

# ***Harrison Transportation***

KA and AD Marsh  
Private Plan Change  
Arawa Road Pongakawa

Transportation Assessment Report  
August 2023

PO Box 11557  
Palm Beach  
Papamoa 3151

Reference: 496 TA v3

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## 1. Introduction

KA and AD Marsh propose a private plan change to re-zone land on the north-western side of Arawa Road, Pongakawa, from Rural to Residential. This will allow the subdivision of the land to provide up to approximately 120 residential lots.

This report provides an update of the previous reports, to reflect comments received from Waka Kotahi NZTA.

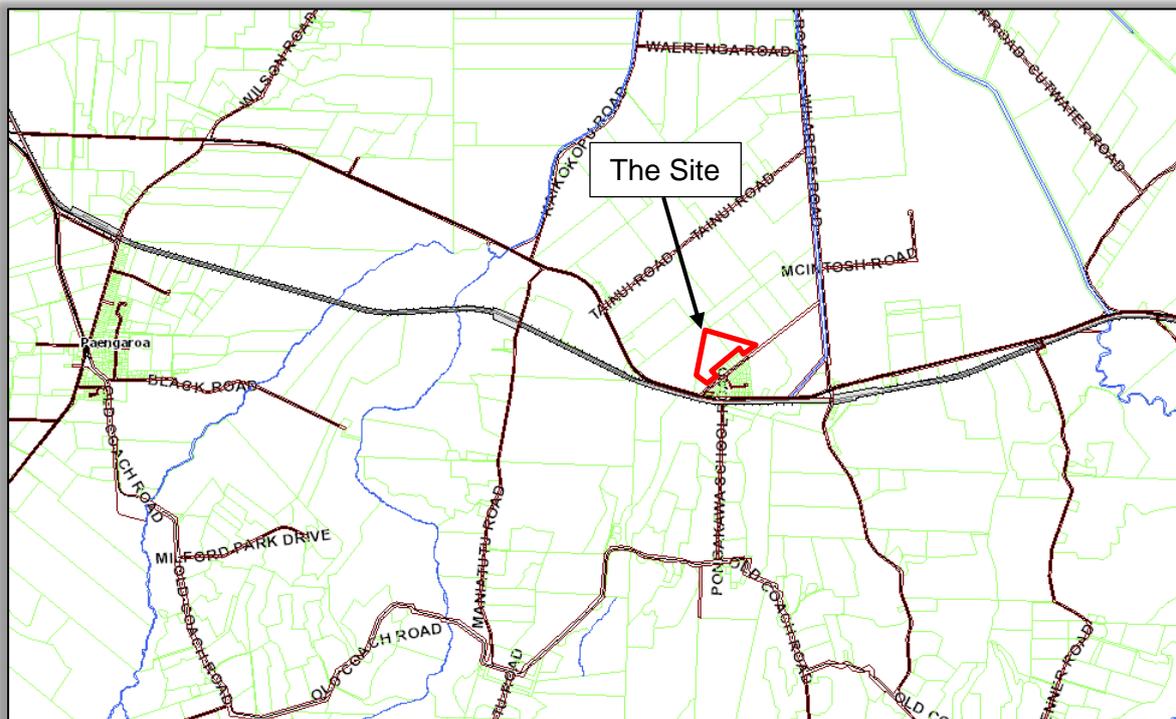
This report has been prepared, at the request of Momentum Planning and Design, to assess the expected transportation effects of the proposed plan change and in particular the effects on SH2. The key transportation issues associated with the proposed plan change are:

- The level of traffic expected to be generated by the residential activity and the effect that this will have on the adjacent road network.
- The design of the internal road network including the intersection with Arawa Road.
- The design of the intersection of Arawa Road with SH2.

These issues are discussed in this report. By way of a summary it is concluded that, with the recommendations given in this report, the proposed residential subdivision can be readily accommodated within the local transportation environment.

## 2. The Site

The site is located on the north-western side of Arawa Road, approximately 1.9 km east of Maniatutu Road and 180 m west of Pongakawa School Road. The location of the site is shown on Figure 1.



**Figure 1: Site Location**

The site is presently zoned Rural in the Western Bay of Plenty District Plan.

The site contains a residential dwelling with associated sheds and is used for farming. Photograph 1 shows the site, viewed from Arawa Road.



**Photograph 1: The Site, Viewed From Arawa Road**

Adjacent activities along Arawa Road are residential, with rural activities surrounding the residential area.

### **3. Transportation Environment**

Arawa Road is classified in the District Plan as a Local Road. It has a sealed carriageway that varies in width from about 5.2 m to 6.0 m. It has no road markings other than at the intersection with SH2.

Photograph 2 shows Arawa Road looking north, while Photograph 3 shows Arawa Road looking south towards SH2.



**Photograph 2: Arawa Road Looking North**

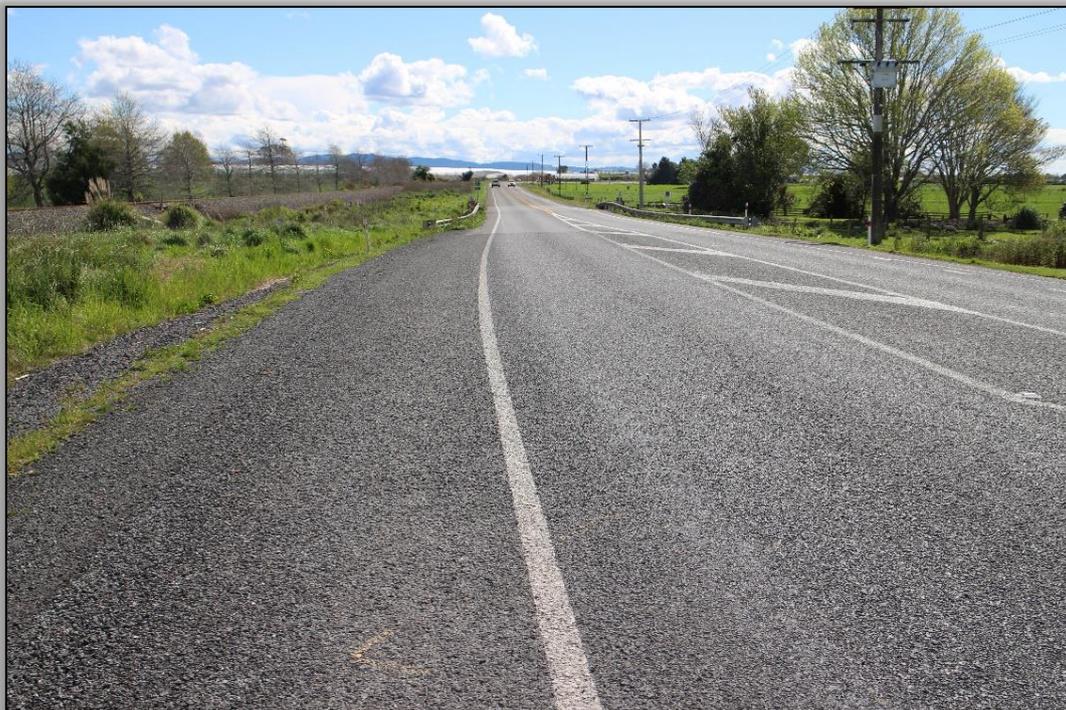


**Photograph 3: Arawa Road Looking South**

SH2 is classified in the District Plan as a Strategic Primary Arterial. It has a 13.6 m wide carriageway marked with a 3.0 m wide right turn bay, a 3.5 m wide traffic lane in each direction and 1.8 m wide shoulders. Photograph 4 shows SH2 looking east while Photograph 5 shows SH2 looking west.



**Photograph 4: SH2 Looking East**



**Photograph 5: SH2 Looking West**

The intersection of Arawa Road and SH2 is in the form of a Tee intersection, with Give Way control on the Arawa Road approach. Photograph 6 shows the Arawa Road approach to the intersection, while Photograph 7 shows Arawa Road viewed from SH2.



**Photograph 6: Arawa Road Approach to SH2 Intersection**



**Photograph 7: Arawa Road Viewed From SH2**

Arawa Road has a 40 km/h speed limit, while SH2 has a 100 km/h speed limit. The Mega Maps website gives a mean vehicle operating speed of 24 km/h on Arawa Road and 94 km/h on SH2.

It is understood that the SH2 Paengaroa to Gisborne corridor, which includes the section of highway adjacent to the site, has been identified for speed management review within the 2021 - 24 National Land Transport Programme. There is presently no indication of whether this will lead to a change in the posted speed limit.

The following Bay Bus routes operate along SH2 adjacent to the site:

- 101 “*Whakatane to Tauranga*”, which operates Monday to Friday.
- 143a “*Whakatane to Tauranga via Paengaroa and Te Puke*”, which operates on Mondays, Tuesdays and Fridays.
- 143b “*Whakatane to Tauranga via Pukehina and Te Puke*”, which operates on Wednesdays, Thursdays and Saturdays.

All three services provide one bus from Whakatane to Tauranga in the morning and then returning in the afternoon or evening. The nearest bus stops are in Matata and Paengaroa.

## 4. Traffic Data

Traffic count data has been obtained from the Mobile Road website. The annual average daily traffic (AADT) volumes are given in the following table, together with the peak hour volumes which have been estimated at 10% of the ADT.

| Road       | ADT (veh/day) | Peak Hour (veh/h) | Heavy Vehicles |
|------------|---------------|-------------------|----------------|
| Arawa Road | 350           | 35                | 4.3%           |
| SH2        | 6,746         | 675               | 13.9%          |

**Table 1: Traffic Count Data**

Table 1 shows very low traffic volumes on Arawa Road, with moderate volumes on SH2.

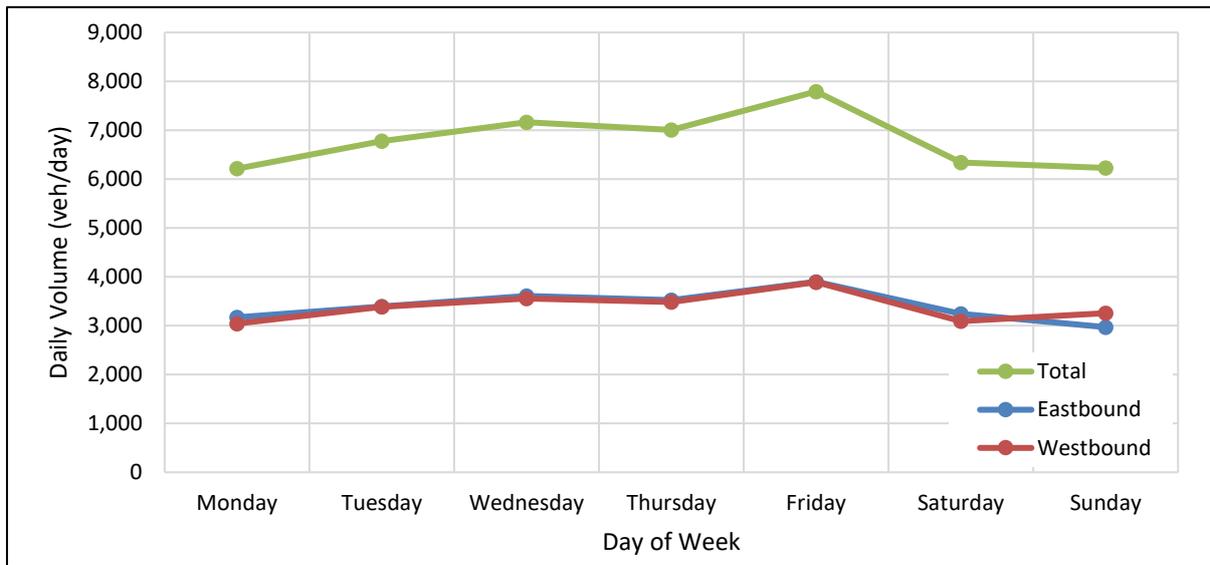
Additional traffic count data for SH2 has been obtained from NZTA. The data was recorded at the NZTA SH2 telemetry site 13, located at Ohinepanea, between August 2021 and September 2022. Data for the week of Monday 12 September to Sunday 18 September 2022 has been selected as being the most recent week with an ADT that is closest to the AADT.

| Data              | Period  | Eastbound | Westbound | Two-Way |
|-------------------|---------|-----------|-----------|---------|
| ADT               | 5-Day   | 3,518     | 3,472     | 6,990   |
|                   | 7-Day   | 3,401     | 3,387     | 6,778   |
| Average Peak Hour | AM Peak | 314       | 235       | 550     |
|                   | PM Peak | 292       | 340       | 632     |

**Table 2: SH2 Traffic Count Data**

Table 2 shows SH2 traffic count data that is consistent with that given on the Mobile Road website. The morning peak occurred between 7.00am and 8.00am, while the evening peak occurred between 4.00pm and 5.00pm.

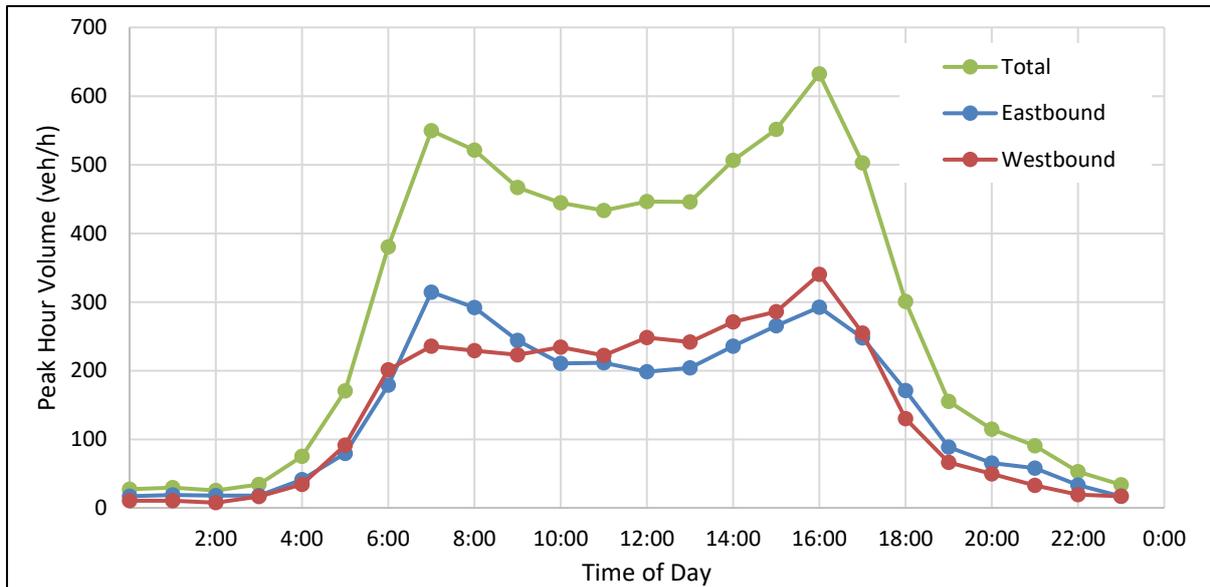
The variation in daily traffic volumes during the week is shown on the following figure.



**Figure 2: SH2 ADT Variation by Day of Week**

Figure 2 shows that the highest traffic volumes occurred on a Friday, with lower volumes during the weekend.

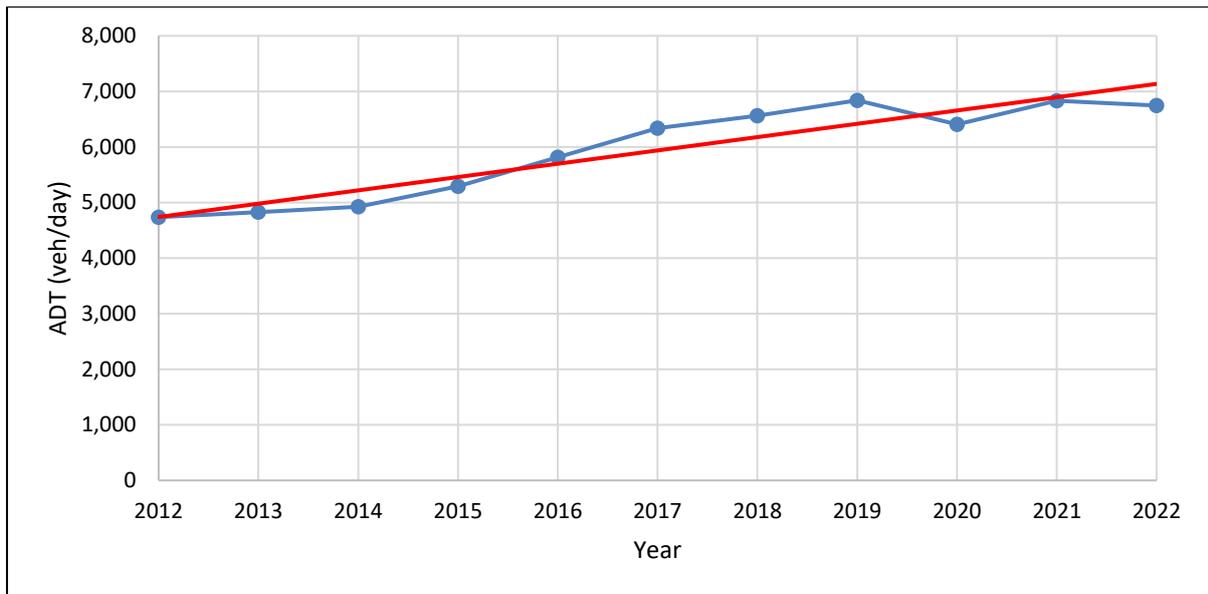
The average weekday peak hour traffic volumes are shown on the following figure.



**Figure 3: SH2 Peak hour Variation by Time of Day**

Figure 3 shows an eastbound morning peak and a westbound evening peak.

The recorded traffic growth on SH2 over the past 10 years is shown on the following figure. Again, this uses data recorded at the NZTA SH2 telemetry site 13, located at Ohinepanea.



**Figure 4: Daily Traffic Growth over 10 Years**

Figure 4 shows an average annual traffic growth of 3.4% over the ten-year period, expressed as a percentage of the year 2022 volume. With the continuation of this growth, the ADT in the year 2032 is expected to be approximately 9,520 veh/day.

## 5. Crash History

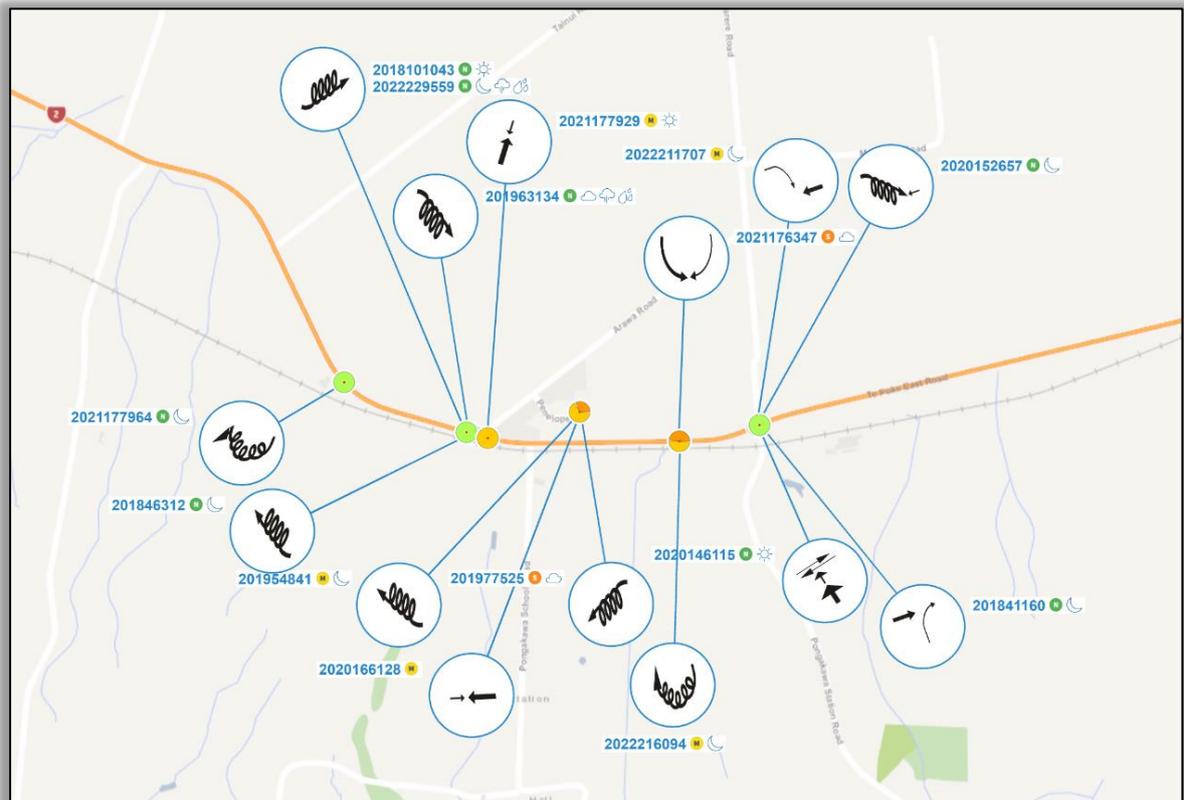
A search of the NZTA Crash Analysis System (CAS) has been carried out to identify all reported crashes in the vicinity of the site during the five-year period 2018 to 2022. Available data for 2023 has also been included. The search area consisted of the full length of Arawa Road as well as SH2 between Tainui Road and Pongakawa Station Road. The search identified 15 crashes, as follows:

- One crash was recorded at the intersection of SH2 and Arawa Road. This involved an eastbound vehicle hitting another vehicle head-on and was unrelated to the intersection. This resulted in a minor injury.
- Four crashes were recorded at the intersection of SH2 and Pongakawa Station Road:
  - One involved an eastbound vehicle losing control on a straight road and hitting another vehicle head-on.
  - One involved a northbound vehicle on Pongakawa Station Road hitting the rear of a vehicle stopped for cross traffic.
  - One involved a vehicle turning right out of Pongakawa Station Road failing to give way to an eastbound vehicle on SH2.
  - One involved a vehicle turning right onto Pongakawa Station Road failing to give way to a westbound vehicle on SH2. This resulted in a minor injury.
- Ten mid-block crashes were recorded on SH2:
  - Two involved head-on crashes, one on a straight and the other on a curve, which resulted in a serious injury.

- Six involved vehicles losing control on a straight road. Three involved eastbound vehicles and three westbound vehicles. One resulted in a minor injury and one a serious injury.
- Two involved vehicles losing control on curves, one of which resulted in a minor injury.

There were no mid-block crashes recorded on Arawa Road.

The reported crashes are shown on Figure 5.



**Figure 5: Crash History**

Figure 5 shows that some of the crashes on SH2 have incorrect co-ordinates, placing them off the highway.

The crash history has identified a small cluster of crashes at the intersection of SH2 and Pongakawa Station Road, as well as a series of loss of control crashes along SH2. This is consistent with a rural highway with moderate traffic volumes. Overall, the crash history has not identified any specific road safety issues relevant to the proposed plan change.

## 6. The Proposed Plan Change

There are presently 37 dwellings along Arawa Road with an additional 22 on Penelope Place, giving a total of 59 dwellings with access to Arawa Road. Of these, the eight dwellings on the western side of Arawa Road are zoned Rural, while the other 49 dwellings are zoned Residential. With Proposed Plan Change 92, these zones will not change.

KA and AD Marsh propose a private plan change that will re-zone land on the western side of Arawa Road from Rural to Residential. This will allow the subdivision of the site to provide approximately 120 residential lots.

Internal roads are proposed within the site, with one future intersection onto Arawa Road. There will be no direct access to SH2.

A copy of the proposed structure plan is attached to this report.

## 7. Traffic Generation

### 7.1. Traffic Generation

Traffic generation data is available in the NZ Transport Agency Research Report 453 “*Trips and Parking Related to Land Use*” (RR453). This reference provides rates for inner city, suburban, outer suburban and rural dwellings. Given the location of the site, the outer suburban rates are assessed as most appropriate for the proposed subdivision.

As Penelope Place gains access from Arawa Road, the dwellings along Penelope Place have been included as part of the existing development.

The expected traffic generation of both the existing and proposed development, assessed on the basis of the RR453 rates, is given in the following table.

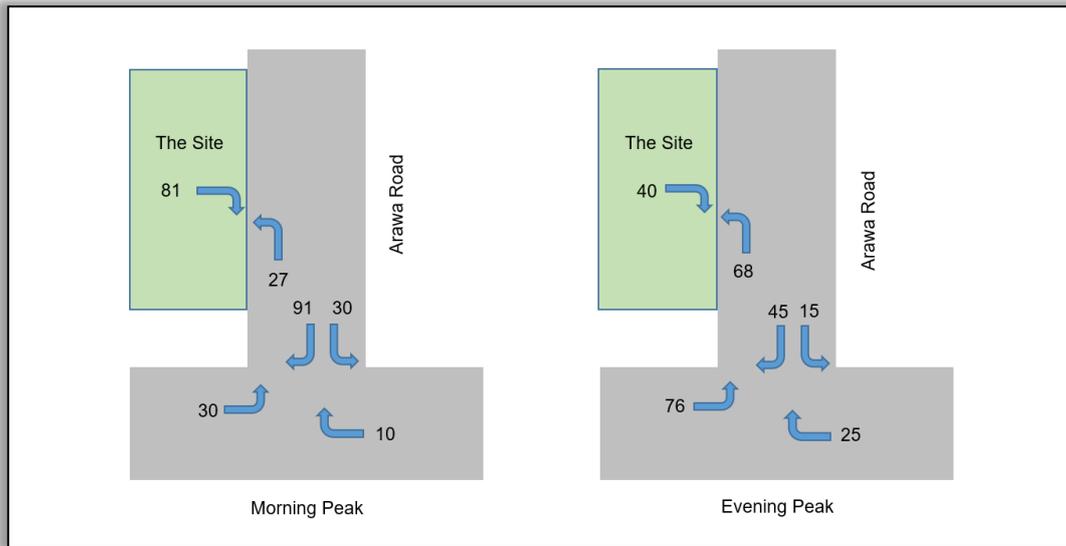
| Activity             | Number of Units | Traffic Generation Rates |                        | Traffic Generation |                   |
|----------------------|-----------------|--------------------------|------------------------|--------------------|-------------------|
|                      |                 | Daily (veh/day/unit)     | Peak Hour (veh/h/unit) | Daily (veh/day)    | Peak Hour (veh/h) |
| Existing Development | 59              | 8.2                      | 0.9                    | 484                | 53                |
| Proposed Plan Change | 120             | 8.2                      | 0.9                    | 984                | 108               |
| <b>Total</b>         | <b>179</b>      | -                        | -                      | <b>1,468</b>       | <b>161</b>        |

**Table 3: Expected Traffic Generation**

Table 3 shows that the proposed plan change area has an expected daily traffic generation of 984 veh/day, with a peak hour traffic generation of 108 veh/h. With the inclusion of the existing residential development along Arawa Road and Penelope Place, this is expected to increase the total ADT on Arawa Road at the intersection with SH2 to 1,468 veh/day.

### 7.2. Traffic Distribution

Given the location of the site to the east of Te Puke, it is expected that approximately 75% of generated traffic will be to and from the west, with 25% to and from the east. Using ITE distribution data for the in and out movements gives peak hour turning movements at the intersection of Arawa Road and SH2 as shown in the following figure.



**Figure 6: Peak Hour Turning Movements**

Figure 6 shows that the predominant movements are expected to be the right turn out of Arawa Road in the morning peak and the left turn into Arawa Road during the evening peak. It is noted that the turning movements shown at the site access are for the proposed plan change only, whereas the turning movements at the intersection with SH2 are inclusive of the existing residential development.

## 8. Traffic Effects

### 8.1. Road Carriageways

The expected increase in traffic on the adjacent roads is given in the following table. For this assessment, as the traffic count data for Arawa Road may pre-date some of the recent residential development on Penelope Place, the expected ADT on Arawa Road as given in Table 3 has been adopted for this assessment.

| Road       | Location           | Existing ADT | Increase | Expected ADT |
|------------|--------------------|--------------|----------|--------------|
| Arawa Road | North of SH2       | 484          | 984      | 1,468        |
| SH2        | East of Arawa Road | 6,746        | 246      | 6,992        |
|            | West of Arawa Road | 6,746        | 738      | 7,484        |

**Table 4: Expected Increase in Daily Traffic (veh/day)**

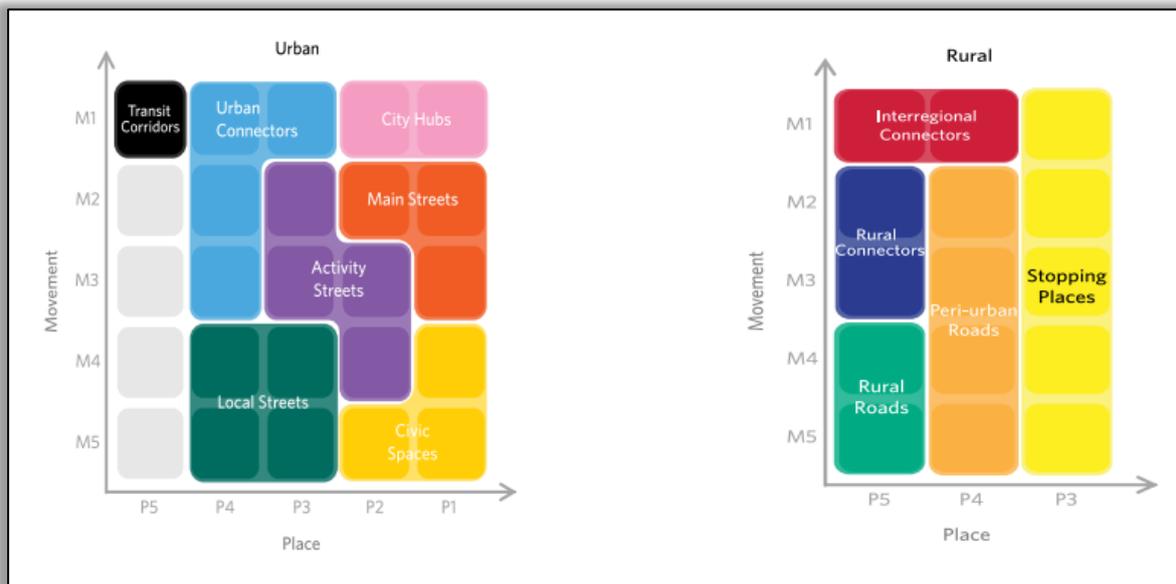
Table 4 shows an expected ADT on Arawa Road of 1,468 veh/h. For urban roads with an ADT of between 1,000 veh/day and 2,500 veh/day, the District Plan specifies a minimum carriageway width of 8.5 m.

While the District Plan specifies a minimum carriageway width for Arawa Road of 8.5 m, the Safe System Audit has identified that this width could lead to increased vehicle speeds and an increased likelihood of crashes. The auditors recommended a width of between 6.5 m and 7.0 m. In accordance with the auditor’s recommendation, it is recommended that Arawa Road, between SH2 and the intersection providing access to the subdivision, be widened to 6.5 m.

The ADT on SH2 to the west of the site is expected to increase to 7,484 veh/day, an increase of approximately 11%. For rural highways with an ADT greater than 3,000 veh/day, the Austroads “*Guide to Road Design Part 3: Geometric Design*” recommends a carriageway with two, 3.5 m wide traffic lanes and 1.5 m wide sealed shoulders, giving a total sealed carriageway width of 10.0 m. The existing 3.5 m wide traffic lanes with 1.8 m wide shoulders exceed this minimum requirement. It is therefore assessed that the expected increase in traffic is able to be accommodated on the existing SH2 carriageway with minimal effects.

### 8.2. Street Categories

The NZTA Waka Kotahi One Network Framework (ONF) includes a classification matrix to determine the classification of both rural and urban roads. This considers both movement and place, as shown on the following Figure 7.



**Figure 7: Street Families**

Arawa Road is presently classified in the ONF as a peri-urban road, while SH2 is classified as a rural connector.

The classification with the proposed plan change is given in the following table.

| Road       | Place Function Ranking  | Movement Function Ranking  | Classification  |
|------------|---|--|-----------------|
| Arawa Road | P4: Low to medium on-street activity related to people going about their lives. Limited movement across the carriageway | M4: Minor local movement by people making short trips or connecting to connector roads | Local Street    |
| SH2        | P5: Little discernible on-street activity   | M3: Moderate movement of people and/or goods around a city, town or region             | Rural Connector |

**Table 5: ONF Road Classification**

The previous classification of Arawa Road as a peri-urban road was based on the road being in the rural street family. This was due to the existing rural-residential environment. With the

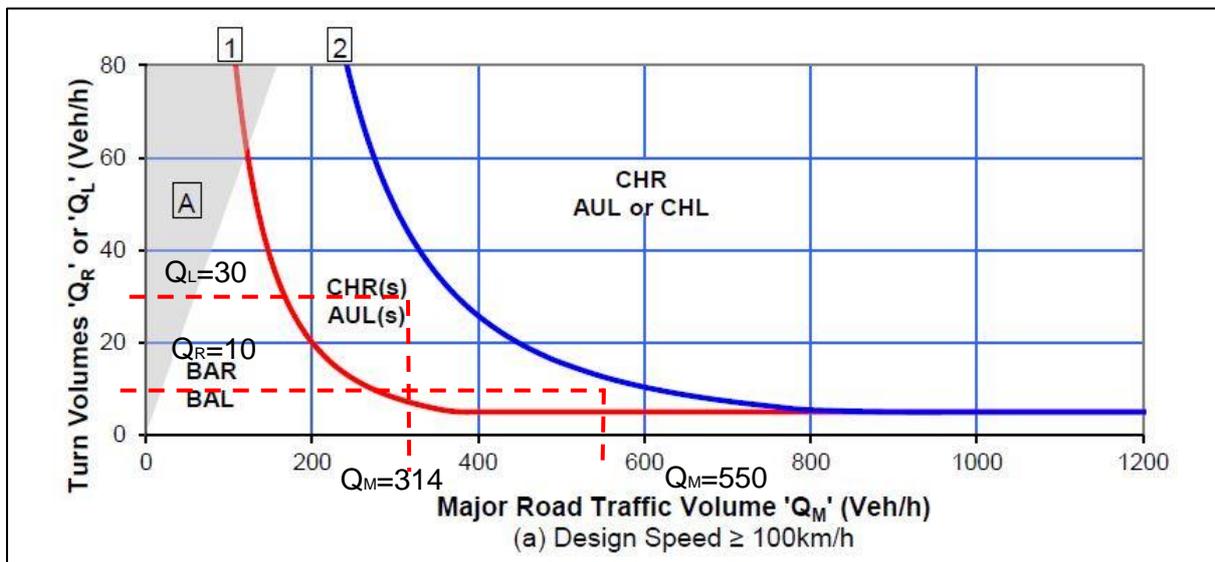
proposed plan change, Arawa Road will be in the transition between a rural road and an urban road. Table 5 shows that, as an urban road, the ONF classification is a Local Street.

Section 8.1 of this report has recommended that Arawa Road, between SH2 and the site access intersection, be widened in accordance with the safety auditor’s recommendation for an urban road. This is consistent with the ONF classification. Other than the recommended upgrade of Arawa Road to an urban standard, it is assessed that no additional infrastructure is required to support the new street category.

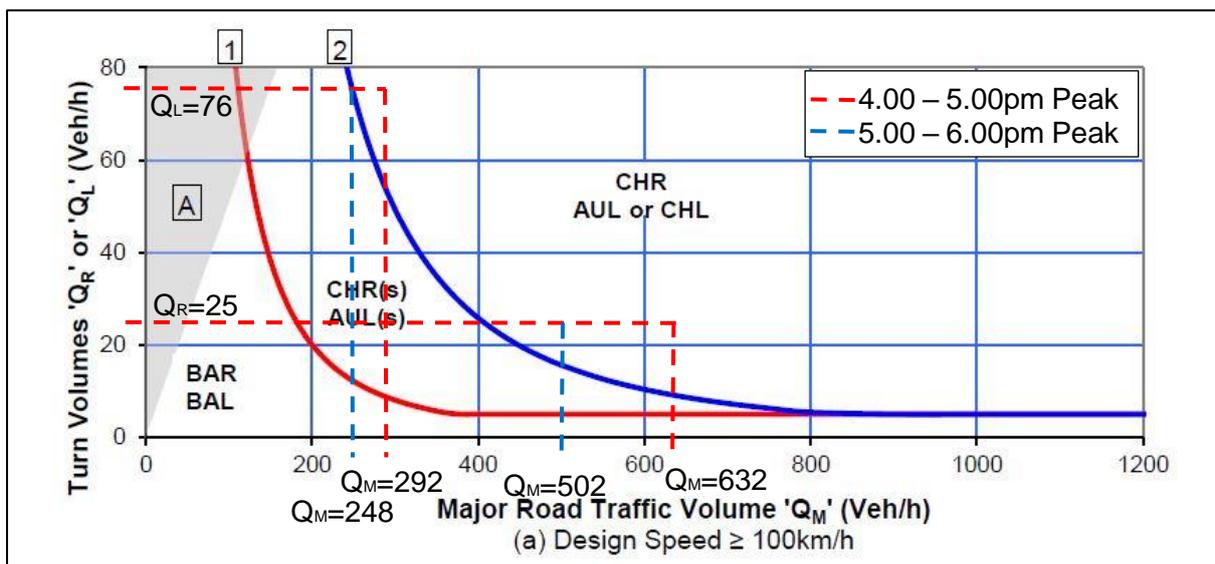
SH2 will continue to be classified as a rural connector.

### 8.3. Intersection of Arawa Road and SH2

Recommendations for the provision of auxiliary turning lanes at intersections are given in the Austroads “Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings”. An assessment of the warrant for the provision of auxiliary lanes at the intersection of Arawa Road and SH2 is given in the following figures.



**Figure 8: Warrant for Auxiliary Turning Lanes, AM Peak**



**Figure 9: Warrant for Auxiliary Turning Lanes, PM Peak**

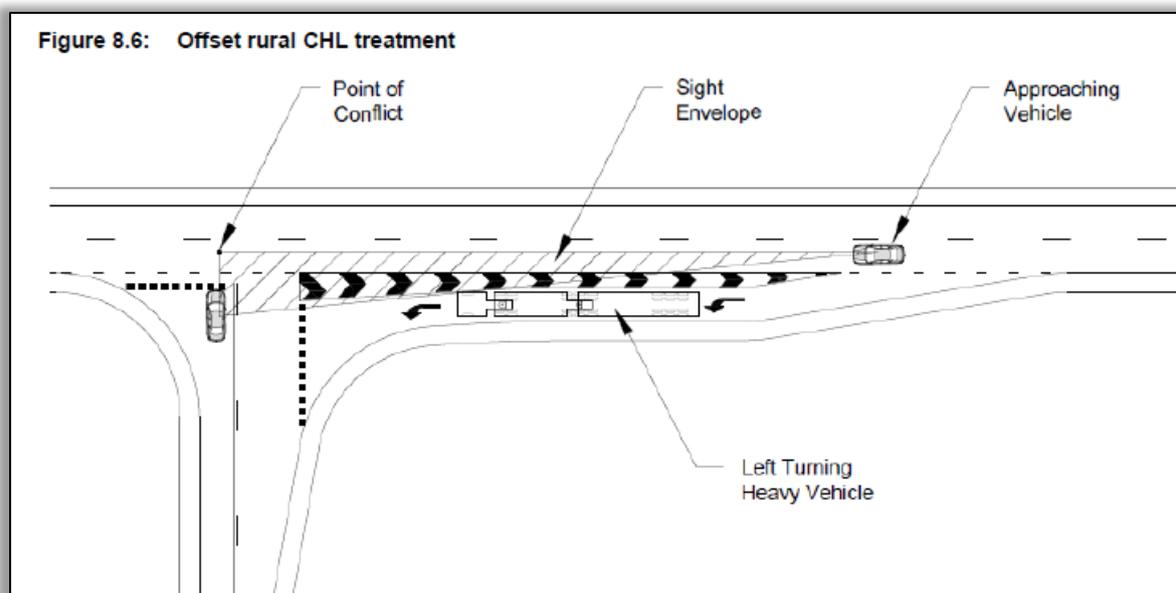
Figure 8 shows that, during the morning peak, short auxiliary lane treatments (CHR(s) and AUL(s)) are warranted.

Figure 9 shows that, if assessed with the peak traffic generation occurring at the same time as the peak hour on SH2, then the full auxiliary lane treatments (CHR and AUL) are warranted. Section 4 of this report has identified that the evening peak on SH2 occurs between 4.00pm and 5.00pm. The peak left turn movement associated with the residential plan change is however expected to occur later, between 5.00pm and 6.00pm. Figure 9 shows that, with this later evening peak, an AUL(s) left turn treatment is warranted rather than the full AUL treatment.

Requirements for the design of left and right turn lanes are given in the Austroads *“Guide to Road Design”* series of guides as well as the NZTA *“Manual of Traffic Signs and Markings”*. A right turn bay is presently provided, however NZTA has noted that the right turn bay appears to have non-standard road markings and that this should be upgraded. The right turn bay has been recently installed by NZTA and it is unclear why non-standard markings have been provided. Given the relatively close spacing between the intersections of Arawa Road and Pongakawa School Road, the marking of a short section of flush median incorporating the two intersections is considered appropriate.

Both NZTA and the Safe System Auditors have expressed concern that the standard design of a channelised left turn could result in a dynamic visibility obstruction for drivers exiting Arawa Road. The auditors have recommended providing an offset AUL(s) treatment, noting that any increase in the risk of rear end crashes will have a lower potential severity than side impact crashes.

The standard design for an offset left turn lane, as given in the Austroads Guide, is shown in the following Figure 10.



**Figure 10: Standard Design for an Offset Left Turn Lane**

The preliminary design of the intersection of SH2 and Arawa Road is shown on the attached Drawing 03. This shows the right turn bay re-marked in accordance with the relevant MOTSM requirements and the provision of an offset AUL(s) left turn lane.

The safety auditors also noted safety issues associated with the existing guardrails on SH2 and recommended that the proposed new barrier is designed by a Waka Kotahi accredited designer in accordance with NZTA M23:2022 “*Specification and guidelines for road safety hardware and devices*”. It is recommended that the barrier be designed accordingly.

### 8.4. Intersection Sight Distances

For a vehicle operating speed of 100 km/h, the Austroads Guide requires a minimum safe intersection sight distance (SISD) of 248 m to be provided. The compliance of the available sight distances with these requirements is given in the following table.

| Road | Direction   | Sight Distance (m) |           | Complies? |
|------|-------------|--------------------|-----------|-----------|
|      |             | Required           | Available |           |
| SH2  | To the East | 248                | 259       | Yes       |
|      | To the West | 248                | >300      | Yes       |

**Table 6: Sight Distances at the Intersection of Arawa Road and SH2**

Table 6 shows that the available sight distances at the intersection comply with the Austroads requirements. The available sightlines are shown in the following photographs.



**Photograph 8: Sightline to the East**



**Photograph 9: Sightline to the West**

Photograph 8 and Photograph 9 show that clear lines of sight are available.

### **8.5. Intersection Operational Performance**

The expected operational performance of the intersection of Arawa Road and SH2 is given in the following table. This assessment uses the turning movement volumes given in Figure 6 of this report with the SH2 left turn lane as recommended in Section 8.3.

| Peak Hour    | Approach   | Movement | Degree of Saturation | Average Delay (s) | Level of Service | Queue (veh) |
|--------------|------------|----------|----------------------|-------------------|------------------|-------------|
| Morning Peak | SH2 East   | Through  | 0.198                | 0.0               | A                | 0.0         |
|              |            | Right    | 0.011                | 9.4               | A                | 0.0         |
|              | Arawa Road | Left     | 0.312                | 6.4               | A                | 1.3         |
|              |            | Right    | 0.312                | 14.7              | B                | 1.3         |
|              | SH2 West   | Left     | 0.017                | 7.9               | A                | 0.0         |
|              |            | Through  | 0.198                | 0.0               | A                | 0.0         |
| Evening Peak | SH2 East   | Through  | 0.198                | 0.0               | A                | 0.0         |
|              |            | Right    | 0.030                | 9.7               | A                | 0.1         |
|              | Arawa Road | Left     | 0.164                | 5.3               | A                | 0.6         |
|              |            | Right    | 0.164                | 13.7              | B                | 0.6         |
|              | SH2 West   | Left     | 0.043                | 7.9               | A                | 0.0         |
|              |            | Through  | 0.198                | 0.0               | A                | 0.0         |

**Table 7: Intersection Operational Performance**

Table 7 shows that the intersection is expected to operate efficiently with low delays, a high level of service and negligible queues. It is noted that, while a delay of approximately 15 seconds has been identified for the right turn out of Arawa Road in the morning peak, this consists of both geometric and stop line delay. The geometric delay for the combined left and right turn lane is approximately 3.4 seconds while the stop line delay is approximately 9.3 seconds.

## 8.6. Ten-Year Intersection Capacity

Section 4 of this report has identified an average annual traffic growth of 3.4% over the past ten-year period. With the continuation of this growth, the traffic volumes on SH2 are expected to increase by approximately 34% over the next ten years.

The expected operational performance of the intersection of Arawa Road and SH2 with the additional ten-year traffic growth is given in the following table.

| Peak Hour    | Approach   | Movement | Degree of Saturation | Average Delay (s) | Level of Service | Queue (veh) |
|--------------|------------|----------|----------------------|-------------------|------------------|-------------|
| Morning Peak | SH2 East   | Through  | 0.264                | 0.0               | A                | 0.0         |
|              |            | Right    | 0.014                | 10.3              | B                | 0.0         |
|              | Arawa Road | Left     | 0.490                | 10.8              | B                | 2.2         |
|              |            | Right    | 0.490                | 26.5              | D                | 2.2         |
|              | SH2 West   | Left     | 0.017                | 7.9               | A                | 0.0         |
|              |            | Through  | 0.264                | 0.0               | A                | 0.0         |
| Evening Peak | SH2 East   | Through  | 0.264                | 0.0               | A                | 0.0         |
|              |            | Right    | 0.036                | 10.7              | B                | 0.1         |
|              | Arawa Road | Left     | 0.259                | 7.4               | A                | 0.9         |
|              |            | Right    | 0.259                | 23.3              | C                | 0.9         |
|              | SH2 West   | Left     | 0.043                | 7.9               | A                | 0.0         |
|              |            | Through  | 0.264                | 0.0               | A                | 0.0         |

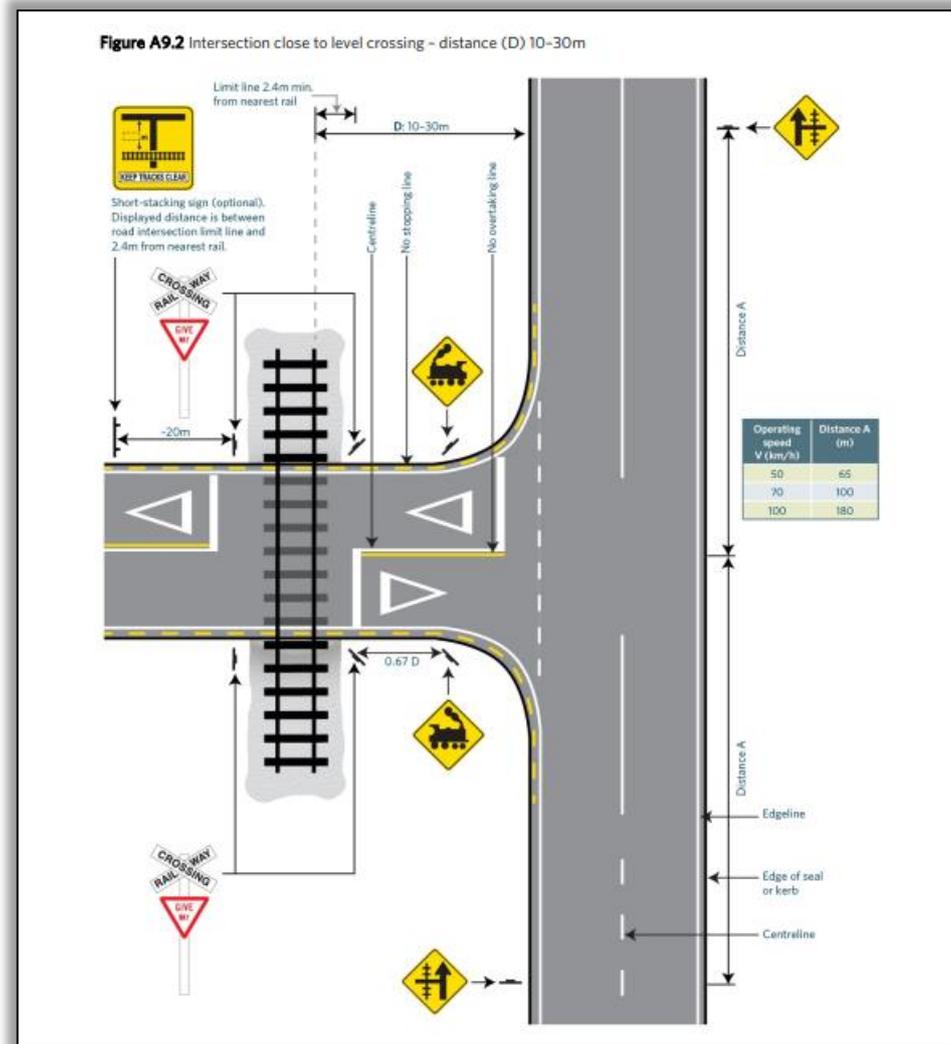
**Table 8: Intersection Operational Performance**

Table 8 shows that the intersection is expected to continue to operate efficiently with low to moderate delays, an acceptable level of service and minimal queues.

## 8.7. Pongakawa School Road

The Pongakawa School is located on the southern side of Old Coach Road, immediately east of the intersection with Pongakawa School Road. Pongakawa School Road intersects with SH2 on the southern side of the highway, approximately 180 m east of Arawa Road. A right turn bay is provided on SH2 at the intersection. Pongakawa School Road crosses the East Coast Main Trunk Railway approximately 25 m south of SH2, providing a stacking distance of approximately 20 m, which is sufficient for three vehicles.

The requirements for traffic signs and road markings at railway level crossings is given in the NZTA *“Traffic Control Devices Manual, Part 9 Level Crossings”*. For crossings located close to an intersection, the requirements are as shown on the following figure.



**Figure 11: Railway Crossing Traffic Signs and Road Markings**

Figure 11 shows Give Way signs at the crossing, however these may be replaced with flashing light assemblies. The installation of a WX1L level crossing ahead warning sign is mandatory on all crossings. The short stacking sign is optional and is used where vehicles longer than the stacking length regularly use the crossing.

The railway crossing is presently provided with:

- RPX1 "level crossing flashing light assembly" with WX6 crossbuck "railway crossing" signs and RPB barrier arms.
- WX1L and WX1R "level crossing ahead" signs on the Pongakawa Station Road approach northern approach, with a WX1L sign on the southern approach.
- WXL2 and WXR2 "level crossing on controlled side road" signs on the SH 2 approaches.
- WXB1 "intersection immediately beyond level crossing" on the Pongakawa Station Road approach.
- A 25m long emergency escape zone on the northern side of the crossing.

As an escape zone is provided, the WXB3 "short stacking" sign is not required.

The existing crossing is shown on the following photograph.



**Photograph 10: Railway Crossing Looking South**

The signs at the railway crossing comply with the requirements of the Traffic Control Devices Manual.

Section 12 of this report notes that it is proposed to provide a school bus stop within the site, which will be used for pupils travelling to and from the Pongakawa School. With the provision of the bus stop encouraging the use of the school bus, any increase in traffic on Pongakawa School Road associated with the proposed residential plan change is expected to be minimal. Any effects on the rail crossing or the available stacking distance are also assessed as minimal.

## **9. Parking**

The District Plan has a policy that activities should be established and operate in a manner which ensures safe and effective on-site and off-site vehicle parking. RR453 gives an expected parking demand for outer suburban dwellings of 1.8 spaces per unit.

Given that only a plan change is proposed at this stage, the details of the on-site parking are not known. It is recommended that this be considered as part of the subdivision consent.

## 10. Internal Road Design

The Development Code specifies the road design requirements for urban subdivisions. Given that only a plan change is proposed at this stage, details of the design of the internal roads, the internal intersections and the intersection with Arawa Road are not yet known. It is recommended that these also be considered as part of the subdivision consent.

The NZTA *“Planning Policy Manual”* (PPM) has no specific requirement for the separation distance between a local road intersection and a State highway intersection. Private vehicle entrances however require a minimum separation of 60 m, measured from the State highway boundary to the centre of the access. Similarly, the Development Code also requires a minimum separation of 60 m, however measured centre to centre. The proposed intersection location on Arawa Road will provide a separation distance of approximately 165 m, measured from the State highway boundary to the centre of the intersection, which exceeds the minimum requirements of both the PPM and the Development Code.

The separation distance between the proposed new intersection on Arawa Road and the existing intersection with Penelope Place is approximately 82 m, measured centre to centre, which also exceeds the minimum intersection spacing specified in the Development Code, so also complies.

## 11. Property Access

The Development Code specifies requirements for the location, design and sight distances at vehicle entrances. Again, given that only a plan change is proposed at this stage, the details of the internal layout of the subdivision and the access to each individual lot are not known. It is recommended that these also be considered as part of the subdivision consent.

## 12. Multi-Modal Travel

The site is located within an essentially rural area. As such there are no pedestrian footpaths or other facilities. It is however understood that footpaths will be provided within the subdivision and that an area will be allocated for commercial activities, such as a community store. This will provide some services within the site, reducing the need for external vehicle trips.

The Pongakawa School is located on Old Coach Road, at the southern end of Pongakawa School Road. The school provides for students from year 1 to year 8. To minimise the number of private vehicles travelling to and from the school, using SH2 and crossing the railway, it is proposed to provide a school bus stop within the site. The proposed increase in residential dwellings will also improve the viability of using the bus stops for other bus services.

## 13. Conclusion

KA and AD Marsh propose a private plan change to re-zone land on the north-western side of Arawa Road, Pongakawa, from Rural to Residential. This will allow the subdivision of the land to provide up to approximately 120 additional residential lots.

The expected daily traffic generation of the additional dwellings is assessed at 984 veh/day, with a peak hour traffic generation of 108 veh/h. This is expected to increase the ADT on Arawa Road at the SH2 intersection to 1,468 veh/day. Approximately 75% of generated traffic is expected to travel to and from the west, with 25% to and from the east.

For the forecast ADT on Arawa Road, the District Plan specifies a minimum carriageway width of 8.5 m. The safe system audit has however recommended a width of between 6.5 m and 7.0 m. In accordance with the Safe System Audit recommendation, it is recommended that Arawa Road, between SH2 and the intersection providing access to the subdivision, be widened to 6.5 m.

The ADT on SH2 to the west of the site is expected to increase by approximately 11%. The existing design of SH2 exceeds the minimum required by the relevant Austroads Guide. It is therefore assessed that the expected increase in traffic is able to be accommodated on the existing carriageway with minimal effects.

At the intersection of Arawa Road and SH2, the provision of both left and right turn auxiliary lanes are warranted. A right turn bay is presently provided, however there is no left turn lane. The Safe System Auditors have expressed concern that the standard design of a channelised left turn can result in a dynamic visibility obstruction for drivers exiting Arawa Road. The auditors have recommended providing an offset AUL(s) treatment. It is recommended that an offset channelised left turn lane be provided, with the final design of the intersection developed in accordance with NZTA requirements.

The safety audit has noted safety issues associated with the existing guardrails on SH2. It is recommended that the proposed new guardrails at the intersection be designed by a Waka Kotahi accredited designer in accordance with NZTA M23:2022 *“Specification and guidelines for road safety hardware and devices”*.

The available sight distances at the intersection of Arawa Road and SH2 comply with the relevant Austroads requirements.

The intersection is expected to operate efficiently with low delays, a high level of service and negligible queues. A ten-year assessment shows that the intersection is expected to continue to operate efficiently with low to moderate delays, an acceptable level of service and minimal queues.

The signs at the railway crossing comply with the requirements of the Traffic Control Devices Manual.

Given that the proposed plan change is in the preliminary stages, it is recommended that the on-site parking, internal road and intersection design, the intersection with Arawa Road and the access to individual properties be considered as part of the subdivision consent stage.

The proposed location of the intersection on Arawa Road will provide separation distances between the SH2 and Penelope Place intersections that exceed the relevant minimum requirements of both the PPM and the Development Code.

In summary it is recommended that:

- The Arawa Road carriageway, between SH2 and the intersection providing access to the subdivision, be widened to 6.5 m.
- At the intersection of Arawa Road and SH2, an offset channelised left turn lane be provided, with the design of the intersection developed in accordance with NZTA requirements.
- The proposed new guardrails at the intersection be designed by a Waka Kotahi accredited designer in accordance with NZTA M23:2022 "*Specification and guidelines for road safety hardware and devices*".
- The on-site parking, internal road and intersection design, the intersection with Arawa Road and the access to individual properties be considered as part of the subdivision consent stage.

It is concluded that, with the above recommendations, the proposed private plan change and associated residential development can be accommodated within the local transportation environment.

Report Prepared by:



Bruce Harrison  
**Harrison Transportation**

10 August 2023

Reference: 496 TA v3



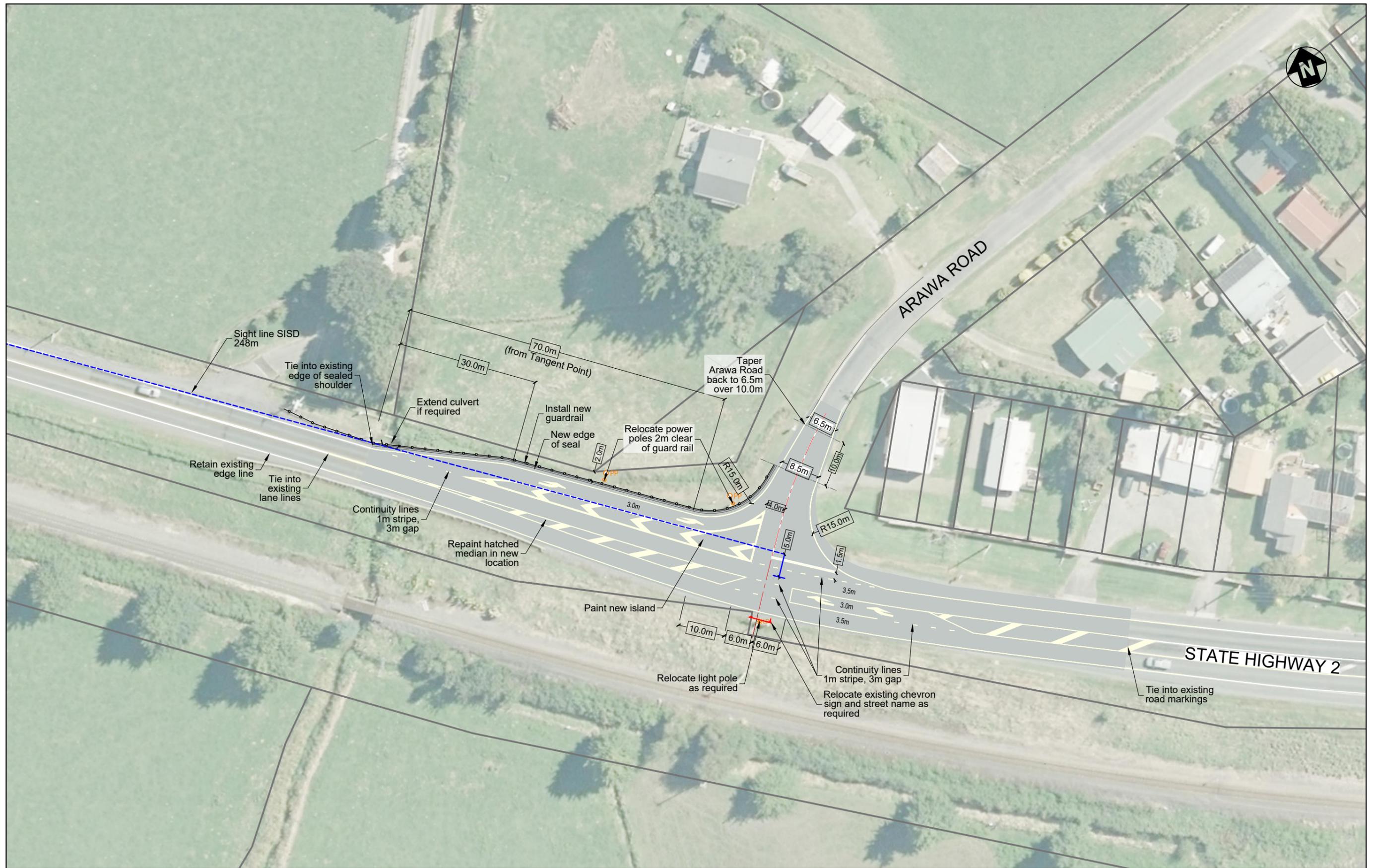
### Pencarrow Estate - Structure Plan

#### LEGEND

- |                                   |                                     |                      |
|-----------------------------------|-------------------------------------|----------------------|
| Affordable/Higher-Density Housing | Residential Height Restriction Area | Plan Change Area     |
| Low-Density Housing               | Pedestrian Connection               | Overland Flowpath    |
| Commercial Use                    | Proposed Playground                 | New 100mm Water Main |

Date: 08.12.2022  
 Scale: 1:2000 @ A3  
 Drawing: Pencarrow Estate - Structure Plan  
 Drawn: JS





| No | DESCRIPTION | DATE | CHK |
|----|-------------|------|-----|
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|    |             |      |     |
|    |             |      |     |
|    |             |      |     |
|    |             |      |     |

**KA & AD MARSH**  
**ARAWA ROAD PONGAKAWA**  
**INTERSECTION RECONFIGURATION WITH OFFSET LEFT TURN LANE**

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| Design  | BH       | Job No.     | CAD File  | 22-205   | DRAWING No |
|---------|----------|-------------|-----------|----------|------------|
| Drawn   | DJ       | 496         | Plot Date | 09/08/23 | 03         |
| Checked | BH       |             | Rev.No.   |          |            |
| Date    | 09/08/23 | Drawing No. |           |          | SCALE      |
| Drawing | 1 of 1   | 496-03      |           |          | 1:750 @A3  |