

# Chiles Ltd

16 April 2018

Ref: 170901b

Planning Works  
PO Box 15326  
Tauranga

Attention: Todd Whittaker

Dear Todd

**Subject: Eastland Port – Wharves 6 & 7 and slipway redevelopment – Acoustics review**

## Introduction

Chiles Ltd has been engaged by the Gisborne District Council (GDC) to review acoustics aspects of resource consent applications by Eastland Port Ltd (EPL) for wharves 6 & 7 and slipway redevelopment projects. For this work the following documents have been reviewed:

- Tairāwhiti Resource Management Plan (TRMP) – the operative unitary plan,
- Assessment of Environmental Effects (AEE), by 4Sight Consulting for each project,
- Noise and vibration effects report, by Malcolm Hunt Associates (MHA) for each project,
- Additional information from 4Sight, MHA and EPL dated 27/11/17, 28/11/17, 21/2/18, 28/2/18, 1/3/18, 16/3/18, & 10/4/18,
- Submissions.

Dr Chiles met with the EPL project team and made a site visit on 5 July 2017. He has discussed technical issues, related to the TRMP and the projects, with Mr Hunt of MHA on several occasions.

## Twin berths

To consider the noise effects of the current two projects, ideally there first needs to be clarity on the activity they will enable, distinct from existing and permitted activity.

It is understood that EPL is ultimately seeking to increase capacity at the port to allow two 220m long log ships to berth at the same time. The current two projects are essential for this increased capacity and corresponding increased activity. However, there are three future projects (port capital dredging, wharf 8 extension, and breakwater redevelopment and reclamation) also required before the increased capacity can be realised. EPL therefore asserts that the current two projects in themselves will result in minimal increase in capacity/activity and noise effects. With respect to the slipway redevelopment in particular, EPL takes a narrow view of enabled pedestrian activity on the resulting island, rather than port operational activity enabled with the space vacated by the current slipway. It is understood that space is needed for larger tugs to manoeuvre and use wharf 6, so wharf 7 is available for log ships.

For assessing potential noise effects, it is considered that greater activity than suggested by EPL should be attributed to both of the current two projects. Given the rolling nature of upgrades at the port and progressive growth, it is difficult to accurately segregate activity and noise effects from each

project. However, whatever the exact contribution of sound resulting from the current projects, it is necessary to control cumulative noise effects. Therefore, as part of the current consents it is recommended that noise limits and controls apply to sound from all port activity regardless of which specific project/consent might have enabled it. Noise effects can then be assessed primarily on an absolute rather than relative basis.

## **TRMP**

The applications rely to some extent on noise rules in the TRMP to manage potential effects. The TRMP includes rules generally based on the relevant New Zealand Standards, being NZS 6809 for port noise and NZS 6803 for construction noise. However, the TRMP deviates from NZS 6809 and NZS 6803 in some key respects, resulting in significant deficiencies. Consequently, the TRMP rules are not considered adequate to control the noise effects of the current applications (or existing port operations). The situation is also complicated by three previous resource consents granted for log yards at the port, which are each subject to separate noise limits.

Appendix A provides a summary of issues identified with the TRMP and gives high level recommendations to address each issue in the context of the current applications. The recommendations are based on good practice following guidance in NZS 6809 and NZS 6803. A fundamental recommendation in Appendix A is that noise controls should apply to all sound from the port. Noise effects experienced by residents generally cannot be compartmentalised depending on bureaucratic definitions or other delineations within the port. A holistic approach is needed to manage effects on residents, as recommended in NZS 6809.

The issues and recommendations in Appendix A have been prepared in consultation with Mr Hunt and he has indicated general agreement with this approach, at least with respect to wharves 6 & 7. EPL's planning consultant has highlighted practical issues with these recommendations (letter dated 10/4/18), and it is acknowledged there are unavoidable complexities created by the way the EPL is developing the port under multiple resource consents.

## **Slipway project**

An assessment of noise effects by MHA is appended to the AEE. In terms of construction noise and vibration this assessment identifies the main sources expected and predicts sound levels in a realistic range. The MHA assessment does not address operational port activity that may be enabled by the project.

MHA finds that temporary construction noise and vibration effects should be acceptable in this environment. It is agreed that with appropriate controls, while construction noise may give rise to temporary disturbance for nearby residents the effects should be reasonable.

## **Wharves 6 & 7 project**

An assessment of noise effects by MHA is appended to the AEE, primarily addressing construction noise and vibration but also including operational noise. The report has been supplemented/clarified by additional information subsequently provided by MHA.

As for the slipway, in terms of construction noise and vibration the MHA assessment identifies the main sources expected and predicts sound levels in a realistic range. Again, it is agreed that with

appropriate controls, while construction noise may give rise to temporary disturbance the effects should be reasonable.

For operational noise MHA has conducted acoustics modelling and measurements. While it appears that some refinements could be made to the modelling, the results are in general accordance with expectations. As for construction noise, if operational noise is subject to appropriate controls the effects should be reasonable in this environment.

## **Submissions**

Several submitters raise issues relating to noise and vibration, including the following:

Construction hours – It has been submitted that construction hours should be limited to normal work time hours. NZS 6803 recommends noise limits that essentially restrict the timing of major construction works to daytime only. There is a balance between limiting the duration of works each day and prolonging overall exposure. It is considered that noise limits in NZS 6803 provide an appropriate balance.

Log loading – A submission comments on differing noise effects depending on the skill of crane operators loading logs. It is recommended that this type of issue is best addressed through a Noise Management Plan (NMP) as discussed below.

Monitoring – A submission requests permanent noise monitoring with results provided to residents and GDC. It is agreed this would be an appropriate port noise management tool and is included in recommended conditions below.

Road and rail transport – Several submissions comment on noise effects from road and/or rail transport to the port. It is agreed this is a potential effect that requires consideration. EPL asserts that these two projects do not increase capacity/activity so do not materially alter off-site transportation noise effects. However, as above for activity within the port, this review considers that the cumulative effects of these projects are material. Noise from trucks and trains off-site depends on several parties and generally cannot be directly controlled by EPL. It is therefore recommended this is a matter that should be addressed through a NMP.

A specific existing issue that has been raised by residents is noise and vibration from trucks travelling to/from the port on Customhouse Street (SH35) as they pass over the railway level crossing. Level crossings introduce unavoidable discontinuities to road surfaces so normally do create slightly elevated noise and vibration levels. However, if a crossing/surface is appropriately constructed and maintained the noise and vibration should remain at reasonable levels. In this instance the crossing appears to be a basic type (i.e. without rubber surfacing) and is complicated by a siding diverging from the main track as it crosses the road. Nevertheless, the nearest residential property appears to be at least 35 metres from the crossing, and for trucks travelling at 50 km/h vibration may be felt by people in the apartments but would be unlikely to exceed thresholds for building damage. As for other issues associated with road/rail transport to the port, the causes of noise and vibration from the level crossing involve several parties (NZ Transport Agency, KiwiRail, EPL, GDC, truck operators). Therefore, this is a matter that may be best influenced by EPL through a NMP. In the first instance it is recommended that through a NMP the condition of the crossing is inspected, and measurements are made to confirm whether the current vibration levels are within reasonable limits at the nearest residential apartments, as should be the case at a distance of 35 metres from a crossing.

Titirangi Heritage Reserve – A submission highlights predicted exceedances of noise limits in the Heritage Reserve Zone. It is recommended that daytime noise limits continue to apply in this zone to maintain appropriate amenity. The MHA modelling shows that some mitigation will be required to comply with noise limits in this area.

## Conditions

EPL has proposed consent conditions, including an updated set for wharves 6 & 7 dated 10/4/18. In general, the proposed conditions provide an appropriate framework for managing noise effects, but the following amendments are recommended.

- 1) For the reasons set out above, all conditions relating to noise and vibration should be identical for the wharves 6 & 7 project and the slipway project.
- 2) The Port Liaison Group (PCLG) should be the main forum for future port noise management to be discussed, any issues resolved, and potential improvements explored. The following changes to conditions 4 to 7 proposed by EPL are recommended with respect to the PCLG:
  - a. The PCLG should have an independent chair appointed by GDC (and should not be chaired by EPL).
  - b. The membership of the PCLG should be specified in conditions, including a minimum number of residents' representatives and a GDC representative. EPL should be required to advertise for nominations from nearby residential areas, rather than just inviting parties submitting on the current consents.
  - c. The minutes of the PCLG should be publicly available on EPL's website.
- 3) For the reasons set out in Appendix A, good practice is for construction vibration to be controlled in terms of the industry standard 'ppv' parameter, rather than the alternative acceleration values in the TRMP. Also, conditions should explicitly state limits rather than cross referencing other standards. Based on recommendations set out in the NZ Transport Agency *Construction and maintenance noise and vibration guide*<sup>1</sup>, EPL condition 32 should be replaced with the following:

*Construction vibration must be measured in accordance with ISO 4866:2010. The Category A construction vibration criteria in the following table must be complied with as far as practicable. If measured or predicted vibration from construction activities exceeds the Category A criteria, a suitably qualified person must assess and manage construction vibration during those activities. If measured or predicted vibration from construction activities exceeds the Category B criteria those activities must only proceed if vibration effects on affected buildings are assessed, monitored and mitigated by a suitably qualified person.*

<b>Receiver</b>	<b>Details</b>	<b>Category A</b>	<b>Category B</b>
Occupied residential or visitor accommodation	Night-time 2000h - 0630h	0.3mm/s ppv	1mm/s ppv
	Daytime 0630h - 2000h	1mm/s ppv	5mm/s ppv
Other occupied buildings	Daytime 0630h - 2000h	2mm/s ppv	5mm/s ppv
All other buildings	Vibration - transient	5mm/s ppv	BS 5228-2* Table B2
	Vibration - continuous		BS 5228-2* 50% of table B2 values

<sup>1</sup> <http://nzta.govt.nz/resources/sh-construction-maintenance-noise/>

- 4) For the reasons set out above, condition 41 should require a NMP to apply to all port operations. Furthermore, additional requirements for the NMP should be added to condition 41 to address:
- a. Details of personnel responsible for port noise management.
  - b. Consultation with the PCLG in the preparation of the NMP.
  - c. Current NMP to be publicly available on EPL's website.
  - d. NMP to be reviewed annually and any changes certified by GDC.
  - e. Management of off-site transportation noise effects.
  - f. Details of permanent noise monitoring.
  - g. Details of biennial noise monitoring at other locations.
  - h. Details of noise monitoring that will be conducted in response to complaints or to investigate issues.
  - i. Annual reporting of noise monitoring results to the PCLG and display on EPL's website.
  - j. Reporting of noise management actions/initiatives to the PCLG.
  - k. Reporting of complaints, investigations and remedial actions to the PCLG.
  - l. Details of current noise contours and process for review and update of contours.
  - m. Display of current noise contours on EPL's website.
  - n. Integration of concurrent construction and operational noise management.

- 5) Conditions 42 to 44 proposed by EPL should be replaced with the following:

*Sound from all activities in the port operational area must comply with the following noise limits when measured and assessed in accordance with NZS 6801 and NZS 6809:*

<i>At any point in the Amenity Reserve Zone or Heritage Reserve Zone outside the Port Inner Control Boundary</i>	<i>65 dB L<sub>dn</sub></i>
<i>At any point in the Amenity Commercial Zone, Residential General Zone or Inner City Residential Zone</i>	<i>65 dB L<sub>dn</sub> 60 dB L<sub>Aeq(9h)</sub> (2200h-0700h) 65 dB L<sub>Aeq(15 min)</sub> (2200h-0700h) 85 dB L<sub>AFmax</sub> (2200h-0700h)</i>
<i>At the permanent port noise monitoring location (Portside Hotel)</i>	<i>63 dB L<sub>dn</sub> 60 dB L<sub>Aeq(9h)</sub> (2200h-0700h) 65 dB L<sub>Aeq(15 min)</sub> (2200h-0700h) 85 dB L<sub>AFmax</sub> (2200h-0700h)</i>

- 6) Condition 45 proposed by EPL should be replaced with the following two conditions:

*i. Prior to any works being undertaken the Consent Holder must install and maintain a permanent noise monitor at the Portside Hotel or an alternative location agreed by the Consent Authority. The monitor must continuously record sound levels and provide results in a format that allows compliance with the noise limits to be confirmed. Data from the monitor must be publicly available on a website in real-time. Each year the Consent Holder must prepare an annual summary report of data from the monitor and submit it to the PCLG within one month of the reporting period.*

*ii. Within three months of the re-commencement of operations in the Wharf 6 and Wharf 7 areas, and every two years thereafter, the Consent Holder must conduct noise logging for at least a one-week period at two representative locations surrounding the port agreed with the Consent Authority, in addition to the permanent noise monitoring position. The Consent Holder must prepare a report of data from the noise logging and submit it to the PCLG within one month of the measurements.*

## **Conclusions**

MHA has undertaken analysis and assessment of potential noise effects from the wharves 6 & 7 and slipway redevelopment projects. There is debate over operational activity that should be attributed to each of these projects. However, cumulative noise effects including these projects need to be controlled. The existing noise rules in the TRMP are deficient and therefore it is recommended that consent conditions set noise limits applying to the cumulative sound of all port activities. In accordance with good practice it is also recommended that a Noise Management Plan be implemented, overseen by a Port Liaison Group, to seek improvements, address any issues that arise, and monitor ongoing compliance.

Construction and operational noise associated with the current projects may cause some disturbance in surrounding areas. However, on the basis of the MHA predictions and in the context of this environment, if the activity complies with the noise limits from NZS 6803 and NZS 6809, and is subject to a NMP, the resulting effects should be reasonable.

Yours sincerely

**Chiles Ltd**

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## Appendix A – TRMP issues

Reference	Issue	NZS 6809 / good practice	Recommendations
TRMP E7 definition of “Essential port activities”	<p>The TRMP sets different noise limits for essential and non-essential port activities. This creates the following issues:</p> <ol style="list-style-type: none"> <li>1) The definition of essential port activities is not precise, and some activities could potentially be classified as either essential or non-essential.</li> <li>2) Adverse effects experienced by residents do not depend on these activity descriptions. Residents will be affected by the combination of all sound from the port.</li> <li>3) Monitoring instruments will record all sound from the port and it is relatively complex and time consuming to classify and separate essential and non-essential activities.</li> </ol>	<p>NZS 6809 defines “port activity” to include all activity at a port, only excluding vessels that are not berthed and construction. The approach in NZS 6809 allows holistic and consistent management of all sound affecting residents.</p>	<p>Noise limits based on NZS 6809 Clauses 7.2.5 (long term limits) and 7.2.6 (short term limits) should apply to all port activity.</p>
Consent conditions	<p>Three existing log yard consents (southern, upper &amp; wharfside) each set separate noise limits for those individual activities/sites. The same is proposed by EPL for the current slipway and wharf 6/7 consents, whereby noise limits would apply to specific activities/sites. This creates the following issues:</p> <ol style="list-style-type: none"> <li>1) The noise limits in these individual consents do not address the cumulative sound experienced by residents from the combination of all port activity.</li> <li>2) As the TRMP and resource consents set different noise limits using different parameters, the current total potential noise exposure of residents is not clear, and therefore the cumulative adverse effects of a new activity are difficult to define and assess.</li> <li>3) It is relatively complex and time consuming to separate sound from each source/area and assess it against different noise limits.</li> </ol>	<p>NZS 6809 recommends a single set of noise limits applying to the combined sound of all activity at a port. The total sound as experienced by residents is controlled.</p>	<p>Noise limits based on NZS 6809 Clauses 7.2.5 (long term limits) and 7.2.6 (short term limits) should apply to all port activity.</p>
TRMP C11.2.15.1.G.1.a	<p>This rule limits sound from essential port activities outside the “55dBA noise contour” and “65dBA noise contour”. The following issue arises (there are also related issues with the TRMP maps listed below):</p> <ol style="list-style-type: none"> <li>1) Port noise limits are generally set at one contour/boundary rather than two, as for properly defined contours compliance at one contour should also result in compliance at the other. Checking compliance and/or monitoring at multiple contours is not warranted.</li> </ol>	<p>NZS 6809 recommends operational noise limits applying at any point outside a port inner control boundary (65 dB contour). Monitoring with respect to this requirement close to the port is preferred as it reduces effects of contamination by other sounds.</p>	<p>Noise limits should apply at any point outside the inner control boundary. For monitoring at a fixed location beyond this boundary an equivalent reference noise limit should be determined and specified.</p>

<p>TRMP maps</p>	<p>The TRMP maps show lines labelled as “Port Noise 55Ldn Boundary” and “Port Noise 65Ldn Boundary” and areas labelled as “Port Inner Control Boundary” and “Port Outer Control Boundary”. This creates the following issues:</p> <p>1) The TRMP maps do not include any “noise contours” as specified in the rules. The lines labelled as “55Ldn Boundary” and “65Ldn Boundary” might be intended as contours but are incorrectly drawn if that is the case. By definition, port noise contours have to surround a port operational area in a concentric manner (although the seaward parts of contours are often omitted from maps). The “Port Noise 55Ldn Boundary” is shown as a complete loop just on the landward side of the port, and partly intersecting the port operational area. It appears that a 55 dB Ldn contour was originally calculated with the seaward side not shown, but then the landward side has been closed off to form a loop not centred on the port.</p> <p>2) Most of the port operational area is outside the “55Ldn Boundary” and the remainder of the port operational area is outside the “65Ldn Boundary”. If these are taken as the “noise contours” then it is impossible for many port activities to comply with the TRMP noise limits. On this basis, current port activities and the new consents sought unavoidably infringe the TRMP noise limits. NZS 6809 recommends that identified port areas be inside control boundaries, which would have partly avoided this issue, but that did not occur for the TRMP maps.</p> <p>3) In addition to apparent drafting oversights, the position of the 65Ldn Boundary on the TRMP maps indicates that port activity was initially modelled/assessed as occurring in a limited area (possibly not including wharf 6). Activities over a wider part of the port operational area should have been assessed prior to occurring, to avoid infringement of the noise limit.</p> <p>4) The TRMP Ldn boundaries (lines) and the control boundaries (areas) on the maps are not aligned. It is normal for lines and areas to be slightly different as NZS 6809 recommends that calculated noise contours (lines) be adjusted to form administrative control boundaries (areas) by alignment with cadastral boundaries. It is also common for boundaries to be slightly extended so they align with roads or other features. This is presumably the reason for the differences between the lines and areas in the TRMP, but the use of the term “boundary” for all of them is confusing and inconsistent with the rule.</p>	<p>NZS 6809 recommends adoption of an outer and inner control boundary based on the 55 dB L<sub>dn</sub> and 65 dB L<sub>dn</sub> contours respectively. The boundaries should accommodate current port operations and future expansion. Boundaries should include all of the identified port operational area.</p>	<p>The contours/boundaries in the TRMP should be reviewed and corrected/revised. For consents issued prior to that occurring, noise limits should relate to defined points/lines (not the current TRMP mapped boundaries)</p>
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TRMP C11.2.15.1.G.1.b	This rule contains a circular reference to C12.2.15.1 which is the section containing this rule. It appears this reference might have intended to refer to C12.2.15.1.C.1.	As above, NZS 6809 does not recommend separate noise limits for different types of port activity.	Noise limits based on NZS 6809 Clauses 7.2.5 (long term limits) and 7.2.6 (short term limits) should apply to all port activity.
TRMP C11.2.15.1.G.1.c	This rule sets a short-term noise limit but there are two issues: 1) It is not specified where the noise limit applies. 2) There is ambiguity over whether the limit applies only to essential port activities.	NZS 6809 recommends noise limits apply at any point outside the inner control boundary. It recommends limits apply to all port activities.	Short-term noise limits based on NZS 6809 Clause 7.2.6 should apply to all port activity. Given the issues with the TRMP control boundaries discussed above, noise limits should relate to defined points/lines (not the current TRMP mapped boundaries).
TRMP C11.2.15.1.G.1.d	As for the rules above, this rule setting a night-time noise limit has the following issues: 1) The noise limit applies outside a "noise contour" but none exist. 2) There is ambiguity over whether the limit applies only to essential port activities.	NZS 6809 recommends noise limits apply at any point outside the inner control boundary. It recommends limits apply to all port activities.	Night-time noise limits based on NZS 6809 Clause 7.2.6 should apply to all port activity. Given the issues with the TRMP control boundaries discussed above, noise limits should relate to defined points/lines (not the current TRMP mapped boundaries).
TRMP C11.2.15.2.A.2	The rule references long-term construction noise limits in "Table 8", but this table does not exist.	NZS 6803 recommends noise limits for long-term construction.	Construction noise limits should be based on NZS 6803 and apply at nearest occupied buildings.

TRMP C11.2.15.2.B	<p>The rule sets vibration limits which creates two issues:</p> <ol style="list-style-type: none"> <li>1) The limits are in terms of uncommon units making assessment and monitoring complex.</li> <li>2) The limits apply at boundaries rather than at buildings where effects might occur.</li> </ol>	<p>Construction vibration in New Zealand is generally assessed and measured in terms of peak particle velocity (mm/s PPV), with reference to criteria from British and German standards. Vibration limits apply at buildings where effects occur.</p>	<p>Construction vibration limits should be in terms of standard PPV values applying at buildings.</p>
TRMP C11.2.16.1.C	<p>This rule sets noise limits at the boundary of the Port Management Area with the General Management Area. This creates the following issues:</p> <ol style="list-style-type: none"> <li>1) The boundary where noise limits apply is at the river training wall where adverse effects generally would not be experienced.</li> <li>2) No differentiation is made between construction and operational noise, whereas normally construction noise has more lenient noise limits reflecting its transitory nature.</li> </ol>	<p>NZS 6809 recommends a single set of noise limits for all port activity regardless of location. NZS 6809 also recommends construction noise be subject to separate controls. For construction noise, NZS 6803 recommends noise limits applying at occupied buildings.</p>	<p>A single set of noise limits should apply to all aspects of port activity, regardless of location within the operational port area. These noise limits should apply at the locations discussed above. Construction noise limits should be based on NZS 6803 applying at nearest occupied buildings.</p>