

MEMORANDUM

To:	Anthony Blomfield, Bentley & Co	From:	Brett Harries
cc:	Craig McGarr, Bentley & Co	HTE Ref:	cen002
cc:	Husain Ali, Century Group	Date:	17 July 2024
Re:	Jaafar Holdings Limited, 440 Mt Wellington Highway, Mt Wellington Existing Digital Billboard Dwell Time Assessment		

1. Introduction & Background

This memorandum relates to a proposal by Jaafar Holdings Limited to vary the dwell time condition that applies to the existing north-facing screen of a double-sided digital billboard pair that is located near to the northwestern corner of the site at 440 Mount Wellington Highway in Mount Wellington. This screen in question faces southbound traffic on Mount Wellington Highway (**MWH**). The proposed variation seeks to modify the applicable minimum 30-second dwell time that currently applies, to a new minimum dwell time of 8-seconds.

The digital billboard pair that contains the subject north-facing screen is one of two-sets of double-sided digital billboards that are located on the MWH frontage of the site. An application to change conditions to enable the minimum dwell times for the other three screens (that is, the south-facing screen on the northern billboard pair, and both screens on the southern billboard pair), to be reduced from 30-seconds as originally consented, to 8-seconds, was approved by way of decision LUC60326896-A in October 2023.

The subject north-facing screen was specifically excluded from the reduced 8-second minimum dwell times as approved in LUC60326896-A due to unresolved road safety concerns held by Auckland Council (**Council**) and Auckland Transport (**AT**).

Prior to receiving the LUC60326896-A decision, a meeting was held on 15 September 2023 that included the Applicant (Mr Husain Ali of Jaafar Holdings); representatives of the Applicant (Brett Harries of Harries Transportation Engineers, and Kelby Cai, Craig McGarr and Anthony Blomfield of Bentley and Co); representatives of Council (Gary Black of Harrison Grierson, and Audrey Liu, Council Planner); and representatives of AT (Vaughan Scott of AT, and Paul Schischka of PTM Consultants).

At that meeting, and in subsequent written responses from AT by way of a 28 September 2023 email from Vaughan Scott, and a 4 October 2023 memorandum from Paul Schischka, the following key road safety issues were identified as being of concern to AC and AT:

- a) An existing southbound visual overlap between a north-facing traffic signal and the billboard when approaching the SH1 northbound offramp / MWH intersection;
- b) The number and nature of crashes that have occurred at that intersection;

- c) The perceived speed of southbound traffic when free-flowing through the intersection.

At the 28 September 2023 meeting the merits of those concerns were discussed. It was posited by the Applicant's representatives that despite the existing visual overlapping of a traffic signal lantern with the currently operating digital billboard, there is no evidence from the detail of the crashes that have occurred since its implementation that implicates the presence or operation of the billboard, and that decreasing the dwell time from 30 seconds as existing to 8-seconds as proposed would not compromise that situation.

The AC and AT representatives remained unconvinced. Reference was made to:

- a) an apparent increase in crashes at the off-ramp intersection;
- b) concerns that some of the crashes may have been contributed to by the billboard, notwithstanding that the billboard was not specifically referred to in any of the crash reports; and
- c) concerns about the free-flow southbound vehicle speeds on MWH being comparatively high, which could result in serious crashes with vehicles turning right onto MWH northbound from the off-ramp if a southbound driver missed a signal change due to the visual overlapping with the traffic signal lantern.

Accordingly, at the 28 September 2023 meeting it was agreed that the north-facing screen of the northern pair of billboards would be excluded from the application for a reduced dwell time, on the basis that further investigations would be undertaken to measure southbound traffic speeds through the intersection, and to update the examination of recorded crashes at the intersection.

This memorandum addresses these further investigations.

In providing the outcomes of these further investigations, this memorandum should be read alongside the following documents:

- a) May 2023 Harries Transportation Engineers report "*Digital Billboard Dwell Times – 430-440 Mt Wellington Highway, Mt Wellington - Traffic Engineering Report*"
- b) 4 July 2023 Harries Transportation Engineers memorandum "*Response to S.92 Request for Further Information – Traffic Engineering*"

2. CAS Crash Data Update

Since the May 2023 Traffic Engineering Report (TER) and the July s92 Response were prepared, a further year of crash history has become available.

By way of reminder, the previous reports examined crash patterns within a 100m section of MWH to the north of the northern billboard pair for the five years prior to operation of the billboards, and compared them to the crash patterns that occurred in the 1½ years between commencement of operation of the billboards on 22 December 2022 and the search date of 15 May 2023.

For the purposes of this report, the 'after' search has been extended to include the past year of the billboard's operation (i.e. to the current search date of 15 May 2024). The previous crash search has also been extended to include a further 120m of the southbound approach so as to encompass the extent of the approach that is potentially

affected by the visual overlapping between the southbound primary signal and the subject billboard.

This search revealed a total of 13 crashes, with four having occurred on the southbound approach near to the off-ramp intersection, and the remaining nine having occurred within or closely proximate to the intersection. Figure 1 below shows the extent of the crash search area (shaded light blue), and the grouped locations of the crashes as output from CAS.



Figure 1: CAS crash search since billboard establishment (December 22, 2021 to May 15, 2024).

A summary of the crash types is provided in Table 1 as follows:

Crash Type	No. Crashes	Non-Injury	Minor Injury	Serious Injury
SB MWH through movement from turn lane	3	3		
SB MWH rear end	1	1		
WB Off-ramp rear end	2	1		1
SB MWH fail to stop for red signal	2		2	
WB Off-ramp fail to stop for red signal	2	1	1	
WB Lost control turning right	3	3		

Table 1: Crash type summary since billboard establishment (December 22, 2021 to May 15, 2024).

An extract from the CAS 'plain English' summary of each crash is provided in Table 2 as follows.

Crash road	Dist	Dir	Side road	ID	Date	Day	Time	Description of events	Crash factors	Fatal	Serious	Minor
MWH	16	S	MT WGTN OBR	2023271368	27/09/2023	Wed	19:57	Car/Wagon1 SDB on MOUNT WELLINGTON HIGHWAY changing lanes to left hit Truck2	CAR/WAGON1, incorrect merging/diverging manoeuvre, overseas/migrant driver fail to adjust to nz roads	0	0	0
MWH	12	S	MT WGTN OBR	2022219623	21/04/2022	Thu	21:04	Van1 SDB on MOUNT WELLINGTON HIGHWAY hit rear end of Unknown2 stop/slow for queue	CAR/WAGON3, alcohol test below limit VAN1, failed to notice car slowing, stopping/stationary	0	0	0
MWH		I	MWH OFF RAMP	2022230021	14/07/2022	Thu	9:57	Car/Wagon1 SDB on MOUNT WELLINGTON HIGHWAY hit rear of Truck2 SDB on MOUNT WELLINGTON HIGHWAY turning right from left side	CAR/WAGON1, alcohol test below limit, travelled straight ahead from turning lane or flus TRUCK2, alcohol test below limit	0	0	0
MWH		I	MWH OFF RAMP	2022239361	28/10/2022	Fri	4:44	Car/Wagon1 WDB on MOUNT WELLINGTON HIGHWAY lost control turning right; went off road to left, Car/Wagon1 hit traffic signal	CAR/WAGON1, alcohol test above limit or test refused, other fatigue, too far right	0	0	0
MWH		I	MWH OFF RAMP	2023272628	8/11/2023	Wed	13:31	Car/Wagon1 SDB on MOUNT WELLINGTON HIGHWAY hit rear of Car/Wagon2 SDB on MOUNT WELLINGTON HIGHWAY turning right from left side	CAR/WAGON1, alcohol test below limit, travelled straight ahead from turning lane or flus	0	0	0
MWH		I	MWH OFF RAMP	2022221906	11/05/2022	Wed	13:10	Car/Wagon1 SDB on Mount Wellington Highway hit Truck2 turning right onto AXROAD from the left	CAR/WAGON1, alcohol test below limit, did not stop at steady red light TRUCK2, alcohol test below	0	0	1
MWH OFF RAMP		I	MWH	2024282457	3/03/2024	Sun	0:58	Ute1 WDB on MOUNT WELLINGTON HWY OFF RAMP hit rear end of Car/Wagon2 stop/slow for signals	UTE1, attention diverted by passengers	0	1	4
MWH OFF RAMP		I	MWH	2023245712	15/01/2023	Sun	5:10	Car/Wagon1 WDB on MOUNT WELLINGTON HWY OFF RAMP hit Bus2 crossing at right angle from right	CAR/WAGON1, did not stop at steady red light, speed entering corner/curve	0	0	1
MWH OFF RAMP		I	MWH	2023272297	24/10/2023	Tue	21:50	Car/Wagon1 WDB on MOUNT WELLINGTON HWY OFF RAMP lost control turning right but did not leave the road, Car/Wagon1 hit traffic signal	CAR/WAGON1, alcohol test below limit, cutting corner on bend, other fatigue	0	0	0
MWH OFF RAMP		I	MWH	2023253713	7/04/2023	Fri	17:40	Car/Wagon1 WDB on MOUNT WELLINGTON HWY OFF RAMP lost control turning right; went off road to left, Car/Wagon1 hit raised median, traffic signal	CAR/WAGON1, alcohol test above limit or test refused, lost control when turning, speed approaching a traffic control	0	0	0
MWH OFF RAMP		I	MWH	2022214612	22/02/2022	Tue	21:42	Car/Wagon1 WDB on MOUNT WELLINGTON HWY OFF RAMP hit SUV2 crossing at right angle from right	CAR/WAGON1, alcohol suspected SUV2, alcohol test below limit, did not stop at steady red light, failed to notice control, other fatigue	0	0	4
MWH OFF RAMP		I	MWH	2022217167	26/03/2022	Sat	7:30	Car/Wagon1 NDB on MOUNT WELLINGTON HWY OFF RAMP hit turning Car/Wagon2	CAR/WAGON2, alcohol test below limit, did not stop at steady red light, other brakes	0	0	0
MWH OFF RAMP		I	MWH	2022218802	4/04/2022	Mon	12:00	Car/Wagon1 WDB on MOUNT WELLINGTON HWY OFF RAMP hit rear end of SUV2 stop/slow for signals	CAR/WAGON1, attention diverted by cell phone, failed to notice car slowing, stopping/stationary, new driver/under instruction	0	0	0

Table 2: CAS extract of crash summaries

Points to note from the crash history are as follows:

- a) The single serious-injury crash occurred on the off-ramp in advance of the intersection with MWH, and involved a rear-end crash. The at-fault driver had been distracted by rear-seat passengers while on approach toward MWH, resulting in a rear-end crash with a stationary queued vehicle. The subject billboard would not have been visible to the at-fault driver.
- b) Two crashes involved southbound drivers failing to give way for a red signal and hitting into a vehicle turning right from the off-ramp onto MWH. Both involved minor injuries. Neither crash cited the existing billboard as a contributing factor. Rather, both driver statements refer to driving while not being focussed on the driving task. Their statements as recorded in the relevant Police Traffic Crash Reports were as follows:
 - (i) *"I was too tired and did not see the red light."*
 - (ii) *"I was distracted and drove through a red light. I've been so stressed with work and everything else going on that I was distracted and didn't even see the light change."*
- c) One crash involved a southbound rear-end incident on approach to the intersection, which did not involve an injury. No crash cause or driver statement was available as the at-fault driver fled from the crash scene. This single rear-end incident since the subject billboard became operational compares to the three southbound rear-end crashes that occurred in the five years prior to establishment of the billboard.

In relation to the two crashes that involved southbound drivers failing to give way to a red signal, it is noted that the nature and frequency of these crashes are entirely typical of any signalised intersection. Neither the total of two crashes, nor the statements of the two drivers, refer to any influence of the existing digital billboard in their failures to be focussed on the driving task.

It is further noted that the average annual rate of these crashes at 0.86 per annum is comparable to, (albeit slightly less than), the rate of 1.0 per annum of the same crash type that occurred during the five-year period preceding the establishment of the billboard. Of most significance and relevance to this proposal is the lack of any indication that the existing digital billboard has exacerbated the frequency of this crash type.

Overall, the further year of crash data since establishment of the billboard confirms the previous finding that there is no identifiable indication from either the individual crashes that have been examined, or from any adverse change to crash patterns, to suggest that the existing digital billboard has been operating unsafely.

Further, there is nothing about the road safety records at this location, nor from examination of the crash records at any other digital advertising screen within New Zealand, (noting that an estimated 90% or more of the existing approximately 1,000 digital screens currently operate with an 8-second dwell time), to suggest that a reduction in the operational minimum dwell time from 30-seconds to 8-seconds for the subject billboard cannot be achieved in a manner that similarly results in no identifiable adverse road safety outcomes.

3. Southbound Traffic Speeds

In agreement with Vaughan Scott, the location for undertaking the southbound speed count was in the section of MWH between the off-ramp intersection and the off-ramp left-turn lane slip lane. The intention of this position was to enable the recording of essentially free-flow speeds on the downstream side of the off-ramp intersection that are not materially influenced by upstream queuing effects.

TEAM was commissioned to undertake the week-long southbound traffic speed count using a pole-mounted radar recorder, which was undertaken 22-28 February 2024. Figure 2 shows where the recordings were undertaken in relation to the affected southbound primary traffic signal and the north-facing billboard screen.

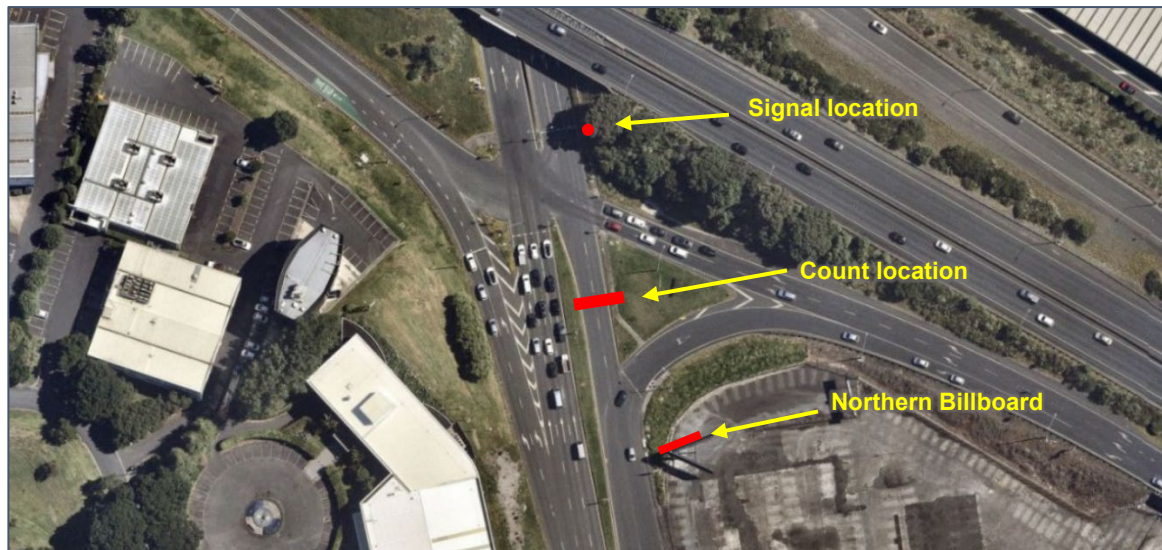


Figure 2: Speed count location.

The count measured a 7-day average daily traffic flow of 11,572 vpd; and a weekday average daily flow of 12,781 vpd. Figure 3 below shows the hourly traffic flow profiles through each day of the week.

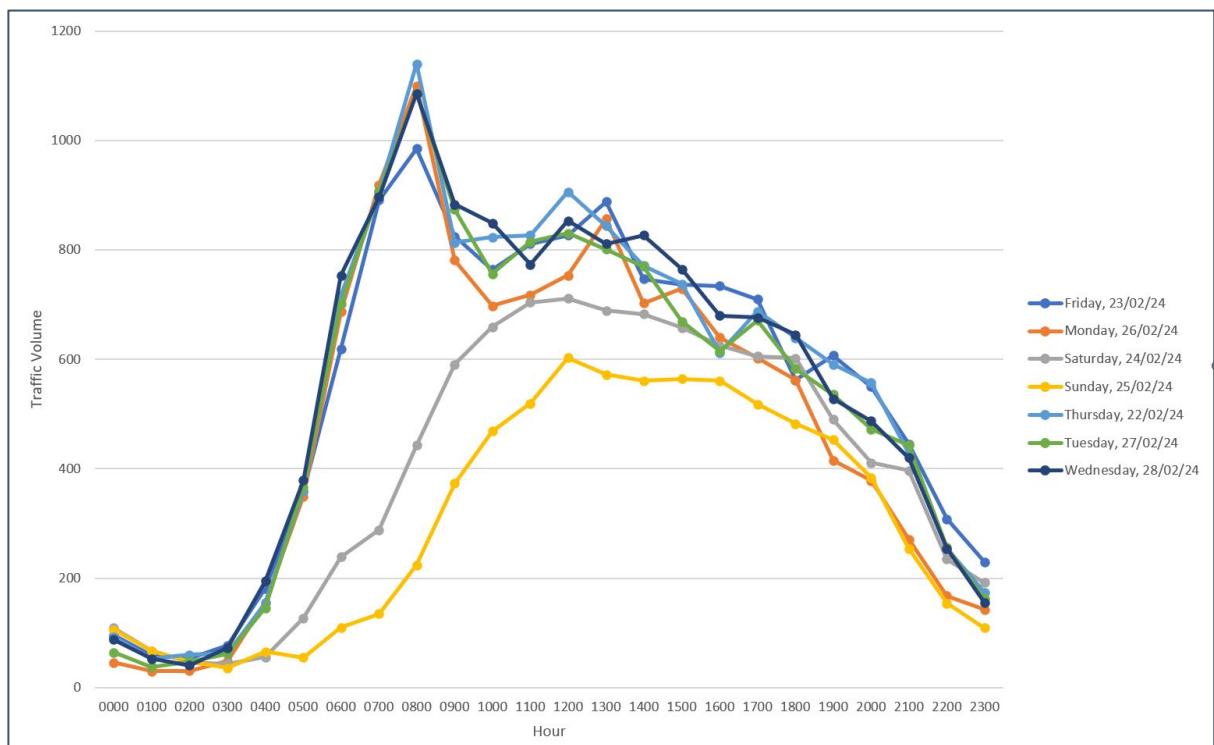


Figure 3: Southbound hourly traffic flow profiles by day (Source: TEAM)

In terms of travel speeds, the data revealed:

- A 7-day mean speed of 47.6 km/h.
- A 7-day 85th percentile speed of 54.0 km/h.

These travel speeds, which are largely unaffected by queuing, demonstrate travel speeds that are comparable with what might be expected of any Auckland arterial road.

It is noted that in advance of the intersection, (i.e. in the area of the southbound approach where the concerns were expressed about visual overlapping between the traffic signal and the billboard as per Figure 4 below), it would be expected that both the average and 85th percentile traffic speeds will be lower due predominantly to queuing effects.



Figure 4: Visual relationship of north-facing screen to southbound primary traffic signal.

Even notwithstanding that speeds in advance of the intersection are likely to be lower, the 85th percentile speed of 54 km/h as recorded would be considered typical of an arterial road traffic environment, and certainly not unexpected or unreasonably high.

It is noted in this regard that the survivability of a side impact at 50 km/h is 90%, and at 55 km/h it is about 85%.

A closer examination of the temporal profile of measured hourly 85th percentile speeds throughout an average weekday and an average weekend day is illustrated in Figure 5.

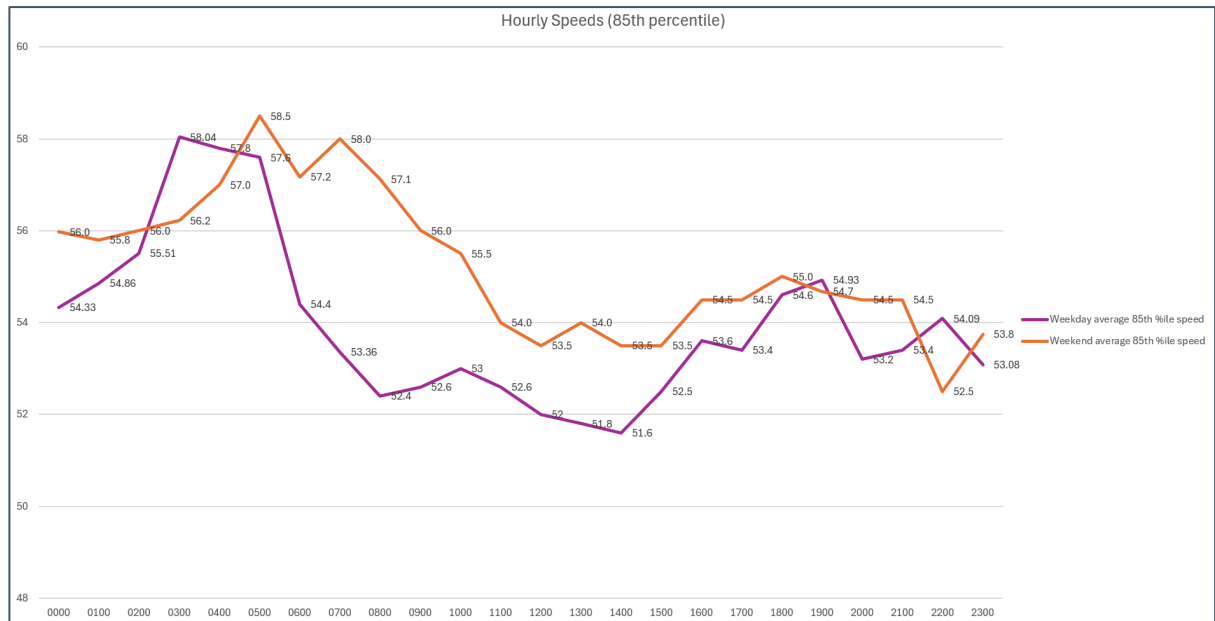


Figure 5: Hourly 85th percentile speeds by average weekday and average weekend day.

The above graph demonstrates that on weekdays, hourly 85th percentile speeds are highest between about 2am and 7am, reaching a peak of 58 km/h in the hour ending 5am. However, during the day, i.e. between 6am and midnight, the 85th percentile speeds remain consistently between 52km/h and 55 km/h, being about 53km/h on average during this period.

During the weekend, the higher early morning 85th percentile speeds persist longer, remaining above 55 km/h between midnight and 10am. However, between 10am and midnight, the hourly 85th percentile speeds remain below 55km/h, being about 54km/h on average during this period.

4. Analysis

Based on the further analysis of the additional year of post-implementation crash data, and with the benefit of the southbound speed data as now available, it is considered that the proposal to reduce the current 30-second minimum dwell time to 8-seconds can be supported from a road safety perspective.

Having said that, the data as illustrated in Figure 5 above reveals that speeds are not consistent throughout the day, and that during nighttime periods, 85th percentile speeds can exceed 55 km/h. It is considered that these existing travel speed patterns should be taken into account when assessing road safety risk associated with any dwell time reduction for the subject screen.

Accordingly, it is recommended that the 8-second minimum dwell times only apply at the following periods:

- Between 6am and midnight on weekdays.
- Between 10am and midnight on weekend days.

Outside of those periods, (i.e. between midnight and 6am on weekdays, and between midnight and 10am on weekends), the billboard should retain its existing 30-second minimum dwell time.

5. Conclusion

With the further information that is now available as described and assessed, it is possible to now more confidently confirm the findings of the original TER as they apply to the reducing the minimum dwell time to apply to the northern north-facing billboard screen from 30-seconds to 8-seconds.

As described in the TER:

- a) There is no indication that the billboards have been directly contributing to crashes, and nothing to indicate that crash patterns have deteriorated since the billboards have been operational.
- b) The proposed use of 8-second dwell times is not without basis. This dwell time applies to the vast majority of the existing billboards that operate in a wide range of urban environments within Auckland and elsewhere in New Zealand. The 12+ years of experience with those billboards reveals no identifiable situation where road user behaviours or performances have been adversely affected, or road safety in any other way compromised, by the presence of digital billboards that operate with 8-second dwell times.

Based on the findings as described in this memorandum, it is recommended that:

- a) the application to vary the dwell time condition that currently applies to the northern north-facing billboard screen be approved to enable a reduction in the minimum dwell time from 30-seconds as existing to 8-seconds as proposed for limited periods of each day.
- b) The reduced minimum dwell time shall only apply between 6am and midnight on weekdays, and 10am to midnight on weekend days. Outside of those periods (i.e. from midnight to 6am on weekdays and midnight to 10am on weekend days), the existing 30-second minimum dwell time shall apply.

B. Harries

Harries Transportation Engineers Limited

17 July 2024