Planning | Surveying | Engineering | Environmental

Subject: **Drury Metropolitan Centre Stage 2 Fast Track Application**
Work From Home Methodology

Ref: A23016

21 July 2025

Noted By: **Daryl Hughes, Associate / Principal Transportation Engineer**

Background

Chapter 5 of the CKL Integrated Transportation Assessment (the ITA) dated 14 March 2025 described the traffic effects of the Drury Centre Precinct Stage 2 Fast Track application. That chapter described the traffic modelling that had previously been undertaken (Section 5.1.1) and outlined a revised modelling tests undertaken to assess the effect of changes to the timing of the proposed infrastructure upgrades (Sections 5.2 and 5.3). It also described proposed changes to the activity mix within the applicable precincts (Section 5.4).

Section 5.5 then introduced adjustments to trip generation rates that were made to reflect changes to travel habits as a result of the global Covid-19 pandemic since the original traffic modelling was undertaken, namely the prevalence of working from home (WFH) including hybrid working practices. As a result of each of these aspects, an updated Development / Sequencing Table was provided as Table 11 of the ITA.

Since the Stage 2 Fast Track ITA was submitted, several meetings have been held with Auckland Council, Auckland Transport and NZTA to discuss the methodology involved in the WFH adjustments, leading to some technical responses being sent via email. Further, questions about WFH methodology were also raised within the Council's suggested Section 67 request, which included input from Auckland Transport.

This memo:

- Summarises the methodology to adjust trip generation rates to account for changes in WFH habits that we used in the ITA;
- Summarises changes to the methodology following AT / NZTA discussions and presents an updated Development / Sequencing Table;
- Collates the various questions asked and answers provided through each of those processes; and
- Responds to the Council's relevant Section 67 request items.

ITA WFH Adjustment Methodology

Section 5.5 of the ITA described the WFH adjustment to trip rates as a result of the changes to working habits since the modelling was undertaken. Figure 65 of the ITA within that section presented a comparison of the percentage of people working mostly from home, derived from a comparison of

the 2018 and 2023 census responses relating to how people normally travel to work. This is provided below as Image 1 for ease of reference.

Image 1: ITA Figure 65, Percentage Change in People Mostly Working from Home

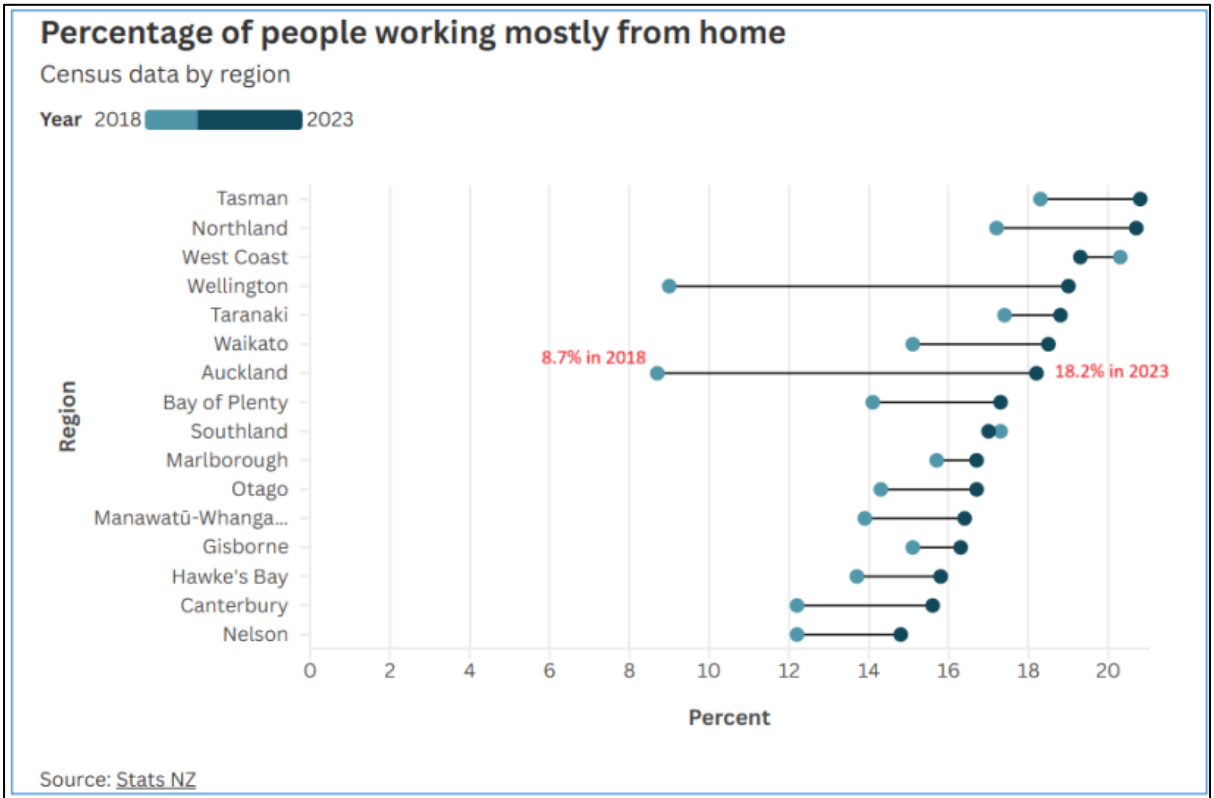

FIGURE 65: CHANGES IN WFH BY CITY/REGION

The figure established a 9.5% increase in mostly working from home in Auckland. To produce a simple calculation, that number was conservatively factored down to 9% and applied to the residential trip rates used in the Drury Plan Change modelling and all subsequent consenting reports. Along with the changes to infrastructure upgrade timings and the changes to the Drury East activity mixes, Table 11 presented a revised Development / Infrastructure Sequencing Table, replicated in Image 2 below for ease of reference.

However, it is noted that WFH is expected to be particularly prevalent in Drury East due to its location towards the edge of Auckland urban area, the TOD effect that is already recognised in the trip rates, and the fact that there will be many significant amenities and employment to maximise internal trips. It is considered therefore that using the Auckland specific WFH data is conservative.

Image 2: ITA Table 11: Updated Development / Infrastructure Sequencing table

TABLE 11: DEVELOPMENT/INFRASTRUCTURE SEQUENCING TABLE

Row	Transport Infrastructure	Expected Completion	Level of Development enabled by Transport Infrastructure				
			Residential (Dwellings)	Retail (GFA)	Commercial (GFA)	Community (GFA)	Drury East Peak Hr Trip Gen
(a)	Existing GSR / Waihoehoe roundabout	N/A	Up to 600 units	Up to 5,000sqm	-	-	Up to 800 trips
(b)	Waihoehoe Road Ultimate upgrade incl full GSR/Waihoehoe signalisation Drury Central Rail Station	Early - mid 2028 Late 2026	600 to 1,100 units	5,000 to 32,000sqm	-	-	800 to 2,000 trips
(c)	SH1 Six-laning Papakura to Drury.	2030	1,100 to 2,660 units	32,000 to 73,000sqm	-	-	2,000 to 3,800 trips
(d)	Mill Road southern connection (Fitzgerald to SH1 (incl. Drury South Interchange) SH1 direct southbound connection	Not programmed Not programmed	2,660 to 3,300 units	73,000 to 83,000sqm	up to 6,000sqm	Up to 600sqm	3,800 to 4,300 trips
(e)	Mill Road northern connection Opaheke northern link	Not programmed Not programmed	3,300 to 5,800 units	83,000 to 97,000sqm	6,000 to 47,000sqm	600 to 10,000sqm	4,300 to 5,600 trips
(f)	Assessment of PT uptake required	N/A	5,800 to 6,400 units	97,000 to 108,000sqm	47,000 to 60,000sqm	10,000 to 16,000sqm	5,600 to 6,000 trips

Changes to WFH Adjustment Methodology Following AT / NZTA Comments

Around the time of the Fast Track ITA lodgement, further information was supplied by Auckland Transport that shed more light on the increase in the WFH responses that led to a revision of the WFH methodology. A spreadsheet was provided that included a further breakdown on changes to travel habits by mode, which wasn't available at the time of writing the ITA. The spreadsheet included the following results:

- % increase in normally WFH (17.9 in 2023 – 8.7 in 2018): **9.2%**
- % decrease of normally travelling by car (74.1 in 2018 – 69 in 2023): **5.1%**
- % decrease of normally travelling by other modes (17.2 in 2018 – 13.1 in 2023): **4.1%**

The reason that the total WFH percentage at 9.2% differed from the previously presented 9.5% is unknown, but as the figure had been rounded down to 9% anyway, it had no bearing on the results.

The key finding of the data is that of the 9.2% WFH increase, only 5.1% were due to a reduction in car trips, while the remaining 4.1% were due to a reduction in other travel modes. In light of these results, the reduction of residential (car) trip rates of 9% used in the ITA appears optimistic, and that a more realistic reduction would have been 5.1%. However, given the additional data it was decided to dial further into the census results and other research to derive a more appropriate set of changes to trip rates, including the effect the increase of WFH on retail and commercial trips rates. Another factor

considered was, as the census question relates to how people "normally" travel / WFH, those that "sometimes" travel / WFH should also be taken into account.

Effect of people "Sometimes" travelling / WFH

As described earlier, the initial WFH adjustment in this ITA was based on Census data showing a ~9% shift toward WFH. This overall shift comprised an approximate ~5% reduction in car-based commuting and a ~4% reduction in other travel modes.

A more detailed analysis has now been undertaken to quantify the effect of "hybrid" work patterns—i.e., individuals who only travel to work some days of the week. This is necessary because the Census data reflects how people normally travel, which doesn't capture reduced trip frequency for those who travel fewer than five days per week. For example, a person commuting only three days a week would still be counted as a "normal commuter," which would potentially overstate actual trip demand.

A study by Hall et al. (on behalf of the NZ Modelling User Group)[1] provides insight into the distribution of weekly commuting days. To align this with the Census result indicating 17.9% WFH prevalence (as referenced earlier), the travel frequency distribution was adjusted (normalised), resulting in the following pattern as shown in Table 1:

Table 1: Percentage of People Travelling for 1-5 Days per Week

Days Travelling	Split
5	56.1%
4	13.9%
3	12.2%
2	4.1%
1	2.3%
0	11.5%

This distribution reflects a continuum from full-time commuters to full-time WFH individuals. To estimate how many people sometimes travel or WFH (i.e., deviate from their primary mode), probability model was applied. For instance:

- A person who commutes four days/week has a 20% chance of not travelling on any given day.
- A person commuting three days/week has a 40% chance of WFH on a given day.

Similarly, for people who WFH most of the week:

- Someone commuting one day/week has an 80% chance of WFH on any given day.

[1] https://onedrive.live.com/?redeem=aHR0cHM6Ly8xZHJ2Lm1zL2IvYy9jMjI0YWU4YzdkZjVlMDNmL0ViYVhldENqV1lsRmlrYVN6OUhkZUFNQl9YbjN1OERiMDlmVzN0X0s5YzVoSnc%5FZT1JWjBYTjU&cid=C224AE8C7DF5E03F&id=C224AE8C7DF5E03F%21sd07a97b659a345898a4692cfd1dd7803&parId=C224AE8C7DF5E03F%21sca3b343b7d1147309c950ec8303e1a1c&o=OneUp

To estimate the net effect on trip generation, we:

1. Multiply the population share in each commuting category by their likelihood of being in the alternate state (i.e., WFH vs travel).

2. Apply a mode split adjustment based on Census data, attributing 5/9 of the WFH shift to driving and 4/9 to other modes (reflecting the breakdown of the original 9% shift).

The resulting impact is summarised in Table 2 below (the blue rows would increase the rate of WFH while the green rows would reduce this probability).

Table 2: Calculation of People Sometimes Driving and Sometimes WFH

Days Travelling	Split	% change	Probability of person being sometimes different	Probability of being sometimes different and driving	**Total**
5	56.1%	0%	0.0%	0.0%	
4	13.9%	20%	2.8%	1.5%	**4.2%**
3	12.2%	40%	4.9%	2.7%	
2	4.1%	40%	1.6%	-0.9%	
1	2.3%	20%	0.5%	-0.3%	**-1.2%**
0	11.5%	0%	0.0%	-0.0%	
					3%

Rounding conservatively, a 3% net reduction in driving trips due to these hybrid travel patterns is warranted, in addition to the base 5% reduction attributed to permanent WFH behaviour. Therefore, a total 8% reduction in trip rates has now been applied for residential activities.

Effect of WFH on Retail Trip Rates

In terms of effects on retail, some of the 5% shift from driving to WFH previously visited retail. The Household Travel Survey[2] stated that 29% of trips were people travelling to the shops or for entertainment (such as going to the movies) purposes. Given that there is an expected reduction in trip rates due to increased WFH, there is also likely to be a partial decrease in rates for the retail activity, as previously there was no accounting for secondary or internal trips. With the 5% reduction in car trips as established earlier, this equated to a 1.5% reduction in retail rates (29% of 5%).

However, since the calculation was undertaken, the Household survey data has been updated, showing 27% or household trips now related to retail or entertainment. However, with the updated WFH calculation that established an 8% rate increase in normally and sometimes WFH that previously travelled by car, multiplying that by the more recent 27% value for trip purposes to retail/entertainment, corresponds to a 2.2% reduction in the peak hour trip rate for retail activity. As such, the 1.5% used in the initial calculation is considered conservative and was retained.

[2] Travel Purpose ad Time graph, https://www.transport.govt.nz/statistics-and-insights/household-travel

Effect of WFH on Commercial Office trip rates

No discount to commercial offices has been applied as evidence shows employers have balanced WFH prevalence with smaller offices sqm per employee. This may explain anecdotal observations of offices being full of employees despite hybrid working being evident.

Outcome of analysis and updated Development / Infrastructure Sequencing table

With the now updated 8% reduction in residential trip rates and 1.5% reduction in retail trip rates outlined above, an updated Development / Infrastructure Threshold Sequencing Table has been produced, as shown in Image 3 below.

It should be noted that the WFH adjustments were only applied to rows (c) and (d) of the table. This is because resource consents are already granted for the development yield that can be achieved by the Waihoehoe Road Ultimate Upgrade in row (c), i.e., 32,000sqm retail and 1,100 residential units; and rows (e) and (f) assume that the northern connection of Mill Road is in place, which significantly diversifies the trip distribution throughout the region, making the implications much more complex. Instead, it is proposed to retain the thresholds within rows (e) and (f) and provide further evidence to support trip generation changes once the thresholds are reached, by which time it is likely that surveys of existing development within the Drury East precincts can be collected.

Image 3: Updated Development / Infrastructure Threshold Sequencing Table

Row	Transport Infrastructure	Expected Completion	Level of Development enabled by Transport Infrastructure				
			Residential (Dwellings)	Retail (GFA)	Commercial (GFA)	Community (GFA)	Drury East Peak Hr Trip Gen
(a)	Existing GSR / Waihoehoe roundabout	N/A	Up to 600 units	Up to 5,000sqm	-	-	Up to 800 trips
(b)	Waihoehoe Road Ultimate upgrade incl full GSR/Waihoehoe signalisation Drury Central Rail Station	Early - mid 2028 Late 2026	600 to 1,100 units	5,000 to 32,000sqm	-	-	800 to 2,000 trips
(c)	SH1 Six-laning Papakura to Drury.	2030	1,100 to 2,660 units	32,000 to 71,000sqm	-	-	2,000 to 3,800 trips
(d)	Mill Road southern connection (Fitzgerald to SH1 (incl. Drury South Interchange) SH1 direct southbound connection	Not programmed Not programmed	2,660 to 3,300 units	71,000 to 78,500sqm	up to 6,000sqm	Up to 600sqm	3,800 to 4,300 trips
(e)	Mill Road northern connection Opaheke northern link	Not programmed Not programmed	3,300 to 5,800 units	78,500sqm to 97,000sqm	6,000 to 47,000sqm	600 to 10,000sqm	4,300 to 5,600 trips
(f)	Assessment of PT uptake required	N/A	5,800 to 6,400 units	97,000 to 108,000sqm	47,000 to 60,000sqm	10,000 to 16,000sqm	5,600 to 6,000 trips

To provide a useful tracking comparison of how the mix of activities has changed from the Plan Change table, through the Fast Track Consent ITA and to the above updated output, Image 4 below has been provided. Note that the Hourly Trip Threshold (the final column in each of the Development / Infrastructure Sequencing Tables remains unchanged in all iterations to retain the integrity of the original traffic modelling undertaken by SGA and adopted in the Plan Change and subsequent consents.

Image 4: Changes to Activity Breakdown Since Plan Change

Hourly Trip Threshold	Scenario	Row	Resi	Retail	Commercial	Community	Comment
3,800	Plan Change	d	3,300	56,000	17,900	2,000	
	With activity area adjustments	c	2,660	65,000	0	0	
	With WFH = -9% resi	c	2,660	73,000	0	0	2025 Fast Tack / Consent applications
	With WFH = -8% resi -1.5% retail	c	2,660	71,000	0	0	Revised WFH approach
4,300	Plan Change	e	3,800	64,000	21,000	2,400	
	With activity area adjustments	d	3,300	72,000	6,000	600	
	With WFH = -9% resi	d	3,300	83,000	6,000	600	2025 Fast Tack / Consent applications
	With WFH = -8% resi -1.5% retail	d	3,300	78,500	6,000	600	Revised WFH approach

Post-Lodgement Questions from AT / NZTA and Answers provided

Following lodgement of the ITA as part of the Fast Track application, a meeting was held with AT, AC and NZTA on 3 June 2025. At that meeting, changes to the WFH trip methodology outlined above were presented. Several questions were asked during the meeting, and further work was undertaken to respond to those questions. On 9 July 2025, a response was sent via email. The questions asked and responses sent are summarised below, with the questions shown in bold italics..

> ***What are the actual effects of the revised WFH methodology (i.e. 8% residential and 1.5% retail trip rate reductions) in terms of traffic generation?***

For context, when talking about the WFH effects on the trips generated by the Drury East developments, we reference the Drury East peak hour trip generation column, at the far right of the updated Thresholds for Subdivision and Development table, provided below as Table 5 for ease of reference. The peak trip generation for rows (c) and (d) are 3,800vph and 4,300vph respectively, which we've ringed for clarity. It should be noted that these trip generation figures remain fixed for all trigger table iterations, including WFH calculations and changes to the mix of activity areas. This is to ensure that traffic generated in each row remains consistent with the plan change modelling that informed the Plan Change trigger table, and all subsequent iterations.

Image 5: Updated Development / Sequencing Table with trip generation thresholds highlighted

Row	Transport Infrastructure	Expected Completion	Level of Development enabled by Transport Infrastructure				
			Residential (Dwellings)	Retail (GFA)	Commercial (GFA)	Community (GFA)	Drury East Peak Hr Trip Gen
(a)	Existing GSR / Waihoehoe roundabout	N/A	Up to 600 units	Up to 5,000sqm	-	-	Up to 800 trips
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(f)	Assessment of PT uptake required	N/A	5,800 to 6,400 units	97,000 to 108,000sqm	47,000 to 60,000sqm	10,000 to 16,000sqm	5,600 to 6,000 trips

Residential

For context, the modelling in the Stage 2 Fast Track ITA assumed a 9% WFH reduction to residential trip rates, based on the broad increase in WFH of 9% between the 2018 and 2023 Census results. As presented in the meeting with AT / NZTA (and summarised in the circulated meeting slides), that methodology has now been revised to assume an 8% decrease to residential trip rates, consisting of 5% change in people who WFH, plus a 3% adjustment based on a statistical calculation of those that now sometimes drive / WFH (as described earlier in this memo). This action response therefore addresses the trip generation of the 8% WFH updated methodology, rather than the previous 9% WFH methodology.

The changes to the number of trips generated by the residential developments, based on an 8% WFH reduction factor are as follows:

- At the 3,800vph trip generation threshold (which corresponds to 2,660hh) the 8% residential WFH adjustment relates to a reduction of **106 residential trips per hour** (=1,330vph without the adjustment minus 1,224vph with the adjustment).
- At the 4,300vph trip generation threshold (which corresponds to 3,300hh) the 8% residential WFH adjustment relates to a reduction of **122 residential trips per hour** (=1,523vph without the adjustment; and 1,401vph with the adjustment).

Retail

The latest iteration of the WFH adjustments assumed a 1.5% reduction in retail trip rates, as per the methodology set out in the presentation slides. The changes to number of trips generated are as follows:

- At the 3,800vph trip generation threshold (which corresponds to 65,000sqm retail) the 1.5% WFH adjustment relates to a reduction of **37 retail trips per hour** (=2,456vph without the adjustment; and 2,419vph with the adjustment).

- At the 4,300vph trip generation threshold (which corresponds to 72,000sqm retail) the 1.5% WFH adjustment relates to a reduction of **40 retail trips per hour** (=2,662vph without the adjustment; and 2,622vph with the adjustment).

In total (residential and retail):

- At the 3,800vph trip generation threshold: 143vph reduction from 3,749 vph = 3.8%
- At the 4,300vph trip generation threshold: 162vph reduction from 4,185 vph = 3.9%

Overall, this is considered a relatively minor adjustment to trip generation, enabling a modest increase in retail yield.

> ***What effect do census responses from part-time workers have in terms of WFH statistics, and what effect would an anecdotally observed prevalence of Friday and Monday WFH days for hybrid workers have on the results?***

For context, this query relates to whether the proportion of people responding to the census question about how they usually travel is affected by those that work part time, and also that the statistical analysis assumes an equal five-day week whereas anecdotal observations suggest that people that WFH commonly include Friday and/or Monday as their WFH days.

Part-time workers' responses

From our interpretation, the data sources used for our work-from-home (WFH) analysis do not specifically account for part-time workers. For example, a person who works only two days per week might report that they "usually drive" to work, even if they are home-based the majority of the week. The Hall et al research commissioned by the Modelling User Group (MUGS) asked respondents how many days per week they travelled but did not capture responses from people who did not travel at all. As a result, we normalised the data to ensure that the proportion of people travelling 0–2 days per week matched the 17.9% WFH rate reported in the 2023 Census. This suggests that the number of people working from home may in fact be slightly undercounted using this method, and that more people may be staying home all week than the data directly shows.

As described earlier, we proposed an 8% reduction in peak-period residential trip generation. This figure was derived by separating the 9% increase in WFH into two components:
– A 5% reduction from car drivers who now WFH, and
– A 3% reduction from those who still usually travel but sometimes work from home.

The 3% figure was based on a probability calculation shown in Table 2 of this memo. This showed that people who usually travel may work from home 4.24% of the time, while those who usually work from home may travel 1.16% of the time. The net difference (4.24% – 1.16%) gives a 3.08% adjustment, which we conservatively rounded down to 3%.

To test whether part-time working patterns would meaningfully affect this analysis, we undertook a sensitivity test. In this test, we increased the number of people classified as not travelling by 5%, simulating a higher prevalence of part-time or hybrid workers. When we reran the same probability-based calculation:
– The likelihood of a usual traveller WFH dropped slightly to 3.98%,

– The likelihood of a usual WFH travelling dropped to 1.09%,
– The net change became 2.9% — only 0.18% lower than our original calculation.

For context, in a development with 3,800vph, this 0.18% change would reduce total traffic by just 2 vehicle trips per hour, which is well within the margin of modelling uncertainty.

We therefore consider that the impact of part-time workers is already implicitly accounted for, and that any further adjustment would have a negligible effect on the resulting trip generation estimates.

Monday/Friday WFH effect

There is no clear data when people are more likely to WFH. Demands on the transport network do show that Thursdays are typically busier than Friday which may indicate that some may be more likely to travel on Thursdays rather than Fridays. However, because there is more capacity available on Fridays, it is possible that someone may be more likely to drive on Fridays to reduce their overall travel time. Given that there is no clear data available, it is not possible to definitively provide a probability of whether people are more likely to WFH on different days. In the absence of data, this effect has not been taken into consideration. However, the sensitivity test above can also be applied to the Monday / Friday WFH effect, which would demonstrate that this is negligible from a trip generation perspective.

> ***Is there any research that WFH rates are declining, which would need to be accounted for in the calculations?***

A graph taken from NZTA's Research Report 729[3] dated March 2025 was included within the presentation slides provided that showed a stabilisation from 2023, replicated below in Image 6 for ease of reference:

[3] Figure 4.9, https://www.nzta.govt.nz/assets/resources/research/reports/729/RR-729-feasibility-of-modelling-impacts-of-working-from-home-on-travel-and-land-use.pdf#:~:text=Feasibility%20of%20modelling%20impacts%20of%20working%20from%20home,Kotahi%20in%202023%20to%20carry%20out%20this%20research.

Image 6: WFH Stabilisation Since 2023

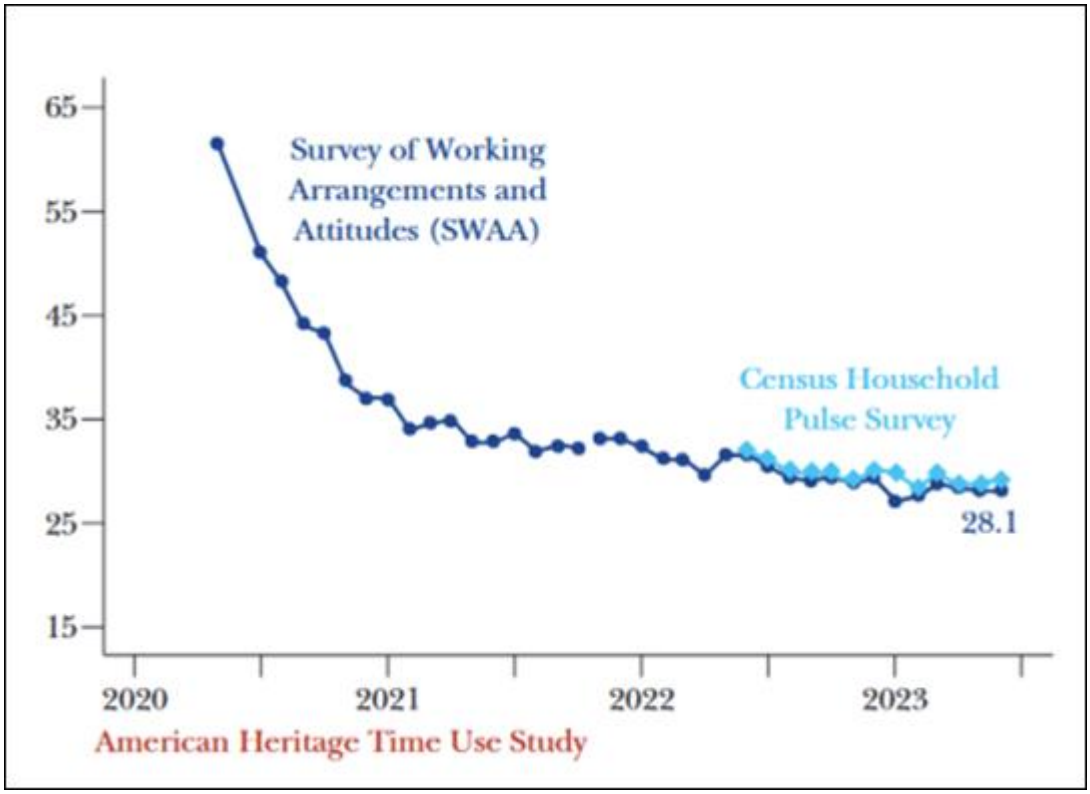
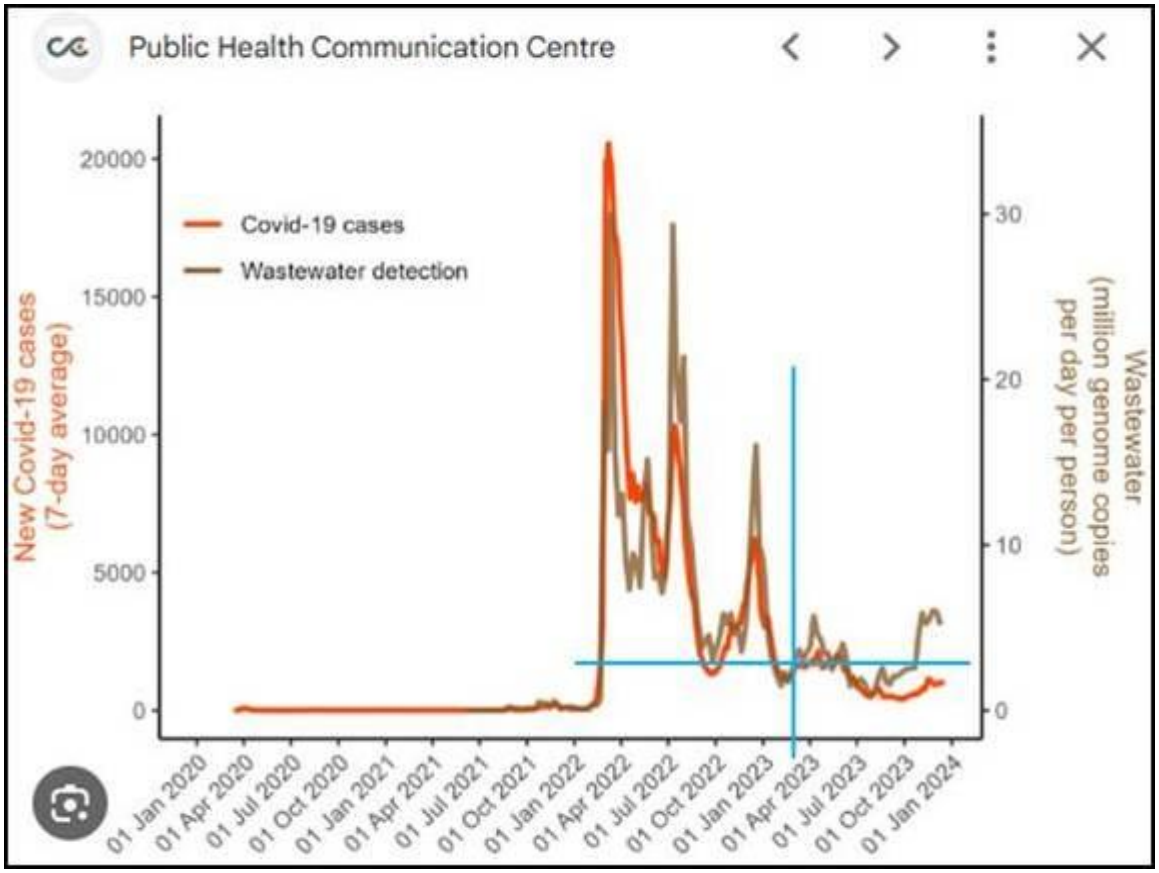


Image 7 below was provided by NZTA during the meeting. The blue lines have been added at March 2023 when the census was undertaken. The graph shows that the Covid peaks occurred well before the census was carried out. After the census, there is no significant difference in Covid rates. The reduction in new cases (orange line) is likely due to less people testing for the virus and symptoms are more akin to a cold. The wastewater testing has shown an increase since the census. Overall, the timing of the census is considered to be appropriate and not affecting by Covid rates.

Image 7: Prevalence of Covid IN New Zealand



However, it is acknowledged that the question from NZTA was not in relation to whether Covid was present in the community at the time of the census, but whether opinions towards WFH / travelling to workplaces have changed since that time. Further research undertaken since the meeting suggests that the stabilisation is real. The below Images 8 and 9 are taken from the Household Labour Force Survey[4], and present WFH statistics from June 2020 through to September 2024:

[4] https://www.stats.govt.nz/assets/Uploads/Labour-market-statistics/Labour-market-statistics-September-2024-quarter/Download-data/Work-from-home-statistics-september-2024-quarter.pdf

Image 8: WFH Rates by Employment Status (showing Stabilisation of WFH)

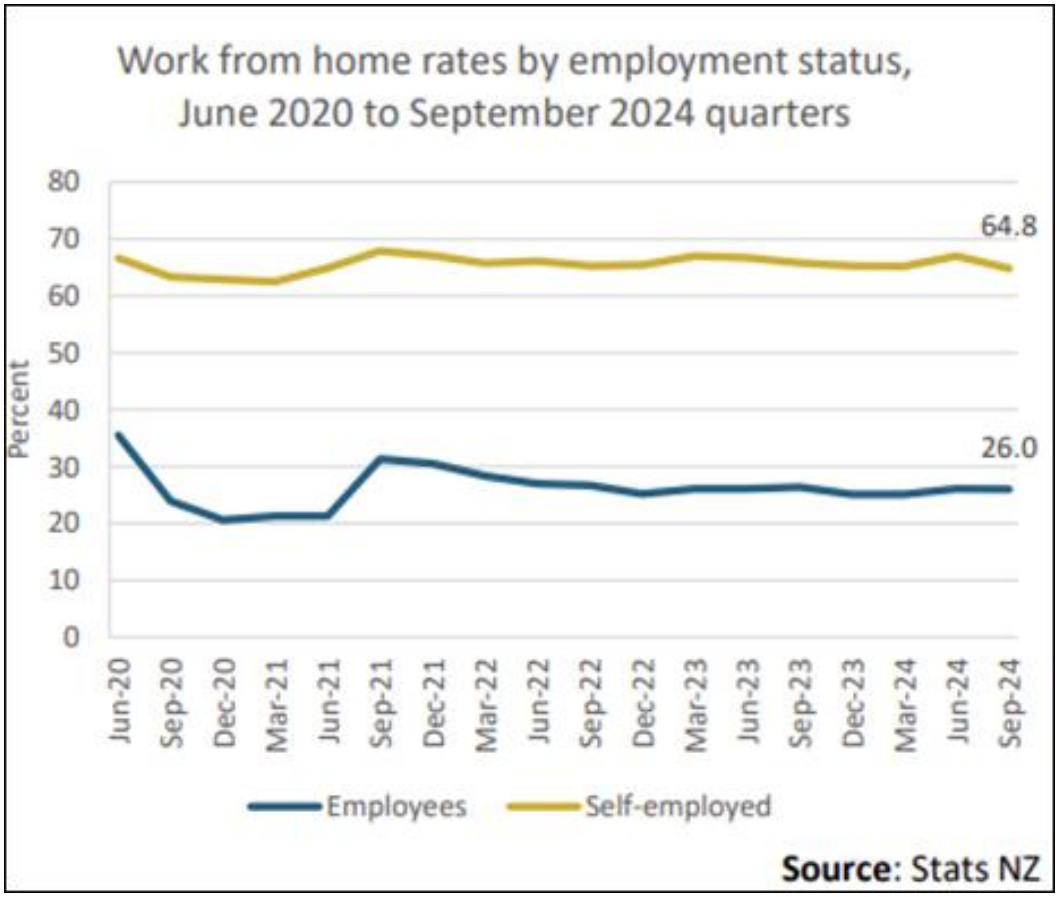
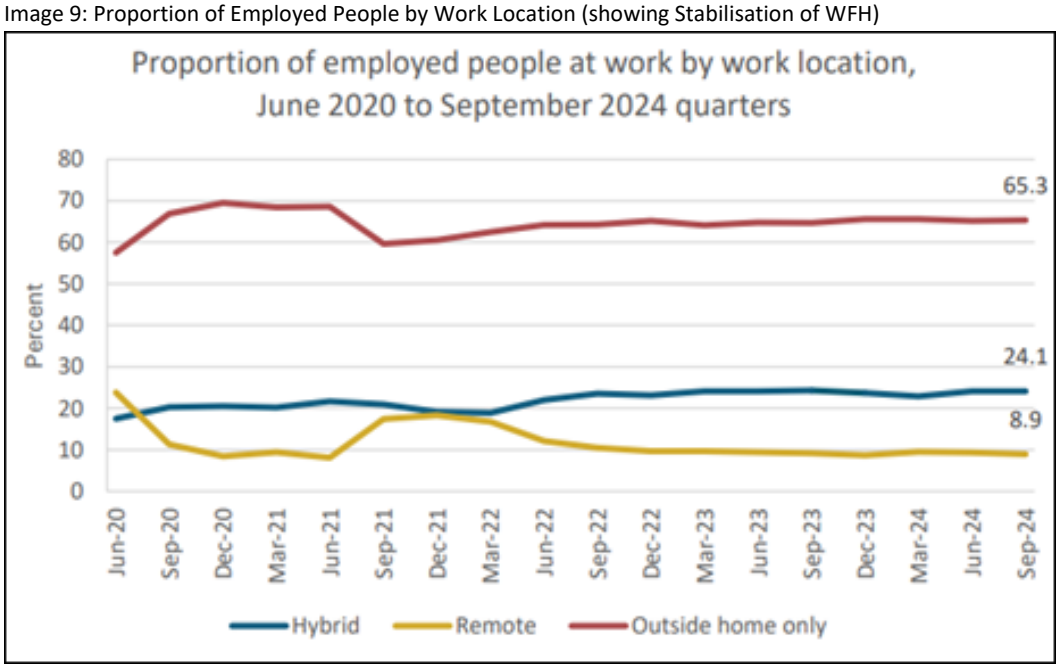


Image 9: Proportion of Employed People by Work Location (showing Stabilisation of WFH)



Both graphs show a clear stabilisation following the lockdown events in 2020 and 2021. Accordingly, it is confirmed that WFH rates have indeed stabilised and therefore the WFH assumptions used in the analysis are valid.

What are the actual trip generation rates before and after WFH Discounts?

The original trip rates (for both residential and retail) followed the SGA methodology, described within its Technical Note dated 16/03/2021 (Transport Assessment), which formed Appendix A of the SGA Drury Development Contributions Policy Transport Assessment (dated August 2022)[5]

In summary, SGA's residential trip rates were based on proximity to the Drury Central Train Station, and the forecast year, with trip rates gradually reducing the closer to the train station and the further into the future. Image 10 below shows the network nodes in the Drury East Area, then Table 3 shows the SGA trip rates for each zone by forecast year:

Image 10: Figure 2-3 of the SGA DIFF ITA – S3M Zone System for DIFF Test:

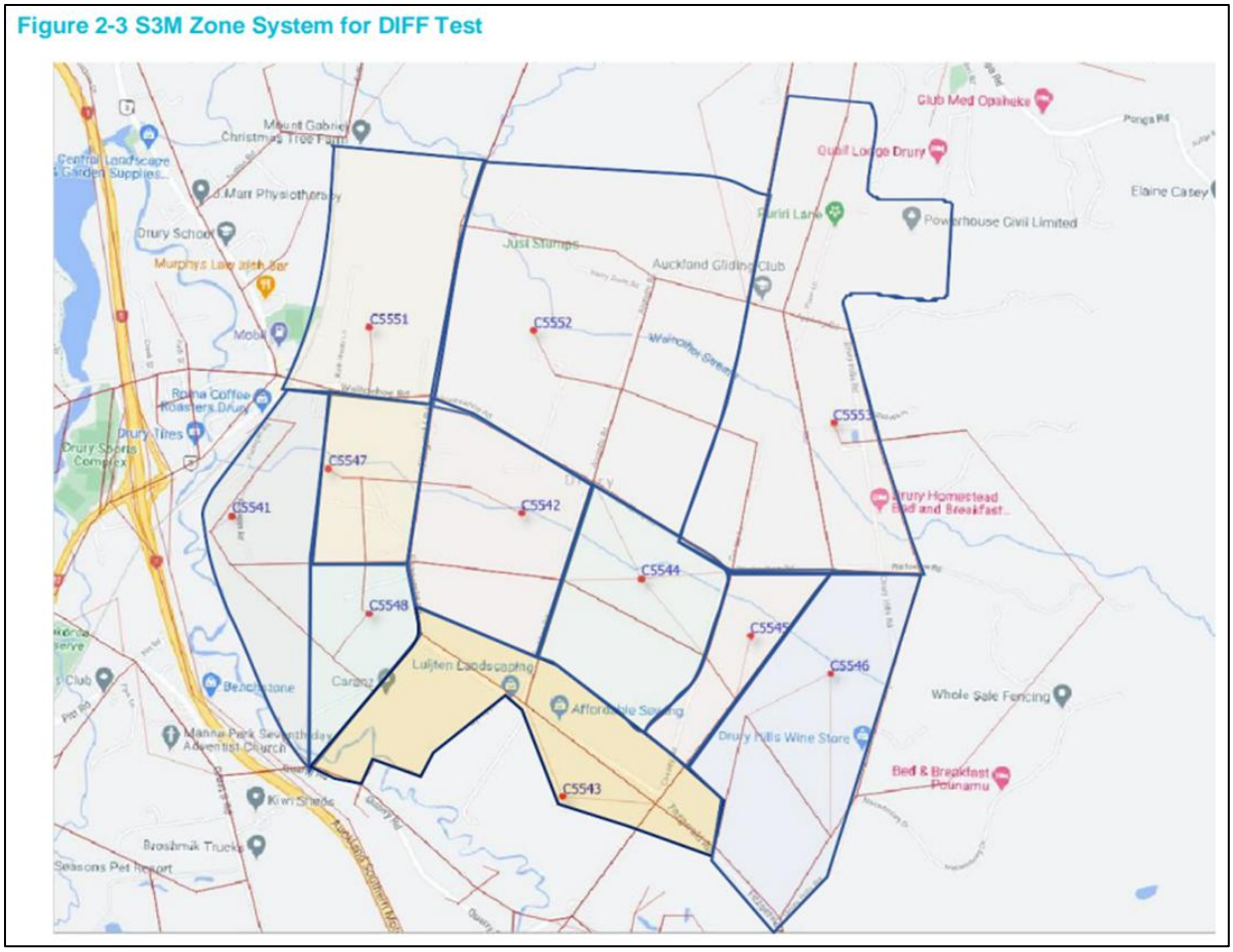


Table 3: SGA Drury East Trip Rates (unadjusted)

		2028		2033		2038		2048	
Zone	**Precinct**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
5542	Drury East	0.45	0.45	0.43	0.43	0.40	0.40	0.36	0.36
5544	Drury East	0.64	0.64	0.62	0.62	0.59	0.59	0.55	0.55
5548	Drury Centre	0.41	0.41	0.39	0.39	0.37	0.37	0.33	0.33
5551	Waihoehoe	0.45	0.45	0.43	0.43	0.40	0.40	0.36	0.36

[5] https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-policies/development-contributions-policy/Documents/drury-development-contribution-policy-transport-assessment.pdf

Table 4 below shows the trip rates once the 8% WFH reduction has been applied:

Table 4: Updated Trip Rates Including 8% WFH Reduction

		2028		2033		2038		2048	
Zone	**Precinct**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
5542	Drury East	0.41	0.41	0.39	0.39	0.37	0.37	0.33	0.33
5544	Drury East	0.59	0.59	0.57	0.57	0.54	0.54	0.51	0.51
5548	Drury Centre	0.38	0.38	0.36	0.36	0.34	0.34	0.30	0.30
5551	Waihoehoe	0.41	0.41	0.39	0.39	0.37	0.37	0.33	0.33

For brevity, SGA's retail trip rates have not been replicated here but can be seen in the SGA DIFF ITA referenced earlier. In summary they are the average of Sylvia Park Mall trip rates and those provided for shopping centres in the Institute of Transportation Engineers Trip Rate Database. Those trip rates show a gradual decrease as the centre size increases, which is an accepted trend.

What WFH rate was assumed in the original plan change modelling?

WFH was not specifically mentioned in the SGA DIFF ITA and it did not appear as a variable within the model files. Trip generation rates (pre-covid) take into account the proportion of WFH and other modes when calculating the number of trips. It is the change to this (in the absence of fresh and comprehensive trip rate surveys) that is being replicated in this exercise. For information, the pre-covid Auckland WFH rate was 8.7% (as shown earlier in this memo), so it is assumed that was the basis of the trip rates used by SGA.

Given that the census data captures trips to/from workplaces, does the analysis capture other trip purposes, such as education, retail and entertainment etc?

In terms of school and education trip purposes, no reduction has been made. In the case of primary/secondary where parents may drop off students on their way to work, it is likely that parents would still drop off students except then return home for work rather than continuing to an office. For tertiary education, there is likely to be a reduction in trip rates as more courses become available online and more resources support remote learning. However, there is no clear data available that looks at the increase in tertiary students studying from home. As such, no reduction to trip rates has been made for study from home.

Consideration has been given to trip rates for other purposes. Drury Centre Precinct includes a large amount of retail land uses. Typically, there is a high proportion of people that would travel to the supermarket or other retail shop on their way to/from work. Such trips would be considered as being secondary trips as they do not represent the primary reason for a trip to be made. Practically, people are still likely to travel to the shops, however such trips can be made during off-peak times when the journey will be faster due to reduced congestion on the roads. Applying a trip rate reduction in the peak periods is therefore still considered to be valid. From the Household travel survey, 27% of trips were people travelling to the shops or for entertainment (such as going to the movies) purposes (previously we had adopted 29% which was from previous years of the travel survey data). Given that there is an expected reduction in trip rates due to increased WFH, there is

also likely to be a partial decrease in rates for the retail activity, as previously there was no accounting for secondary or internal trips. With the 5% reduction in trips rates as suggested by AT, this equated to a 1.5% reduction in retail rates (29% of 5%). With the revised value of an 8% rate reduction as outlined above from the residential activity and a more recent 27% value for trip purposes to retail/entertainment, this would not correspond to a 2.2% reduction in the peak hour trip rate for retail activity. As such, the 1.5% used in the calculation is considered conservative.

Reponses to Section 67 Request

The questions asked in the Section 67 Request that are relevant to the traffic modelling and WFH calculations are provided below in bold italic, with the answer below each item:

> ***Item 12: There is insufficient evidence provided by the Applicant on the trip generation calculations relating to the work from home (WFH) rates. AT is unsure if the WFH rates may allow for a certain level of development to occur but not trigger the associated transport upgrades required to support the development. The Applicant should provide further information in the form sensitivity/scenario testing of the WFH assumption as AT cannot be certain of the WFH adjustments potential extent of adverse effects on the transport network.***

This memo has provided full details of the original ITA and subsequent updated methodology to account for changes to WFH and travel habits, and sensitivity tests have been carried out to establish the changes to actual traffic generation that has resulted from the analyses. Overall the analyses are considered robust and reliable, and the magnitude of change is considered negligible given the high traffic generation of the entire Drury East area.

> ***Item 13: The Applicant should confirm whether this 1.5% reduction has been applied to retail trips, and if so, provide further information on the calculations and methodology used to derive this figure. Without this information, AT cannot be certain how the WFH adjustment affects retail trip generation or fully understand the potential extent of adverse effects on the transport network.***

This has been explained within this memo.

> ***Item 14: The Applicant should provide further information demonstrating that no WFH rate adjustment has been made for either visitor accommodation or the commercial activities. Without confirmation, AT cannot be certain of the baseline trip generation from these sources and therefore cannot fully assess the potential extent of adverse effects on the transport network.***

It is confirmed that no adjustments have been made to any other activities, other than residential and retail discussed previously in this memo.

> ***Item 15: The Applicant should provide further information to demonstrate for each activity type and on each row of the proposed Table 11, the trip generation rate used (specifying the***

rate per activity type and for each relevant year of stage), and clearly reference these rates back to the specific rates in the Southern Growth Program (SGP) report. Without this information, AT cannot fully assess the potential extent of adverse effects on the transport network.

The trip rates used through the Drury private plan change (48, 49 & 50) processes, retained through all subsequent fast track and resource consent processes, used the Supporting Growth Alliance trip rates within its Drury Infrastructure Funding and Financing ITA.

This methodology was agreed with all parties (SGA, AT, NZTA, AC and the applicants) prior to commencing the Plan Change modelling. These were therefore uncontested through the plan change and subsequent processes and remain valid.

Item 16: Table 11 proposed to re-sequence some required infrastructure delivery across different development threshold (rows). The Applicant should provide further information to demonstrate the effects of allowing for an additional 49,000m2 of retail GFA be built before the State Highway 1 (SH1) six-lane works is complete in 2030. The Applicant has relied on previous modelling undertaken as part of the plan change, but this proposed change in the thresholds has not been modelled.

Section 5.3 of the ITA (Traffic Modelling to Reflect Infrastructure Timing Changes) describes the modelling process that led to the change of infrastructure sequence. In summary, with the SH1 six-laning programme being pushed back to ~2030, but with the Ultimate Waihoehoe Upgrade being brought forward to ~2028, it was necessary to carry out further Saturn and Sidra modelling to assess the overall trip generation yield that could be accommodated by the Ultimate Waihoehoe Road upgrade alone. That further modelling established that a total Drury East trip generation of 2,000 vehicles per hour (vph) could be accommodated by the Ultimate Waihoehoe Road upgrade alone. 2,000vph corresponds to 1,100 residential units and 32,000sqm GFA of retail.

In terms of this information request, item 16 appears to have misinterpreted Table 11, and the source of the 49,000sqm mentioned in the request is unknown. As described above, 32,000sqm of retail can be accommodated once the Ultimate Waihoehoe Road upgrade is in place (as per row (b) of Table 11). Beyond that, with the Ultimate Waihoehoe Road upgrade and SH1 six-laning in place, up to 3,800vph can be accommodated (shown in the final column of row (c) of table 11), which in turn relates to 73,000sqm of retail. The 3,800vph trip generation was established through the plan change modelling and has not been adjusted as part of this consent, although the achievable development yield has been adjusted to account for the WFH trip adjustments.

Item 17: The Applicant should provide further information to demonstrate what calculations go into the Table 11 Row F 'assessment of public transport uptake', what uptake expectations are needed to be met in order to determine that public transport is actually being effective in reducing private vehicle trip generation, and what planning mechanism is proposed to ensure this level of assessment is provided at the relevant time.

The threshold in row (f) of Table 11 was established through the plan change modelling and presented within the Plan Change ITA and the Fast Track ITA, and has not been adjusted in this application. However, it is not shown within Table I450.6.2.1 Threshold for Subdivision and Development within the resulting Drury Centre Precinct Provisions. Through the plan change process, this final trigger threshold was removed in favour of row A9 of table I450.4.1 (Activity Table), which specifies that non-compliance with upgrades in rows d to f of Table I450.6.2.1 are treated as discretionary consents. In summary, a new discretionary consent would be required to develop beyond row (f) of Table I450.6.2.1.

Conclusions

Significant further work and research has been undertaken through the production of the ITA, subsequent discussions with AC, AT and NZTA, and in this memo. The key findings are:

- Other than to establish a new trip generation threshold for the Ultimate Waihoehoe Upgrade without the SH1 6-laning upgrade in place (explained in Section 5.3 of the ITA and within the Section 67 Request responses in this memo), no traffic modelling has been undertaken, therefore the trip generation thresholds for each row of the Development / Infrastructure Threshold Sequence tables have been retained. The only changes made have been to the trip rates and activity mixes that produce those thresholds, and only within rows (c) and (d).
- An updated WFH analysis has combined the latest census data with a statistical probability analysis to determine that a suitable reduction in trip rates to account for changes to travel habits post the Covid-19 global pandemic are 8% for residential and 1.5% for retail activities.
- Further research has also confirmed that WFH and hybrid working practices have stabilised since 2023, ensuring that the assumptions remain valid for future years.
- Overall, once the updated trip rate reductions are applied, only minimal changes to trip generation are evident. The updated Development / Infrastructure Sequencing table maximises retail activities to take account of the reduction in residential trip generation as a result of WFH adjustments.
- The analyses are considered robust and realistic, and use latest research publications, all of which are referenced in this memo.

Accordingly, the updated Development / Infrastructure Threshold Sequencing table provided as Image 3 in this memo can be dependably used to ensure that development remains within a level that can be supported by the surrounding road network.

CKL