



Project: **NOISE MANAGEMENT PLAN**

Prepared for: **Port Otago Limited  
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## 1.0 INTRODUCTION

Dunedin City District Plan (DCDP) requires Port Otago to operate in accordance with this Port Noise Management Plan (NMP). The Port Otago appointed Noise Officer is responsible for implementing this NMP.

This NMP sets out the long-term commitment of Port Otago to the assessment and management of noise from port related activities at its Port Chalmers site. This NMP is consistent with the requirements in DCDP Appendix 21A and Section 8 of the New Zealand Standard NZS 6809: 1999, “Acoustics – Port Noise Management and Land Use Planning” (Port Noise Standard).

The objectives of this NMP are:

- To set out Port Otago’s commitment to reduce port noise or to mitigate the effects of port noise
- Provide a framework for the measurement, monitoring, assessment, and management of noise
- Identify and adopt the Best Practicable Option (BPO) for the management of noise effects
- Inform the duration, frequency and timing of activities to manage potential disruption
- Require engagement with the community and timely management of noise complaints

This NMP is available on the Port Otago [Community and Environment webpage](#).

A glossary of standards and terminology is included in Appendix A.

## 2.0 PERFORMANCE STANDARDS

### 2.1 Port Noise Standard (NZS 6809)

The DCDP port noise provisions (Section 2.2) are reliant in part on the Port Noise Standard.

The objective of the Port Noise Standard is to ensure the long-term compatibility of ports and their neighbours by the application of appropriate land use planning techniques. The Standard recognises the need for ports to operate in an effective manner and provides guidelines to ensure that the adjacent residential communities can co-exist with ports and their associated activities.

The Port Noise Standard recommends implementation of Control Boundary overlays on planning maps, supported by a range of permitted and conditional activity controls therein. The Control Boundaries rely on an acoustic descriptor called the Day/Night Level that spans a representative 5-day peak operations period ( $L_{dn(5\text{ day})}$ ). This parameter is essentially the energy average sound level ( $L_{Aeq(5\text{ day})}$ ) with 10 decibels added to contributions between 10pm and 7am to reflect the greater sensitivity to noise at night.

The Port Noise Standard also recommends port companies and port users should implement an NMP to manage and monitor noise from their operations, with the aim of progressively reducing noise levels wherever practicable. This component is the focus of this NMP.

Section 8.1 of the Port Noise Standard recommends that an NMP should be developed by the port operator in consultation with the local authority. It states: *“The need for a management plan recognizes that noise levels adjacent to the port may at times be higher than desirable. The port noise management plan should be based on consideration of operational needs of the port balanced by consideration of the needs of the port’s neighbours, as ascertained through consultation with those neighbours and the local authorities. A liaison committee may be a useful method to foster communication and understanding of mutual needs.”*

This NMP addresses the wider statutory requirements of Section 16 and 17 of the Resource Management Act (RMA). Section 16 requires adoption of the best practicable option to ensure that the emission of noise does not exceed a reasonable level. Section 17 requires all occupants to avoid, remedy or mitigate any adverse effect on the environment.

## 2.2 Operative Dunedin City District Plan (DCDP)

Port Otago is accessed by water (Otago Harbour), road (George Street as SH88) and rail (Port Chalmers Branch). It operates on land zoned 'Port' and is bordered by a mix of commercial, industrial, residential and public areas. Some residential receivers in Scotia Street, Grey Street and Mount Street are elevated and little more than 200m away, with no intervening buildings to block sound. Aerial imagery and DCDP zoning maps are included in Appendix B.

The NMP approach was established in the DCDP. It resulted from hearings on this matter before the Council, Environment Court (formerly Planning Tribunal), High Court and Court of Appeal.

The relevant port noise rules are reproduced in Appendix C. The primary requirements in Rule 21.5.2 are supported by more detail in Appendix 21. In summary, the port will:

- Adopt the Best Practicable Option (BPO) to minimise port noise emissions in accordance with Appendix 21A
- Purchase or acoustically treat noise affected properties in accordance with Appendix 21B
- Maintain and participate in a Port Noise Liaison Committee in accordance with Appendix 21C
- Measure port noise in accordance with NZS 6801 and assess in accordance with NZS 6809

This NMP satisfies Appendix 21A and informs the requirements of Appendices 21B and 21C.

## 3.0 PORT NOISE

### 3.1 Port Operations

Port Otago operates the only commercial port with international trade directly serving the Otago region. It operates 24 hours per day, 7 days per week. The need for this NMP recognises that noise levels received in the community may at times be higher than desirable. It balances the operational needs of the port with those of the community.

Businesses and organisations that participate in port related activities at Port Otago include:

- Shipping lines
- Cargo owners
- Stevedores
- Log marshallers
- Cruise operators
- Ship builders/repairers
- Service suppliers
- Transport contractors
- Rail Services

### 3.2 Noise Model

A computer-based noise model is used to represent the 'average' noise emissions from Port operations over the busiest 5-day period each year (peak week). The port noise model consists of the following parts that must be representative to enable the noise contours to be reliable:

- **Noise sources.** Measurements have been made of representative Port machinery to determine the reference sound power levels used in the model.

- **Operational scenario.** Assumptions include the location of noise sources, their typical operational duration and duty. This is developed and reviewed by Port Otago on a regular basis.
- **Modelling methodology.** The software calculates noise emissions and attenuation with distance, allowing for shielding from buildings, barriers and topography, ground and water surface effects, and air absorption.
- **Calibration.** The model relies on long-term unattended and short-term attended monitoring to verify the shape and the overall level of the noise contours and calibrate the model (Section 4.7).

The first Port Otago noise model was developed in 1994. This model is regularly updated to reflect changes in current operations and evaluate future master planning options. It has progressively improved due to advances in modelling software, more detailed and/or accurate ground contours, model verification through noise monitoring, and better representations of the port operations.

The noise source data used in the model is primarily from measurements carried out on Port Otago machinery. In some cases, equipment information was supplemented with representative data measured at other ports to make the data more complete or representative. The calculated sound powers have been cross checked against data for similar equipment at other ports.

### 3.3 Port Noise Contour Maps

Port Otago must prepare Port Noise Contour Maps based on a current busy 5 day operating scenario in accordance with DCDP Appendix 21A.2.4. The maps are reviewed annually. If they are no longer representative of the effects of port noise on a busy five day operating scenario, then Port Otago will prepare replacement Port Noise Contour Maps and present these to Dunedin City Council and the Noise and Environment Committee (Section 5.3).

The current Port Noise Contour Maps are included in Appendix D. The primary noise sources are:

- Log loading and stacking activities
- Container handling and industrial activities
- Ship, train and vehicle movements

The 55, 60 and 65 dB  $L_{dn(5 \text{ day})}$  noise contours identify the properties that are eligible for the various Port Noise Mitigation provisions in DCDP Appendix 21B. Port Otago maintains an Acoustic Certificate register of treated properties in the Port Mitigation Plan, which is available on the Port Otago [Community and Environment webpage](#).

## 4.0 MITIGATION AND MANAGEMENT

### 4.1 Training

All wharf-side staff and contractors will participate in an induction training session with attention given to the following matters:

- The noise sensitivity of residential receivers in Port Chalmers and Careys Bay
- Activities with the potential to generate high noise levels (Section 3.0) and/or result in noise complaints (Section 5.2)
- Noise mitigation and management procedures in this NMP (Section 4.0)

Ongoing awareness of current noise matters will be addressed using noticeboards, staff communications or further targeted training sessions.

### 4.2 Equipment Selection

Noise is to be considered during the procurement of new equipment and will be included in specifications where appropriate. Other factors include efficiency, appropriateness and cost.

In general, when selecting equipment, Port Otago will where practicable:

- Prioritise quieter models/options
- Prioritise electric motors over diesel engines
- Prioritise equipment with rubber tracks over steel tracks
- Equipment must be suitably sized for the proposed task
- Equipment must be maintained and fitted with exhaust silencers and engine covers
- Avoid tonal safety alarms (Section 4.3)

This policy extends to the upgrade of existing equipment where appropriate and practicable. A comprehensive list of achievements is detailed in Port Environment Plan, which is available on the Port Otago [Community and Environment webpage](#). Specific initiatives include:

- Retro fitting hush-kits on straddle carriers and side loaders
- Working with the shipping lines to reduce the auxiliary generator noise while at berth
- Cranes have software installed that automatically controls the rate of descent near the ground to reduce the impact noise from containers landing on the wharf

### 4.3 Safety Alarms

Safety alarms are important to ensure the safety of those working at the port. Therefore, some vehicles are equipped with reversing alarms, or in the case of some equipment, warning alarms. The intermittent nature of alarms and the tone that is generated by some types can make them audible at a significant distance, and, given the nature of the operations, the noise of the alarms occur regularly.

It is not practicable for all alarms to be muted for occupational health and safety reasons. However, the use of tonal reversing or warning alarms will be avoided where practicable. Suitable alternatives may include flashing lights, broadband audible 'squawkers', reversing cameras inside vehicles, and/or use of a banksman/dogman.

The use of ship and train horns will be avoided where practicable, noting necessary exceptions such as those required by the Maritime NZ Rules (e.g. restricted visibility and distress signals).

Specific initiatives include:

- Ship horns are only used for safety reasons (e.g. fog) and not used to signal departure
- The elimination of tonal alarms on most heavy machinery

### 4.4 Night Activities

Most Port Otago noise complaints occur late at night or early in the morning. These periods are when residents are most sensitive to noise due to the potential for sleep disturbance. It is also when local road traffic noise is quietest, making Port Otago operations noise more apparent.

Port Otago operates continuously, potentially 24 hours per day, 365 days per year. However, where practicable, activities with the potential to result in sleep disturbance will be prioritised during the day or early evening. People tend to be less disturbed by low frequency continuous engine noise (e.g. reefers), than intermittent noise (e.g. engine revs and dropped containers) or activities with special audible character qualities (e.g. reversing beepers, a throbbing ship engine or whistling).

#### 4.5 General Measures

Complaints can arise whether or not noise levels comply with the rules. To avoid complaints, general mitigation and management measures include, but are not limited to:

- Avoid unnecessary noise, such as shouting, the use of horns, rough handling of material and equipment, and banging or shaking machinery attachments
- Avoid steel on steel contact where practicable and take care to minimise impact where required, such as stacking of containers and logs
- Avoid high engine revs through appropriate equipment selection, observe speed limits on port and public roads, and turn engines off when idle
- Mitigate squeal from tracked equipment, such as excavators (may include tensioning and watering or lubricating the tracks regularly)
- Minimise rail shunt moves, particularly at night
- Utilise buildings and/or container stacks as noise barriers where practicable and appropriate
- Maintain paved surfaces to avoid pot holes and corrugations
- Undertake maintenance and repairs for port plant and equipment within workshop buildings and avoid the use of sledge hammers outdoors (e.g. use hydraulic jacks to remove dents in containers where practicable)

#### 4.6 Tenants and Contractors

Port Otago will include as part of the obligations in its leasing and licensing agreements wherever possible, a requirement for tenants, contractors and independent operators to comply with this Plan.

With road and rail operators, while not in a position to require changes, Port Otago will work with and encourage the adoption of practical opportunities to reduce noise output and effects during the night-time period. This includes minimising engine braking, road maintenance, minimising track squeal through track maintenance and the use of dash pots on corners, and minimising use of horns at night between 10pm and 7am where appropriate and practicable.

The DCDP addresses construction noise separately from port operations. Likewise, construction noise management is not addressed by this NMP. It will be addressed separately on a project specific basis. Nonetheless, the objective will be to adopt the best practical option to avoid, remedy or mitigate the noise effects as far as practicable.

#### 4.7 Noise Monitoring

Port Otago will:

- Undertake continuous noise monitoring (currently at the following four sites identified in Appendix B: Scotia Street, Cemetery, Henry Street and Light Tower 4)
- Undertake attended noise monitoring:
  - o To validate the Port Noise Contour Maps (Appendix D) where appropriate
  - o In response to a reasonable noise complaint if it assists in understanding the level and/or effect of the complaint (Section 5.2)
  - o To investigate activities that may exceed 65 dB  $L_{dn}$  (5 day) or 65 dB  $L_{Aeq}$  (15 min, 10pm - 7am) at properties that are not shown on the Port Otago Contour Map (Appendix D) as eligible for mitigation under Appendix 21B.1
- Summarise the results for the Port Noise Liaison Committee (Section 5.3)



## 5.0 ENGAGEMENT

### 5.1 Communication

The Port Otago [Community and Environment webpage](#) provides detail on environmental responsibilities and access to the following documents (available for download):

- This NMP
- Port Noise Mitigation Plan

Targeted engagement with community and stakeholders is undertaken on a case-by-case basis and/or through the Port Noise Liaison Committee (Section 5.3).

### 5.2 Complaints Response

The Port Otago [Contact Us webpage](#) provides details (phone and email) for Harbour Control, to which complaints should be directed.

When a noise complaint or enquiry is received, either electronically or via telephone, acknowledgement will be provided as soon as possible. Where possible, a subsequent response will be provided the same day. Where the inquiry demands a more detailed response, this will be provided within two working days or an alternative timeframe where this is communicated to the people who made the complaint.

All noise complaints will be recorded in a complaints file that is available to Council on request. For each complaint, an investigation will be undertaken involving the following steps as soon as practicable:

- Acknowledge receipt of the concern or complaint:
  - o Time and date the complaint was received and who received it
  - o Time and date of the activity subject to the complaint (estimated where not known)
  - o The name, address and contact details of the complainant (unless they elect not to provide)
  - o The complainant's description of the activity and its resulting effects, including notes about the character of the noise (e.g. one-off bang, continuous hum, low or high frequency)
  - o The complainant's description of the location or relative direction of the source
  - o Any relief sought by the complainant (e.g. scheduling of the activity)
- Identify the relevant activity and the nature of the works at the time of the complaint and then forward the complaint to the appropriate operational area and Dunedin City Council
- Review the activity noise levels (Section 3.0) to determine if the activity is predicted to comply with the relevant performance standards (Section 2.0) at the complainant's building. Consider attended monitoring (Section 4.7) to verify the underlying reference level assumptions.
- Review the mitigation and management measures in to ensure the activity represents the BPO (Section 4.0). Review the relief sought by the complainant. Adopt further mitigation and management measures if appropriate.
- Document the findings, implement changes and update this NMP if appropriate
- If requested, report the outcomes of the investigation to the complainant, identifying where the relief sought by the complainant has been adopted or the reason(s) otherwise

In most cases, ceasing the activity would provide immediate relief. However, this may not be practicable for safety and/or operational reasons.

Port Otago will maintain a register of noise complaints. They will be summarised and presented to the Port Noise Liaison Committee (Section 5.3) along with any action taken to investigate and resolve the complaints.

### 5.3 Port Noise Liaison Committee

#### 5.3.1 Meetings

Objectives:

- Implement the NMP and the Port Noise Mitigation Plan requirements of the DCDP
- Maintain and continuously develop this NMP in association with the Noise and Environment Committee Port Noise Liaison Committee, Dunedin City Council and the community
- Review practices and procedures in this NMP to reduce noise output from port operations, especially at night
- Encourage the port to continue to keep awareness of noise matters across operational areas through staff training and shift change-over meetings or briefings

Port Otago will:

- Summarise noise monitoring results (Section 4.7)
- Summarise noise complaints and actions (Section 5.2)
- Summarise any changes to this NMP and the Port Noise Contour Maps (Appendix D)
- Gather feedback on noise issues and the mitigation and management measures (Section 4.0)

The Port Noise Liaison Committee shall:

- Undertake the functions given to it by the Port Noise Mitigation Plan
- Consider noise complaints (Section 5.2), and where necessary, recommend further investigation into issues raised, or actions to prevent, a recurrence of the complaint
- Monitor Port Otago's performance of its obligations under this NMP and the Port Noise Mitigation Plan and provide recommendations to assist Port Otago in the continued fulfilment of such obligations
- Produce an annual report for the board of Port Otago

In undertaking the business of the Port Noise Liaison Committee, each member shall in good faith endeavour to achieve consensus on all issues before the Committee.

The meetings of the Port Noise Liaison Committee shall not be open to the public or media, but members shall be free to disclose all matters discussed at a meeting unless that member has agreed that a particular matter will be discussed in confidence.

All members shall report to the body that appointed them following each meeting of the Port Noise Liaison Committee.

#### 5.3.2 Representation

The Port Noise Liaison Committee must include an independent chair and must comprise, but not be limited to, members appointed by the following organisations:

- Port Otago
- Otago Regional Council
- Dunedin City Council

- Careys Bay Association
- West Harbour Community Board<sup>1</sup>

The Port Noise Liaison Committee has the following representation:

- 1 Member of the Board of Directors of Port Otago
- 2 Members of the Port Otago management (including the Noise Officer)
- 3 Representatives of port users and cargo owners appointed by Port Otago
- 1 Dunedin City Council officer
- 1 Otago Regional Council officer
- 2 Representatives of residents in the Flagstaff Hill/Port Peninsula area appointed by the West Harbour Community Board, but are not members of the West Harbour Community Board
- 1 Representative of the residents from the Careys Bay area appointed by the Careys Bay Association Inc
- 1 Representative from the central Port Chalmers area appointed by the Chalmers Business Community
- 2 Representatives of users of recreational facilities at Port Chalmers (appointed by Port Chalmers Yacht Club and Port Chalmers Rowing Club)
- 1 Representative of the West Harbour Community Board.

### 5.3.3 Support

Port Otago will:

- Appoint a Noise Officer who is responsible for implementation of this NMP
- Arrange for the Port Noise Liaison Committee (Section 5.3) to meet at least four times per year, at a time convenient to members
- Arrange for an emergency meeting of the Port Noise Liaison Committee within three days of receiving a written request for an emergency meeting signed by at least four members
- Provide secretarial and logistic support for the Port Noise Liaison Committee and host the minutes of the meetings on the Port Otago [Community and Environment webpage](#)
- Provide a Noise Mitigation Budget to be used in accordance with the Port Noise Mitigation Plan
- Implement the Port Noise Mitigation Plan
- Implement all recommendations of the Port Noise Liaison Committee where practicable

## 6.0 REVIEW

This NMP is a 'living document' that is expanded and updated as appropriate:

- The Port Noise Contour Maps (Appendix D) must be updated annually (Section 3.3).
- The provisions of this NMP may be altered by resolution of the Board of Port Otago. Any amendments to the provisions will not take effect unless and until approved to by both the Dunedin City Council and the Otago Regional Council.

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<sup>1</sup> The board will be responsible for appointing resident representatives from areas of Port Chalmers, other than Careys Bay, affected by port noise

**APPENDIX A GLOSSARY OF STANDARDS AND TERMINOLOGY**

<b>dB</b>	Decibel. The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of $P_r=20 \mu\text{Pa}$ , i.e. $\text{dB} = 20 \times \log(P/P_r)$ .
<b>dBA</b>	The unit of sound level which has its frequency characteristics modified by a filter (A-weighted) to more closely approximate the frequency bias of the human ear.
<b><math>L_{Aeq}(t)</math></b>	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.  The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent 15 minutes and (2200-0700) would represent a measurement time between 10pm and 7am.
<b><math>L_{dn}</math></b>	The "Day Night Average Sound Level" as defined in NZS6801:2008. It is calculated from the 24 hour $L_{Aeq}$ with a 10 dB penalty applied to the night-time period (2200-0700 hours).
<b><math>L_{Amax}</math></b>	The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.
<b>NZS 6801:2008</b>	New Zealand Standard NZS 6801:2008 "Acoustics – Measurement of environmental sound"
<b>NZS 6809:1999</b>	New Zealand Standard NZS 6809:1999 "Acoustics – Port Noise Management and Land Use Planning"
<b>Acoustic Certificate</b>	A certificate signed by an acoustic engineer approved for the purpose by the Port Noise and Environment Committee certifying Acoustic Treatment of a residential property and specifying a Certified Level of Port Noise.
<b>Acoustic Certificate Register</b>	The register kept by Port Otago that contains a list of the addresses of all properties that have an acoustic certificate, the date of the certificate and the Certified Level of Port Noise for that property.
<b>Acoustic Treatment</b>	Acoustical treatment of a residential property that achieves an indoor design level of 40 dBA $L_{dn(5 \text{ day})}$ within any kitchen, dining area, living room, study or bedroom either with ventilating windows open or with mechanical ventilation installed when port noise is at or below the Certified Level of port noise and shall include the cost of testing and obtaining an Acoustic Certificate.
<b>Certified Level of Port Noise</b>	The maximum level of Port Noise that a residential property subject of an Acoustic Certificate for Acoustic Treatment can receive provided that the Certified Level of Port Noise for any property is set 3 dB $L_{dn}$ above the noise contour level for that property shown on the Port Noise Contour Map at the date the certificate was issued.
<b>Mechanical ventilation</b>	Means either:  (a) A mechanical system or mechanical ventilation systems capable of:  i. providing at least 15 air changes of outdoor air per hour in the principal living room of each building and 5 air changes of outdoor air per hour in the other habitable rooms of each building, in each case with all external doors and windows of the building closed with the exception of such windows in non-habitable rooms that need to be ajar to provide air relief paths;

- ii. enabling the rate of airflow to be controlled across the range, from the maximum airflow capacity down to 0.5 air changes (plus or minus 0.1) of outdoor air per hour in all habitable rooms;
  - iii. limiting internal air pressure to not more than 30 Pascals above the ambient air pressure;
  - iv. being individually switched on and off by the building occupants, in the case of each system; and
  - v. creating no more than 40 dB  $L_{Aeq}$  in the principal living room, no more than 30 dB  $L_{Aeq}$  in the other habitable rooms, and no more than 40 dB  $L_{Aeq}$  in any hallway, in each building. Noise levels from the mechanical system(s) shall be measured at least one metre away from any diffuser; or:
- (b) Air conditioning plus mechanical outdoor air ventilation capable of:
- i. Providing internal temperatures in habitable rooms not greater than 25 degrees Celsius at 5% ambient design conditions as published by the National Institute of Water & Atmosphere Research (“NIWA”) (NIWA, Design Temperatures for Air Conditioning (degrees Celsius), Data Period 1991-2000), with all external doors and windows of the habitable rooms closed;
  - ii. Providing 0.5 air changes (plus or minus 0.1) of outdoor air per hour in all habitable rooms;
  - iii. Each of the air conditioning and mechanical ventilation systems shall be capable of being individually switched on and off by the building occupants; and
  - iv. Creating no more than 40 dB  $L_{Aeq}$  in the principal living room, no more than 30 dB  $L_{Aeq}$  in the other habitable rooms, and no more than 40 dB  $L_{Aeq}$  in any hallway, in each building. Noise levels from the mechanical system(s) shall be measured at least one metre away from any diffuser.
- and
- v. A mechanical kitchen extractor fan ducted directly to the outside to serve any cooking hob, if such extractor fan is not already installed and in sound working order.

**Noise Affected Property**

A property (plural is Noise Affected Properties) used for residential purposes that is situated in the Residential 1 Zone at Port Chalmers (including Careys Bay) and identified on the Port Noise Contour Map as likely to receive levels of Port Noise at or above 55 dBA  $L_{dn}$  but excludes properties that have received Acoustic Treatment and are receiving Port Noise at or below the Certified Level of Port Noise.

**Noise Mitigation Budget**

Sum of money allocated by Port Otago for noise mitigation in accordance with paragraph 6.2 hereof.

**Port Noise**

Means:

- (a) Noise generated within the Port 1 Zone; and
- (b) Noise emanating from ships at berth in the coastal marine area; and
- (c) Noise associated with the handling of cargo whether in the Port 1 Zone or the coastal marine area

and includes the following noise:

- (d) Noise from trains, trucks, machinery whether in the Port 1 Zone or the coastal marine area; and
  - (e) Noise from administrative, repair, storage and maintenance activities;
- but excludes
- (f) Noise from ships not at berth;
  - (g) Noise associated with construction of permanent port facilities;
  - (h) Noise from an emergency situation.

<b>Port Noise Contour Map</b>	A noise contour map produced by Port Otago pursuant to its obligations under clause 3.3 of this Plan until any replacement map has been produced pursuant to 3.3 of this plan in which case the replacement map shall constitute the Port Noise Contour Map
<b>Port Noise Mitigation Plan</b>	The Port Noise Mitigation Plan of Port Otago created pursuant to Rule 25.1.2 of the Dunedin City Council District Plan.
<b>Port Otago</b>	Port Otago Limited. or its successor in title as owner of the land in the Port 1 Zone that is subject to the obligations of this Plan.
<b>Special Audible Characteristics</b>	Distinctive characteristics of a sound which are likely to subjectively cause adverse community response at lower levels than a sound without such characteristics. Examples are tonality (e.g. a hum or a whine) and impulsiveness (e.g. bangs or thumps). In accordance with Rule 21.5.2 (iv) (ii), adjustments for special audible character shall, except for audible warning devices, not apply to noise from log and container handling activities.

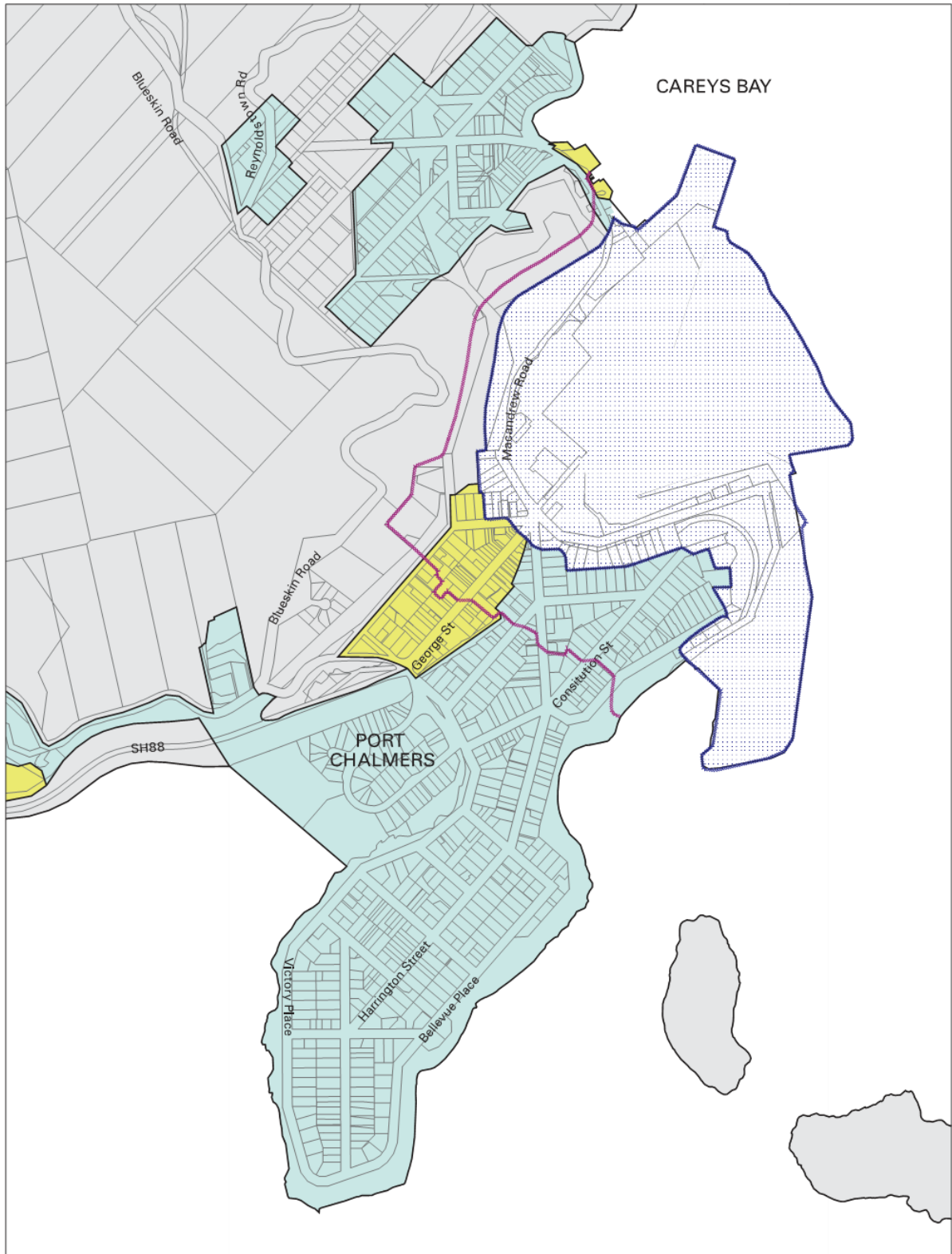
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APPENDIX B AERIAL IMAGERY AND ZONING

Figure 1: Aerial imagery showing Port Otago in Port Chalmers



Figure 2: Dunedin City District Plan Zoning Map 70



**Noise Areas**

- 60Dt/Nt dBA\*
- 55Dt/40Nt dBA\*
- 50Dt/40Nt dBA, 45SP dBA\*
- 50Dt/35Nt dBA, 45SP dBA\*
- 55 Dt/40Nt dBA\* within 50m of a residence
- Port Outer Control Boundary ( See Rules 8.7.2(xl) and 9.7.2(lx) )
- Port Noise Boundary ( See Rule 21.5.2 )

\* Refer to Index to Noise Maps for abbreviations

**NOISE**



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Port Chalmers

**Map 70**  
Scale 1:7500



## APPENDIX C DUNEDIN CITY DISTRICT PLAN, CHAPTER 21 – ENVIRONMENTAL ISSUES

Relevant sections reproduced in part below. Refer to District Plan for full text.

### 21.5.2 Port Noise Management and Noise Mitigation Performance Standards – Port Chalmers

(i) Port Noise Management

The Port Operator shall investigate and adopt the best practicable option to minimise Port Noise emissions; and

The Port Operator shall produce and at all times operate in accordance with a Port Noise Management Plan which shall include but is not limited to the matters set out in **Appendix 21A**.

(j) Port Noise Mitigation

The Port Operator shall implement a Port Noise Mitigation Plan for the purchase or Acoustic Treatment of Noise Affected Properties which shall include but is not limited to the matters set out in **Appendix 21B**.

(k) Port Noise Liaison Committee

The Port Operator shall establish, maintain and participate in a Port Noise Liaison Committee which shall operate generally in accordance with the requirements set out in **Appendix 21C**.

(l) Port Noise Measurement

1. The measurement of Port Noise shall be in accordance with NZS 6801:1999 Acoustics - Measurement of Sound, and assessment shall be in accordance with NZS 6809:1999 Acoustics - Port Noise Management and Land Use Planning, provided that:
  - a. subject to sub-clause (b)(i) of this clause, the Rating Level described in clause 7.3 of NZS 6809:1999 shall be determined for the sole purpose of defining any  $L_{eq(15\text{ minute})}$  sound level, required for the purposes of **Appendices 21A and 21B**; and
  - b. adjustments for any special audible characteristic to any  $L_{eq(15\text{ min})}$  made in accordance with clause 7.3 and A6 of NZS 6809:1999 shall, except for audible warning devices, not apply to noise from log and container handling activities.
2. For the purpose of comparison with noise criteria specified in **Appendix 21B** the following will apply:
  - a. In calculating any  $L_{dn, (5\text{ day average})}$ , one ship visit of up to five days duration, shall be deemed to be one occasion.
  - b. In assessing any  $L_{eq(15\text{ minute})}$  sound level between 10pm and 7am the following day, one ship visit of up to five days duration shall be deemed to be one occasion.

### Appendix 21A. Port Noise Management Plan

#### 1. Minimum port noise management plan provisions

The Port Noise Management Plan required by **Rule 21.5.2 (i)** must contain the following:

- i. Port Noise Management Plan objectives.
- ii. Detailed procedures for the implementation of **Rule 21.5.2**, including the Port Noise Mitigation Plan outlined in **Appendix 21B** and the establishment and maintenance of a Port Noise Liaison Committee outlined in **Appendix 21C**.
- iii. A list of Port Noise Liaison Committee functions.
- iv. Procedures for recommendations of the Port Noise Liaison Committee to be considered and determined by the Port Operator.

- v. Noise modelling, noise monitoring, auditing and reporting procedures.
- vi. Complaint handling procedures.
- vii. Procedures for achieving noise reduction through port operational procedures and staff and contractor training.
- viii. Procedures for alterations to the Port Noise Management Plan.

## 2. Minimum monitoring and reporting requirements

- i. The Port Operator shall maintain at its expense sound level monitoring equipment to ensure the continuous measurement of port noise emanating from port related activities occurs twenty four hours a day and seven days a week.
- ii. The Port Operator shall provide the results of sound level monitoring to Council and the Port Noise Liaison Committee in a summary form showing Leq, calculated Ldn sound exposure and all attended Lmax levels not less than four times a year. Significant port noise emissions shall be highlighted and correlated with port activity and wind speed and wind direction data.
- iii. When sound level monitoring indicates that port noise may be exceeding 65 dBA Ldn (5 day average) or 65 dBA Leq (15 min, 10pm - 7am) at noise affected properties that are not shown on the Port Noise Contour Map as eligible for mitigation under Section 1 of **Appendix 21B**, the exceedance shall be recorded, investigated and reported to the Port Noise Liaison Committee. The investigation shall identify as far as possible those noise affected properties receiving port noise at or above such levels.
- iv. The Port Operator must produce and include in the Port Noise Management Plan a port noise contour map based on a current busy 5 day operating scenario. The contour map must be updated at least on an annual basis or when a change to port operations is likely to affect the levels of port noise received in Residential 1 Zone. Port noise contours shall be modelled at 1dB intervals between 55 Ldn and 70 Ldn.
- v. To ensure the accuracy of the Port Noise Contour Map the Port Operator shall perform field verification of calculated sound exposure levels and assessed Leq (15 min) levels of port noise at the agreed monitoring points identified in the Port Noise Management Plan.
- vi. Those noise affected properties confirmed as eligible for mitigation under Section 1 of **Appendix 21B** shall be identified on the Port Noise Contour Map.
- vii. The Port Operator shall maintain an acoustic certificate register. A copy of the register and acoustic certificates for noise affected properties shall be supplied to Council. Copies of the register and acoustic certificates shall also be held at the offices of the Port Operator and the Dunedin City Council and made available to members of the public on request.
- viii. The Port Operator shall make available to the Port Noise Liaison Committee or Council on request all information the Port Operator has as to noise and meteorological conditions.
- ix. When a noise complaint is received, the Port Operator will immediately advise the Dunedin City Council (if the complaint is not received through the Dunedin City Council).
- x. The Port Operator shall maintain a register of noise complaints and report the details of complaints and any action taken to investigate and resolve complaints to the Port Noise Liaison Committee at the earliest opportunity.
- xi. Copies of the Port Noise Management Plan are to be held at the offices of the Port Operator and the Dunedin City Council and made available to members of the public on request.

## Appendix 21B. Port Noise Mitigation Plan

### 1. Mitigation for noise affected properties 65 dBA and above

The Port Operator shall offer to purchase or provide Acoustic Treatment for Noise Affected Properties which receive at any point within their boundary levels of Port Noise equal to or greater than an assessed 65 dBA Ldn (5 day average) or an assessed 65 dBA Leq (15 min, 10pm –7am) on more than three occasions (more than 24 hours apart) during any rolling 12 month period. The following conditions and standards shall apply to the offer to purchase or provide Acoustic Treatment:

a) Owner to decide

The owner of each such noise affected property must have the right to elect whether to accept either purchase or acoustic treatment, and there is no time limit on the owner's acceptance of the offer.

b) Purchase

The fair market value of a Noise Affected Property shall be determined as if the property was situated in Port Chalmers, excluding the effect of port operation; plus an additional compensatory payment of \$1,000 for each year, up to 30 December 2003 that the owner was in prior occupation of the property. The minimum additional payment is to be \$2,000 up to a maximum of \$15,000 with adjustment for inflation to be in accordance with the method specified in the Port Noise Mitigation Plan.

c) Acoustic treatment

Acoustic Treatment of Noise Affected Properties shall be carried out in accordance with procedures specified in the Port Noise Mitigation Plan up to a limit specified in the Port Noise Mitigation Plan.

Where the assessed costs of Acoustic Treatment exceed the limit specified in the Port Noise Mitigation Plan the Port Operator shall advise the property owner of the costs of Acoustic Treatment and offer the property owner the option of making up the difference in the costs of Acoustic Treatment to enable the Port Operator to obtain an Acoustic Certificate.

If Port Noise received by a noise affected property which has received Acoustic Treatment exceeds the Certified Level of Port Noise for that property, then the Port Operator shall offer to purchase the affected property notwithstanding the previous election of Acoustic Treatment.

d) Residential use of properties purchased by the Port Operator

Noise Affected Properties purchased under this provision may not be used for residential purposes unless they receive Acoustic Treatment.

### 2. Mitigation for noise affected properties 60 dBA and above

The Port Operator shall contribute to the costs of Acoustic Treatment for Noise Affected Properties or may offer to purchase Noise Affected Properties which are shown on the current Port Noise Contour Map as receiving at any point within their boundary Port Noise levels equal to or than greater than 60 dBA Ldn (5 day average) or). The following conditions and standards shall apply to the offer to purchase or provide Acoustic Treatment.

a) Purchase

The Port Operator, on application by the owner of a noise affected property, shall consider and decide whether to offer to purchase a noise affected property. The purchase will be on the basis of a “willing buyer/willing seller” and no additional compensatory payments shall be necessary.

b) Acoustic treatment

The Port Noise Liaison Committee on a case by case basis, shall provide a contribution to the costs of acoustic treatment utilising its annual mitigation budget. Acoustic Treatment of Noise Affected Properties shall be carried out in accordance with procedures specified in the Port Noise Mitigation Plan and the

Liaison Committee will determine the level of the contribution up to a limit specified in the Port Noise Mitigation Plan.

### 3. Mitigation for noise affected properties 55 dBA to 60 dBA

The Port Noise Liaison Committee will provide technical advice to Noise Affected Properties.

In special circumstances the Port Noise Liaison Committee utilising its annual mitigation budget may offer to contribute to the costs of Acoustic Treatment for Noise Affected Properties which are shown on the current Port Noise Contour Map as receiving at any point within their boundary Port Noise levels equal to greater than 55 dBA Ldn (5 day average). The following conditions and standards shall apply to the provision of technical advice or an offer to provide Acoustic Treatment:

a) Technical advice

An annual update of noise modelling information is to be made available to property owners.

An annual summary of the activities of the Port Noise Liaison Committee taken from the minutes of the liaison committee meetings is to be provided to property owners.

b) Acoustic treatment

Acoustic Treatment of Noise Affected Properties shall be carried out in accordance with procedures specified in the Port Noise Mitigation Plan.

Where the contribution to the costs of Acoustic Treatment is to be provided it shall be up to a limit specified in the Port Noise Mitigation Plan.

### Appendix 21C. Port Noise Liaison Committee

The Port Noise Liaison Committee required under Rule 21.5.2 (iv) shall comprise but is not limited to members appointed by the following organisations:

The Port Noise Liaison Committee required under **Rule 30.5.4** must include an independent chair who is paid for by Port Otago Limited and must comprise, but not be limited to, members appointed by the following organisations:

- Port Operator
- Otago Regional Council
- Dunedin City Council
- Careys Bay Association
- Chalmers Community Board<sup>1</sup>

a) General duty to committee:

The Port Operator shall implement to the extent reasonably possible all recommendations of the Port Noise Liaison Committee that can be implemented within budget and without compromising the efficiency, safety and competitiveness of port operations.

b) Role of the Port Noise Liaison Committee:

The Port Noise Liaison Committee shall consider all noise issues arising from the port operation and carry out the functions identified in the Port Noise Management Plan and mitigation functions identified in Appendix 21 B.

c) Port Noise Liaison Committee resourcing:

The Port Operator shall provide for the implementation and maintenance of the Port Noise Liaison Committee as follows:

- i. The Port Operator will provide secretarial and logistic support for the Port Noise Liaison Committee.

- ii. The Port Operator shall arrange for the Port Noise Liaison Committee to meet on not less than four occasions a year and shall identify procedures in the Port Noise Management Plan for calling an emergency meeting of the Committee.
- iii. The port operator shall provide an annual budget for noise mitigation that reasonably provides for the Port Noise Liaison Committee to undertake its mitigation responsibilities under Appendix 21B and to investigate and recommend noise reduction measures at Port Chalmers.




**APPENDIX D PORT NOISE CONTOUR MAPS (2019)<sup>2</sup>**

- Figure 1B Peak Operations Period pre mitigation (1.5m elevation, 5 decibel intervals)
- Figure 1C Peak Operations Period pre mitigation (1.5m elevation, 1 decibel intervals)
- Figure 2A Façade Noise Map pre mitigation (plan view, 5 decibel intervals)
- Figure 2B Façade Noise Map pre mitigation (3D perspective, 1 decibel intervals)




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<sup>2</sup> Refer MDA report Rp 002 r013 20190116, dated 1 November 2019, "Port Otago 2019 Port Noise Maps"




Buildings:

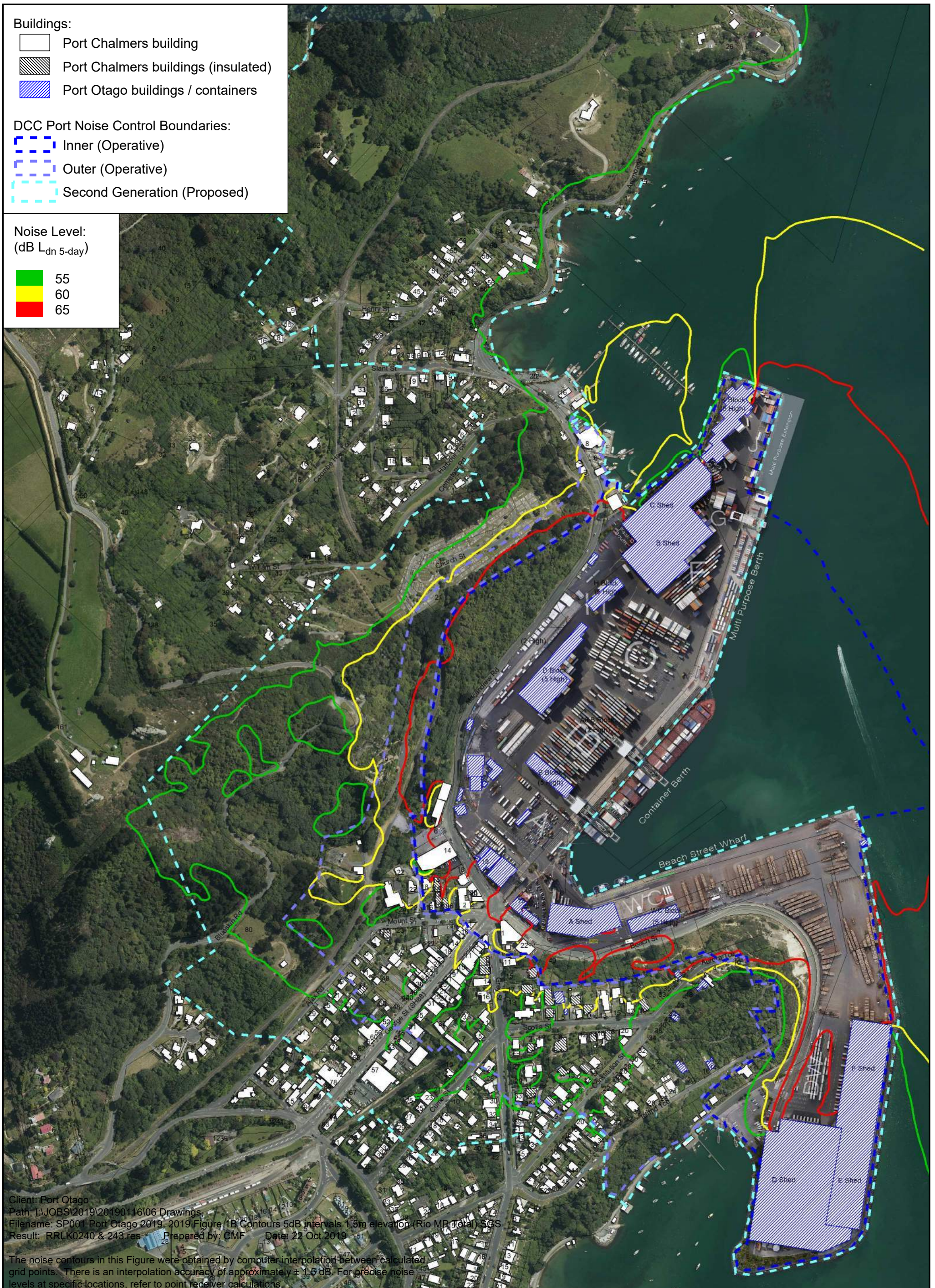
-  Port Chalmers building
-  Port Chalmers buildings (insulated)
-  Port Otago buildings / containers

DCC Port Noise Control Boundaries:

-  Inner (Operative)
-  Outer (Operative)
-  Second Generation (Proposed)

Noise Level:  
(dB L<sub>dn</sub> 5-day)

-  55
-  60
-  65






Client: Port Otago  
 Path: I:\JOBS\2019\20190116\06 Drawings  
 Filename: SP001 Port Otago 2019, 2019 Figure 1B Contours 5dB intervals 1.5m elevation (Rio MP Total) SGS  
 Result: RRLK0240 & 243.res Prepared by: CMF Date: 22 Oct 2019




The noise contours in this Figure were obtained by computer interpolation between calculated grid points. There is an interpolation accuracy of approximately ± 1.5 dB. For precise noise levels at specific locations, refer to point receiver calculations.



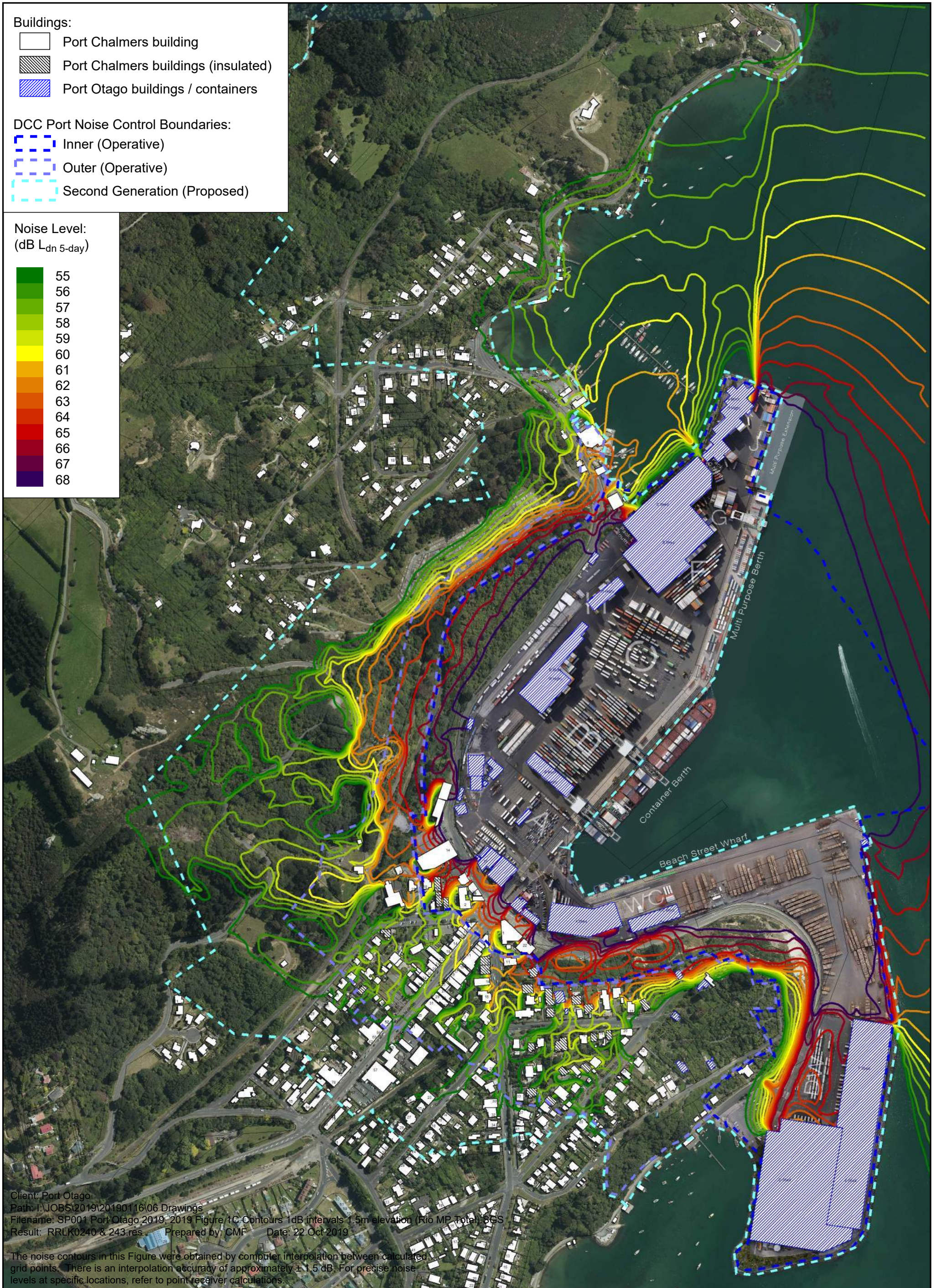
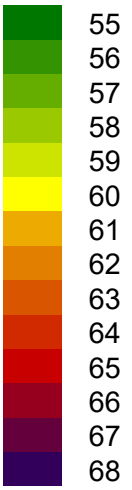
Buildings:

-  Port Chalmers building
-  Port Chalmers buildings (insulated)
-  Port Otago buildings / containers

DCC Port Noise Control Boundaries:

-  Inner (Operative)
-  Outer (Operative)
-  Second Generation (Proposed)

Noise Level:  
(dB L<sub>dn</sub> 5-day)






Client: Port Otago  
 Path: J:\JOBS\2019\20190116\06 Drawings  
 Filename: SP001 Port Otago 2019, 2019 Figure 1C-Contours 1dB intervals 1.5m elevation (Rio MP.Total) SGS  
 Result: RRLK0240 & 243.res Prepared by: CMF Date: 22 Oct 2019

The noise contours in this Figure were obtained by computer interpolation between calculated grid points. There is an interpolation accuracy of approximately ± 1.5 dB. For precise noise levels at specific locations, refer to point receiver calculations.











**Buildings**

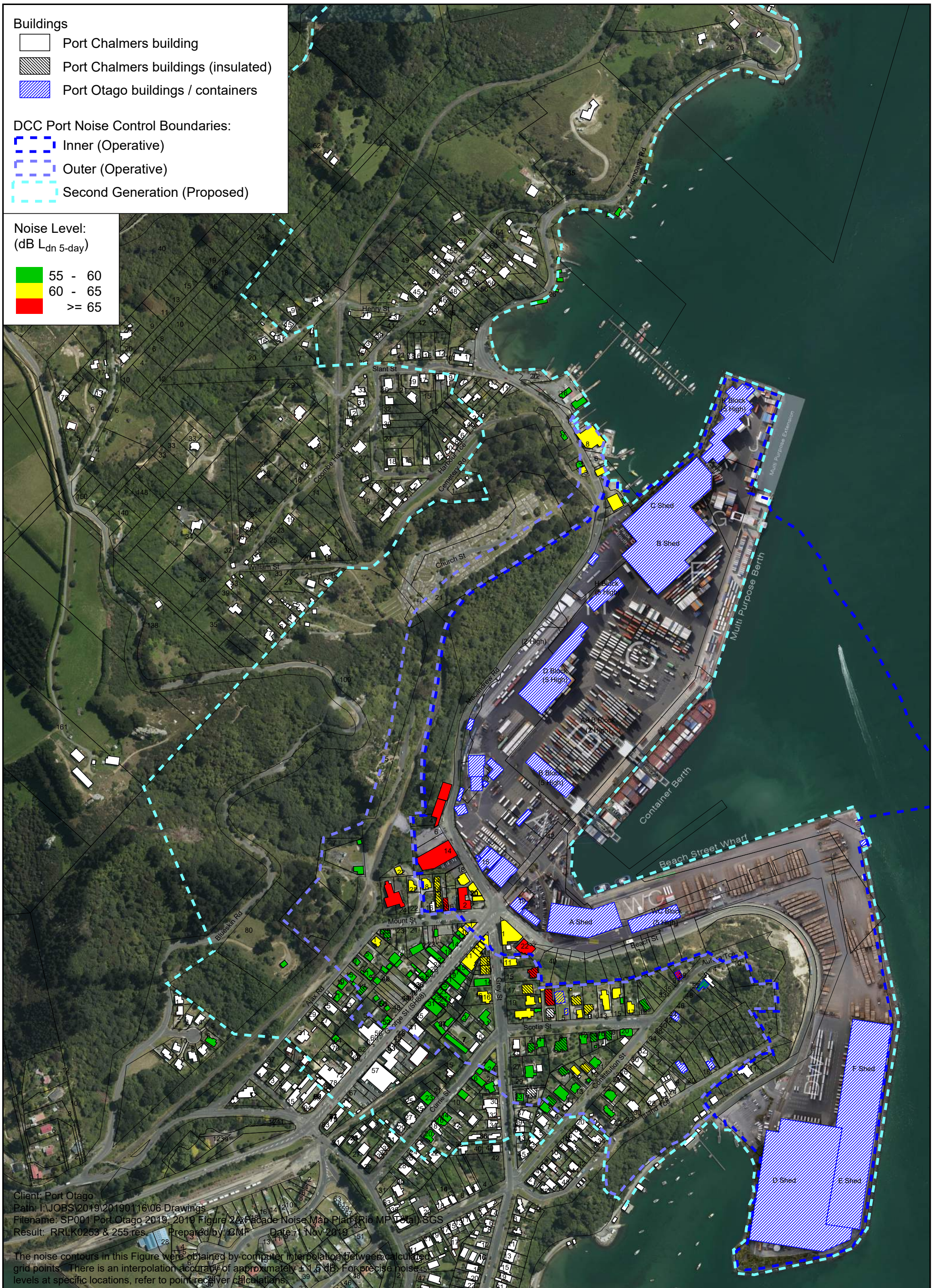
-  Port Chalmers building
-  Port Chalmers buildings (insulated)
-  Port Otago buildings / containers

**DCC Port Noise Control Boundaries:**

-  Inner (Operative)
-  Outer (Operative)
-  Second Generation (Proposed)

**Noise Level:**  
(dB L<sub>dn</sub> 5-day)

-  55 - 60
-  60 - 65
-  >= 65



Client: Port Otago  
 Path: I:\JOBS\2019\20190116\06 Drawings  
 Filename: SP001 Port Otago 2019 - 2019 Figure 2A Facade Noise Map Plan (R10 MP Total).SGS  
 Result: RRLK0263 & 255.res Prepared by: GMP Date: 7 Nov 2019

The noise contours in this Figure were obtained by computer interpolation between calculated grid points. There is an interpolation accuracy of approximately ± 1.5 dB. For precise noise levels at specific locations, refer to point receiver calculations.



