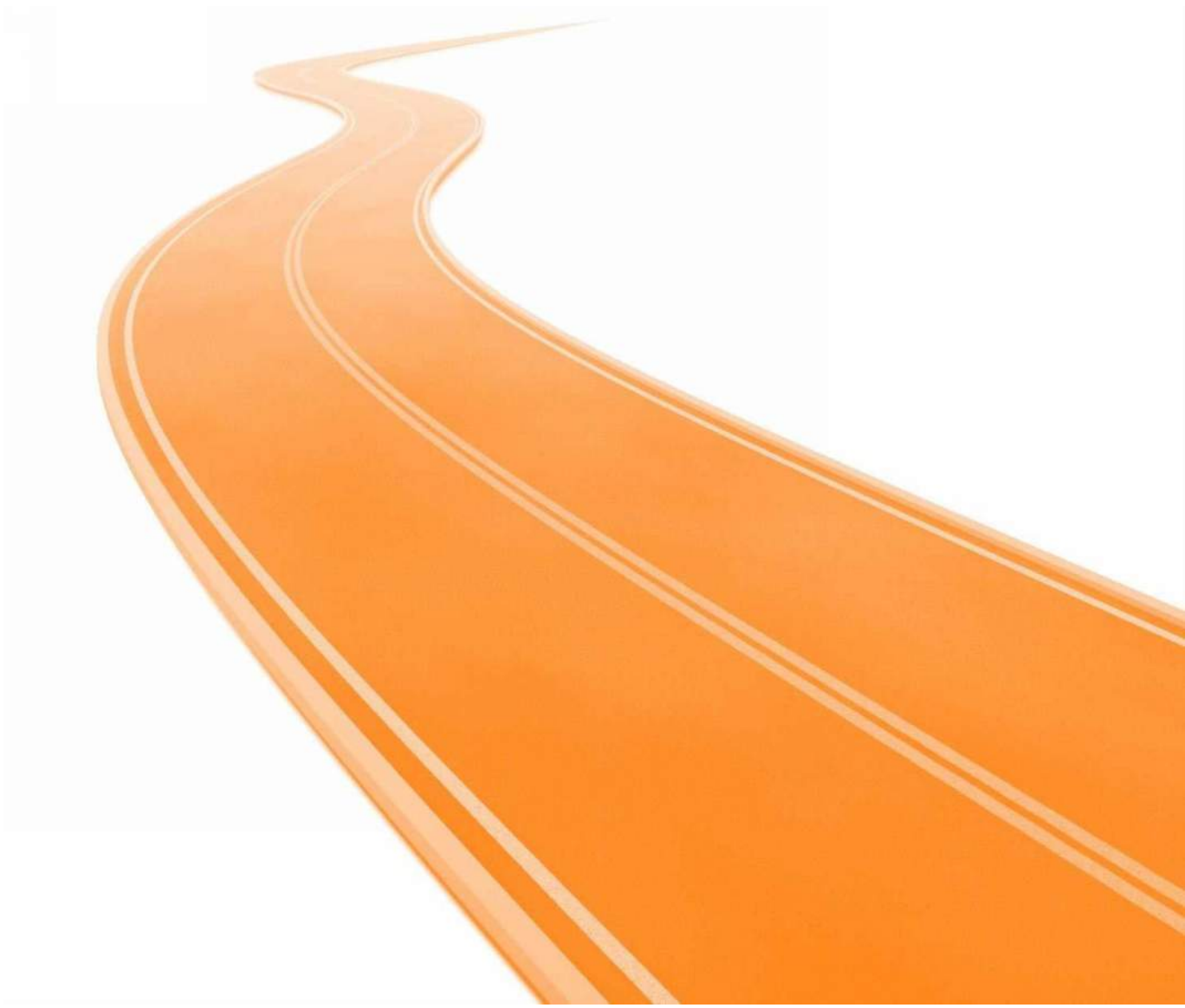
APPENDIX U

INTEGRATED TRANSPORTATION ASSESSMENT

Industrial Plant Development
401 Racecourse Road, Te Awamutu

Transportation Assessment Report

1 December 2021



4 Leek Street, Newmarket
PO Box 128259, Remuera 1541, Auckland
Ph. 09 869 2825
www.commute.kiwi

Project:	Industrial Development
Report title:	Transportation Assessment Report
Document reference:	J002086 401 Racecourse Road Te Awamutu 261121
Date:	1 December 2021

Report Status	Prepared By	Reviewed By	Approved By
Final Report	Nabi Mussa	Leo Hills	Leo Hills

Table of Contents

1 INTRODUCTION

The proposal is to establish a recycling and electricity generation plant located at 401 Racecourse Road, Te Awamutu. The plant will generate power from thermal processing of Refuse Derived Fuel which is a product produced by shredding, sorting and dehydrating solid waste.

The operation hours are as follows:

- Monday – Saturday (7am – 6pm);
- Sunday & Public holidays (8am – 5pm); and
- Approximately 60 staff.

The site is zoned 'Specialised Dairy Industrial Area' in the Waipa District Plan (District Plan).

This report assesses the transport-related matters of the proposal, including:

- A description of the site and its surrounding transport environment;
- A description of the key transport-related aspects of the proposed development;
- The expected traffic volumes likely to be generated by the development;
- The expected impact of the additional traffic flows on the surrounding road network;
- The acceptability of the proposed parking provision in relation to anticipated parking demands;
- The adequacy of the proposed servicing arrangements;
- The proposed access arrangements for vehicles and pedestrians;
- Compliance with relevant regulatory controls.

These and other matters are addressed in detail in this report. By way of summary, it is considered that the proposed development, as detailed in this report, is likely to generate minimal adverse transport effects on the function, capacity and safety of the surrounding transport network.

2 SITE LOCATION

Figure 1 and Figure 2 shows the location of the site in relation to the surrounding road network.

Figure 1: Site Location

Figure 2: District Plan Zoning

Racecourse Road runs in a north-south alignment (at the site entrance), connecting to Alexandra Street (via Tawhiao Street) to the south and Ohaupo Road (State Highway 3) to the north. Racecourse Road provides for a single traffic lane in each direction and on-street parking is permitted on both sides of the carriageway.

With reference to the District Plan (and shown in Figure 3), Racecourse Road is classified as a 'Collector Road'.

Figure 3: District Plan Road Classification

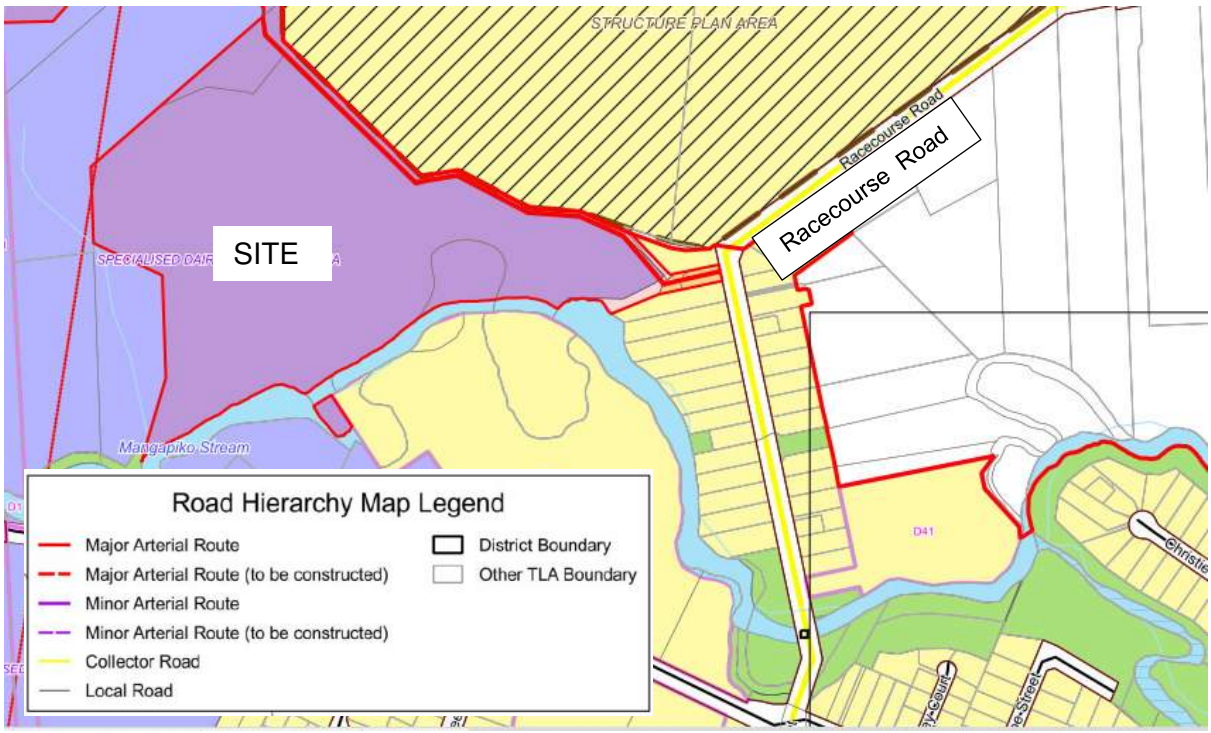


Figure 4 shows the posted speed limits within the vicinity of the site which shows the speed limit in the area is 50km/hr.

Figure 4: Speed Limits Bylaw 2019 – Waipa District Council

2.1 TRAFFIC VOLUMES

Traffic data obtained from Waipa District Council indicates Racecourse Road carried approximately 1,379 vehicles per day as shown in Figure 5 below.

Figure 5: Waipa District Council RAMM Data

RACECOURSE ROAD (T.A.)	Average of Est AADT	1379
	Max of Est AADT	1680
	Min of Est AADT	1110
	Average of Width	9.6
	Sum of Length	1404

3 ROAD SAFETY ASSESSMENT

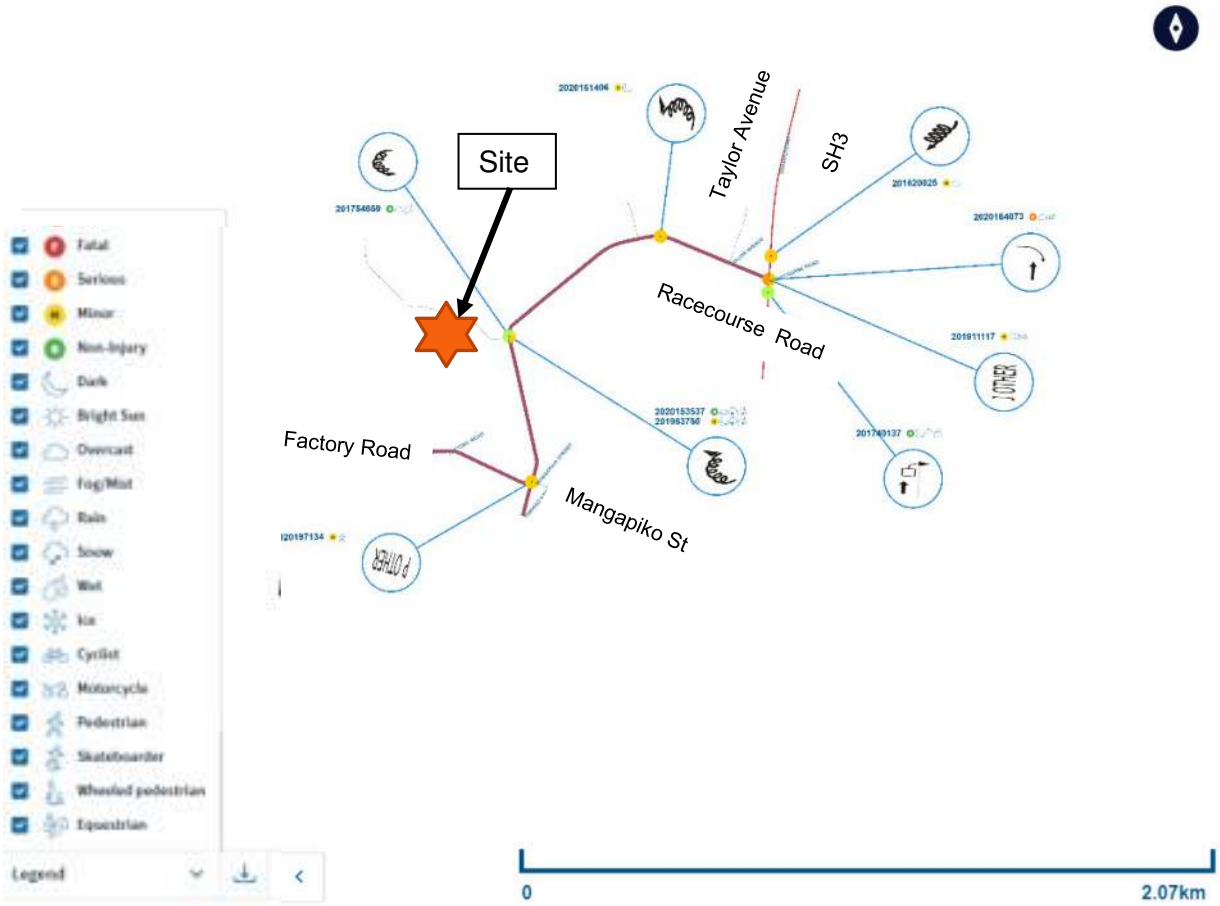
An assessment of the surrounding area's road safety record has been undertaken using the NZTA's CAS database for the five year period 2016 – 2020 including all crashes reported in 2021. The study area includes the intersections of Racecourse Road / Ohaupo Road (SH3), Racecourse Road / Taylor Avenue and Racecourse Road / Mangapiko Street.

The identified crashes are summarised as follows:

- Two crashes occurred at the intersection of Racecourse Road / Ohaupo Road (SH3) resulting in 1 severe and 2 minor injuries. The crashes resulted from failure to notice another party behind and failure to give way at a priority traffic control;
- One crash occurred at the intersection of Racecourse Road / Mangapiko Street, resulting in 1 minor injury. The crash resulted from vehicle travelling too fast;
- Four crashes occurred on Racecourse Road. Of these, two crashes resulted in 3 minor injuries occurring from alcohol test above limit and inappropriate speed for road conditions (slippery due to rain). The remaining crashes were non-injury occurring from loss of control when turning and inappropriate speed for road conditions;
- Two crashes occurred on Ohaupo Road (SH3) near the site. Of these, one crash resulted in 1 minor injury occurring from lack of sleep (fatigue). The remaining crash was non-injury occurring from alcohol test above limit; and
- No crashes have occurred at the intersection of Racecourse Road / Taylor Avenue.

A collision diagram of the surrounding area is included in Figure 6.

Figure 6: Collision Diagram



Whilst a small number of crashes have occurred near the site, there is no history of crashes relating to vehicle movements into and out of the site. Further there is no specific pattern to the crashes especially at the SH3 / Racecourse Road intersection. As such, the crash history does not indicate any significant safety concerns in respect to the proposed development.

4 PROPOSED DEVELOPMENT

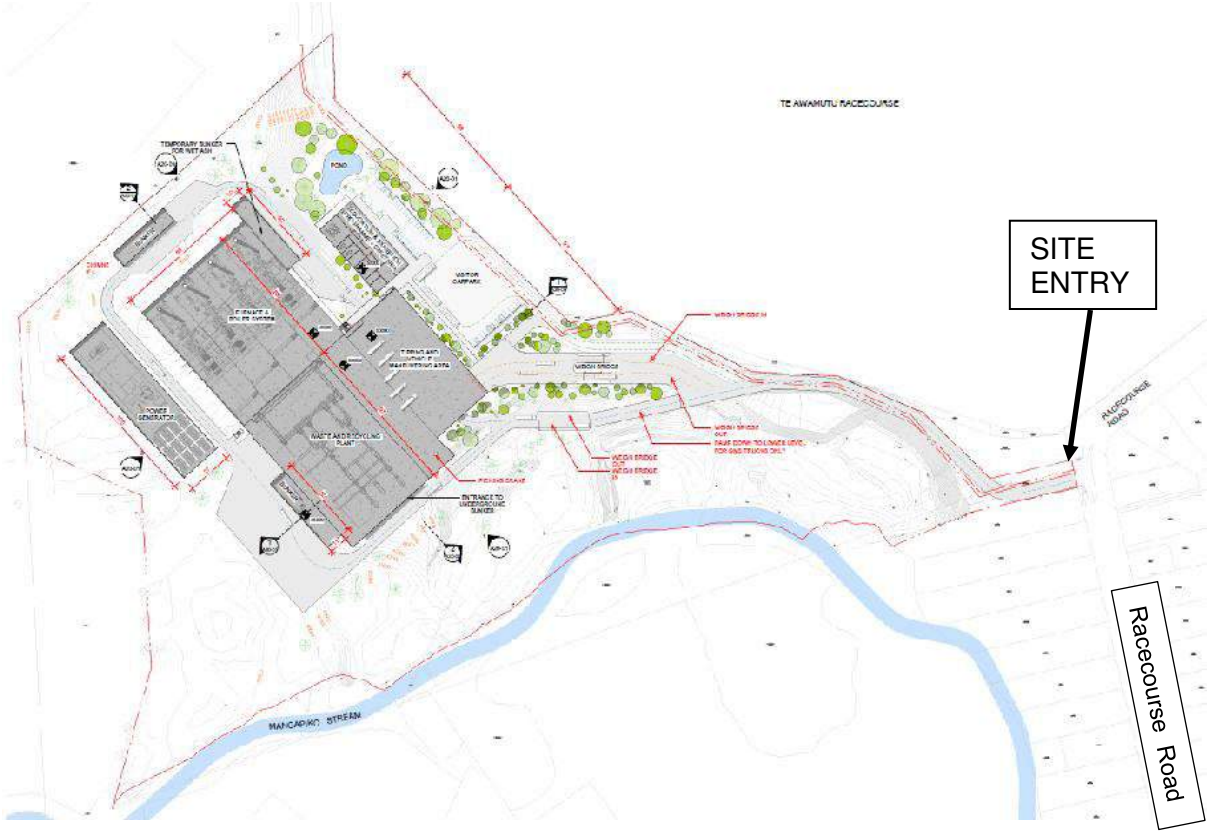
The proposal is to establish a recycling and electricity generation plant located at 401 Racecourse Road, Te Awamutu. The plant will generate power from thermal processing of Refuse Derived Fuel which is a product produced by shredding, sorting and dehydrating solid waste.

The operation hours are as follows:

- Monday – Saturday (6am – 6pm) – Commercial drop-off facility;
- Monday – Sunday (7am – 4pm) – Domestic drop-off facility; and
- Approximately 60 staff.

Figure 7 shows the proposed development.

Figure 7: Proposed Development



5 TRIP GENERATION / DISTRIBUTION

5.1 GENERATION

The following information has been provided with regards to traffic movements once the facility is in operation.

- 20-30 High productivity motor vehicles (HPMV) per day – Starting locations ranging from Auckland, Hamilton, Tauranga, New Plymouth and Taupo;
- 100 single unit trucks (class 2 & 3) per day
- Waste water truck: 4 per day (up to 2 movements per hour)
- Ash removal: 2-3 trucks per day (up to 2 movements per hour)
- Chemical delivery inc lime: 1 per day (up to 2 movements per hour
- Diesel delivery: 2-3 trucks per week (up to 2 movements per hour)
- Up to 60 staff generating up to 100 movements per day (50 in / 50 out)

Table 1 summarises the total traffic generation.

Table 1: Traffic generation

Vehicle type	Number	Movements per day	Peak Movements (per hour)
HPMV	30 per day	60 per day	6 per hour
Single unit truck	100 per day	200 per day	20 per hour
Waste water	4 per day	8 per day	2 per hour
Ash removal	3 per day	6 per day	2 per hour

Chemical delivery	1 per day	2 per day	2 per hour*
Diesel	1 per day	2 per day	2 per hour*
Staff cars	50 per day	100 per hour	50 per hour
TOTAL		**378 per day**	**84 per hour**

*Assumes worst case of the one vehicle per day in the peak hour

Section 16.4.2.22 of the District Plan outlines what level of traffic assessment is required depending on road type and traffic volume. Given Racecourse Road is a collector road and the site will generate over 250 vehicles per day (but less than 1500 vehicles per day) a "*Simple Integrated Transportation Assessment (ITA)*" is required.

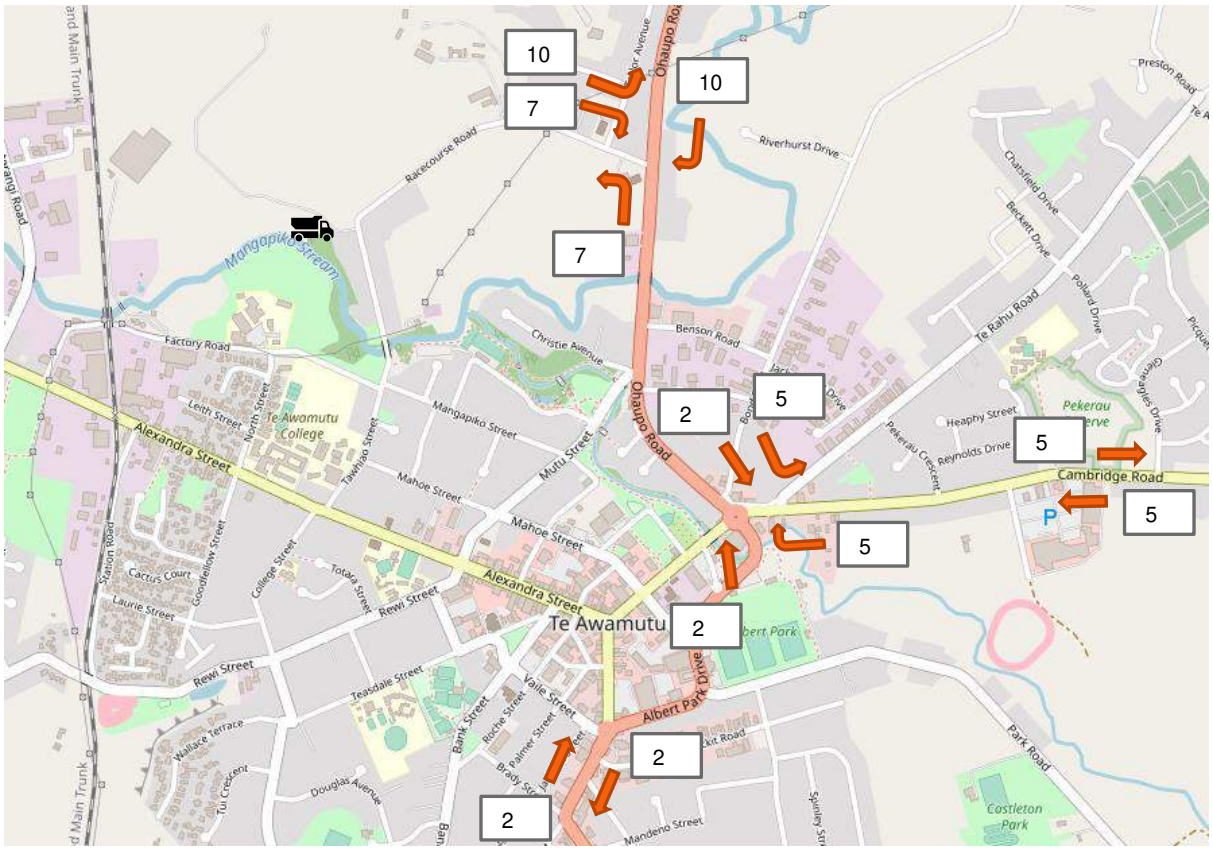
5.2 DISTRIBUTION

Movements to and from the site for trucks have been assumed to following the distribution set out in Figure 8 below. Traffic distribution has been developed based on information provided that indicate trucks will come from Hamilton, Auckland, Tauranga, New Plymouth and Taupo.

Figure 8: Truck Distribution across the road network

From this, the following hourly traffic truck generation is shown in Figure 9.

Figure 9: Additional Truck Generation (per hour)



The distribution of car movements to / from the site will be largely dependent on where staff live. Given the majority of residential development in Te Awamutu is to the south of the site the majority of entry movements in the morning and exit movements in the afternoon are expected to be from the south on Racecourse Road (i.e., left in and right out).

6 CAPACITY OF SURROUNDING ROAD NETWORK

6.1 GENERAL

In order to assess the safe and efficient operation of the surrounding road network, the following elements have been considered:

- Intersection of Racecourse Road / SH3
- Midblock sections

6.2 INTERSECTION BETWEEN RACECOURSE ROAD / SH3

The Racecourse Road / SH3 intersection is a give way-controlled intersection with priority given to SH3. A right turn lane is provided on SH3. **Error! Reference source not found.**10 s hows the layout of the intersection.

Figure 10: Racecourse Road / SH3 intersection

The intersections capacity has been assessed based on the Austroads Guide to Traffic Management (AGTM) Section 2 Figure C7 6: Unsignalised intersection (practical absorption capacity).

Racecourse Road carries approximately 1,379 vehicles per day with peak hour estimated to be 140 vehicles per hour. The proposal is expected to add approximately 34 vehicles per hour near SH3.

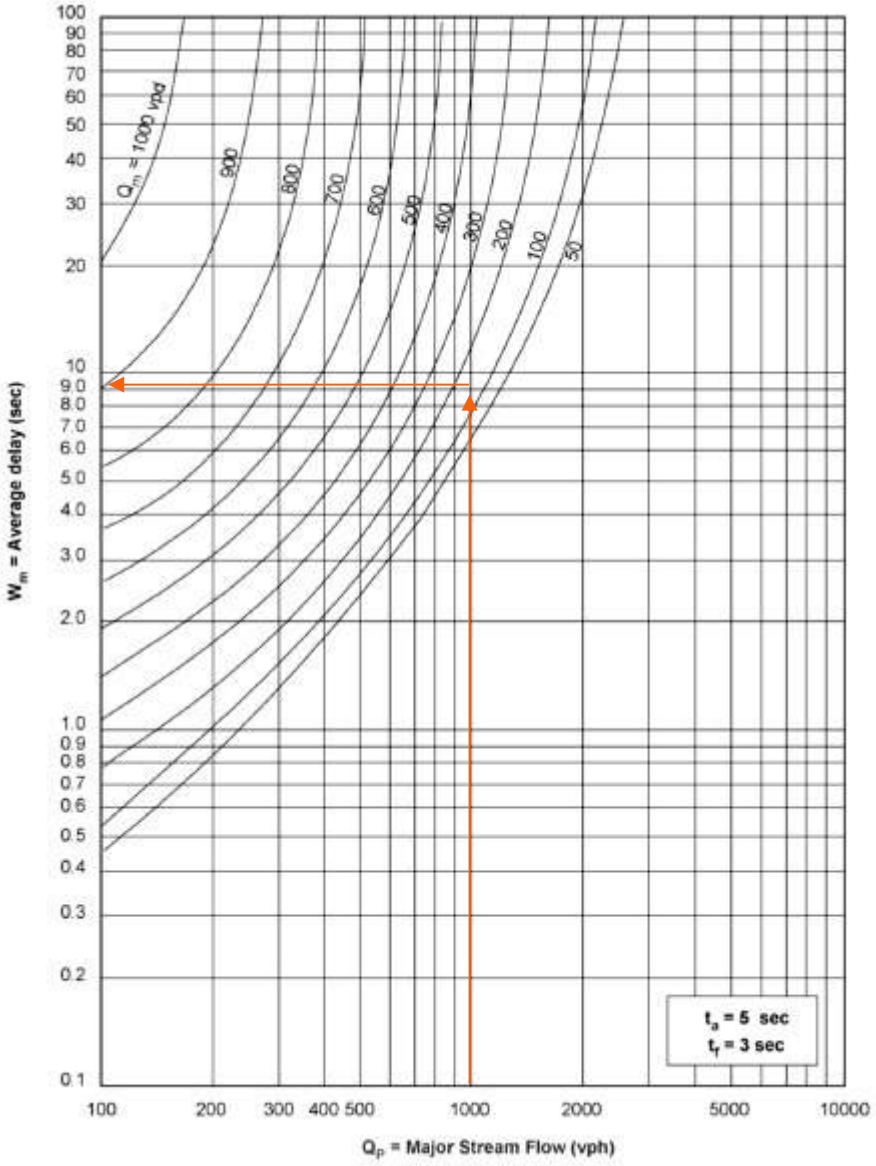
SH3 in Te Awamutu[1] carried 9,423 vpd in 2019 and 10,384 vpd in 2020. Based NZTA telemetry data the peak hour volumes are likely to be approximately 1,000 vehicles per hour.

Using the traffic volumes for SH3 and Racecourse Road (1,000vph and 140vph respectively) and a critical acceptance gap and follow up headway of 5 seconds and 3 seconds respectively, results in an average delay of 9 seconds for the minor road (Racecourse Road) as per Figure 11.

Of particular note from Figure 11, the additional 34 vehicles per hour anticipated by the proposal will make little difference to the delay experienced (approximately 1 second).

[1] NZTA Traffic data booklets and state highway traffic volumes

Figure 111: Austroads Delay assessment



As such, the effects of the development on the intersection operation are considered minimal.

6.3 MIDBLOCK SECTION

The 2013 assessment of road capacity looked at the Austroads document “Guide to Traffic Management Part 3: Traffic Studies and Analysis”. The methodology set out in Austroads determines the general capacity of a road based on road width, lateral clearances and portion of heavy vehicles. The capacity is defined by the following equation:

“C=1800FWFHV
Where:
C = capacity in vehicles per hour under prevailing roadway and traffic conditions
Fw = adjustment factor for narrow lanes and lateral clearances
Fhv = adjustment factor for heavy vehicles”

In this regard Racecourse Road is approximately 8.5-10.5m in width. As such from Table 4.1 of Austroads Part 3 Fw=0.9. Given the level nature of Racecourse Road and assuming 5% heavy vehicles, Fhv = 0.95

C=1800 x 0.9 x 0.95
Therefore C = 1539 vehicles per hour per lane

On this basis the full-width two-way traffic volume limit is calculated to be approximately 3000 vehicles per hour.

Current traffic volumes are around 140 vehicle per hour and thus Racecourse Road has significant spare capacity to accommodate the proposed increase in truck movements.

7 ACCESS

7.1 GENERAL

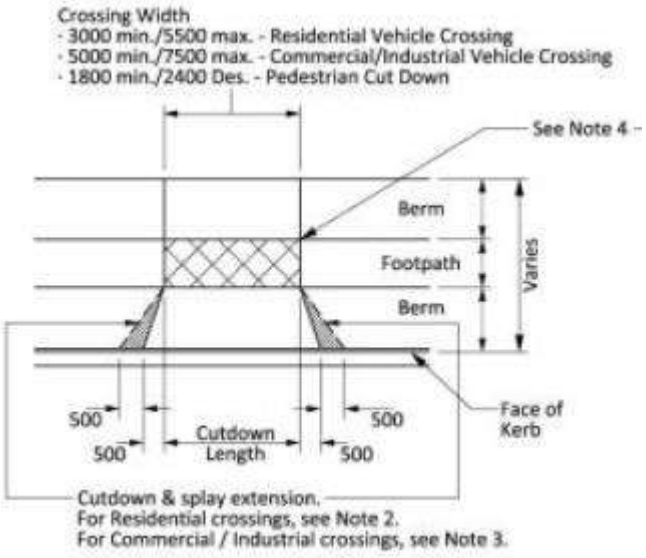
Figure 12 shows the access location over the site.

Figure 12: Access over site

7.2 ACCESS DESIGN

Drawing D3.3.1 of the RITS[2] outline the vehicle crossing requirements for commercial / industrial developments. Detailed design specifications for this vehicle crossing are shown in Figure 9.

Figure 13: Vehicle crossing requirement – D3.3.1



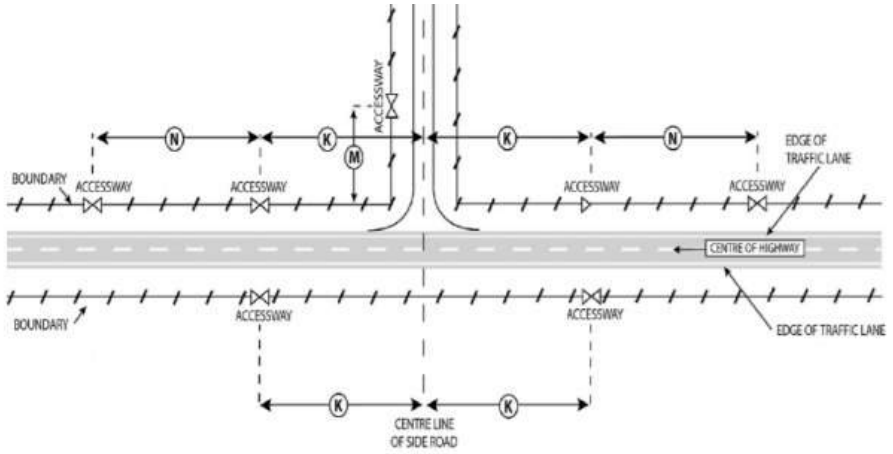
It is recommended the proposed access should be designed generally in accordance with D3.3.1 taking into account the vehicle tracking of the largest vehicle expected. This is discussed in section 7.6 below.

7.3 SEPARATION FROM INTERSECTIONS AND OTHER ENTRANCES

Rule 16.4.2.5 of the District Plan (Figure 10) outlines rules regarding vehicle entrance separation distances from intersections and other vehicle entrances. The minimum distance of a vehicle entrance (accessway) from an intersection or other entrance shall be as follows, where the values for K, M and N are included in the following table:

[2] Regional Infrastructure Technical Specifications used by Waipa District Council

Figure 14: Separation Distances to Intersections and adjacent crossings



Posted Speed limit	Minimum Distance K=	Minimum Distance M=	Minimum Distance N=
40	30	20	For 60km/h- less than 4m or more than 11m
50	30	20	
60	30	20	
70	100	45	40
80	100	45	100
90	200	60	200
100	200	60	200

The development complies with the above District Plan requirement in relation to separation to intersections.

It is however noted that access to No 381 Racecourse Road is approximately 7.5m distance separation with the subject driveway (measured from centre of both driveways). This does not comply with requirement "N" in the above table. In this regard it is noted that this situation is existing, and the driveway at No 381 serves only one house and operates in a one-way nature. Overall, this is considered acceptable and a minor effect.

7.4 NUMBER OF CROSSINGS

Rule 16.4.2.12 of the District Plan outlines rules regarding vehicle access to sites in the Industrial Zone. The District Plan requires the following:

- *'Where a site has a frontage greater than 50m to a road which is not a State Highway or a major arterial road, two vehicle crossings will be allowed from that road, subject to the requirements of Rule 16.4.2.5'.*

The site's frontage to Racecourse Road is less than 50m. The proposed development provides for one access. As such, the proposal complies with the District Plan requirement.

7.5 SIGHT DISTANCE

7.5.1 DISTRICT PLAN REQUIREMENT

The District Plan contains no information on driveway sight distance. The Regional Infrastructure Technical Specifications (RITS) which Waipa District Council uses notes (section 3.3.5) that "The driver sight distance requirements relate to the road classification function and vehicle speeds. Refer to NZTA RTS 6". Table 1 of RTS-6 sets out the minimum sight distance requirement. Figure 15 shows the requirement.

Figure 15: Minimum Sight Distance Requirement

Driveway classifications	Operating speed (km/h)*	Minimum sight distance (metres)** Frontage road classification Local	Collector	Arterial
Low volume	40	30	35	70
Up to 200 vehicle manoeuvres per day	50	40	45	90
	60	55	65	115
	70	85	85	140
	80	105	105	175
	90	130	130	210
	100	160	160	250
	110	190	190	290
	120	230	230	330
High volume	40	30	70	70
More than 200 vehicle manoeuvres per day	50	40	90	90
	60	55	115	115
	70	85	140	140
	80	105	175	175
	90	130	210	210
	100	160	250	250
	110	190	290	290
	120	230	330	330

For a vehicle entrance generating more than 200 vehicles per day with a 50km/h speed environment, RTS-6 requires a minimum sight distance of 90m.

7.5.2 AVAILABLE SIGHT DISTANCE

Photograph 1 and Photograph 2 shows the available sight distance (in both directions) from the existing vehicle crossing along Racecourse Road.

Photograph 1: Sight distance to the north along Racecourse Road

Photograph 2: Sight distance to the south along Racecourse Road

As shown in the above photographs, sight distance is considered to be well in excess of requirements to the south. To the north, sight distance is limited due to a corner. This restricts visibility to approximately 83m as shown in Figure 16 below.

Figure 16: Sight Line Assessment

The available sight distance exceeds the Local road requirements but not the Collector road requirement being 7m short. In this regard:

- Speeds on approaching the corner and one the corner are expected to be significantly less than 50km/hr

- The majority of vehicles (especially trucks) are expected to travel to / from the north. As such when turning left out (to the north) sight distance to the north is not considered critical.

Given the above, the sight distance is considered acceptable.

7.6 CROSSING DESIGN

7.6.1 DESIGN VEHICLE

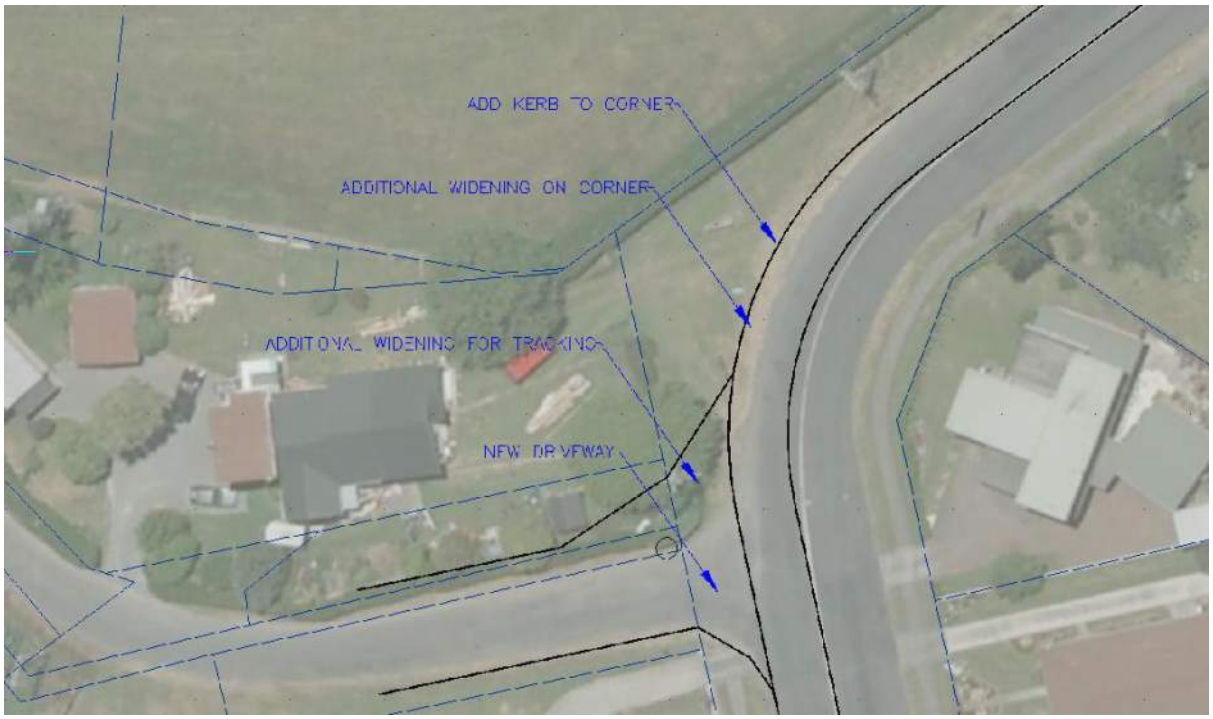
The operator has advised that the typical vehicles will require a Class 2-3 type licence which is a small single unit truck with trailer (gross combination weight (GCW) of up to 25,000kg). It is however also understood that some High Productivity Motor Vehicles (HPMV) will also visit the site. As such a HPMV vehicle in the form of a 19.45m long semi-trailer or a 23m long truck and trailer has been used for testing.

7.6.2 ACCESS LAYOUT

Appendix A shows the tracking of both vehicles in and out of the site (from the north) together with a more common 11.5m long single unit truck (from the south).

It is recommended that widening is provided on the entrance to ensure there is minimal queuing on Racecourse Road. This is shown in Figure 17 below and **Appendix C**.

Figure 17: Access



It is noted that the proposed width at the boundary exceeds the 7.5m maximum width in Drawing D3.3.1 of the RITS however this is considered acceptable due to:

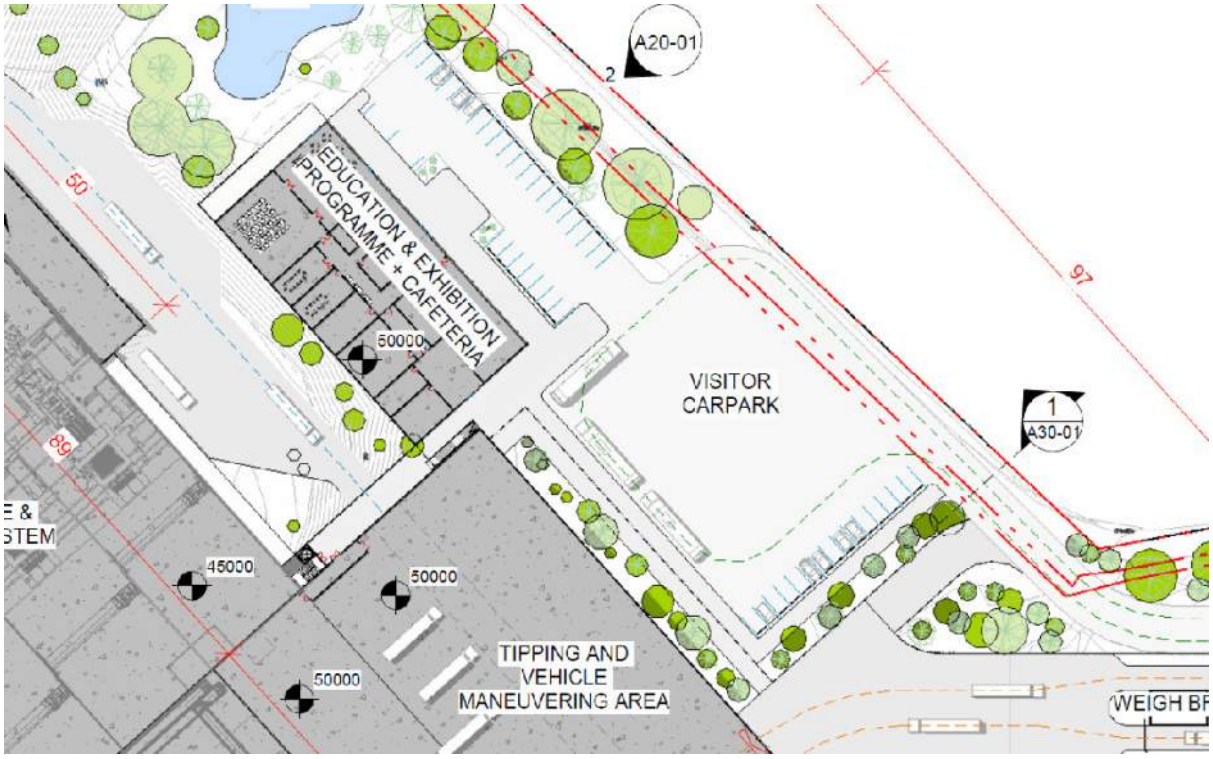
- The additional width is required to accommodate the vehicle tracking and
- The footpath on the subject side of Racecourse Road terminates in this location (so the number of pedestrians crossing the driveway will be minimal).

8 PARKING

8.1 GENERAL

Figure 18 shows the parking layout over the site.

Figure 18: Parking Layout over site



New developments are no longer required to provide minimum carparks following District Plan update from central government. The District Plan states '*the carparking removal is one of a number of provisions identified through the National Policy Statement on Urban Developments (NPSUD) which came into effect on 23 July 2020. The removal of carparking minimum requirements applies across the whole District Plan and in all zones, whether urban or rural'.*

As such, the proposed development complies with the District Plan.

8.2 CYCLE PARKING

Rule 16.4.2.21 of the District Plan outlines the requirement for bicycle parking rates. The District Plan requires:

- *'Activities employing more than ten people must provide bicycle parking at a rate of one bicycle park for every ten people employed'.*

It is recommended bicycle parking spaces should be provided in accordance with the District Plan requirement.

8.3 PARKING LAYOUT

The District Plan does not specify minimum dimensional requirements for parking spaces and manoeuvring areas.

However, Rule 16.4.2.18 of the District Plan outlines that *"Vehicle manoeuvring areas loading and unloading spaces, and if provided, parking spaces, including those spaces located in a garage, shall be provided on a site, of a standard adequate to accommodate a*

99.8 percentile car, or a 99 percentile truck, in order to ensure that all vehicles have the ability to access the adjoining road in a forward direction after no more than a three point turning manoeuvre on the site, except where Rule 16.4.2.16 applies."

All parking spaces within the site are designed as per ASNZS2890 and are considered to be appropriate.

Vehicle tracking has been undertaken in those areas of the Site with the most difficult to access spaces to determine their accessibility. **Attachment B** shows the vehicle tracking of a AS2890 car accessing these spaces, which are all considered acceptable.

It is recommended that the area where the lower-level ramp, the main weigh bridge and the visitor access all meet be carefully considered at detailed design stage to provide users with appropriate guidance.

9 SERVICING

9.1 GENERAL

Appendix T1 (Minimum loading and unloading requirements) of the District Plan details the loading space requirement for various activities. The District Plan requires the following:

For Industrial Activities, the District Plan requires:

- *'One heavy goods vehicle bay per site'.*

The site provides a number of loading areas / spaces and this complies with the above requirement.

Attachment B shows vehicle tracking of a HPMV semi-trailer and B-train within the site, which is considered acceptable, and the largest vehicle expected on the site.

10 CONSTRUCTION TRAFFIC

It is estimated that around 3800 truck movements (assuming double units of 20m3 capacity) will be required to transport all of the cut, fill and preload material to and from the site. Using eighty workdays of earthworks vehicle movements, this equates to approximately 46 trucks per day, spread relatively evenly over a 10 hour day.

Based on the assessment previously, this volume of movements along Racecourse Road can be considered within the capacity of this collector road.

It is however recommended that production of a Construction Traffic Management Plan (CTMP) should be a condition of consent.

The CTMP should provide details on the following aspects:

(i) Construction dates and hours of operation including any specific non-working hours for traffic congestion/noise etc.
(ii) Truck route diagrams both internal to the Site and external to the local road network.
(iii) Temporary traffic management signage/details for both pedestrians and vehicles to appropriately manage the interaction of these road users with heavy construction traffic.
(iv) Details of site access/egress over the entire construction period.

(v) Fencing around the perimeter, and within the site between operational areas (once established) and construction areas, to protect pedestrians.

11 CONCLUSION

Following a review of the proposal to establish a recycling and electricity generation plant located at 401 Racecourse Road, Te Awamutu, the following can be concluded:

- No traffic safety issues have been identified which could adversely affect the road network in the vicinity of the proposed development;
- The traffic expected to be generated by the proposed development can be accommodated within the existing road network;
- The existing access does not comply with the District Plan in terms of separation distances to adjacent crossings and nearby intersections however this is considered acceptable;
- New developments are no longer required to provide minimum carparks following District Plan update from central government. The District Plan states '*the carparking removal is one of a number of provisions identified through the National Policy Statement on Urban Developments (NPSUD) which came into effect on 23 July 2020. The removal of carparking minimum requirements applies across the whole District Plan and in all zones, whether urban or rural'.* As such, the proposed development complies with the District Plan;
- The District Plan requires one loading bay to support the development. The entire site provides a number of loading areas / spaces and this complies with the above requirement. **Attachment A** shows vehicle tracking of a semi-trailer and B-train entering and leaving the site (including 500mm clearance), which is considered acceptable, and the largest vehicle expected on the site.

Overall, the following is recommended:

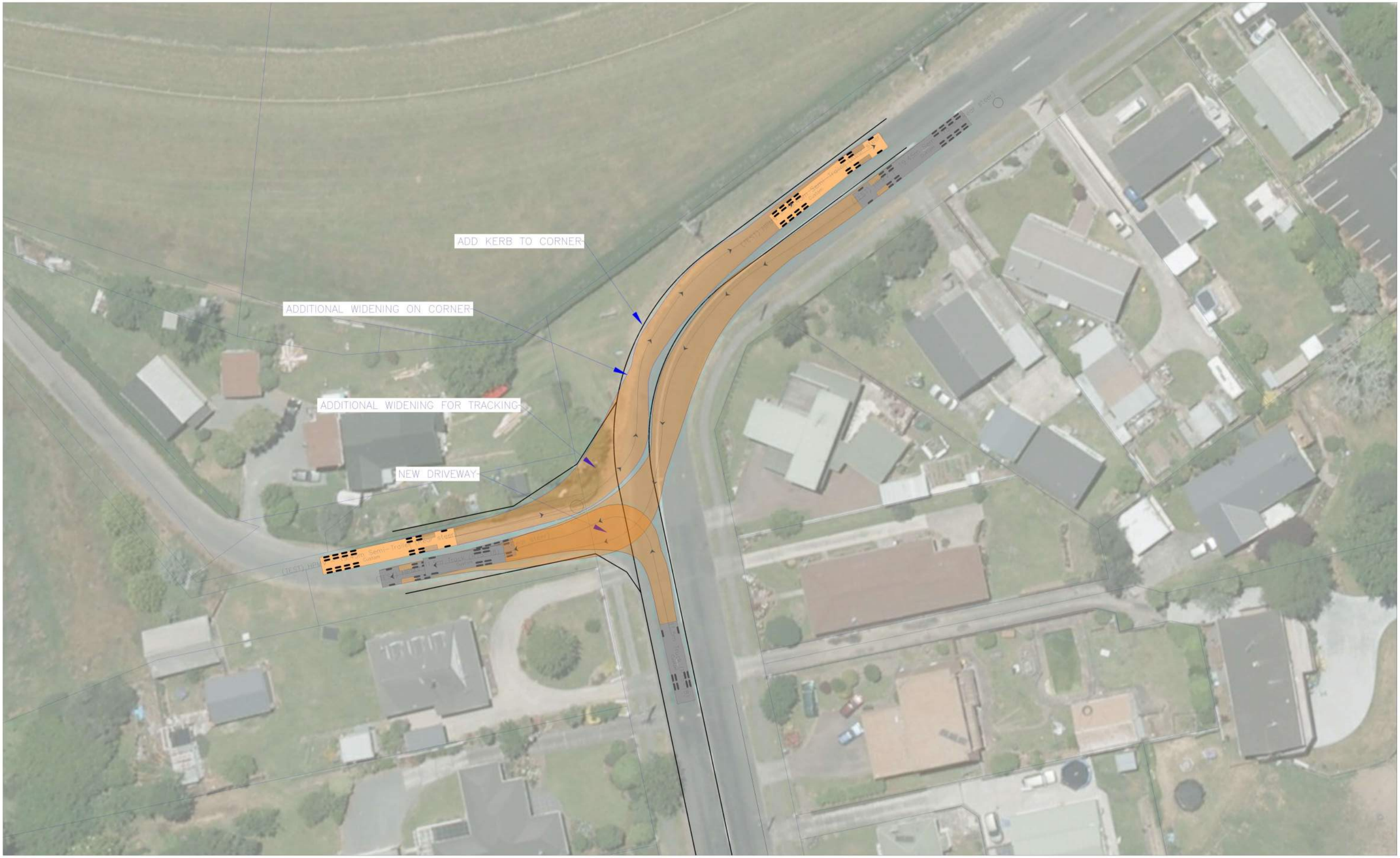
- It is recommended the proposed access (and Racecourse Road) should be designed as per Figure 17;
- the area where the lower-level ramp, the main weigh bridge and the visitor access all meet should be carefully considered at detailed design stage to provide users with appropriate guidance;
- A CTMP should be included as a condition of consent; and
- It is recommended bicycle parking spaces should be provided in accordance with the District Plan requirement.

Overall (subject to the above), it is concluded that the development is generally in accordance with the District Plan, there are no traffic engineering or transportation planning reasons that would preclude the development of the subject site as proposed.

Yours sincerely

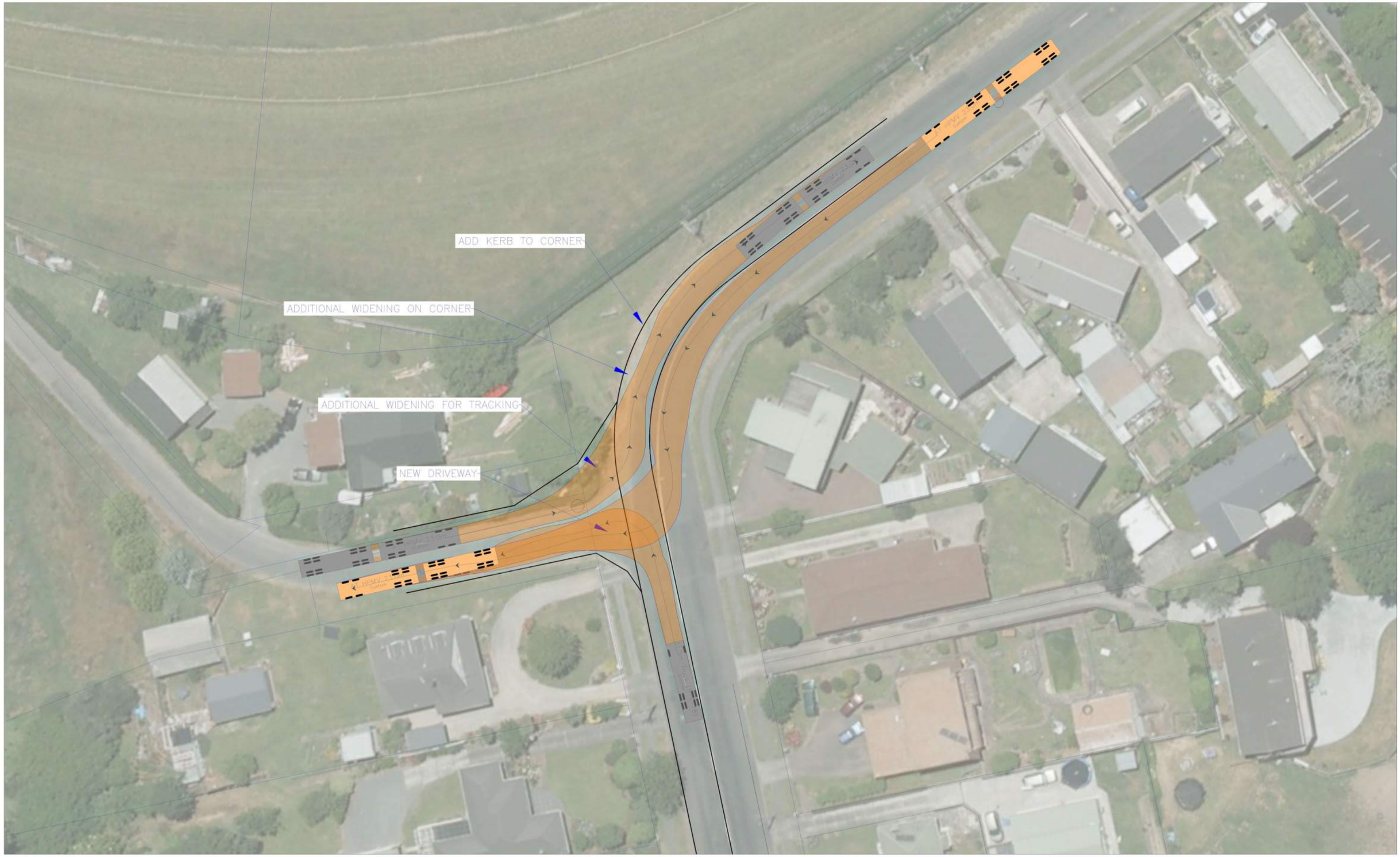
Commute Transportation Consultants

ATTACHMENT A – VEHICLE TRACKING (ACCESS)



Revision notes:		
Rev:	Date:	Notes:

Drawn by: LH J002086	**Project:** PAEWIRA	**Date:** 27th OCTOBER 2021	commute TRANSPORTATION CONSULTANTS	**Figure:** A1
Client: GLOBAL METALSOLUTIONS	**Drawing Title:** VEHICLE TRACKING 19m HPMV Semi-trailer	**Scale @ A3:** 1:500 **Revision:** A		



Revision notes:		
Rev:	Date:	Notes:

Drawn by: LH J002086	Project: PAEWIRA	Date: 27th OCTOBER 2021	commute TRANSPORTATION CONSULTANTS	Figure: A2
Client: GLOBAL METALSOLUTIONS	Drawing Title: VEHICLE TRACKING 23m HPMV B-train	Scale @ A3: 1:500		
		Revision: A		

APPENDIX B: TRACKING (INTERNAL)

POWER GENERATOR

WASTE AND RECYCLING PLANT

BUNKER

BUNKER

RESERVED

100

50

45000

44500

44000

43500

43000

42500

42000

41500

41000

Revision notes:		
Rev:	Date:	Notes:

Drawn by: LH J002086	Project: PAEWIRA	Date: 1 December 2021	commute TRANSPORTATION CONSULTANTS	Figure: B1
Client: GLOBAL METALSOLUTIONS	Drawing Title: VEHICLE TRACKING Truck and trailer	Scale @ A3: 1:500		
		Revision: A		

RY
OR
H

POND

EDUCATION & EXHIBITION
PROGRAMME + CAFETERIA

50000

VISITOR
CARPARK

FURNACE &
BOILER SYSTEM

45000

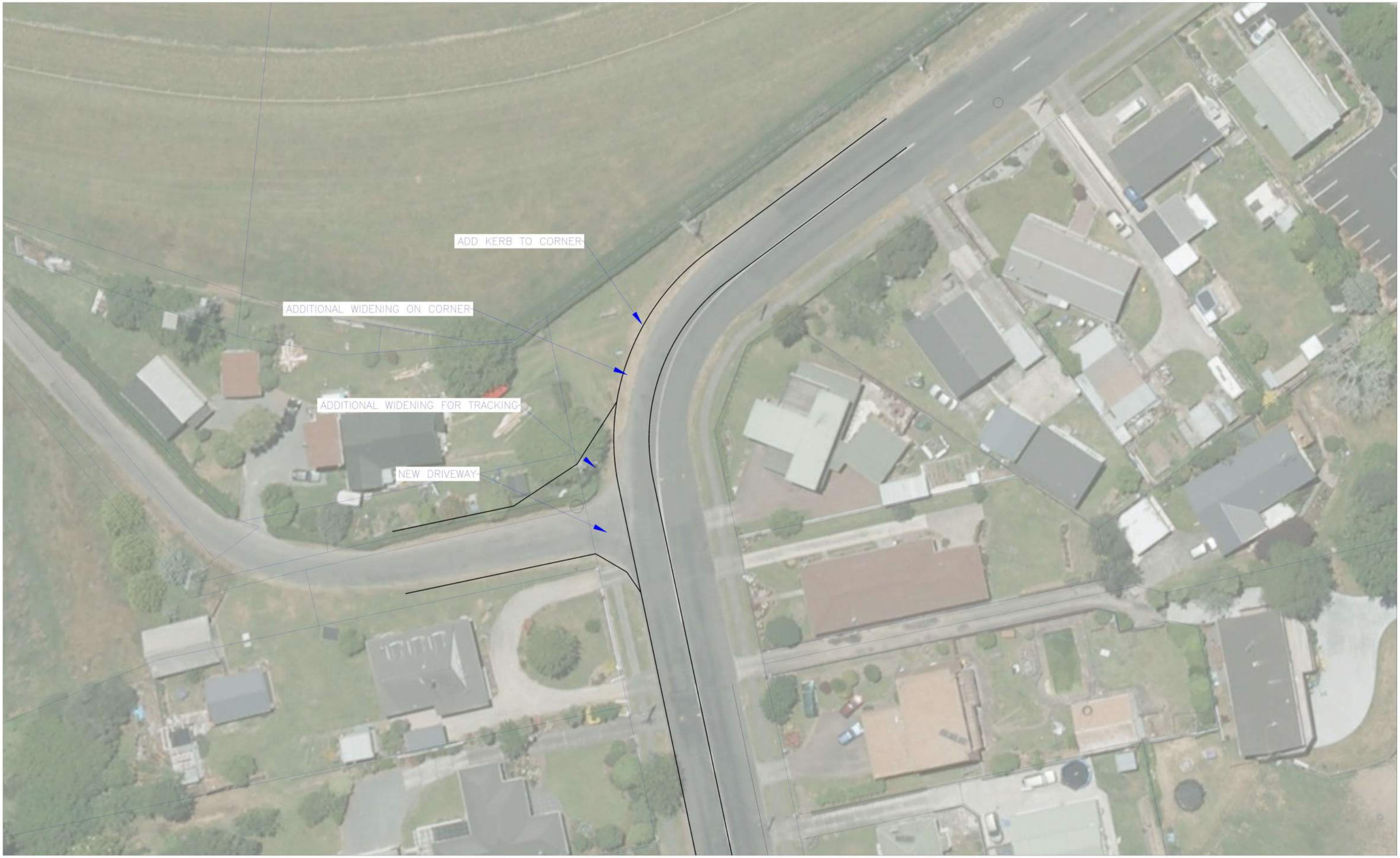
50000

87

Revision notes:		
Rev:	Date:	Notes:

Drawn by: LH J002086	**Project:** PAEWIRA	**Date:** 1 December 2021	commute TRANSPORTATION CONSULTANTS	**Figure:** B2
Client: GLOBAL METALSOLUTIONS	**Drawing Title:** VEHICLE TRACKING Truck and trailer & car	**Scale @ A3:** 1:500 **Revision:** A		

APPENDIX C: DRIVEWAY LAYOUT



Revision notes:		
Rev:	Date:	Notes:

Drawn by: LH J002086	Project: PAEWIRA	Date: 27th OCTOBER 2021	commute TRANSPORTATION CONSULTANTS	Figure: C1
Client: GLOBAL METALSOLUTIONS	Drawing Title: LAYOUT	Scale @ A3: 1:500		
		Revision: A		