

File Note

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Proposed Gull Station Development, Amohia Street/Kapiti Road - Peer Review

1. Background

The Kapiti Coast District Council (“KCDC”) have requested Beca provide a peer review of the traffic assessment for the proposed development off the old State highway 1 route, Amohia Street (the “Proposal”) submitted to KCDC by Harrison Transportation dated October 2018 and an Addendum submitted on 28 November 2019.

The proposal is to develop the site at 3 Kapiti Road as a Gull NZ service station. The land is currently zoned Industrial/service in the KCDC District Plan, with the proposed service station as a permitted activity.

Current access to the site is via two access points from Amohia Street and Kapiti Road (east). While not discussed by Harrison Transportation, the previous use of the site appears, from historic images and maps, to have been used more recently to store buses over night and while there was a gate to access the site from Amohia Street, in the majority of the images they are closed and there are bus bays marked out against the gates suggesting this access may not have been used.

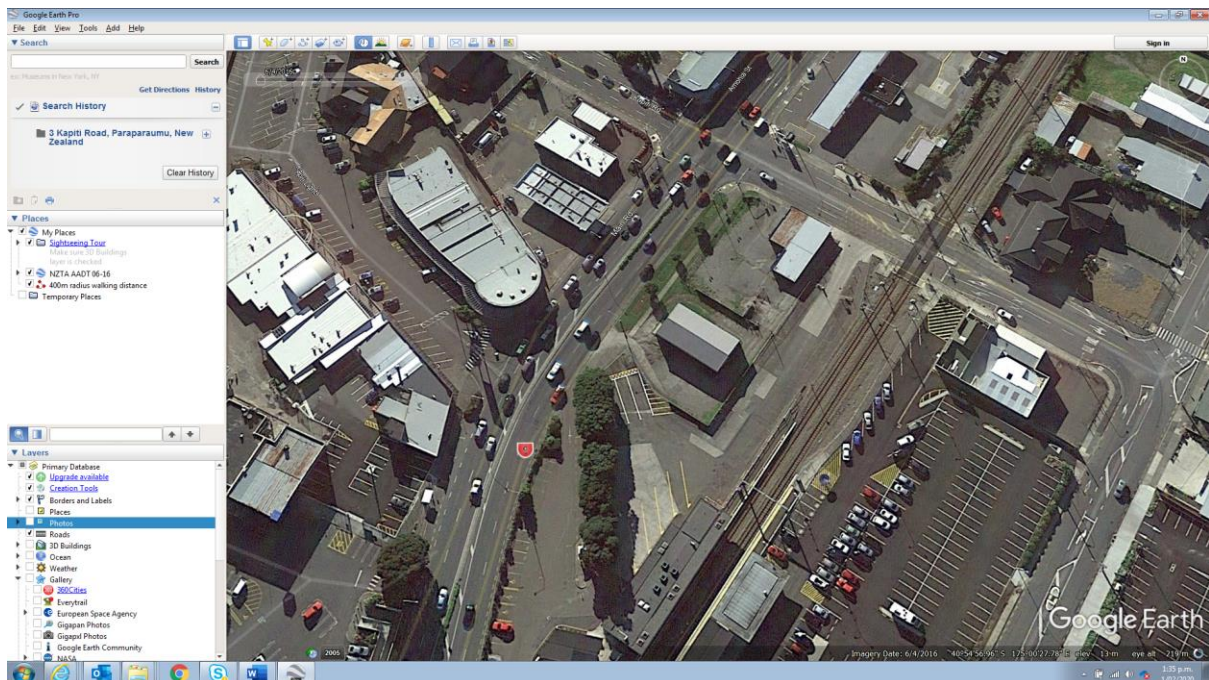


Figure 1 - Google Earth image from April 2016

The current site appears to have been vacant for a number of years. Gull NZ have recently purchased the site and are proposing to develop it into a self-service petrol station.

There will be no associated convenience store or car wash facility. Some of the “spare” land is proposed to be utilised as leased-parking for the adjacent rail station.

The transport assessment also highlights that the NZ Transport Agency Waka Kotahi (“Transport Agency”), in consultation with KCDC, have plans to redesign Amohia Road in the future, however, the report states that these are still in the concept stages and there are no confirmed dates for the changes. Despite this, the assessment, at times, assesses the development with the upgrades and at others without. It is recommended that the assessment be considered without the upgrades as residual safety issues could be undertaken by the Transport Agency as the design is progressed.

In summary the Harrison Transportation reports conclude that the proposed land use and associated minor improvements can be supported from a transportation perspective.

2. Issues arising from the Peer Review

2.1 Traffic Data

The October 2018 report states a number of sources of traffic data for the road network adjacent to the site.

For Amohia Street the data is given from a month before and a month after the new McKays to Peka Peka expressway was opened i.e. February 2017 and March 2017. While these indeed show a reduction in traffic on Amohia Street, the immediate impact of the expressway opening would have significantly changed travel patterns in the short term, however by 2019/20 it is likely that traffic would have readjusted and it is recommended that newer traffic volume data are obtained to determine the true impact, in particular on queue lengths. Also, no traffic volume data has been provided for a weekend. Given the vicinity of Coastlands shopping centre it is likely traffic volumes on a weekend are as high or even higher than for a weekday peak.

In addition, there are no travel speeds provided for Amohia Street yet speeds are used to make a number of assessments in the Harrison report i.e. to determine sight distances. Anecdotally, it is known that speeds from the traffic signals at Kapiti Road heading south are higher than the posted 50kph, even before the expressway opened, due to there being two lanes of traffic and a lack of side friction southbound. With even lower traffic volumes the likelihood is that the speeds will have increased further without any management/active enforcement.

2.2 Trip Generation

The trip generation rates used in the Harrison report have been taken from industry recognised reports, however these reports have not been updated for a number of years, whilst the databases they refer to may well have. It is also not clear if the peak hour rate is for the activity or for the road network, an important distinction.

Using the Trips Database for Australasia, there are two sites that were surveyed in 2014, both Gull stations in Auckland. The UK TRICS database also has survey data from the last 5 years (extracts from the databases are attached)

The sites in NZ showed some variation but the peak hour of the activity was up to 16.25 vehicles per bay per hour during the weekday and as high as 23.13 vehicles per bay per hour on the weekend. For the peak hour of the road – in the AM peak the rate was between 7.75 and 10 vehicles per bay per hour and in the PM peak 11.5 vehicles per bay per hour.

For the UK the numbers were similar but based on significantly more surveys.

AM peak average (8-9am) = 12.38 vehicles per bay per hour

PM peak average (4-5pm) = 12.78 vehicles per bay per hour

Weekend average (1-2pm) = 15.5 vehicles per bay per hour

It is shown above that for both databases the trip generation rates for service stations is considerably higher at the weekend as opposed to the weekday yet the assessment has only been undertaken for a "peak hour".

The report does provide data from vehicle transactions to calculate what the percentage of the passing traffic might be, however there are some issues with the calculations. At some of the sites the road has a solid median and traffic can not turn right into the site yet the graph presented (Figure 4) gives the ADT as a two-way figure when it is not. The graphs should be recalculated for either two-way or for the one-way only sites to provide a better representation of the proposed site.

The calculation for the trip generation also adds the traffic volume on Amohia Street and Kapiti Road together, which is not appropriate either. Given pass by trips on Amohia Street is likely to be the highest generator this should be used for the trip generation calculation.

There are two further issues to note:

- There is already a service station on Amohia Street, on the north side of Kapiti Road, which will also capture pass by trips heading south, so some allowance should be made for this.
- No trip rate has been given for the leased-parking spaces.

The addendum suggests a trip rate for the leased-parking spaces but suggests this is approximately 1 car per 3 minutes. In my opinion this is very unlikely given arrivals are likely to correspond to the train departures/arrivals and are likely to much more bunched up.

In my opinion I believe the trip generation values given in the report are too low, even accounting for the other service station opposite, and that the impact of the service station should be calculated on a weekend.

Further to above, it is unclear how the trip distribution of the trips has been calculated. There is no turning count survey for the intersection so no way of even proportioning traffic volumes.

2.3 Car parking

In my opinion there are no issues with the calculation for car parking as there will be no staff on site.

The leased parking spaces are also designed appropriately to AS/NZS 2890.1:2004.

The only issue to be raised by the leased parking is that the swept path of the tanker appears to overlaps some of the spaces. It is noted in the Addendum to the report that to manage this the lease agreement will only allow for certain sized vehicles to use the spaces. In my opinion I can not see how that can be enforced and especially over time. There should be no caveats or covenants on these spaces and therefore the tanker should have the ability to manoeuvre without hitting these cars.

If the tanker cannot undertake the exiting manoeuvre it could lead to additional manoeuvring time i.e reversing within the forecourt area, which could delay traffic entering/exiting the site and lead to backing up of traffic onto Amohia Street which could present a potential safety risk.

2.3 Access Arrangements

2.3.1 *Pedestrian Movements*

The original design, in the October 2018 report had a two way (left-in left-out) access at Amohia Street and a two-way (all movements) access at Kapiti Road. The latest design appears to have removed the left-out, at the same location, onto Amohia Street and the exit is now through the existing car parking area to the south of the site. However, no assessment has been presented on the impact of additional traffic using the car park access or on the car parking area itself.

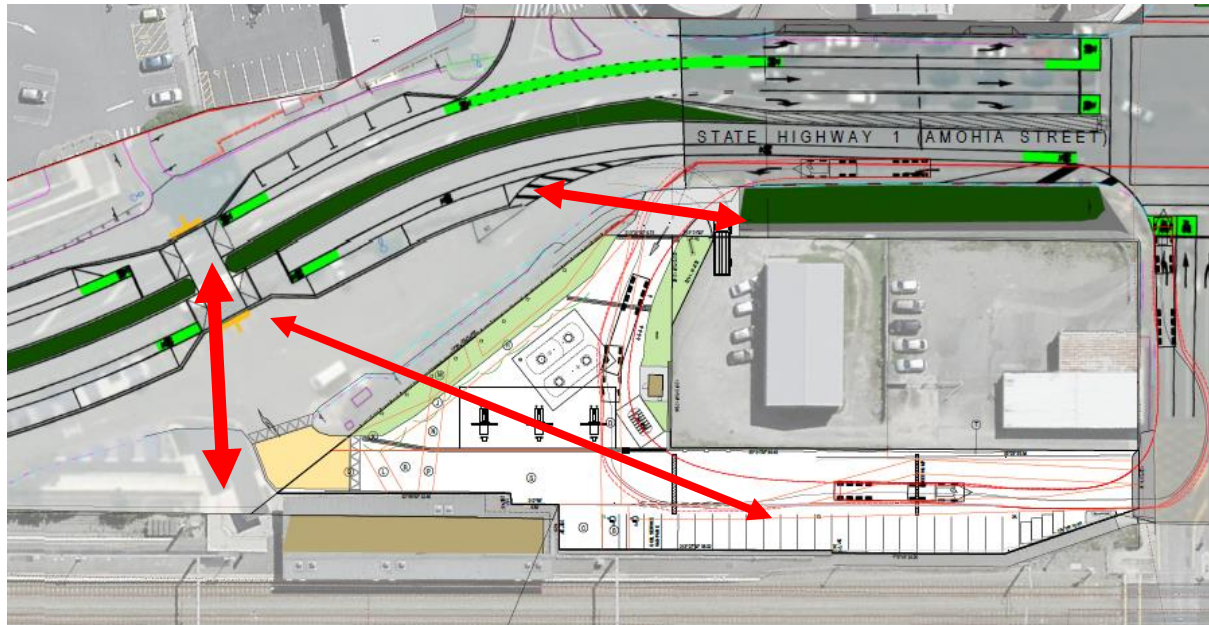
While it is unclear when the improvements will be made on Amohia Street, from the latest drawings provided, there is now an at grade crossing, east to west across Amohia Street, and it has been single laned. From these changes, the exit from the service station into the car park now appears to be exactly at what would be the desire line for pedestrians exiting the railway station and using the at grade crossing.

With the at grade crossing, pedestrians currently using Kapiti Road, and the signals to cross Amohia Street, may cut through the railway station, or even the service station to cross, plus those that use the leased car parking spaces. Some clear, untracked over delineation for pedestrians would be recommended.

It is also unclear what pedestrian facilities are provided along Amohia Road. This may be more of an issue to be addressed by Council/NZTA but there appears to be a footpath along the frontage from the Kapiti Road lights south but these end at the driveway to JayCar/service station despite there appearing to be bus stops marked south of the driveway. I have general concerns about pedestrians, and also cyclists, navigating what will be a very wide access that includes the access to JayCar, the service station and the car parking area. Previous designs considered some type of pedestrian refuge area separating the ingress and egress for the service station but this is not incorporated into the new design.

Cyclists are also very exposed to conflict with the deceleration lane allowing for access for all three landuses also and the green cycle markings should at the very least be extended across the main access point to raise awareness to drivers of their presence. This should also include the exit point but there are no drawings of this point in the report.

Further, some traffic calming is recommended for the exit onto Kapiti Road to raise awareness of pedestrians crossing the footpath.



←→ Pedestrian Desire Lines

2.3.2 Access and Connectivity

The main concerns with regard to the accesses are discussed above. It is stated in the transportation assessment that the access separation distance does not comply with the District Plan but that the design will provide sufficient separation to ensure the safety of pedestrians and to minimise any potential conflict between turning movements at the access driveways. In my opinion I do not see how this has been demonstrated at all. While all of the movements from Amohia Street are access only there is potential for confusion by pedestrians if they are walking along this frontage and long distances to cross (noting that the footpath does stop north of the JayCar access).

Also the Kapiti Road access is two way but here the access is directly adjacent to the Kapiti Signs/JayCar access. While this has been an existing arrangement there is little evidence presented to address this potential conflict and as stated earlier, the current queue lengths may be different to those calculated for 2017 so this needs to be assessed.

In addition to the capacity and conflict points, the Harrison transportation report presented the swept path for the tanker movements. This shows that the tanker takes up all of the space at the property boundary as well as the three lanes of traffic on Kapiti Road. This will likely impede traffic turning right into the site from Kapiti Road and may create additional queues not already taken into account. It is not clear in the report what the frequency is of the tanker movements and therefore it is difficult to understand whether this will be an important issue to consider.

2.3.2 Sight Lines

Sight lines for the access in the original report were assessed against a 50kph posted speed. However, it was noted above that no speed measurements were taken for Amohia Street and anecdotally speeds from the traffic signals, due to lack of side friction may be much higher. This could create rear end crash issues with an increase in turning traffic from Amohia Street.

In addition, while the design has changed so at this point it is access only, with an increase in traffic using the car park exit, the sight distance should be assessed at this point also and for a higher speed.

The proposed improvements to Amohia Street do introduce an at grade crossing, with a raised table, so speeds may eventually decrease but as no date for the improvements is proposed, these safety concerns should be addressed in the meantime.

2.4 Conclusion

In conclusion, there are a number of items that cannot be assessed due to lack of up to date information and some safety concerns that still need to be addressed.

In summary these include:

- For Amohia Street the data is given from a month before and a month after the new McKays to Peka Peka expressway was opened i.e. February 2017 and March 2017. It is recommended that newer traffic volume data are obtained to determine the true impact, in particular on queue lengths. Also no traffic volume data has been provided for a weekend. Given the vicinity of Coastlands shopping centre it is likely traffic volumes on a weekend are as high or even higher than for a weekday peak.
- No travel speeds provided for Amohia Street yet speeds are used to make a number of assessments further in the report i.e. to determine sight distances.
- Databases for trip generation rates for service stations show rates are considerably higher at the weekend as opposed to the weekday yet the assessment has only been undertaken for a “peak hour” and it is unclear if this is a peak hour for the land use activity or for the state highway.
- Trip generation values given in the report are too low, even accounting for the other service station opposite and incorporating for car park arrival rates which are likely to correspond to train arrival and departure times and not a steady arrival rate across a peak hour.
- No assessment has been presented on the impact of additional traffic using the car park access or on the car parking area itself especially on pedestrian desire lines and for cyclists.
- General concerns about pedestrians, and also cyclists, navigating what will be a very wide access that includes the access to JayCar, the services station and the car parking area. Previous designs considered some type of pedestrian refuge area separating the ingress and egress for the service station but this is not incorporated into the new design.
- Cyclists are also very exposed to conflict with the deceleration lane allowing for access for all three landuses. The green cycle markings should be extended across the main access point to raise awareness to drivers of their presence. This should also include the exit point but there are no drawings of this point in the report.
- Traffic calming is recommended for the exit onto Kapiti Road to raise awareness of pedestrians crossing the footpath.
- Swept path of the tanker appears to overlap some of the leased parking spaces. It is noted in the Addendum to the report that to manage this the lease agreement will only allow for certain sized vehicles to use the spaces. In my opinion I cannot see how that can be enforced and especially over time.
- Also swept path for the tanker takes up all of the space at the property boundary, as well as the three lanes of traffic, on Kapiti Road. This will likely impede traffic turning right into the site from Kapiti Road and may create additional queues.
- Sight distances should be assessed for the actual traffic speeds on Amohia Street and at the car park exit point, taking account the increase in traffic.

Based on the residual issues, as summarised above, it is my opinion that the site layout, in its current form is not appropriate for the type of activity proposed, and the impact on the network and to the current users is more than minor.