

**Before a Board of Inquiry
Northern Corridor Improvements Project**

Under the Resource Management Act 1991 ('the Act')

In the matter of a Board of Inquiry appointed under section 149J of the Act to consider notices of requirement for designations and resource consent applications by the New Zealand Transport Agency for the Northern Corridor Improvements Project

Statement of evidence of Ian David Clark for the New Zealand Transport Agency (Transportation - General overview)

Dated 20 April 2017

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STATEMENT OF EVIDENCE OF IAN DAVID CLARK FOR THE NEW ZEALAND TRANSPORT AGENCY

1 Qualifications and experience

- 1.1 My full name is Ian David Clark.
- 1.2 I am a Director of Flow Transportation Specialists Limited, which was established in February 2005. Prior to October 2005 I was the Manager of the Transportation Planning Section at the Auckland office of Opus International Consultants Ltd. I was employed by Opus for eight years.
- 1.3 I hold a Bachelor of Arts in Geography from the University of Wales and a Master of Science in Transportation from the University of London. I am a member of the Chartered Institute of Logistics and Transport, the Chartered Institution of Highways and Transportation and the Australian Institute of Traffic Planning and Management. I am also an affiliate member of the Institution of Professional Engineers of New Zealand (i.e. a member of the Transportation Group), and I was formerly a board member of the Trips Database Bureau and Chairman of the New Zealand (Transport) Modelling User Group.
- 1.4 My work experience includes 30 years in transport planning, working in both New Zealand and the United Kingdom.
- 1.5 My experience in New Zealand includes responsibility for the transportation planning of numerous major transport schemes, including the Manukau Harbour Crossing, the Upper Harbour Motorway, the State Highway ('SH') 1 Esmonde Interchange, the SH1 to Waiouru Peninsula connection, the City Rail Link, and the Southern Corridor Improvements projects, all in Auckland.
- 1.6 I was also responsible for reviewing the effects of the Victoria Park Tunnel and the SH20 Waterview Connection projects, for the former Auckland City Council.
- 1.7 My experience in the United Kingdom between 1988 and 1990 included involvement in the planning of the Limehouse Link, a cut and cover four lane road connecting the City of London with London Docklands. This

work included assessments of the proposed temporary road closures during construction. My work on the Auckland City Rail Link also included assessments of the likely effects of the temporary transport effects during construction.

- 1.8 My local experience of relevance to this Project includes the following:
- a I was responsible for the transport modelling and economic analysis for the Upper Harbour Highway, from Albany Highway to Westgate, in 2001/2002;
 - b I was involved in the transport planning of various components of the Northern Busway, providing evidence to the Council Hearings in 2002 and the Environment Court Hearing in 2003;
 - c I was responsible for an initial study into extending the Northern Busway, north of Constellation station, in 2005;
 - d I was responsible for the traffic modelling undertaken as part of the 2010 study into the potential additional Waitemata Harbour Crossing, for the New Zealand Transport Agency (**'Transport Agency'**);
 - e I was responsible for preparing a strategic assessment of the future operation of the Western Ring Route, for the Transport Agency, in 2011;
 - f I have been involved in what is now called the Northern Corridor Improvements Project (**'Project'**), since 2013.
- 1.9 My evidence relates to notices of requirement and resource consent applications lodged by the Transport Agency with the Environmental Protection Authority on 14 December 2016 for the Project.

2 Involvement with the Project

- 2.1 I am familiar with the area that the Project covers and the SH and local road network in the vicinity of the Project. As noted in paragraph 1.8 (f) above, my firm was first engaged to undertake traffic assessments as part of the early planning phases of the Project in 2013. My colleague **Mr**

Church led the early assessments of options during 2014/2015, and I became more heavily involved during 2015/2016. Since that time I have been involved in the development of the transport models, assessments of the area-wide effects of the Project, assessments to inform aspects of the design of the Project and the assessment of a number of alternatives.

- 2.2 I am the primary author of the *Assessment of Transport Effects* (Technical Report) that formed part of the Assessment of Environmental Effects ('AEE') lodged in support of the Project.

3 Code of Conduct

- 3.1 I have read and am familiar with the Code of Conduct for Expert Witnesses in the current Environment Court Practice Note (2014). I have complied with it in the preparation of this evidence, and will follow the Code when presenting evidence to the Board. I also confirm that the matters addressed in this statement of evidence are within my area of expertise, except where I rely on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

4 Scope of evidence

- 4.1 This evidence addresses the following matters:
- a My assessment methodology;
 - b The existing transport environment;
 - c The benefits of the Project and how these contribute to achieving the Project objectives;
 - d Operational effects;
 - e Construction related effects;
 - f Comments on submissions lodged in relation to the Project;
 - g Response to section 149G(3) key issues report; and

h Conclusions.

4.2 In preparing this evidence, I have reviewed the following evidence:

- a Mr Glucina, Transport Agency;
- b Mr Moore, Project Design;
- c Mr Hale, Construction;
- d Mr McGregor, Utilities;
- e Mr Schofield, Alternatives;
- f Mr Burn, Planning (designations);
- g Mr McGahan, Planning (resource consents); and
- h Mr Church, detailed transport assessments.

5 Executive summary

5.1 My evidence assesses the area-wide traffic and transport effects of the Project. It demonstrates that:

- a The Project will improve the efficiency and effectiveness of travel along the strategically significant routes of SH1, SH18 and the Northern Busway;
- b The additional traffic lanes along the mainline motorway, as well as the provision of direct connections between SH18 and SH1 (north), will ensure effective continuity of capacity along these two important routes. These improvements will offer efficiency gains throughout the Project area, which will benefit a significant volume of traffic, including freight movements;
- c The extension of the Northern Busway, from the Constellation Bus Station to the Albany Bus Station, will provide a dedicated route for buses, allowing public transport passengers reliability of travel times;

- d Additions and enhancements to walking and cycling facilities will also be made as part of the Project;
- e Overall, the Project will increase traffic volumes on SH1 and SH18, while generally reducing traffic volumes on the local road network, benefitting local traffic, public transport and walking and cycling modes; and
- f These improvements will enhance the capacity and efficiency of movement, for people and freight travelling within Auckland, and between Auckland and the north.

6 Assessment methodology

- 6.1 This transport assessment has drawn on traffic and public transport forecasts from the Auckland Regional Transport ('ART') model. More detailed traffic modelling has been carried out primarily using the Upper Harbour SATURN model. This traffic model has been used for several significant projects and it has been updated for the purposes of this study.
- 6.2 The assessment of effects during the construction of the Project has been based on forecast models for the year 2018. The assessment of the longer term effects of the Project are based on forecast travel demands and conditions, with and without the Project, in 2031.
- 6.3 Details regarding the development of these traffic and transport models, and the key assumptions relating to the forecast models, are set out at Section 5 of the *Assessment of Transport Effects* and in the evidence of **Mr Church**.¹

7 The existing transport environment

- 7.1 Details regarding the existing transport environment are provided within Section 3 of the *Assessment of Transport Effects*. That report provides information on:
 - a Existing land uses;

¹ Section 5 of Mr Church's evidence in chief (Transportation - Design).

- b The surrounding road hierarchy and the local road network;
- c The current layout along SH1, SH18, interchanges and intersections;
- d Existing traffic flows and traffic conditions;
- e Crash data;
- f Public transport services, demand for those services, and travel conditions; and
- g Issues relating to freight.

Existing Traffic Conditions

7.2 Key points to note, in terms of traffic congestion, are as follows:

- a The section of SH1 between Tristram Avenue and Oteha Valley Road including associated interchanges, currently experiences high levels of congestion, resulting in delays and unreliable journey times;
- b Congestion along SH1 on weekdays is currently predominantly “tidal”, i.e. southbound in the morning peak and northbound in the evening peak;
- c Southbound congestion in the weekday morning peak is primarily a result of bottlenecks to the south of the Project area. While predominantly a morning peak issue, southbound congestion through the Upper Harbour Interchange also occurs during the inter peak and evening peak periods, at the merges at the Greville Road and Upper Harbour southbound on ramps;
- d The ultimate southbound bottleneck is the SH1/Esmonde Road interchange, where a busy on ramp joins three already full through lanes. Slow moving traffic regularly extends back through the Greville Road interchange, and often back to McClymonts Road or Oteha Valley Road, during the morning peak period;

- e Northbound flow breaks down during the weekday evening peak due to the reduction from three to two traffic lanes on SH1 within the Upper Harbour Interchange;
- f Congestion occurs at weekends, mainly on SH1 between the Upper Harbour and Greville Road Interchanges, in both directions. In the southbound direction, the bottleneck relates to the two lane section of SH1 from the Greville Interchange on ramp through to the Tristram Avenue Interchange off ramp. In the northbound direction, congestion is known to occur from time to time at the three to two lane merge within the Upper Harbour Interchange;
- g For the SH18 corridor, between Albany Highway and Constellation Drive, there is currently inherent conflict between 'through-traffic' and 'local access' traffic. There are four sets of traffic signals that restrict strategic traffic flow travelling between the SH18 and SH1 motorways, two of which provide local access; and
- h Congestion along the SHs affects the local arterial network. In particular, there are limited routes into and out of the North Harbour Industrial Area, and congestion affects the accessibility of this area.

Crash Analysis

- 7.3 Section 3.12 of the *Assessment of Transport Effects* includes a summary of the crashes reported in the Transport Agency's Crash Analysis System, within the Project area.
- 7.4 Analysis of the crashes reported in the Project area shows that the majority of crashes were rear-end/obstruction crashes. This is not unexpected in congested motorway conditions. Changing lanes, overtaking and merging crashes were also noted as common crash events.
- 7.5 Serious injury only crash maps indicate that crashes are scattered and are not concentrated within particular areas. There are no specific areas that have a noticeably higher number of crashes or crash types.

However, there may be localised problematic areas on the network which affect the overall safety of the network.

Pedestrian and Cycle Facilities

- 7.6 In terms of issues relating to pedestrians and cyclists, these modes of transport are not currently allowed to travel along the SH1 motorway corridor in the Project area. The SH1 and SH18 corridors both present significant barriers to walking and cycling accessibility, with a general lack of facilities along or across these routes. While improvements at the Greville Interchange have recently been introduced, facilities through the Upper Harbour Interchange are limited.
- 7.7 Along SH18, there is a footpath on the southern side between the Upper Harbour Interchange and Caribbean Drive, but no facilities further west. Therefore, there is no walking/cycling connection between the Constellation Bus Station and the employment area and the North Harbour Hockey Stadium within the North Harbour Business Park (via Paul Matthews Road).
- 7.8 In terms of the local road network, cycle facilities are provided along a few routes, or sections of routes, with several significant gaps present. The gaps prevent cyclists from having a continuous, well connected route to their destination and often leave cyclists with no safe facility in the most challenging locations e.g. intersections and interchanges.²
- 7.9 The Auckland Cycle Network outlines the proposed cycle network in Auckland. Auckland Transport classifies proposed cycle infrastructure within the network into three categories as follows:
- a Cycle Metros – Regional links connecting metropolitan centres, public transport interchanges and other key regional destinations. These routes provide the highest level of service on physically separated cycle infrastructure, often following motorway or rail corridors;
 - b Cycle Connectors – Links to the cycle metros and key local destinations such as public transport interchanges, town centres,

² *Assessment of Transport Effects*, pages 32-33.

residential areas and schools. These routes generally follow arterial roads and may or may not provide physical separation from general traffic; and

- c Cycle Feeders – Lower order neighbourhood accesses and links to the cycle connectors and cycle metros, community facilities, schools, parks, reserves and local services.

7.10 The Project includes Cycle Metro facilities parallel to both SH1 from Oteha Valley Road southwards, and on SH18. A network of Cycle Connectors is proposed on key routes to support the Cycle Metros. The two Cycle Metros will form key cycle connections to the Albany and Constellation Bus Stations and to Albany Metropolitan Centre. Via future extensions to these Cycle Metro facilities to the south and west, they will also provide key onward connectivity to the Takapuna Metropolitan Centre, Auckland City Centre and Central Auckland destinations, and across the Upper Harbour Bridge to the Westgate Metropolitan Centre and West Auckland destinations.³

Public Transport

- 7.11 The busiest bus route in the area is the Northern Express, which operates between the City Centre, Constellation Bus Station and Albany Bus Station, with some services continuing to Silverdale Bus Station. The Constellation and Albany bus stations are located within the Project area and both provide Park and Ride facilities. Demand for these facilities is high, with both facilities reaching 100% occupancy on weekdays, with parking generally spilling over onto the neighbouring streets.
- 7.12 With the Northern Busway currently terminating at the Constellation Bus Station, Northern Express services and other Busway services must mix with general traffic to reach Albany Bus Station and the Silverdale Park and Ride facility. This requires buses to circulate through the Upper Harbour Interchange and typically to share motorway lanes with general traffic. Southbound buses also exit the motorway at the Greville Road Interchange, passing through this interchange.

³ This is further detailed in the *Assessment of Transport Effects*, section 6.2.1, pages 49-50.

- 7.13 Thus, while there are a number of existing measures to improve priority for buses, bus travel times are variable due to congestion encountered where buses have to share road space with other road users. Journey variability particularly affects northbound buses in the evening peak, but southbound buses also are affected throughout the day.

Freight

- 7.14 SH1 is an important route for freight travelling between Auckland and Whangarei and Northland. The Heavy Commercial Vehicle percentage, based on available traffic information, is as high as 8% in 2015, as recorded on the Upper Harbour Interchange southbound off ramp, and 5% on SH1, north of the Upper Harbour Interchange.
- 7.15 A large portion of the land adjacent to the Project area is identified as major freight generating and attracting areas. Specifically, these include employment areas, such as the North Harbour Business Park, Constellation and Apollo Business areas, and the Albany Metropolitan Centre. These areas are accessible by both the Greville Road and Upper Harbour Interchanges.
- 7.16 There are several ramp signal bypass lanes on motorway on ramps within the Project area, and freight vehicles are generally allowed to use these facilities. Also, the main purpose of the northbound kerbside lane on SH1, which starts from the Greville Road Interchange northbound on ramp where the northbound carriageway widens from two to three lanes, is a climbing lane for slow moving/heavy vehicles, due the gradient of that section of highway. However, apart from these facilities, freight vehicles have to share road space with other users, meaning that they are also caught up in general traffic congestion.

8 The future transport environment, without the Project

- 8.1 Details regarding the future transport environment, without the Project, are provided within Section 6 of the *Assessment of Transport Effects*. Key issues to note include:

- a Significant land use changes are anticipated both within and beyond the area of the Project. These changes will clearly affect the demand for travel, which is expected to increase over time;
- b There is significant transport investment committed which will influence future changes in travel demands, by all modes; and
- c There is a growing recognition that large cities cannot simply 'build their way' out of congestion, and there is an emphasis in documents such as the Auckland Plan on encouraging increasing proportions of trips to be accommodated by modes other than private vehicle travel.

8.2 Section 6 of the *Assessment of Transport Effects* notes that there are a number of committed transport projects that will affect future travel demands. These include the following:

- a The Western Ring Route. Following the completion of the SH20 Waterview Connection, in April 2017, the Western Ring Route will have been completed to a motorway standard from its southern extent in Manukau to Albany Highway on the North Shore⁴ (of course, the Western Ring Route will not be entirely completed until the Project is operational);
- b Investment in public transport. This includes a "new network" for the North Shore, as part of the implementation of Auckland Transport's Regional Public Transport Plan; and
- c Investment in walking and cycling.

8.3 The net effects of the land use and transport changes have been assessed through the ART model, with the traffic forecasts assigned to the project SATURN model. The existing (2015) and forecast (2031) demands, without the Project, are summarised at **Table 1**.

⁴ While the Western Ring Route will be completed to motorway standard in 2017, works will be progressing along SH16, until around 2019, to provide additional traffic lanes east from Lincoln Road.

Table 1: Weekday Traffic Flows on Key Routes (two way, vehicles per day), 2015 Base Model and Forecast 2031

Road	2015 Base Model	2031 Reference Case	Difference
SH1: Greville Road to Oteha Valley Rodd	68,500	95,000	+26,500
SH1: Upper Harbour to Greville Road	103,400	132,400	+29,000
SH18: East of Albany Highway	34,300	45,800	+11,500
Sunset Road (near SH1)	13,800	17,000	+3,200
Constellation Drive (east of Apollo Dr)	18,700	25,000	+6,300
Rosedale Road (west of Tawa Dr)	26,100	24,700	-1,400
Rosedale Road (west of Apollo Dr)	15,900	14,100	-1,800
McClymonts Road (west of Medallion Dr)	28,800	35,200	+6,400
Oteha Valley Road (east of SH1)	28,900	39,400	+10,500
Oteha Valley Road (west of Munroe Ln)	19,900	19,700	-200
Greville Road (east of SH1)	17,800	28,100	+10,300
Albany Highway (south of Wharf Road)	17,600	25,200	+7,600
Albany Highway (south of Rosedale Rd)	21,600	24,000	+2,400
Albany Highway (south of Upper Harbour Drive)	30,800	42,800	+12,000
Albany Expressway (west of SH1)	31,600	38,900	+7,300
Albany Expressway (west of Bush Rd)	19,500	28,800	+9,300
William Pickering Drive (north of Piermark Drive)	13,500	16,800	+3,300
Bush Road (north of Piermark Drive)	28,100	31,700	+3,600
Tawa Drive (north of Rosedale Rd)	18,100	15,900	-2,200
Apollo Drive (north of Constellation Drive)	25,100	27,400	+2,300
East Coast Road (north of Greville Road)	17,200	24,000	+6,800
East Coast Road (north of Browns Bay Road)	16,200	21,200	+5,000
East Coast Road (north of Constellation Dive)	31,200	38,100	+6,900
Unsworth Drive (north of Albany Highway)	5,700	7,200	+1,500
Unsworth Drive (south of Barbados Drive)	3,300	3,200	-100
Paul Matthews Road (east of Bush Road)	26,000	25,200	-800
Caribbean Drive (North of Goldfinch Rise)	14,500	17,700	+3,200

8.4 The models indicate that even with a greater emphasis on public transport, walking and cycling over time, traffic flows are still generally expected to increase. These increases will adversely affect accessibility within the region, and congestion is expected to increase along SH1 and

SH18. Travel times are already unreliable along these routes, and this unreliability can be expected to get worse, adversely affecting inter-regional travel, including freight, and adversely affecting public transport, where buses share road space with general traffic.

9 Project need and description

The need for the Project

- 9.1 The need for the Project stems from the conclusions of the above sections of this evidence, namely:
- a There is already congestion which is affecting the North Harbour area;
 - b The Auckland Region currently suffers from problems relating to network resilience, in that there are very few alternative routes. For example, North Auckland over-dependes on travel across the Auckland Harbour Bridge;
 - c The Transport Agency has put significant investment into the Western Ring Route, to provide an alternative route to the SH1 Northern/Southern Motorway route through central Auckland (and the Auckland Harbour Bridge);
 - d Following the completion of the Western Ring Route to motorway standard, the SH18 to SH1 connection will be the final incomplete section. As a result, the Northern Motorway Upper Harbour interchange, and the adjacent sections of SH1 and SH18, will become critical sections of Auckland's motorway network. These sections of SH currently operate with significant congestion, and this congestion is predicted to worsen following the completion of the Western Ring Route, and as a result of growth in population and employment anticipated for Albany (including the surrounding areas) and areas further north;
 - e The Northern Busway provides an excellent and reliable route for public transport between the Constellation and Akoranga Bus Stations, but without the Project buses will continue to join the

(congested) general traffic stream north of the Constellation Bus Station; and

- f SH1 and SH18 currently act as a significant barrier to movement by walking and cycling.

9.2 Accordingly, the Project seeks to achieve the following outcomes:

- a To help facilitate interregional travel between Auckland and Northland by completing the Western Ring Route to motorway standard;
- b To improve connectivity of the SH1 and SH18 interchanges;
- 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.

Description of the Project

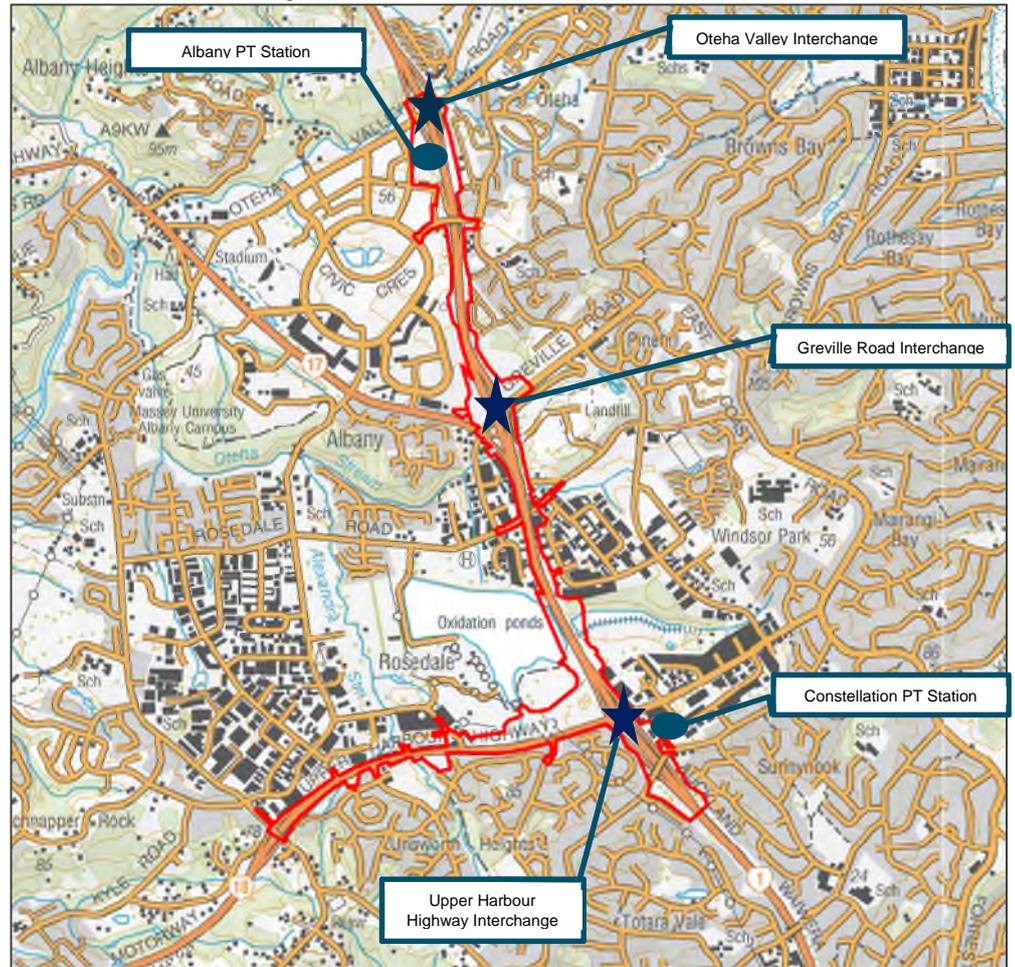
9.3 A full description of the Project is included within the evidence of **Mr Glucina**⁵ and includes the following improvements (see **Figure 1** below):

- a Upper Harbour Highway (SH18) is to be upgraded to full motorway status and separated from the local roads;
- b New direct motorway to motorway connections are to be provided, from SH1 southbound to SH18 westbound, and SH18 eastbound to SH1 northbound;

⁵ Section 6 of Mr Glucina's evidence in chief (Corporate).

- c Additional (fourth and fifth) lanes are to be provided northbound on SH1 between the new SH18 eastbound connection and Greville Road interchange;
- d An additional (fourth) lane is to be provided northbound on SH1 between Greville Road Interchange and Oteha Valley Interchange. This will allow an additional general traffic lane to be provided, next to the existing climbing lane;
- e Additional (third and fourth) lanes are to be provided southbound on SH1 between Greville Road Interchange and the new SH18 westbound connection;
- f Widening of the SH1 mainline (an additional lane), crossing the Upper Harbour (northbound) and Greville Road Interchanges (northbound and southbound);
- g Extension of the Northern Busway from Constellation Bus Station to Albany Bus Station. At its northern end, the Busway will include a connection over the motorway, into the Albany Bus Station, and at the southern end, the Busway will pass over Constellation Drive, and tie into Constellation Bus Station. This will require changes within the Constellation Bus Station, including the provision of a new platform for northbound buses. The Busway extension will provide a single lane travelling in each direction, and is intended for dedicated public transportation, maintenance and emergency service vehicles;
- h Provision of a shared walking and cycle path on the eastern side of the Northern Motorway between the Constellation Bus Station and Albany Bus Station. Further walking and cycling connections are to be provided alongside SH18, between SH1 and the SH18 Albany Highway Interchange; and
- i Modified connections are to be provided to Paul Matthews Road, with local road access retained and walking and cycling access added along and across SH18.

Figure 1 **Extent of Project Area**



10 **Operational effects**

Traffic Flow Changes

10.1 The predicted changes in daily traffic flows, as a result of the Project, are set out in **Table 2** below.

Table 2: Predicted 2031 Forecast Weekday Traffic Flows (two way, without and with Project, vehicles per day)

	2031 Reference Case	2031 Project	Difference
SH1: Greville Road to Oteha Valley Road	95,000	100,400	+5,400
SH1: Upper Harbour to Greville Road	132,400	161,000	+28,600
SH18: west of Paul Matthews Road	45,800	68,300	+22,500
Sunset Road (near SH1)	17,000	14,100	-2,900
Constellation Drive (east of Apollo Drive)	25,000	24,700	-300
Rosedale Road (west of Tawa Drive)	24,700	19,900	-4,800
Rosedale Road (west of Apollo Drive)	14,100	13,700	-400
McClymonts Road (west of Medallion Drive)	35,200	36,300	+1,100
Oteha Valley Road (east of SH1)	39,400	41,700	+2,300
Oteha Valley Road (west of Munroe Ln)	19,700	18,500	-1,200
Greville Road (east of SH1)	28,100	30,700	+2,600
Albany Highway (south of Wharf Rd)	25,200	19,600	-5,600
Albany Highway (south of Rosedale Rd)	24,000	18,800	-5,200
Albany Highway (south of Upper Harbour Drive)	42,800	44,800	+2,000
Albany Expressway (west of SH1)	38,900	43,300	+4,400
Albany Expressway (west of Bush Rd)	28,800	30,200	+1,400
William Pickering Drive (north of Piermark Drive)	16,800	12,800	-4,000
Bush Road (north of Piermark Drive)	31,700	27,200	-4,500
Tawa Drive (north of Rosedale Road)	15,900	14,400	-1,500
Apollo Drive (north of Constellation Drive)	27,400	24,400	-3,000
East Coast Road (north of Greville Road)	24,000	23,800	-200
East Coast Road (north of Browns Bay Road)	21,200	21,200	-
East Coast Road (north of Constellation Drive)	38,100	35,200	-2,900
Unsworth Drive (north of Albany Highway)	7,200	7,600	+400
Unsworth Drive (south of Barbados Drive)	3,200	2,500	-700
Paul Matthews Road (east of Bush Road)	25,200	21,900	-3,300

	2031 Reference Case	2031 Project	Difference
Caribbean Drive (North of Goldfinch Rise)	17,700	16,300	-1,400

Operational Effects along SH1 and SH18

- 10.2 As noted in **Table 2** above, the Project is expected to increase daily flows on SH1 by up to 28,600 vehicles per day, two way, in 2031, between the Greville Road Interchange and the SH18 direct connections (a 21% increase). Daily flows along SH18 east of the Albany Highway Interchange are expected to increase by 22,500 vehicles/day, two way, in 2031 (a 49% increase).
- 10.3 The potentially adverse effects of these increases in traffic flows will be significantly reduced by:
- a the provision of additional capacity along SH1, between the SH18 direct connections and Oteha Valley Interchange;
 - b the provision of the SH18 direct connections between SH18 and SH1 (north); and
 - c the upgrade of SH18, between the Albany Highway and SH1 direct connections, to motorway standards.
- 10.4 As a result, travel times are predicted to improve, relative to the future scenario without the Project, even with these increases in flows. These improvements in travel times are summarised in **Table 3**.

Table 3: Predicted 2031 Forecast Weekday Travel Times, without and with Project, (mm:ss))

	2031 Reference Case	2031 Project	Difference
Morning Peak			
SH18 Albany Highway Interchange to SH1 Oteha Valley Interchange	10:10	3:40	-6:30
SH1 Oteha Valley Interchange to SH18 Albany Highway Interchange	18:55	6:30	-12:25
SH1 Tristram Interchange to Oteha to SH1 Oteha Valley Interchange	6:25	4:30	-1:55
SH1 Oteha Valley Interchange to SH1 Tristram Interchange	21:25	16:25	-5:00
Morning Peak			
SH18 Albany Highway Interchange to SH1 Oteha Valley Interchange	6:50	3:45	-3:05
SH1 Oteha Valley Interchange to SH18 Albany Highway Interchange	9:25	4:45	-4:40
SH1 Tristram Interchange to Oteha to SH1 Oteha Valley Interchange	5:25	4:55	-0:30
SH1 Oteha Valley Interchange to SH1 Tristram Interchange	7:35	6:05	-1:30
Morning Peak			
SH18 Albany Interchange to SH1 Oteha Valley Interchange	12:55	6:45	-6:10
SH1 Oteha Valley Interchange to SH18 Albany Interchange	16:10	6:00	-10:10
SH1 Tristram Interchange to Oteha to SH1 Oteha Valley Interchange	15:05	7:30	-7:35
SH1 Oteha Valley Interchange to SH1 Tristram Interchange	9:05	7:15	-7:35

10.5 The travel time savings will vary by route, direction and time of day, but **Table 3** indicates that they are predicted to include decreases of over 10 minutes during the weekday morning and evening peaks, between the SH1 Oteha Valley interchange and the SH18 Albany Highway Interchange.

10.6 As a result of the above travel time improvements, increases in traffic are forecast along SH18 in particular. This demonstrates the extent to which the Project will improve network resilience, as it will encourage drivers to

use the Western Ring Route, thereby reducing the current over-dependence of North Auckland on the Auckland Harbour Bridge.

Area Wide Traffic Effects of Project

- 10.7 While the Project is predicted to increase flows along both SH1 and SH18, **Table 2** indicates that decreases in traffic flows are forecast on a number of parallel routes (based on 2031 traffic forecasts), most notably on:
- a Albany Highway (reductions of up to 5,600 vehicles per day predicted, or 22%);
 - b Rosedale Road (reductions of up to 4,800 vehicles per day predicted, or 19%);
 - c Bush Road (reductions of approximately 4,500 vehicles per day predicted, or 14%);
 - d William Pickering Drive (reductions of approximately 4,000 vehicles per day predicted, or 24%);
 - e Paul Matthews Road (reductions of approximately 3,300 vehicles per day predicted, or 13%);
 - f Apollo Drive (reductions of approximately 3,000 vehicles per day predicted, or 11%);
 - g East Coast Road (reductions of up to 2,900 vehicles per day predicted, or 8%); and
 - h Sunset Road (reductions of approximately 2,900 vehicles per day predicted, or 17%).
- 10.8 Conversely, traffic flows are predicted to increase on some arterial routes, particularly those that feed the Greville Road and Oteha Valley interchanges. Most notable among these is Albany Expressway, which is predicted to increase by up to 4,400 vehicles per day west of SH1 (an 11% increase).

10.9 In general, the Project is predicted to result in decreases in forecast traffic flows on local roads, except for those closest to and connecting directly to the Greville Road and Oteha Valley Interchanges. These decreases in flows will lead to travel time benefits, and improvements in journey time reliability. These decreases will also have corresponding beneficial effects on local property accesses. Access will, for example, be improved on local roads that experience reductions in traffic volumes.

Effects on Public Transport

10.10 The Project will offer significant benefits for public transport in terms of providing quicker and more reliable journeys by bus, through the extension of the Northern Busway to Albany Bus Station. In particular, northbound buses will no longer need to travel with general traffic at the Upper Harbour Interchange as they leave the Constellation Bus Station. This will lead to benefits in terms of reduced travel times for buses, as outlined in **Table 4**.

Table 4: Predicted 2031 Forecast Weekday Bus Travel Times, between Albany and Constellation Stations (mm:ss)

	2031 Reference Case	2031 Project	Difference
Morning Peak			
Northbound	7:35	3:35	-4:00
Southbound	7:50	3:35	-4:15
Inter Peak			
Northbound	8:10	3:35	-4:35
Southbound	8:20	3:35	-4:45
Evening Peak			
Northbound	14:15	3:35	-10:40
Southbound	7:755	3:35	-4:20

10.11 **Table 4** demonstrates the extent to which conditions for buses, without the Project, are predicted to be quite variable, with the greatest congestion expected to be encountered by buses northbound in the evening peak. Also, the table indicates that travel times are expected to be consistent as a result of the Project, as buses will be removed from the

general traffic stream. The greater reliability of bus services is then expected to encourage an increase in bus patronage, which in turn will contribute to less traffic congestion.

10.12 In addition, as noted above, the Project is expected to reduce general traffic volumes on several arterial roads in the areas surrounding the Project. These reductions will provide indirect benefits to public transport operators and users by reducing congestion on these arterial road routes and improving bus travel times where bus priorities are not already in place. Key among these routes will be:

- a East Coast Road;
- b Bush Road;
- c Rosedale Road;
- d Apollo Drive;
- e Paul Matthews Road;
- f William Pickering Drive; and
- g Sunset Road.

10.13 Each of the above routes are all to be used by buses, under Auckland Transport's New Network, and all of the routes are expected to experience reductions in traffic as a result of the Project, as set out in **Table 2** above.

10.14 Section 7.5 of the *Assessment of Transport Effects* acknowledged that the proposed extension to the Northern Busway is predicted to increase public transport patronage. That Assessment noted that the benefits of these increases will be supported by the following:

- a Increases in parking at the Silverdale, Albany and Constellation bus stations (as proposed in Auckland Transport's Parking Strategy);
- b Increases in feeder bus services, as proposed by Auckland Transport's New Network;

- c Increases in the number of people walking and cycling to the stations, facilitated by the new developments being built (and proposed to be built) in the Albany Metropolitan Centre;
- d Enhancements to the Albany Bus Station, with perhaps an additional platform for buses at the station.

10.15 I also note that Auckland Transport is currently considering the provision of an additional bus station (alongside the extended Busway) at Rosedale. This proposal is being pursued as a separate project, but if implemented, it will reduce pressure on the Albany and Constellation bus stations.

Effects on Pedestrians and Cyclists

- 10.16 The Project will include shared use paths parallel to SH1 from Oteha Valley Road to Constellation Bus Station, and parallel to SH18 from Albany Highway to Constellation Bus Station.
- 10.17 The proposed SH1 shared use path (**'SUP'**) will be located on the eastern side of the motorway and busway corridors, with connections to the wider network at Oteha Valley Road, Masons Road, McClymonts Road, Spencer Road, Greville Road, Rosedale Road, Arrenway Drive and at Constellation Bus Station.
- 10.18 The proposed SH18 SUP will be located to the north of SH18 (east of Albany Highway), connecting to Albany Highway, William Pickering Drive, an existing SUP beneath SH18 at Alexandra Creek, and at Paul Matthews Road. The proposed SUP would then cross SH18 via the realigned Paul Matthews Road, continuing east to the south of Upper Harbour Highway with connections at Caribbean Drive and Constellation Bus Station.
- 10.19 Additional pedestrian and cyclist facilities are to be provided at McClymonts Road and Paul Matthews Road.
- 10.20 Connectivity for pedestrians and cyclists will be significantly improved both north-south along the SH1 corridor and east-west parallel to SH18 through the provision of continuous, safe, SUPs along these corridors, bridging significant gaps in the existing walking and cycling network. The

Project will assist in remedying the past severance caused by the motorway corridors, by providing new pedestrian and cyclist connections across these corridors.

- 10.21 The Project will also generally support recent Auckland Transport pedestrian and cyclist improvements on Oteha Valley Road, Greville Road, Rosedale Road and Albany Highway.
- 10.22 In terms of future linkages and integration into the wider future footpath and cycleway network, the Project will not preclude linkages and expansion to the Auckland Transport North Auckland Cycle Network that generally accord with the Regional Cycle Network Plan from the Auckland Plan.
- 10.23 In addition, and as noted above, the Project is in general expected to result in reduced traffic flows on existing arterial routes; this is considered a further benefit to active mode users of these arterial routes.
- 10.24 In summary, it is concluded that the Project's effects on pedestrians and cyclists will be positive, and that the Project will result in significantly improved safety and connectivity outcomes for active modes.

Safety Effects of the Project

- 10.25 The Project is expected to result in an increase in traffic on the motorway and local arterials leading to the motorway, with corresponding reductions in traffic elsewhere on the local network. If all other factors are equal, the likelihood of a crash would be expected to increase where traffic volumes increase (as a result of increased exposure and speed), and decrease where traffic volumes reduce (as a result of reduced exposure). As such, the reductions in traffic on the local network are expected to have positive effects in terms of safety.
- 10.26 In addition, the rate of crashes occurring on the motorway and its interchanges is also expected to reduce, despite increases in traffic volumes and speed, because the Project will deliver a range of safety improvements, including:

- a Removing motorway to motorway traffic from the local road network, especially with regards to freight;
- b Removing right turn movements from SH18 at Paul Matthews Road and Caribbean Drive;
- c Reducing congestion and queuing on SH1, thereby reducing the incidence of rear-end type crashes;
- d Improving street lighting throughout the Project extent;
- e Providing increased shoulder widths;
- f Improving existing crash barriers;
- g Increased shoulder widths, to allow forward visibility to be improved in certain locations;
- h Providing safer, separated pedestrian and cyclist facilities.

10.27 Predictions of the crash rates for SH1 and SH18 in 2031 with and without the Project have been developed. Crash reductions are predicted through sections of motorway that the Project will fundamentally change, particularly on SH18 east of Albany Highway, but small crash rate increases are predicted on sections outside the Project where increases in traffic are expected as a result of the Project, such as on SH18 west of Albany Highway. It is acknowledged that an increase in traffic flows and an increase in the number of lane change manoeuvres introduced by the Project along SH1 may lead to an adverse effect in terms of the number of crashes between the Greville Road and Upper Harbour Interchanges. Also, the increase in forecast speeds in this area may lead to increases in the severity of crashes. In total however, a net reduction in annual injury crashes on the road network is expected, relative to 2031 predictions without the Project.

Summary of Benefits of Project

10.28 Therefore the benefits of the Project can be summarised as:

- a Greater capacity along SH1 and SH18, improving inter-regional network resilience;
- b Improved travel times for general traffic and freight, across the wider area;
- c Improved travel times and journey time reliability for public transport;
- d Reductions in traffic flows on a number of local roads within the Project area, improving travel times;
- e Improved safety along the SHs and on the local road network;
- f Improved connectivity and efficient access for local traffic (including walking and cycling) improving journey times; and
- g Greater local travel choice and safety through the provision of extensive SUPs.

11 Construction effects

Construction effects on traffic

- 11.1 It is understood that the precise method and sequencing of construction will be determined at a later date, by the contractor. However, the contractor will be required to work within several constraints, as set out in the proposed conditions. **Mr Hale's** evidence⁶ sets out a likely construction methodology and programme. The main points to note are:
- a Construction is expected to take 3.5 years, but will affect different locations within the Project area at different times;
 - b Temporary speed limit reductions are to be expected along SH1 and along SH18;
 - c There is likely to be lane narrowing along SH1 and SH18, but the numbers of through traffic lanes and the location and extent of bus

⁶ Section 6 of Mr Hale's evidence in chief (Construction).

shoulder lanes and bus priority facilities along SH1 are to be retained as at present (as far as reasonably practicable); and

- d McClymonts Road is to be kept open throughout the construction period, by the development of an off line bridge (as far as reasonably practicable). This is to allow eastbound buses from Albany Bus Station to reach the bus only on ramp at McClymonts Road, and to allow pedestrians to reach the Albany Bus Station.

11.2 Therefore, the main transport effects of the construction works identified to date relate to:

- a The effects of the temporary speed limit and lane width reductions along SH1 and SH18;
- b The effects of potential temporary works on Rosedale Road, at the motorway bridge;
- c The effects of potential works along SH18 which may require the temporary banning of right turns to/from Paul Matthews Road;
- d The effects of construction related traffic, to and from the work sites.

11.3 Traffic modelling has been carried out of several scenarios during the period of construction, and the following points are noted in terms of predicted overall travel times during this period:

- a Evening peak effects are predicted to be greater than morning peak effects;
- b Understandably, full closure of Rosedale Road is predicted to result in greater effects (temporary) than one way operation, or shuttle working (which would allow one way to run at a time, governed by traffic signals);
- c Operating Rosedale Road with two way, one lane working, with traffic signals, is predicted to result in lesser effects than one way operation;
- d On Rosedale Road, eastbound operation is critical in the morning peak, while evening peak operation is more balanced; and

- e Restrictions at Paul Matthews Road are predicted to result in smaller travel time increases than the full Rosedale Road closure.

12 Alternatives

- 12.1 The assessments of alternatives from a transportation perspective are covered in the evidence of **Mr Church**.⁷ However, I note that I have been involved in some assessments of alternatives.
- 12.2 In particular, I was involved in the assessment of a proposed bridge connection between Unsworth Drive and the North Harbour Industrial Area. This route would have improved accessibility of persons living or working on either side of the connection. However, traffic modelling indicated that it would also be an attractive route for other (through) traffic. It would have led to traffic reassigning from Albany Highway and Caribbean Drive (arterial routes) onto Unsworth Drive (a local road) – this is colloquially known as ‘rat-running’. This reassignment would have had potentially adverse implications on the Unsworth Heights community. For this and other safety reasons, the Transport Agency decided not to proceed with the proposed bridge connection.

13 Mitigation of effects

- 13.1 The implementation of the Project is expected to lead to predominantly positive transport benefits. However, I propose that conditions are imposed on the Project requiring the preparation of a Construction Traffic Management Plan (‘**CTMP**’) (or Plans), in order to minimise the potential temporary adverse impacts of the Project during construction. These conditions, which are Appendix A to the AEE, would require the following, as far as reasonably practicable:
 - a Minimising disruption to public transport, during weekday peak periods, (proposed condition CTMP.3(d));
 - b The retention of the existing number of through traffic lanes along SH1 and SH18 (proposed condition CTMP.3(d)(i) and (iii));

⁷ Paragraphs 7.1 – 7.3 of Mr Church’s evidence in chief (Transportation - Design).

- c The retention of existing bus shoulder lanes along SH1 and bus priorities at interchanges (proposed condition CTMP.3(d)(ii));
 - d The retention of vehicle connectivity on McClymonts Road, over SH1 (proposed conditions CTMP.3(d)(iv) and CTMP.3(f));
 - e The retention of at least one traffic lane on Rosedale Road, beneath SH1 (proposed conditions CTMP.3(d)(v) and CTMP.3(f)); and
 - f Avoiding road closures and the restriction of vehicle, cycle and pedestrian movements (proposed condition CTMP.4(b)).
- 13.2 The effects of the construction should be further mitigated by the following measures which are generally applied by contractors as good practice:
- a By ensuring that any short period construction works which affect capacity are carried out during time periods when they will cause the least disruption;
 - b By the provision of good advanced traveller information, such that travellers are aware of the likely works and what travel alternatives are available; and
 - c By active management of the network during the construction period.

14 Response to submissions

- 14.1 In my evidence, I address the following issues raised by submissions:
- a Support for the transport benefits of the Project;
 - b The operation of the Constellation/Upper Harbour Interchange (and the adjacent sections of SH18);
 - c The provision of an additional Busway station;
 - d Adverse effects during construction;
 - e Issues raised by Auckland Council and Auckland Transport;
 - f Issues relating to the proposed pedestrian/cycle facilities; and

- g Other issues.

14.2 **Mr Church's** evidence⁸ responds on matters relating to the following:

- a The absence of new connections between SH1 (south) and SH18, at the Constellation/Upper Harbour interchange;
- b The need for further improvements at the SH1/Greville Interchange; and
- c Alternatives for the SH18/Paul Matthews/Caribbean Interchange.

14.3 **Mr Moore's** evidence⁹ responds on matters relating to the following:

- a The submitters' requests that various additional transport proposals should not be precluded by the Project;
- b The impact of the Project on various sites; and
- c The background and justification for various design aspects and alternative design options considered.

Support for the Project

14.4 A number of submitters have expressed support for the Project:

- a Auckland Transport (Submission 126290) states that it strongly supports the transport benefits of the Project;¹⁰
- b Auckland Council (Submission 126345) supports the Project in principle, and notes that the benefits of the Project will be to offer greater transport resilience, to support economic growth by improving trip reliability and regional access, to enhance public transport and to enhance connectivity for pedestrians and cyclists;¹¹
- c Infrastructure New Zealand (Submission 126321) states that it supports the Proposal in full, and the submission refers to the "very

⁸ Paragraphs 9.1 – 9.11 and 11.8 – 11.9, and section 10 of Mr Church's evidence in chief (Transportation - Design).

⁹ Paragraphs 9.2 and 9.4, and sections 6, 7 and 8 of Mr Moore's evidence in chief (Project Design).

¹⁰ Submission by Auckland Transport (Submission 126345), paragraph 1.4 of supporting statement.

¹¹ Submission by Auckland Council (Submission 126345), section 2.2.3.

significant transport benefits along a corridor already committed to transport services”,¹²

- d The Ministry of Education (Submission 126309) acknowledges that *“the project, once operational, will have significant positive impacts and lead to improvements on pedestrians and cyclists moving through the SH1 and Upper Harbour corridor”*.¹³ The submission also notes the travel time and safety benefits for school buses;
- e National Road Carriers (Submission 126192) strongly supports the completion of the Western Ring Route with speed and urgency, and they note that linking SH1 and SH18 is a key gap to be closed;¹⁴
- f Bike Auckland’s (Submission 126313) submission notes its partial support for the Project. It states that it strongly supports the proposed extension of the busway, and the cycling components, and it states that the latter *“make us view the project more favourably than a number of other motorway projects.”*¹⁵

Constellation/Upper Harbour Interchange

- 14.5 The submission of Mr Willmott (Submission 126516) claims that the Project will offer *“some marginal and temporary respite from current (and rapidly growing) congestion”*.¹⁶ To a certain extent this is true, based on the information provided at Appendix G of the *Assessment of Transport Effects*, summarised at **Table 5** below.

Table 5: Predicted Operation of SH1/Constellation (Upper Harbour) Interchange (Maximum Volume to Capacity Ratios^{17,18})

¹² Submission by Infrastructure New Zealand (Submission 126321), page 1 of supporting statement.

¹³ Submission by Ministry of Education (Submission 126309), paragraph 2.11 of supporting statement.

¹⁴ Submission by National Road Carriers (Submission 126192), paragraphs 11 and 30.

¹⁵ Submission by Bike Auckland (Submission 126313), page 1 of supporting statement.

¹⁶ Submission by Mr David Willmott (Submission 126516), page 1 of supporting statement.

¹⁷ As explained within Section 7.3.3 of the *Assessment of Transport Effects*, *“In theory a V/C ratio of 100% means that the volume equals the capacity and an intersection at this level is said to be operating at theoretical capacity. In practice, conditions tend to become congested at values less than 100%, and intersections operating at V/C ratios of 85 to 90% are said to be operating at “practical capacity”*.

¹⁸ In preparing this evidence, I have noticed that the columns within Tables G4 to G6 of the *Assessment of Transport Effects* were not labelled. Consistent with other tables within Appendix G, the three unlabelled columns are (1) 2015, (2) 2031 Reference Case and (3) 2031 with Project.

	2031 Without Project	2031 With Project
Morning Peak	106%	93%
Inter Peak	100%	88%
Evening Peak	108%	101%

- 14.6 The above table indicates that while the Project will improve the operation of the interchange, it will be operating at theoretical capacity in the evening peak in 2031, with the Project in place, and at practical capacity in the morning and inter peak. However, this is partly due to additional traffic being encouraged into the area due to the provision of additional capacity at the interchange, through the provision of the new ramps between SH1 north and SH18. This is shown in **Table 6** below, by comparing the forecast flows using the north facing ramps at the Interchange, without the Project, against the traffic using either those ramps or the new connections, and the Busway, with the Project in place. This table demonstrates the level of traffic and buses that will be able to avoid the interchange (via the new connections and the Busway), and the residual level of traffic still using the north facing ramps to/from the Constellation Interchange, as a result of the Project.

Table 6: Predicted Traffic Demands at SH1/Constellation (Upper Harbour) Interchange (Vehicles/Day, 2031)

	2031 Without Project	2031 With Project
Northbound		
Northbound on ramp	18,700 (inc 700 buses)	9,200
SH18 to SH1 (north) link	-	20,700
Northbound Busway	-	700
Total	18,700	30,600
Southbound		
Southbound off ramp	16,400 (inc 700 buses)	10,400
SH1 (north) to SH18 link	-	23,500
Southbound Busway	-	700
Total	16,400	34,600

- 14.7 The above figures indicate the level of suppressed traffic, as some traffic will be “squeezed off” the SHs and onto the local roads, due to forecast congestion, for the scenario without the Project.
- 14.8 I agree with **Mr Church’s**¹⁹ concern (in his response to submissions) that there may be limited value in providing additional connections (e.g. between SH18 and SH1 south, if the adjacent network is unable to accommodate any further increases in traffic (on SH1, between the Upper Harbour interchange and the Harbour Bridge). Therefore, the key point, as **Mr Church**²⁰ notes, is that the additional connections are not precluded by the current design, and that they could be provided if/when the adjacent network is improved.
- 14.9 The points raised by Mr Broadbent (Submission 126154) are fairly similar, in that the solution sought by Mr Broadbent is the provision of the SH18 to SH1 south link.²¹ Therefore, my response is similar to the one to Mr Willmott. However, in terms of the points raised by Mr Broadbent, I disagree with his assertion that in heavy traffic there will hardly be any

¹⁹ Paragraph 9.7 of Mr Church’s evidence in chief (Transportation - Design).

²⁰ Paragraphs 9.6 – 9.10 of Mr Church’s evidence in chief (Transportation - Design).

²¹ Submission by Mr Stephen Broadbent (Submission 126154), page 2.

difference between the current and the proposal.²² Details regarding the predicted improvements in travel times along SH18 and SH1 were provided at **Table 3** above. Mr Broadbent states that queues from the west regularly back up to Albany Highway, and even Greenhithe. However, I note that vehicles from SH18 (west) heading to SH1 south are currently caught up with other traffic streams, for example in queues of traffic heading to SH1 north, or queues of traffic extending beyond the short right turn bay into Caribbean Drive.

14.10 The submission of Mr Fogarty (Submission 126267) also refers to issues at the Constellation Interchange. Again, **Mr Church** addresses some of the issues raised, but I note the following:

- a Mr Fogarty claims that the only times he sees what he terms "slight congestion" on SH18 is in the mornings, as eastbound traffic encounters the lights at Paul Matthews Drive.²³ I am surprised at his assertion that traffic moves quite smoothly. This is inconsistent with my observations regarding eastbound congestion, both during the morning and afternoon peak periods. During the afternoon peak in particular, I have regularly observed congestion from west of the Paul Matthews Road intersection through to the SH1/SH18 Constellation/Upper Harbour interchange (as noted above, in my response to Mr Broadbent, who refers to quite severe congestion).
- b Mr Fogarty expresses concerns about the improvements being claimed at the Constellation Interchange and along Upper Harbour Highway. This is in part due to his understanding that only a small percentage of traffic will use the new links between SH1 north and SH18.²⁴ In fact, as noted in **Table 6** above, the forecast flows predicted to use the new links are 20,700 vehicles/day on the SH18 to SH1 (north) link, and 23,500 on the SH1 (north) to SH18 link, in 2031, with the Project completed. Some of this is induced traffic (as noted in the response to Mr Willmott), but the removal of these levels of flow from the Interchange will allow the traffic signals to be re-

²² Ibid, page 1 of supporting statement.

²³ Submission by Mr Peter Fogarty (Submission 126267), page 1 of supporting statement.

²⁴ Ibid, page 2.

optimised, with greater time able to be allocated to the other movements.

- c Mr Fogarty's next concern relates to the lack of widening of SH1, south of Constellation Interchange²⁵. While this is the case, the Project is predicted to encourage a switch in the routing of some vehicles, from SH1 (and the Auckland Harbour Bridge) to SH18 (via the Upper Harbour Bridge and the Western Ring Route).
- d Mr Fogarty also expressed concerns at the operation of the proposed SH18/Paul Matthews Road/Caribbean Drive intersection²⁶. I accept his point that a signalised T intersection operates with less phases than a signalised crossroads, but I respectfully suggest that his analysis refers to lightly trafficked movements (e.g. between Paul Matthews Road and Unsworth Drive) and it does not acknowledge that traffic from SH18 to SH1 (in both directions) will be removed from the intersection. The net impacts of the Project on each of the four movements of concern to Mr Fogarty are considered further in the evidence of **Mr Church**.

Additional Busway Stations

- 14.11 The submissions of Mr and Ms Perera (Submission 126274) and of DJ Goris (Submission 126086) note their support for an additional Busway station in the vicinity of Rosedale or Greville Road²⁷. I referred to this proposal at paragraph 10.15 above, and I accept the comments by Mr and Ms Perera, regarding the benefits of such a station. The submission of Auckland Transport confirms that "*AT has been working closely with the NZTA on a possible new busway station between Constellation and Albany stations, which will be lodged separately in the future, and the NCI has been designed for such an eventuality*".²⁸
- 14.12 The submission by Ms Tregonning (Submission 126095) refers to future access to the Busway extension, noting difficulties for people from Browns

²⁵ Ibid, page 2.

²⁶ Ibid, page 5.

²⁷ Submissions by Nadine and Ian Perera (Submission 126274), page 2, and by DJ Goris, page 2.

²⁸ Submission of Auckland Transport (Submission 126086), paragraph 2.10.

Bay to reach the Albany Bus Station²⁹. In my view this issue also relates to the proposal for a separate bus station.

Adverse effects during construction

- 14.13 A number of submitters express concern regarding the adverse effects during construction:
- a Auckland Transport (Submission 126290) also note that one of its key interests in the Project relates to disruption of public transport services during construction. The submission states that it generally accepts that the effects away from the motorway are "minimal and manageable". However, Auckland Transport express the desire that any delays on bus trips between Constellation and Albany stations should be avoided.³⁰ While I accept that any increase in delays should be minimised as far as reasonably practicable (as required by the proposed conditions), the suggestion that any increase in delays is avoided is in my opinion not a reasonable expectation;
 - b Auckland Transport also would like to avoid closing the right turn from SH18 into Paul Matthews Road, unless it is impracticable to avoid this temporary closure.³¹ Unfortunately, I have been advised that this closure cannot be avoided. However, I agree that the length of time of any closure should be minimised;
 - c Auckland Council (Submission 126345) seeks acceptable degrees of travel time variability for local road traffic, using only appropriate diversion and haulage routes. It also seeks safe and efficient temporary routes for pedestrians, cyclists and public transport services during construction.³² In my view, this is the intention, as expressed currently within the CTMP conditions;
 - d Bike Auckland (Submission 126313) requests a consent condition requiring pedestrian and cycle paths to stay open as much as

²⁹ Submission of Christine Tregonning (Submission126095), page 3.

³⁰ Submission of Auckland Transport (Submission 126290), paragraph 3.6, first bullet.

³¹ Ibid, paragraph 3.6, fifth bullet.

³² Submission of Auckland Council (Submission 126345), section 3.1.4.

- possible during construction³³. This appears to be very similar to proposed condition CTMP.4(b) (see paragraph 13.1 above);
- e Similarly, while the Ministry of Education (Submission 126309) states that it supports the overarching approach to construction traffic management, it seeks amendments to the conditions to require specific consideration of disruption to educational facilities and impacts that construction works may have on pedestrian and cycle connectivity³⁴. As noted above (in my response to Bike Auckland) I consider that this request is very similar to that already proposed within proposed condition CTMP.4(b);
 - f Waste Management NZ Ltd (Submission 126271) expresses concerns, stating that it is generally unclear how construction is to be managed. The submission refers to the potential one way traffic and signalised controls at Rosedale Road, stating that this will require trucks to use the route through Greville Road and Hugh Green Drive³⁵. This would be the case if Rosedale Road was to be closed, but Section 8 of the *Assessment of Transport Effects* clarified that the proposal is to maintain one way shuttle working, with signalised control (i.e. two way traffic, but one direction at a time) to be permitted. This should be clarified within condition CTMP.3(d)v. I accept that there will be some delay during this construction period, but general traffic is to be permitted to use Rosedale Road, under SH1, throughout the construction period;
 - g The Melanesian Mission Trust Board and St John's College Trust Board (Submission 126339) express a number of concerns around construction:³⁶
 - i The effects of temporary speed limit reductions along SH1 and SH18. I accept that these will increase travel times slightly, but these cannot be mitigated, as the reductions are required in order to minimise the potentially adverse safety issues that may

³³ Submission of Bike Auckland (Submission 126313), page 6 of supporting statement.

³⁴ Submission of Ministry of Education (Submission 126309), paragraph 2.5 of supporting statement.

³⁵ Submission by Waste Management NZ Ltd (Submission 126271), paragraph 31 of supporting statement.

³⁶ Submission of Melanesian Mission Trust Board and St Johns College Trust Board (Submission 126339), paragraphs 6.1 to 6.3.

otherwise be encountered, both by road users and construction workers;

- ii The effects of the construction activity on night time deliveries to the Bunnings store in Home Place (close to the SH1/SH18 Upper Harbour interchange). At paragraph 13.2 above I noted that there will be a desire to minimise the overall construction effects by ensuring that any short period construction works which affect capacity are, as far as reasonably practicable, carried out during time periods when they will cause least disruption. This could therefore affect night time deliveries. I note that the submitter appears to understand and accept that the works will be temporary/short terms, so the submitter's request is to be notified when works commence. The evidence of **Ms Strogen**³⁷ and **Mr McGahan**³⁸ addresses how affected parties will be notified of such events.³⁹

- h Mr Grant Young's (Submission 126329) submission seeks that the Northern Busway Extension is constructed prior to the parts of the Project relating to the SH. I accept that this would appear to be desirable, as it would provide many road users with an alternative means of travel during the construction period. However, I understand that this idea is not practical for engineering reasons. Further details are set out in the evidence of **Mr Hale**.⁴⁰

Other Issues raised by Auckland Transport

14.14 As noted at paragraph 14.4a above, the submission of Auckland Transport states its strong support for the Project. It notes its interest in the effects of the Project at Oteha Valley Road and Albany Highway (south of the SH18 interchange), and I will discuss these issues further with Auckland Transport, prior to the Hearing.

14.15 Auckland Transport also notes that one of its key interests in the Project relates to disruption of public transport services during construction. The

³⁷ Section 11 of Ms Strogen's evidence in chief (Social effects).

³⁸ Section 14, subheading *Ministry of Education* (#126309), of Mr McGahan's evidence (Planning – consents).

³⁹ Section 11 of Ms Strogen's evidence in chief (Social effects).

⁴⁰ Paragraph 8.10 of Mr Hale's evidence in chief (Construction).

submission states that it generally accepts that the effects away from the motorway are “minimal and manageable”. I refer to Auckland Transport’s comments relating to delays to bus travel, and the desire to retain right turns to/from Paul Matthews Road, at paragraph 14.13 above.

Other Issues raised by Auckland Council

- 14.16 The submission of Auckland Council indicates (at Section 3.4) that there are a number of outstanding matters on traffic and transport. I respond to some of these as follows:
- a At Section 2.3 of the submission, the Council requests details of the modelling used to estimate growth and economic benefits. This request is repeated at Item 3.1.1.1. The Model Validation Report was provided as Appendix C of the *Assessment of Transport Effects*. Furthermore, I note that the assumptions within the models (set out within Section 5 of that Assessment) were discussed with the Joint Modelling Applications Centre (**JMAC**) - with JMAC representing the Transport Agency, Auckland Transport and Auckland Council;
 - b Item 3.1.1.2: Testing of alternative demand and network scenarios. Information on a number of such scenarios was provided at Section 9 of the Assessment of Transport Effects. **Mr Church** and I have provided additional information to the Council’s representative, including forecast congestion plots, and tables giving the forecast volume to capacity ratios at key intersections/interchanges, for the sensitivity tests reported at Sections 9.1 and 9.2 of that report. (This additional information is consistent with that provided at Appendices F and G of the report);
 - c Item 3.1.2: **Mr Church** provides detail regarding the operation of the proposed Paul Matthews Road/SH18/Caribbean Drive intersections;⁴¹
 - d Item 3.1.3: **Mr Church** provides information relating to weaving on SH1;⁴²

⁴¹ Paragraphs 10.1 – 10.3, 10.9 – 10.12, and 10.16 of Mr Church’s evidence in chief (Transportation – Design).

⁴² Paragraph 12.2 of Mr Church’s evidence in chief (Transportation – Design).

- e Item 3.1.4: I have responded to the Council's comments regarding management of effects during construction, at paragraph 14.13 above;
- f Item 3.1.5: the issue of possible conversion of the Busway to future conversion to rail is addressed in the evidence of **Mr Moore**;⁴³
- g Item 3.1.6: Section 7.2.5 of the *Assessment of Transport Effects* provided details of travel times between Albany and Constellation stations. That said, I note that travel time reliability is extremely important for bus services, to the extent that I would not have too great a concern if this was a key issue in option evaluation.

Issues relating to Pedestrian/Cycle Facilities

- 14.17 There are a number of submissions relating to the details of the pedestrian/cycle measures proposed as part of the Project.⁴⁴ These are predominantly design issues which are addressed by **Mr Moore**.⁴⁵
- 14.18 A particular issue relates to the location of the SUP alongside SH18. This is to be provided along the northern side, west of Paul Matthews Road - primarily for design reasons. For longer distance pedestrians/cyclists (between east of Paul Matthews Road and Albany Highway) the precise location of the facility should not significantly affect the demand. A facility to the south would better serve the residential area of Unsworth Heights, while a facility to the north would better serve the business area of North Harbour. However, Barbados Drive will offer an alternative route for most of the Unsworth area, such that while the location of the facility as proposed was primarily determined by engineering/design issues, I do not consider it is poorly located.

Other Issues

- 14.19 DJ Goris's (Submission 126086) submission asks what improvements are to be made to Jack Hinton Drive.⁴⁶ This is a local road between Rosedale

⁴³ Paragraphs 7.16, 7.18 – 7.19, and 9.2 of Mr Moore's evidence in chief (Project Design).

⁴⁴ Submissions of Mr Stefan Olson (Submission 126351); Bike Auckland (Submission 126313) pages 2-5; DJ Goris (Submission 126086); Auckland Transport (Submission 126290) paragraph 2.15; and Auckland Council (Submission 126345) paragraph, 5.1.7.

⁴⁵ Paragraphs 9.3 – 9.8, 9.10 – 9.21, 9.30 – 9.35, and 9.38 of Mr Moore's evidence in chief (Project Design).

⁴⁶ Submission by DJ Goris (Submission 126086), page 2.

Road and Paul Matthews Road. It predominantly serves the various recreational facilities in Rosedale Park North and it is not intended to operate as a route for through traffic. Primarily for this reason, but also since the Project is expected to lead to decreases in traffic on Paul Matthews Road, Rosedale Road and Bush Road, no improvements to Jack Hinton Drive are proposed, as part of the Project.

15 Response to section 149G(3) key issues report

- 15.1 Paragraph 165 of the Key Issues Report states that a key issue is the extent to which the Project provides positive effects and avoids, remedies or mitigates temporary or permanent effects on the transportation systems having regard to the policy approach set out in the Regional Policy Statement level and district plan level for transportation and infrastructure.
- 15.2 The positive effects of the Project are identified within the *Assessment of Transport Effects* and earlier within my evidence. These positive effects include:
- a The provision of additional capacity along SH1 and SH18;
 - b The reassignment of some traffic to the SHs, from several local roads;
 - c The resulting reductions in travel times, both along the SHs and along several local roads;
 - d Improvements to the resilience of the SH network, meaning the ability of the network to respond to, or recover from, unplanned events is improved. These benefits are expected due to the completion of the Western Ring Route, and therefore the ability of that route to act as an alternative to the SH1 Northern/Southern Motorway route through central Auckland, and across the Auckland Harbour Bridge;
 - e Safety improvements along the SH network, and safety benefits to the local road network due to the reassignment of traffic onto the SHs;

- f The provision of an extension to the Northern Busway. This is expected to improve travel times and improve journey time reliability for bus users, through the provision of a dedicated facility which will allow passengers to avoid congestion within the general traffic stream. This in turn is expected to lead to improvements in public transport patronage; and
 - g The provision of a number of new facilities and connections for pedestrians and cyclists.
- 15.3 The adverse transport effects of the Project will primarily be experienced during the construction phase. These effects will be significantly avoided or mitigated by the imposition of a series of conditions which will govern the construction phase.

16 Conclusions

- 16.1 The Project will improve the efficiency and effectiveness of travel along the strategically significant routes of SH1, SH18 and the Northern Busway.
- 16.2 Additions and enhancements to walking and cycling facilities will be made as part of the Project.
- 16.3 Overall, the Project will increase traffic volumes on SH1 and SH18, while generally reducing volumes on the local road network, benefitting local traffic, public transport and walking and cycling modes.
- 16.4 These improvements will enhance the capacity and efficiency of movement, for people and freight travelling within Auckland, and between Auckland and the north.

Ian Clark

Ian David Clark

20 April 2017