

IN THE MATTER of the Resource Management Act 1991 (**RMA**)

AND

IN THE MATTER of a Board of Inquiry appointed under s149J of the Resource Management Act 1991 to consider Notice of Requirements and applications for Resource Consent made by the New Zealand Transport Agency in relation to the Northern Corridor Improvements roading proposal in Auckland.

**STATEMENT OF EVIDENCE OF DUNCAN TINDALL ON BEHALF OF AUCKLAND
COUNCIL
TRAFFIC AND TRANSPORT**

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INTRODUCTION AND EXPERIENCE

- 1.1 My name is Duncan Barry Tindall. I am a Transport Planner employed as an Associate Director by AECOM and engaged by Auckland Council (**Council**) to advise on the transportation effects of the proposed Northern Corridor Improvements (**Proposal**). I hold a Masters Degree in Civil Engineering from Imperial College, London, and a Masters Degree in Transport from the Centre for Transport Studies, London, United Kingdom. I am an affiliate of the IPENZ Transportation Group.
- 1.2 Prior to moving to New Zealand I worked as a traffic engineer in the UK and central Europe for 13 years. Whilst there, I worked on the development of a range of roading, planning and development related schemes, for national and local government and for private developers. I also undertook several roles as advisor to the planning authority and as an independent reviewer.
- 1.3 I moved to New Zealand in 2010 and continued my work in the field of Transport Planning and Traffic engineering, again in scheme design, assessment and review roles for the NZ Transport Agency, Local Authorities and for private developers across New Zealand, although primarily in the Upper North Island.
- 1.4 Within the Auckland region I have provided transport planning and traffic modelling for the Waterview Connection, SH16, SH1 Southern Motorway, Te Atatu interchange, St Luke's Road, SH20A - Kirkbride Road intersection, and the Auckland Transport Alignment Project (ATAP).
- 1.5 Outside of Auckland I have been engaged by the NZ Transport Agency for several urban corridor studies including SH2 and SH2A in Tauranga and as Peer Reviewer of the SH1 Ngauranga to Aotea Quay traffic model in Wellington.
- 1.6 I was engaged by Auckland Council in February 2017 in relation to the Northern Corridor Improvements. Prior to that I had not been specifically involved in this project, although the project was included within ATAP and I am familiar with the strategic road network in this area through these other projects.

1.7 I have undertaken site visits to familiarize myself with the area, the scheme and the issues raised within the evidence of other experts presenting evidence on behalf of the Council.

1.8 I have also reviewed the Evidence in Chief in on behalf of the NZTA of Mr Church, Mr Clark, and Mr Moore. Where in my Evidence I discuss matters related to cycling and pedestrian features of the Proposal I do so with cognisance of the Evidence on behalf of Auckland Transport by Ms King and Evidence of Ms Maylene Barrett on behalf of Auckland Council.

2. CODE OF CONDUCT

2.1 My qualifications as an expert are set out above. I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing this evidence. Except where I state that I am relying on the evidence of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

3. EXECUTIVE SUMMARY

3.1 My evidence is given in support of the Council's submission on the applications by the New Zealand Transport Agency (**NZTA**) relating to the Proposal, specifically the Notice of Requirements to designate land and the resource consent applications to construct, operate and maintain the Proposal.

3.2 The key conclusions of my evidence are that:

- (a) the Proposal will achieve the project objectives set by the NZTA;
- (b) the objectives and the Project are in alignment with Auckland Council Policy and Strategy, including the Auckland Plan;

- (c) the Proposal will create a slight increase in the transport severance on SH18;
- (d) there are detailed elements of the scheme related to access and egress to the Shared Use Path which require refinement to mitigate the severance effects of the scheme;
- (e) overall the Proposal will lead to improved safety for road users;
- (f) the design of the Paul Matthews Intersection should be further reviewed to ensure that adverse effects are not created on the local road network; and
- (g) Proposal adequately allows for futureproofing of the public transport system.

3.3 Overall, I am of the opinion that the Proposal will deliver significant net benefits, and that the adverse effects I have identified and discussed can be mitigated through the proposed design changes and conditions I detail below.

4. DESCRIPTION OF PROPOSAL

4.1 The Proposal comprises works on State Highway 1 (**SH1**) extending from Oteha Valley Road in the North to Constellation Drive in the south and on State Highway 18 (**SH18**) from the Albany Highway Interchange in the west to the SH1 connection. Key elements of the Proposal include capacity and safety improvements to SH18 and SH1 within the Project Area, including the construction of a motorway to motorway connection for northbound traffic at SH18 to SH1 interchange and additional lanes and improved connections to the local roading network. These elements of the Proposal will necessitate alterations to both the SH18 and SH1 designations to provide sufficient footprint for the proposed works.

4.2 Complementary to the above, the Proposal incorporates an extension to the Northern Busway from its current terminus at Constellation Bus Station to the Albany Bus Station. A shared pedestrian/cycleway path will also be provided along the eastern side of SH1. These elements of the Proposal will require

new designations. An upgrade of the existing Constellation Bus Station is proposed which also requires an alteration to the existing bus station designation.

5. PARTS OF THE PROPOSAL ADDRESSED IN MY EVIDENCE

5.1 My evidence will address the following aspects of the Proposal:

- (a) Transport resilience;
- (b) Public transport in relation to the northern Busway extension;
- (c) Walking and cycling connectivity;
- (d) Design of SH18 and Paul Matthews Drive Intersection;
- (e) Weaving of traffic on SH18; and
- (f) Future proofing of the transport system.

6. METHODOLOGY OF ASSESSMENT

6.1 My assessment of the proposal has been based on the information presented in the Assessment of Environmental Effects, the Assessment of Transport effects and supplementary Information provided by the Applicant. I have also reviewed the Evidence in Chief presented on behalf of NZTA by Mr Moore, Mr Clark and Mr Church.

6.2 I commenced my review with a consideration of the outcomes sought by the Agency for the Proposal so as to provide a framework for my assessment in relation to the degree that the scheme achieves the intended consequences and the scale of unintended consequences of the Proposal. I noted that the Assessment of Transport Effects identified five objectives of the Proposal:-

- (a) To help facilitate interregional travel between Auckland and Northland by completing the Western Ring Route to motorway standard;

- (b) To improve connectivity of SH1 and SH18 interchange;
- (c) To improve safety, efficiency, reliability and the capacity of:
 - (i) SH1 between SH18 and Albany; and
 - (ii) SH18 between SH1 and Albany Highway.
- (d) To provide safe walking and cycling facilities adjacent to SH1 and SH18 and connections to local transport networks; and
- (e) To extend the Northern Busway from Constellation Bus Station to the Albany Bus Station.

6.3 Auckland Council Group were represented in the discussions related to the problem definition and the outcomes sought, and I therefore considered this to be an appropriate starting point for the assessment, and I did not seek to review those documented outcomes nor the process that defined them.

6.4 Having reviewed the objectives I have relied upon the data contained within the Assessment of Transport Effects presented by the NZTA and I have sought to reach my own conclusion to the interpretation of the effects of the project initially using the information presented.

6.5 In relation to areas where my assessment has identified information to be lacking, or to be lacking in robustness, I have sought to address this through requests for additional information from the applicant and to discuss this with the Agency and their transport experts.¹

6.6 In relation to the transport modelling undertaken to support the application I have focused my consideration primarily on the scope of the modelling and the interpretation of the output. I have not attempted to verify the coding of the main traffic model used by the Agency and their consultant.

6.7 The modelling that has been undertaken for the Proposal has been independently peer reviewed and within that process checks of the coding

¹ Mr Church acknowledges in his evidence in chief, (para 12.1) the initial meeting held and supply of additional information, with a further meeting held on the 4 May with Mr Clark and Mr Moore..

have been undertaken. The peer review considered the model generally robust and I therefore did not consider there to be benefit to be gained from repeating that exercise.

6.8 However the peer review summary did state that no review had been undertaken on the public transport benefits and therefore I did seek to review that aspect of the modelling, and this is considered in more detail later in my evidence.

6.9 For the cycle and pedestrian facilities of the Proposal, I considered the current and future desire lines for a variety of trip purposes in the locale of the Proposal. I also considered the wider walking and cycling network, current, planned and potential to establish the demand for access and connectivity.

7. RELEVANT EFFECTS OF THE PROPOSAL

7.1 My assessment has identified the following key relevant effects arising from the Proposal which I discuss in greater detail below:

- (a) Provision of a more resilient roading and public transport network;
- (b) Pedestrian and Cycle linkages are lacking in some locations and therefore not fully realising potential benefits;
- (c) The design of the connections between busway and interchanges may constrain the anticipated public transport benefits;
- (d) The design of the Paul Matthews Drive intersection adversely effects accessibility for local residents;
- (e) The safety and efficiency of the weaving on SH1;
- (f) The degree to which the scheme enables or constrains the delivery of further public transport through future schemes; and
- (g) Potential for adverse effects on all modes of travel during construction.

Network resilience

- 7.2** The Proposal forms part of the Western Ring Route providing an alternative link to the existing SH 1 connection between Northland and Auckland.² Whilst I note that SH18 does already exist as a connection, the standard of that connection is not what I would consider conducive to delivering an efficient and safe route alternative to the SH1 route over the Harbour Bridge.
- 7.3** As noted in Mr Clark's Evidence,³ the remainder of the Western Ring Route will soon have been upgraded to motorway standard leaving the SH18 to SH1 section inconsistent with the remainder of the route. The Proposal is key to delivering the full potential benefits of those earlier projects, and also is able to leverage off the earlier investment to provide improved access to a wide range of destinations via the Western Ring Route.
- 7.4** I note that forecasting of public transport using the Auckland Regional Transport (ART) Model for the Auckland Transport Alignment Project (ATAP) in 2016³ forecast that despite a considerable growth in the demand for movement from the Upper Harbour to the CBD and further south, due to capacity bottlenecks the AM peak traffic flows across the Harbour Bridge are not forecast to grow from the existing 12,000 vehicles per hour.⁴
- 7.5** However, considerable increases in forecast public transport patronage across the Harbour Bridge result in the increase in public transport mode share, from approximately 30% to almost 50% by 2026.⁵ As a result, whilst the vehicle flows do not increase, the flow of the people in those vehicles over the Harbour Bridge is increased. This simultaneously highlights the importance of the improvements to the Western Ring Route to provide additional capacity for private vehicles, and to grow the catchment of the public transport network.
- 7.6** I will discuss the public transport and busway aspects of the scheme later in my evidence, however at this point I wish to focus on the traffic flows. SH 1 is

² Assessment of Transport Effects, Section 2.1

³ Evidence in Chief, Para 9.1 (b)

⁴ NZTA: State Highway Traffic volumes

⁵ Auckland Transport Alignment Project (2016), Medium growth – common elements scenario

at capacity south of SH18 in the morning and evening peak periods,⁶ and due to the limited options available for transport between the CBD and the North Shore, I consider this to be one of the constraining factors in the ability to deliver further residential growth in North Auckland.

- 7.7** However, as evidenced by the traffic modelling undertaken for the Proposal, the SH18 improvements and upgraded ramps would significantly increase the flows via the SH18 Upper Harbour Motorway (8,200 additional per day, 10% increase west of Tauhinu Road) whilst maintaining SH1 volumes.⁷ I consider that this increase in predicted flow is an indicator of the network's ability (with the Proposal) to deliver greater throughput to areas of residential and employment across the wider Auckland and Northland region.
- 7.8** In addition to the increases in flows on SH1 and SH18 outside of the immediate area of the proposal I refer to in paragraph 7.7, there are additional increases on SH18 and SH1 locally arising from the diversion of traffic off the existing local roads onto SH1 and SH18 within the Proposal extent.⁸
- 7.9** I am supportive of the Proposal's effects in so much as it diverts some traffic away from the local roading network and onto the State Highway network, as identified by Mr Clark in his evidence.⁹ I consider that this is a significant positive effect of the proposal because it will result in less congestion and a reduction in the crash risk on the local road network as a result of that reduced traffic.
- 7.10** As discussed above, one component of the Proposal is the upgrade of SH18 between Albany Interchange and SH1 to 'Motorway Standard'. This includes the removal of the current at grade intersections with the local road network at Unsworth Road, Caribbean Drive and Paul Matthews Drive. I consider and discuss the effects of this below in terms of access effects for the current users of those access points to the local network. However I do consider that this change would bring positive benefits for the efficiency of the State Highway traffic.

⁶ Mr Church, Evidence in Chief, para 9.7

⁷ Assessment of Traffic Effects, NZTA, Table 19

⁸ Assessment of Traffic Effects, NZTA, Table 18

⁹ Mr Clark, Evidence in Chief, paras 10.7-10.9

- 7.11** Generally I would expect the removal of the at-grade intersections and other geometric and road environment features associated with a conversion to a motorway standard to provide significant safety benefits. In this case, the evaluation of the safety benefits becomes somewhat more complex as a result of the change in flows and speeds on SH1. I discuss this specifically below, although it is my opinion that the conversion to motorway standard on SH18 will provide some localised safety benefits.
- 7.12** However, I am of the opinion that these safety benefits are accompanied by a slight increase in the degree of severance that the Proposal brings to the local community. In my view, SH18 already creates a strong disincentive for pedestrian and cyclist movements between the Unsworth Heights and Rosedale areas. However, the Proposal will take that poor level of accessibility and amenity for cyclists and result in it becoming completely inaccessible.
- 7.13** Mr Church refers to the consideration of 'south facing ramps' within his evidence.¹⁰ This discussion arises in response to submissions and in connection with the Proposal alignment that has been designed to allow for the addition in the future of ramps to allow a freeflow connection between SH1 South and SH18 and vice versa.
- 7.14** I am aware that the discussion may be viewed to be outside of the scope of the Proposal, and therefore the current statutory process. However, I do consider that by retaining the ability to add south facing ramps in the future, an additional constraint is placed on the geometric design of the north facing ramps which becomes a factor in the SH1 'weaving' issue I cover later in evidence.
- 7.15** However, in light of the potential for future schemes which could increase the capacity of SH1 south of the Proposal, I consider the ability to further enhance the connectivity and network resilience is a prudent design choice. These potential schemes include the Additional Waitemata Harbour Crossing which is identified as a strategically important transport project in the Auckland

¹⁰ Mr Church, Evidence in Chief, Section 9.

Plan.¹¹ Conversely, by not allowing for the future construction of the south facing ramps, this may result in a constraint on the ability to provide transport access to support future residential and industrial growth in the North Shore and further north.

- 7.16** I consider that the busway component of the Proposal will deliver a significant benefit to the transport network to the north of Auckland. As detailed in the Assessment of Transport Effects,¹² the Proposal will result in a predicted journey time between Albany and Constellation Bus Stations of some three and a half minutes, which will be consistent throughout the day. This compares to the forecast baseline which has average journey times that range from double that to four times higher (over 14 minutes) northbound in the evening peak.
- 7.17** Noting that these savings are in most cases likely to be part of a much longer journey, and so the proportional journey time reduction benefit will be somewhat diluted, I consider that it is the ability for the Busway to provide journey time reliability up to Albany Station which would offer the more significant benefits to the passengers along the entire Busway.
- 7.18** In reaching this view, I have considered the bus operational requirements of such a service, and the detrimental effects that unreliability has on services.
- 7.19** In order to cater for unreliability of journeys, the bus layover times (the time between a bus service reaching its terminus and then starting a new journey) are extended. This increases the number of vehicles, and drivers required to serve the route, thereby increasing the operating costs of the service. The forecast patronage increase, combined with reduced operating costs are therefore efficiency benefits which contributes to the overall Proposal benefits.
- 7.20** A further second order effect from the provision of a reliable PT service that runs parallel with SH1 is a potential reduction in the vehicles on SH1 as a result of people changing from car to bus for their journey, thereby releasing

¹¹ The Auckland Plan, paragraph 777.1 refers to the construction of an additional harbour crossing for road and public transport between 2021 and 2030.

¹² Assessment of Traffic Effects, NZTA, Section 7.5.1

capacity on the network for those who are unable to use the bus, or choose to continue to drive.

- 7.21** The traffic modelling that has been supplied as part of the evidence base for the Proposal shows the traffic flows during peak periods on several local roads are predicted to reduce. Whilst the Proposal does not explicitly provide additional support for Public Transport aside from the Busway, I consider the decongestion that will come from the diversion of traffic off local roads onto SH1 and SH18 will extend the benefits to a wider catchment of bus routes which pass through those local roads.
- 7.22** As a result of the above, I consider that the public transport outcomes sought by the NZTA for this Proposal are likely to be met. I also consider that this outcome is well aligned with Auckland Council's position as outlined in the Auckland Plan with respect to doubling Public Transport trips.¹³
- 7.23** I note that in Mr Moore's evidence he proposes an amendment to the connection between the busway and Albany Station¹⁴ from that within the plans lodged with the application. I had previously noted concerns with the initial design of the connection which I considered to have several potential challenges in relation to efficiency. I therefore support the proposed amendment which results in the busway entering the Albany bus station at a new 'intersection' as opposed to creating an additional arm adjacent to the Cornerstone Drive sliproad.
- 7.24** **Paul Matthews Drive/SH18**
The current signalised intersection at Paul Matthews Drive will be replaced by a grade separated intersection that will pass over SH18 and connect into an amended signaled intersection with Caribbean Drive. The interchange layout is highly unusual and is of a form that I am not aware of being used elsewhere.
- 7.25** Whilst I do not consider that this leads directly to adverse effects, there are several risks which arise which require mitigation which more standardised

¹³ Auckland Plan transport targets include "Double public transport from 70 million trips in 2012 to 140 million trips by 2022 (subject to additional funding)";

¹⁴ Mr Moore, Evidence in Chief, Drawing 250310-3PRE-3DES-DRG-0201-1

designs would not require. This is related to the expectation of drivers on approach to the intersection in terms of lane and route choice, and the potential for accidents arising from late changes in lane, or driver distraction.

- 7.26** The current separation of Caribbean Drive and Paul Matthews Drive is insufficient to allow separate interchanges to be delivered, at some 500m, and yet sufficiently separated to prevent a skewed diamond interchange¹⁵ where the overbridge is angled. I understand that the design that is proposed has been selected through a rigorous option evaluation process in order to deliver the intended levels of connectivity for the local roads, minimise the land required from the North Harbour Hockey Stadium and Rosedale Park South.
- 7.27** Given the constraints I have concluded that the development of a bespoke design for the intersection was justified. However, I do have concerns that the specific design of the Proposal results in an elevated risk of drivers entering the wrong carriageway. I would however consider that this is likely to be something which could be addressed as a matter of detailed during later stages of the design.
- 7.28** Of greater concern to me is the capacity and delay which the intersection creates, and the resulting delays and queues that are forecast to form at the intersection. The roundabout of Barbados Drive and Caribbean Drive is some 100m from the signaled intersection, and I have a concern that the queues will extend close to this roundabout, or potentially through the intersection. This could potentially cause elevated crash risks and disruption to local traffic movements within Unsworth Heights. The length of the queue on SH18 needs to be managed to avoid interactions with the Constellation Drive / SH1 northbound off-ramp intersection, which would cause delays and potentially adverse safety effects.
- 7.29** Whilst I have some concerns with the capacity, I wish to explore this further during the Witness Conferencing to more fully understand the extent of the risks, and the potential for mitigations to be achieved through refinement of the design, or in the future if required. Whilst I do have some concerns in relation to the specifics of the design and performance, I would consider that these are

¹⁵ Albany Interchange is a 'Diamond'

of a nature which if proven, would still be able to be addressed through amendments to the design within the proposed designation boundary.

Pedestrian and cycle linkages

- 7.30** State Highway 1 already creates a significant severance effect to east-west movements for all modes. Similarly SH18 constrains north-south movements as I identified earlier. Currently, whilst not of a high amenity, it is possible for pedestrians and cyclists to negotiate SH18 between Rosedale and Unsworth Heights at road level. In addition there is an underpass at Rook Place which facilitates a connection for pedestrians and cyclists at approximately the midpoint of SH18 between Albany Interchange and SH1.
- 7.31** There is a mixture of land uses adjacent to the State Highway network in the Proposal area, including leisure, education, residential and employment, with the addition of specific origins and destinations of bus stations at Albany and Constellation Drive. This mix of land-uses creates a clear demand for movements across the motorways; with the distance of those journeys being such that they would support a high mode share of walking and cycling trips.
- 7.32** Notwithstanding the severance effect of SH1, the surrounding network of local roads, footpaths and to a lesser extent cycleways, has evolved to match the available crossing points. As such there is the ability to make east-west journeys, albeit through defined 'funnel' points such as the interchanges, or Rosedale Road. However, what is currently not provided is the ability to travel by foot or cycle parallel to SH1. The local road network which provides north south routes are some 1-1.5km away, and do not form a contiguous route, but instead a series of links between intersections and crossing points.
- 7.33** The Proposal includes a Shared Use Path (**SUP**) which runs parallel and adjacent to the Busway and provides a safe and convenient route for pedestrians and cyclists to travel between Oteha Valley Road and Constellation Bus Station. I support the provision of this facility, as it provides an additional choice of route to support sustainable travel and also provides connections to the bus stations that would allow travel to destinations beyond that which could conveniently be walked or cycled.

- 7.34** A similar facility is proposed alongside SH18 delivering a functional connection to Constellation Bus station, and providing a link to both the leisure, residential and employment areas that front SH18. I consider that both SUPs deliver on their intended purpose of providing a spine for movements parallel to the motorways, and I support their inclusion.
- 7.35** However, in both cases the SUPs are reliant on connection from the Proposal infrastructure into existing, or planned local networks that reach out to the actual origins and destinations.
- 7.36** The lodgment drawings show the proposed location and form of these connections. I consider these connections to vary greatly in terms of the desirability of the alignment, with some offering a preferable straight or gently curved connection, such as the connections to McClymonts Road (chainage 12700) and Greville Road (chainage 13800). Others are shown to include zig-zag forms that are very difficult to navigate by cycle such as Rosedale (chainage 14400) and Arrenway Drive (chainage 14850). Whilst I accept that there are likely to be several factors that influence, and perhaps even constrain the design of the connection I consider that the Proposal could be amended to enhance the connectivity of the SUPs in several locations, as discussed in the following paragraphs.
- 7.37** I consider that the design of the Elliot Rose Avenue and McClymonts Road intersection¹⁶ is a very important node in the network for cyclists, as this forms the most logical route for cyclists (and pedestrians) from the south and east to access the Albany Bus station. However the current intersection does not provide any facility to support right turning cyclists, nor is there an off road shared-path. As a result I consider that this arrangement may not adequately address the potential adverse safety effect of encouraging greater numbers of cyclists to make a right turn manoeuvre with no specific protection.
- 7.38** Combined with this intersection layout, the details of an appropriate crossing of McClymonts Road have not been provided. Considering the elevated nature of the road in this location, and the bridge structure that is on the natural desire line to Albany Bus Station I am concerned as to the feasibility of

¹⁶ As shown on Drg-0202 Rev H

providing a safe crossing in this location. There are potential solutions to address this shortcoming, although they potentially would require infrastructure to be located outside of the proposed designation as shown in the notice of requirement. The need to address these deficiencies is also raised by Ms King in her evidence on behalf of Auckland Transport.¹⁷

- 7.39** I note that there is a separate scheme which is to provide a footpath over the proposed SUP.¹⁸ I understand the elevation of such a bridge precludes a direct connection to the SUP. However, notwithstanding the availability of alternate pedestrian routes which are of similar distance, I support the proposed inclusion of steps to Coxton Lane from which it would be possible to access the footbridge.
- 7.40** I am aware from the evidence of Ms King that in the future the closed landfill which is located to the west of the Proposal at chainage 2250-2400 is proposed to become an open space.¹⁹ I would therefore consider it advantageous that the provision of a facility that would allow the proposed network of paths in the future reserve to be efficiently and cost-effectively connected to the SUP would provide appropriate future proofing to enable connection to a foreseeable walking and cycling infrastructure.
- 7.41** The connection shown between the shared path and Rosedale Road is of a form that is unlikely to deliver good amenity as a result of cyclists being required to undertake numerous 180 degree switchbacks. Whilst I am supportive of the connection at this location, I consider the form of the connection to not be designed to good practice as the radii of the turns do not support the ability of a cyclist to ride up or down the ramp.
- 7.42** There would appear to be the opportunity to provide an additional stair connection with a wheeled ramp to Rosedale Road, and whilst I consider that this is still less than ideal, it would provide an option that would facilitate a quicker journey for some pedestrians and cyclists. This would be in accordance with the Auckland Transport Code of practice for the Design of

¹⁷ Ms King, Evidence on behalf of Auckland Transport – Walking and Cycling, Section 9

¹⁸ As shown on Drg-0202 at Chainage 13025

¹⁹ This connection would not add any amenity in the short term as there is no network currently within the closed landfill for the path to connect to with minimal disruption to the SUP at the time that the connection is opened.

Cycle Infrastructure. However, I would be supportive of more significant changes to the connection which could be enabled through development in the area.

- 7.43** Mr Clark refers in his evidence to the consideration of providing an additional bus station at Rosedale.²⁰ Should this occur, I would consider that this would provide the opportunity to deliver a significantly enhanced connection for pedestrians and cyclists, and I would support the inclusion of measures to facilitate this connection within the Proposal.
- 7.44** Continuing to the SH18 SUP, there is a current footpath connection between SH18 and Cobello Place²¹ which has not been explicitly identified on the drawing as having a connection to the proposed SUP. Given that there is an existing level of amenity that this footpath provides I would support the retention of this in the final scheme. I understand that this may be an oversight and that the addition of this connection will be acceptable the Agency.
- 7.45** The NZA is proposing to retain the existing underpass at the Rook Reserve. Whilst I support the provision of a connection in this location I do not consider that the current underpass provides sufficient amenity to pedestrians or cyclists due to the alignment of the underpass. At the southern end of the underpass there is a 90 degree bend which is not limits visibility and could contribute to collision between pedestrians and cyclists.
- 7.46** Whilst this is the retention of an existing facility, I do not consider that this mitigates the increased severance effects arising from the proposed new form of SH18.As such I believe that the quality of the connection needs to be improved in order to provide mitigation for the adverse effects. This should include the provision of a connection that provides a route for cyclists and pedestrians with minimal vertical and horizontal deflections from the primary desire lines.

²⁰ Mr Clark, Evidence in Chief, para 10.15

²¹ Visible on Drg-0208 midway between the Caribbean Drive intersection and the matchline to DRG-0206.

Public Transport

- 7.47** The existing Northern Busway is widely considered to be a highly successful piece of infrastructure that has exceeded expectation and become a key component of the transport system in Auckland.
- 7.48** I would therefore expect the extension of this facility to Albany, to retain the segregated route which protects the services from the congestion that increases both journey time and delay, to be highly positive.
- 7.49** The forecast benefits are also predicted to lead to a patronage increase which is in-line with Auckland Council policy and strategy.²² Whilst not directly related to the Proposal, I do consider that there is potential adverse effect related to an increase in demand for the Park and Ride facilities at Albany Bus Station in particular.
- 7.50** I understand that Auckland Transport is currently developing and implementing several responses to improve the management of parking in the vicinity of the bus stations on the North Shore. Whilst I am not aware of the full details of the proposals in order to assess the likely outcome when combined with the increased demand following the potential implementation of the Proposal, I am of the view that there are a range of responses available which, when combined, will allow any adverse effects to be adequately managed by Auckland Transport.
- 7.51** Finally in relation to the public transport aspects of the scheme, I am aware of the potential for future extension of the busway north of Albany, and also of the possibility to upgrade the busway to a mass rapid transit (MRT) scheme.
- 7.52** I consider that both of these potential extensions to the proposed infrastructure would be well aligned with Auckland Council policy and strategy in relation to the growth of the capacity of the Auckland public Transport system.²³ Whilst neither of these proposals is consented or committed, there are design decisions that could be made as part of the Proposal that could facilitate the future extensions, or equally result in them being effectively precluded.

²² Auckland Plan, Section 13. And Evidence of Mr Newcombe on behalf of Auckland Transport.

²³ Auckland Plan, Section 13.

7.53 I consider that the future provision of this extension to the public transport network will be necessary to provide an alternate transport option to support the future growth of Auckland to the north of Albany. On the basis of the traffic modelling provided by NZTA as part of the Assessment of Effects I do not consider that there is the ability to cater for significant further growth in traffic demand. The movement of people would therefore need to rely on a further increase in the number of people carried on public transport.

7.54 On the basis of the information provided by NZTA I understand that the Proposal as notified has been designed to accommodate both of these future schemes. I consider the retention of this accommodation to be important for the delivery of the Auckland Plan with respect to both transport and landuse outcomes

SH1 Weaving

7.55 Within his evidence, Mr Church states that the weaving of traffic between interchanges was 'a key element of determining the Project design'.²⁴ Mr Clark in his evidence acknowledges the potential adverse effects arising from the additional lane change manoeuvres between intersections on SH1 between Greville Road and Upper Harbour Interchanges may lead to an increase in the number and severity of crashes.²⁵

7.56 Whilst in itself I consider that this is a less than ideal proposal for a key State Highway, I accept that if considered in its entirety the Proposal would lead to a reduction in the crashes across the network. There is a potential further adverse effect that could arise following a crash on SH 1, which leads to diversion onto the local road network to avoid resultant congestion.

7.57 This has the potential to dilute the potential benefits of the scheme, both safety and efficiency. I have reviewed the calculations on weave capacity undertaken by Mr Church which followed the recognised methodology.²⁶ This shows that in order to provide a desirable level of service the distance between ramps would need to be some 400m further apart.

²⁴ Mr Church, Evidence in Chief, para 12.2 (d)

²⁵ Mr Clark, Evidence in Chief, para 10.27

²⁶ Highways Capacity Manual, 2000.

- 7.58** Having previously assessed the weave capacity of State Highways in what I would consider to be 'urban environments' that tend to have closer intersection spacing than the Highways Capacity Manual(2010), I repeated the calculation using an alternative method which is contained in the Highways Capacity Manual (2010).
- 7.59** This methodology also identified that the proposed weave distance was several hundred metres shorter than the desirable distance for the traffic volumes that are forecast to occur with the Proposal. I also note that the assessment of weaving has taken account of the expected high level of familiarity from commuter drivers, and therefore making favourable lane choice decisions otherwise the assessment would be significantly worse than that assessed.
- 7.60** I recognise that the NZTA and the independent Safety Audit team have concluded that it would be appropriate to partially mitigate this risk by providing an additional lane in the northbound direction.
- 7.61** On the basis of the calculations undertaken by NZTA and myself, this would still not reduce the required weave distance to that of the Proposed scheme and therefore leads to an elevated likelihood of crashes on SH1 when compared to either the existing layout or a layout with greater separation between intersections. As a result, I would consider that any further reduction in the spacing between the intersections would lead to an even greater likelihood of crashes.
- 7.62** As discussed earlier in para 7.13 of my evidence, the allowance for the future provision of the south facing ramps constrains the ability to move the merge and diverge point of the SH18 ramps south.
- 7.63** I therefore remain concerned with the potential safety outcomes from the system, although without a significant change to the form of the SH18 intersection it is not apparent how the scheme could be improved. The overall safety outcomes are of sufficient scale to offset this specific adverse effect.²⁷

²⁷ Assessment of Transport Effects, Section 7.7 "...on balance, the Project is expected to deliver net crash benefits."

However, I would consider any changes to the scheme during detail design that would result in any reduction in weave length to be highly undesirable.

Construction effects

- 7.64** In reviewing the existing operation of the transport network in the vicinity of the Proposal, and the evidence related to journey time and journey time variability within the Assessment of Traffic Effects I concluded that the network is liable to be extremely sensitive to any disruption that could occur during the construction of the Proposal should consent be granted.
- 7.65** In order to manage those risks I concluded that there would be the need for significant planning to minimise the adverse effects of the works for all modes (walking, cycling, public transport and private vehicles). In addition there should be strong conditions placed upon the consents if granted to ensure that the works minimise the effects.
- 7.66** I note that the Agency has provided draft conditions of consent related to the construction phase of the project. However I do not consider that these adequately provide the protection required for public transport or the local road network in particular, nor that as drafted they provide sufficient opportunity for Auckland Transport to be engaged in the development of the detailed plans.
- 7.67** I have therefore concluded that there remains the potential for significant adverse effects to arise as a result of the construction of the Proposal. I note that in his Evidence on behalf of Auckland Transport Mr Peake reaches the same conclusion, and I support his conclusion in relation to the need for further conditions.

8. MANAGEMENT OF EFFECTS

- 8.1** In my opinion amendments to the Proposal and/or the NoR conditions are required to ensure effects are appropriately managed as follows:
- (a) That the design of the intersection at McClymonts Rd - Elliot Rose intersection include further facilities to support the movement of cycles designed in conjunction with Auckland Transport;

- (b) That the Proposal is modified to provide a connection from the SH18 SUP to Cobello Place;
- (c) The Proposal is amended to deliver an improved connection for pedestrians and cyclists at the Rook Reserve;
- (d) The design of the Paul Matthews Drive Interchange be required to ensure that queues do not extend to upstream intersections and all movements are forecast to achieve a Level of Service of 'E' in the design year;
- (e) SH1 Weaving – Additional condition that the spacing between the SH18 on ramps and Greville Road interchange ramps is not reduced from that shown and that 5 lanes are provided as shown on the General Arrangement plans;
- (f) Conditions on futureproofing to not preclude future Public Transport upgrades including the extension of the Busway north of Albany or the upgrading of the busway alignment to facilitate a Mass Rapid Transit system; and
- (g) That the conditions are amended to include the changes as proposed by Auckland Transport.

8.2 In my opinion, these amendments are necessary because:

- (a) The proposed SUP does not fully connect to the existing and proposed walking and cycling network which would result in the scheme not delivering the intended and claimed benefits for walking and cycling;
- (b) Without an additional condition related to the connection there is the potential that the detail of the Albany busway connection is changed to one that results in increased journey time for passengers and service running costs for Auckland Transport;

- (c) The design of the Paul Matthews interchange provides the replacement to the current direct connection to SH18. The proposal increases the distance and delay for many movements, and further loss of amenity as a result of reduced capacity of the intersection would increase the adverse effects to local traffic;
- (d) The predicted adverse safety outcome of the weaving could be increased further should the detail design reduce the distance available for weaving leading to increased delays for local traffic including PT services;
- (e) This condition is required so that as a result of the Proposal works on SH1, SH18 or the Busway extension do not precluding the delivery of a further improvements to the public transport network in North Harbour; and
- (f) The implementation of the Proposal will continue for several years and will create temporary adverse effects arising from increased delays for travel and potentially increased traffic on local routes. The proposed conditions are to ensure that these adverse effects are mitigated as far as is practicable.

9. CONCLUSION

- 9.1 In conclusion, I am of the opinion that the Proposal will deliver significant net benefits, and that those adverse effects I have identified and discussed can be mitigated through the proposed design changes and conditions I have proposed above.



Duncan Barry Tindall

25 May 2017