

**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 MARTIN JOHN PEAKE ON BEHALF OF  
AUCKLAND TRANSPORT  
CONSTRUCTION TRAFFIC AND TRAFFIC OPERATIONS**

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## **1. INTRODUCTION AND EXPERIENCE**

**1.1** My full name is Martin John Peake. I am a traffic engineer and am a Director of Progressive Transport Solutions Ltd and have been engaged by Auckland Transport (AT) to advise on the traffic engineering and construction traffic effects of the proposed Northern Corridor Improvements (NCI) project.

**1.2** I hold a Masters Degree in Civil Engineering with Management from the University of Birmingham, United Kingdom. I am a Chartered Engineer and a member of the Institution of Civil Engineers and a member of the Chartered Institution of Highways and Transportation.

**1.3** I have 24 years' experience as a traffic engineer, 13 years in the UK and 11 years in New Zealand. In New Zealand, I have worked for a number of major consultant engineering firms, and as a Team Leader of one of AT's Traffic Operations Teams. In these roles, I have worked in most areas of transportation including traffic engineering, traffic modelling and temporary traffic management. I have provided expert advice on public transport projects, and on traffic aspects on resource consents.

**1.4** In particular, I have been involved in a number of transport related projects/activities and processes which have direct relevance to my evidence on the NCI. These include:

- (a) Developing traffic management plans and procedures for the refurbishment of the Terrace and Mt Wellington Tunnels in Wellington;
- (b) Delivering scheme assessment reports including the development of proposals for Greville Road Interchange which the existing configuration is based upon.
- (c) Assisted NZTA in the assessment of construction traffic effects for the East West Link proposals. In particular, interpreting strategic modelling output to determine the traffic effects of construction and identifying measures to avoid, remedy or mitigate those effects.

**1.5** I also provided specialist traffic engineering advice to AT during the Proposed Auckland Unitary Plan hearings and presented evidence to the Independent Hearings Panel on traffic engineering matters, which included Albany Village and Fairview Heights areas of the North Shore.

**1.6** My New Zealand experience includes a variety of projects on the North Shore including within the area of the NCI project in which I have provided advice and expertise on a variety of traffic engineering and operational matters.

## **2. CODE OF CONDUCT**

**2.1** I confirm I have read the 'Code of Conduct for Expert Witnesses' contained in the Environment Court Consolidated Practice Note 2014. I agree to comply with this Code of Conduct. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might later or detract from the opinions I express.

## **3. EXECUTIVE SUMMARY**

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

**3.2** I have considered the operational effects of NCI on the local road network, and have identified a number of matters that require further investigation (and potentially mitigation) during the design phase of the project. I consider that these can be managed through appropriate conditions on the designation. These matters include:

- (a) Provision for the future proofing of McClymonts Road bridge to be widened to four lanes;
- (b) Ensuring the design of Rosedale Road at SH1 future proofs for widening of Rosedale Road to four lanes and for accessibility to the proposed Rosedale Road bus station;

- (c) The project shall identify and bring forward measures in the AT Albany Highway south improvements package) to mitigate the effects of increased traffic on Albany Highway, as a result of the NCI project.
- (d) Ensure connections from the SUP connect all the way to the existing (and funded future) networks.

**3.3** On two other operational matters, I consider that further investigation is required to identify the effects of NCI on the local road network and any appropriate mitigation measures. In my opinion, such investigations can be progressed through conferencing, with potential mitigation solutions or conditions identified as part of this process. The two locations of concern are:

- (a) Oteha Valley Road including SH1 interchange and the Munroe Lane roundabout; and
- (b) Number of lanes and the pedestrian / cycle facilities on McClymonts Road bridge including the form of intersections.

**3.4** With respect to construction traffic effects, I consider that with appropriate conditions, the effects of construction can be appropriately managed. Matters that require new or modified conditions include:

- (a) Setting out the purpose of the CTMP and how the CTMP will identify mitigation measures for displaced traffic from SH1 and SH18 during construction;
- (b) Specific conditions for mitigating the effects of banned turns at Paul Matthews Road;
- (c) The mechanism for identification and management of diversion routes for the closure of SH18/SH1 during the construction works;
- (d) Requirement to ensure there is no loss of parking at the Albany Park and Ride during construction;

- (e) The need to keep at least one footpath open on Rosedale Road at SH1;
- (f) Monitoring of the road pavement condition to identify and rectify the effects of heavy construction vehicles on the local road network;
- (g) A requirement to consult with AT and the freight industry with regards to the effects on over-dimension and over-weight routes; and
- (h) The need to bench mark, monitor and implement mitigation measures to address effects on bus journey times and reliability.

**3.5** I consider that on-going liaison, discussions, and conferencing, with the applicant prior to the hearing can identify appropriate mitigation measures or wording of conditions to manage the effects in the outstanding matters.

#### **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. A shared pedestrian and cycle path, or Shared Use Path (**SUP**), will also be provided along the eastern side of SH1 and along SH18, connecting in a number of locations to the local walking and cycling network.

#### **5. PARTS OF THE PROPOSAL ADDRESSED IN MY EVIDENCE**

**5.1** My evidence covers the operational and construction traffic effects of the NCI on the local road network and the appropriateness of conditions for managing those actual and potential effects.

**5.2** My evidence should be read in conjunction with the following statements of evidence from other AT witnesses:

- (a) Mr Daniel Newcombe (Corporate);
- (b) Mr Anthony Cross (Public Transport – Strategy);

- (c) Mr Andrew Maul (Public Transport – Operations);
- (d) Katheryn King (Walking and Cycling); and
- (e) Mr Alastair Lovell (Planning).

## **6. CONSTRUCTION TRAFFIC EFFECTS**

**6.1** I have read the evidence of Mr Ian Clarke, Mr Terry Church and Mr David Moore for the New Zealand Transport Agency (NZTA) in respect of the construction traffic effects of the NCI on the local road network. I have also reviewed the relevant parts of the NZTA's Notice of Requirement (**NoR**) including:

- (a) Assessment of Traffic Effects and appendices;
- (b) Design and Constructability Report; and
- (c) Various file notes and model assessments provided by the applicant to AT including internal AT reviews of model assessments.

**6.2** I acknowledge and understand that at this stage full details of the construction methodology are not available and that these would not be prepared until such time as a contractor is appointed. As a result, my evidence is based on the management of the potential traffic effects of the construction of the project, as set out in NZTA's evidence and addressed by their proposed conditions.

**6.3** It is important to acknowledge, in my view, that there are established practices and procedures in which construction works by a network utility (including NZTA and AT) in the road corridor must be undertaken. These include:

- (a) The National Code of Practice for Network Utility Operators Access to Transport Corridors (the Code); and
- (b) The Code of Practice for Temporary Traffic Management (CoPTTM).

**6.4** In the road corridor, all works must have an approved Traffic Management Plan (TMP). It is the responsibility of the Road Controlling Authority (RCA) to approve the TMP. In the case of State highways, NZTA is the RCA and for local roads in the Auckland Region it is AT. TMPs are managed through the Corridor Access Request (CAR) process under the Code. This process requires that details of how the works will be undertaken in safe and efficient way are documented within the TMP.

**6.5** The application sets out that a Construction Traffic Management Plan (**CTMP**) will be prepared for the project. The CTMP is required to detail how the works will manage the potential impacts of construction on the transport network. I consider that this is an appropriate approach to manage the potential effects of the project. The proposed consent conditions detail matters that the CTMP should address. I have reviewed these matters alongside the construction traffic effects and have identified a number of issues that in my opinion require modification or clarification. These matters are:

- (a) Effects of the traffic displaced from SH1 and SH18 due to reduced capacity during construction;
- (b) Effects of restriction to right turn movements on SH18 at Paul Matthews Road;
- (c) Routes to be used for temporary closures of SH18 and SH1 during construction;
- (d) Potential for temporary loss of car parking at Albany Park and Ride;
- (e) Effect on pedestrians due to traffic management at Rosedale Road under SH1;
- (f) Potential damage to local roads caused by construction vehicles;
- (g) Effect on over-dimension and over-weight routes; and
- (h) Impact on bus services during construction.

**6.6** My assessment is based on the Technical Report on the Assessment of Traffic Effects, transport evidence of Mr Clark and Mr Church, construction evidence of Mr Burn and project design evidence of Mr Moore as well as further information provided to me by AT including modelling outputs.

**6.7** At this stage I consider that the construction traffic effects have not been adequately assessed. I have identified a variety of issues that have the

potential for construction traffic effects and have proposed amendments to proposed consent conditions to enable these effects to be managed. These are detailed below.

- 6.8** I am currently engaging with the NZTA's traffic experts to address the issues raised; and anticipate that these matters may be capable of being resolved, through conferencing, prior to the hearing.

**Displacement of Traffic from SH1 and SH18**

- 6.9** The construction of NCI will generally involve works to the existing State highways and local roads. Works on live roads generally have greater traffic effects than works that are off-line as traffic movements have to be managed for safety and to provide sufficient construction space.

- 6.10** Traffic management measures along SH1 and SH18 include the imposition of reduced speed limits, narrowed lanes and lane shifts. It is anticipated that there will be a reduction in capacity due to these measures. The Assessment of Traffic Effects has assumed a capacity reduction of up to 10% on SH1 and SH18. I consider this level of reduction to be appropriate based on my knowledge of other similar projects undertaken by NZTA.

- 6.11** The Assessment of Traffic Effects provides details of the effects on travel times for vehicles both at a network wide level and along the State highway. In addition, forecast daily volumes on alternative routes are provided (refer to Section 8.1 and 8.2.1 of the Assessment of Traffic Effects Report). Section 8.2.2 of the report states that there will be 'indirect impacts' on bus services. I take this to indicate that there will be additional delays on the local road network during construction.

- 6.12** Whilst the effects appear to be relatively minor on the travel times on the State highways, with the information provided it is not possible for me to determine the effects on the local road network during construction. Greater detail is required to assess the forecast distribution of traffic during construction, particularly at peak times to determine whether additional mitigation measures are required. Areas of particular concern are:

- (a) Oteha Valley Road, including the interchange at SH1;

- (b) Albany Expressway;
- (c) Greville Road;
- (d) Albany Highway north and south of SH18 and including the interchange with SH18;
- (e) Rosedale Road; and
- (f) East Coast Road.

**6.13** I am therefore unable to confirm that the effects on the local road network during construction can be adequately managed.

**6.14** Therefore, I recommend that a new condition should be included for Construction Traffic Management to ensure that the effects of displaced traffic onto local roads is appropriately assessed and measures adopted to avoid, remedy or mitigate those effects. -The condition should require the CTMP to include the following:

- (a) Assess the effect on the local road network (at least on those roads identified at paragraph 6.12) of traffic management measures on SH1 and SH18 through appropriate traffic modelling, including detailed modelling of intersections;
- (b) Identify ways to minimise delays to road users, including public transport, pedestrians and cyclists; and
- (c) Where effects of works on SH1 and SH18 are identified to have effects on local roads, AT shall be consulted and provide input into the development of any Traffic Management Plan (**TMP**) including approval of any mitigation measures.

### **Right turning movements at Paul Matthew Road**

- 6.15** The Design and Constructability Report (section 7.18.2.4) describes the construction methodology at the SH18 / Paul Matthews Road intersection. To construct the lowering of SH18 at this location, right turning movements at the intersection are proposed to be banned. Mr Clark states in para 14.4(b) of his evidence that the "closure cannot be avoided".
- 6.16** The assessment undertaken has provided details of the effects of the closure in terms of overall travel times on the network and changes in daily traffic flows. No details of the peak period impacts of the closure are provided.
- 6.17** Count data for the right turning movements from 2015 as reported in the Assessment of Traffic Effects report, show that there were approximately 950 vph turning right from SH18 into Paul Matthews Road in the AM peak and 600 vph in the PM peak. Right turning movements out were much lower at approximately 200vph and 120 vph in the AM and PM peaks respectively. From my observations, the right turn movement out appears to be low in the PM peak as there is extensive queuing for this movement.
- 6.18** In my opinion the closure of the right turn movement into Paul Matthews Road will result in diversion of a considerable volume of traffic onto other already congested intersections. No analysis has been provided to show the effects of this diverted traffic at peak times.
- 6.19** Paul Matthews Road is the only access into the Upper Harbour Industrial estate directly from SH18. Diversion routes for right turning traffic are limited to either proceeding along SH18 to the Albany Highway interchange to Bush Road (a distance of 1.5km) or utilising SH1 to travel via the Greville Road interchange (a distance of 3.7km to Bush Road) and would increase traffic volumes on already congested intersections.
- 6.20** In addition to general traffic, several bus services (Routes N65, N66 and N78) also utilise the right turn into Paul Matthews Road. These buses will be delayed and experience increased travel distances of between 2.1 to 2.3km by the proposed closure of the right turn movement.

**6.21** Given the volume of traffic, likely diversion routes and length of diversion, I consider that there will be adverse effects on other intersections during the period of the closures. I further consider that the current conditions are insufficient to ensure that the effects are mitigated.

**6.22** I therefore recommend amendments to condition CTMP 3 to ensure that;

(a) the effects of banned movements at Paul Matthew Road are appropriately assessed including:

(i) An assessment of where traffic from Paul Matthews Road is displaced due to the closure;

(ii) Analysis of the effects of the displaced traffic on critical intersections and roads along the diversion route, including traffic modelling where appropriate;

(iii) Analysis of the effects of re-routed buses;

(iv) Identify mitigation measures required to address the effects of the closure for general vehicles, buses, pedestrians and cyclists and to AT; and

(v) The assessment and mitigation measures should be to the satisfaction of AT.

#### **Temporary Closure of SH18 and SH1**

**6.23** The construction works include a number of bridges to be constructed along the State highways, connections to be made between ramps and alterations to ramps. In my experience, road closures are usually required in these situations to enable the works to be completed safely and efficiently. Closures of these roads would result in diversion of traffic onto alternative routes.

**6.24** The assessment of effects has not specifically considered what routes may be used for diversion or the effects of such closures on these alternative routes. Given that works are likely to be undertaken simultaneously on SH18 and SH1, it would be reasonable to expect some diversion between these roads as well as onto local roads.

**6.25** Whilst I acknowledge that closures would be managed through an approved TMP, the consent conditions should be modified to ensure that:

- (a) The potential closure of the State highway is addressed in the CTMP; and
- (b) Diversion routes are approved by the relevant RCA including timing of closures and any appropriate mitigation measures required.

### **Albany Park and Ride Car Parking**

- 6.26** The Design and Construction Report (Section 7.3.5) has identified that construction will impact on existing car parking at the Albany Park and Ride. Demand for parking is high at this location with occupancy being 100% during weekdays (evidence of Mr Clark paragraph 7.11). In fact, my observations are that parking overflows onto adjacent roads and land surrounding the park and ride site.
- 6.27** Reduction in car parking at this location will impact on the ability for commuters to use Public Transport. While some level of alternatives to access the busway do exist, such as the use of local bus services or other park and ride sites, this would result in inconvenience for users of the facility.
- 6.28** Further, parking may be displaced to other locations such as neighbouring streets. From my observations, there is limited scope for additional parking on these neighbouring streets within Albany Town Centre without affecting traffic movements on the more heavily trafficked roads.
- 6.29** The evidence of Mr Cross highlights the importance of the Northern Bus Way and the role park and ride sites, including Albany, play in the public transport system.
- 6.30** It is important during construction to maximize opportunities and the attractiveness for modes other than private vehicles to reduce the potential effects of construction works. Whilst I understand there have been discussions between AT and NZTA as to alternative sites for the affected car parks, I consider that a consent condition is required to ensure that the number of car parks is maintained at the park and ride site or provided at an appropriate alternate nearby site, throughout the construction period.

### **Footpaths along Rosedale Road**

- 6.31** The construction works are proposed to potentially reduce Rosedale Road to a single lane underneath SH1. A condition of consent is included (CTMP 3d(v)) that would ensure that the road is kept open to at least a single lane. I agree with this condition as it ensures that connectivity for motorists and buses along this route is maintained and the effects on the surrounding road network are minimised.
- 6.32** However, it is also important that connectivity is also maintained for pedestrians and cyclists along this route. There are footpaths on both sides of the road. There are also cycle lanes on the approaches to the bridge which divert onto the footpaths as the road passes under the motorway. Therefore, pedestrians and cyclists share the space.
- 6.33** If these footpaths were to be closed, there is no practical alternative for pedestrians to be able to move between the eastern and western sides of SH1. The additional travel distance for cyclists is also considerable.
- 6.34** CoPTTM requires that where existing facilities for pedestrians and cyclists exist that suitable alternatives are provided. CoPTTM also requires that where cycle lanes are affected, they 'must' be replaced with temporary lanes although it does allow lanes to merge with traffic lanes where road constraints exist. This situation needs to be approved in a TMP.
- 6.35** Whilst I acknowledge that the number of pedestrians and cyclists using this route is low at up to 17 pedestrians per hour and 6 cyclists per hour (AEE Assessment of Transport Effects Section 8.2.3, Table 32), it is my opinion that closure of the footpath would not be appropriate as it is likely to lead to pedestrians walking in the carriageway with traffic. This would therefore compromise safety. Further, this may discourage walking along the route and may result in pedestrians driving instead, thereby adding additional vehicles to the route.
- 6.36** I therefore, consider that consent condition CTMP 3d(v) should be modified to require that at least one footpath is kept open and that, where reasonably practicable, facilities for cyclists should be included at Rosedale Road under SH1.

### **Damage by Construction Vehicles**

- 6.37** The construction of the project will lead to an increase in heavy vehicle movements on the State highway and local road networks, particularly around the accesses to the Construction Support Areas (CSA). These additional movements have the potential to cause damage to the roading assets which would not have occurred without the project being constructed. This is because the increased number and weight of construction vehicles have the potential to exceed the design volume of the roads in relation to the equivalent standard axles. As a result, damage can occur to the road pavement.
- 6.38** The CSAs are generally proposed to be accessed from local roads, many of which are unlikely to have been designed for the use by heavy construction vehicles.
- 6.39** To manage this effect, I consider a condition(s) of consent is required to ensure that:
- (a) the local road network along identified routes are assessed pre-construction;
  - (b) the affected roads are monitored on a regular basis; and
  - (c) repairs are undertaken, to AT's satisfaction, in a timely fashion.
- 6.40** I understand that AT has standard preferred conditions that have been used on other projects to ensure that damage to local roads associated with concentrated heavy vehicles associated the construction works is identified and repaired. I support the inclusion of such conditions as part of this project.

### **Over-dimension and Over-weight Routes**

- 6.41** Certain routes are approved by NZTA and the RCA for the use of over-dimension and over-weight vehicles. These routes include Upper Harbour Highway (including SH18), Albany Highway and SH1. These routes are deemed suitable to carry excess loads and/or vehicles that are larger than the legal limits.

**6.42** The proposed construction works would include the narrowing of traffic lanes on SH18 and may include temporary or permanent structures that reduce the available clearance envelope for vehicles on these routes. These routes may also be closed to traffic from time to time. There is therefore the potential that over-dimension or over-weight vehicles to be affected by the construction works.

**6.43** To manage the potential effects on these routes, it is my opinion that a consent condition is required to ensure that:

- (a) Alternative routes for over-dimension and over-weight vehicles are identified where these routes are affected during construction; and
- (b) AT and the freight industry (including affected local businesses) are consulted on alternative routes or closures.

#### **Impact on Bus Services during Construction**

**6.44** The evidence of Mr Cross and Mr Maule deals with the importance of the bus services along the Northern Busway and the new bus network in the area. I rely on their evidence in relation to the effects on buses during construction. In particular, I note the importance their evidence places on rapid services operating on the Northern Busway. Construction traffic management has the potential to cause service disruption, something which occurred during the construction of the Western Ring Route projects resulting in significant patronage drop-offs.

**6.45** The Assessment of Transport Effects (Section 8.2.2) describes the anticipated effect on bus operations during construction. There are four principal areas affected:

- (a) Northern Busway services along SH1 connecting Constellation Drive to Albany Park and Ride;
- (b) Buses turning into and out of Paul Matthews Road;
- (c) Bus services at Oteha Valley Road; and
- (d) Bus services along Rosedale Road.

- 6.46** I deal with each of these areas in turn below.
- 6.47** The project proposes to retain the existing bus priority elements between Albany Bus Station and Constellation Drive Bus Station during construction where practicable and this is provided for in consent condition CTMP3d (ii). I generally support this consent condition although I do not consider that these should only be retained during the times outlined in the condition. As has been noted in the evidence of Mr Clark, congestion on the motorway is present during the day on weekends as well as during the week. Therefore, it is my opinion that the times should be extended to include the interpeak and weekends.
- 6.48** The assessment of effects identifies that buses may be affected by congestion at the McClymonts Road / Medallion Drive roundabout. No measures are proposed or identified to mitigate the effects on these buses. Mitigation measures here could include a bus lane on McClymonts Road.
- 6.49** The right turns from SH18 to Paul Matthews Road are proposed to be closed off temporarily during the construction works as I discussed above in paragraphs 6.15 to 6.22. This closure will affect both connector and local bus routes (N65, N66, N78). These bus services connect to Constellation Drive Bus Station to Massey University and provide a valuable service for commuters working at Upper Harbour Industrial estate. Closure of the right turns will have a significant impact on the travel distance and routing of these services into the industrial estate. Mitigation measures to address these effects have not been identified. Mitigation measures that could be adopted may include increasing the number of buses on these routes to compensate for the longer travel times.
- 6.50** Bus services at Oteha Valley Road are identified to be affected by indirect impacts of construction due to increased congestion on this route. These affects have not been quantified nor any mitigation measures proposed. For example, bus priority at the traffic signals could be provided or bus lanes installed.

**6.51** Works to widen SH1 are proposed to narrow Rosedale Road to a single lane with traffic controlled by traffic signals. Whilst I acknowledge this will affect buses along this route I consider the effects can be appropriately managed with the use of the shuttle working traffic signals. This can be managed through the TMP process.

**6.52** Overall, I consider that the proposed consent conditions are inadequate in dealing with the effects on buses (other than where noted above), particularly as no mitigation measures for adverse effects have been identified. I consider a specific consent condition is required to ensure that:

- (a) pre-construction bus travel times and reliability are surveyed to set a bench mark for monitoring the effects on buses due to construction;
- (b) the travel times and reliability of bus services are surveyed at regular intervals (at least every 6 months) during construction;
- (c) a maximum of level of additional delay to bus travel times and reliability be specified as part of the construction management plan; and
- (d) the NZTA should liaise with AT in agreeing appropriate mitigation measures.

## **7. OPERATIONAL TRAFFIC EFFECTS**

**7.1** I have read the evidence of Mr Ian Clark (Transportation - General Overview) and Mr Terry Church (Transportation - Design) for the NZTA in respect of the operational traffic effects of the NCI on the local road network. I have also read the NoR, AEE and the Assessment of Traffic Effects. I have also reviewed various file notes and model assessments provided by the applicant to AT including internal AT reviews of model assessments.

**7.2** AT has been involved in the development of the project and has previously provided comment on preliminary modelling results. I understand that AT has reviewed the transport modelling that has been prepared for the project and is largely in agreement with the NZTA's assessment of the operational traffic effects of the project on the local road network. I also understand there are several areas AT has raised with NZTA and requested further information.

**7.3** Based on my review of the evidence and documentation detailed above, I consider that there are areas where actual and potential adverse effects on the local road network have not been adequately considered or addressed by the project and its conditions. These effects require further consideration as part of the detailed design of the NCI and include:

- (a) The operation of Oteha Valley Road on the approach to the Oteha Valley Road interchange, including the Oteha Valley Road Munroe Lane intersection;
- (b) The number and extent of lanes on Rosedale Road from the Tawa Drive intersection along Rosedale Road and under SH1;
- (c) The number of lanes on McClymonts Road;
- (d) Traffic effects on Albany Highway South due to the project; and
- (e) Adequacy of linkages from the proposed Shared Use Path (SUP) to the existing footpath and cycle network.

**7.4** I deal with each of these areas in turn below.

#### **Oteha Valley Road**

**7.5** I have reviewed model output for the Oteha Valley Road / SH1 interchange and the Oteha Valley Road / Munroe Lane intersection as well as information for the wider modelled network. This model output shows that in 2021 that both intersections operate at or over capacity in the PM Peak period.

**7.6** Table 1 summarise the operation of the interchange for the PM peak in 2021 for the critical approaches. It includes the operation for the reference case (i.e. the situation of the road network as it would be without NCI) and for the case with NCI complete.

**Table 1 – Forecast Operation of Oteha Valley Road / SH1 Interchange – 2021 PM Peak**

Approach	2021 Reference Case			2021 NCI		
	% Sat	LOS (delay secs)	95%ile Queue (m)	% Sat	LOS (delay secs)	95%ile Queue (m)
SH1 Northbound off ramp	101%	F (93 secs)	232	112%	F (199 secs)	534
SH1 Southbound off ramp	76%	D (53 secs)	32	109%	F (170 secs)	74
Oteha Valley Road eastbound	105%	F (111 secs)	516	113%	F (196 secs)	837

**7.7** Whilst the interchange is forecast to be at capacity in the reference case, the NCI results in a significant worsening of its operation due to increased traffic travelling through the intersection. Of particular concern, is the forecast queue length on the northbound off-ramp. The ramp is proposed to be 430m long (similar to the existing ramp), however, the 95th percentile queue is forecast to extend over 100m beyond the end of the ramp. This poses a safety risk to motorists with queuing on the motorway main line, a situation which is not anticipated to occur without NCI. As a result, I consider that traffic signals at the interchange are likely to be operated to favour the northbound off-ramp to minimise the risk of queuing on the motorway mainline. This would thereby significantly increase queuing and delays on the Oteha Valley Road approach in excess of that indicated in Table 1.

**7.8** This would also result in buses exiting Albany Bus Station via a dedicated bus ramp onto the northbound off-ramp being delayed by queues on the ramp.

**7.9** I also note that the southbound off-ramp would be overcapacity in this time period with NCI which is not the case without NCI.

**7.10** The Oteha Valley Road / Munroe Lane roundabout is also adversely affected by the introduction of NCI. This roundabout is only 360m west of the Oteha Valley Road / SH1 interchange, and therefore the increased queues and delays at the interchange will interfere with the roundabout and lower its performance. There is also a forecast increase in traffic at the intersection. Oteha Valley Road eastbound is forecast to operate at LOS F in the PM Peak

in 2021 with the NCI compared to LOS C in the reference case. The intersection is at capacity in 2031 in both cases. Therefore, the analysis shows that the intersection reaches capacity earlier with NCI.

- 7.11** From this assessment, it is my opinion that NCI will have a significant effect on the interchange and on Oteha Valley Road. Whilst I acknowledge the interchange is forecast to be at capacity in 2021 without NCI, it is clear that the additional traffic volumes associated with NCI will further degrade the performance of this part of the network. This will affect not only private vehicles but freight exiting Albany and buses. Therefore, I consider that the project needs to consider upgrades to Oteha Valley Road interchange and Oteha Valley Road to address the effects of NCI on this part of the network.
- 7.12** Further investigation is required to determine potential mitigation measures which is anticipated to occur through conferencing.

#### **Number of Lanes at McClymonts Road**

- 7.13** The modelling and traffic flows provided by the NZTA indicate that the McClymonts Road bridge can accommodate the forecast volume of traffic as a two-lane bridge. Whilst I agree with the assessment based on the information provided, I am concerned that the forecast volume of traffic using the bridge may be underestimated. I also understand from discussions with AT that previous network modelling within the area has consistently shown that the volumes on McClymonts Road require the bridge to be four-lanes.
- 7.14** The modelling for NCI forecasts a reduction in traffic volumes on McClymonts Road with NCI. This would appear to be due to SH1 and SH18 becoming a more attractive route with greater use of Oteha Valley Road and Greville Road interchange.
- 7.15** As I discussed in paragraphs 7.5 to 7.12, there is an increase in delay on Oteha Valley Road with NCI in the PM peak. I concluded that Oteha Valley Road will experience greater delays than forecast due to the interchange being operated in such a way to prevent the queues on the SH1 northbound off-ramp reaching the motorway main line. With greater delay on Oteha Valley Road, this would be less attractive to travel east or to access the motorway and hence motorists will seek alternative routes such as McClymonts Road

and Greville Road interchange. As a result, the forecast reduction in flows on McClymonts Road does not appear to be appropriate and I consider that the volume of traffic on McClymonts Road would be greater than that currently forecast with NCI.

- 7.16** The bridge is forecast to operate at approximately 100% capacity in both the reference case and with NCI. Whilst, I am unable to say with any certainty that traffic would divert from Oteha Valley Road to McClymonts Road due to the likely delays on Oteha Valley Road, I do consider that this is a possible alternative route from Albany town centre to travel to the east. Therefore, additional traffic demand with NCI on McClymonts Road may require additional lanes on the bridge.
- 7.17** Whilst link capacity is one consideration in determining the number of lanes on the bridge, the operation of intersections on either side of this relatively short link will also have a bearing on its design.
- 7.18** Modelling of the operation of the McClymonts Road / Medallion Drive roundabout as a single lane roundabout has not been provided. I have therefore not been able to assess the operation of this intersection to determine whether this intersection is sufficient to accommodate future traffic volumes. As the roundabout is only 70m from the McClymonts Road bridge if more than one approach lane to the roundabout is required, this may require the bridge to be wider to accommodate an additional eastbound traffic lane.
- 7.19** It is also anticipated that the McClymonts Road / Don McKinnon Drive intersection will be signalised in the future. This has been included in the future 2031 modelling for the reference case and for NCI although this has not been shown on the lodged plans. Depending on the design and requirement for stacking space, this intersection may also require additional lanes on McClymonts Road that may impact on the bridge.
- 7.20** I discuss below the need to provide pedestrian crossing facilities on McClymonts Road and the potential to signalise the McClymonts Road / Elliot Rose Avenue intersection which is 80m to the west of the bridge. Signalisation of this intersection may also require additional approach lanes that would require greater width on the bridge.

**7.21** Based on this assessment, I consider that further investigation is required into the operation of this part of the network as a whole considering the three intersections of Don McKinnon Drive, Elliot Rose Avenue and Medallion Drive with McClymonts Road. This investigation should include the potential signalisation of Elliott Rose Avenue to primarily to provide pedestrian crossing facilities (as I discuss in paragraphs 7.23 to 7.29).

**7.22** Regardless of the assessment it would be prudent to future proof for the widening of the bridge to four-lanes should this be demanded by the operation of the network at a later date

### **Pedestrian crossing facilities on McClymonts Road**

**7.23** Currently there is a footpath on only the northern side of McClymonts Road. The proposed new bridge would include a footpath on both sides. The southern path provides a connection to the new Shared Use Path (SUP) located to the east of SH1.

**7.24** To ensure pedestrians and cyclists can connect to the SUP a pedestrian crossing facility is required. The general arrangement drawings indicate a pedestrian crossing although the form of the crossing is not specified. I support the provision of this crossing but consider that it should be a suitable form so that cyclists and pedestrians can cross safely. For instance, a refuge island should be sufficiently wide to accommodate a cyclist waiting in the middle of the road.

**7.25** The NCI project will increase the demand for walking and cycling in the vicinity due to:

- (a) Improvements to public transport resulting in higher demand to access the Albany Bus Station; and
- (b) The inclusion of the Shared Use Path along SH1 resulting in greater accessibility to the wider network, particularly for cyclists.

- 7.26** I understand that AT has previously requested that the NCI project upgrade the McClymonts Road / Elliot Rose Avenue intersection to be traffic signal controlled.
- 7.27** I consider that the suggestion to signalise Elliot Rose Avenue is appropriate as it provides safe connections for pedestrians and cyclists across McClymonts Road and would meet the increased walking and cycling demands as a result of NCI across and along McClymonts Road. Traffic signals at this location would not remove the requirement for a facility on the eastern side of SH1 which would be required for pedestrians and cyclists travelling to the SUP from Medallion Drive.
- 7.28** I note that Ms King in her Walking and Cycling evidence for AT and Mr Tindall's Traffic and Transport evidence for Auckland Council also identify the need for appropriate pedestrian and cycle facilities on McClymonts Road and at the Elliot Rose Avenue intersection.
- 7.29** I also consider that any design should ensure appropriate pedestrian and cycle connections to the wider walking and cycle network (existing or future network) so that the potential benefits of the active mode facilities for NCI are maximised. I discuss this in more detail in paragraphs 7.39 and 7.40 and have proposed a condition to address this issue.

### **Rosedale Road**

- 7.30** The lodged design for Rosedale Road under SH1 is for a two-lane road. This appears to be sufficient for forecast traffic flows along the road. However, there are other factors in the vicinity which may require additional numbers of lanes or carriageway width. These include:
- (a) Proposed future bus station at Rosedale Road located just on the eastern side of SH1 on the south side of Rosedale Road (not included in the NCI project);
  - (b) Intersections in close proximity to the underpass; and
  - (c) Safety for cyclists along Rosedale Road.

- 7.31** The future bus station will be serviced by the proposed extension to the bus way. Whilst I have not seen plans of the proposed bus station, I understand that local buses may need to connect to the bus station by way of bus stops located on Rosedale Road. There will also be a requirement for vehicular access for passengers at the station either for park and ride or at least for drop off and pick up. To ensure suitable bus connections and for access for park and ride traffic or pick up and drop off, upgrades to the Rosedale Road / Triton Drive intersection may be required.
- 7.32** The Tawa Drive/Rosedale Road intersection is proposed to be signalised, however, at this stage funding is not currently available. Signalisation of the intersection may require additional westbound lanes for capacity and to manage queue lengths.
- 7.33** There are existing on-road cycle lanes on Rosedale Road that transition onto footpaths under SH1 due to its existing restricted width. Whilst I appreciate cycle numbers are currently low, improvements to the wider cycling network will increase demand for cycling along Rosedale Road due to the proposed connection to the SUP alongside SH1 from Rosedale Road. The restricted width is not desirable and cyclists that choose to stay on the road may be put at risk when merging with traffic.
- 7.34** Further assessment work is currently being undertaken by the project on the operation of Rosedale Road and the intersections of Tawa Drive, Triton Road and Apollo Drive. This is not currently available at the time of preparation of evidence. Once this is available I will review the requirement for the number of lanes under SH1 along Rosedale Road.
- 7.35** In the interim I consider that a specific consent condition is required to ensure that the modelling work is undertaken to the satisfaction of AT and that the design of the widened SH1 at Rosedale Road does not preclude the future option of a bus way station at Rosedale Road including the potential to widen Rosedale Road to 4-lanes and to provide for cycle lanes under SH1. This condition is discussed in the evidence of Mr Lovell.

### **Albany Highway south of SH18**

- 7.36** Albany Highway south of Upper Harbour Highway (SH18) is forecast to have an increase in traffic flows as a result of NCI. In 2021, this increase is forecast to be approximately 200vph in the southbound direction in both the AM and PM peaks. As a result, Albany Highway operates at capacity (97% volume to capacity ratio) with NCI compared to 84% in the reference case without NCI. Delays at the Unsworth Road / Albany Highway intersection are also forecast to substantially increase with a 124% increase for the right turn out and 36% increase for the right turn in in the morning peak period.
- 7.37** Upgrades have previously been identified by AT to Albany Highway which provide additional capacity (as demonstrated in the 2031 model outputs) with the corridor operating with a volume to capacity ratio of 85% in 2031. The upgrades include widening of Albany Highway to four-lanes between SH18 and Sunset Road. The proposals also include upgrading the Unsworth Road / Albany Highway intersection to traffic signal control and amendments to the traffic signals at the Upper Harbour Drive / Albany Highway intersection. I understand from AT that these upgrades are not funded until the second decade of the Long Term Plan. - Therefore, in my opinion, the NCI brings forward the need for the planned Albany Highway improvements or at least requirements for interim improvements.
- 7.38** To address this effect on the local road network, I consider that a designation condition is required such that the NZTA shall:
- (a) work with AT to identify from the Albany Highway South scheme the appropriate improvements for Albany Highway south to mitigate the effects of NCI until such time that the full Albany Highway South scheme is constructed; and
  - (b) Implement the identified mitigation measures.

### **Pedestrian and Cycle Facility Connections**

- 7.39** A major component of the project is the creation of the Shared Use Path (SUP) along SH1 and SH18. This provides a significant piece of infrastructure for these active modes. The evidence of Ms King deals specifically with cycling and walking. I support the provision of these facilities.

**7.40** I am concerned, however, that, for the measures as outlined in Ms King's evidence, the connections between the SUP and the existing (and proposed future network) are not sufficiently completed. The connections are shown to only extend as far as the project designation and therefore facilities may not extend as far as existing (or future planned facilities) and therefore gaps may exist. These gaps between the new SUP and existing or proposed facilities may result in the full potential benefits of active modes not being realised. I therefore, agree with the recommendations for improved connections as outlined by Ms King.

## **8. CONSTRUCTION TRAFFIC CONSENT CONDITIONS**

**8.1** I have reviewed the proposed consent conditions with regards to construction traffic (series CTMP) and in addition to the items I have detailed above have the following observations on the conditions. The wording of proposed conditions is addressed in the evidence of Mr Lovell.

### **CTMP 3**

**8.2** A number of road closures may be required for the construction of the project. Whilst I agree that road closures will be unavoidable from time to time, they have the potential to cause travel disruption. Therefore, I consider a condition should be included that requires the duration of any road closure to be minimised.

### **CTMP 3d**

**8.3** This condition refers to minimising the effects of traffic management at peak traffic times during weekdays. However, as is acknowledged by Mr Clark, traffic conditions are congested even during the interpeak and at weekends. Therefore, I consider that this condition may result in adverse effects due to temporary traffic management at other times when traffic volumes and congestion are also heavy. I therefore consider that the condition should be amended to refer to weekends as well as weekdays and to include the interpeak period. I do not consider it is appropriate to include times when traffic management may be used as this will be dependent on the measures employed and the location of the works. For instance, traffic management on SH1 or SH18 may not be appropriate until later in the evening. An

assessment would need to be undertaken on a case-by-case basis as required for the approval of relevant TMPs.

**CTMP 3d(ii) and (iii)**

- 8.4 This condition refers to the temporary closure of McClymonts Road bridge and right turns at Paul Matthews Drive. Temporary is not defined and therefore could be considered to range from just a few minutes to weeks or even months. I therefore consider that the wording of the condition needs to be amended so that it more accurately defined such that any closure will minimise effects on buses and on general traffic.

**CTMP4b**

- 8.5 I recommend that this condition should be amended to include buses so that these are explicitly considered. This is because the effects of road closures may be more significant for buses as there are fewer viable alternative routes for them to use to by-pass a road closure whilst still providing a service to passengers.

**9. CONCLUSION**

- 9.1 I have considered the operational effects of NCI on the local road network, and have identified a number of matters that require further investigation (and potentially mitigation) during the design phase of the project. I consider that these can be managed through appropriate conditions on the designation.

- 9.2 These matters include:

- (a) Provide for the future proofing of McClymonts Road bridge to be widened to four lanes;
- (b) Works to Rosedale Road at SH1 future proof for widening of Rosedale Road to four lanes and for accesses to the proposed Rosedale Road bus station;
- (c) The project shall identify and implement measures from the future AT Albany Highway south improvements package to mitigate the effects

of NCI prior to the construction of the full AT Albany Highway South improvements project.

- (d) Ensure connections from the SUP connect all the way to the existing (and funded future) networks.

**9.3** On a number of other matters, I consider that further investigation is required to identify the effects of NCI on the local road network and any appropriate mitigation measures at a number of locations. In my opinion, such investigations can be progressed through conferencing, with potential mitigation solutions or conditions identified as part of this process. The locations of concern are:

- (a) Oteha Valley Road including SH1 interchange and the Munroe Lane roundabout; and
- (b) Number of lanes and the pedestrian / cycle facilities on McClymonts Road bridge including the form of intersections.

**9.4** I consider that other matters can be appropriately mitigated or managed through conditions.

**9.5** In consideration of the construction traffic effects of the project, I consider that the Assessment of Traffic Effects has not fully assessed the effects on the local road network. I will work with the NZTA's experts through conferencing with regards to the issues raised in my evidence with the aim to seek resolution to the matters raised prior to the hearing. Notwithstanding, I consider that the matters raised can be managed through amended conditions on the designation.

**9.6** These conditions should include:

- (a) Setting out the purpose and how the CTMP will identify mitigation measures for displaced traffic from SH1 and SH18 during construction;

- (b) Specific conditions for mitigating the effects of banned turns at Paul Matthews Road;
- (c) The mechanism for identification and management of diversion routes for the closure of SH18/SH1 during the construction works;
- (d) Requirement to ensure there is no loss of parking at the Albany Park and Ride during construction;
- (e) Need to keep at least one footpath open on Rosedale Road at SH1;
- (f) Monitoring of the road pavement condition to identify and rectify the effects of heavy construction vehicles on the local road network;
- (g) Requirement to consult with AT and the freight industry with regards to the effects on over-dimension and over-weight routes; and
- (h) Need to bench mark, monitor and implement mitigation measures to address effects on bus journey times and reliability.

**9.7** On this basis, I consider that through on-going liaison and development of conditions with the NZTA until the start of the hearing, that measures to appropriately manage the operational and construction effects can be identified.



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Martin Peake  
25 May 2017