

Before a Board of Inquiry  
MacKays to Peka Peka Expressway Proposal

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*under:* the Resource Management Act 1991

*in the matter of:* Notice of requirement for designation and resource consent applications by the NZ Transport Agency for the MacKays to Peka Peka Expressway Proposal

*applicant:* **NZ Transport Agency**  
*Requiring Authority*

Statement of rebuttal evidence of **Dr David Black** (Public Health) for the NZ Transport Agency

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**TABLE OF CONTENTS**

**STATEMENT OF REBUTTAL EVIDENCE OF DR DAVID BLACK FOR THE NZ  
TRANSPORT AGENCY ..... 2**

**EXECUTIVE SUMMARY ..... 2**

**EVIDENCE OF SUBMITTERS ..... 3**

Response to the evidence of Dr Lisa Wildmo-Seerup, Dr Marie O’Sullivan, Dr  
Simon Hales and Dr M E McIntyre, on behalf of APSOC ..... 3

Response to the evidence of Kent Duston, on behalf of the RTS ..... 13

Response to the evidence of Mary-Jane Rivers and Emily Thomson on behalf of  
KCDC ..... 13

Other Issues Raised in Evidence ..... 14

**STATEMENT OF REBUTTAL EVIDENCE OF DR DAVID BLACK  
FOR THE NZ TRANSPORT AGENCY**

- 1 My full name is David Russell Black.
- 2 I have the qualifications and experience set out at paragraphs 2-8 of my statement of evidence in chief, dated 7 September 2012 (*EIC*).
- 3 I repeat the confirmation given in my *EIC* that I have read, and agree to comply with, the Code of Conduct for Expert Witnesses (Consolidated Practice Note 2011).
- 4 In this statement of rebuttal evidence, I respond to the evidence of:
  - 4.1 Dr Lisa Wildmo-Seerup, Dr Marie O’Sullivan, Dr Simon Hales and Dr E H McIntyre, on behalf of Action to Protect and Sustain our Communities (*APSOC*) (submitter number 677);
  - 4.2 Kent Duston, on behalf of the Rational Transport Society (*RTS*) (submitter number 611);
  - 4.3 Mary-Jane Rivers and Emily Thomson, on behalf of the Kāpiti Coast District Council (*KCDC*) (submitter number 682);
  - 4.4 Russell and Sandra Walker, on behalf of Fourways Enterprises Limited (submitter number 230);
  - 4.5 Dr Christopher and Monica Dearden, on behalf of themselves (submitter number 261); and
  - 4.6 Loretta Pomare, on behalf of herself (submitter number 309).
- 5 The fact that this rebuttal statement does not respond to every matter raised in the evidence of submitter witnesses within my area of expertise should not be taken as acceptance of the matters raised. Rather, I rely on my *EIC* and this rebuttal statement to set out my opinion on what I consider to be the key public health matters for this hearing.
- 6 Consistent with my *EIC*, I have referred to the MacKays to Peka Peka Expressway Project as “the Project” in this rebuttal evidence.

**EXECUTIVE SUMMARY**

- 7 I have read all of the statements of evidence provided by submitters in relation to the area of public health effects.
- 8 The evidence prepared by submitters has not caused me to alter my opinions as expressed in my *EIC*. I am confident that potential public health effects have been thoroughly considered in the development of this Project and remain confident that the Project will not negatively impact on public health.

- 9 Many of the statements made in opposition to my EIC rely on approaches other than Best Professional Practice in Public Health Management and are not in accordance with my understanding of the approach prescribed by the Resource Management Act 1991 (RMA).

### **EVIDENCE OF SUBMITTERS**

#### **Response to the evidence of Dr Lisa Wildmo-Seerup, Dr Marie O'Sullivan, Dr Simon Hales and Dr M E McIntyre, on behalf of APSOC**

##### ***Dr Lisa Wildmo-Seerup***

- 10 The evidence from Dr Lisa Wildmo-Seerup, an audiologist appearing on behalf of APSOC, addresses my EIC in paragraphs 8-9, and states that I have no evidence to back up my "claim" that the proposed mitigation for construction noise will eliminate health effects.
- 11 Dr Wildmo-Seerup states "*There are numerous studies showing the opposite. The noise levels offered by Ms. Wilkening will cause peripheral vasoconstriction, elevated blood pressure and greater risk of cardio vascular disease. In addition to the affects [sic] on health, noise at this levels will also interfere with understanding and speech, causes stress reactions interferes with sleep, reduces moral [sic].*"<sup>1</sup>
- 12 In my opinion, Dr Wildmo-Seerup is incorrect. I do not expect there to be any such physiological effects arising from the predicted sound pressure levels, either during the construction or the operational phases of the Project.
- 13 Dr Wildmo-Seerup goes on to state that my EIC suggests ignoring the World Health Organisation (WHO) noise guidelines, and states that "*the WHO noise guidelines proposed should be adopted whenever possible*".<sup>2</sup>
- 14 Dr Wildmo-Seerup is mistaken about this also. My EIC did not suggest ignoring the WHO guidelines.<sup>3</sup> On the contrary, as my EIC explained, the WHO guidelines are intended for use in the development of local standards. However, they are not intended to be used as standards themselves.
- 15 The relevant NZ Standards for noise<sup>4</sup> all use the WHO guidelines as a basis for their noise limits. Our local Standards also take into account the approach required by the RMA, whereas the WHO guidelines do not (and cannot) make any assumptions about local

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<sup>1</sup> Paragraph 8.

<sup>2</sup> Paragraph 9.

<sup>3</sup> See paragraphs 68-71.

<sup>4</sup> i.e. NZS 6803:1999, NZS 6806:2010.

national legislation. Instead, they are intended to provide the basis for the development of relevant local standards.

- 16 In paragraphs 11-12, Dr Wildmo-Seerup criticises the statement in my EIC that it is appropriate to locate schools in the vicinity of the Project, stating that "*children need a better signal to noise ratio in order to learn effectively*".
- 17 I reiterate my opinion that the level of protection provided for the community by the approach and mitigation measures proposed by the NZ Transport Agency (*the NZTA*) reduces any possible health effect to a level which is less than minor. This includes any effects on learning.
- 18 In paragraph 13, Dr Wildmo-Seerup queries my conclusion that occasional exceedances of the construction noise Standard (i.e. NZS 6803:1999) are acceptable and will not affect public health.
- 19 Since construction noise effects at the levels predicted are deterministic (that is to say proportional to an accrued effect over time), point exceedances below ceiling levels (i.e. limits at which effects start) have no relevance to public health. Physiological damage to the ear is caused by a dose accrued over time, unless they are well over 100 dBA. Effects on sleep and general health are only caused by recurrent and persistent noise. Neither of these will happen as a result of the construction of the Expressway. Any exceedances are therefore potential amenity effects, and not health issues. I reiterate my opinion that occasional exceedances of the noise Standard during construction will not affect public health.
- 20 In paragraphs 13-15 of her evidence, Dr Wildmo-Seerup discusses Noise Induced Hearing Loss (*NIHL*) and noise dosage. She includes a table of permissible exposure times at different sound pressure levels.
- 21 I agree that the figures given in the table are correct; however, at those levels the matter under consideration is NIHL in the workplace (rather than in a residential environment). I agree that 85 dB for 8 hours is equivalent to 82 dB for 16 hours, but from this progression it can easily be seen that, at the levels predicted for the Project,<sup>5</sup> the permissible energy dose (which is the product of energy level and time (multiplied)) would never be approached by a significant margin.
- 22 In paragraph 16, Dr Wildmo-Seerup goes on to discuss individuals with an increased propensity towards NIHL, stating that a high number of individuals might be in this category, contradicting my assumption of a normal population distribution.

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<sup>5</sup> See the EIC of **Ms Siiri Wilkening**.

- 23 With regard to individuals with an increased propensity towards NIHL, in reality the effective range of such a sensitivity is no more than 6 dB, and so that is not an issue which needs to be considered in this case. Hearing loss is not an issue at these levels, even for sensitive individuals. The level at which hearing damage might occur in even the most sensitive person (who would not be a member of the "normal" population), would be a lifetime exposure of 73 dB  $L_{Aeq(24h)}$ .<sup>6</sup>
- 24 In paragraph 17, Dr Wildmo-Seerup reiterates her opinion that the WHO guidelines for noise should be "*adopted wherever possible*".
- 25 I agree that the WHO noise guidelines are highly authoritative and evidence based and should be adopted widely. As I discussed above, that is the case in New Zealand, where they are the basis of the national noise Standards, which are being applied in this case.

***Dr Marie O'Sullivan***

- 26 I have read the Health Impact Assessment contained in the Statement of Evidence of Dr O'Sullivan. This 99 page paper raises a number of issues of interest, but not necessarily of relevance to this inquiry. Given the sheer volume of material provided by Dr O'Sullivan, I have chosen to elaborate below only on particular matters raised, where I consider further comment is appropriate.

*Health Equity*

- 27 Dr O'Sullivan suggests that a further equity focussed health impact assessment is required.<sup>7</sup>
- 28 In response, I note that the WHO's definition of "health equity" (upon which Dr O'Sullivan relies) is not a concept which is in any way binding on member states or on the application of resource management practice in New Zealand. The RMA has its own way of dealing with health issues. As I understand it, from my perspective as a medical practitioner, that approach is generally on the basis of assessing the scale of a development's effects on public health, including any potential effect of high probability, or an effect of low probability and high potential impact. The detailed application of such ideas is a matter for legal argument. However, in providing health advice to the NZTA, I have had to take these thresholds into account in deciding whether the approaches taken by the NZTA are reasonable in terms of the intent of the RMA. In my opinion, they are reasonable.

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<sup>6</sup> This estimate is based on the evidence that the most sensitive workers show some hearing damage at 82 dB  $L_{Aeq(8h)}$  over a lifetime of work based on an 8 hour day. Extrapolating this to 24 hours requires deduction of another 9 dB equivalent to gain dose equivalence. Having said that, there is no research about NIHL at those levels and no firm data to confirm that NIHL has ever been seen at levels below about 80 dBA.

<sup>7</sup> Paragraph E.4, page 3.

- 29 Dr O’Sullivan provides a detailed and interesting discussion regarding health equity impacts. The principle of health equity is the idea that different layers of classes of society may be affected in different ways by the same impacts.
- 30 However, from my perspective as a Medical Practitioner operating at a Specialist level in Environmental Health (and with a concern for public health), the idea of equity-focused public health assessment is unlikely to be a practical approach to health protection. In contrast, the methodology and practice of the RMA is intended to be, and has proven to be, an effective approach to achieving a high level of, and continuous improvement in, public health with regard to environmental determinants.
- 31 Furthermore, the WHO’s concept of health equity, whilst aspirational in its goals has not yet been shown to be fully achievable in any member states. The predicted positive outcome of this approach, having regard to unknown costs versus benefits, is virtually unknown. In contrast, the RMA continues to achieve ongoing improvement in the New Zealand environment and this contributes positively to public health.
- 32 Whilst the principle of “health equity” is undoubtedly correctly described, the approach taken by orthodox public health practice, which I notice Dr O’Sullivan hardly refers to, is the concept of providing the highest practically achievable level of protection to the “normal” population. That means that some individuals outside the normal group are best protected by providing special individualised care. I have described that in detail in my EIC.<sup>8</sup> However, I have not found any evidence that a need for any special care will be generated by this Project. On the contrary, I consider that the living environments around the existing roads are likely to be improved.
- 33 It is my opinion that this orthodox public health approach, as practised in New Zealand under the auspices of the Royal Australasian College of Physicians and the New Zealand College of Public Health Medicine and endorsed by the Ministry of Health is a practical way of achieving the best possible health outcome for the whole population. Furthermore, the real inequities in health in New Zealand at this time are well accepted to be factors other than environmental issues and they are the subject of concerted efforts by successive governments, Public Health Authorities and health professionals. Dr O’Sullivan appears to be discounting a well proven and widely accepted approach in suggesting that it can be overtaken by recent concepts which have a predominantly theoretical and political basis.
- 34 In my opinion, a further Health Equity assessment is not required. I believe that, contrary to Dr O’Sullivan’s statements at paragraph

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<sup>8</sup> For example, EIC, paragraphs 71, 140.

E.4, the Project has “adequately taken account of the impacts on health and wellbeing of the population affected”.

*Air Quality*

- 35 With respect to Dr O’Sullivan’s comments on air quality, I have already stated in my EIC that I consider that exhaust from internal combustion engines used in road transport has the potential to be a contributor to premature mortality in New Zealand and this is a reality based on the country’s relatively high use of road transport.<sup>9</sup> Dr O’Sullivan states that the “claims” made by the NZTA, that there is likely to be a net benefit in community air quality, do not stand up to close scrutiny.<sup>10</sup> At paragraph E.18, she provides calculations to suggest that the number of residences currently exposed to vehicle pollutants on State highway 1 is only a small proportion of residences that would be exposed if the Expressway was built.
- 36 **Ms Camilla Borger’s** evidence-in-chief (which I support), explained why there is likely to be a net benefit in air quality, arising from the Project’s development. Current use of roads in this environment expose people walking on the local streets to the exhaust fumes of heavy volumes of traffic, which are not local but which are transiting the area. It is far more equitable to these local communities to have this traffic bypass local settlements at speed, and thereby having their engines operating in a more efficient manner.
- 37 At paragraphs E11 and E12, Dr O’Sullivan discusses the potential issue of differential effects of poor air quality on children and the elderly, suggesting that these groups will be more affected by the Project.
- 38 It is not correct to presume that children and the elderly are likely to be most affected by vehicle pollutants. In any event both are members of the general population so any identified greater sensitivity in a particular age group would determine protection for the whole population.
- Noise and the WHO*
- 39 With regard to noise, it is not correct for Dr O’Sullivan to say that the NZTA proposes to ignore current evidence in relation to health impacts.<sup>11</sup> As noted above, WHO guidelines are primarily intended for use as a basis to develop practically achievable national standards, which has been done in New Zealand. Contrary to Dr O’Sullivan’s assertion,<sup>12</sup> in my opinion, it is entirely appropriate to take into account the unarguable fact that this Expressway will replace an existing road and therefore can rely, to some extent, on the existing acceptance of that facility.

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<sup>9</sup> EIC, paragraph 44.

<sup>10</sup> Paragraph E.18, page 6.

<sup>11</sup> Paragraph E.27, page 7.

<sup>12</sup> Paragraph E.27, page 7.



- 40 In paragraph E19, Dr O’Sullivan discusses the issue of noise, raising concern over the potential for the Project to cause sleep disturbance and cause subsequent health effects. In paragraph E20, Dr O’Sullivan goes on to raise particular concern over the effects of noise on children and the elderly, citing several papers regarding effects of background noise on children’s learning and ability to understand speech.
- 41 Regarding sleep disturbance, this was thoroughly covered in my EIC.<sup>13</sup> I acknowledge that ongoing disruption of sleep has the potential to affect health, but reiterate the conclusions in my EIC that this Project will not cause sustained or ongoing disturbance to sleep and that there will be no negative effects on health as a result of sleep disturbance.
- 42 Regarding children and the elderly, it is probably true to say that the sensitivity of children and the elderly is of particular importance in noise control and this is taken into account in the setting of the guidelines by WHO and the Standards in NZ. I have already discussed this in my EIC.<sup>14</sup>

*Literature Review*

- 43 On Page 28 of her evidence, Dr O’Sullivan provides a summary of her literature review which is detailed and provides worthwhile information. Much of the information she has retrieved is common ground. For example, Table 1 tabulating the impact of motor vehicle emissions on health contains well accepted relationships, although this Table is well out of date (1998) and in fact the situation with regard to cancer risk is now established to be somewhat worse than had been assessed at that time.
- 44 Dr O’Sullivan provides extensive discussion about the health problems associated with oxides of nitrogen, which I agree are a significant potential public health problem. As I have stated in my EIC,<sup>15</sup> these problems will not be solved by avoiding the construction of arterial roads. Instead, as is happening in many countries further advanced than New Zealand in this regard, they are being solved by tighter control of emissions from the national vehicle fleet. Therefore, whilst these discussions by Dr O’Sullivan are of interest and seem to me to be in general quite accurate, I cannot see that they are relevant in the consideration of an application for this Project.
- 45 With regard to Dr O’Sullivan’s comments on noise, this matter has been well traversed. As I have stated in my EIC and earlier in this rebuttal, WHO guidelines which reflect the state of international best practice have been highly influential in formulating New Zealand

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<sup>13</sup> Paragraphs 137-143.

<sup>14</sup> Paragraphs 68-71.

<sup>15</sup> For example, EIC, paragraphs 43, 117.

standards and continue to be the single most significant source of data in guiding New Zealand best practice. It is therefore my view that this Project does achieve best practice in this regard.

- 46 I have considered Dr O’Sullivan’s discussion on low frequency noise and vibration. I consider that she is making unreasonable assumptions in suggesting that vibrations from road traffic on the Expressway will be more likely because of the geology of the Kāpiti area. Having worked with engineers on recent road projects in New Zealand, including the NZTA’s Auckland Waterview Project, I am confident that these issues can be readily overcome and that low frequency noise and vibration will be well under any area of even potential public concern.
- 47 Matters of food security and light pollution have been considered but are of much less concern in this Project than in many other road projects in New Zealand and are unlikely to have any effect on public health. The matter of light pollution has been addressed in the design of the Expressway and adverse effects in this regard can readily be mitigated.

*Analysis of impacts*

- 48 On Page 45, Dr O’Sullivan goes on to undertake an analysis of these impacts. However she does so, it seems to me, without recognising the acknowledged and accepted approaches of best practice in public health and the principles of the RMA which I have outlined earlier. Furthermore, she does not provide any evidential basis for overturning these accepted approaches. Much of the discussion is repetitive and seems to reflect back to the concept of “health equity” (which I have responded to earlier in this evidence).

*Response to Supplement C*

- 49 In Supplement C to her evidence, Dr O’Sullivan has analysed my EIC by attempting to frame it using the health equity approach ideas, rather than the orthodox approaches I have previously explained. She goes on to suggest that my opinions are shaped “*in part by the remuneration*” I receive “*from NZTA*”.<sup>16</sup> I simply note in response that I have read, and have agreed to comply with the Code of Conduct for Expert Witnesses, in preparing evidence for this inquiry.
- 50 Most of the matters which Dr O’Sullivan considers are lacking in objective references to evidence<sup>17</sup> are matters of orthodox public health practice with which I am readily familiar. However, I accept that they may lie outside the expertise of a practitioner without medical training or experience and not participating in routine reaccreditation in a recognised professional body concerned with public and environmental health.

<sup>16</sup> Paragraph 5, page 78, Supplement C.

<sup>17</sup> Paragraph 5, page 78, Supplement C.

- 51 Dr O’Sullivan criticises me for responding to individual submissions in my EIC, which raise public health effects, on the basis of privacy concerns.<sup>18</sup> With regard to my comment on details provided by submitters, it is my understanding that these have been entered into and published in the public domain deliberately by those submitters and therefore my comments are similarly presented. There are processes available in RMA proceedings for presenting confidential medical information. I have been part of this on many occasions and have, without exception, found the process to provide complete privacy. I am not aware that this has been requested in this case.
- 52 Dr O’Sullivan states that the approach I have taken "*contravenes medical ethics of non-maleficence with regard to public health. In population health terms, this means that it is not only an ethical requirement to do no more, but also requires knowing how likely it is that harm may occur.*"<sup>19</sup> I confirm that I do consider that the risks have been adequately assessed (consistent with the approach required by the RMA) but I disagree that it is inappropriate to look for and support an approach which seems to me to minimise mortality or morbidity which is effectively (if not literally) what Dr O’Sullivan is saying. I agree that a fundamental principle of the practise of medicine is "*first do no harm*" but Dr O’Sullivan has taken that out of context. In medicine that means, when considering whether to do something or nothing, if doing something might cause harm, then consider doing nothing. I have considered that principle in this case (to the extent that this medical principle is relevant in an RMA context) and I have decided that being involved in the case in the manner I have and applying an orthodox public health approach provides the potential for a better public health outcome than not being involved.
- 53 In the context of motor vehicle emissions as a cause of premature mortality it is quite incorrect for Dr O’Sullivan to infer that I "*see no difficulty with exposure to a sector of the community which is at present free from such emissions*".<sup>20</sup> The point is that I am taking care to provide balanced evidence to the Board of Inquiry (*BoI*) so that a legal decision can be made using the framework of the RMA.
- 54 Dr O’Sullivan suggests that I consider the residents in the MetLife Care Retirement Village should be afforded "*standard mitigation*" which means that they are regarded as part of the normal population.<sup>21</sup> That interpretation is correct. With regard to compliance with the air quality standards I am, as Dr O’Sullivan interprets, relying on the evidence of others, however, I continue to have confidence in their assessments.

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<sup>18</sup> Paragraph 8, page 79, Supplement C.

<sup>19</sup> Paragraph 182, page 52.

<sup>20</sup> Paragraph 10, page 79, Supplement C.

<sup>21</sup> Paragraph 10, page 79, Supplement C.

- 55 With regard to Dr O’Sullivan’s comments on non-potable water,<sup>22</sup> I do not consider that this is likely to be affected significantly by either construction or operation of the Expressway. I have confined my assessment of potable water takes to those registered with the Ministry of Health and any question of further entitlements (such as through the Human Rights Commission) are a matter for the BoI to decide.
- 56 Dr O’Sullivan is quite correct in understanding that I am placing complete reliance on the noise guidelines, which I do believe provide adequate protection.<sup>23</sup> Dr O’Sullivan’s assertion that construction noise at 85 decibels will cause hearing loss over the five years of the Project’s construction period demonstrates a serious lack of understanding of noise dosimetry.<sup>24</sup> Noise induced hearing loss in the Kāpiti population caused by the construction (or operation) of this Project is completely implausible.
- 57 Dr O’Sullivan interprets the discussion of hypersensitivity in my EIC as suggesting that *“individuals with heightened sensory processing are therefore mentally unstable, abnormal in some respects or suffering from phobias”*.<sup>25</sup> I do not suggest that such individuals are unstable. However, it is my evidence such persons are abnormally affected by factors which are outside of normal physiology. This is an area in which I have considerable clinical experience. I have also frequently provided evidence to the Environment Court on these issues, which has been subject to substantial cross examination and interest by the Court and I understand, accepted.
- 58 Contrary to Dr O’Sullivan’s suggestion that my ideas are *“20 years out of date”* and that I am engaging in *“armchair psychiatry”*<sup>26</sup> I am a currently registered and practising occupational and environmental physician, current with maintenance of professional standards requirements with the Royal Australasian College of Physicians and vocationally registered by the New Zealand Medical Council. I would respectfully recommend to the BoI that if evidence contradicting mine is to be accepted from another witness, that inquiries be made as to their professional standing, particularly with regard to vocational registration and current practice.

*Conclusion*

- 59 In summary, I confirm that I have read Dr O’Sullivan’s evidence and report with care. Whilst I accept that many issues of international, political and scientific interest are raised and discussed, nothing changes the opinions which I have already provided in my EIC.

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<sup>22</sup> Paragraphs 16-19, page 80-81, Supplement C.

<sup>23</sup> Paragraph 21, page 81, Supplement C.

<sup>24</sup> Paragraph 25, page 82, Supplement C.

<sup>25</sup> Paragraph 32, page 83, Supplement C.

<sup>26</sup> Paragraph 32, page 83, Supplement C.

**Dr Simon Hales**

- 60 The evidence of Dr Simon Hales, a medical doctor and Associate Professor researching the health impacts of air pollution, disagrees with my (and **Ms Borger's**) conclusions that the overall health impacts of the Project will be a net benefit to the community. He states that in the long term, the impacts may be strongly negative, when factoring in the larger picture of potentially greater national motor vehicle usage (and decreases in walking and cycling), as a result of the Roads of National Significance programme.<sup>27</sup>
- 61 I have already discussed many of these matters in my EIC.<sup>28</sup> In my opinion, **Ms Borger's** community exposure assessment is adequate for this Project and the results of it reassure me that the net effect of the changes in roading and traffic flow in the Kāpiti region after the construction of the Expressway will result in, if anything, an improvement for the local communities.
- 62 With respect to Dr Hales' concerns about increased motor vehicle usage (and decreases in walking and cycling), I note that there is already a well used rail service in the area, which is supported by bus services. These provide an alternative to motor vehicle usage. In addition to this, the Project includes cycle and walking paths. I do not believe that it is a given that, as a result of this Project, overall car usage will increase and outdoor physical activity decrease.

**Dr M E McIntyre**

- 63 I have read the evidence of Dr McIntyre, an entomologist, whose evidence discusses the potential threat to human health from mosquitoes in the Waikanae area.
- 64 I agree that the possibility of arthropod disease is an ever present threat in many countries, including New Zealand. I accept Dr McIntyre's suggestion that this is a relevant consideration for the bodies of water created by this Project. However, in New Zealand discoveries of disease-bearing mosquitoes have been rare and outbreaks of arthropod disease are very rare. Nonetheless, this is a relatively easy matter to manage and in my opinion it is reasonably raised by Dr McIntyre.
- 65 In terms of any action required, either pre-emptively or during construction, these are matters for the Medical Officer of Health for the region at the time. In my opinion, pre-emptive action is not necessary as there is no history or expectation of an outbreak of such diseases. However, the possibility of such an outbreak is one that is recognised throughout New Zealand and for which planning is already in place, under the auspices of the Ministry of Health (*MoH*) and vigilance in this regard is an ongoing responsibility of the MoH.

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<sup>27</sup> Paragraph 9.

<sup>28</sup> EIC, paragraphs 18, 49, 191-192.

**Response to the evidence of Kent Duston, on behalf of the RTS**

- 66 In his evidence, Mr Duston refers to a Health Impact Assessment (*RLTS HIA*) which was published by Robert Quigley, Ruth Cunningham, Martin Ward, Marty de Boer and Catherine Conland in 2006. This HIA was based on the proposals in the draft Greater Wellington Regional Land Transport Strategy (*RLTS*).<sup>29</sup>
- 67 Mr Duston cites this *RLTS HIA* as calling for increases in public transport, and decreases in private car usage. He states that this *RLTS HIA* concludes that the overall proposed approach to public transport put forward in the *RLTS* (that is, focusing on new roading developments instead of public transport options), is “*unlikely to protect and promote public health for the region’s population*” and “*likely to increase inequalities in health, particularly between socio-economic groups*”.<sup>30</sup>
- 68 The *RLTS HIA* referred to by Mr Duston is not directly related to this Project. This document was prepared for use in guiding the development of a long-term policy strategy for the region. In comparison, this notice of requirement (and consent applications) are for a specific Project, which I have judged on the proposals put forward and the assessments of effects of the various experts. In my view, that is a far more precise and targeted approach and one for which the RMA is well equipped to consider the evidence of myself and others.

**Response to the evidence of Mary-Jane Rivers and Emily Thomson on behalf of KCDC**

- 69 The evidence submitted by Mary-Jane Rivers on behalf of the KCDC calls for a Health Impact Assessment (*HIA*) of the safety and health impacts of the Project. She wants this to be a designation condition and seeks that the final approach for this HIA be approved by KCDC.<sup>31</sup> I note that Ms Rivers does not refer to my evidence at all, and hence I am unsure whether she has considered my assessment.
- 70 Ms Rivers’ recommendation is reiterated in the evidence of Emily Thomson (also on behalf of the KCDC), who includes a proposed new condition requiring a social impact assessment, which includes an investigation into the effects of heavy traffic movement on human health.<sup>32</sup> Ms Rivers also calls for a formal process of interaction between the KCDC, Capital and Coast District Health Board, Compass Primary Health and NZTA to deal with “*health service demands and management*”.<sup>33</sup>

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<sup>29</sup> Page 9.

<sup>30</sup> Page 9.

<sup>31</sup> Paragraph 3.6, page 5; paragraphs 6.17-6.20, pages 15-16.

<sup>32</sup> Paragraph 9.54, pages 28-29.

<sup>33</sup> Paragraph 6.13(a), page 14.

- 71 I do not consider that a HIA, nor a formal interaction process on health, is required. I have assessed the Project's effects on the health and wellbeing of the population in accordance with RMA principles. Potential public health effects have been thoroughly considered in the development of this Project and I am confident that the Project will not negatively impact on public health.
- 72 Ms Rivers is particularly concerned with effects on the lower socio-economic parts of the local community, who are "*the least well resourced to deal with the social and health impacts from new developments*".<sup>34</sup>
- 73 I have already discussed the effects on lower socio-economic groups in paragraphs 123-125 of my EIC. As stated, New Zealand's air quality standards are designed to provide protection to all members of the normal population, which includes those seen as vulnerable, such as lower socio-economic families. Similarly, the noise standards will also adequately protect such groups.

**Other Issues Raised in Evidence**  
***Stress and Mental Health***

- 74 Several submitter witnesses raise the issue of stress. Russell and Sandra Walker<sup>35</sup> are concerned about stress from perceived uncertainty regarding house values, particularly in light of Mr Walker's heart problems and high blood pressure. Loretta Pomare's evidence claims that the stress from the Project "*will continue to destroy my life and wellbeing*".<sup>36</sup>
- 75 I discuss the issue of mental health and stress in paragraphs 26 and 102-107 of my EIC. I reiterate my conclusion that mental health effects are best countered through clear and open communication, an approach which I believe the NZTA has adopted for this Project.
- 76 I remain confident that, following commissioning of the Expressway, once the perceived uncertainties regarding the Project have been resolved, the majority of the community will adapt to the presence of the Expressway and will not suffer any ongoing health effects as a result of stress.

***Sleep disturbance***

- 77 Dr Christopher and Monica Dearden are concerned that even with compliance with the appropriate noise standards (as proposed by the NZTA), those living within 200 m of the Proposal will still suffer from disrupted sleep patterns.<sup>37</sup> They are particularly concerned with the effects this could have on the elderly and young, who are "*likely to suffer excessively from the effects of sleep deprivation and*

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<sup>34</sup> Paragraph 6.4(a), page 11.

<sup>35</sup> Fourways Enterprises Limited, submitter number 0230, page 4.

<sup>36</sup> Preamble, page 3

<sup>37</sup> Paragraphs 2.28-2.29, pages 12-13.

*stress*". Health effects due to sleep disturbance as a result of noise and/or lighting is also raised by Ms Pomare.<sup>38</sup> Ms Pomare is particularly concerned about proposed night-time works for the Waikanae Bridge/Te Moana Roundabouts and Flyover, which she says are near her house and will significantly disrupt her. **Mr Andrew Goldie** addresses this latter concern in his rebuttal evidence.

78 The issue of the health effects of noise, including effects due to lack of sleep or disrupted sleep, are discussed in great detail in my EIC, as are the effects of light pollution. Sleep disturbance is specifically addressed in paragraphs 137-143.

79 It remains my opinion that the Project does not pose a risk to public health as a result of sleep disturbance. Compliance with the relevant noise standards and lighting standards, as is proposed, will prevent any health effects as a result of sleep disturbance.

#### **Noise and Vibration**

80 Dr Christopher and Monica Dearden raise concern over construction noise and vibration adding "*enormously to hospital and doctor's visits and lead to greatly increased mental and emotional problems, especially among the elderly*".<sup>39</sup> Mrs Dearden suffers from tinnitus, which she believes will be worsened during construction and operation of the Project, as a result of noise.<sup>40</sup> The submitters' request double glazing on their home to counter the "*health and noise issues*".<sup>41</sup> Ms Pomare's evidence says that any exceedances of the noise standards should be unacceptable and that any increase in noise on her property will have a "*serious effect*" on her health.<sup>42</sup> Ms Rivers also raises concern over health effects from noise and vibration.<sup>43</sup> Ms Rivers expresses concern that health effects could arise from vibration effects due to construction on peaty soil and "*psychological effects of vibration, particularly at night*".<sup>44</sup>

81 Concerns over health effects resulting from operational noise are also raised by Ms Pomare,<sup>45</sup> while Ms Rivers raises concern about noise effects on the elderly.<sup>46</sup>

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<sup>38</sup> Paragraphs 33-34, pages 10-11; paragraph 109, page 26; paragraphs 114-115, page 27.

<sup>39</sup> Paragraph 2.29, page 13.

<sup>40</sup> Paragraph 3.13, page 21.

<sup>41</sup> Paragraph 3.15, page 21.

<sup>42</sup> Paragraph 108, page 26.

<sup>43</sup> Paragraph 6.12(a), page 13; paragraph 6.15, page 15.

<sup>44</sup> Paragraph 6.15, page 15.

<sup>45</sup> Paragraph 114, page 27.

<sup>46</sup> Paragraph 5.1 (h), page 8.



82 I have thoroughly covered the potential effects of noise in my EIC<sup>47</sup> and remain confident that compliance with the appropriate noise standards – strict compliance in the case of operational noise and general compliance in the case of construction noise – will be adequate to prevent direct health effects resulting from noise.

***Air Quality Effects***

83 Ms Pomare’s evidence expresses her concern over dust and sand during construction, stating on page 2 of her evidence that in paragraph 36 my EIC, I acknowledge this will be “horrendous”. She later goes on to state that “*dust particles and/or sand will seriously impact on my health, vegetable crops, fruit trees etc.*”<sup>48</sup>

84 Firstly, I did not say or imply that the effects of construction dust and sand would be “horrendous”. At paragraph 36 of my EIC, I stated that construction could cause some discharges of contaminants to air, which can have an irritant effect. I then discuss this further in paragraphs 37-40, stating that I am confident that the appropriate conditions proposed for mitigation of air effects during construction of the Project will minimise such contaminants to air and therefore protect against health effects from this source.

85 I reiterate this conclusion and remain confident that any potential health effects which could arise from dust and sand will be adequately minimised by the appropriate mitigation measures, as proposed by the NZTA.

86 Ms Pomare’s evidence goes on to raise concern over the operation phase of the Project, stating it (air effects) will “*get worse, adding pollutants from diesel, fuel, dust from tyres, brakes etc*”, and that she will be “*breathing in chemicals*”. Ms Pomare’s evidence also states that “*pollution*” will “*increase by up to 100% for the 1300 homes living beside the proposed expressway*”.<sup>49</sup> Air quality effects on the elderly, who may already suffer from compromised respiratory health, was also raised by Mary-Jane Rivers.<sup>50</sup>

87 I have already thoroughly discussed the issues regarding effects on air during the operation of the Expressway in my EIC.<sup>51</sup> I remain confident that there will be no increase in health effects as a result of this Project. I agree with the conclusions of **Ms Borger**, that the net effect on air quality will be, if anything, positive, and that there will not be anything like a 100% increase in pollution.

88 The evidence of Ms Pomare also calls for 1 year of independent monthly tests on her “*environment and produce to ensure there are*

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<sup>47</sup> See, for example, paragraphs 20-23, 68-91,144-164.

<sup>48</sup> Paragraph 110, page 26.

<sup>49</sup> Paragraph 24, page 9.

<sup>50</sup> Paragraph 5.1 (h), page 8.

<sup>51</sup> Paragraphs 41-56 and 109-128.

*no adverse health effects when consumed*".<sup>52</sup> I do not consider that this request is necessary, reasonable, or practically achievable.

### **Diesel**

- 89 Specific concern regarding diesel fumes was raised in the evidence of Ms Pomare, in which she refers, in paragraph 38, page 11, to a 2005 report from the Clean Air Task Force, which she states releases facts and figures of "*deaths, non fatal heart attacks, asthma attacks, chronic bronchitis, hospital admissions...*" She also states that this report cites numerous studies showing that diesel soot degrades the immune system, interferes with hormones, impairs the nervous system and induces allergic reactions.
- 90 Ms Pomare's evidence goes on to state that she herself is "*allergic to diesel fumes*", which give her an instant headache and prolonged exposure causes her to vomit and suffer a migraine attack lasting several days.<sup>53</sup>
- 91 The issues relating to diesel fumes have been discussed extensively in my EIC in paragraphs 110-111.
- 92 As I have explained in my EIC, public health matters are based on the normal population and cannot deal with individuals who have atypical sensitivities.

### **Water Quality Effects**

- 93 Ms Pomare's evidence expresses concern over health effects due to contamination of ground water with metals "*making my gardens unusable for food production*".<sup>54</sup> She is also concerned that road run-off from the operational Expressway will contaminate shallow aquifers, posing a risk to her health.<sup>55</sup>
- 94 I have discussed the issue of water quality effects in paragraphs 129-136 of my EIC. As stated in my EIC, I am confident that the mitigation measures discussed in the evidences of **Ms Ann Williams** and **Dr Kerry Laing** are adequate to prevent contamination of ground water or aquifers with sediment or chemical toxins, such as heavy metals. My opinion remains unchanged, that there will be no health effects as a result of water contamination.

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<sup>52</sup> Paragraph 142, page 32.

<sup>53</sup> Paragraph 116, page 27.

<sup>54</sup> Page 2.

<sup>55</sup> Paragraph 119, page 28.

**Gas Pipeline**

- 95 Ms Pomare raises concern over potential health effects that she could experience, arising from pollution caused during relocation of a nearby Vector "Main Gas Pipeline".<sup>56</sup>
- 96 I would anticipate no public health issues in this work, which is no different to pipeline maintenance, routinely conducted.

**Paraparaumu Medical Centre (PMC)**

- 97 The evidence submitted by Ms Rivers, on behalf of the KCDC, expresses concerns about effects on the PMC, agreeing with the concerns raised by the PMC in their submission.
- 98 I have already addressed the PMC in my EIC (paragraphs 179-182, page 36) and remain confident that the Project will not impact on the Centre's ability to safely continue their medical practice. I do not agree that the PMC needs to be moved to a new location or that any further mitigation is required, other than those measures already proposed by the NZTA. However, I understand that discussions on these matters are continuing between the NZTA and PMC.

**Other Health Concerns**

- 99 In paragraph 37 (page 11) of Ms Pomare's evidence, she claims "*there is significant International (including but not limited to WHO) body of evidence showing the detrimental effects on health living within 200 m of a motorway/expressway, particularly in terms of heart and lung disease and increase in cancer incidence*".
- 100 This issue is covered in detail in my EIC in paragraphs 120-122.




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**Dr David Russell Black**

26 October 2012

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<sup>56</sup> Paragraph 121, page 29.