Affirm NZ Ltd
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Consent Application RM230535, 332 Queen Street, Richmond
Review of Traffic Effects 19/9/2024

1. Scope of this Review

Affirm NZ Ltd has been engaged by Tasman District Council to carry out a review of the traffic matters of a resource consent application by Bekon Media Ltd to install a single sided 24.5m^2 digital billboard for off-site advertising on a building at 332 Queen Street in Richmond.

The application is a revised application to that initially lodged in August 2023, which was for a single sided 18m^2 static billboard at the same location. The main changes from the initial application are that the billboard is now proposed to be digital, and the billboard size increases from 18m^2 to 24.5m^2. The billboard location is the same as that for the initial application, mounted on the parapet of the building at 332 Queen Street, which is located on the southeast corner of the Queen Street/ Lower Queen Street/ Gladstone Road (State Highway 6) intersection

This review is intended to provide background information to the Council Planners Report on the consent application.

2. Statement of Qualifications and Experience

My name is Ari Joseph Albert Fon. I am a Director of Affirm NZ Ltd, a private engineering consultancy. I hold a Bachelor's Degree in Civil Engineering with honours from Canterbury University. I am a Chartered Member of Engineering New Zealand (CMEng), a member of the Transportation Group of Engineering New Zealand and a member of the Safety Practitioners subgroup of the Transportation Group.

I established Affirm NZ approximately eight years ago, following a long period of employment with Aurecon NZ Ltd, a multi-disciplinary engineering consultancy. For the previous 15-year period I was manager of the Aurecon Nelson office, with specific responsibility for land development and transportation projects.

I am experienced in traffic and transportation engineering and have worked in these disciplines throughout the Nelson, Tasman and Marlborough regions and New Zealand. I have also completed many traffic and access assessments for developments adjacent to both local roads and state highways throughout the Tasman region over the past 20 years. I am also an experienced road safety and safe system auditor and have completed numerous Safety Audits for Waka Kotahi NZ Transport Agency as well as for Tasman District Council (the Council) on local road projects.

3. Documents Reviewed

For the purpose of this review, I have considered the following documents:

1. Application for Resource Consent prepared by Town Planning Group (NZ) Limited on behalf of Bekon Media Ltd, 21 May 2024, (the Application).
2. Proposed Digital Billboard, Queen Street, Richmond – Assessment of Transportation Matters, Carriageway Consulting, 21 May 2004 (the Carriageway report).
3. Urban Design & Visual Impact Assessment (DCM Urban), April 2024

4. Planning Context

Resource consent is required for a **Restricted Discretionary Activity** under the Tasman Resource Management Plan (TRMP) pursuant to Rule 16.1.4.2. Council's discretion is restricted to:

(1) Location and legibility in relation to traffic safety.

(2) Any amenity effect on the surrounding area, including size and duration.

5. Intersection Safety Assessment

The Carriageway report includes a review of the reported crash history at the intersection for the five-year period 2019 – 2023 and 2024 (to date). An analysis of the 21 crashes that occurred over this period on the two legs that would have visibility to the proposed billboard is also included in the report. The conclusion made in the Road Safety section in paragraph 2.3.2 of the Carriageway report is that "*it does not appear that there are any inherent road safety deficiencies at this location*."

The previous traffic effects review of the original static billboard application at this site (Affirm NZ, 7 December 2023), included an analysis of the respective Collective Risk, Personal Risk and Level of Safety Service (LoSS) of the intersection and provided comparisons to other signalised urban crossroads intersections nationally. That analysis also remains valid for this revised application.

To put the safety performance of the intersection into context in more local terms, a brief investigation has been caried out using reported crash data from the Waka Kotahi Crash Analysis System (CAS) for crashes coded only to intersections, at all urban intersections (maximum 50km/h regulatory speed limit) in the Nelson and Tasman regions for the five-year period 2019 – 2023. This covers all intersections within the main urban areas of both regions including Nelson, Richmond, Stoke, Motueka, Takaka, Wakefield and Brightwater.

Over this period the Queen Street/ Lower Queen Street/ Gladstone Road (SH6) intersection has both the highest total number of reported crashes (27) as well as the highest number of reported all- injury crashes (eight), of all the urban intersections throughout the Nelson and Tasman regions.

Further, there has been a noted increase in both the number and severity of crashes at the intersection, when comparing the most recent five-year crash history (2019-2023) to the previous five-year history (2014-2018). Over these respective periods, the total number of reported crashes has increased from 20 to 27 and reported all-injury crashes have increased from three to eight.

A summary of the contributing crash factors across all 47 reported crashes for the ten-year period 2014 – 2023 shows that the main factor was poor observation, which was recorded in 25 crashes or just over half of all crashes. Poor observation includes both driver inattention and distraction. The next highest contributing factor was failure to give way or stop, which was recorded in 22 crashes or slightly under half of all crashes.

The assessment of the intersection crash risk (carried out by Affirm NZ for the traffic effects review of the initial static billboard application) showed the crash rate at the intersection is higher (worse) than that of 70% of similar intersections nationally. The more specific regional assessment outlined above, shows that this intersection has both the highest number of reported crashes and the highest number of reported all-injury crashes of any urban intersection across the Nelson and Tasman regions over the five-year period 2019-2023.

Section 2.3.1 of the Carriageway report states that for the period 2019 to 2023, plus the partial record for 2024, "*there were 21 crashes reported in this area from where drivers could potentially have seen the billboard (if it was in place)".* That number represents approximately 80% of the total number of crashes that have occurred over this period.

Based on these findings, we disagree with the conclusion made in the Carriageway report that *"it does not appear that there are any inherent road safety deficiencies at this location."*

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6. Carriageway Consulting Report

The Carriageway report includes a discussion on research papers on the road safety effects of digital billboards and provides summary information on New Zealand studies on crash rates at locations where billboards have been installed.

I agree with the statements in paragraph 3.3.1of the Carriageway report that *"the available literature is sometimes contradictory"* and that *"it appears that digital billboards do attract driver attention to a greater extent than static billboards."*

However, the referenced literature isn't conclusive with regards to the effect of any increased distraction and whether that leads to an increase in the crash rate.

As part of the General Assessment of Road Safety Effects of Billboards section in the Carriageway report, there is reference to the Austroads Research Report AP-R420-13, Impact of Roadside Advertising on Road Safety, 2013.
In referring to this document it is acknowledged that it is a research report and so doesn't have the same status as Austroads guides that are typically given more weight in traffic engineering.

There are some direct quotes taken from the Austroads report that are included in the Carriageway report. Paragraph 3.2.2. 8 of the report includes excerpts from Section 5.3 - Summary of the Austroads report, with some of the lines bolded. However, the Carriageway report omits the text immediately following the quoted excerpt, which states:

"On the other hand, from a Safe System perspective it would be difficult to justify adding any infrastructure to the road environment that could result in increased distraction for drivers."

Section 3.1 of the Carriageway report discusses the guidance provided in the Waka Kotahi Traffic Control Devices Manual (Part 3, Advertising Signs) and paragraph 7.2 in the Conclusions section of the Carriageway report states:

"The location of the billboard meets the recommendations of the Waka Kotahi Traffic Control Devices Manual (Part 3, Advertising Signs), other than in respect of the proximity to intersections, and to permanent warning / regulatory signs."

The relevant Section 5.5 of the Traffic Control Devices Manual states:

The location of advertising signs or devices in close proximity to traffic control devices may result in the advertising sign obscuring a traffic sign or otherwise detracting from the traffic sign's effectiveness. Traffic control devices place demands on a driver's attention and are often located at sites to warn of specific hazards or to control hazardous traffic movements. Distractions caused by advertising signs may result in road safety problems. To help avoid safety issues, advertising signs should not be located within 100m and 200m in urban and rural areas respectively of:

- *intersections*
- *permanent regulatory or warning signs*
- *curves (with chevron signing)*
- *pedestrian crossings.*

While the digital billboard does meet some of the recommendations for advertising outlined in the Traffic Control Devices Manual: Part 3, the proposed location of the billboard conflicts with the recommended 100m setback from the intersection, the pedestrian crossing and permanent regulatory and warning signs. This non-compliance against the recommendation from the Traffic Control Devices Manual (on road safety grounds) that advertising signs shouldn't be located within 100m of any of these three features is a fundamental matter for consideration.

Southbound drivers approaching the intersection on Lower Queen Street experience a number of demands on their attention, particularly during the morning and evening peak periods. Stratford Street, located approximately 110m north of the intersection and 130m from the proposed billboard, has a high number of turning movements at peak times. While Stratford Street has a Give Way control, at peak times when queues form on both streets, southbound drivers on Lower Queen Street will allow space for traffic to turn into and out of Stratford Street as a courtesy.

Immediately south of Stratford Street, on the opposite side of Lower Queen Street are two vehicle crossings servicing light industrial and commercial areas, both of which also have higher numbers of turning vehicles in the peak periods. Along this section of the Lower Queen Street approach, the diverge taper commences for the lane gain at the intersection and for the development of the left turn slip lane. The development of the flush painted median in the centre of the road also begins. At peak times, traffic is already two-wide at a point just south of Stratford Street, even though this isn't formally marked as a dual-lane section.

Immediately adjacent to the intersection, there is an at-grade zebra pedestrian crossing at the unprotected left turn lane.

The Urban Design and Visual Impact Assessment Graphic Attachment included in the consent application as Attachment C doesn't include a representative before and after view that southbound drivers would have when approaching the intersection on Lower Queen Street. Further, Section 5.1.4 of the Carriageway report states that the *"roadside advertising is only expected to be visible at 80m".*

However, it is evident from image VP1 on page 9 of Attachment C that drivers approaching the signals will have a view of the billboard far in excess of that distance, likely out to 130m and visible from the vicinity of Stratford Street, with the billboard becoming more prominent the closer they get to the intersection.

Section 5.1 of the Carriageway report discusses the overlap of traffic signal heads with the billboard. While no overlap will occur on the Gladstone Road approach, there will be visual overlap with the primary signal head on the Lower Queen Street approach, which is the signal on the immediate left of approaching drivers. As the Carriageway report highlights, this visual overlap will occur within the Approach Site Distance (ASD) from the traffic signal stop line, which that report assesses as 63m for an operating speed of 55km/h. Within this distance, drivers will need to make the key decision as to whether they can proceed through the intersection or brake and stop for an orange or red.

The 55km/h adopted operating speed essentially allows for free-flow conditions where there is little or no traffic, while in reality the actual operating speeds will be lower than that, with a resulting reduction in the ASD. For example, at an operating speed of 40km/h, and allowing for a driver reaction time of two seconds the ASD would be 40m. Therefore, the visual overlap of the primary signal with the billboard could have an effect over a greater range than that indicated in the Carriageway report.

As the Carriageway report sets out, there are additional signal heads on this approach comprising a dual primary, secondary and tertiary and the signal head also has a black target board, however the purpose of the primary signal is to warn approaching traffic of the state of the signals and to stop traffic at the correct position. Of all the signal heads at a signalised intersection, it is the primary signal that should be protected from any visual overlap from background advertising due to its importance.

7. Submissions

A total of 27 submissions have been received, all of which are in opposition. 22 of the submissions have specifically raised traffic safety matters as the primary reason for opposition.

Of note is the submissions made by business and/or property owners near to the subject property, along with those that are regular commuters through the intersection. Some of those submissions make anecdotal reference to having observed crashes as well as near misses at the intersection.

8. Review

The proposed digital billboard will be visible to traffic approaching the traffic signals on two legs of the Queen Street/ Lower Queen Street/ Gladstone Road (State Highway 6) intersection.

A review of crashes at all urban intersections in the Nelson and Tasman regions over the five-year period 2019- 2023 shows that this intersection has both the highest total number of reported crashes as well as the highest number of reported all- injury crashes, of all urban intersections throughout the Nelson and Tasman regions.

This indicates that there are existing safety deficiencies at the intersection, which is contrary to statements in both the Carriageway report and the Application with respect to traffic safety.

The purpose of roadside advertising, by its own definition, is to capture attention. This is undesirable from a traffic safety perspective as it could result in driver attention being side-tracked from the key driving tasks. Additional roadside distractions are also contrary to the Safe Systems Approach used in New Zealand for traffic and road safety work.

It is important that a driver's attention be focussed on the road ahead when approaching intersections, as any distraction could be detrimental to their decision-making capacity. This is consistent with the guidance provided in Section 5.5 of the Traffic Control Devices Manual: Part 3, which recommends that advertising signs should not be located within 100m of intersections in urban environments.

The location of the proposed digital billboard, at the intersection with the worst reported crash history of all urban intersection across the Nelson and Tasman regions and in conflict with a key recommendation from the Traffic Control Devices Manual: Part 3 with respect to location of advertising signage, has a likelihood of adverse effects on traffic safety that will be more than minor.

9. Proposed Conditions of Consent

The Applicant has volunteered proposed conditions, in a document titled *Bekon - Richmond - proposed consent conditions as at 11.09.2024* and noting that these have been provided on a Without Prejudice basis.

Those draft conditions relevant to traffic matters have been reviewed, with responses provided in plain text where required. Where additional or amended wording or new conditions are recommended, these have been provided in conventional fashion using underlined or struck-out text. We consider that should consent be granted, these would generally be appropriate conditions subject to the following amendments.

Condition 15

1. Each image displayed shall:

    a. Be static while being displayed, and not contain flashes, movement, scrolling, animation, full motion video, or other dynamic effects.

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Conditions 17-19

17. Once operation of the signage has commenced, the consent holder shall engage an independent chartered professional traffic engineer that is experienced in the preparation of safety assessments to provide the CMO, with Traffic Safety Reports at the following frequencies:

    a. ~~12~~ six months; and

    b. ~~24~~ 12 months.

18. The Traffic Safety Reports, including any recommended mitigation measures (if relevant), must be submitted to the CMO within 30 working days of the ~~12~~ six-month and ~~24~~ 12-month anniversaries of commencement of the signage operations.

19. The Traffic Safety Report must as a minimum include:

    a. An examination of the New Zealand Transport Agency Crash Analysis System for all recorded crashes within 100m of the ~~stop~~ limit-lines of all ~~the~~ approaches to the intersection. Particular reference to be made to crashes on legs ~~digital billboard~~ from where the images on the billboard can be seen~~, with particular reference~~ and to any crashes with the cause factor 356: "attention diverted by advertising or signs", to establish whether there is an identifiable increase of recorded crashes with interpretation having regard to the likelihood that any such increase may be attributable to the operation of the digital billboard; and

    b. Recommendation(s) of any measures that will be undertaken to avoid, remedy or mitigate any identified effects.

Advice note

The type of measures recommended in accordance this condition might include one or more of the following:

    a. Reductions to the daytime and/or night time luminance levels;

    b. Adjustments to the transition time;

    c. Increases in the image dwell time; ~~and~~

    d. Further controls on the image content~~.~~; and

    e. Convert the billboard to static only.

Advice Notes

The proposed consent conditions also include four Advice Notes in the proposed Conditions. Advice Note 1 states that the basis for defining and identifying daytime, night time, sunset and sunrise should be LINZ Astronomical Data. While

it is agreed that the astronomical data would be definitive, using that as the reference rather than prescribing set times will make compliance checking by Council officers more difficult.

We believe it is appropriate to include an Advice Note referencing the Waka Kotahi TCD Manual Part 3, but recommend expanding on the wording in Advice Note 4 to also include provisions around the use of colour on the digital billboard. This addition is consistent with the Carriageway report as these limitations on the use of colour are discussed in Section 3.1 on pages 9 and 10 of that report.

Recommended changes to Advice Note 4:

> *Guidance in relation to digital billboards is set out in Clauses 3.1 and 3.2 of the NZTA Traffic Control Devices Manual Part 3 ('Advertising Signs') 2011.*
>
> > *The colours and patterns used on the digital billboard should also comply with the provisions of Clause 6.3 of the Traffic Control Devices Manual Part 3, specifically any advertising constructed where visible from a roadway must not:*
> >
> > - *be coloured red, green, orange, white or yellow in combinations of colours, or shapes which may be mistaken for a traffic control device*
> > - *have red, green, orange, white or yellow in isolation, or in combinations of colours and in a location where it is likely to form the foreground or background to or appear alongside a traffic control device of similar colour when viewed by approaching motorists*
> > - *contain large areas of red, green or orange display on illuminated signs which at night are likely to cause confusion with traffic control signals or tail lights of vehicles.*

10. Summary and Recommendations

10.1 Conclusions

The proposed digital billboard will be visible to traffic approaching the traffic signals on two legs of the Queen Street/ Lower Queen Street/ Gladstone Road (State Highway 6) intersection.

A review of crashes at all urban intersections in the Nelson and Tasman regions over the five-year period 2019- 2023 shows that this intersection has both the highest total number of reported crashes as well as the highest number of reported all- injury crashes, of all the urban intersections throughout Nelson and Tasman regions.

The location of the billboard at the intersection is inconsistent to the guidance provided in Section 5.5 of the Traffic Control Devices Manual: Part 3, which recommends that advertising signs should not be located within 100m of intersections, pedestrian crossings and permanent and regulatory signage in an urban environment.

The billboard has the potential to distract driver's attention, which could be detrimental to their decision making capacity in a demanding environment of a signalised intersection with the worst reported crash history in the region.

Based on this, we disagree with the conclusion of the Carriageway report that *"the digital billboard will not present any particular road safety concerns."*

And for the same reasons we disagree with the conclusion in Section 5.4 of the Application that *"any potential for adverse effects can be appropriately avoided, remedied, or mitigated, and will be less than minor in the context of the receiving environment".*

Based on this review, this intersection is considered to be an unsuitable location for a digital billboard.

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10.2 Recommendations

It is recommended that the consent application for the digital billboard on the building at 332 Queen Street in Richmond be declined due to likelihood of adverse effects on traffic safety that will be more than minor.

Ari Fon, BE Civil (Hons), CMEngNZ

Director Affirm NZ Ltd