

Our Ref: 20406

24 March 2021

Ethos Urban 173 Sussex Street SYDNEY NSW 2000

Attention: Mr Gareth Bird

Dear Gareth,

RE: DIGITAL SIGNAGE – WOODVILLE ROAD, GRANVILLE RESPONSE TO SUBMISSIONS

As requested, please find herein The Transport Planning Partnership (TTPP)'s Response to Submissions (RtS) to road safety queries made by government agencies for the proposed digital signage on Woodville Road in Granville.

Background

Sydney Trains is seeking approval to install two new digital sign boards off the sides of the existing overhead railway bridge above Woodville Road in Granville. The proposed digital signage is to be located on both sides of the rail bridge facing northbound and southbound travel lanes on Woodville Road.

A Development Application for the proposal has been submitted and is currently on public exhibition. Submissions were received from Transport for NSW (TfNSW) dated 5 February 2021 and City of Parramatta Council (Council) dated 16 February 2020. TTPP has reviewed the submissions and provides the following responses.



Submissions by Transport for NSW

Submission 1: The proposed signs design and operation shall be in accordance with the Transport Corridor Outdoor Advertising and Signage Guidelines 2017 requirements.

Noted.

Submission 2: The images displayed on the signs shall not use:

- Flashing or flickering lights or content
- Animated displays, moving parts or simulated movement
- Complex displays that hold a driver's attention beyond "glance appreciation"
- Displays resembling traffic control devices by use of colour, shape or words that can be construed as giving instruction to traffic for example, red, amber, or green circles, octagons, crosses, triangles and words such as 'stop' or 'halt'
- A method of illumination that distracts or dazzles
- Dominant use of colours red or green

Noted. The contents and images displayed on the proposed digital signage would be in accordance with Table 3 of the Transport Corridor Outdoor Advertising and Signage Guidelines which state the following criterion:

- The image must not be capable of being mistaken for a prescribed traffic control device because it has, for example, red, amber or green circles, octagons, crosses or triangles or shapes or patterns that may result in the advertisement being mistaken for a prescribed traffic control device.
- The image must not be capable of being mistaken as text providing driving instructions to drivers.
- The images displayed on the sign must not otherwise unreasonably dazzle or distract drivers without limitation to their colouring or contain flickering or flashing content.
- The amount of text and information supplied on a sign should be kept to a minimum (i.e. no more than a driver can read at a short glance).

In addition, the proposed digital signage will not predominantly display the colours red or green which is in accordance with Guidelines.



Submission 3: Dwell times between displays shall be no shorter than 30 seconds due to the close proximity to the existing Traffic Control Signals (TCS) on Woodville Road.

Noted. In-line with TfNSW's recommendation, the dwell times for content displayed on the proposed digital signage on the north and south approaches shall be increased from 15 seconds to 30 seconds.

Submission 4: After twelve months of operation, the proponent shall undertake a Road Safety Assessment (RSA) to review the signage, recommend any changes and submit to TfNSW for review and implementation of any changes.

Noted. A Road Safety Assessment by a suitably qualified audit team will be undertaken following twelve months of operation. The Road Safety Assessment would be undertaken in accordance with the requirements by TfNSW and would be submitted to TfNSW for review upon completion.

Submission 5: A Road Occupancy Licence (ROL) should be obtained from Transport Management Centre for any works that may impact on traffic flows on Woodville Road during construction activities. A ROL can be obtained through http://myrta.com/oplinc2/pages/security/oplincLogin.jsf.

Noted. A Road Occupancy Licence will be obtained prior to the installation of the digital signage.

Submission 6: All costs associated with the proposed sign, including maintenance activities, shall be at no cost to TfNSW.

Noted.



Submissions by City of Parramatta Council

Submission 1: In regard to the interchange sequence signs, the report Road Safety Assessment claims that the advertising sign will not obstruct the drivers view. However, although the advertising sign is not physically obstructing the existing sign, it is still in very close proximity and may cause an information overload for the driver causing them to miss key information regarding the approaching road environment to allow them to safely navigate the road.

A digital signage is proposed to be installed on the existing railway bridge above the southbound carriageway of Woodville Road. The existing interchange sequence sign is located above the northbound carriageway which is in the direct view of oncoming motorists on Woodville Road. As such, the existing interchange sequence sign will not be obstructed by the proposed digital signage as shown in Figure 1.



Figure 1: Proposed Digital Signage Location - Woodville Road South Approach

In accordance with the Transport Corridor Outdoor Advertising and Signage Guidelines, the amount of text and information displayed on the proposed digital signage will be kept to a minimum i.e. no more than a driver can read at short glance. This is to ensure that all motorists would still be able to process the information shown on the surrounding road signs, such as the interchange sequence sign. In addition, the contents and images displayed on the proposed digital signage would not predominantly utilise colours and shapes that are similar to the interchange sequence sign to ensure motorists travelling on Woodville Road can distinguish the road sign.



However, more generally, there is a perception that digital signs would cause an unsafe level of distraction for a motorist which is likely to result in a crash incident. As such, TTPP has undertaken an analysis of crashes in the vicinity of existing digital signs like the digital signage that is proposed on Woodville Road.

The supplementary crash analysis investigates seven (7) digital signs located across the Sydney road network. The aim of the crash analysis at additional sites is to determine whether the operation of digital signs has resulted in any safety impacts to road users. Attachment One of this RtS contains the crash analysis of additional sites.

The supplementary crash analysis is based on historic crash data obtained from TfNSW for a period before and after the operation of each digital signage. Crash data has been analysed to compare the number of crashes and severity of crashes during these periods.

Overall, the findings of the supplementary crash analysis indicate that the distraction potential for road users due to the presence of a digital signage is minimal and evidently has not contributed to creating a road environment that is any less safe for road users. A practical example which demonstrates such findings is the existing digital signage on Parramatta Road in Lewisham.

Of the sites assessed by the supplementary crash analysis, the proposal at Woodville Road is most comparable to the digital signage on Parramatta Road in Lewisham for reasons explained below. Importantly, both digital signs would be located in close vicinity to an interchange sequence sign.

The digital signage in Lewisham, which was installed in May 2017, is located on the western side of an overhead railway bridge above Parramatta Road (parallel to the Brown Street cross-street) as shown in Figure 2. Like Parramatta Road, the Woodville Road digital signage would be located along a major arterial road having a signposted speed limit of 60 km/h. There would be three travel lanes on approach to the digital signage on both roads, and the signage infrastructure would be located above the opposite travel lane i.e. not directly above the travel lanes from which the signage would be visible. Also, there would be an interchange sequence sign located immediately prior to the digital signage as shown in Figure 3.



Interchange gequence sign

Figure 2: Digital Signage at Parramatta Road, Lewisham

Figure 3: Existing Digital Signage and Interchange Sequence Sign - Parramatta Road





The findings of the supplementary crash analysis during the pre-installation and operational periods for the digital signage on Parramatta Road are summarised as follows:

Pre-Installation Period (26 October 2013 - 28 May 2017):

- There were five (5) crashes recorded within the likely visible distance of the digital signage.
- Of these crashes, there were four (4) rear end collisions and one (1) incident involving a vehicle travelling off the carriageway colliding with a roadside object.
- These crashes resulted in one (1) serious injury, one (1) moderate injury, two (2) minor injury, and one (1) vehicle tow-away (non-casualties).

Operational Period (29 May 2017 - 31 December 2020):

- There was one (1) crash recorded within the same visible distance as above.
- The incident involved a vehicle travelling off the carriageway and colliding with a roadside object.
- The crash resulted in no injuries and a vehicle being towed-away.

The findings of the crash analysis on Parramatta Road suggest that the presence of a digital signage does not result in an unsafe amount of information exposure and/ or driver distraction that is likely to result in a crash. This conclusion is based on there being no additional crashes following operation of the digital signage on Parramatta Road.

Furthermore, the analysis findings all seven locations indicate that there has been no increase in the number of crashes following operation of a digital signage. Attachment One of this RtS contains the crash analysis of additional sites.

Submission 2: It is also noted that this area carries a high volume of traffic across the majority of the day and there is often queued traffic. The installation of an advertising sign at this location may cause the driver to be distracted by the advertising which may result in contributing to rear end collisions.

As addressed in Submission 1 (above), evidence gathered at existing digital signage locations does not suggest that this is the case. The findings of the crash analysis on Parramatta Road, which is similar in nature to the Woodville Road site, suggest that the presence of a digital signage does not result in an unsafe amount of information exposure and/ or driver distraction that is likely to result in a crash.

Furthermore, the existing signage in Lewisham is located within a section of Parramatta Road which carries a high volume of traffic across the day and night, and where queued traffic is common. Given that the road environment and traffic characteristics on Parramatta Road at this location are similar to Woodville Road, it is considered to be a practical example demonstrating that a digital signage of this nature is unlikely to result in greater crashes due to heightened driver distraction.



Further to the above, a study was carried out in November 2015 by Carolyn Samsa, Level 3 Road Safety Auditor at Samsa Consulting, to determine whether digital billboards are distracting to motorists. The Queensland study identified that digital billboards do not draw drivers' attention away from the road for dangerously long periods of time compared to the other signage types and drivers maintained a safe average vehicle headway in the presence of such signs. The findings of Samsa's investigation supported international studies which generally found that the presence of billboards did not significantly affect the percentage of time drivers devoted to glancing at the forward roadway.

Conclusively, a digital signage such as the proposal on Woodville Road is unlikely to distract drivers to the point of increasing the risk of rear end collisions.

Submission 3: For the traffic signals, the Road Safety Assessment states that the advertising sign will not be within the Stopping Sight Distance of the southbound traffic toward the traffic signals at the intersection of Woodville Road and Crescent Street. This point from the report is noted; however, this may cause the driver to be distracted by the advertising and to miss the traffic signals.

In accordance with the Transport Corridor Outdoor Advertising and Signage Guidelines, the amount of text and information displayed on the proposed digital signage will be kept to a minimum i.e. no more than a driver can read at short glance. This is to ensure that all motorists would still be able to observe and react to the road environment ahead of the driver.

Provided in accordance with the Guidelines, there are several locations across Sydney Metropolitan where a digital signage is located beyond traffic signals yet the signage does not detract from the traffic signals. Relevant examples are shown in Figure 4 to Figure 7. Similar to these examples, the Woodville Road digital signage facing the north approach would not be expected to distract motorists' attention away from the traffic signals.



Figure 4: King Georges Road, Roselands



Figure 5: Canterbury Road, Canterbury





Figure 6: Waterloo Road, Macquarie Park



Figure 7: Rookwood Road, Yagoona





We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

Wehn

Wayne Johnson Director



Attachement One:

Crash Analysis of Additional Digital Signage Locations



Our Ref: 20406

26 March 2021

Ethos Urban 173 Sussex Street SYDNEY NSW 2000

Attention: Mr Gareth Bird

Dear Gareth,

RE: DIGITAL SIGNAGE SAFETY ASSESSMENT EXISTING DIGITAL SIGNAGE CRASH DATA ANALYSIS

As requested, please find herein The Transport Planning Partnership (TTPP)'s crash data analysis at locations along the Sydney Trains network with existing digital signage billboards.

Background

Ethos Urban, on behalf of Sydney Trains, have submitted proposals for a new digital signage at various locations within Sydney NSW. Submissions made by Council and Transport for NSW (TfNSW) have been received which identify concerns for such digital sign boards to cause potential distraction to road users.

There is a perception that digital signage boards would result in an unsafe level of distraction to a motorist or pedestrian which is likely to result in a crash incident. As such, a review has been undertaken of crash data in the vicinity of existing digital billboard signs, like those which Sydney Trains is proposing to implement. The aim of the analysis is to determine whether the digital signage at each location has resulted in any safety impacts to road users within the vicinity of the signage.

This study assessed crash data that has been obtained from TfNSW at seven locations having digital signage owned by Sydney Trains. The crash data has been analysed to compare the number of crashes and severity of crashes for the same duration of time before and after the digital signage was installed. The findings of the analysis as presented herein identifies whether existing digital signs cause sufficient distraction to road users which result in road crashes.



Existing Digital Signage Locations

Existing digital signs which have been assessed as part of this investigation are as follows:

- M4 Motorway, Homebush,
- Parramatta Road, Lewisham,
- City West Link Eastbound, Lilyfield
- City West Link Westbound, Lilyfield,
- Pacific Highway, Pymble,
- Boundary Street, Roseville, and
- Victoria Road, West Ryde.

The location of each digital signage within the context of the surrounding road network is shown in Figure 1 to Figure 6.

Figure 1: M4 Motorway, Homebush





Figure 2: Parramatta Road, Lewisham



Figure 3: City West Link, Lilyfield





Figure 4: Pacific Highway, Pymble



Figure 5: Boundary Street, Roseville





Figure 6: Victoria Road, West Ryde



Crash History Analysis

Historic crash data has been obtained from TfNSW and assessed for incidents at seven locations with digital signage. The crash data analysis includes incidents that have occurred within the visible distance of the existing digital signage. For the purpose of this assessment, the visible distance has been based on desktop observations.

Crash data has been assessed on the approaches to the digital signage for a period prior to its installation and whilst it has been operational. The installation date varies for each signage location (as detailed below). Notwithstanding this, crash data during the operation of each digital signage has been assessed up to 31 December 2020.

M4 Motorway, Homebush

A digital signage is located on the eastern side of an overhead railway bridge across the M4 Motorway as shown in Figure 1. This digital signage, which was installed on 25 July 2016, is visible to motorists travelling on the M4 Motorway east approach within approximately 350m.

Crash history data has been assessed for the periods as follows:

- Pre-installation period: 18 February 2012 to 24 July 2016. 4 years, 5 months, 7 days
- Post installation period: 25 July 2016 to 31 December 2020. 4 years, 5 months, 7 days



A comparison of crashes pre-installation and during operation of the digital signage is presented in Table 1. The location of crashes recorded during these periods are illustrated in Figure 7 and Figure 8 respectively.

| | Crash Severity (No. of Crashes) | | | | | | | |
|--|---------------------------------|-------------------|--------------------|--------------|----------------------------|--|--|--|
| Crash Type | Fatality | Serious Injury | Moderate Injury | Minor Injury | Non-casualty (tow-away) | | | |
| Pre-Installation (18 February 2012 - 24 July 2016) | | | | | | | | |
| Rear End (RUM CODE 30) | | | | 1 | 7 | | | |
| Accident or Broken Down (RUM CODE 62) | | 1 | | | | | | |
| Struck Object (RUM CODE 66) | | | 1 | | | | | |
| Load or Missile Struck Vehicle (RUM CODE 91) | | | | | 1 | | | |
| Sub-total | 0 | 1 | 1 | 1 | 8 | | | |
| Total | 11 | | | | | | | |
| Oper | ational Period | (25 July 2016 – 3 | 31 December 20 | 20) | | | | |
| Rear End (RUM CODE 30) | | | | | 1 | | | |
| Other Same Direction (RUM CODE 39) | | | | | 1 | | | |

0

0

2

0

2

0

Table 1: Crash History Summary on M4 Motorway, Homebush

Sub-total

Total





Figure 7: Crash Locations at M4 Motorway, Homebush – Pre-Installation

Figure 8: Crash Locations at M4 Motorway, Homebush – Operational





From Table 1, a total of 11 incidents occurred in the time period prior to the digital signage. The majority of the crashes resulted in no injuries or casualties, only vehicles being towedaway; that is, 8 out of 11 crashes. As a result of the crashes, there was one serious injury, one moderate injury, and one minor injury.

The serious injury crash was a result of a vehicle colliding into a broken-down vehicle (RUM CODE 62) on the M4 Motorway. The moderate injury crash occurred when a vehicle collided with an object on the road (RUM CODE 66). The minor injury crash was a result of a rear end collision (RUM CODE 30).

Prior to installation of the digital signage, the most common type of crash was a rear end crash which made up 8 out of 11 crashes.

Once the digital signage was in operation, there was a total of two crashes recorded. Both incidents resulted in a no injuries (tow-away). One incident was a rear end crash and the other was the result of two vehicles travelling in the same direction colliding with one another (RUM CODE 39).

Overall, the number of crashes on the M4 Motorway east approach has not increased following the installation of the digital signage.



Parramatta Road, Lewisham

A digital signage is located on the western side of an overhead railway bridge across Parramatta Road in Lewisham as shown in Figure 2. This digital signage, which was installed on 29 May 2017, is visible to motorists travelling on the west approach on Parramatta Road within approximately 230m.

Crash history data has been assessed for the periods as follows:

- Pre-installation period: 26 October 2013 to 28 May 2017. 3 years, 7 months, 3 days
- Post installation period: 29 May 2017 to 31 December 2020. 3 years, 7 months, 3 days

A comparison of crashes pre-installation and during operation of the digital signage is presented in Table 2. The location of crashes recorded during these periods are illustrated in Figure 9 and Figure 10 respectively.

| | Crash Severity (No. of Crashes) | | | | | | | |
|---|---------------------------------|----------------|--------------------|--------------|----------------------------|--|--|--|
| Crash Type | Fatality | Serious Injury | Moderate Injury | Minor Injury | Non-casualty (tow-away) | | | |
| Pre-Installation (26 October 2013 - 28 May 2017) | | | | | | | | |
| Rear End (RUM CODE 30) | | | 1 | 2 | 1 | | | |
| Left Off Carriageway into Object or Parked Vehicle (RUM CODE 71) | | 1 | | | | | | |
| Sub-total | 0 | 1 | 1 | 2 | 1 | | | |
| Total | 5 | | | | | | | |
| Operational Period (29 May 2017 - 31 December 2020) | | | | | | | | |
| Right Off Carriageway into Object or Parked Vehicle (RUM CODE 73) | | | | | 1 | | | |
| Sub-total | 0 | 0 | 0 | 0 | 1 | | | |
| Total | 1 | | | | | | | |

Table 2: Crash History Summary on Parramatta Road, Lewisham





Figure 9: Crash Locations at Parramatta Road, Lewisham – Pre-Installation

Figure 10: Crash Locations at Parramatta Road, Lewisham – Operational





In the time period prior to the digital signage, there were a total of five crashes recorded within the visible distance of the digital signage. The serious injury crash was the result of driver fatigue which caused the driver to veer from the carriageway and collide into a power pole (RUM CODE 71). The moderate injury crash was related to a rear end incident. There two minor injuries resulting from rear end collisions (RUM CODE 30), and one crash that resulted in no injuries (tow-away).

Since the digital signage has been in operation, a vehicle has veered from the carriageway colliding into a parked vehicle (RUM CODE 73). This crash resulted in the vehicle being towed away, however, no injuries.

Whilst the digital signage has been operational, there has been no increase in the number of crashes within the signage visible distance on Parramatta Road.



City West Link (Eastbound), Lilyfield

A digital signage is located on the northern side of the City West Link carriageway at Lilyfield, facing eastbound traffic as shown in Figure 3. This digital signage, which was installed on 20 April 2015, is visible to motorists travelling on the western approach on Parramatta Road within approximately 350m.

Crash history data has been assessed for the periods as follows:

- Pre-installation period: 1 January 2010 and 19 April 2015. (5 years 3 months 18 days)
- Post-installation period: 20 April 2015 and 7 August 2020. (5 years 3 months 18 days)

A comparison of crashes pre-installation and during operation of the digital signage is presented in Table 3. The location of crashes recorded during these periods are illustrated in Figure 11 and Figure 12 respectively.

| | Crash Severity (No. of Crashes) | | | | | | |
|---------------------------------------|--|-------------------|--------------------|-----------------|------------------------------------|-------------------------|--|
| Crash Type | Fatality | Serious Injury | Moderate Injury | Minor Injury | Non- casualty (tow- away) | Uncategorised Injury | |
| | Pre-Inst | allation (1 Jan | uary 2010 – 19 | April 2015) | | | |
| Head On (RUM CODE 20) | | 1 | | | | | |
| Rear End (RUM CODE 30) | | | | | 2 | | |
| Sub-total | 0 | 1 | 0 | 0 | 2 | 0 | |
| Total | 3 | | | | | | |
| | Operational Period (20 April 2015 – 7 August 2020) | | | | | | |
| Other Same Direction (RUM CODE 39) | | | | 1 | | | |
| Sub-total | 0 | 0 | 0 | 1 | 0 | 0 | |
| Total | 1 | | | | | | |

Table 3: Crash History Summary on City West Link (Eastbound), Lilyfield





Figure 11: Crash Locations at City West Link (Eastbound), Lilyfield – Operational

Figure 12: Crash Locations at City West Link (Eastbound), Lilyfield – Operational





A total of three crashes have been recorded during the five-year period prior to the digital signage. One incident occurred east of the City West Link – Catherine Street intersection which was a head on crash (RUM CODE 20) that resulted in a serious injury. The other two incidents were rear end crashes which resulted in vehicles being towed away.

Whilst the digital signage has been operational there has been one crash recorded. This crash resulted in a minor injury which was due to an uncommon crash between two vehicles travelling in the same direction (RUM CODE 39).

Overall, there has been no increase in crashes on City West Link western approach following the installation of the digital signage.



City West Link (Westbound), Lilyfield

A digital signage is located on the northern side of City West Link at Lilyfield, facing westbound traffic as shown in Figure 3. This digital signage is located 100m east of the intersection of City West Link – Catherine Street. The digital signage, which was installed on 31 October 2016, is visible to motorists travelling on the eastern approach on City West Link within approximately 230m.

Crash history data has been assessed for the periods as follows:

- Pre-installation period: 30 August 2012 to 30 October 2016. 4 years, 2 months, 1 day
- Post-installation period: 31 October 2016 to 31 December 2020. 4 years, 2 months, 1 day

It is noted that there have been no crashes recorded following installation of the digital signage. A summary of crashes pre-installation of the digital signage is presented in Table 4. The location of crashes recorded pre-installation is illustrated in Figure 13.

| Crash Type | Crash Severity (No. of Crashes) | | | | | | | |
|---|---------------------------------|----------------|--------------------|--------------|----------------------------|--|--|--|
| | Fatality | Serious Injury | Moderate Injury | Minor Injury | Non-casualty (tow-away) | | | |
| Pre-Installation (1 January 2011 – 30 October 2016) | | | | | | | | |
| Rear End (RUM CODE 30) | | | | | 1 | | | |
| Sub-total | 0 | 0 | 0 | 0 | 1 | | | |
| Total | 1 | | | | | | | |

Table 4: Crash History Summary on City West Link (Westbound), Lilyfield





Figure 13: Crash Locations at City West Link (Westbound), Lilyfield – Pre-Installation

During the time period prior to the digital signage, there was one rear end crash which resulted in no injuries and only the vehicle/s being towed away. Since the signage was installed, there have been no crashes recorded within the visible distance on City West Link in the westbound direction.

Thus, the digital signage has not contributed to any further road crashes in the vicinity.



Pacific Highway, Pymble

A digital signage is located on the eastern side of Pacific Highway in Pymble as shown in Figure 4. This digital signage, which was installed on 23 March 2015, is visible to motorists travelling on the north approach on Pacific Highway. The digital signage would become visible immediately after passing the Pacific Highway - Livingstone Avenue intersection which is approximately 180m from the signage.

Crash history data has been assessed for the periods as follows:

- Pre-installation period: 1 January 2010 and 22 March 2015. (5 years 2 months 21 days)
- Post installation period: 23 March 2015 and 13 June 2020. (5 years 2 months 21 days)

A comparison of crashes pre-installation and during operation of the digital signage is presented in Table 5. The location of crashes recorded during these periods are illustrated in Figure 14 and Figure 15 respectively.



Table 5: Crash History Summary on Pacific Highway, Pymble

| | Crash Severity (No. of Crashes) | | | | | | | |
|--|---------------------------------|-------------------|--------------------|--------------|----------------------------|--|--|--|
| Crash lype | Fatality | Serious Injury | Moderate Injury | Minor Injury | Non-casualty (tow-away) | | | |
| Pre-Installation (1 January 2010 - 22 March 2015) | | | | | | | | |
| Right Through (RUM CODE 21) | | | | | 1 | | | |
| Rear End (RUM CODE 30) | | | | | 2 | | | |
| Off Carriageway Left on Right Bend into Object or Parked Vehicle (RUM CODE 81) | | | 1 | | 1 | | | |
| Off Carriageway Right on Left Bend into Object or Parked Vehicle (RUM CODE 85) | | | | | 2 | | | |
| Sub-total | 0 | 0 | 1 | 0 | 6 | | | |
| Total | 7 | | | | | | | |
| Operational Period (23 March 2015 – 13 June 2020) | | | | | | | | |
| Right Through (RUM CODE 21) | | | | | 2 | | | |
| Rear End (RUM CODE 30) | | | 1 | | | | | |
| Lane Change Left (RUM CODE 35) | | | | 1 | | | | |
| Sub-total | 0 | 0 | 1 | 1 | 2 | | | |
| Total | 4 | | | | | | | |





Figure 14: Crash Locations at Pacific Highway, Pymble – Pre-Installation

Figure 15: Crash Locations at Pacific Highway, Pymble – Operational





There were seven crashes recorded within the time period prior to the digital signage. Most of these crashes occurred at the intersection of Pacific Highway with the side road bridge crossing towards Grandview Street, and resulted in no injuries. The crashes include two rear end collisions, a vehicle travelling south colliding into vehicle turning right onto the bridge (RUM CODE 21), and three vehicles veering from carriageway at the bend into an object (RUM CODE 81 and RUM CODE 85). A similar incident occurred approximately 40m south of the bridge where a vehicle veered from the carriageway at the bend into an object resulting in a moderate injury.

Following the installation of the digital signage, four crashes have been recorded. Two of the crashes were due to a vehicle travelling south colliding into a vehicle turning right onto the bridge. The remainder of incidents were rear end crashes and a vehicle colliding with another vehicle in the adjacent travel lane (RUM CODE 35).

Overall, the number of crashes at this location has not increased following the installation of the digital signage.



Boundary Street, Roseville

A digital signage is located on the western side of the overhead railway bridge across Boundary Street as shown in Figure 5. This digital signage was installed on 17 July 2017.

On Boundary Road west approach, the signage becomes visible after a motorist has turned left or right from Pacific Highway. The digital signage is not visible on Pacific Highway north approach, and visibility is partially obstructed on the south approach as shown in Figure 16.

Figure 16: Pacific Highway North Approach and South Approach



Motorist's view from north approach



Motorist's view from south approach

Crash history data has been assessed for the periods as follows:

- Pre-installation period: 2 February 2014 to 16 July 2017. 3 years, 5 months, 15 days
- Post installation period: 17 July 2017 and 31 December 2020. 3 years, 5 months, 15 days

A comparison of crashes pre-installation and during operation of the digital signage is presented in Table 6. The location of crashes recorded during these periods are illustrated in Figure 17 and Figure 18 respectively.



Crash Severity (No. of Crashes) **Crash Type** Moderate **Non-casualty Serious Injury Minor Injury** Fatality Injury (tow-away) Pre-Installation (2 February 2014 - 16 July 2017) Left Far 1 (RUM CODE 12) Rear End 1 2 2 (RUM CODE 30) Lane Change Left 1 (RUM CODE 35) Left Turn Side Swipe 1 1 (RUM CODE 37) Other Same Direction 1 (RUM CODE 39) Left Off Carriageway into Object or Parked Vehicle 1 (RUM CODE 71) Sub-total 0 0 2 4 5 Total 11 Operational Period (17 July 2017 - 31 December 2020) Pedestrian Far Side 1 (RUM CODE 02) Cross Traffic 1 (RUM CODE 10) Other Same Direction 1 (RUM CODE 39) Left Off Carriageway into Object or Parked Vehicle 1 (RUM CODE 71) Sub-total 0 1 2 1 0 Total 4

Table 6: Crash History Summary on Boundary Street, Roseville



Figure 17: Crash Locations at Boundary Street, Roseville – Pre-Installation



Figure 18: Crash Locations at Boundary Street, Roseville – Operational





From Table 6, the recorded crashes have all occurred at the intersection of Pacific Highway-Boundary Street. There was a total of 11 crash incidents within the time period prior to the digital signage. Of those 11 crashes, there were two moderate injuries, four minor injuries, and five non-casualties (tow-away). It is noted that these crashes occurred at the signalised intersection of Pacific Highway - Boundary Street where vehicles were recorded as travelling north and south through the intersection. Given that the digital signage is partially obstructed or not visible from the north approach and south approach, such crashes would be unrelated to the presence of a digital signage on Boundary Street.

Following the installation of the digital signage, four crashes have been recorded at the Pacific Highway - Boundary Street intersection. Of these incidents, one crash resulted in a fatality, one minor injury, and two non-casualties with vehicles being towed away. The incident which resulted in a fatality involved a pedestrian illegally crossing the intersection from the north-east corner to the south-west corner which resulted in the pedestrian being struck by a vehicle travelling northbound on Pacific Highway. The driver's visibility of the pedestrian was obstructed by a truck waiting to turn right from Pacific Highway to Boundary Street. Since the pedestrian breaking the law by crossing at an unmarked crossing location, this incident is an uncommon situation. More importantly, such incident was unrelated to the digital signage on Boundary Street.

Overall, the number of crashes within the visible distance of the digital signage has not increased since being installed in 2017.

Victoria Road, West Ryde

A digital signage is located on the western side of an overhead railway bridge across Victoria Road in West Ryde as shown in Figure 6 This digital signage, which was installed on 3 October 2016, is visible to motorists travelling on the west approach on Victoria Road from 265m.

Crash history data has been assessed for the periods as follows:

- Pre-installation period: 4 July 2012 2 October 2016. 4 years, 2 months, 29 days
- Post installation period: 3 October 2016 31 December 2020. 4 years, 2 months, 29 days

A comparison of crashes pre-installation and during operation of the digital signage is presented in Table 7. The location of crashes recorded during these periods are illustrated in Figure 19 and Figure 20 respectively.



| | Crash Severity (No. of Crashes) | | | | | | | |
|---|---------------------------------|----------------|--------------------|--------------|----------------------------|--|--|--|
| Crash Type | Fatality | Serious Injury | Moderate Injury | Minor Injury | Non-casualty (tow-away) | | | |
| Pre-Installation (1 January 2011 - 2 October 2016) | | | | | | | | |
| Pedestrian Near Side (RUM CODE 0) | | 2 | | | | | | |
| Pedestrian Far Side (RUM CODE 02) | | 1 | | | | | | |
| Left Near (RUM CODE 16) | | 1 | | | | | | |
| Right Through (RUM CODE 21) | | | | | 1 | | | |
| Rear End (RUM CODE 30) | | | 1 | 2 | 1 | | | |
| Lane Side Swipe (RUM CODE 33) | | | | | 1 | | | |
| Lane Change Left (RUM CODE 35) | | | 1 | | | | | |
| Other on Path (RUM CODE 69) | | | | | 1 | | | |
| Out of Control on Carriageway (RUM CODE 74) | | | 1 | | | | | |
| Off Carriageway Left on Left Bend into Object or Parked Vehicle (RUM CODE 87) | | | | | 1 | | | |
| Sub-total | 0 | 4 | 3 | 2 | 5 | | | |
| Total | 14 | | | | | | | |
| Opera | tional Period (| 3 October 2016 | - 31 December 2 | 2020) | | | | |
| Right Off Carriageway into Object or Parked Vehicle | | | 1 | | | | | |

Table 7: Crash History Summary on Victoria Road, West Ryde

| | | | Operational Period (3 October 2016 - 31 December 2020) | | | | | | |
|---|---|---|--|---|---|--|--|--|--|
| Right Off Carriageway into Object or Parked Vehicle (RUM CODE 73) | | | 1 | | | | | | |
| Sub-total | 0 | 0 | 1 | 0 | 0 | | | | |
| Total | | | 1 | | | | | | |





Figure 19: Crash Locations at Victoria Road, West Ryde – Pre-Installation

Figure 20: Crash Locations at Victoria Road, West Ryde – Operational





From Table 7, there are a total of 14 crashes recorded in the period prior to the digital signage. Of these incidents, four crashes resulted in serious injuries, three crashes with moderate injuries, and two crashes with minor injuries. Five crashes resulted in no injuries and a vehicle tow-away.

The four incidents resulting in a serious injury occurred at the signalised intersection of Victoria Road - West Parade where three crashes involved a pedestrian (RUM CODE 0 and RUM CODE 02), and one crash involved a vehicle colliding into the rear of a vehicle after turning left from West Parade (RUM CODE 16). The moderate and minor injuries were the result of a rear end, lane change (RUM CODE 35), and loss of control (RUM CODE 74) incidents.

After the digital signage was installed in 2016, there has been one crash recorded within the visible distance on Victoria Road. The crash occurred approximately 20m east of Gaza Road which involved a vehicle travelling eastbound veering to the opposite side of the carriageway causing the vehicle to collide with a signpost and barricade (RUM CODE 73).

Hence, it is concluded that the number of crashes on Victoria Road eastbound has not increased since the installation of the digital signage.



Summary and Conclusion

There is a perception that digital signage boards would result in an unsafe level of distraction to a motorist of pedestrian which is likely to result in a crash incident. As such, a review has been undertaken of crash data in the vicinity of existing digital billboard signs, like those which Sydney Trains is proposing to implement. The aim of the analysis is to determine whether the digital signage at each location has resulted in any safety impacts to road users within the vicinity of the signage.

This study assessed crash data that has been obtained from TfNSW at seven locations having an existing digital signage owned by Sydney Trains. The crash data has been analysed to compare the number of crashes and severity of crashes before and after the digital signage was installed. The findings of the analysis suggest that existing digital signs do not cause distraction to road users which leads to road crashes. In fact, at all site locations, historic crash data indicates that there were a greater number of incidents recorded prior to the installation of each digital signage.

Based on the analysis presented in this letter, it can be concluded that the perceived distraction potential for road users due to the presence of a digital signage is minimal and evidently has not resulted in creating a road environment that is any less safe for motorists, pedestrians, and cyclists.

We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

Wayne Johnson Director

