Submission on Napier City Proposed District Plan

Form 5 Submission on publically notified proposal for policy statement or plan, change or variation

Clause 6 of Schedule 1, Resource Management Act 1991

To: Napier City Council - Planning Unit

Date received: 15/12/2023

Submission Reference Number #:232

This is a submission on the following proposed plan (the **proposal**): Napier City Proposed District Plan

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Attachments:
Fitzgerald & Whitlock - Construction noise reform.pdf

I wish to be heard: Yes
I am willing to present a joint case: Yes

Could you gain an advantage in trade competition in making this submission?
- **No**

Are you directly affected by an effect of the subject matter of the submission that
(a) adversely affects the environment; and
(b) does not relate to trade competition or the effects of trade competition
- **No**

Submission points

Point 232.1

Section: NOISE - Noise

Sub-section: NOISE - Noise - Rules Table

Provision:

NOISE-R2: Construction noise and vibration

NOISE-R2A

Activity Status: Permitted

Where:

1. Noise (including vibration) from construction activities shall be measured and assessed in accordance with NZS 6803:1999 Acoustics Construction noise, except where varied by the rules below.
2. Noise from construction activities in all zones must not exceed the levels in the table below when measured 1 m from the facade of any building that contains a noise-sensitive activity that is occupied during the works.

Time of week	Time period	Maximum noise level (dB)	
		LAeq	LAFmax
Weekdays	6.30 a.m. - 7.30 a.m.	60	75
	7.30 a.m. - 6.00 p.m.	75	90
	6.00 p.m. - 8.00 p.m.	70	85
	8.00 p.m. - 6.30 a.m.	45	75
Saturdays	6.30 a.m. - 7.30 a.m.	45	75
	7.30 a.m. - 6.00 p.m.	75	90
	6.00 p.m. - 8.00 p.m.	45	75
	8.00 p.m. - 6.30 a.m.	45	75
Sundays and public holidays	6.30 a.m. - 7.30 a.m.	45	75
	7.30 a.m. - 6.00 p.m.	55	85
	6.00 p.m. - 8.00 p.m.	45	75
	8.00 p.m. - 6.30 a.m.	45	75

3. Noise from construction activities must not exceed the

NOISE-R2B

levels below when measured 1 m from the facade of any other building that is occupied during the works.

Time Period	Maximum noise levels LAeq (dB)
7.30 a.m. - 6.00 p.m.	75
6.00 p.m. - 7.30 a.m.	80

4. For a project involving a total duration of construction work that is less than 15 consecutive calendar days, the LAeq and LAFmax noise levels applying between 6.30 a.m. and 8.00 p.m. from Monday to Saturday in clauses 2 and 3 above shall be increased by 5 dB.
5. For a project involving a total duration of construction work that is more than 20 weeks the LAeq and LAFmax noise levels applying between 6.30 a.m. and 8.00 p.m. from Monday to Saturday in clauses 2 and 3 above shall be decreased by 5 dB.
6. Where there is no practicable way of measuring outside a building, and where the windows and doors of the building are normally closed, the upper limits for noise inside the building shall be those set out in clauses 2 and 3 above minus 20 dB.
7. Construction and demolition activities must be controlled to ensure any resulting vibration does not exceed:

    a. The limits set out in German Industrial Standard DIN 4150-3 (1999): Structural vibration - Part 3: Effects of vibration on structures when measured in accordance with that standard on any structure not on the same site, and
    b. The limits in the table below when measured in the corner of the floor of the storey of interest for multi-storey buildings, or within 500 mm of ground level at the foundation of a single-storey building.

Receiver	Period	Peak Particle Velocity Limit millimetres/second
Occupied noise sensitive activity	Night time 10.00 p.m. to 7.30 a.m.	0.3 mm/s
	Daytime 7.30 a.m. to 10.00 p.m.	2 mm/s
Other occupied buildings	At all times	2 mm/s

Note: Construction vibration levels of 2 mm/s PPV are easily felt by receivers in residential units or other buildings and may generate complaints, especially if the source or impending duration of the vibration is unknown.

A construction vibration limit of 0.3 mm/s PPV is near the limit of perception for most people and compliance with such a limit would avoid sleep disturbance for most people. Such a low limit would likely mean that no construction work involving tracked or

Activity Status where activity conditions are not met:
Restricted Discretionary

Matters of discretion are:

1. Public health;
2. Amenity values;
3. The disruption caused by the noise, and
4. The duration of noise effects at any one receiver.

heavy machinery could occur in proximity to any noise sensitive activity. All vibration measurements shall be undertaken in accordance with ISO 4866:2010 – Mechanical vibration and shock.	

Sentiment: Amend

Submission:

The noise rules are clearly copied from the Auckland Unitary Plan, with some minor improvements including fixing wording and technical errors. These rules have caused huge consenting issues in Auckland, adding unnecessary hurdles and expense - especially to small projects. Consenting planners have come to treat the noise and vibration limits as absolute thresholds, but they should be applied as trigger levels for consultation and management to address potential effects.

I recommend the following amendments:

Amendment one:

1. Noise ~~(including vibration)~~ from construction activities shall be measured and assessed in accordance with NZS 6803:1999 Acoustics Construction noise~~, except where varied by the rules below.~~

Reason: NZS 6803 only addresses noise, not vibration. There is nothing in the following rules that would require this exception

Amendment two:

2. Noise from construction activities in all zones must be managed to comply with ~~not exceed~~ the levels in the table below, as far as practicable, when measured 1 m from the facade of any building that contains a noise-sensitive activity that is occupied during the works.

Reason: Construction noise infringes the noise levels in NZS 6803 all the time - particularly in cities and small-lot residential areas. The distances between construction equipment and neighbouring buildings are simply too short for compliance. Activities that cause infringements of these limits should be managed and mitigated in accordance with the best practicable option (BPO). A management plan approach is the best way to address this, and all construction projects and Auckland (and other cities around NZ) successfully implements this approach.

Amendment three:

7. Construction and demolition activities must be controlled to ensure any resulting vibration does not exceed:

a. The limits set out in German Industrial Standard DIN 4150-3 (~~1999~~ 2016): Structural vibration - Part 3: Effects of vibration on structures when measured in accordance with that standard on any structure not on the same site, and
b. The vibration amenity limits in the table below when measured in the corner of the floor of the storey of interest for multi-storey buildings, or within 500 mm of ground level at the foundation of a single-storey building.

Receiver	**Period**	**Peak Particle Velocity Limit millimetres/second**
Occupied building containing a noise sensitive activity	Night time 10.00 p.m. to 7.30 a.m.	0.3 mm/s
	~~Daytime 7.30 a.m. to 10.00 p.m.~~	~~2 mm/s~~
~~Other occupied buildings~~	~~At all times~~	~~2 mm/s~~

~~**Note:** Construction vibration levels of 2 mm/s PPV are easily felt by receivers in residential units or other buildings and may generate complaints, especially if the source or impending duration of the vibration is unknown.~~

A construction vibration limit of 0.3 mm/s PPV is near the limit of perception for most people and compliance with such a limit would avoid sleep disturbance for most people. Such a low limit would likely mean that no construction work involving tracked or heavy machinery could occur in proximity to any noise sensitive activity.

All vibration amenity measurements shall be undertaken in accordance with ISO 4866:2010 – Mechanical vibration and shock.

Reasons:

- The 1999 version of DIN 4150-3 is no longer the latest version

- I have proposed deleting the daytime vibration amenity limits because 2 mm/s PPV is not based on any known standard. The Auckland Unitary Plan adopted this from the CRL project conditions, where 2 mm/s PPV was a value agreed upon during mediation. This limit has caused many consenting issues in Auckland, adding cost and red tape to simple construction activities like digging holes for residential swimming pools and removing concrete footings.

- PPV is a peak value, so any activity that breaches it - even for an instant - would infringe the district plan control. Vibration levels are very difficult to predict, so expert predictions are often conservative, inflating the infringement envelope.

- Like noise, vibration amenity can be managed by applying the BPO via a management plan. Note, I have kept the night-time amenity value because high-vibration activities at night should be discouraged (although it may be beneficial to provide an avenue for road maintenance activities i.e. milling, paving and vibratory rolling)

I note that the Australasian Association of Acoustic Consultants is currently drafting a guideline document to accompany NZS 6803. Its objective is to help its members to apply the standard's provisions sensibly and consistently.

Also, I attach a paper published in the NZ Acoustics Journal this year that addresses the challenges of construction noise and offers a pragmatic way forward. Note that I was co-author of this paper with a colleague, and it reflects our opinions - not necessarily those of the Acoustical Society of New Zealand or its members (though, anecdotally, many support its content).

Relief sought

I have recommended amendments in my submission.

I request that Council consider them as a way to make sure construction limits are applied within a sensible framework, learning from the issues that stringent limits continue to cause in other cities - especially Auckland.

Construction noise reform – refocussing on management outcomes over noise limits

Craig Fitzgerald and James Whitlock

Marshall Day Acoustics, Auckland, New Zealand

ABSTRACT

Construction noise assessments in Auckland have become a high cost, low value exercise. Nearly all urban construction projects exceed the construction noise limits for short periods, triggering a restricted discretionary activity status. Requiring a Construction Noise Management Plan (CNMP) to manage exceedances is a routine condition of consent to minimise noise levels and ensure residual effects are reasonable. In this age of RMA reform, we have an opportunity to refocus on construction noise effects and refine the best practice management measures that reduce community disruption and improve process certainty. We urge local government to reframe construction noise 'limits' as 'trigger levels' in a CNMP certification process. This approach aligns with recent revisions to British and Australian construction noise standards, and the Auckland Unitary Plan rules for 'construction noise and vibration levels for work within the road'.

1 INTRODUCTION

The New Zealand Construction Noise Standard (NZS 6803:1999) uses phrases like 'desirable upper limit', 'should not generally exceed' and 'every effort should be made by the contractor to comply'[1]. These phrases all convey a degree of flexibility, but when its recommended limits are translated into a regulatory framework like a district plan, this flexibility can disappear.

We are proposing a reform of construction noise policy. This is likely to be controversial, so here is a succinct list of what we would like to change:

- Use noise trigger levels, not noise limits, to inform construction noise effects assessments
- Convince councils that a management framework can be robust and dependable
- Convince councils that best practice can be defined and enforced
- Generate momentum for updating NZ Standard NZS 6803:1999

In this paper, we have focused on noise, but the same issues are relevant to vibration.

2 THE CURRENT CONSTRUCTION NOISE ASSESSMENT PROCESS NEEDS TO CHANGE

2.1 Construction noise is inherently variable

A construction site could have 10 different excavators (of varying size, age and condition) being used by 10 different operators (of varying skill and temperament) in 10 different locations doing 10 different tasks (of varying intensity and duration, using different attachments).

Acoustic Consultants have the tools to predict construction noise levels with high modelling precision, but the resulting accuracy is low due to the factors we have listed above.

2.2 Most urban construction activities exceed the construction noise limits

As consultants, we predict noise levels from a 'typical worst-case' scenario to understand the potential effects envelope, which is key to the planning process.

[1] NZS 6803:1999, Sections 7.1.1, 7.1.2 and 7.4 respectively

Figure 1 below shows the noise level – distance relationships for a range of typical construction activities. The construction noise limit for long-term projects is 70 dB L_{Aeq} in NZS6803:1999. The graph shows that nearly all activities can exceed this threshold when close to a neighbouring building. Even when applying a 10dB factor for mitigation from effective screening, a medium-sized 20 tonne excavator is predicted to exceed 70 dB L_{Aeq} when operating 8m from a neighbouring building, which is inevitable at some stage during most urban projects.

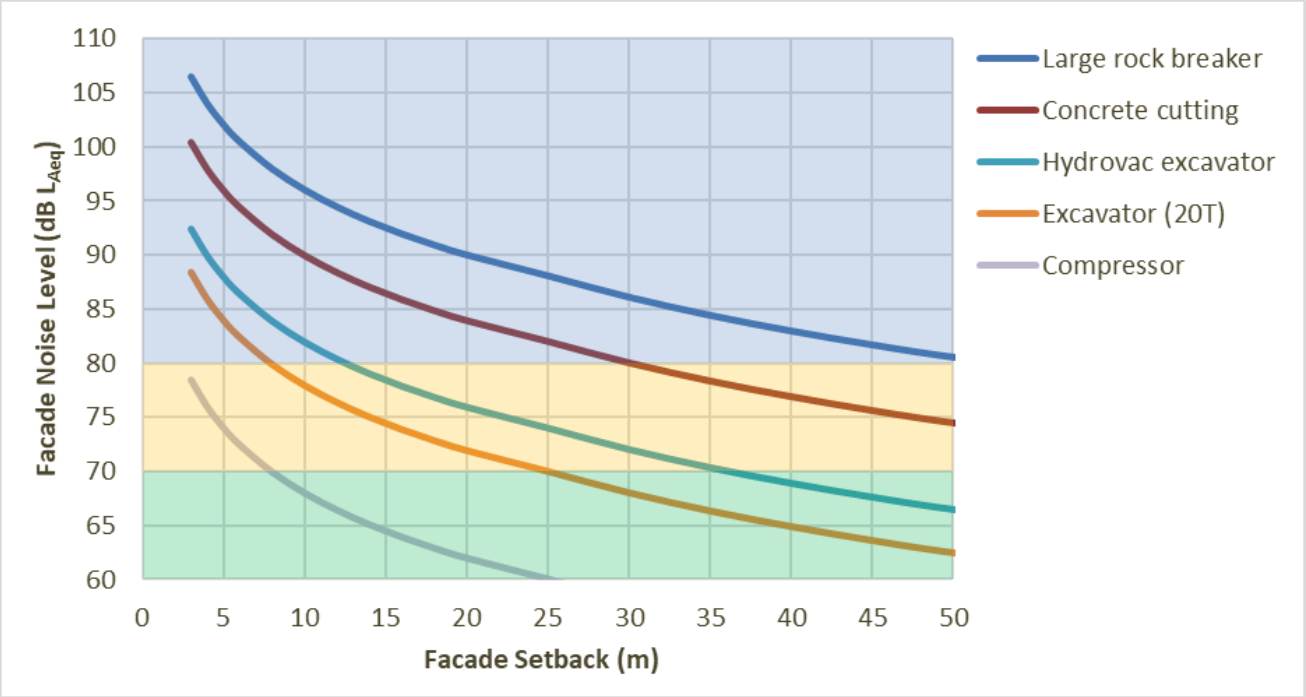

Figure 1: Typical construction noise levels of machinery (without mitigation)

Any predicted exceedance (regardless of duration, frequency and timing) triggers the need for a resource consent. In many cases, this amounts to regulatory 'red tape', less planning certainty, protracted timeframes and unnecessary cost. For notified projects, public hearings tend to focus on the predicted noise levels, rather than whether effects will be reasonable.

Consultants are often pushed to provide more certainty that compliance will be achieved. Our proposal aims to move the focus from 'level certainty' to 'process certainty'.

2.3 Stakeholder engagement and management is more important than noise level

In construction, predicting a noise level allows consultants to assess the likelihood of disturbing the neighbours (stakeholders). Construction noise limits are supposed to provide a clear line: compliance = good, exceedance = bad. But the real test is whether or not the neighbour is affected, and they will be affected at a noise level that bears little or no resemblance to the limit.

There are various factors that feed into whether a person is disturbed by a noise source, and the noise level is only one of them. They might be particularly sensitive because they work nights, or have a 6 month old baby, or they may be planning a 6 week trip and won't be home at all.

Telling someone that they can't complain about 70 dB of construction noise because it complies with the limit is unhelpful and misses the point. It makes them feel like they're being kept at arm's length, without any say in the process. A considerate member of the communications team who listens to concerns, and makes good on commitments to mitigate using the Best Practicable Option (BPO) has been said to be worth at least 10 dB!

Consistent messaging about construction management is also critical. Building trust with stakeholders is paramount, and it can be undone in a second if what they observe on the site is not what they were told during the initial process.

It is important to note that flexibility does not mean that the contractor can act with impunity. There should still be strict requirements, and consequences for non-compliance, but the requirements shouldn't be based on construction noise levels alone – they should be based on the BPO.

2.4 A CNMP is the bridge between predicted exceedances and reasonable effects

We have established that exceeding the NZS 6803 limits is inevitable in built up areas, and that receivers benefit from BPO mitigation, engagement and goodwill with the contractor. A CNMP ties this all together – by identifying potential exceedances, setting the blueprint for how the construction should unfold, and drawing clear lines of communication and reporting.

A draft CNMP is routinely submitted to Council as part of a resource consent application, so it is already a common feature in the consenting process. Its content sometimes causes debate between experts and consenting officers, but it is clear that a well-crafted CNMP gives all parties certainty of process and reassurances that potential effects will be suitably managed.

3 THE UK AND AUSTRALIAN STANDARDS HAVE EVOLVED, THE NZ STANDARD HAS NOT

3.1 New Zealand Standard NZS 6803:1999

The title of this Standard is "Acoustics - Construction Noise". It is one of the oldest NZ standards in the 680X Series. It is largely based on the 1997 version of British Standard BS 5228:1997 which has since been revised (refer Section 3.2). It is long overdue for an update.

In general, its content is still relevant and fit for purpose. But, when implemented in District Plans, the rules often refer to the recommended noise limits only, and ignore everything else.

We consider that NZS 6803 intended the noise limits to be a trigger for mitigation and management. We note that it states: "A noise management plan will often be appropriate to achieve the aims of the Standard. The requirements for a noise management plan are outlined in Annex E." [2]

Annex E is often overlooked, and in our opinion, provides the 'bridge' we discussed in Section 2.4. It recommends a CNMP framework and a method for implementation, and can be used by Council for certification and determining if residual effects are reasonable. Annex E consists of three parts:

- Annex E1 clarifies that the intent of a CNMP
- Annex E2 recommends a list of CNMP contents, which include predicted noise levels, mitigation measures, training of staff, monitoring and community engagement
- Annex E3 provides guidance on the implementation of the CNMP

3.2 British Standard BS 5228-1:2009

The title of this Standard is "Code of practice for noise and vibration control on construction and open sites". Note the phrase 'code of practice' emphasises the focus on noise management. It is already used by consultants to supplement NZS 6803:1999 when recommending BPO.

It uses 'noise control targets' as management triggers and doesn't mention of 'noise limits'. Predicted noise levels are simply a tool to inform an appropriate management response.

3.3 Australian Standard AS 2436:2010

The title of this Standard is "Guide to noise and vibration control on construction, demolition and maintenance sites". The key term here is 'guide to… control' which, like 'code of practice', indicates it is a blueprint for how construction sites should be managed.

It was prepared by the Australian members of the Joint Standards Australia / Standards New Zealand Committee EV-010. The ASNZ representative at the time was a building acoustician who opted not to be involved in its development, but Standards NZ has the option of adopting it.

[2] NZS 6803:1999, Sections 8.1.2

It aligns with, and reproduces large parts of, BS 5228:2009 (it also has no noise limits). Implementation varies by State. The Northern Territory implementation is very simple, so makes an excellent example for this paper. In short, it requires:

- Work in normal hours
- Undertake the works in accordance with AS 2436
- Provide 48 hours' notice to neighbours prior to disruption

OR

- Undertake works in accordance with a CNMP registered with the Council (includes a list of minimum components and where to register it for certification)

4 A CASE STUDY: AUCKLAND UNITARY PLAN (AUP)

4.1 The Unitary Plan's construction noise rules conflict with its objectives and policies

The Auckland Unitary Plan (Auckland Council, 2016) sets out an objective for construction noise in Rule E25.2 (4). It states the following (we have added bold font for emphasis):

> *"Construction activities that cannot meet noise and vibration standards are **enabled while controlling duration, frequency and timing** to manage adverse effects".*

This acknowledges that there are often periods or activities where the construction noise standards cannot be met. The objective is to enable them provided they are no louder than necessary.

AUP policies E25.3 (2) states "Minimise, **where practicable**, noise and vibration at its source or on the site from which it is generated to mitigate adverse effects on adjacent sites". E25.3 (10) states:

> *"Avoid, remedy or mitigate the adverse effects of noise and vibration from construction, maintenance and demolition activities while having regard to:*
> *a) the sensitivity of the receiving environment; and*
> *b) the proposed duration and hours of operation of the activity; and*
> *c) the **practicability of complying** with permitted noise and vibration standards."*

Again, this acknowledges that compliance may not be practicable.

In direct contrast, the construction noise rules in AUP rules E25.6.27 and E.25.6.28 state that "noise from construction activities **must not exceed** the levels" set out in the relevant tables. This wording provides no flexibility, and any exceedances give the activity a restricted discretionary status.

4.2 The rules for construction in the road reserve are more pragmatic

AUP rule E25.6.29 provides specific construction noise rules for works in a road. It enables exceedance of the noise limits in E25.6.27 and E.25.6.28 under certain circumstances, including when they are of limited duration and have a certified CNMP.

We propose that this approach would work for all construction noise assessments, and the CNMP certification process would allow the flexibility we are looking for.

4.3 The assessment criteria for restricted discretionary activities are pragmatic too

If a project exceeds the limits, and is classified as restricted discretionary, Council has to assess the consent application according AUP rule E25.8. It sets out assessment criteria for the consenting officer, which read very much like a management plan.

> *"The Council will consider the relevant assessment criteria for restricted discretionary activities from the list below:*
> *(1) for noise and vibration:*
>
> *a) "whether activities can be managed so that they **do not generate unreasonable noise and vibration levels** on adjacent land uses particularly activities sensitive to noise;*
>
> *b) the extent to which the noise or vibration generated by the activity:*

i. will occur at times when disturbance to sleep can be avoided or minimised; and
ii. will be compatible with activities occurring or allowed to occur in the surrounding area; and
iii. will be limited in duration, or frequency or by hours of operation; and
iv. will exceed the existing background noise and vibration levels in that environment and the reasonableness of the cumulative levels; and
v. can be carried out during daylight hours, such as road works and works on public footpaths"

c) [this rule relates to vibration only]
*d) Whether the measures to minimise the noise or vibration generated by the activity represent the **best practicable option**."*

In summary, like NZS 6803:1999, the Auckland Unitary Plan has enough pragmatism and flexibility to result in good consenting outcomes. But, the wording of its noise rules is too rigid, and this undermines the consenting process.

5 THE AUCKLAND UNITARY PLAN'S CERTIFICATION PROCESS SHOULD BE EXPANDED

By expanding the CNMP certification process to all construction noise assessments (instead of just works in the road reserve), the focus of acoustic consultant and Council would shift from the planning phase to the construction phase. This will simplify the planning process, improve value and reduce costs. A comparison of the existing situation and proposed improvements are summarsied in Table 1.

Table 1: Construction noise – proposed improvements to the planning and construction phase

Phase	Existing situation	Proposed improvements
Planning	High Cost: - Consenting is the primary focus of acoustic consultants and Council - Predicted exceedance of noise limits triggers restricted discretionary status - Generic draft CNMP prepared to demonstrate BPO	Low cost: - Exceedances should automatically trigger a CNMP for certification - CNMP framework can be standardised
Construction	Low Value: - Contractor has little input to the CNMP provided during consenting so takes a reactive approach to noise complaints - Low enforcement rates from Council with focus on noise limits rather than BPO	High Value: - A better place for acoustic consultants and Council to focus their energy - Acoustic consultant should support contractor to improve training and use monitoring to provide management feedback - Council should focus on BPO monitoring and enforcing good management

Figure 2 shows the existing planning process for construction noise and the proposed simplifications.

Introducing more flexibility around how predicted noise levels are expressed, and how the consenting process relies on them, will:

- Reduce the fixation on noise level compliance
- Focus the attention of council staff on BPO enforcement
- Enable a more straightforward and reliable planning process
- Promote a more holistic view of the proposed construction activities
- Allow adaptation when activities on site necessarily change or evolve
- Move acoustic experts' main involvement from the planning phase to the construction phase, where it is more valuable

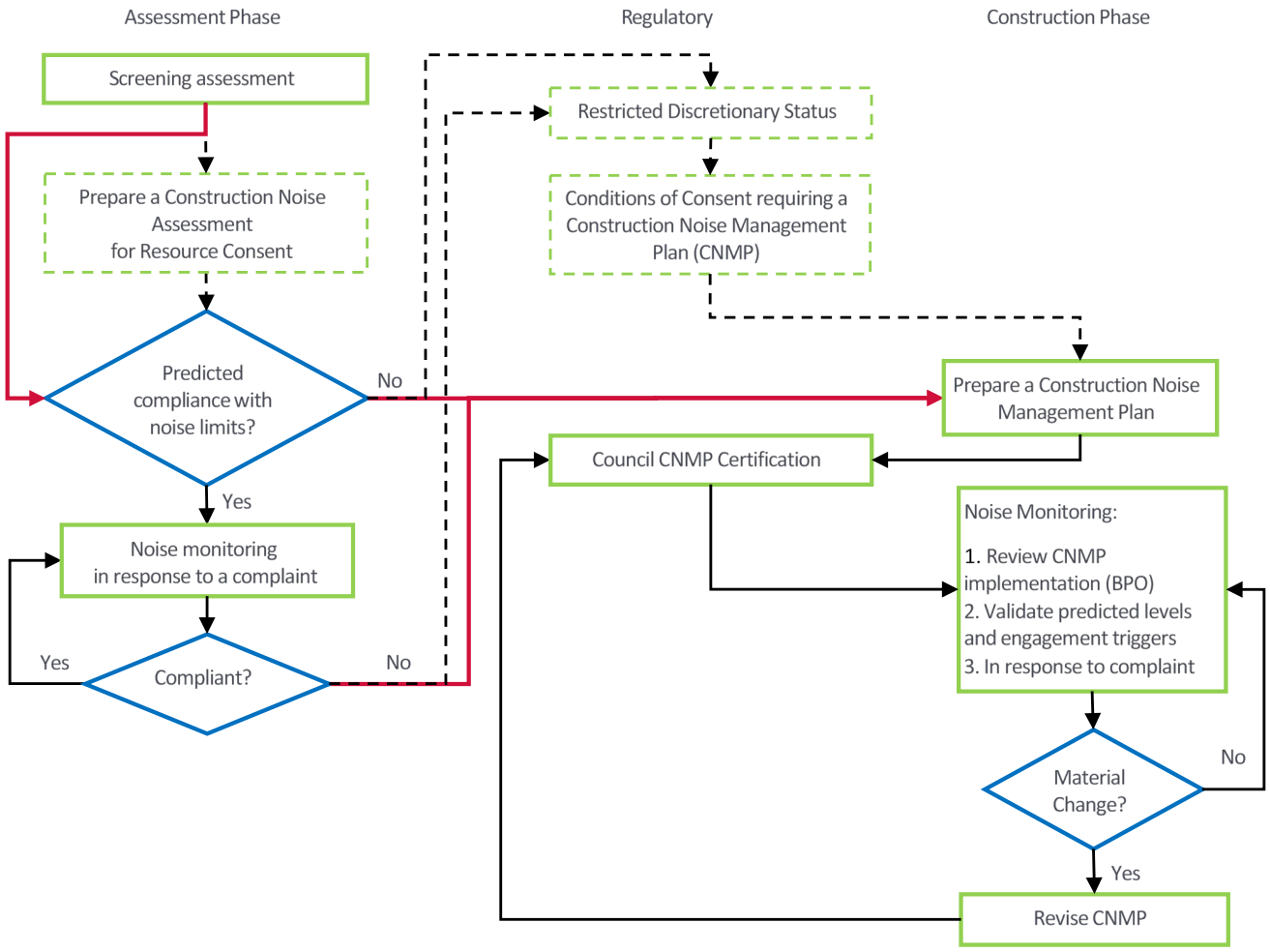

Figure 2: Typical construction noise planning process (proposed deletions dashed and changes in red)

6 CONCLUSIONS

Construction noise assessments in Auckland have become a high cost, low value exercise. Exceedances of construction noise limits is very common – especially in urban areas – and applying noise limits rigidly adds cost and frustration to the consenting process.

CNMPs are common, but their real value isn't being realised because of the rigid application of noise limits. In this age of RMA reform, we have an opportunity to reframe our construction noise assessment and focus more on BPO measures that reduce community disruption and improve process certainty.

We urge local governments throughout NZ to reframe their construction noise 'limits' and apply them as 'trigger levels' along with a CNMP certification process. This approach aligns with recent revisions to British and Australian construction noise standards, and the Auckland Unitary Plan rules for construction noise in the road reserve.

REFERENCES

Auckland Council, 2016, *Auckland Unitary Plan – Operative in Part, 15 November 2016*, Auckland, https://unitaryplan.aucklandcouncil.govt.nz/

AS 2436:2010, *Guide to noise and vibration control on construction, demolition and maintenance sites*, Standards Australia, ISBN 978 0 7337 9581 7

BS 5228: 2009, *Code of practice for noise and vibration control on construction and open sites*, British Standards Institute, ISBN 978 0 580 56049

NZS 6803: 1999, *Acoustics - Construction Noise*, Standards New Zealand, Wellington