Minutes of the
Mount Maunganui Air Quality Working Party
Monday 17 July 2023

Bay of Plenty Regional Council Chambers – Regional House, Elizabeth Street

Chair: Graeme Marshall

In attendance*:* Commissioner Shadrach Rolleston, Commissioner Bill Wasley (TCC); Councillor Paula Thompson (BOPRC); Beau Cowdrey-Woods, Mike Corbett, Aimee Driscoll (Ballance Agri-nutrients); Shvonn Cunningham, Tony Clark (Lawter); Kate Barry-Piceno, (TMFAG); Cat Lochore, Rewa Kino, Kevin Sinnott (Toi Te Ora); Owen West (MfE); Joel Ngatuere (Whareroa); Joey McKenzie (Port of Tauranga); David Phizacklea, Carl Lucca (TCC); Jess Andrew (Waka Kotahi); Kiri Petia, Lindsey Webber (WBOP PHO); Dudley Clemens (J Swap); Kataraina O'Brien, Angela Foster (BOPRC); Oscar Nathan, Mary Tolley, Stacey Linton (Bay of Plenty Tourism)

Presentations & Speakers: Dr Jim Miller (Toi Te Ora); Dean Taylor / Brock Nash (Higgins); Dimity McCreedie (CLIA)

Support: Reece Irving, Stephen Mellor (BOPRC); Sarah Omundsen (TCC)

Apologies: Reuben Fraser (BOPRC); Emma Jones, Rosie Kelway (Clear the Air); Dominic Adams (Ballance Agri-nutrients); Nigel Tutt, Colin Baskin (Priority One); Nicole Smith (TMFAG); Councillor Matemoana McDonald (BOPRC)

Meeting Goals - Gather information, maintain momentum, get answers, and drive actions. Get clarity and visibility on issues and actions; hold those responsible for air quality to account. Continue to seek ways to work collaboratively.

09:00am: Opening Karakia – Joel Ngatuere

Welcome and over-view of meeting; introduction to fresh faces – Chair Graeme Marshall

Presentations:

Presentation: - Mount Maunganui Health Risk Assessment (HRA) – Dr. Jim Miller, Toi Te Ora (Appendix 1)

Toi Te Ora (Te Whatu Ora) commissioned an independent health report to answer questions regarding the impact of pollutant discharges within the Mount Maunganui airshed on surrounding residents. The commissioning of the report was driven by local interest and concerns regarding air quality impacts on human health, the fact that a larger data set is now available, the increasing body of evidence showing air quality is a globally significant health issue, and to assist in updating previous health impact estimates.

The study was asked to investigate and estimate the health impacts of several air-borne pollutants including particulates, SO2, NO2, H2S, benzene, odour, and PAH's (where monitoring data was available). It used data from 2019 as the base year and compared Otumoetai with Mount Maunganui to estimate additional health impacts.

The study found the impacts of chronic air pollution in the area can be robustly estimated and the health impacts from PM10, PM2.5 and NO2 are significant, with increased mortality, cardiovascular and respiratory hospitalisations, and restricted activity days.

Q&A

Q: Is the report measuring against the NESAQ or the WHO guidelines?

A: The NES guidelines are peak exceedances and a minimum guarantee of air quality, not something to pollute up to. Toi Te Ora would want to see WHO guideline values adhered to or at levels below these guidelines as WHO set levels specifically for health. Evidence is accumulating that the impact of pollution on human health is greater than previously thought and further research will likely show more impacts. The UN has declared clean air as a human right. WHO standards are set lower than NESAQ guidelines, and overall ambient air quality should be at a level that it is extremely difficult even with high pollution spikes, to breach a standard.

Q: Is there ability to cross-reference hospitalisation data against what has been found in this report?

A: This report takes one approach to determine the impact of air pollution. Toi Te Ora will be having a discussion with the Ministry and a Massey University environmental epidemiologist to ask the question about hospitalisation data. The report is working with the most up to date statistics we have but it would be interesting to be able to compare the findings with historical hospitalisation data.

Q: Even if the WHO guidelines were adopted as the New Zealand standard, you would assume that deaths resulting from air pollution would still occur, is that correct?

A: Yes, but the relationship, particularly with PM10 pollution to impact is linear so any reduction in levels will have a reduction in impact on human health. We know there is no safe level of air pollution, so we should be aiming to have standards at lower levels than the WHO guidelines. How much is society prepared to tolerate? At least international guidelines should be a minimum starting point.

Q: So, it does not matter what guideline standards are adopted, they will always cause some deaths due to air pollution?

A: It comes down to what as a society we are willing to tolerate. A lot of activities come with risk. Look at motorcars for example. There are numerous road deaths each year, but cars and roads are being made safer to reduce deaths. The lower the levels of air pollution that are allowed the lower the health impacts will be from air pollution.

Q: The numbers in the report are sobering. Is there any way to compare what the health impacts would have been for an earlier period so we can determine whether there is any improvement or are things getting worse?

A: This would be difficult as there was not the level of monitoring undertaken earlier. We have seen a step-change in the level of monitoring undertaken in the air-shed since 2018. We could look at running the data again in the future to determine what change has occurred, likely in 2024/2025 based on 2022 annual data.

Q: The report identifies a number of childcare centres in the Mount Maunganui airshed. However, it is not clear whether it specifically identifies the impact that air pollution may be having on children attending these childcare centres, can you clarify this aspect?

A: The report takes a whole of population approach rather than delving into smaller groups within that population. Monitoring is currently only undertaken within the airshed boundaries, however without doubt air pollution moves across the boundary lines and into residential areas. Children are certainly more susceptible to the effects of air pollution as their lungs are still developing, the elderly are also more susceptible due to declining lung function in older age as well as those with underlying conditions.

Q: Is the Māori community also more susceptible to the impacts of air pollution?

A: There are impacts on the Māori community such as Māori showing susceptibilities to air pollution at a younger age, there may be greater underlying health conditions within the community and higher levels of socioeconomic deprivation all mean the community is more vulnerable to external hazards. It is a role of public health to identify the risks to the public, to their health and try and quantify that so we can develop an idea of the impacts and then prioritize our efforts to have the greatest impact. How we go about doing that is beyond the scope of this report. From the health position, the health agencies can be involved in discussions, but how you move the report findings into changes to the regulatory framework is more difficult and something that Toi Te Ora would be interested to hear about.

Q: Is there any comment from MfE on the WHO and NES guidelines and where these may head in the future?

A: The NES is focussed on the short-term acute effects of air pollution whilst WHO is more focussed on the longer chronic effects. MfE consulted on changes to the NESAQ back in 2020, looking to bring in a long-term guideline for PM2.5. The work was paused as MfE waited for the release of both the WHO and HAPINZ reports. Now these have been received MfE are in the process of working through the NES review which is being done alongside the new resource management reform and developing the National Planning Framework.

Q: Now the report has been released, what are councils, both Tauranga City and Bay of Plenty Regional going to do in terms of planning changes, clean air boundaries, protecting vulnerable communities, working around existing use rights, to cause improvement in air quality?

A: The Mount Maunganui Industrial Planning study is underway and will be completed this year and it will clearly outline what the opportunities are. There could well be recommendations for changes to planning framework and zoning provisions within the industrial area. There is also the Mount Zoning Project underway which will also be finished this year. Anything the council does needs to be robust and withstand scrutiny, particularly under the RMA. We acknowledge there is no single silver bullet, it is larger than the scope of just two councils but involves business and other agencies.

Comment: *What everyone is expecting is some action to come out of this report. There are many agencies that need to be involved to drive change. That includes the councils, but also Toi Te Ora and the Ministry for the Environment working together. The agencies must stop working in silos and get together, work with industry and drive actions to reduce the impacts of air pollution.*

Presentation: Pursuing Net-zero carbon cruising by 2050 – Dimity McCredie - Cruise Lines International Association (CLIA)

(Appendix 2)

Cruise Lines International Association (CLIA) represents 52 ocean going cruise line members with a fleet of 294 cruise ships which is around 90% of the total global cruise capacity. Worldwide cruising is now back to the same numbers that were carried in 2019 – that is 30 million passengers annually.

Cruise liners represent less than 1% of the total global oceangoing ship fleet. CLIA members ships and passengers contribute a direct spend of $550 million into the New Zealand economy per year with around $90 million of that directly spent in Tauranga.

CLIA has a global strategy for net zero carbon cruising by 2050, including all ships having the facility to connect to port shore power (Shore Side Electricity – SSE) by 2035. Currently less than 2% of cruise berths around the world have facility for SSE.

Full information on CLIA members activities can be found on www.cruiseinfohub.com

Q&A

Q: Is the Port of Tauranga able to offer shore power to visiting cruise liners?

A: No not currently. As pointed out less than 2% of global port facilities currently offer shore power for cruise ships. However, the cruise industry sees this as an important step that can be rapidly introduced to help with net zero cruising. The Port of Tauranga has assessed shore power pre Covid, however there was a very small number of ships capable of plugging in. We realise this is now changing. However, Marpol VI was important for the Port of Tauranga, to assess the impact on air quality from low sulphur fuels.

Q: How many of the cruise lines visiting the Port of Tauranga belong to CLIA?

A: We have not assessed this since pre pandemic, however, would estimate that 90-95% of ships visiting are members of CLIA.

Q: Given the shareholding structure of the Port of Tauranga, how much of a commitment is there by Regional Council and other shareholders to see the Port of Tauranga leading the way and being the first in New Zealand to introduce shore power for visiting cruise ships?

A: Shore power is a solution that can be installed relatively rapidly however does require a large degree of financial investment. There are also alternative fuels being explored such as LNG (liquid natural gas) and since adopting Marpol VI all cruise ships visiting New Zealand ports now burn low sulphur fuels which has seen an almost immediate reduction in sulphur dioxide levels detected on the council monitoring network during times cruise ships are berthed.

Action: Regional Council to compile an analysis of SO2 levels detected during cruise ship visits over the 2022/23 cruise season.

Presentation: Bay of Plenty Overview - Dean Taylor / Brock Nash - Higgins + Chris Bender – Pattle Delamore Partners (PDP)

(Appendix 3 & 3a)

Higgins are part of Fletcher Building employing 1900 people across New Zealand and Fiji with an excess of $62 million annual direct spend investment in the Bay of Plenty. Higgins build major horizontal infrastructure as well as provide maintenance services to the Port of Tauranga and 24 hours on call crews for road, footpath, and slip / emergency response.

Higgins operate an asphalt manufacturing plant in Hewletts Road in the Mount Maunganui airshed. Depending on demand this plant produces between 35 – 50,000 tonnes of asphalt per annum. The manufacture of asphalt requires discharge via a stack as part of the process. There is an associated odour. Higgins have engaged air quality expert Chris Bender of PDP to assist with analysing and minimising air discharges associated with their Hewletts Road plant.

Higgins are currently operating their site discharges under expired consent (s.124) No.63317 and are seeking an additional 10-year term to continue to operate whilst plant upgrades are determined.

Chris Bender from PDP has been engaged to undertake air quality and discharge analysis to assist Higgins with their resource consent application. The application proposes a reduction in TSP discharge, and a cap on annual tonnage production. PDP have undertaken a standard dispersion model to determine maximum contaminant emission rates and undertook odour monitoring around the site during normal operating conditions.

Q&A

Q: Have Higgins considered relocation out of the Mount Maunganui airshed rather than upgrading the current site?

A: All options have been considered and as yet nothing firm has been landed on, which is why Higgins seeks a further 10 years consent for the current site, so there is time to fully evaluate all options.

Q: There are different types of products produced which would have different odour profiles. How does Higgins determine which products create the most odour.

A: It is difficult to determine what additive causes different odours. We have done some research into the port mix which contains polymer modified bitumen, so we have looked into the odour profile of this product.

Q: What are the options for Higgins if the 10-year consent is not granted?

A: Higgins are focussed on getting the extension requested to continue operating on the same site whilst all other options are investigated.

Next meeting: Wednesday 15 November, venue to be advised.

11:55am Meeting closed with Karakia.

Table of Actions

Action	Agency
Inform Working Party members when the Mount residential monitoring network is live on the BOPRC website and provide a demonstration and update of this monitoring network at the next hui.	BOPRC
Toi Te Ora, TCC, BOPRC and MfE to commit to meet to produce an aligned plan to respond to the Toi Te Ora Health Impact Report and provide an update on actions to the next hui.	BOPRC/TCC to organise meeting
Priority One presentation carried over to the next meeting.	Priority One
Provide analysis of ambient SO2 levels in the airshed during cruise ship visits (2022/23 cruise ship season)	BOPRC

Appendices: PowerPoint Presentations

Appendix 1: Toi Te Ora

Appendix 2: Cruise Lines International Association (CLIA)

Appendix 3 / 3a: Higgins / PDP

Mount Maunganui Health Risk Assessment (HRA)

Presented by
Dr Jim Miller
Medical Officer of Health

17 July 2023

TOI TE ORA PUBLIC HEALTH
Bay of Plenty + Lakes Districts

Te Whatu Ora Health New Zealand
Hauora a Toi Bay of Plenty

Te Whatu Ora Health New Zealand
Lakes

TOI TE ORA
PUBLIC HEALTH

Lifelong health + wellbeing for all

Overview

- Why air quality is an important public health issue
- Air quality in Mount Maunganui
- Why we requested a health risk assessment
- Methods and findings
- Summary

Air Quality is a significant health issue

- **Globally:** amongest the largest global health risks (comparable to smoking, high cholesterol and obesity)
- **Nationally:** air pollution in New Zealand responsible for
  - approximately 3,300 premature deaths annually
  - $15.6 billion per year social costs
- Clean air critical for human health and wellbeing and air pollution affects everyone, however impacts are not the same across all groups

Pollutant health impacts

Particulate matter - PM_{10} & $PM_{2.5}$

- Known to affect respiratory and cardiovascular systems
- Linked to all cause mortality, cardiovascular mortality, respiratory mortality, lung cancer
- Long-term (chronic) exposure of most concern
- No known safe exposure threshold

Nitrogen dioxide (NO_2)

- Respiratory and cardiovascular impacts
- Increases risk of premature death
- Health impacts from short-term and long-term (chronic) exposure

Pollutant health impacts

Sulphur dioxide (SO_2)

- Acute exposure (daily and 1 hour) affects respiratory system
- Linked to increased risk of all-cause mortality and respiratory mortality

Hydrogen Sulphide (H_2S)

- Odour annoyance and impacts wellbeing
- High levels can affect nervous and cardiovascular systems

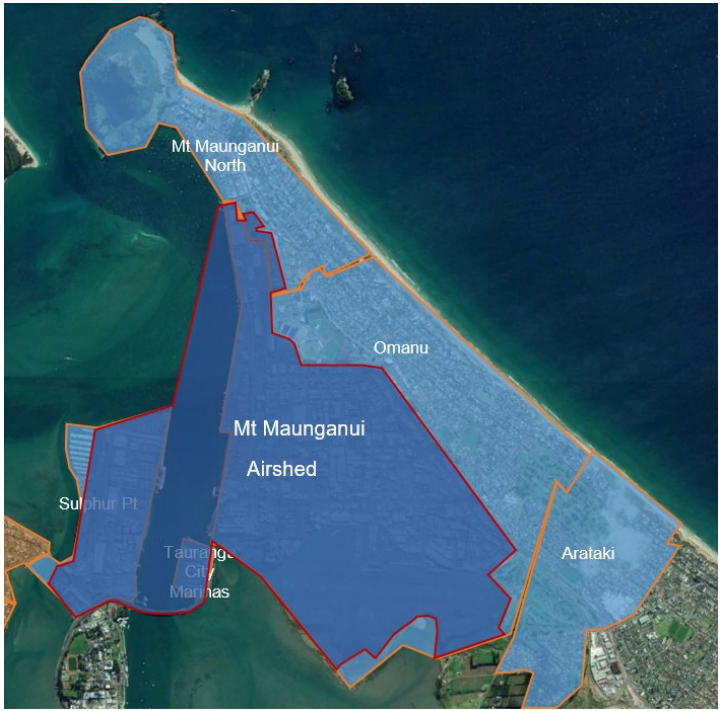
Benzene (C_6H_6)

- Carcinogenic and non-carcinogenic effects

Odour

- Range of impacts on wellbeing

Mount Maunganui area



- Air quality has been of concern for some time. Increased monitoring mainly in industrial area
- Breaches of national air quality standards (PM10) since 2019 – designation of airshed (polluted).
- Airshed includes port, airport, industrial area, Whareroa Marae and some residents (in dark blue)

Why commission a health report?

- Requests for health studies
- Concerns raised about pollutants other than PM_{10}
- Increasing and changing evidence of health effects in the literature
- More local data on air quality available
- Previous health estimates needed updating

What did we want to know?

What are the health impacts of air contaminants of public health concern in the Mount Manganui area?

What did we ask for?

An estimate of health impacts on the population of Mount Maunganui from exposure to air contaminants of public health concern* where the concentrations are known or can be reasonably estimated.

*Particulates, SO_2, NO_2, H_2S, benzene, odour, PAHs

Study approach & findings

Report produced by ESR

Commissioned May 2022, final report produced June 2023

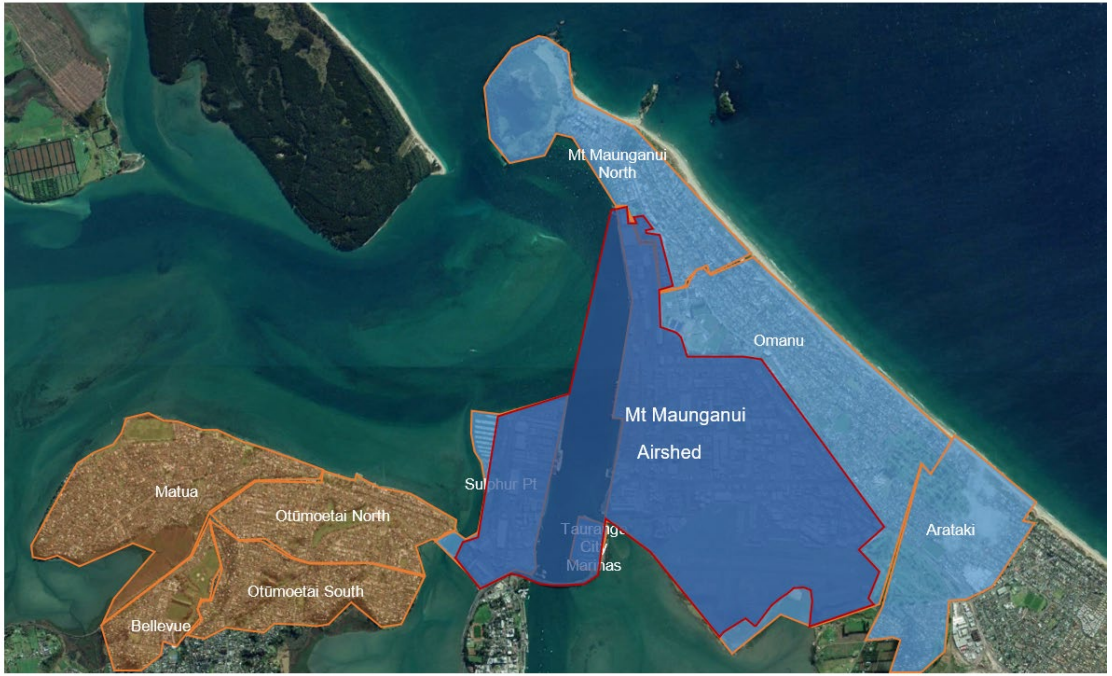
ESR (Institute of Environmental Science and Research) is New Zealand's Crown Research Institute specialising in science for communities.

Study approach

- Used available air quality information (full year), complete health statistics, population data, and current information on health impacts
  → 2019 data as base year
- Applied a robust New Zealand - specific methodology
- Where possible quantified the health impacts, otherwise qualitative assessment
- Comparison of Otūmoetai area with Mount Maunganui area to estimate *additional* health impacts
- Assessed how robust findings are
- A number of peer reviews before final report produced

Comparison areas

- Blue = area of interest
- Orange = area for comparison
- Similar population sizes
- Pollution levels measured or able to be reasonably well estimated



Quantified health impacts

PM_{10}

- On average the long term PM_{10} levels in Mount Maunganui were 20 $\mu g/m^3$ as compared to 10 $\mu g/m^3$ in Otūmoetai
- Estimated 13 additional premature deaths* each year in adults over 30 (base year 2019) associated with the chronic exposure to this higher level of PM_{10}
- This represents around 9% of all deaths from non external causes in Mount Maunganui in 2019

***95% confidence intervals 11, 15**

Quantified health impacts

$PM_{2.5}$ associated with

- Two additional premature deaths in adults over 30
- Three additional cardiovascular hospitalisations (all ages)
- Two additional respiratory hospitalisations (all ages)
- 1,256 restricted activity days

Quantified health impacts

NO_2 associated with

- Three additional premature deaths in adults over 30
- One additional cardiovascular hospitalisations (all ages)
- Four additional respiratory hospitalisations (all ages)
- Two additional asthma cases in 0-18 year olds

Quantified health impacts

$PM_{2.5}$ and NO_2

- Five additional premature deaths* in adults over 30
- Four cardiovascular hospitalisations (all ages)
- Six respiratory hospitalisations (all ages)
- 1,256 restricted activity days

***95% confidence intervals 3,6**

Qualitative health impacts

SO_2

- Exceedances of WHO 10 minute guidelines
  → short-term transient health effects (bronchoconstriction, nose or throat irritation)
- Possible impacts on mortality risks but not quantified

H_2S

- Only monitored at Whareroa Marae (2015-2020)
- Many exceedances of New Zealand Ambient Air Quality Guidelines set to protect against offensive odours, likely adverse impacts on wellbeing

Qualitative health impacts

Benzene

- Several potentially significant sources in the airshed
- Lack of information to draw conclusions
- Lack of long-term monitoring data considered significant data gap as there *may* be health risks

Odour

- Complex mix → no single indicator chemical to measure
- Large number of odour complaints → offensive and objectional odours likely to be adversely impacting wellbeing of residents

How much weight should we give this report?

- Clear question
- Reputable expert authors
- Extensive internal, external and international peer review
- Overall approach used is likely to undestimate the potential impacts
- Tight confidence intervals

Summary

- Increased health impacts of chronic air pollution in the area can be robustly estimated.
- Health impacts from chronic exposure have been quantified for PM_{10}, $PM_{2.5}$ NO_2, and are significant.
- Other contaminants of potential concern may be having impacts on health, but there is a lack of information on ambient air concentrations.
  So there is limited ability to quantify this impact

What does this study add?

- The impact of air pollution in Mount Maunganui is higher than previously estimated and add significantly to the community health burden in the area.
- There is limited or no data for some pollutants

What next?

- Efforts to improve air quality should continue
- Consideration should be given to additional monitoring, both of other contaminants and in other parts of the peninsula.

2022 Air Quality Monitoring Review

Overview

- Long-term exposure has the greatest health impact
- Monitoring shows some recent improvements which is encouraging
- Annual PM_{10} for airshed still high and exceeds WHO guideline
- Annual NO_2 concentrations appear to be increasing in Mount Maunganui community
- Monitoring data show more can be done to improve air quality in the airshed

TOI TE ORA
PUBLIC HEALTH
Bay of Plenty + Lakes Districts

For further information:

0800 221 555
enquiries@toiteora.govt.nz
www.toiteora.govt.nz


CLIA
CRUISE LINES
INTERNATIONAL
ASSOCIATION
SAILING SUSTAINABLY
PURSUING NET-ZERO CARBON
CRUISING BY 2050

#WeAreCruise (The world`s largest cruise industry trade association)

The world`s largest cruise industry trade association

50+ Cruise Lines – From ocean to speciality cruise ships, CLIA lines represent more than ***95 % of global cruise capacity*** and 350+ Executive Partner,13,000 Global Travel Agency and 50,000 Travel Agent Members

CLIA Cruise Lines serve nearly ***30 million passengers*** annually.

The ***economic impact*** of Cruise Tourism Globally: over $US150 billion in total economic impact to the global economy, supporting nearly 1.2 million jobs and US$50 billion in wages. Cruise lines and cruise passengers spend over NZ$550 million each year in New Zealand.

With the launch of 14 ships from CLIA-member cruise lines during 2023, the CLIA fleet by year-end will include 293 ships, and ***€38 billion invested*** in 62 ships for delivery between now and 2028

CRUISE LINES INTERNATIONAL ASSOCIATION

Strategy

Sailing to a Better Future (Two Core Strategies)

PURSUING
NET–ZERO
CARBON
CRUISING

RESPONSIBLE
SUSTAINABLE
CRUISE
TOURISM

Ship

Sailing to a Better Future (Two Core Strategies)

PURSUING
NET–ZERO
CARBON
CRUISING

RESPONSIBLE
SUSTAINABLE
CRUISE
TOURISM

Clear commitments, aligned with global targets

Key CLIA cruise line member commitments

- **Pursue net zero carbon cruising by 2050**
- **Reduce the rate of carbon emissions by 40% by 2030 compared to 2008**
- **All CLIA member ships will be equipped to connect to Shoreside Electricity facilities wherever available at ports as soon as possible, and no later than 2035**

IMO 2023 GHG Strategy on Reduction of GHG Emissions from Ships

Levels of ambition

- **carbon intensity of the ship to decline through further improvement of the energy efficiency for new ships**
- **carbon intensity of international shipping to decline** to reduce CO2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008;
- **uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to increase** - uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to represent at least 5%, striving for 10%, of the energy used by international shipping by 2030; and
- **GHG emissions from international shipping to reach net zero by or around 2050**

The most technologically advanced fleet

(now and development until 2028)

PURSUING
NET–ZERO
CARBON
CRUISING
STARTS NOW

The latest ***CLIA Environment Technology Report*** tracks progress in CLIA members investment in technologies aimed at reducing their environmental impact.

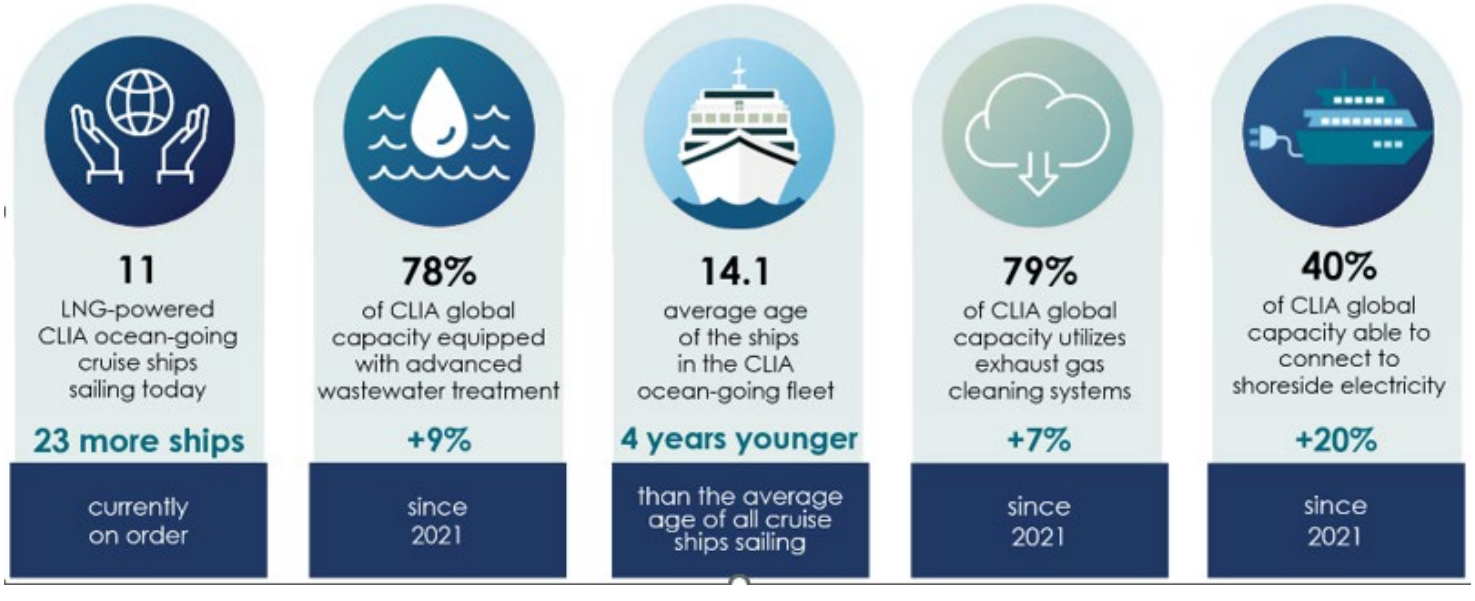
A comprehensive approach ***beyond CO2*** , also looking at SOX using Exhaust Gas Cleaning Systems, ***alternative fuel*** options and ***water treatment*** systems.

Progress is happening now with the ***youngest fleet*** ever and a set of technologies that accelerates.

We now have reached ***shoreside electricity*** capability at 40% and continue to invest in ***new fuels, fuel cells*** and advanced propulsion solutions.

The most technologically advanced fleet
(today's impact)

TODAY

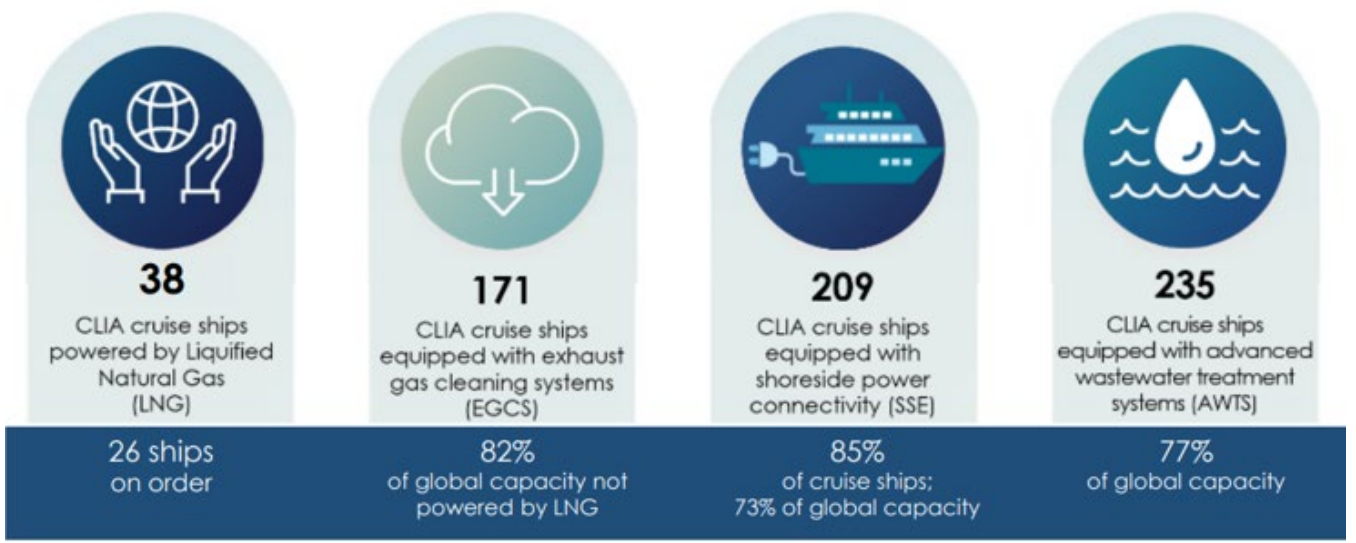


Source: CLIA Environmental Technologies and Practices Report, October 2022

The most technologically advanced fleet

(future impact)

by 2028



Source: CLIA Environmental Technologies and Practices Report, October 2022

Note: Projections do not account for retirement of vessels between now and 2028; vessels more likely to be retired first are those without these technologies and/or unable to be retrofitted with these technologies, are .

CRUISE LINES INTERNATIONAL ASSOCIATION

Immediate solutions: Shore Side Electricity

EU goal is to have full SSE coverage or ‘zero-emission’ solutions by 2035

SSE will be a viable solution when at Dock

“The time a vessel is on SSE is crucial to stockpile other low emission fuels for sailing times”

Alternative fuel options will focus on Sailing

European SSE Feb 2023

“40% of the fleet operated by CLIA members can connect to SSE today. By 2028, this number will be 75% globally”

“Our members have invested and are ready; what we lack is the shoreside infrastructure at scale”

CRUISE LINES INTERNATIONAL ASSOCIATION

Shore

Sailing to a Better Future (Two Core Strategies)

PURSUING
NET–ZERO
CARBON
CRUISING

RESPONSIBLE
SUSTAINABLE
CRUISE
TOURISM

Cruise Tourism is Managed Tourism

1. Cruise tourism is ***managed tourism***; by collaborating with ports and destinations.
2. Ocean and ***marine life protection***, and coral reef restoration; with advanced wastewater treatment, noise reduction, and self-produced water.
3. Waste reduction through ***repurposing and recycling***; by eliminating single-use plastic; repurposing waste generated onboard.
4. Responsible ***sourcing for food*** and supplies.
5. Sustainable ***tour excursions***; with a rigorous certification program.

RESPONSIBLE
SUSTAINABLE
CRUISE
TOURISM

CRUISE LINES INTERNATIONAL ASSOCIATION

Keeping the Timeline Realistic

CHARTING THE COURSE TO NET-ZERO CARBON CRUISING BY 2050

3 Pillars of Action for Sustainable Cruising

- Reducing the carbon footprint of ships while at berth and at sea
- Investing in advanced environmental technologies onboard
- Partnering with cities and ports on sustainable destination management

SAVING ENERGY WITH INNOVATION

Strategic use of solar panels on a cruise ship generates enough power to operate approximately 7,000 LED lights which last 25 times longer and use 80% less energy.

PAVING THE WAY WITH LOWER CARBON FUELS

By 2027, more than half of the new capacity of the global cruise fleet will be powered by the transitional fuel liquid natural gas with up to 20% less greenhouse gas emissions.

ACTING NOW FOR FUTURE-PROOFED SHIPS

Engines and fuel supply systems are being designed so that no changes will be needed when renewable synthetic liquid natural gas becomes viable at scale.

EXPLORING HYBRID SOLUTIONS

Research projects are taking place on hybrid options such as LNG-hydrogen powered ships, or fuel cells and batteries for further emission reductions.

PROTECTING OUR OCEANS

Cruise lines are investing in technologies to preserve ocean biodiversity. For instance, innovative coatings to prevent foreign organisms from being deposited in the ocean. Cruise lines have invested in many projects with NGOs to protect ocean wildlife and coastal ecosystems.

USING DIGITAL TECHNOLOGY TO DRIVE EFFICIENCIES

Digital technology is offering new ways to increase energy efficiencies. From tracking the energy use of appliances in a ship's galley to routing ships optimally for weather safety and fuel efficiency.

INVESTING IN SHORESIDE ELECTRICITY

At least 66% of CLIA-member cruise ships will be capable of connecting to shoreside electricity within the next five years.

APPLYING CIRCULAR ECONOMY PRINCIPLES

The extent of recycling on ships is often superior to many cities. Some ships can repurpose 100% of waste generated aboard – removing, reusing, recycling, and converting waste to energy.

REDUCING FUEL CONSUMPTION

Use of air lubrication systems on ship hulls help to reduce drag and fuel consumption.

FACILITATING TOURISM FLOWS

CLIA and its members work with city leaders to implement innovative solutions to help manage tourism flows such as mobile app technology and opening new visitor routes.

PARTNERING WITH CITIES AND PORTS

The industry works with cities and ports to develop action plans to deliver sustainable tourism. CLIA's partnership with Dubrovnik led to a Global Sustainable Tourism Council assessment, which helped the city create a sustainability action plan, "Respect the City."

INVESTING IN COMMUNITIES

The industry is working with local tourism stakeholders to improve the sustainability of their activities. Cruise lines are investing in projects with local communities and sourcing local products.

PURIFYING WASTEWATER

Advanced wastewater purification systems are often equivalent to the best shoreside treatment plants. 100% of new ships on order are specified to have advanced wastewater treatment systems.

APPLYING STRICT REGULATIONS

Every cruise ship receives multiple inspections each year from the ports they visit and countries where they are registered to ensure implementation of strict environmental and safety regulations.

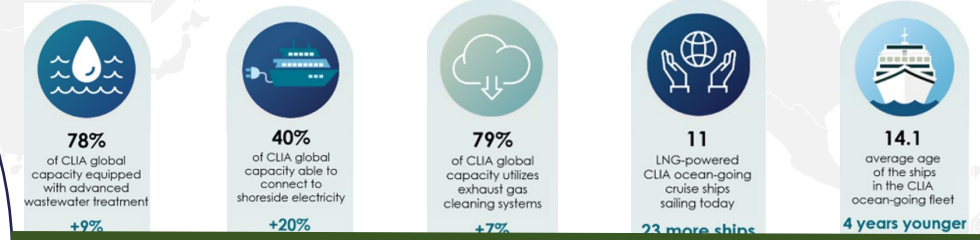
A Realistic Timeline – managing short-term perception

Millennium Goals
(2000)

Sustainable Development Goals
(2015)

EU – Fit for 55
(2021)

Blue Flag
(2015



1992
(Save the Waves – focus on sustainability)

2001
(Juneau Alaska – first shore power program negotiations)

2007
(pioneering the first Exhaust Gas Cleaning System)

2013
(designing the first LNG-powered vessel)

2020
(pledge: pursuing net zero cruising)

2050
(net zero)

Port of Tauranga cruise visits

2022/23 season

- 91 actual ship berths, a total of 77 actual ship days.
- 153,177 cruise passengers and 68,366 crew visited the region.

2023/24 season

- 115 scheduled cruise ship arrivals resulting in 93 ship arrival days.
- These visits will bring 291,000 passengers and crew into the Bay of Plenty region.

Cruise as a percentage of all port calls

In the year to 30 June 2023, there were approximately 90 cruise ship departures from Tauranga out of an overall total of around 1432 departures.

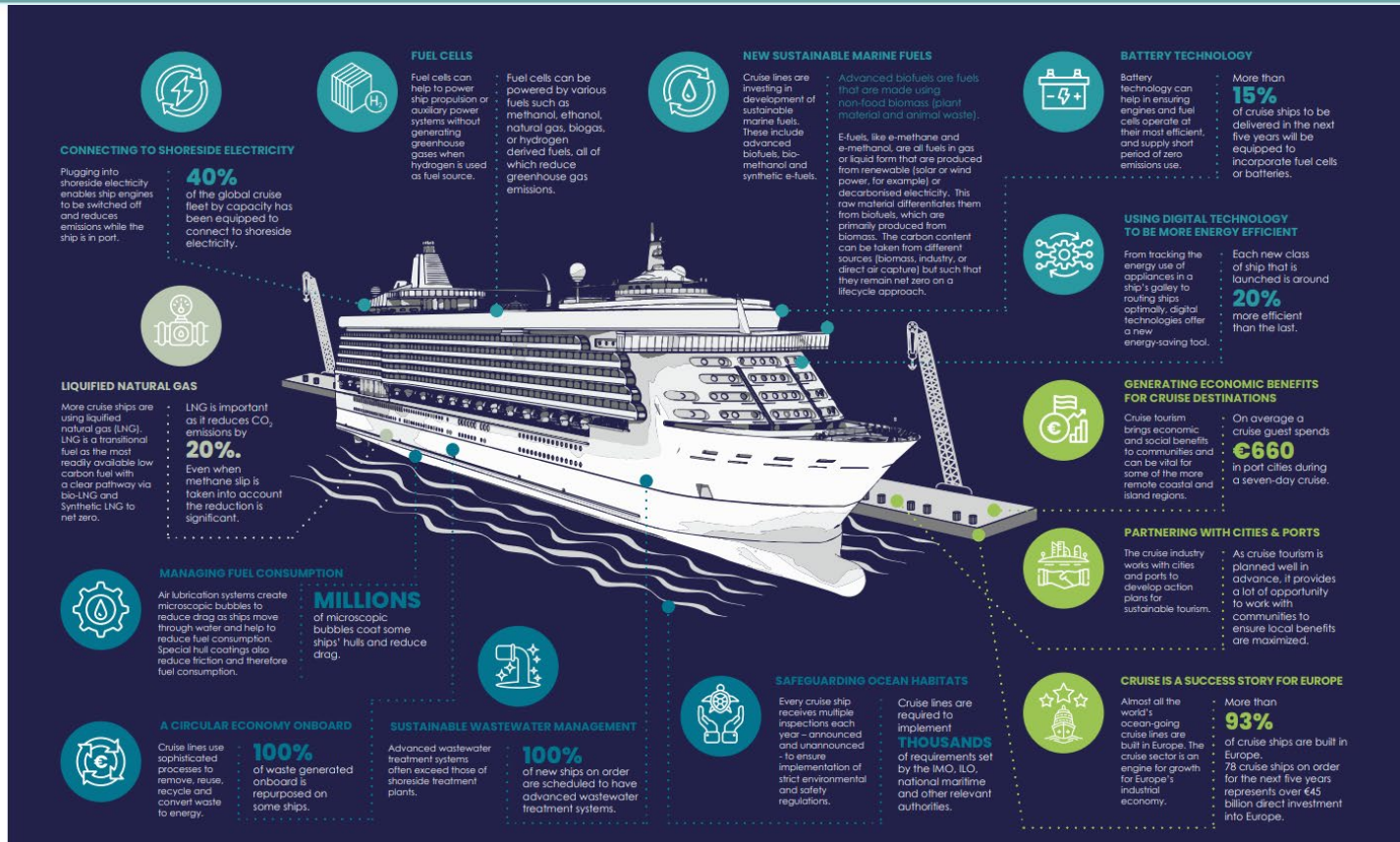
Cruise = 6.3% of all departures

CRUISE LINES INTERNATIONAL ASSOCIATION

Communication and Information

visit **www.cruiseinfohub.com**

A new, online, multilingual resource containing reports, statistics, infographics, videos, case studies and more…



CLIA CRUISE LINES INTERNATIONAL ASSOCIATION

Thank you

Please connect with us

- Facebook.com/CLIAglobal
- CLIA Global
- @CLIA Global
- YouTube.com/CLIAglobal
- CLIA (Cruise Lines International Association)

Cruising.org #WeAreCruise

HIGGINS

Bay of Plenty overview

Mount Air Quality Working Party Hui

17 July 2023

Agenda

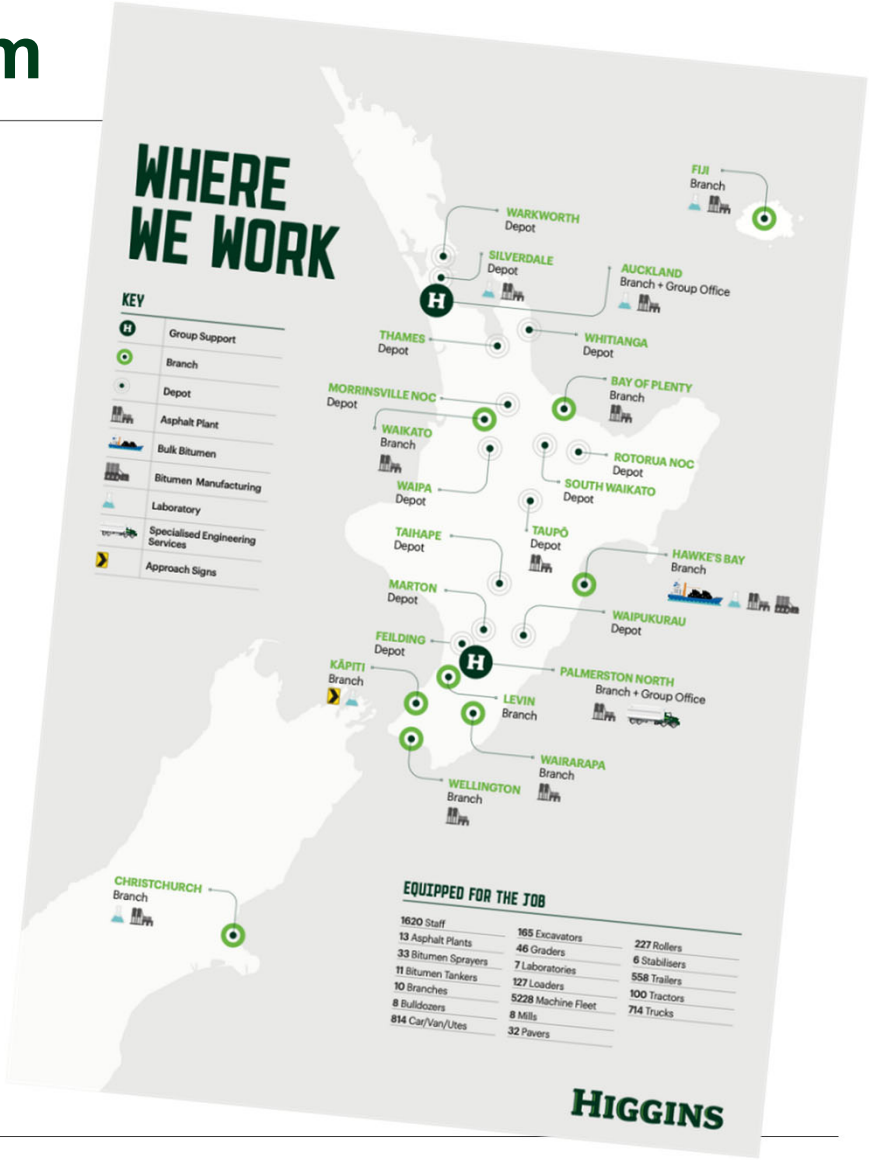
- Introductions
- Who we are – big picture
- Business overview of Higgins BOP
- Our Asphalt plant
- Questions

Who we are

- Part of Fletcher Building
- One of 3 operating business units within Fletcher Construction
- Employ 1900 people across NZ and Fiji
- Focus on building and maintaining horizontal infrastructure

Business overview – Higgins team

North Island	
Auckland / Northland	267
Waikato	221
Bay of Plenty	145
Manawatu / Taranaki	362
Hawke's Bay	176
Wellington	228
Elsewhere	
South Island	119
Fiji	313
Total	**1892**



Business overview – regional investment

Financial Year End Spend

- $ 10.8M Higgins Labour and Staff
- $ 1.0M Labour hire
- $ 30.5M Subcontract spend BOP/Waikato
- $ 16.5M Local material
- $ 4.0M Plant & fuel

Total $62.8M

HIGGINS | For generations to come

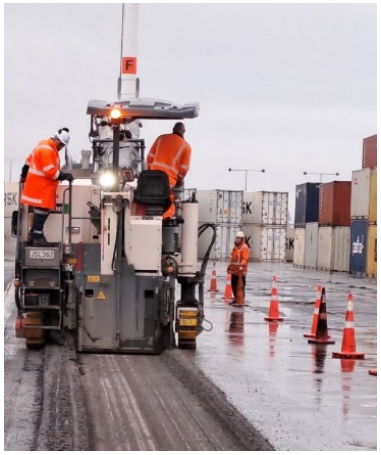
Business overview – major infrastructure

Quayside Holdings

Tauranga City Council

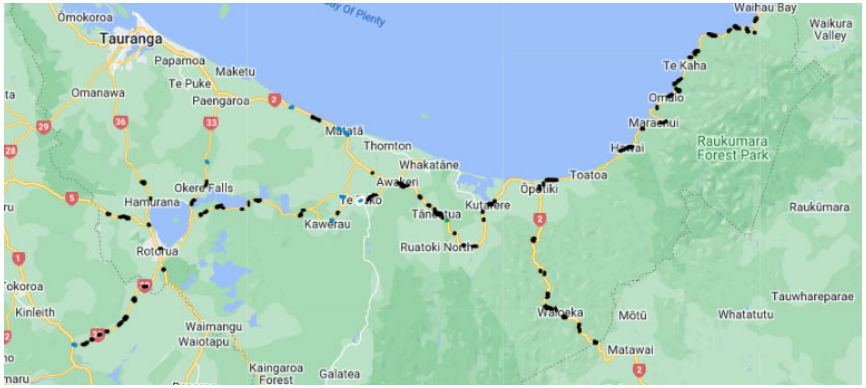
Western Bay of Plenty Regional Council

Business overview – maintenance



Port of Tauranga and Bay of Plenty East Maintenance contracts

- POT pavement rehabilitation, stormwater and general maintenance
- NOC crews available 24/7 for emergency call outs to address pavement defects and slips.



Business overview – commercial and residential

GIB facility – yard car park

Subdivision – residential, retirement village

Business overview – emergency response

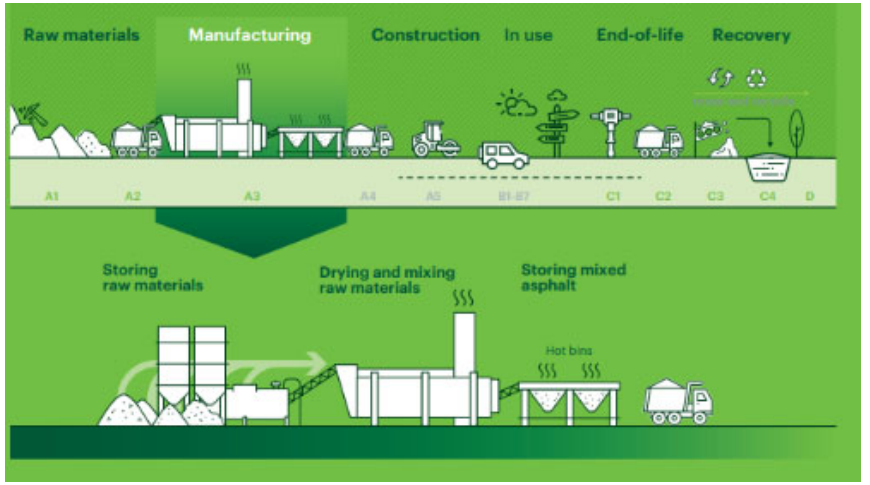
- Committed teams on call 24/7 to respond to emergency works
- One of the east coast recovery alliance partners

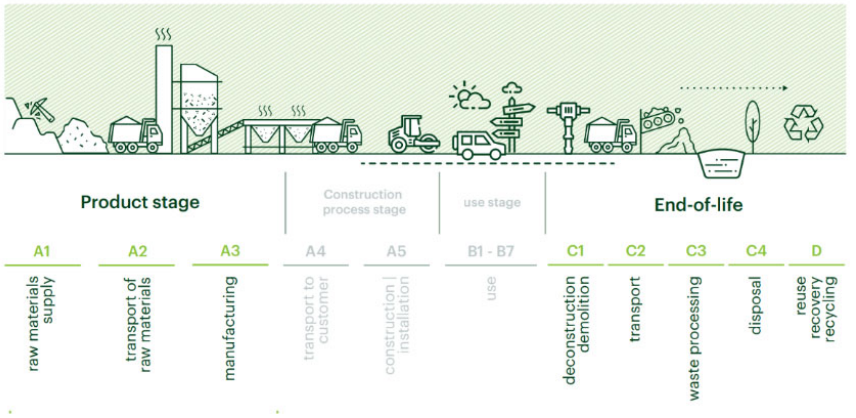
Asphalt plant – surfacing and asphalt manufacturing

What an Asphalt Plant actually does?

- Asphalt Plant or Asphalt Mixing Plant is a plant that heats and mixes dry aggregates with bitumen at a set temperature to produce hot mix asphalt.
- Process – 1) Aggregate bin feeder 2) Conveyor belt 3) Mixing drum 4) Bitumen tanks 5) Hot asphalt bins/silo 6) Control room
- Different types of bitumen grades – PG64H (60/70), PG64V (PMB), PG64E (Hi Mod)
- Various types of asphalt products and use – Dense Graded/Asphaltic Concrete
  - Low volume traffic, cul de sac, residential roads, car parks (DG7, DG10)
  - Medium to Heavy traffic, local roads (DG10, AC10)
  - Heavy to Very Heavy traffic, arterial roads, commercial yards (AC14, AC14 PMB)
  - Extreme traffic, Ports, Airports and Industrial (AC20 PMB, AC28 PMB, EME2)

	FY22 AC Tonnages	FY23 AC Tonnages	FY24 AC Forecast
TN	35,043	44,373	48,000





Asphalt plant - our challenges

Public perception

- Volatile Organic Compounds (VOC)

Managing Odour leaving site

- Odour scouting
- Stack height

Consent update / strategy

- Consent No. 63317 expired , applied for 10-year term for existing plant to enable time to design, consent, commission, lower emission plant
- Public Notification submissions received
- Engagement with submitters in advance of hearing underway
- Hearing date set for 7 & 8 November 2023

Questions

Higgins Tauranga Asphalt Plant Air Quality Assessment

Chris Bender| Pattle Delamore Partners Limited

Description of Proposal

- Renewal of application for discharges to air from an asphalt manufacturing plant
- Mitigation used: Discharges pass through a venturi wet scrubber before discharge through a 13m stack
- Proposed reduction in consented emission rates for TSP from 2.5 kg/hr to 1.5 kg/hr.
- Production rate capped at historic rates (i.e. no increase) of 50,000 tonnes per year
- Proposed changes ensure Higgins don't make air quality worse in the Mount
- Short term of consent proposed to allow time for Higgins to upgrade to a new plant

Assessment Methodology (Dispersion Modelling)

Assumptions of operation:

- Maximum contaminant emission rates
- Continuous emissions 12 hours per day over two year period (around 7 x more than actual operations annually)

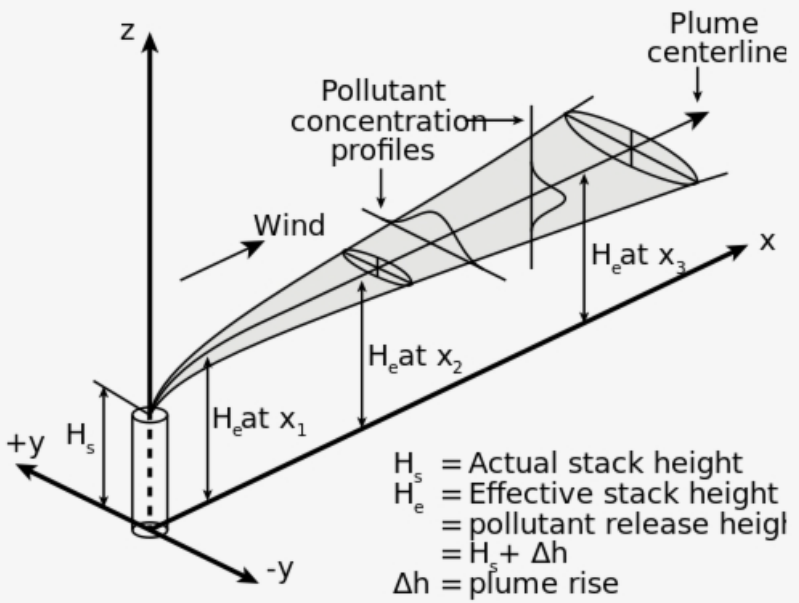


Table 1: Highest Predicted offsite MGLCs of Contaminants from the HCL Asphalt Plant (

Contaminant	Highest Predicted MGLCs (µg/m³)		Averaging Period	Assessment Criteria (µg/m³)
	Excluding Background	Including Background		
PM_{10}	9.1	39.4	24-hour	50
	1.3	15.9	Annual	20
$PM_{2.5}$	2.4	16.4	24-hour	25
	0.4	7.9	Annual	10
NO_2	35.8	100.8	1-hour	200
	12.6	55.6	24-hour	100
	1.7	17.7	Annual	30
CO	82	5082	1-hour	30,000
	70	2070	8-hour	10,000
SO_2	0.07	24.1	1-hour	350
	0.02	16.0	Annual	120

Dispersion Modelling Results

- *Maximum predicted concentrations are within the health-based assessment criteria for all contaminants*
- Modelled concentrations at the nearest sensitive receptors significantly lower
- Trace contaminants, including heavy metals, VOCs, dioxins/furans, and PAHs) were predicted to be at concentrations that are considered to have negligible health effects

Assessment Methodology (Airshed Analysis)

Mount Maunganui Airshed:

- Gazetted as of 31 October 2019
- Considered 'polluted' under the NESAQ with respect to PM10
- Regulation 17 of the NESAQ restricts new sources of PM10, but can permit existing sources to continue
- 2018 Emissions inventory shows Higgins asphalt plant a minor contributor to PM10 in Tauranga:
  - <1.8% of total industrial emissions
  - <0.3% of total PM10 emissions

Additional Assessments: VOC Monitoring

VOC Monitoring:

- Ambient Air sampling and analysis for VOCs collected near load-out area and downwind of the stack (worst case conditions)
- Stack Emissions VOC Measurement collected during peak operating conditions, and VOCs assessed using dispersion modelling
- VOCs assessed against the relevant health-based criteria for all compounds detected.

Ambient VOC Monitoring Results:

- Ambient monitoring detected a number of VOCs, however concentrations were all well below the assessment criteria (<5%)

Stack Emission VOC Monitoring Results:

- Highest concentrations of VOCs discharged from the stack occur near the site boundary, and are <2% of all assessment criteria

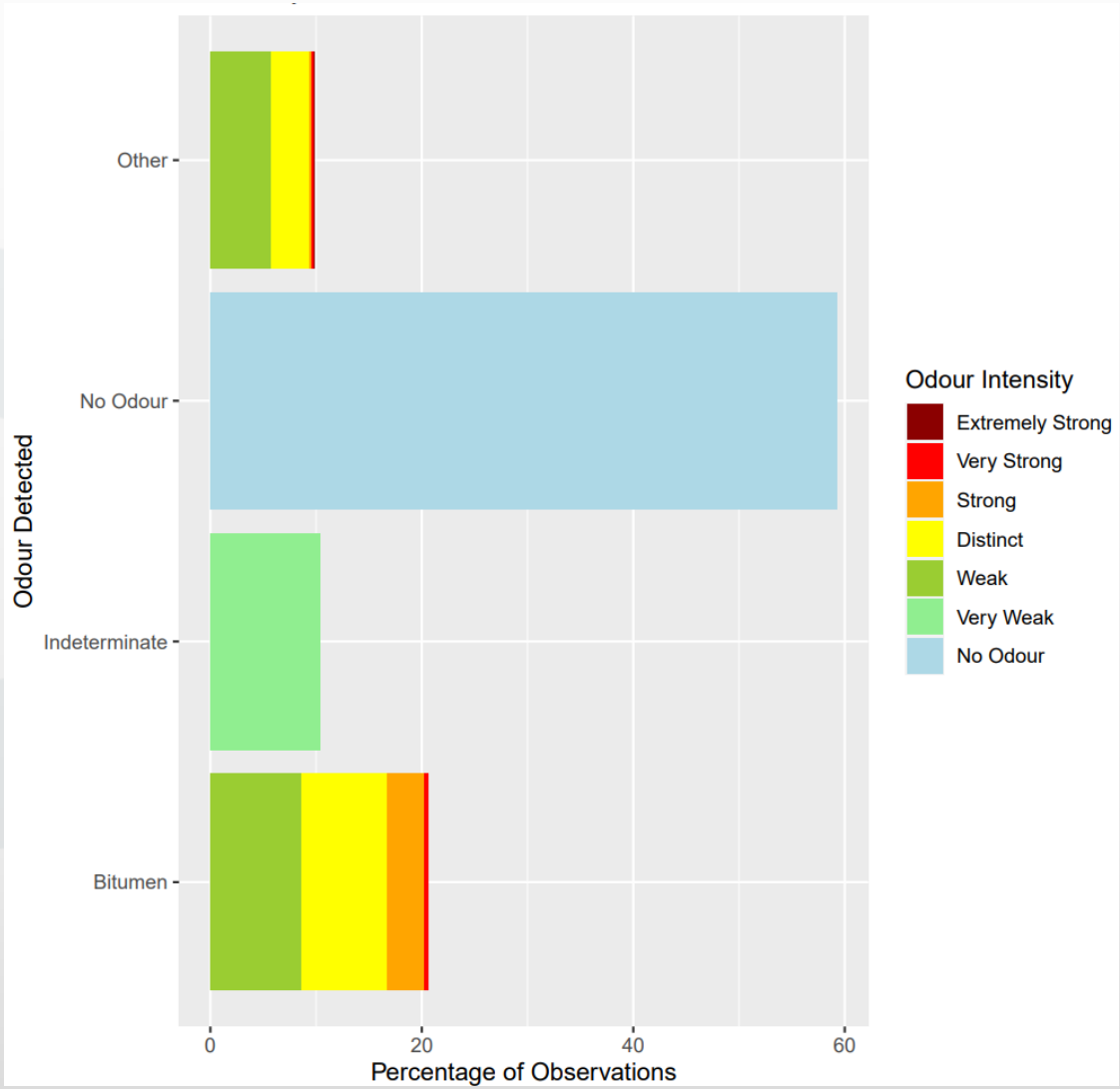
Overall assessment:

- VOCs generated from the Higgins site will result in a very low risk for adverse health effects

Additional Assessments: Odour Monitoring

Odour Observations

- Higgins commissioned PDP to undertake an independent odour monitoring study
- Ten separate odour monitoring events were undertaken to measure nature and intensity of odour downwind of the Higgins site
- Bitumen odour detected around 20% of the time
- Odours were generally weak to distinct, but occasionally strong
- Would generally be expected to be 'acceptable' in an industrial area, but would depend on overall frequency



Proposed additional mitigation:

Stack Height Sensitivity

- Building downwash effect results in high concentrations near the source
- Increasing stack heights can mitigate building downwash effect on stack emissions
- Higgins is investigating options for increasing the stack height from 13m to the permitted activity height of 16m
- Dispersion modelling indicates that increasing the stack height to 16m will decrease odour concentrations by around 20%