

29 March 2017

Northern Corridor Improvements Proposal  
C/-Environmental Protection Authority  
Private Bag 63002  
Wellington 6140

FAO: Amy Selvaraj, EPA Project Leader

Dear Chair

### **Northern Corridor Improvements Proposal – Request for Further Information**

Please find below a response in full to the Board's request for further information dated 6 March 2017. We have utilised the numbering of the Board's letter to address each of the points.

#### **Noise (Operational)**

- 1. In relation to Area 2a (SH1 Colliston Rise), why is noise being addressed through insulation rather than being addressed at the source? Why is mitigation within the road reserve as preferred in the Road Traffic Noise Standard NZS6806:2010 not considered suitable?**

There is only one mitigation measure which can effectively be applied at source when the nature and location of future developments is unknown. That mitigation measure is the use of Open Graded Porous Asphalt (OGPA) on the road surface. The NZ Transport Agency proposes to use OGPA along the length of the Project area. The use of OGPA will reduce the generation of road noise as compared to chip seal, and is effective regardless of the nature and location of adjacent land uses. The use of OGPA will constitute mitigation within the road reserve.

Colliston Rise and surrounding sites are currently either under development or still undeveloped. The subdivision consent was obtained at a time when the North Shore District Plan was operative, and the resource consent conditions are based on the requirements of that District Plan. The District Plan provisions in place were focussed on avoiding reverse sensitivity effects on established roading infrastructure.

A number of dwellings within Colliston Rise have obtained building consent, and the required acoustic reports have been reviewed by the Project's noise specialist (Ms Wilkening). These acoustic reports require that appropriate internal noise levels be achieved in these new dwellings, as was set out in the North Shore District Plan, i.e. 40 dB  $L_{Aeq}(6am-10pm)$ .

The dwellings are being constructed in an existing high noise environment. The developer can (and will need to) take account of the existing high noise environment in their design, locations, orientation, façade construction and insulation. In addition, the developer can provide boundary fences to reduce noise levels at the ground floor of the dwellings, during the development phase of the subdivision.

Many of the dwellings have not yet been constructed, and can therefore take account of the future situation as a result of the Project, as set out in the Assessment of Operational Noise and Vibration (Technical Assessment 9). The Assessment notes that for the existing dwellings, predicted noise levels increases are insignificant to slight, with only one dwelling predicted to have a noise level increase of up to 4 decibels, and five further dwellings with noise level increases of less than 3 decibels. Effects from such increases are generally unnoticeable.

To our knowledge, not all dwellings have been designed yet. Mitigation for dwellings that have yet to be designed cannot practicably be assessed, because: it is unknown if they will be single or double storey; if habitable rooms will be located towards the motorway; where on the site they will be located; and if the developer has proposed any boundary fencing. Ms Wilkening is of the opinion that if she was to design mitigation for the development, this may be unsuitable or ineffective, and would therefore not consist of the best practicable option of mitigation.

Ms Wilkening also considers that new developments adjacent to existing high noise roads should take account of that environment in their design and implementation, to avoid reverse sensitivity issues.

Ms Wilkening has designed mitigation for all existing dwellings where practicable (for example, using noise barriers), and notes that along SH1, given the topography and location of the State highway with respect to the (often new) developments, it is impracticable to mitigate with structural mitigation, i.e. barriers, due to dwellings being elevated or multi storey above the road.

## **Social effects**

### **2. Can you please provide additional information clarifying the potential health effects of construction (dust, noise and disposal exposure), particularly on sensitive users such as the Meadowood Reserve Community Centre and Crèche within the project area?**

Transport projects such as the Northern Corridor Improvements Project have the potential to impact (positively or negatively) on people's health, with the potential for negative effects being higher during the construction phase. Health effects may arise due to anxiety associated with a project, sleep disturbance from noise and vibration, or increased localised air quality related illnesses if construction work is progressed without mitigation.

Sensitive receptors in the NCI Project area from a social perspective consist of residential areas (including retirement developments) and preschools / early childhood facilities (Meadowood Community Centre and Crèche, Top Kids Education and Childcare Centre site at Saturn Place and Little Steps Childcare off Omega Street). No schools or healthcare facilities are located with the Project area.

## **Dust**

Construction of the Project will involve major earthworks, and other activities carried out in construction support areas, all of which generate dust. Dust can affect human health (eye and throat irritation, breathing difficulties), and it can be a nuisance to the surrounding public due to soiling (i.e. excessive dust deposits on and within houses, cars and washing, for example).

In general, dust discharges from earthworks and other construction activities typically fall into the larger particle sizes with minimal adverse physical health impact as the particles have limited penetration into the respiratory tract. The Assessment of Air Quality Effects (Technical Assessment 1) confirms this at section 5.1 and considers that the effects of dust emissions associated with the construction activities are likely to be limited to amenity and nuisance.

While the risk of health effects from dust may be low, the Assessment of Air Quality Effects proposes mitigation measures that will be confirmed in a Dust Management Plan proposed to include the primary management approach of suppression of dust at its source and a dust monitoring programme to measure the effectiveness of the mitigation and facilitate a rapid response if and when additional dust mitigation is required. With these controls in place, the likelihood of health, amenity and nuisance effects associated with the Project will be low.

Fear over effects from dust (health, amenity and nuisance) may cause some people to limit the time they spend outdoors and with reduced activity could conceivably lead to some health effects from a

sedentary lifestyle. With respect to the NCI Project, while the overall duration is anticipated to be a 3.5 years build programme, construction works will be staged and not concentrated in a single area for the whole construction period. Consequently, it is very unlikely for health effects due to restrictive use of outdoor living areas, play areas or areas of open space within the Project area to come about.

### Noise

It is acknowledged that construction noise and vibration is always higher than noise and vibration levels from ongoing operations on a road. Due to the close proximity of dwellings and other sensitive receivers to the construction works, and the absence of existing noise attenuation along the Project corridor, there are locations where there is potential for day-time and night-time noise limits to be exceeded as identified in the Assessment of Construction Noise and Vibration (Technical Assessment 3).

Actual and perceived health effects arising from noise exposure and vibration vary from person to person. The World Health Organisation has determined that noise levels in excess of 65 decibels may cause restricted behaviour and secondary health effects such as stress. Exposure to construction vibration may also result in anxiety. Sleep deprivation is another potential health effect which may if extended over a long period trigger other health matters.

It is acknowledged that construction noise may cause adverse effects on the operation of the crèche and childcare facilities, as it is proposed that day-time noise limits will be set relatively high in order to enable construction work to be undertaken. This may interfere with activities such as sleeping or outdoor play, and as a consequence may result in negative health effects (e.g. trips and falls or low immunity levels due to tiredness).

The Assessment of Construction Noise and Vibration (Technical Assessment 3) identifies potential short-term disturbance to occupants of specific buildings as a result of construction noise and in particular piling activity during Project construction. As these areas are associated with bridge and structure works in the main, residential areas as well as the three childcare facilities would be impacted.

The project proposes by way of control the development and implementation of a Construction Noise and Vibration Management Plan (CNVMP), to include measures such as scheduling works to minimise disruption and erection of temporary noise barriers, equipment maintenance and communication with neighbouring residents and businesses ahead of works taking place.

By way of mitigation, it is recommended that the option for residents temporarily affected by construction vibration to be temporarily relocated (for the duration of the construction period) is provided, if the impacts on them are too great to maintain normal daily functioning and thereby impacting on their health and wellbeing. This requires consideration by the NZ Transport Agency on a case-by-case basis, though in the main requests for relocation are not anticipated.

With these measures in place, the potential health effects of noise and vibration during construction will be reduced as far as practicable.

### Disposal

The Assessment of Land Contaminated Effects (Technical Assessment 7) identified several areas of land where contaminants of concern may be present, which could pose a human health risk from soil disturbance. The main potential risk is to workers from contact with contaminated soils and inhalation of dust and volatile vapours.

The draft Contaminated Soil Management Plan (CSMP) contains measures for protecting construction workers, such as requiring them to wear correct PPE to avoid coming into contact with or inhaling contaminants.

Construction works also give rise to the potential for contamination to be carried by the air to surrounding properties. However, the CSMP outlines dust control measures and management of contaminated materials which will avoid this impact. Where contaminated material is discovered, it will be removed from site and disposed of at an appropriate licenced facility.

### Health Impact Perception

Despite management measures being employed, it is acknowledged that some people will continue to have fears over ill-health, and that this concern in itself has an impact on people's wellbeing. Early and proactive engagement with the local community, in particular neighbouring residential properties and early learning facilities (Meadowood Community Centre and Crèche, Top Kids Education and Childcare Centre and the Little Steps Childcare) can assist in reducing concerns and planning for periods of disturbance. As such, information sharing and engagement is a key requirement for the Project's construction phase and is recommended as a condition of Resource Consents (Proposed Condition SCP1).

### **3. Can you please provide additional information in regards to how the potential child safety risks associated with the proposed wetland ponds will be mitigated?**

From a safety perspective wetland ponds are often enclosed by fencing normally at a minimum of 1.2 metres above the ground on the outside of the pond being enclosed. Boundary treatment is also used to provide an additional buffer to entry.

Another approach, is to employ *SafetyInDesign* initiatives. Auckland Council's Stormwater Treatment Devices: Design Guidelines Manual (TP10) states at Section 5.4.3 Safety Features "*The ARC does not require fencing of ponds, because we consider that use of natural features such as reverse benching, dense bank planting, and wetlands buffers (which consists of a dense stand of vegetation) will provide a similar level of protection.*"

The NCI Project will provide fencing or a *SafetyInDesign* approach as described in TP10 to ensure safety buffers to all proposed stormwater ponds are in place.

We are in discussion with Auckland Council Parks section regarding the integration of stormwater wetlands as a park amenity (proposed wetland at Rook Reserve or Bluebird Reserve) in order to devise Reinstatement Plans. Where discussions conclude with Auckland Council that a wetland or pond should be designed as a community feature, appropriate safety measures will need to be worked through. *SafetyInDesign* initiatives such as benching of the pond profile, boundary planting (species type and density) to provide a natural buffer in combination with the fencing of discrete areas (if necessary) can be used to achieve best practicable measures for public safety.

### **4. Can you please provide additional information in regards to how the potential nuisance issues of insect populations, specifically mosquitoes, using the proposed wetland ponds will be mitigated?**

The stormwater management devices proposed are detention not retention ponds and therefore, an insect nuisance is not anticipated. Detention ponds for holding stormwater runoffs usually do not produce mosquitoes in sufficient numbers to cause a problem. Exceptions may occur when ponds become nearly dry due to a lack of rainfall.

The wetland design proposed for the NCI project will ensure a cycle of water within the system, decreasing the potential for stagnant water conditions to occur. Eliminating this type of habitat normally controls mosquito larva such that problems do not arise. In addition, an appropriate planting

mix to foster native aquatic insects and other natural predators to keep mosquito in check will also be used.

Discussions with Auckland Motorway Alliance, which carries out management and maintenance of the assets within the motorway corridor on behalf of the NZ Transport Agency, have indicated that problems concerning mosquitos are not a common pest management complaint which they have needed to respond to. Routine maintenance of the wetlands in terms of water flow and removal of dying vegetation is considered best practice.

In the unlikely event that monitoring or complaints indicate insect management is required, the application of insecticides may be used to control both immature and adult mosquito populations respectively.

### Transport

- 5. In relation to the gradient of the Shared Use Path, please include reference to appropriate design standard(s) and how the proposed design of the Shared Use Path complies, or does not comply with the standard(s), with a particular attention to its suitability for all users.**

The alignments of the Shared Use Paths (SUP) have been designed in accordance with Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths. The gradient of the SUPs is generally in accordance with Section 7.4, with a maximum gradient of 5% proposed.

Whilst the gradients are within the acceptable range for SUPs, the lengths of these gradients do not always comply with the recommended maximums for uphill cycling. This is due to the existing steep terrain within the Project extent. In order to provide relief from these gradients, flat landings have been provided where connections between the SUP and the local network are located.

Where ramp connections are required for access to the SUP, these are provided as an 'accessible route' in accordance with the NZ Building Code D1 Access Routes.

Yours faithfully



Damien McGahan  
Planning Manager

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Copies: Deepak Rama, Principal Planner – Consents, NZ Transport Agency