

Before a Board of Inquiry

Basin Bridge Proposal

Under the Resource Management Act 1991 (the Act)

In the matter of a Board of Inquiry appointed under section 149J of the Act to consider the New Zealand Transport Agency's notice of requirement and five resource consent applications for the Basin Bridge Proposal.

Statement of evidence of Gavin Westwood Fisher for the New Zealand Transport Agency (Air Quality)

Dated 25 October 2013

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STATEMENT OF EVIDENCE OF GAVIN WESTWOOD FISHER FOR THE NEW ZEALAND TRANSPORT AGENCY

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1 Introduction

- 1.1 My full name is Gavin Westwood Fisher.
- 1.2 My evidence is given on behalf of the New Zealand Transport Agency (**Transport Agency**) in support of the Notice of Requirement (**NoR**) and the five associated applications for resource consent lodged with the Environmental Protection Authority on 17 June 2013 in relation to the construction, operation and maintenance of the Basin Bridge Project (the **Project**).

Qualifications and Experience

- 1.3 I am a scientist and consultant with 34 years' experience in atmospheric science and 23 years' experience in air pollution modelling, transport effects and meteorology. I hold a Masters of Science in Physics. Until recently, I was self-employed as a consultant (Endpoint Ltd). I am now working on contract to the Environmental Protection Agency in Victoria in the position of Group Leader Air Quality and Noise. I was previously employed by the National Institute of Water and Atmospheric Research Ltd (**NIWA**) in Auckland in various roles, including (for eight years) Manager of the Auckland office and Senior Air Quality Scientist.
- 1.4 I am immediate past President of the Clean Air Society of Australia and New Zealand. I am also past President of the 67,000 strong International Union of Air Pollution Prevention Association. I have produced over 500 reports and publications, including 68 refereed papers, and over 350 client reports on air quality issues. I have appeared in 48 hearings on resource consenting matters.
- 1.5 I have conducted numerous air quality assessments for traffic effects in Auckland, Wellington, Christchurch, Hamilton, Napier, Nelson and overseas. I am very familiar with the air quality issues in Wellington. I have given evidence at the 2006 hearings for both the Victoria Park Tunnel Project (Auckland), as well as the Newmarket viaduct extension (Auckland), which have recently been completed. I also gave evidence on air quality at the 2011 Board of Inquiry on the Waterview Project (Auckland) which is currently being constructed.

Code of Conduct

- 1.6 I have read and am familiar with the Code of Conduct for Expert Witnesses in the current Environment Court Practice Note (2011), have complied with it, and will follow the Code when presenting evidence to the Board. I also confirm that the matters addressed in this Statement of Evidence and in Technical Report 6 are within my area of expertise, except where relying on the opinion or evidence of

other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

My Role in the Project

- 1.7 I am familiar with the area the Project relates to and have carried out several site visits, as well as having previously lived nearby for several years.
- 1.8 I have been advising the Transport Agency on air quality aspects of the Project since November 2009 and have been centrally involved in the design and implementation of the various components of the air quality assessment. I have attended several project meetings as well as an open day for the public.
- 1.9 I am a leading co-author of the technical report entitled *Technical Report 6: Assessment of Air Quality Effects* dated 27 May 2013 that formed part of the Assessment of Environmental Effects (**AEE**) lodged in support of the Project (**Technical Report 6**).

Scope of Evidence

- 1.10 This Statement of Evidence provides the following (the relevant subheading is noted in brackets in each case):
- a a summary of my evidence (**Executive Summary**);
 - b an overview of the key points of Technical Report 6 (**Previous Report**);
 - c comments on submissions lodged in relation to the Project (**Response to Submissions**);
 - d comments on the draft conditions and proposed mitigation (**Conditions / Mitigation**); and
 - e **Conclusions**.

2 Executive Summary

- 2.1 I oversaw the assessment of air quality effects of the Project. The assessment used the formalised guidance methods provided in the Ministry for the Environment's *Good Practice Guide for Assessing Discharges to Air from Land Transport* (2008), as well as in the Transport Agency *Guide to Assessing Air Quality Effects for State Highway Asset Improvement Projects* (2012) (**Good Practice Guides**).

- 2.2 The assessment modelled the worst-case effects associated with the Project and compared these with the relevant standards and guidelines, as well as calculating the effects of the Project over the 'Do Nothing' option. A suite of contaminants recommended to be considered in the Good Practice Guides was modelled – carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), and benzene.
- 2.3 The Project's contribution to these contaminants was assessed by making a series of conservative simplifying assumptions – such as the worst traffic conditions, a high proportion of heavy-duty diesel vehicles, and worst-case weather conditions. The effects of the Project were added to the background concentrations already in the air, and then compared to the Standards and Guidelines¹. The assessment was made for 2021 and 2031.
- 2.4 My evidence shows that the appropriate Standards and Guidelines for CO, NO₂, PM₁₀ and benzene are not exceeded, either for the 2021 or 2031 cases.
- 2.5 Therefore, under the worst-case scenario, using conservative assumptions, I consider that the construction of the Project will not result in any unacceptable adverse effects on air quality.
- 2.6 The construction phase of the Project is likely to result in increased local dust effects. However, I consider that these can be mitigated through implementation of the measures in the Construction Environmental Management Plan (**CEMP**), and in particular the Construction Air Quality Management Plan (**CAQMP**). All contractors will be required to follow and implement those measures, which include a dust monitoring programme, which will help to assess and control dust effects.

3 Previous Report

- 3.1 Subject to the contents of this Statement, I confirm the contents of Technical Report 6.
- 3.2 Air quality issues in relation to the Project relate to two distinct matters, namely:
- a whether there will be any adverse effects arising from vehicle emissions using the new road configuration; and
 - b whether there will be any adverse effects such as dust arising during the construction stage.

¹ Given in full in Technical Report 6, pages 14-17.

Methodology

- 3.3 I oversaw the air quality assessment, which involved the following steps:
- a determine the worst-case traffic flows (hence the worst potentially affected area);
 - b determine the worst-case emissions from these traffic flows;
 - c run a roadway dispersion model with worst-case meteorology;
 - d add the worst-case background concentrations for key contaminants; and
 - e compare the results to appropriate assessment criteria.
- 3.4 The detailed methodology is fully described in Technical Report 6 and is not repeated here. However of considerable relevance is the fact that this technical assessment was peer reviewed by two independent teams, on behalf of the EPA. The first of these reviews was conducted by Emission Impossible Ltd., and the second by Beca Ltd. The reviewers raised a number of issues that required the technical assessment to be revised several times. Most of the issues raised were simply requesting further information and detail on the methodology and assumptions made, resulting in the final technical report being significantly enhanced. One issue requiring substantial revision was the appropriateness of the meteorological data used in the modelling.
- 3.5 In the traffic planning evidence of **Mr David Dunlop** the detailed traffic flows for the current (2011) case and the Project options are given. I notice that the 2021 and 2031 projections are precisely the same as have been used in the air quality effects modelling. So the projected air quality effects are as accurate as they can be in relation to traffic emissions. However the current case flows presented by David Dunlop are an update on those used in the Air Quality Technical Report 6. This seems to have occurred in the time between the original air quality modelling and the finalised traffic modelling. The differences are not great, ranging from about 4% to 10% (with the air quality modelling flows being higher). These are given in Technical Report 6 at Figure 2.4 (page 10) and Table 6.5 (page 26).
- 3.6 The implications of this are inconsequential. At the very worst the current (2011) modelled effects might be up to 10% greater than those presented in the report. There is no change in the predicted (2021 and 2031) effects. Indeed it turns out that having current traffic numbers that are slightly lower than those used in the air quality assessment actually improves some aspects of the case. There is

better agreement between the 2011 modelled case and the 2011 ambient monitoring (shown in Appendix D of Technical Report 6). In the analysis I had put this down to model conservatism, but this new factor improves the modelling representativeness for some existing effects.

3.7 Other issues raised were:

- a the use of background air quality data;
- b the assumptions in regard to traffic flows;
- c the location and number of modelling receptors used; and
- d the modelling assumptions.

3.8 I note that the assessment has also taken full account of the specific circumstances around the Project area, including:

- a the local meteorological effects;
- b specific local background concentrations of contaminants;
- c the presence of tall buildings;
- d the fact that the emissions from the bridge route will be elevated; and
- e the detailed changes in each of the roadways in the area.

3.9 The assessment area has included all areas potentially affected by the Project, as well as the major ancillary and feeder roads that would also experience changes in traffic flows as a result of the Project. Emissions from the nearby portals of the Buckle Street Underpass, and Mount Victoria Tunnel have also been assessed.

Re-modelling

3.10 As a result of the peer reviews, the entire system was re-modelled and the new results are those given in Technical Report 6. The conclusions were revised appropriately.

Assessment Criteria

3.11 The anticipated emission effects were assessed in relation to National Air Quality Standards, Ambient Air Quality Guidelines, WHO Guidelines, as well as the

Greater Wellington Regional Council's air quality indicator criteria² (**Standards and Guidelines**).

3.12 The anticipated dust effects during construction were also assessed.

Results

- 3.13 The results show that for the major contaminants considered – particulates (PM₁₀ and PM_{2.5}), nitrogen dioxide (NO₂), carbon monoxide (CO, and benzene) – the effects are no more than minor and all remain well below relevant the Standards and Guidelines. Many effects decrease with the Project in place, due to better flowing traffic. There are slight increases in effects at a few locations. For instance, even at the site closest to the Project – at 9A Dufferin Street – the peak 24-hour PM₁₀ concentration is currently 27.3 µg/m³, is expected to be 24.2 µg/m³ in 2021 without the Project, whereas with the Project this rises only slightly to 24.4 µg/m³, which is below half the recommended limit in Standard and Guidelines of 50 µg/m³, and below current levels.
- 3.14 The reduction in effects from 2011 to 2021 (and 2031) is largely due to improved traffic flows, and to improvements in vehicle technology, resulting in continuing decreases in emissions from newer vehicles that also bring down the average emissions from the vehicle fleet. This occurs both with the Project in place or without it going ahead. The effect is included in all assessments.
- 3.15 At most other locations – for instance along Sussex Street, Kent Terrace, and Rugby Street – the concentrations fall slightly with the Project because of the traffic re-direction.
- 3.16 The only location that experiences any appreciable increase in peak NO₂ effects due to the Project is at 10m high on the Grandstand Apartments building at 80-82 Kent Terrace, due to its proximity to the new bridge. However this increase is modest (for the 1-hour average from its current 43.5 µg/m³ to its 'do nothing' value of 42.7 µg/m³ in 2021, to its 'with Project' value 53.5 µg/m³ in 2021 which is still well below the recommended limit in Standard and Guidelines of 200 µg/m³).
- 3.17 We also assessed the effects on people occupying the two new buildings proposed – the building at the corner of Kent Terrace and Ellice Street (the Building under the Bridge), and the Northern Gateway Building in the Basin Reserve. The worst case effects are well within the Standards and Guidelines and do not result in any adverse effects.

² Regional Air Quality Plan, Greater Wellington Regional Council. May 2000. p47.

- 3.18 The situation is similar with NO₂, CO and benzene – there are mostly reduced effects with the Project in 2021 and 2031, and at worst very modest increases at a few locations, but still all well below the Standards and Guidelines.
- 3.19 If Standards and Guidelines are met for these five main contaminants then they will generally be also met for other contaminants emitted from the vehicle fleet.

Dust

- 3.20 The Project construction works are not major but the potential does exist for short-term dust nuisance effects close to the works. Any effects will be mitigated with standard and accepted methods that are included in the CAQMP, which is part of the broader CEMP. All contractors that have a potential to produce dust will be required to abide by the CEMP, including the CAQMP, which includes specific measures for dust avoidance, mitigation, monitoring, and handling of complaints.

4 Response to Submissions

- 4.1 In this section, I address the key air quality issues raised in the submissions. There are a total of 81 submissions making reference to ‘fumes’, ‘air quality’, ‘dust’ or ‘greenhouse gas emissions’.
- 4.2 Of these 81 submissions, 76 are in opposition, and 5 are in support³. One submission in support is from an engineer who has correctly surmised that improving traffic flows results in increased environmental benefits over the ‘Do Nothing’ option. The other submissions in support are from local government and organisations that have generally accepted the conclusions in Technical Report 6 regarding the effects of the Project on air quality.
- 4.3 In summary, the bulk of submissions have raised a general concern that the Project will result in negative air quality effects. This concern is unfounded, as is described above, and in more detail in Technical Report 6.
- 4.4 The submissions do not raise any significant new issues. One or two submitters have raised matters that were not explicitly addressed in Technical Report 6, and these are covered in more detail below. Many submissions were form submissions identifying the same issues contained in one lead submission.

³ #103368 Laurie Petherick, #103434 NZ Automobile Association, #103509 Wellington Employers Chamber, #103546 Greater Wellington Regional Council, #103579 Wellington City Council.

Climate Change

- 4.5 Ten submitters⁴ have raised the issue of greenhouse gas emissions and climate change and suggest that any project resulting in any increase in carbon emissions should not be implemented. This Project does not result in increased carbon emissions. As noted above and in Technical Report 6⁵, this Project will result in lower vehicle-kilometres travelled (**VKTs**) and thus lower emissions. Our modelling shows that the current VKTs for the Project are 74,158. By 2021 under a 'Do Nothing' scenario, the VKTs are projected to increase to 78,020. However with the new Bridge in place the VKTs in 2021 will be 76,424, some 2% lower. The situation is similar for 2031, with VKTs for the 'With Project' option being around 1.8% lower than for the 'Do Nothing' option.
- 4.6 The reason for this is that the new route provides for improved traffic flow with vehicles traversing the area having to travel shorter distances than they would have otherwise.
- 4.7 This translates into lower total amounts of all contaminant emissions after the Bridge is built, including CO₂.
- 4.8 I also note that simply improving traffic flow and providing traffic with fewer stop-start events also reduces emissions. This effect has not been quantified but is likely to result in further emissions reductions of a few more percent with the Project in place.
- 4.9 In summary, the implementation of the Project actually contributes positively to national and regional carbon reduction targets, all other things being equal.
- 4.10 59 of the submissions refer in some way to 'an increase in pollution or traffic fumes'⁶. As detailed in Technical Report 6, this is not generally true. Many of these submitters have adopted a rather simplistic line that if there is a new road, therefore there must be more traffic, and the emissions must be greater.

⁴#103350 Karlum Lattimore, #103373 Patrick Morgan, #103430 Katy Brown, #103444 Timothy Jones, #103494 Ross Tepett #103512 Charles Devenish, #103540 Barry Weeber, #103560 Liz Forrester, #103561 Linda Green, #103586 Chris Home.

⁵Table 7.9 Page 42.

⁶#103370 Moira Hurst, #103372 Heidi Irions, #103376 Addy Irions, #103416 Noeline Gannaway, #103417 Adrian Williams, #103421 Thomas Culy, #103422 Patricia Kane, #103425 Haley Robinson, #103430 Katy Brown, #103441 Tasman Gardens Body Corporate, #103444 Timothy Jones, #103447 Janice Jolly, #103450 Grandstand Apartments Body Corporate, #103467 Lorna Bingham, #103468 Fiona & John Styles, #103470 Mount Victoria Historical Society, #103473 Maryann Nesbitt, #103476 Janis Freegard, #103480 Kenneth Bailey, #103482 Judith Graykowski, #103486 Leonie Reynolds, #103488 Paul Bruce, #103493 Save the Basin, #103494 Ross Tepett #103497 Athol & Pauline Swann, #103505 Graham Wigley, #103506 Sean Beresford, #103508 Anthony Devenish, #103511 Rachel MacFarlane, #103512 Charlie Devenish, #103516 St Marks School, #103517 Elaine Hampton, #103519 Christina Ordinario, #103524 M & C Cummins, #103525 Ari Sargent, #103526 Demetrius Christoforou, #103528 David McCrone, #103529 Geoff Palmer #103532 Ora Taio NZ Climate Health Council, #103539 Hannah Hickey, #103540 Barry Weeber, #103541 Peter Skrzynski, #103544 Oliver Middleton, #103547 Micheline Evans, #103566 Living Streets Aotearoa, #103572 Richard Reid, #103572 Richard Reid, #103573 Action for the Environment, #103575 Clyde Quay School, #103576 Cricket Wellington, #103582 Craig Ralph, #103583 Day and Sampson, #103586 Chris Home, #103587 Iona Pannett, #103588 Mt Vic Residents Assoc., #103590 Chris Stevenson, #103591 R Matheson & J Heath, #103594 Glen McConnell, #103597 Jocelyn Brooks.

However, as outlined above, according to the assessment that I oversaw, this belief is unfounded, while it may be a common and perhaps natural misconception. For almost all locations assessed the degree of contamination due to emissions from traffic with the Project in place in 2021 and 2031 is either:

- a lower than at present;
- b lower than would occur with the 'Do Nothing' option; or
- c not significantly higher.

- 4.11 There are only two of the 27 modelled sites where there will be an increase in ground level concentrations, but the increases are all very small and have no significant adverse effects⁷.
- 4.12 The main reason for this is that newer vehicles entering the fleet mostly have lower emissions as a result of controls in the major manufacturing countries such as the United States of America, Japan, Korea and European countries. The overall fleet average emission rates are thus continually being lowered.
- 4.13 Seven submissions asserted that contaminant releases from higher up along the Bridge route would 'rain down' or 'fall down' on people and properties nearby⁸. Whilst perhaps a natural concern, none of the emissions from vehicles actually 'rain down'. All the emissions act as gases, and releasing these at greater heights generally improves their dispersion (which is generally why we use chimneys in other situations). Indeed the simple act of having vehicles emitting on the bridge rather than at ground level improves the whole situation. The very worst place to have an exhaust is at a metre or so above the ground – which is closest to the level where children breathe. Any measure to either increase the height, or the distance, between people and exhausts has a strong positive effect.
- 4.14 Any such vertical movement of effects of emissions has been explicitly accounted for in the dispersion model used, and the results and conclusions presented reflect this.

Dust

- 4.15 38 submissions specifically mention concerns about dust, mainly during the construction phase⁹. These concerns are fully recognised, and as noted in

⁷ For reference, these are given in Table 7.2, page 33 of the Technical Report 6.

⁸ #103444 Timothy Jones, #103476 Janis Freegard, #103502 Arlo van Helden, #103506 Sean Beresford, #103541 Peter Skyzynski, #103552 Craig Forrester, #103597 Jocelyn Brooks.

⁹ #103370 Moira Hurst, #103416 Noeline Gunnaway, #103417 Adrian Williams, #103421 Thomas Culy, #103435 Chris Greenwood, #103438 Restaurant Brands Ltd, #103441 Tasman Gardens Body Corporate #103444 Timothy Jones, #103445 Zena Court Body

Technical Report 6, do represent a potential source of nuisance for some local residents and businesses. Some construction dust in a project of this size is inevitable, but the Transport Agency has proposed an extensive series of measures to minimise these effects and mitigate any potential serious effects. The details are all outlined in the CEMP, with specific issues further detailed in the CAQMP. In addition, a specific condition is proposed to cover dust (see more below).

Construction Environmental Management Plan

- 4.16 Of the submissions relating to dust effects, there were three from food retailers expressing specific concerns¹⁰. Whilst each of these outlets is sufficiently removed from the immediate construction zones so as not to be potentially seriously affected (at least a couple of hundred metres), their concerns should be addressed. In this regard, each has sought, and should be given, further input into the development of the details in the CEMP. Along with the Greater Wellington Regional Council, and the Wellington City Council, these organisations should be further consulted on the final CEMP (including the CAQMP).
- 4.17 Finally there were two submissions expressing specific concerns about dust effects on their business¹¹. Regional Wines and Spirits and St Marks School are close enough to the works that at times dust events may need further mitigation. These too should be consulted further on the final CEMP.

Monitoring

- 4.18 One submission requested that air quality monitors be established at some 15-16 sites around the area¹². The assessment undertaken shows that there are no adverse effects anticipated that would warrant such monitoring. The sheer scale of such monitoring is itself unwarranted, with each site costing around \$150,000 to establish and around \$30,000 per year to run. Further, as described above, I would not expect any of these monitors to record any exceedences of Standards or Guidelines.

Corporate, #103447 Janice Jolly, #103450 Grandstand Apartments Body Corporate, #103462 Regional Wines and Spirits, #103468 Fiona & John Styles, #103470 Victoria Historic Places Society, #103473 Maryann Nesbitt, #103476 Janis Freegard, #103478 Kay Jones, #103480 Kenneth Bailey, #103488 Paul Bruce, #103497 Athol & Pauline Swann, #103505 Graham Wigley, #103516 St Marks School, #103519 Christina Ordinario, #103524 M & C Cummins, #103526 Demetrius Christoforou, #103528 David McCrone, #103540 Barry Weeber, #103541 Peter Skrzynski, #103544 A Oliver & J Middleton, #103547 Micheline Evans, #103577 Historic Places Trust, #103582 Craig Ralph, #103583 Day and Sampson, #103584 McDonalds Ltd., #103586 Chris Horne, #103590 Chris Stevenson, #103591 R Matheson & J Heath, #103596 Foodstuff Ltd.

¹⁰ #103596 Foodstuffs, #103584 McDonalds, #103438 Restaurant Brands (KFC).

¹¹ #103462 Regional Wines and Spirits, #103516 St Marks School.

¹² #103529 Geoff Palmer.

Health Effects

- 4.19 Although numerous submissions hinted at being concerned with general health effects, only two made this explicit¹³. There is no argument that exposure to air pollution, from any source, can have effects on peoples' health. Unfortunately this is more a consequence of living in an urban area with emissions from traffic and all sorts of other sources, than a consequence of this particular Project. The technical assessment in Technical Report 6 has not explicitly examined health effects, but that it is likely that any of the health effects that occur are:
- a not significantly worse than occur at present; and
 - b they will not get significantly worse in the future as a consequence of the Project, for anyone, anywhere in the area.
- 4.20 I have taken particular note of the Regional Public Health submission (#103460) that makes a number of comments relating to air quality as it is one of their priority areas. The major recommendation made is that there should be a more detailed health effects assessment made of the Project. I would readily concur on this if:
- a the Project was of significant size or scope to warrant this assessment, and
 - b the Transport Agency had the ability to effectively mitigate any health effects
- 4.21 In my opinion neither of these conditions hold here.
- 4.22 First the air quality assessment has clearly shown that air quality effects are not major. They are well within all the health effects based Guidelines and Standards, and in the bigger picture no worse than are found in many urban areas, simply due to the traffic that is part of any busy city. There are many parts of Wellington (and the rest of New Zealand) that experience worse air quality from traffic. Furthermore, the assessment has shown that these effects do not get any worse due to the Project, and indeed improve in many areas.
- 4.23 Secondly, whatever a health assessment might recommend, the Transport Agency has little opportunity to take any significant actions. The basic cause of air quality effects from traffic is due to their emissions. These are dominated by the number and types of vehicles using the route. The Transport Agency has no practical way of influencing these as they are the responsibility of the Ministry of Transport, who is not a party to this case.

¹³ #103597 Jocelyn Brooks, #103460 Regional Public Health.

- 4.24 The process of conducting a full health effects assessment, incorporating all of the parameters listed by Regional Public Health, would be very complex and involved. To do this properly would take many months, and require a great deal of additional data on emissions, population demographics and peoples' activity patterns and exposures. I submit that the results would not add significant new information to the decision making process.
- 4.25 I gather that one of the issues of interest to Regional Public Health is the effects of PM_{2.5}. The focus to date, and in this assessment, has been on PM₁₀, simply because this is covered by a Standard and the bulk of the health effects research has been based on PM₁₀. However I concur that the focus is shifting onto PM_{2.5} as the main parameter, especially for health effects. By way of context, PM_{2.5} is a significant issue in Auckland, where much of the airshed exceeds the guideline concentrations. We have modelled PM_{2.5} concentrations for the Basin Bridge Project, and have shown that the peak PM_{2.5} concentrations, which occur in Dufferin Street, are 13.8 µg/m³ in 2021 compared with 14.0 µg/m³ today. This is well below the guideline value of 25 µg/m³. Whilst from the public health viewpoint every effort should be made to reduce concentrations, there is no particular mitigation that can be applied to this Project, and given the values in relation to the guideline, none that is particularly justified.
- 4.26 I note finally that Regional Public Health make an assertion that the Guidelines and Standards used in the Technical Report 6 assessment are 'out of date. They give no reference or detail on this so it is not clear what they are referring to. The Transport Agency and I would be most interested to learn which of these Guidelines and Standards have been revised so that we can properly assess the implications for the Project.

Traffic Projections

- 4.27 One submission was received that contained some extremely detailed analysis of the traffic flow projections used¹⁴. The results presented may or may not have an implication for the air quality assessment, and it is extremely difficult to assess this without a very major re-modelling analysis. The submission makes no comment on the air quality implications. No further comment can be made here on this submission, as it falls in the realm of the traffic assessment and evidence. The traffic projections used here are the same as those used in other assessments and were confirmed in May 2013, and consistent with the evidence of **Mr David Dunlop**.

¹⁴ #103565 Generation Zero (based on analysis from Opus).

Green Planting

4.28 One submission requested 'green planting' to mitigate air quality effects (amongst other effects)¹⁵. Whilst green planting no doubt has benefits of various kinds, there is no evidence that it can be used to mitigate any air quality effects. Airborne contamination simply passes through (or around) plants and such measures to nothing to reduce contaminant concentrations.

5 Conditions / Mitigation

Mitigating Vehicle Emissions

5.1 For tailpipe vehicle emissions there are no real alternatives to be considered, as the source of contamination is from vehicles in the national fleet over which the Transport Agency has no control. Vehicle emissions are regulated by the Ministry of Transport with no specific reference to effects around specific roadways. There are really only two ways to reduce effects, being:

- a restricting the number (or type) of vehicles using the road; or
- b imposing some form of emissions standards on vehicles using the road.

5.2 Neither of these options are practical or available to the Transport Agency or any Local Authorities.

Mitigating Dust Emissions

5.3 For dust emissions there is a range of measures that can be used. These include procedures such as watering dry dusty surfaces, minimising the height and extent of stockpiles, minimising the drop heights for trucks unloading, not leaving earthworks exposed for longer than necessary, controlling the vehicle speeds on unsealed surfaces, and even curtailing certain works when the wind speed or direction might lead to dust nuisance.

5.4 All these, and many other measures, are recommended by Ministry for the Environment in their *Good practice guide for assessing and managing the environmental effects of dust emissions* (2001). This forms the basis for the 'Dust' section in the CEMP. All contractors will be required to comply with this guide, as well as the other specific provisions concerning dust in the CEMP. Further details are provided in the 'Construction Dust' section of Technical Report 6¹⁶.

¹⁵ #103566 Living Streets Aotearoa.

¹⁶ Technical Report 6. Pages 44-47.

- 5.5 The CAQMP is required to be implemented via draft General Management Plan condition DC.14 (3).
- 5.6 No conditions are required for operational air quality effects once the Project is completed, since there are no significant effects.
- 5.7 One condition has been proposed to mitigate the effects of dust nuisance during construction. This is contained in the Draft Conditions, at DC29, which makes provision for completing a CAQMP

6 Conclusion

- 6.1 I oversaw an extensive and detailed assessment of the air quality effects of the Project, using the formalised guidance recommended by the Ministry of the Environment and the Transport Agency in the Good Practice Guides. This has used advanced dispersion modelling, on-site measurements of meteorology and existing air quality and detailed information on expected emissions from vehicles using the new route and surrounding roads. The conclusions are based on the worst-case effects at any location where people might be.
- 6.2 The work has been extensively externally reviewed, by two independent expert teams, with a number of additions and revisions made as a result of these reviews. There is agreement on the conclusions.
- 6.3 The results show that there will be no significant adverse effects due to vehicle emissions, and that even including background values from other sources, there will be no exceedences of the Standards and Guidelines.
- 6.4 There are likely to be some short-term localised effects due to dust during the construction phase, but these will be mitigated to the maximum extent feasible through specific provisions in the CEMP and the CAQMP.

6.5 The Draft Conditions proposed will mitigate dust effects to the maximum feasible extent.

Dated 25 October 2013

A handwritten signature in black ink, appearing to read 'G. Fisher', written in a cursive style.

Gavin Westwood Fisher