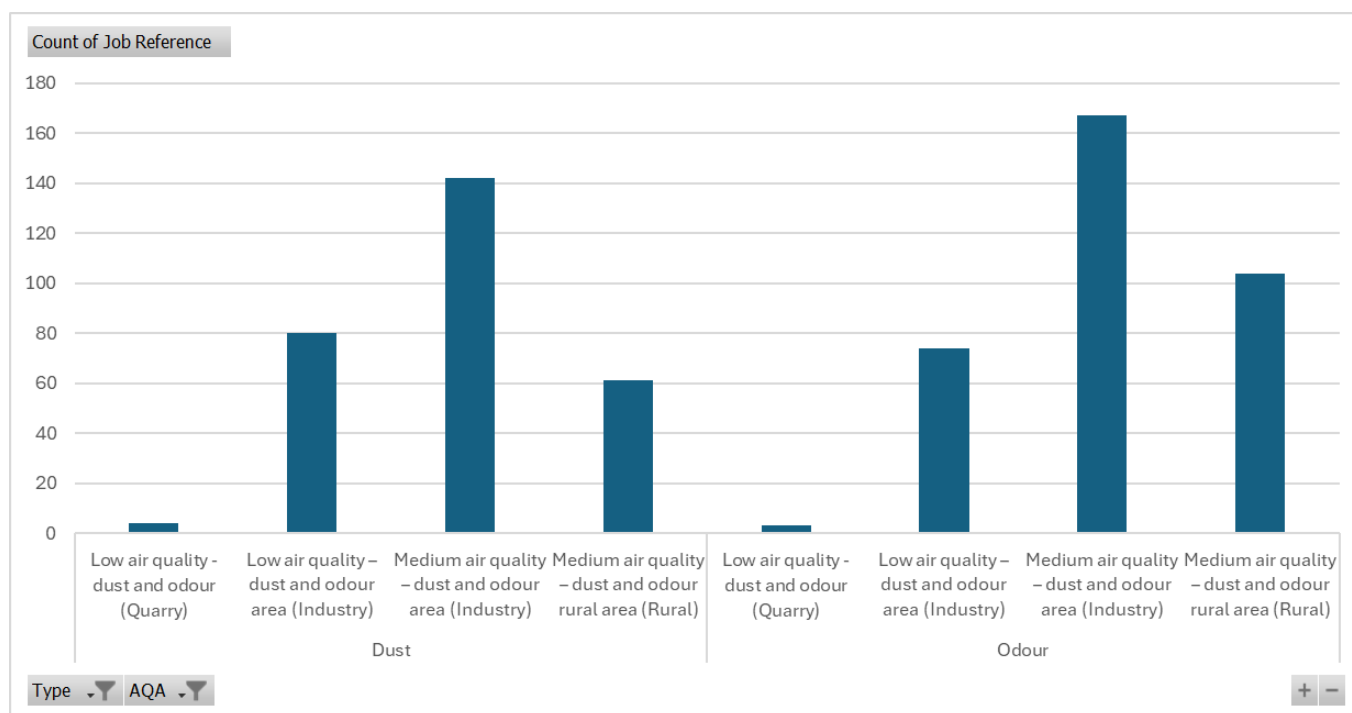


Figure 12: Dust and odour complaints in medium and low air quality areas

This data was then stratified by zone (Future Urban Zone, Rural Coastal and Rural Production were combined due to the similar policy framework regarding rural production activities) and a random 10 per cent sample or no less than five records were selected, whichever was the greater.

By reviewing the complaint job sheets and other related records, these sub-sets were then analysed for:

- the issue giving rise to the complaint;
- whether a resource consent had been issued for the activity; and
- if a consent had been issued, whether the complaint was a result of a non-compliance.

Future analysis on the effectiveness of the AUP, could consider whether activities giving rise to complaints were established before or after the AUP came into effect. This was not undertaken as part of this work due to the resources that would be required to manually assemble information from several sources to build a robust dataset.

## 4 Findings and analysis

This section reports on the data findings, and considers how effective and efficient the objectives, policies, rules and other methods of the AUP have been in meeting the outcomes intended by the Regional Policy Statement. Where appropriate, recommendations for Auckland Council are also provided.

### 4.1 Objective B7.5.1 (1) - Maintaining air quality

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*The discharge of contaminants to air from use and development is managed to improve region-wide air quality, enhance amenity values in urban areas and to maintain air quality at appropriate levels in rural and coastal areas (AUP RPS Objective B7.5.1(1))*

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#### 4.1.1 Indicators and measures

As shown in Figure 6 on page 19, effectiveness in achieving Objective 1 is evaluated with reference to the intended outcome of the AUP – that *air quality standards and management practices are contributing to air quality improvements*.

The indicator and measure of this are:

**Indicator 1:** Region-wide air quality is being maintained within guideline levels and is improving over time.

**Measure 1:** Air quality trends, including exceedances with reference to relevant standards and guidelines.

#### 4.1.2 Findings

Is region-wide air quality being maintained and improved?

Auckland Council's 2016 Air Quality Inventory reported that "from 2001 to 2016, emissions of air pollutants from transport, domestic and industrial sectors have decreased due to a downward trend in emissions from motor vehicles and domestic home heating" (Xie et al., 2019, p. iii). This improvement was attributed to households moving away from domestic wood burners as their heating source, improvements in the quality of vehicle emissions and reduced industrial activity. The report also notes however that some gains had been offset by rate of population growth in the region.

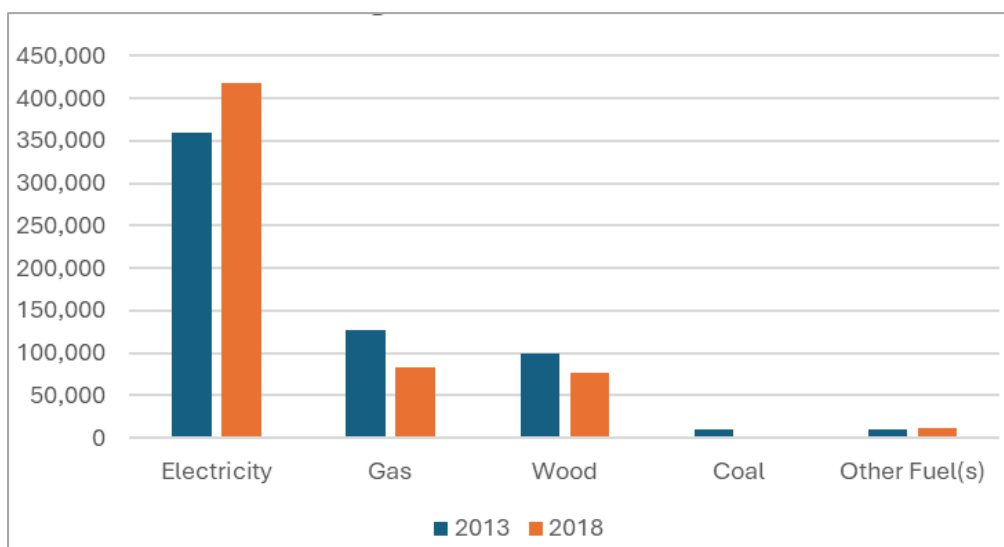


Figure 13: Home heating fuel types 2013 and 2018 (Statistics New Zealand, 2014; 2018b).

Following further improvements in air quality due to COVID-19 restrictions, the 2020, 2021 and 2022 annual data reports (Boamponsem, 2021, 2022, 2023) indicate that air quality is returning to pre-pandemic levels and may be worsening. For 2022 in comparison to 2021:

- PM<sub>10</sub> increased by 2.5%
- PM<sub>2.5</sub> increased by 2.8%
- NO<sub>2</sub> decreased marginally
- SO<sub>2</sub> increased by 40.8%<sup>6</sup>
- CO at Khyber Pass decreased by 4.5%
- O<sub>3</sub> increased by 9%

A similar pattern is observed in the following year. In 2023 compared to 2022:

- PM<sub>10</sub> increased by 1.8%
- PM<sub>2.5</sub> increased by 1.6%
- NO<sub>2</sub> decreased by 8.4%
- SO<sub>2</sub> increased marginally, by 0.7%
- CO at Khyber Pass increased by 3.5%
- O<sub>3</sub> decreased by 1.7%

The 2022 and 2023 annual data reports, similarly to earlier reports, conclude that the dominant sources of air pollutants remain transportation, residential home heating, and industrial emissions (Boamponsem, 2024). However, gains from improving technology appear to be no longer sufficient to maintain and improve air quality in the face of rapid population growth.

Roadside NO<sub>2</sub> monitoring shows a gradual decline in concentrations from 2011 and 2023 (New Zealand Transport Agency Waka Kotahi, 2023) nationally and in the Auckland region despite increases in vehicle travel. The report suggests that “this is likely due to changes in source emissions

<sup>6</sup> The 2022 annual data reports notes that this increase requires further investigation to identify the underlying cause of this rise (Boamponsem, 2023).

(such as improvements in the emissions from the vehicle fleet) and/or meteorology (for example emissions may be better dispersed in some years because of weather patterns)”.

As shown in Table 4 and Table 5 below, results vary locally: for both PM<sub>10</sub> and PM<sub>2.5</sub> the Auckland Central monitoring site shows a deterioration, while in Penrose and Takapuna PM<sub>10</sub> has fallen while PM<sub>2.5</sub> has increased. In Table 4 and Table 5 below, LAWA assigns the trend based on whether the concentrations have been “improving, showing no measurable change, or declining over the 10-years prior to the year selected” (LAWA, 2025).

Table 4: Auckland PM<sub>10</sub> trends 2016-2023 (Land and Water Aotearoa, 2024)

| PM10             |      |      |      |      |      |      |      |      |                                                                                                                                                                                                                                                                                                                       |
|------------------|------|------|------|------|------|------|------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |                                                                                                                                                                                                                                                                                                                       |
| Auckland Central |      |      | ↑    | ↑    | ↑    | ↓    | ↓    | ↓    | <b>Key</b><br> Improving<br> Deteriorating<br> Indeterminate |
| Glen Eden        | ≈    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    |                                                                                                                                                                                                                                                                                                                       |
| Henderson        | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    |                                                                                                                                                                                                                                                                                                                       |
| Pakuranga        | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    |                                                                                                                                                                                                                                                                                                                       |
| Penrose          | ↑    | ↑    | ↑    | ↑    | ↑    | ≈    | ≈    | ≈    |                                                                                                                                                                                                                                                                                                                       |
| Pukekohe         | ≈    | ≈    | ≈    | ≈    | ≈    | ≈    | ↑    | ↑    |                                                                                                                                                                                                                                                                                                                       |
| Takapuna         | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    | ↑    |                                                                                                                                                                                                                                                                                                                       |

Table 5: Auckland PM<sub>2.5</sub> trends 2016-2023 (Land and Water Aotearoa, 2024)

| PM2.5            |      |      |      |      |
|------------------|------|------|------|------|
|                  | 2020 | 2021 | 2022 | 2023 |
| Auckland Central |      | ≈    | ↓    | ↓    |
| Penrose          | ↑    | ↓    | ↓    | ↓    |
| Patumahoe        | ≈    | ≈    | ↑    | ↑    |
| Takapuna         | ↑    | ≈    | ≈    | ↓    |

**Key**  
 Improving  
 Deteriorating  
 Indeterminate

While some deterioration is evident, exceedances of NESAQ and AUP targets are rare. Those exceedances that have been recorded, result from acute incidents and natural phenomena such as:

- dust from individual construction sites
- the concentration of heavy vehicles as a result of road diversions
- uncontrolled fires
- ships at the Ports of Auckland
- weather systems carrying sea salt
- weather systems carrying dust or particulates from fires in Australia.

However, concentrations of contaminants do exceed the more stringent 2021 WHO guidelines. Auckland Council’s 2023 Annual data report, in reference to PM<sub>2.5</sub> states:

*The annual PM<sub>2.5</sub> averages for Penrose, Patumahoe, Takapuna and Queen Street sites were higher than the more stringent WHO air quality guideline. Auckland Unitary Plan target for 24-hour and annual average PM<sub>2.5</sub> were not exceeded.*

The same report with reference to NO<sub>2</sub>:

*There were no NO<sub>2</sub> national standard exceedance in Auckland. However, on 27 occasions (7%), the 24-hour average NO<sub>2</sub> concentrations exceeded the 2021 WHO air quality guideline of 25 µg/m<sup>3</sup>.*

As shown in Table 6 below, with updates published in 2021, the latest WHO guidelines are both more comprehensive in their coverage, and for particulates are significantly more stringent than the 2005 WHO and AUP thresholds.

Table 6: Air quality guidelines

| Polutant                                                   | Averaging time           | NES 2004 | NES (2011)                         | AUP | WHO 2005 | WHO 2021 |
|------------------------------------------------------------|--------------------------|----------|------------------------------------|-----|----------|----------|
| PM <sub>2.5</sub> µg/m <sup>3</sup>                        | Annual                   | -        | -                                  | 10  | 10       | 5        |
|                                                            | 24hr <sup>a</sup>        | -        | -                                  | 25  | 25       | 15       |
| PM <sub>10</sub> µg/m <sup>3</sup>                         | Annual                   | -        | -                                  | 20  | 20       | 15       |
|                                                            | 24hr <sup>a</sup>        | 50       | 50                                 | -   | 50       | 45       |
| O <sub>3</sub> µg/m <sup>3</sup>                           | 1-hour                   | 150      | 150                                | -   | -        | -        |
|                                                            | Peak season <sup>b</sup> | -        | -                                  | -   | -        | 60       |
|                                                            | 8-hour                   | -        | -                                  | 100 | 100      | 100      |
| NO <sub>2</sub> µg/m <sup>3</sup>                          | 1-hour                   | 200      | 200                                | -   | 200      | 200      |
|                                                            | Annual                   | -        | -                                  | -   | 40       | 10       |
|                                                            | 24hr <sup>a</sup>        | -        | -                                  | -   | -        | 25       |
| SO <sub>2</sub> µg/m <sup>3</sup>                          | 1-hr                     | -        | 350 <sup>1</sup> /570 <sup>2</sup> | -   | -        | -        |
|                                                            | 10-minute                | -        | -                                  | -   | 500      | 500      |
|                                                            | 24hr <sup>a</sup>        | -        | -                                  | 120 | 20       | 40       |
| CO, mg/m <sup>3</sup>                                      | 15-minute                | -        | -                                  | -   | 100      | 100      |
|                                                            | 1-hour                   | -        | -                                  | 30  | 35       | 35       |
|                                                            | 8-hour                   | 10       | 10                                 | -   | 10       | 10       |
|                                                            | 24hr <sup>a</sup>        | -        | -                                  | -   | -        | 4        |
| <sup>1</sup> Nine exceedences allowed in a 12 month period |                          |          |                                    |     |          |          |
| <sup>2</sup> No exceedences allowed in a 12 month period   |                          |          |                                    |     |          |          |

## What does this tell us about the AUP?

It appears that the AUP, alongside the NESAQ, have been important instruments in improving some aspects of air quality, particularly the contribution of industrial emissions. However, with gains in some areas already being offset by growth and emissions from vehicles continuing to increase, scope for further improvement with the current policy settings appear limited.

Despite air quality deteriorating by some measures to a point where it exceeds WHO guideline levels, because air quality remains within AAQS and AUP target levels, these standards do not themselves appear to be generating any substantive pressure to improve discharge quality within resource consent processes. This is discussed in more detail in section 4.3.2.1.

Earlier decisions to implement higher standards for emissions from imported vehicles would have been likely to result in material air quality improvements and associated health benefits (Metcalf & Kuschel, 2022), however these would still have taken some years to translate to improved air quality during which time current trends are likely to continue. This is due to:

- increasing vehicle kilometres travelled
- time taken for existing vehicles to exit the fleet
- the staged implementation approach to the introduction of new vehicle emission standards.

Government decisions in mid-2024 to lessen the vehicle emission standard to be achieved and increase the timeframes over which they need to be met may further reduce the pace and scale of air quality improvements.

The more stringent 2021 WHO guidelines offer internationally recommended “quantitative health-based recommendations for air quality management” (WHO, 2021). The discrepancy between both the NES and AUP, and the WHO guidelines, both in terms of scope and stringency will need to be resolved.

Whether this is resolved through amendments to the NES’s AAQS or the AUP guidelines, the impact of this will need to be considered carefully given that regional plans (including the AUP) do not regulate home heating and mobile sources of emission (i.e. transport emissions) which are the majority contributor to air pollution in Auckland. Simply adopting more stringent guidelines into the current policy framework, in the absence of greater control of other sources, may result in additional regulatory burden for industry and infrastructure with little material impact on air quality.

Any move to retain policy tools that create additional requirements in an airshed where air quality standards are not met, as is currently the case under the NESAQ, should also be accompanied by a review of Auckland’s 12 gazetted airsheds. In particular, the Auckland Urban Airshed that covers most of urban Auckland including the industrial areas of Takanini in the South to Albany in the North.

Because air quality in parts of Auckland will remain below these internationally recommended air quality guideline levels for the foreseeable future, in order to protect people’s health, council should consider further measures to manage exposure risks. In addition to retaining discharge regulations and air quality targets, this could include additional measures such as:

- public education on exposure risks, personal and household actions
- planning tools such as restrictions on sensitive activities within areas of reduced air quality (e.g. adjacent to some road corridors) or requiring mechanical ventilation to improve indoor air quality.

It is likely that this would need to be supported by a more detailed picture of Auckland’s air quality, which may be enabled by the advent of lower-cost air pollution sensors and computing (Snyder et al., 2013).

### Recommendations on air quality guidelines and targets

1. Review AUP air quality targets for consistency with current WHO guidelines and the role of these guidelines in air quality management.
2. Consider dividing the Auckland Airshed into more logical units that reflect the region's physical and economic geographies.
3. Consider additional planning measures (such as buffers) that separate, or require more active management of, sensitive activities in areas known to have air quality below WHO guideline levels.
4. Prioritise investment into building a more detailed picture of Auckland's air quality, taking advantage of improvements in air quality monitoring and modeling technology.
5. Advocate for urban planning and transport network interventions that encourage the use of public transport and active modes generally, and avoid high concentrations of motor vehicle traffic (particularly diesel vehicles) in areas where there are high concentrations of people and sensitive activities.
6. Advocate for transport policy interventions that promote an accelerated transition to improved vehicle emission standards and a low or zero emission vehicle fleet.

## 4.2.2 Objective B7.5.1(2) – Managing reverse sensitivity.

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*Industry and infrastructure are enabled by providing for reduced ambient air quality amenity in appropriate locations.*

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### 4.2.1 Indicators and measures

As shown in Figure 6 on page 19, effectiveness in achieving Objective 2 is evaluated with reference to the intended outcome of the AUP – that *Zone rules prevent activities that are sensitive to reduced air quality from locating in areas where reduced air quality is allowed for.*

The indicator and measure of this are:

**Indicator 4:** Activities operating within approved standards can operate without being constrained by reverse sensitivity effects.

**Measure 4:** The frequency and nature of complaints in relation to air quality.

### 4.2.2 Findings

In the Heavy Industry Zone, most complaints related to dust arise from on-site processing of bulk materials – this includes the processing of aggregate such as concrete crushing, concrete and asphalt batching, metal recovery including the breaking down and shredding of car bodies, and associated outdoor bulk storage.

Odour complaints that related to equipment or process failures were quickly remedied. It was noted that several complaints related to asphalt batching.

In the Light Industry Zone, dust complaints arose from businesses operating without adequate dust management. These typically included smaller business undertaking furniture manufacturing, stonework and sandblasting operations who lacked adequate dust suppression and management. Several complaints also related to construction dust associated with land development.

A number of odour complaints in the Light Industry Zone related to poor onsite solid waste (rubbish) management practices.

The majority of complaints in Rural productive zones<sup>7</sup> and the Rural - Mixed Rural Zone appeared to arise due to the close proximity of predominantly residential activities. This included fertiliser odours and agrichemical application.

While a long-term trend could not be discerned from the data available, there was little evidence of industrial activities in the Heavy and Light Industry zones operating outside of their resource consent

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<sup>7</sup> Rural production zones include: Rural Production Zone, Rural Coastal Zone, and Future Urban Zone.

conditions as they relate to discharges to air, or of compliant activities being constrained by reverse sensitivity effects. This is consistent with objective 2.

This was not the case for rural activities where it does appear that rural production activities at the rural/urban interface are subject to reverse sensitivity effects from encroaching residential and lifestyle development.

In respect of infrastructure – the majority of complaints were associated with construction dust. This was particularly noted in the City Centre Zone. This is indicative of the density of people, sensitive activities and sources of particulate emissions. This observation corresponds with environmental monitoring results that show increasing levels of PM<sub>10</sub> and PM<sub>2.5</sub> in the City Centre in recent years, attributed to vehicle emissions and construction activities.

#### Recommendations on industry and infrastructure

7. Review the plan rules controlling activities involving outdoor rock or aggregate crushing, metal processing and outdoor stockpiling in industrial zones.
8. Advocate for the ability to maintain policies that limit the establishment of sensitive activities in rural production and industrial zones.

See also **recommendation 11** that seeks to ensure that construction dust receives appropriate consideration and management as a contaminant of concern for human health through resource consenting.

## 4.3 Objective B7.5.1(3) - Managing discharges through consents

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*Avoid, remedy or mitigate adverse effects from discharges of contaminants to air for the purpose of protecting human health, property and the environment.*

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### 4.3.1 Indicators and measures

As shown in Figure 6 on page 19, effectiveness in achieving Objective 3 is evaluated with reference to the intended outcome of the AUP that - *where there are discharges, adverse effects are avoided, remedied and mitigated through the resource consent process.*

The indicators and measures reflect the two main tools that the AUP uses to avoid, remedy and mitigate the adverse effects of discharges to air. These tools are:

Firstly, requiring resource consents for particular air discharges to ensure that those activities are undertaken in a way that is consistent with the objectives and policies of the plan, giving effect to Part 2 of the RMA (i.e. sustainable management). For this, indicator 2 and measure 2 are:

**Indicator 2:** Resource consent applications are subject to an appropriate level of scrutiny, relative to the potential for adverse effects

**Measure 2:** Extent to which consent processes and decisions are:

- proportionate
- consistent with one another
- applying relevant provisions.

Secondly, physically separating activities that may have adverse effects on air quality, from activities that are sensitive to reduced air quality. This is achieved by zone rules controlling activities, preventing industrial activities from locating in residential areas, and vice versa, and regional rules controlling the types of discharge that are allowable in different Air Quality Areas (See Table 1 on page 8). Separating activities in this way also has a role in avoiding reverse sensitivity effects from constraining industry and infrastructure (Objective B7.5.1(2)). For this, indicator 3 and measure 3 are relevant:

**Indicator 3:** Sensitive activities are restricted from locating in the Light and Heavy Industry zones.

**Measure 3:** Extent to which activities sensitive to air discharges are locating in areas of reduced air quality.

The extent that these tools are proving successful in achieving their objectives is explored through a qualitative analysis of samples of resource consent applications.

## 4.3.2 Findings

As described in section 3.1.1, the consents reviewed are a 15 per cent sample drawn from:

- consents for discharges to air within the medium and low air quality areas under E14.4, and
- all applications for sensitive activities as discernible from the zone rules in the Light and Heavy Industry zones.

The parent data set is that recorded in the 'resource consents database' maintained by the Planning and Resource Consents Department.

Resource consent documents reviewed included:

- Assessment of Environmental Effects
- Auckland Council technical expert review of AEE
- Resource Consent Decisions.

First, findings in relation to resource consents for discharges to air are discussed, followed by consents for sensitive activities in the Light and Heavy Industry zones.

### 4.3.2.1 Resource consents for discharges to air

#### Inconsistency in requirements for technical assessments

Resource consents for discharges were assessed in accordance with the appropriate provisions of the AUP. However, there was considerable inconsistency in whether or not in-depth assessments were required when:

- determining whether an activity meets the permitted activity standards
- assessing the predicted air quality at nearby sensitive receptors.

In relation to the permitted activity assessments, permitted air discharges are subject to meeting standards set out in E14.6.1.1 (provided below). Elements of these standards are subjective and can require considerable technical assessment to understand whether they are able to be met.

While this approach appears consistent with established practice nationally, it is also inconsistent with the general expectation that the status of activities can be determined objectively and without recourse to a prior technical assessment (Quality Planning, 2024). This is somewhat analogous to the management of noise pollution prior to the availability of less costly, mobile monitoring technology and raises the question: With cheaper and more mobile air pollution monitors becoming available, could rules for permitted activities be made more precise and less subjective?

*E14.6.1.1. The following standards apply to all permitted activities that discharge contaminants into air except for:*

- *mobile sources; and*
  - *fire-fighting and other emergency response activities.*
- (1) The discharge must not cause, or be likely to cause, adverse effects on human health, property or ecosystems beyond the boundary of the premises where the activity takes place.*
  - (2) The discharge must not cause noxious, dangerous, offensive or objectionable odour, dust, particulate, smoke or ash beyond the boundary of the premises where the activity takes place.*
  - (3) There must be no dangerous, offensive or objectionable visible emissions.*
  - (4) There must be no spray drift or overspray beyond the boundary of the premises where the activity takes place.*

Once it is decided that a technical assessment will be required, these assessments are guided by well-established industry guidelines (Ministry for the Environment, 2016a, b) which ensures a level of consistency. However, the question of whether a technical assessment will be required is a matter of some discretion.

Discussions with council experts explored how this discretion to request a technical assessment of the applicant is exercised. It appears that experienced planners and technical staff with relevant expertise routinely apply their judgement when considering whether technical assessments are warranted; less expert or experienced staff appear more likely to call for an expert technical assessment out of caution.

Given the cost to applicants and council of technical assessments, opportunities to adopt a more explicit and consistent risk-based approach to requiring technical assessments should be considered.

## Mandated air quality standards are out of date and no longer serve their purpose

Furthermore, while the AAQS and AUP targets are frequently referred to in resource consent applications, they do not appear to be creating any pressure to improve discharge standards.

This is because, as discussed in section 4.1.2, the ambient air quality across Auckland is typically within these standards. However, these standards are now out of date and for some contaminants provide for significantly higher concentrations than internationally recommended air quality guideline levels (World Health Organisation, 2021).

While there is the potential for the WHO guidelines to be considered in an AEE, they carry limited formal weight. It was observed in one case that no detailed technical assessment was undertaken because air quality was expected to remain within AAQS and AUP targets – however ambient air quality was expected to exceed WHO guideline levels. While implementation of the *best practicable option*<sup>8</sup> for managing air discharges appears fairly consistent, it is unclear how the nature of mitigations may need to change if there were higher air quality standards.

## Rigour of assessment appears inconsistent with the risk of adverse effects for some activities

Discharge to air of dust from construction activities, particularly where there are high concentrations of sensitive receptors and ambient air quality is already reduced (e.g. Auckland CBD), may require additional scrutiny.

Assessment and management of construction dust appears to focus on its qualities as a nuisance and potential freshwater contaminant unless hazardous substances or contaminated land are concerned. Even where a resource consent (typically one in a bundle) was required for a discharge to air, AEEs and resource consent conditions took limited account of the proximity of sensitive receptors, background air quality, and the contribution of the activity with reference to AAQS or AUP targets.

Conversely, some activities that have a lower potential for negative health and amenity effects may be subject to more scrutiny than necessary given a functional need for their location and well understood management options. This was observed in applications to re-consent existing small-scale wastewater treatment facilities. These facilities are routinely subject to extensive technical assessment with little obvious gain. In these cases, opportunities to limit the extent of assessments could be explored.

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<sup>8</sup> *Best practicable option*, as defined under Section 2 of the RMA: in relation to a discharge of a contaminant or an emission of noise, means the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to—(a) the nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and (b) the financial implications, and the effects on the environment, of that option when compared with other options; and (c) the current state of technical knowledge and the likelihood that the option can be successfully applied.

### Recommendations on resource consenting

9. Explore opportunities to make it easier and more transparent to determine whether an activity meets general permitted activity standards, through a review of the general standards, guidance and practices.
10. Explore opportunities to ensure that the level of technical assessment required is related to complexity, environmental and health risks and that this is consistently applied.
11. Review assessment criteria and consenting practices to ensure that construction dust receives appropriate consideration and management as a contaminant of concern for human health.
12. Review the rules that apply to reconsenting of existing infrastructure to ensure that the consenting burden is proportionate to the risk of adverse effects.

## 4.3.2.2 Sensitive activities in the Light and Heavy Industry zones

### Sensitive activities in Heavy Industry Zone

The Heavy Industry Zone contains objectives and policies that seek to prohibit activities sensitive to reduced air quality from being established in that zone. In particular, policy H16.3 (1) “Avoid activities which do not support the primary function of the zone”. Rules also prohibit dwellings (H16.4.1(A3)), large community facilities (A24) and make other sensitive activities non-complying.

These objectives, policies and rules are proving effective. From the resource consent database, there were no instances of resource consents being granted for sensitive activities in the Heavy Industry Zone, except for a welding school that presented a clear functional need for having that location.

### Sensitive activities in Light Industry Zone

In the Light Industry Zone, approximately seven per cent of resource consents were for sensitive activities.

While in some cases resource consents for sensitive activities considered the potential for it to give rise to reverse sensitivity effects, for other activities in the Light Industry Zone this was not always the case.

Resource consents for sensitive activities were granted for four main reasons:

1. On the ground, Light Industry zoned land often accommodates activities inconsistent with the purpose of the zone as stated in the AUP. Rather, the activity mix on the ground reflects the legacy approaches and plan provisions (e.g. Manukau District Plan – Business 5 Zone). To prevent an activity with a similar character from establishing would have limited benefit and been seen to be unfair to the latest proponent.
2. Some sensitive activities appear able to co-exist under certain circumstances. The main example of this that appeared in the review of resource consent decisions were community facilities and places of worship that operated during weekends, and so avoided conflict with industrial activities operating during the week. While this may appear inconsequential, this

may give rise to future issues as the footprint of community facilities become well established (including through significant capital investment) and their scale and requirements expand to meet the needs of the communities they serve. There was no evidence observed in this study of this being a current problem. However, this may be an area that warrants more specific inquiry.

3. In some instances, the consenting of sensitive activities appeared to reflect a relaxed approach to protecting the function of the zone. In greenfield areas, this arose where there were few if any already established industrial activities occupying that zoned area. Arguments are provided where the lack of industrial activities is evidence of a lack of demand for that zone in that location, and that a small reduction by way of enabling a sensitive activity is inconsequential. In brownfield areas this arose where the activities already established in the zone had limited effects beyond their sites (e.g. warehousing and administration) and were unlikely to themselves experience reverse sensitivity effects from the proposed activity. The prejudicial effect that this would have on the future capacity of the zone to accommodate activities that reduced air quality was typically overlooked.
4. The health effects arising from the potential for diminished air quality in the Light Industry Zone was not a determining factor in the granting of resource consents. The health effects of reduced air quality in the Light Industry Zone was seldom considered in applications for sensitive activities in the Light Industry Zone. In one instance where health effects were given passing consideration, a childcare centre was approved in an area that complies with AAQS and AUP air quality targets but falls short of current WHO guidelines.

The variable nature of Light Industry zoned land on the ground necessitates responses that take into account the local context. This appears to be giving rise to a high degree of variability in the assessments of applications for sensitive activities. While this is to be expected, some factors appear not to be being given enough regard as a matter of course, in particular: the potential health effects of reduced air quality and the risk of the activity giving rise to reverse sensitivity effects now or at some future time.

While the Medium Air Quality Area and Light Industry Zones are themselves mutually supportive in their policy framework to prioritise light industrial activities that have the potential to cause reduced air quality; these provisions and the need for training and guidance may need to be reviewed.

## Recommendations on resource consenting

- 13.** Review relevant assessment criteria for clarity and consider training and guidance to ensure that sensitive activities proposed in the light industry zone are subject to the appropriate assessment for:
- current and future health risks from reduced air quality
  - current and future constraints on light industrial activities.

## 5 Summary and conclusions

The AUP is proving partially effective in achieving the RPS objectives for air quality, particularly in managing discharges to air that require resource consent and enabling industry and infrastructure to operate in appropriate locations without being unduly constrained by reverse sensitivity effects.

However, the effectiveness of the AUP in achieving the highest order objectives – to maintain and improve air quality and protect human health (B7.5.1(1) and B7.5.1(3)) – is undermined by:

- motor vehicles emissions, which are not regulated under the RMA, being the primary source of air pollution in Auckland; and
- AAQS and AUP air quality targets not reflecting what are now internationally recommended guideline levels for some contaminants.

Notwithstanding these constraints, there are some areas where adjustments to AUP policy settings and planning practices are likely to improve effectiveness. Particularly:

- the management of construction dust
- the management of activities that undertake outdoor processing of aggregates and metal
- the management of sensitive activities in areas in locations where air quality is reduced
- protecting the function of Light Industry zoned land
- the management of activities at the rural/urban interface.

Efficiency may also be improved by:

- adjusting the approach to determining permitted activity status
- ensuring the activity status and level of assessment for some activities is proportionate to the risk of adverse effects
- ensuring consistency in the nature of technical assessments required when applying for resource consents for activities with similar risks of adverse effects.

### Prioritisation of recommendations<sup>9</sup>

| Priority                                                  | Recommendation                                                                                                                                                                    |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b><br><b>(Consider immediate implementation)</b> | <b>1.</b> Review AUP air quality targets for consistency with current WHO guidelines and the role of these guidelines in air quality management.                                  |
|                                                           | <b>2.</b> Consider dividing the Auckland Airshed into more logical units that reflect the region's physical and economic geographies.                                             |
|                                                           | <b>4.</b> Prioritise investing in building a more detailed picture of Auckland's air quality, taking advantage of improvements in air quality monitoring and modeling technology. |
|                                                           | <b>5.</b> Advocate for urban planning and transport network interventions that encourage the use of public transport and active modes                                             |

<sup>9</sup> These recommendations will need to be tested fully through an RMA Section 32 assessment, and be considered alongside other recommendations from other topics and the Planning and Resource Consents Department work programme.

| Priority                                                         | Recommendation                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                  | generally, and avoid high concentrations of motor vehicle traffic (particularly diesel vehicles) in areas where there are high concentrations of people and sensitive activities.                                                                                                                                                                                                                   |
|                                                                  | 6. Advocate for transport policy interventions that promote an accelerated transition to improved vehicle emission standards and a low or zero emission vehicle fleet.                                                                                                                                                                                                                              |
| <b>Medium (Further investigate at plan review stage (2026)).</b> | 3. Consider additional planning measures (such as buffers) that separate, or require more active management of, sensitive activities in areas known to have air quality below WHO guideline levels.                                                                                                                                                                                                 |
|                                                                  | 7. Review the plan rules controlling activities involving outdoor rock or aggregate crushing, metal processing and outdoor stockpiling in industrial zones.                                                                                                                                                                                                                                         |
|                                                                  | 9. Explore opportunities to make it easier and more transparent whether an activity meets general permitted activity standards, through a review of the general standards, guidance and practices.                                                                                                                                                                                                  |
|                                                                  | 10. Explore opportunities to ensure that the level of technical assessment required is related to complexity, environmental and health risks and that this is consistently applied.                                                                                                                                                                                                                 |
|                                                                  | 11. Review assessment criteria and consenting practices to ensure that construction dust receives appropriate consideration and management as a contaminant of concern for human health.                                                                                                                                                                                                            |
|                                                                  | 12. Review the rules that apply to re-consenting of existing infrastructure to ensure that the consenting burden is proportionate to risk of adverse effects.                                                                                                                                                                                                                                       |
|                                                                  | 13. Review relevant assessment criteria for clarity and consider training and guidance to ensure that sensitive activities proposed in the light industry zone are subject to the appropriate assessment for: <ul style="list-style-type: none"> <li>• current and future health risks from reduced air quality</li> <li>• current and future constraints on light industrial activities</li> </ul> |
| <b>Low (Monitor)</b>                                             | 8. Advocate for the ability to maintain policies that limit the establishment of sensitive activities in rural production and industrial zones.                                                                                                                                                                                                                                                     |

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