

BEFORE THE WAIKATO DISTRICT COUNCIL INDEPENDENT HEARING PANEL

IN THE MATTER of Proposed Variation 3, under clause 16A of Schedule 1 of the Resource Management Act 1991, to the Proposed District Plan Change

AND
IN THE MATTER of submissions by Greig Developments No 2 Limited and Harrisville Twenty Three Limited, Tuakau.

**To: The Hearings Co-ordinator
Waikato District Council**

**PRIMARY TRAFFIC IMPACT ASSESSMENT EVIDENCE OF ANDREW HUNTER
FOR HARRISVILLE TWENTY THREE LTD**

4 July 2023

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MAY IT PLEASE THE PANEL

1. Introduction

- 1.1 My name is Andrew John Hunter. I am a Senior Associate with Traffic Engineering & Management Ltd (**Team Traffic**) and have held this position for seven years. I hold a Certificate of Engineering (Civil) and have completed the Special Course in Transportation Planning Management and Control at the University of NSW.
- 1.2 Prior to joining Team Traffic, I was a Principal Traffic Engineer with Traffic and Transportation Engineers Ltd and held that position for four years.
- 1.3 Prior to that I was a director of my own company, Safe Traffic and Transportation Solutions (STATS) Ltd for four years. During that time, I was engaged as an Assets and Contracts Manager for NZTA for over 12 months and contracted to Manukau City Council as the City Traffic Engineer and acted in that capacity for over three years.
- 1.4 Between 1999 and 2006 I was the Traffic Team Leader in the Manukau Office of GHD Ltd, a large international consulting firm.
- 1.5 For approximately fifteen years prior to 1999 I was a traffic engineer with Manukau City Council and rose to the position of Traffic Systems Manager.
- 1.6 I confirm that I have read the 'Expert Witnesses Code of Conduct' contained in the Environment Court of New Zealand Practice Note 2023. My evidence has been prepared in compliance with that Code in the same way as I would if giving evidence in the Environment Court. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

2. Scope of Evidence

- 2.1 This evidence is provided in support of the submission made by Greig Developments and Harrisville Twenty Three Limited on Variation 3 of the Proposed Waikato District Plan (**PWDP**). My evidence specifically addresses rezoning of land at 23A Harrisville Road to Medium Density Residential 2 Zone (**MDRZ 2**) through Variation 3 from a Traffic Impact Assessment perspective.
- 2.2 My evidence addresses whether rezoning the subject land to increase the density to incorporate MDRZ 2 zoning can be supported from a traffic engineering perspective.
- 2.3 A specialist report, titled Proposed Residential Subdivision, 23 & 23A Harrisville Road, Tuakau, Traffic Impact Assessment, dated 9th December 2022, Reference 21451 (Traffic Impact Assessment) and subsequent S92 responses, had been prepared specifically in relation to a proposed subdivision consent at 23 and 23A Harrisville Road, Tuakau. The previous Subdivision Consent Plan the development of the site to create fourteen (14) residential lots is in the **attached** Traffic Impact Assessment – **Appendix A**.
- 2.4 The previous assessment is relevant to this evidence regarding rezoning the subject land to the higher density of MDRS 2, and as per the revised subdivision concept in the Planning Evidence of Mr Addy for Harrisville.
- 2.5 The lot yield change based on a zone change would increase from seven (7) lots (current Rural-Residential/Large Lot Zoning) to approximately twenty-five (25) developable platforms (MDRS 2 zoning), being 18 additional lots/developable platforms. This is based on ultimate lot sizes of 350m² - 450m² as well as some larger lots, and only utilising an area of land that does not present unfavourable contours.
- 2.6 It is noted that the difference in lot yield between the current proposed subdivision consent layout producing fourteen (14) lots and the potential

yield under MDRS 2 zoning potentially generating twenty-five (25) developable platforms is eleven (11) additional lots/developable platforms.

2.7 Further to my original assessment for the fourteen (14) lot subdivision, I can also support the additional lots generated by a rezoning on the subject site given the factors outlined below:

- a) The additional lots resulting in a twenty five (25) lot subdivision will see access provided to thirteen (13) lots with frontage onto the proposed new Public Road and twelve (12) lots with access off a shared right-of-way.
- b) The proposed public road will have two 3m wide driving lanes and a designated hardstand parking area within the entrance strip off Harrisville Road. These widths are adequate for the level of traffic that could be generated from a subdivision with twenty-five lots. The right-of-way will contain two 3m wide driving lanes with three parking bays containing two car parks each, making for a total of 6 car parks within the right-of-way area. This is also deemed adequate for the level of service required by the subdivision.
- c) The current number of seven lots could be expected to generate 70 trips per day including seven trips that would occur during the peak hours.
- d) The proposed 14 lot subdivision could be expected to generate 140 trips per day with 14 of those trips occurring during the peak hours.
- e) If the higher density developed is permitted the number of daily trips would likely rise to 250 trips per day with 25 of those trips occurring during the peak hour.

- f) The proposed new road will be vested in Council and would become a public road that would be classified as a local road. Local roads in many cities around New Zealand are expected to cater for between 250 and 5,000 vehicular trips per day.

2.8 Therefore, the number of additional daily and hourly trips from MDRZ 2 zoning can easily be accommodated on the new road and the local road network.

3. Conclusion

3.1 Rezoning the subject site to MDRZ 2 zone will increase the ability to generate a higher density of residential development. I can support the increase in density as the traffic impacts of the increase in traffic volume is minimal and unlikely to have any noticeable impact on the safe and efficient operation of the local road network.

Andrew Hunter

4 July 2023

APPENDIX A – Traffic Impact Assessment



PROPOSED RESIDENTIAL SUBDIVISION

23 & 23A HARRISVILLE RD, TUAKAU

TRAFFIC IMPACT ASSESSMENT

Prepared for Harrisville Twenty Three Ltd

09 December 2022

Reference 21451

Address 23 & 23A HARRISVILLE RD, TUAKAU
Project: PROPOSED RESIDENTIAL SUBDIVISION
File Path: Z:\2021_PROJECTS\21451 - 23 & 23A HARRISVILLE RD\6 REPORTS\221209
21451 23 & 23A HARRISVILLE RD RESIDENTIAL SUBDIVISION TIA.DOCX
Prepared By: A. Hunter
Reviewed by: A. Hunter



Revisions:

Date	Revision Number	Reviewed By	Initials
22/11/2022	Draft	Andrew Hunter	<i>A. Hunter</i>
09/12/2022	Final	Andrew Hunter	

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1 INTRODUCTION

Team Traffic has been engaged by the Harrisville Twenty Three Limited to undertake a Traffic Impact Assessment (TIA) of the proposal for the creation of a 14-lot residential subdivision on the site at 23 & 23a Harrisville Road in Tuakau. The legal description of the site is lot 9 and 10 DP 136581 and the site occupies a total area of 27,021m².

The property at 23 Harrisville Road is currently occupied by a single residential dwelling and the property is located in an Urban Residential Zone under the Waikato District Council Plan. The property at 23a Harrisville Road is currently vacant and is located within a Rural Residential Zone under the Waikato District Council Plan.

The proposal seeks to remove the existing building on the site at 23 Harrisville Road to allow a new road to be constructed to service the 14-lot subdivision. The main access will be constructed to WDCs roading standard and the road will be vested in Council. A JOAL will be constructed off the head of the road and will provide access to nine of the lots. Eight of the lots will be a minimum of 1,000m² in area and the remaining lots will vary in size between 1,300m² and 5,420m².

This TIA addresses the following matters:

- Assessment of the parking provisions and parking manoeuvring space against the rules of the Waikato District Council Plan.
- Assessment of the road safety, efficiency, and traffic patterns of the existing local road network.
- The traffic likely to be generated by the proposed development and the ability of the road network to accommodate the generated vehicle trips.
- The ability of the proposed development to satisfy the design standards and layout requirements of the Waikato District Council Plan.

These and other matters are addressed in the detail of this report.

The findings of the report are that the proposed subdivision can be established without adversely impacting on the function, capacity, or safety of the surrounding road network. Traffic effects are considered to be less than minor.

2 THE EXISTING SITUATION

Harrisville Road generally runs in a north – south direction with the subject site located on the western side of the road.

The site number 23 Harrisville Road is currently used for residential activities and most of the surrounding properties are of a similar nature although they are large lot sizes. The property at 23a Harrisville Road is currently vacant.

The location of the site in relation to the surrounding properties and road network is shown in Figures 1 and 2 below.

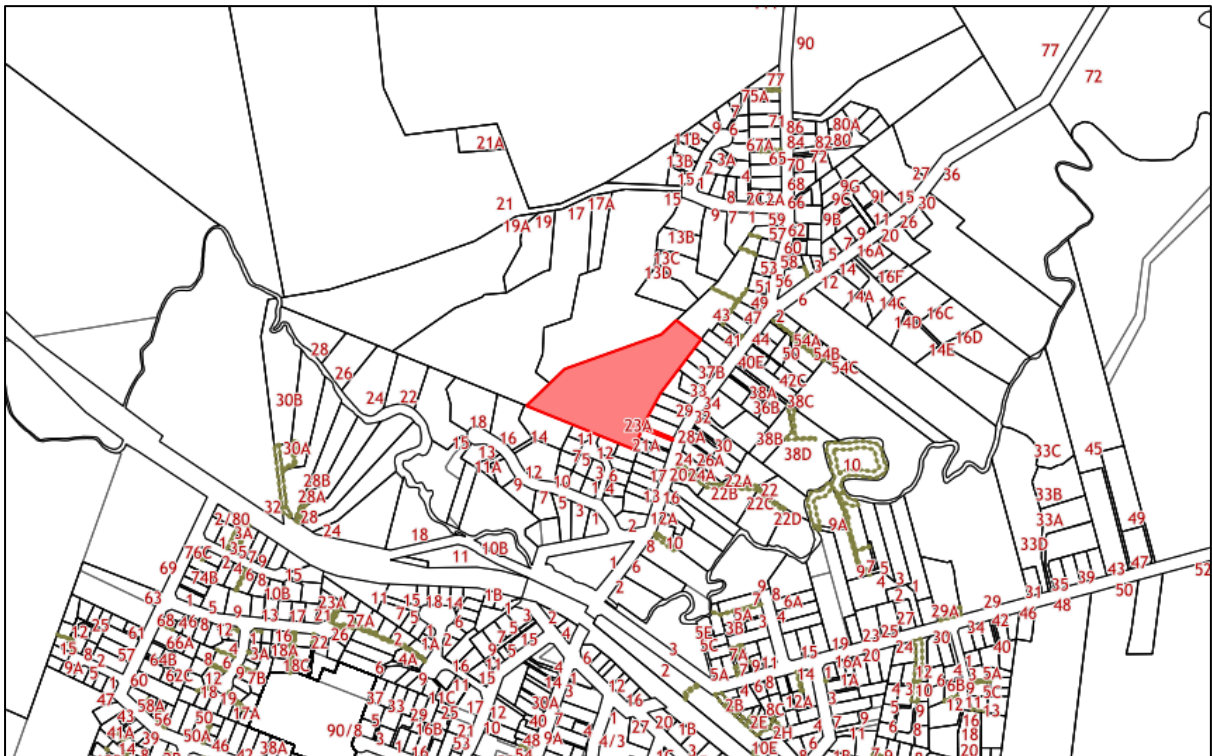


Figure 1: Site in relation to road network.



Figure 2: Subject site in relation to surrounding properties.

2.1 Traffic & Roading Characteristics

Harrisville Road is classified as a Primary Collector Road in the Waikato District Council plan. The road generally runs in a north – south direction adjacent to the site and the property is located on the western side of Harrisville Road. Harrisville Road runs between Mill Road in the north and Dominion Road in the south.

The road reserve is circa 20.1 metres wide and the carriageway is circa 10.5 metres wide. Adjacent to the site the lane configuration consists of one lane in each direction and there is a dashed centre line road marking to delineate the directional flows. The berms on both sides of the carriageway are about 4.8 metres wide and there are narrow footpaths installed on both sides of the carriageway. The footpaths are located roughly in the middle of the berm area. In addition, the carriageway near the site is relatively straight and the road has an uphill gradient from the south to the north. Street lighting is provided on every second power pole so the level of lighting on Harrisville Road is minimal. Unrestricted parking is allowed along both sides of the carriageway.

2.2 Existing Access Arrangements

The existing house at 23 Harrisville Road currently has a narrow single width vehicle crossing with access onto Harrisville Road. Access to number 23a Harrisville Road is via a right of way and there is no formal vehicle crossing or driveway.



Figure 3: Existing road frontage

2.3 Traffic Counts

The mobile Road App was reviewed to determine the average traffic count along Harrisville Road. In June 2020 it was estimated that there were 3,400 vehicles per day using Harrisville Road in both directions.

Collector Roads are expected to carry traffic volumes in excess of 10,000 vehicles per day. Harrisville Road typically has one lane in each direction and the existing volumes are well within the capacity of the road.

2.4 Speed Environment

The site is located within a 50 km/h speed zone. Where no speed measurements are available the Guide for Visibility at Driveways RTS 6 recommends that the 85th percentile speed is calculated by adding 15 percent to the posted speed limit. In a 50 km/h zone the 85th percentile speed would be 57.5km/h.

For the purposes of the visibility calculation an 85th percentile vehicle speed of 60km/h will be adopted as this figure is considered to be representative of the 85th percentile speed.

2.5 Crash History

A study has been made of the crash record maintained by NZTA for the five-year period 2017 to 2021 inclusive. Crashes that have occurred so far in 2022 were also included.

The searched area covered the section of Harrisville Road for approximately 100 metres each side of the entrance to the property. Copies of the collision diagram and crash listing obtained from this search are attached as Appendix A.

There was one serious injury crash, one minor injury crash plus two non-injury crashes reported as occurring within the searched area and time period. The serious injury crash occurred at the northern extreme of the search area and occurred on a shared driveway and not on the road. The first vehicle was exiting the property and hit another car manoeuvring within the driveway. The driver failed to notice the other car manoeuvring.

The minor injury crash involved a southbound car that was travelling too fast and the driver lost control and hit a transformer. Alcohol was suspected.

The first non-injury crash involved a southbound car that was travelling too far to the left and the car hit a parked vehicle. Alcohol was suspected.

The second non-injury crash involved a southbound vehicle whose driver was travelling too fast and cut the corner and hit a bank.

The crash factor records shows that all of the factors were the result of human error.

The crashes that have been reported as occurring on or near the site on Harrisville Road are considered to be random in nature and do not indicate that there are any deficiencies with the configuration of the road. The existing crash record does not indicate the presence of any inherent safety issues that could affect this application.

3 THE PROPOSAL

This report discusses the traffic-related aspects of an application to subdivide the property at 23 & 23a Harrisville Road into 14 residential lots. There is an existing dwelling on one of the properties and this dwelling will be removed to allow a new road to be constructed. Figure 4 below shows the layout of the subdivision.

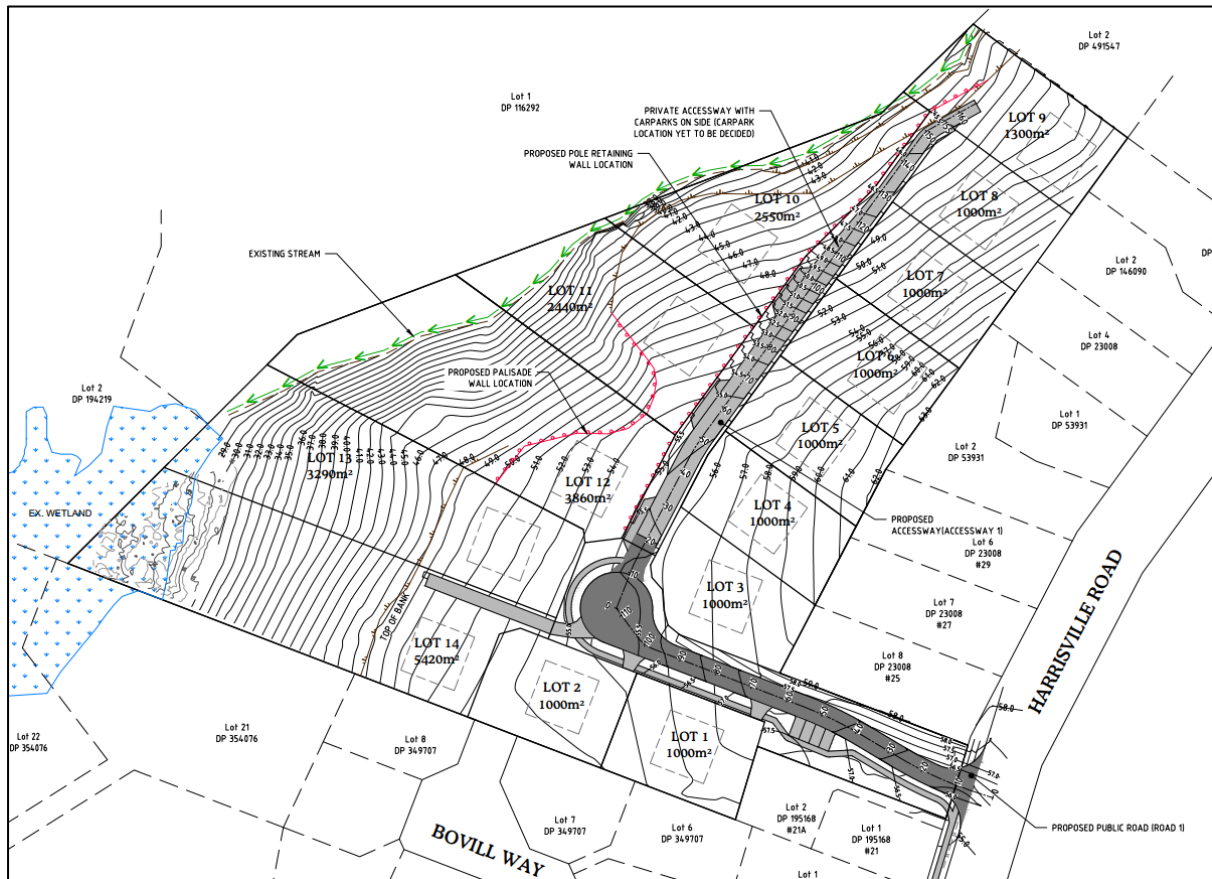


Figure 4: Proposed layout of the subdivision

The existing house as well as the vehicle crossing servicing the existing house will be removed to allow the construction of a new road that will service the subdivision. The new road will be designed and constructed to comply with Councils roading standard so that it will be vested in Council once the subdivision has been completed.

It is understood that the Harrisville Road frontage of the development is to be upgraded so that the new road can be constructed.

3.1 Intersection of New Road and Harrisville Road

The proposed new road will intersect Harrisville Road approximately at a right angle to Harrisville Road. The new carriageway will be 6.0 metres wide and the kerbs that will join the two carriageways will be constructed with 9.0 metres radius curves. This radius will allow heavy vehicles such as rubbish trucks to easily access the new road without the vehicle traversing the kerbs.

It is expected that the existing footpath on Harrisville Road will have pram crossing where the new road intersects and the footpath will link to the proposed footpath on the new road.

The proposed intersection is expected to operate safely and efficiently.

3.2 New Road

The proposed new road will be in the order of 112 metres long have a road reserve width that will vary between 13.4 metres and 20 metres and have a sealed carriageway width of 6.0 metres. A 1.5 metre wide footpath is to be installed on one side of the road the other side of the carriageway will be between 3.0 metres and 7.5 metres wide and the berm will be shaped to suit the contour of the land. A cross section of the proposed road is shown in Figure 5 below.

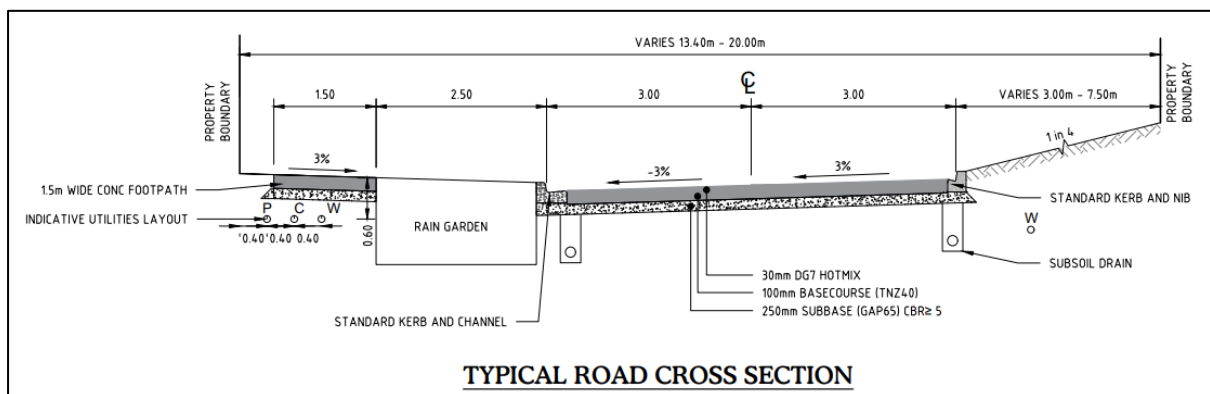


Figure 5: Cross-section of the new road

The cross-section provides for the installation of services and it is expected that there will be street lighting installed during construction. This can be set as a condition of consent.

The interface of the new road with Harrisville Road has been designed with the appropriate geometric parameters to allow the smooth transition between the two roads for vehicles manoeuvring. The grade interface is approximately 3 percent for the first 60 metres at which point the road has a crest curve and the road falls away at a grade of about 5% for about 40 metres before the road flattens off to a grade of nearly 1% at the head of the cul de sac. These grades are appropriate for a residential subdivision and will allow rubbish trucks and delivery trucks to easily access the properties. The long section of the new road is shown in Figure 6.

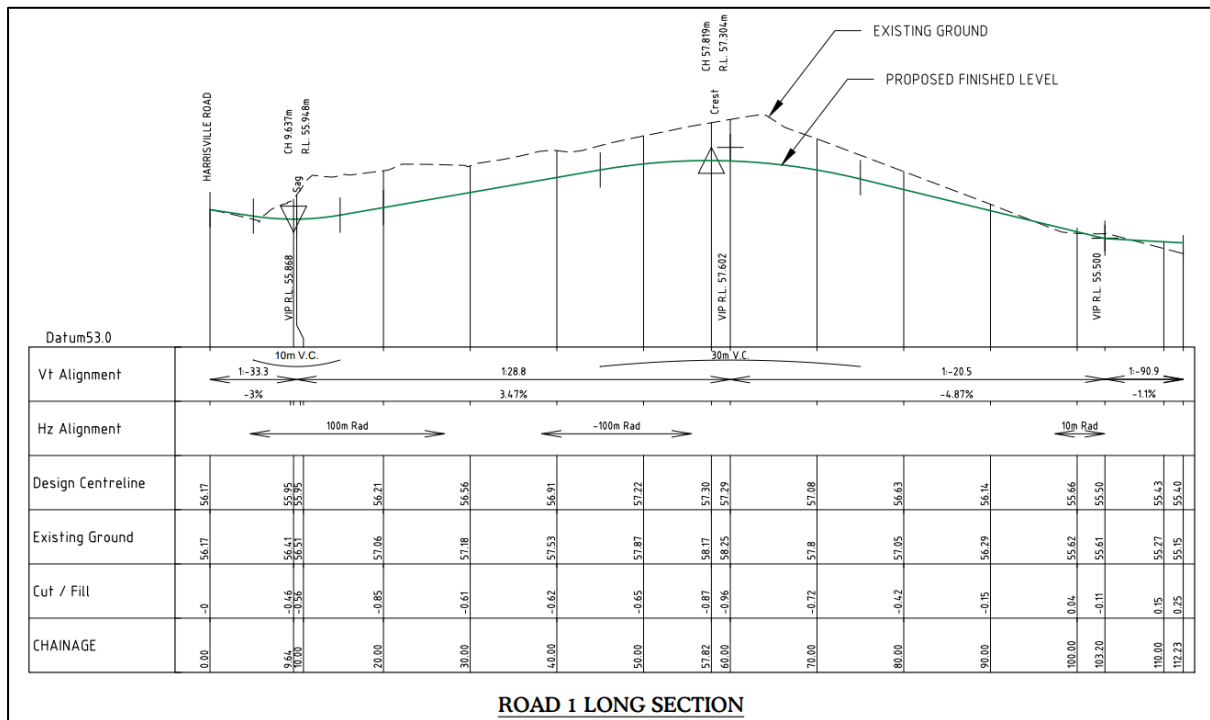


Figure 6: Long-section of the new road

The tracking for a 10.3 metre rubbish truck has been run over the design to confirm that a rubbish truck is able to manoeuvre within the carriageway. The tracking plan clearly demonstrates that a standard rubbish truck can easily manoeuvre within the proposed carriageway of the new road. A copy of the rubbish truck tracking is attached as appendix C.

The visibility from the proposed new intersection has been assessed as in excess of 180 metres in both directions. The criteria for visibility at an intersection is measured using the Safe Intersection Sight Distance (SISD) and where the 85th percentile speed is 60km/h the minimum SISD should be 113 metres. The visibility in both directions exceeds the visibility requirements for an intersection.

3.3 JOAL

There is a Right of Way off the head of the cul de sac that services 8 properties. The ROW includes a sealed width of 6.0 metres that has a cross fall of 3%. There is a kerb and channel or a dish channel on the low side of the access to direct surface water to collection points.

Several recessed areas have been provided that will allow visitors to park on the side of the Joal.

There are 0.8-metre-wide strips on both sides of the Joal that a pedestrian could utilise if necessary, however it is anticipated that most pedestrians will walk along the side of the sealed Joal to access their properties.

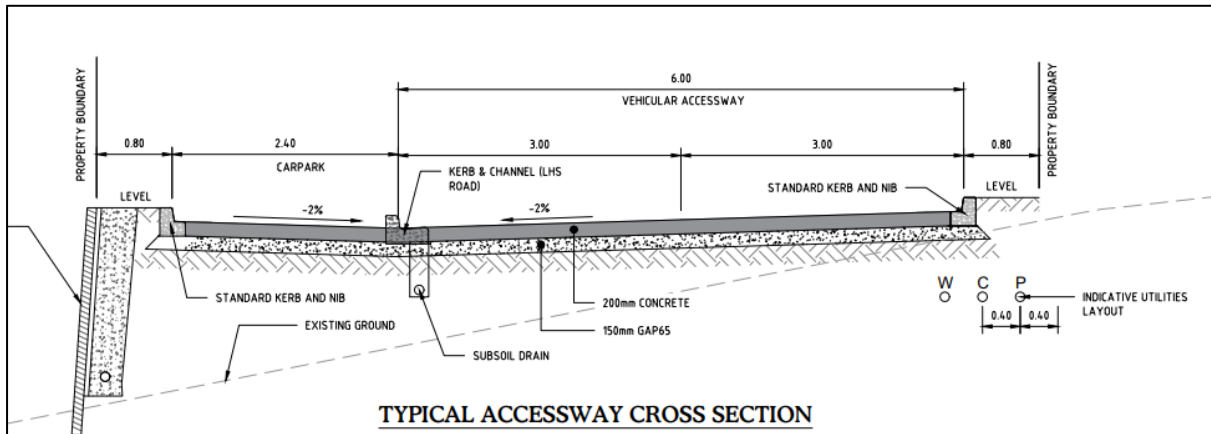


Figure 7: Cross-section of ROW

The long-section of ROW is shown in Figure 8 and demonstrates that the gradients are relatively gentle for the majority of its length. The first 60 metres of the ROW is at a grade of between 1% and 4% whilst the next 50 metres is at a grade of 16.6% at which point the Joal flattens off to a grade 4%.

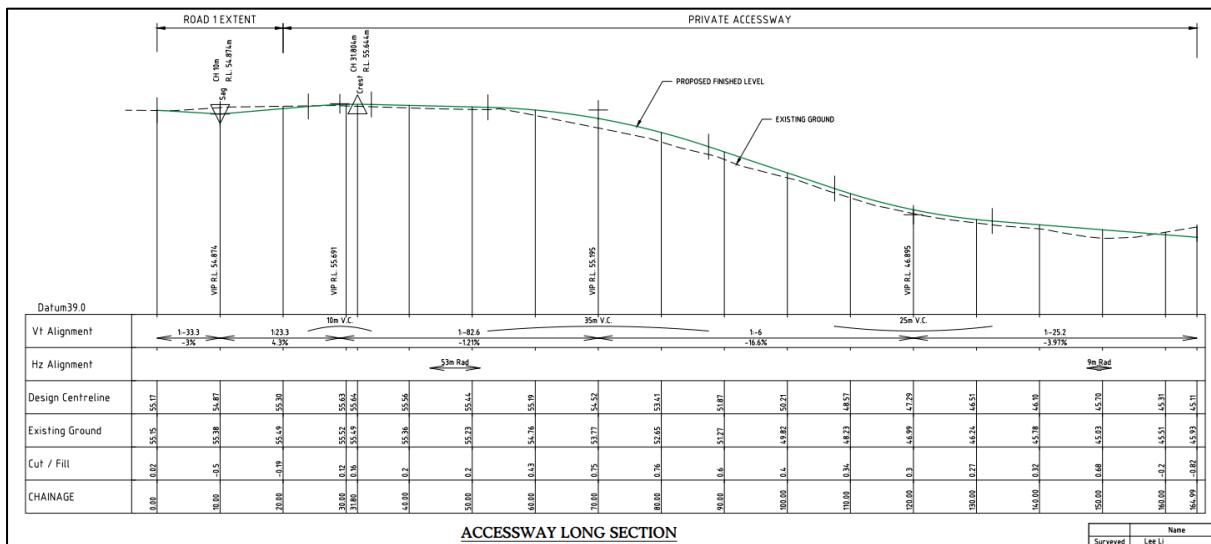


Figure 8: Long Section of ROW

The width of the carriageway portion of the JOAL will be 6.0 metres wide up to the 120 m point. At that point the width of the carriageway portion of the Joal narrows down to approximately 3.0 metres as the JOAL enters lot 9. The narrower portion of the JOAL will only impact on three lots and the entrances to all three lots are on a very gentle grade and visibility will be excellent.

The visibility from the point where the ROW meets the proposed new road is basically irrelevant as the access is essentially a vehicle crossing that intersects the road within the head of a cul de sac. There is a direct line of sight both along the new road and along the ROW and therefore drivers will have good visibility when entering and leaving the ROW. The road as well as the Joal have carriageway widths of 6.0 metres that will accommodate the two-way movement of cars. The ROW is expected to operate safely and efficiently and is of no concern from a traffic engineering perspective.

3.4 Access to Lots

It is expected that lots 1, 2, 12, 13, and 14 will have direct access onto the new road. Lots 3 to 9 inclusive will have direct access off the JOAL whilst lots 10 and 11 are expected to have elevated parking bays that will be constructed to be level with the retaining wall.

3.5 Parking

It is expected that each lot will have two car parking spaces provided and the layout and configurations of the parking will be confirmed in separate consent application when the dwellings are ready to be built.

The developer has provided four perpendicular car parking spaces off the new road plus three recessed car parking spaces that will accommodate two cars each, off the JOAL. A total of 10 visitor car parks will be provided.

The perpendicular car parks will be 2.8 metres wide by 5.4 metres deep and there will be 6.0 metres for manoeuvring behind the spaces. The recessed car parking spaces are 12.0 metres long and 2.4 metres wide and comply with the dimensional requirements in the District Plan.

A driver is easily able to enter and leave the four perpendicular spaces whilst a driver will require an additional manoeuvre to exit the recessed car parks. In reality it is expected that a driver would use one of the vehicle crossings off the JOAL to assist with the turning manoeuvre.

Tracking plans demonstrating the manoeuvring for each space is attached in Appendix C.

3.6 Traffic Generation

Typically, new residential dwellings with larger property sizes will have two car parking spaces and a property with two car parking spaces typically generate 10 vehicular trips per day and one of those trips will be made during the peak hours.

Based on this information with 14 residential properties it is anticipated that there will be a maximum of 140 vehicle trips per day. Of those trips it can be estimated that there will be 14 vehicular trips made during the peak hours. During the morning peak hour, it is estimated that 80 percent of the trips will be exiting the subdivision and 20 percent of the trips will enter the subdivision. From these figures we can expect 11 vehicles to leave the subdivision during the morning peak and 3 vehicles will enter the subdivision.

Based on these estimates it is expected that the likely number of trips will have little if any noticeable impact on the safe and efficient operation of Harrisville Road and the local road network.

If in some time in the future each lot was to establish a minor residential dwelling on the sites it could be expected that each minor dwelling would have a single car parking space and would generate in the order of six vehicular trips per day with one of those trips occurring during the peak hours.

If this scenario eventuated there could be up to 28 vehicular trips during the peak hour of which 22 trips would leave the site during the morning peak and six cars would enter the site. The first part of the subdivision will be formed as a road that has a six-metre-wide carriageway. This width allows for the comfortable two-way movement of vehicles and the number of trips proposed is minimal and of no concern from a traffic engineering perspective.

3.7 Proposed new Intersection

Section 2.3 showed that Council believes that there are 3,400 vehicles per day using Harrisville Road. Under normal circumstances 10 percent of those trips would occur during the peak hours. This means that there is a total of 340 vph in both directions or 170 vph in each direction. This number of vehicles equals three vehicles per minute in each direction.

The proposed new subdivision will have a maximum of 11 trips leaving via the new road in the morning and three vehicles entering the new road. If the site is fully developed and each lot has a minor dwelling attached to each site the number of trips will double.

Harrisville Road provides an alternative link to Bombay and the motorway and the location of the property suggests that there may be a fairly even split of trips entering and leaving the site. The following figure shows the expected traffic movements at the new intersection during the morning peak hour. The number of movements would be reversed during the evening peak hour.

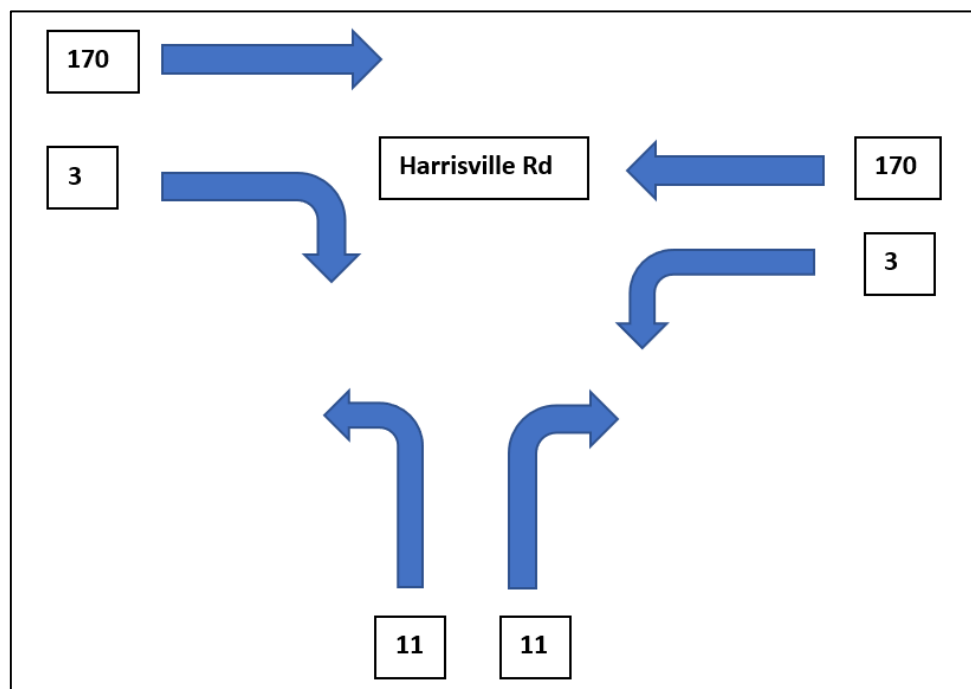


Figure 9: Anticipated am traffic flows at the new intersection

This number of movements at an intersection between a collector road and a local road is very small and almost insignificant and will unlikely be noticeable on the local road network.

3.8 Lighting

Typically, new roads will include a provision for street lighting. This aspect of the design has not been considered at this time and it is recommended that the street lighting design is included as a condition of consent.

3.9 Pedestrians

Pedestrians

It is expected that the pedestrian movements to and from the development will be able to utilise the 1.5-metre-wide footpath proposed on the new road that will link with the existing footpath along on Harrisville Road. Pedestrians are well catered for and the proposed pedestrian amenity is considered to be appropriate from a traffic engineering perspective.

3.10 Loading and Servicing

It is anticipated that each dwelling will have individual rubbish bins stored within each property and each dwelling will use the Councils rubbish collection service. Residents will be responsible for placing their bins on the berm outside of the property on collection day.

It is proposed to have a concrete hard stand area in the head of the cul de sac so that residents of the JOAL will have a dedicated area on which to place the bins on collection day.

The new road will service a small catchment of residential dwellings and it is anticipated that Councils rubbish truck and perhaps a small ridged truck will access the new road and be required to turn around in the cul de sac.

Tracking plans showing a 10.4m long rubbish truck turning around within the cul de sac are attached in appendix C and demonstrate that a rubbish truck will be able to operate within the new road.

Overall, the loading and servicing arrangements of the proposal have been assessed and are considered to be acceptable from a traffic engineering perspective.

Overall, the fire appliance, servicing, and loading arrangements of the proposal have been assessed and are considered acceptable from a traffic engineering perspective.

3.11 Construction Traffic

It is standard practice that the applicant is to submit a Construction Traffic Management Plan (CTMP) so that any potential adverse effects of construction traffic will be mitigated. The CTMP is to be approved by Council and this requirement should be included in the conditions of consent. In this case the CTMP will likely be developed by the contractors as they will have the best information in regard to the staging of the development.

Overall, the provision of an appropriate CTMP will ensure that details of the construction traffic are carefully considered and the effects mitigated appropriately.

4 CONCLUSION

This report considers the traffic-related impacts of the creation of a 14-lot residential subdivision on the site at 23 & 23a Harrisville Road in Tuakau.

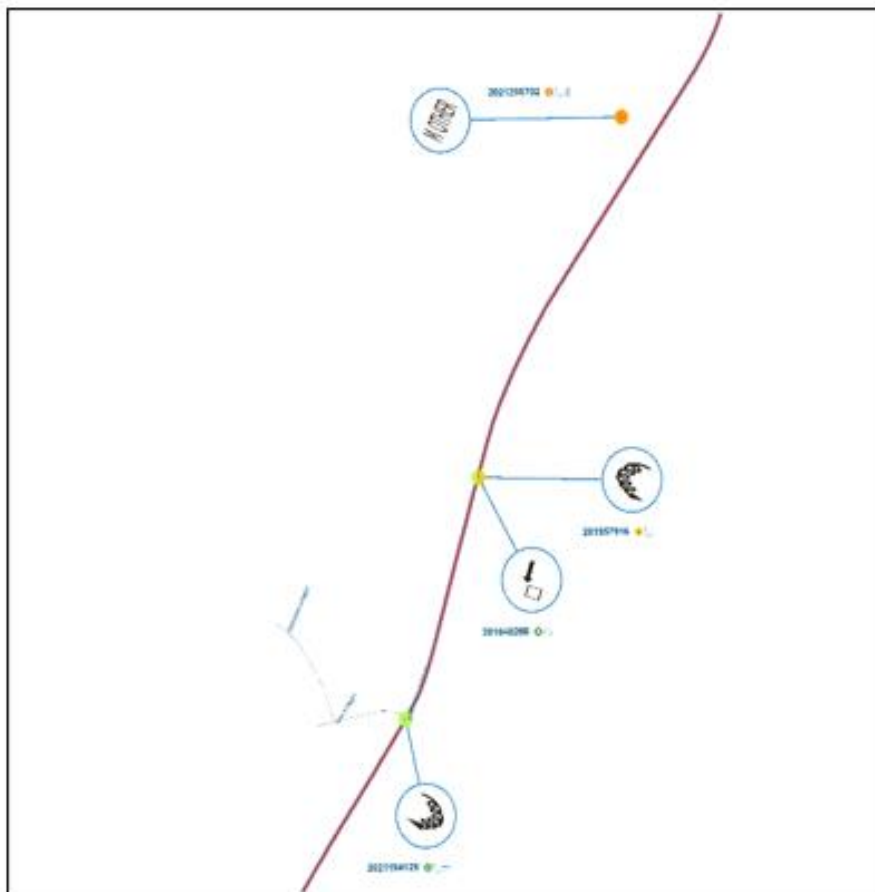
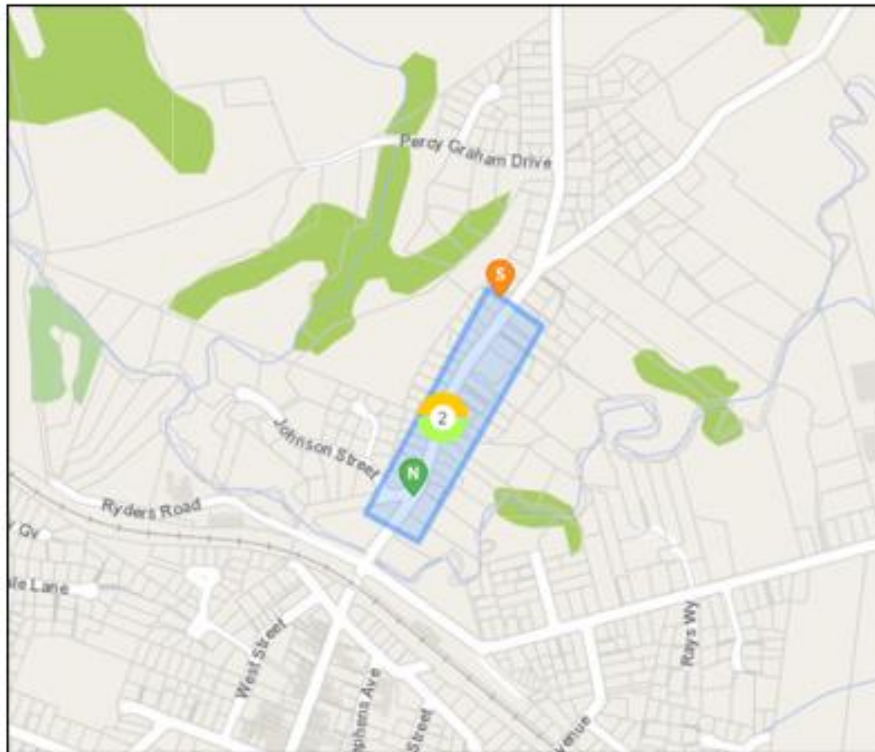
It is concluded that:

- The traffic generation cannot be accessed at this time however the zoning indicates that the likely number of trips has already been factored into the zoning. It is considered that the likely volumes would have few, if any, traffic effects that could be cause for concern from a traffic engineering perspective.
- Harrisville Road is to be upgraded so that the existing kerb and channel on the western side of the carriageway will marry in with the proposed new intersection.
- A new two-way road is to be constructed to service the majority of the lots.
- Loading spaces will be considered once the activities on the various lots have been confirmed.

Overall, this proposal would result in traffic effects that are less than minor. There is therefore no traffic-related reason why resource consent should not be granted.

Appendix A: Crash Statistics

23 & 23A Harrisville Road Collision Diagram



11/22/22, 2:54 PM

Crash Analysis System (CAS) | NZTA



Untitled query

TLA (Territorial local authority)

Waikato District

Crash severity

Fatal Crash, Serious Crash, Minor Crash, Non-Injury Crash

Crash year

2017 – 2022

Saved sites

Harrisville 1

Plain English report

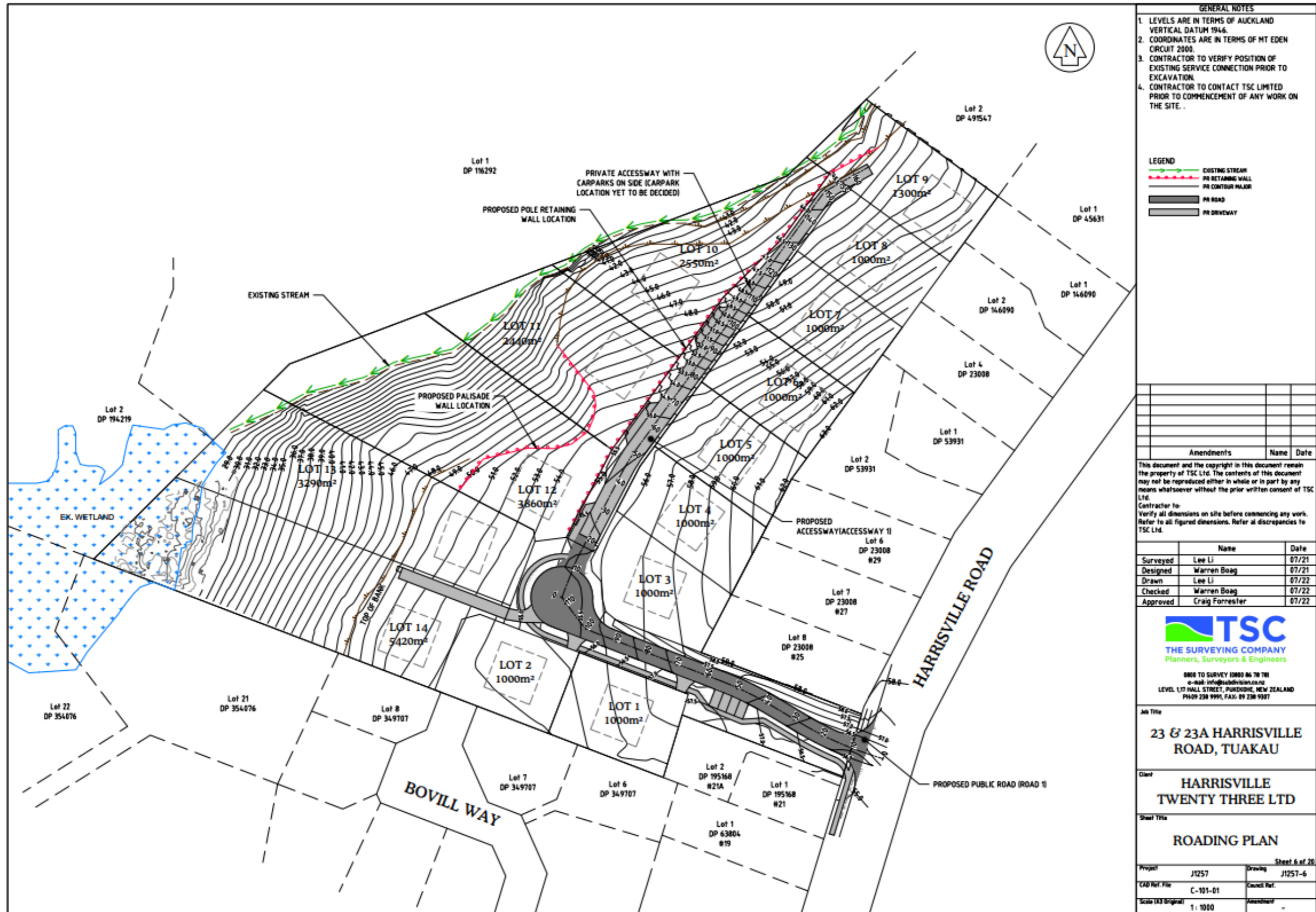
4 results from your query.

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Site Centre: Midpoint	Crash road	Side road	Feature	Distance from side road/feature	Direction	Reference station	Route position	Easting	Northing	Longitude	Latitude	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather	Junction	Control	Casualty count fatal	Casualty count serious	Casualty count minor	Social cost \$(m)
1772794-5875016	HARRISVILLE RD	OAK STREET		140m	N			1772840	5875142	174.948959	-37.254246	201957916	29/06/2019	Sat	00:12	Car/Wagon1 SDB on HARRISVILLE ROAD, TUAKAU, WAIKATO lost control turning left; went off road to left, Car/Wagon1 hit fence, transformer	CAR/WAGON1, alcohol suspected, too far left	Dry	Dark	Fine	Driveway	Unknown	0	0	1	0.10
1772794-5875016	HARRISVILLE ROAD	OAK ST		120m	N			1772840	5875140	174.948959	-37.254272	201848266	14/09/2018	Fri	16:00	Car/Wagon1 SDB on Harrisville Road hit parked veh, Car/Wagon1 hit non specific parked	CAR/WAGON1, alcohol suspected, too far left	Dry	Overcast	Fine	Nil (Default)	Unknown	0	0	0	0.03
1772794-5875016	HARRISVILLE ROAD	OAK STREET		30m	S			1772777	5874992	174.948287	-37.255611	2021194125	05/07/2021	Mon	01:30	SUV1 SDB on HARRISVILLE ROAD missed inters or end of road, SUV1 hit bank	SUV1, cutting corner on bend	Dry	Dark	Mist or Fog	Nil (Default)	Nil	0	0	0	0.05
1772992-5875383	OFFROAD SHARED DRIVEWAY							1772931	5875329	174.949943	-37.252543	2021208702	23/12/2021	Thu	20:50	Car/Wagon1 EDB on OFFROAD SHARED DRIVEWAY hit VEHB manoeuvring	CAR/WAGON1, did not check/notice another party from other dirn	Dry	Dark	Fine	Nil (Default)	Nil	0	1	0	0.71

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Appendix B: Plan of the Subdivision



GENERAL NOTES

- LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
- COORDINATES ARE IN TERMS OF MT EDEN CIRCUIT 2000.
- CONTRACTOR TO VERIFY POSITION OF EXISTING SERVICE CONNECTION PRIOR TO EXCAVATION.
- CONTRACTOR TO CONTACT TSC LIMITED PRIOR TO COMMENCEMENT OF ANY WORK ON THE SITE.

LEGEND

- EXISTING STREAM
- PO RETAINING WALL
- PO CONTIGUOUS MAJOR
- PO ROAD
- PO DRIVEWAY

Amendments	Name	Date

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Contractor to: Verify all dimensions on site before commencing any work. Refer to all figured dimensions. Refer to all discrepancies to TSC Ltd.

	Name	Date
Surveyed	Lee Li	07/21
Designed	Warren Boag	07/21
Drawn	Lee Li	07/22
Checked	Warren Boag	07/22
Approved	Craig Forrester	07/22

TSC
THE SURVEYING COMPANY
Planners, Surveyors & Engineers

800 2 SURVEY (0800 84 78 78)
e-mail: info@subdivisions.co.nz
LEVEL 1/7 HALL STREET, PUNEDŌNE, NEW ZEALAND
PH 09 238 9995, FAX: 09 238 9987

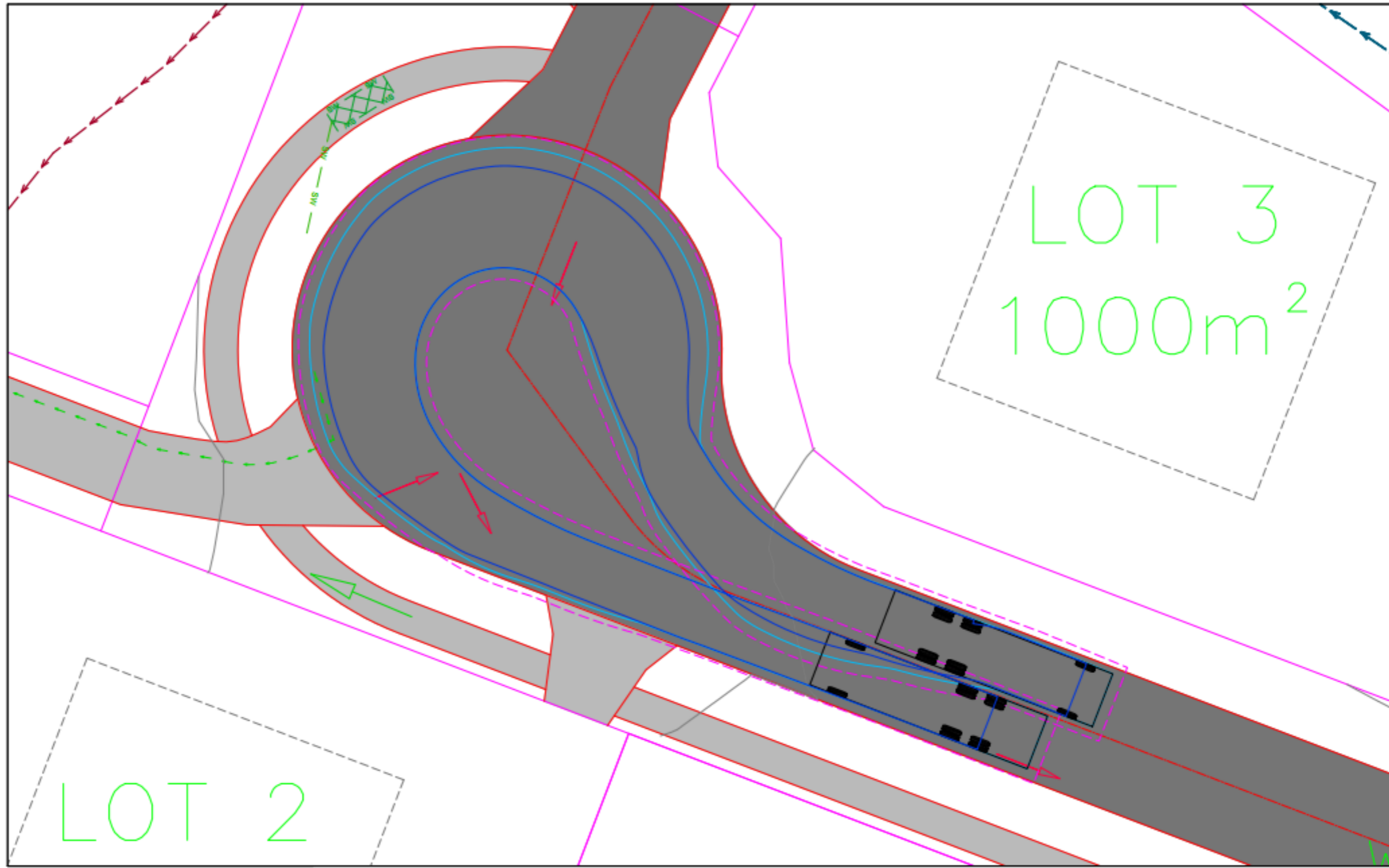
Job Title
23 & 23A HARRISVILLE ROAD, TUAKAU


Client
HARRISVILLE TWENTY THREE LTD

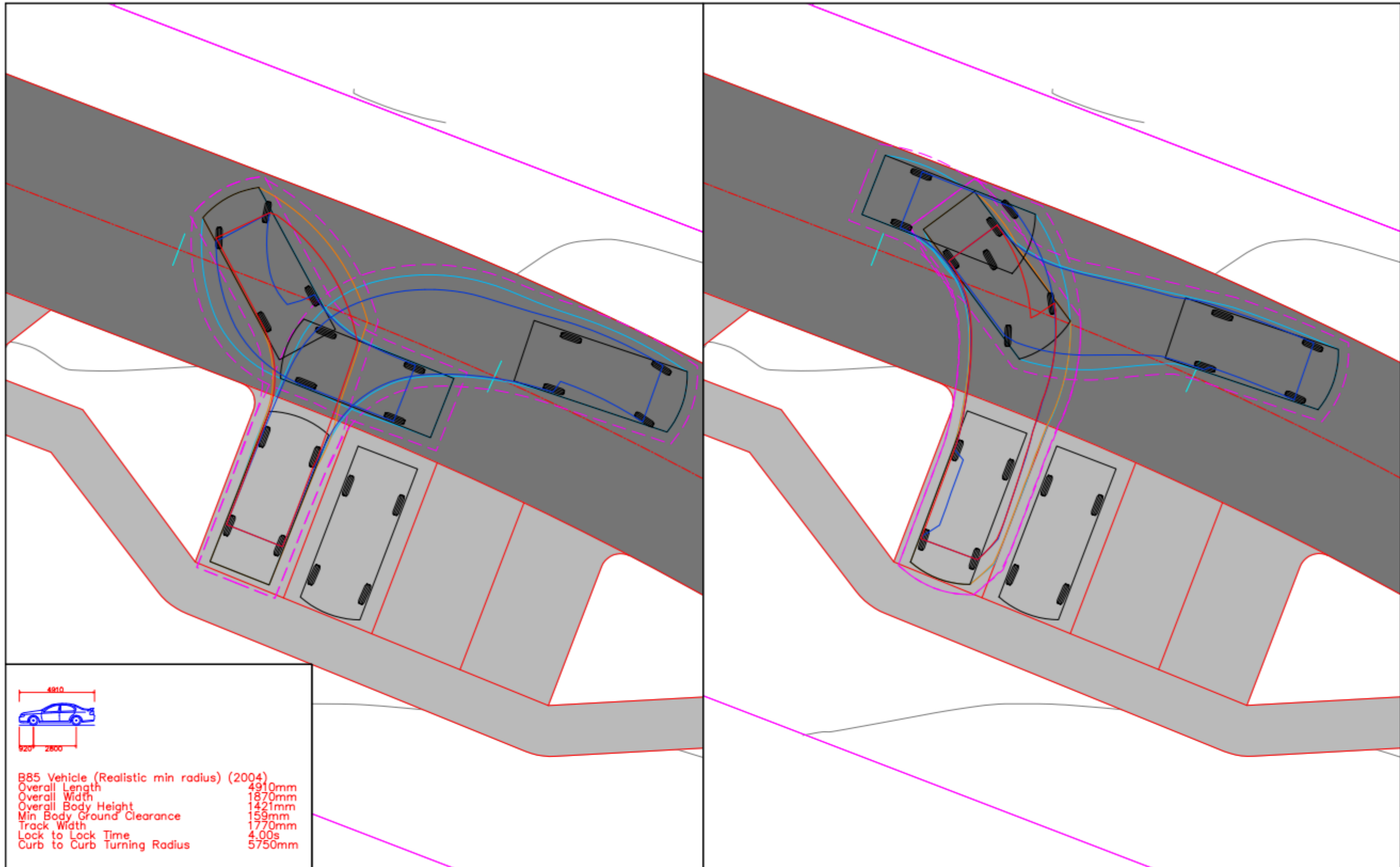
Sheet Title
ROADING PLAN

Project J1257 Drawing J1257-6
CAD Ref. File C-101-01 Council Ref.
Scale (A3 Original) 1 : 1000 Amendment -

Appendix C: Tracking Plans



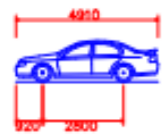
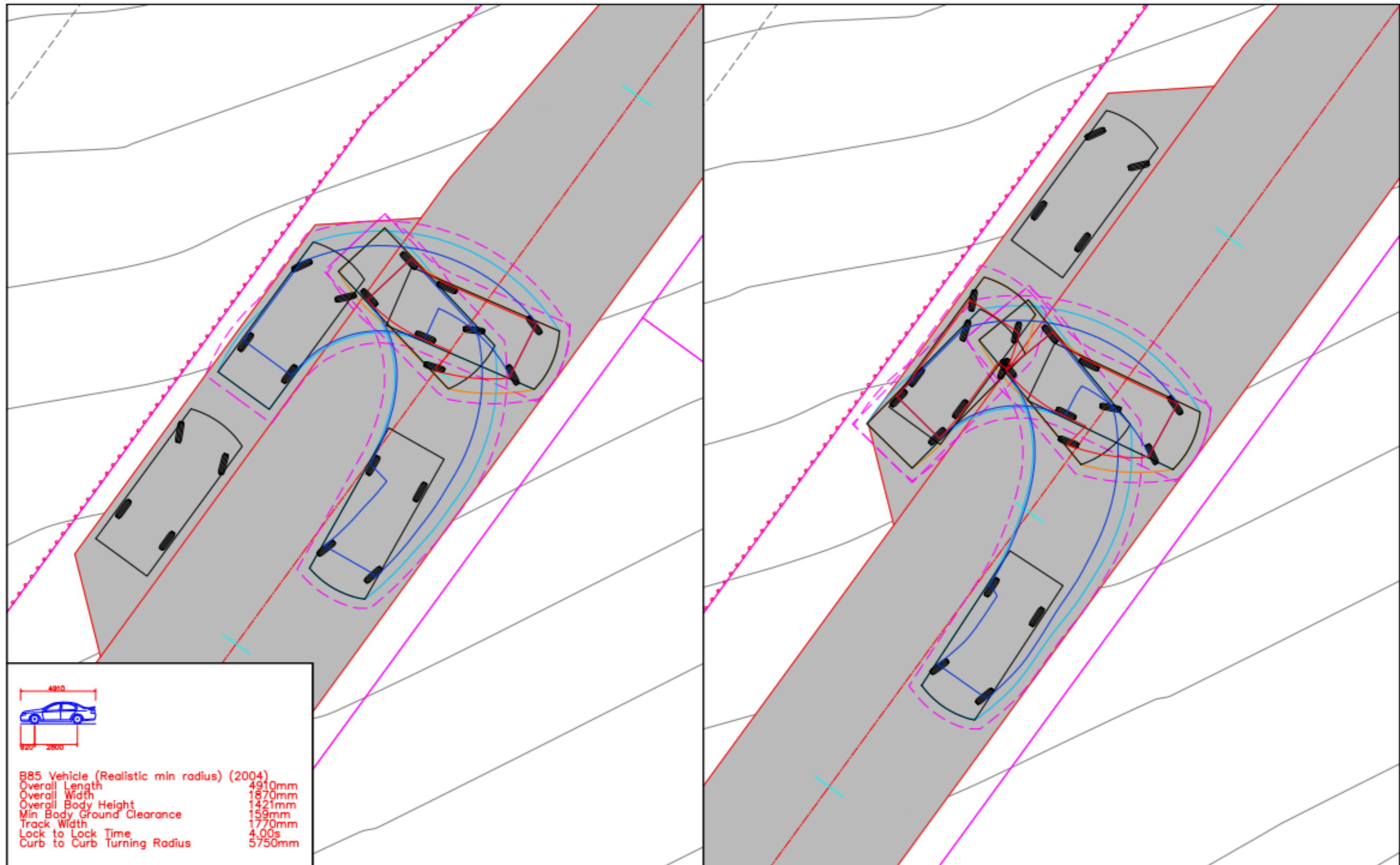
 <small>Team Engineering & Management Ltd T: +61 8 83388 www.teamnz.co.nz</small>	NOTES	PROJECT	23 & 23A HARRISVILLE ROAD, TUAKAU		STATUS	VEHICLE TRACKING ANALYSIS		DATE	02/12/2022	
		DRAWING TITLE	CUL-DE-SAC HEAD - 10.3M RUBBISH TRUCK		PROJECT NO.	21451	SCALE	1:150 A3	SHEET	1



B85 Vehicle (Realistic min radius) (2004)

Overall Length	4910mm
Overall Width	1870mm
Overall Body Height	1421mm
Min Body Ground Clearance	159mm
Track Width	1770mm
Lock to Lock Time	4.00s
Curb to Curb Turning Radius	5750mm

<p>Traffic Engineering & Management Ltd. T: +64 9 8363888 www.teamtraffic.co.nz</p>	NOTES	PROJECT	23 & 23A HARRISVILLE ROAD, TUAKAU		STATUS	VEHICLE TRACKING ANALYSIS		DATE	08/12/2022	
		DRAWING TITLE	90-DEGREE PARKING SPACE 1 - B85 VEHICLE		PROJECT NO.	21451	SCALE	1:100 A3	SHEET	1



B85 Vehicle (Realistic min radius) (2004)
 Overall Length 4910mm
 Overall Width 1670mm
 Overall Body Height 1421mm
 Min Body Ground Clearance 159mm
 Track Width 1770mm
 Lock to Lock Time 4.00s
 Curb to Curb Turning Radius 5750mm



NOTES

PROJECT
23 & 23A HARRISVILLE ROAD, TUAKAU

DRAWING TITLE
RECESSED PARALLEL SPACES - B85 VEHICLE (EXIT)

STATUS
VEHICLE TRACKING ANALYSIS

PROJECT NO.
 21451

SCALE
 1:100
 A3

DATE
 08/12/2022

SHEET
5

REV
A

