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Traffic Assessment Report

52 Kaurilands Road, Titirangi

Date: 22/09/2021

Rev: A

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A handwritten signature in blue ink, appearing to read 'Osama Abdullatif'.

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1.0 Introduction & Objectives

LANDEV was engaged by MAQ Enterprises to undertake a traffic assessment report to support the application for a new development at 52 Kaurilands Road, Titirangi.

The primary focus of this report is to assess and discuss the following:

- Proposed vehicle crossings and parking spaces
- Existing transport environment, and the traffic effects of the proposal
- Look into objects (street furniture etc.) obstructing sight distance near the proposed vehicle crossings
- Sight distance assessment regarding the intervisibility between the site and the wider road network
- the Unitary Plan Provision and an assessment against the relevant Unitary Plan Criteria
- An assessment regarding the proposed vehicle crossing for unit 3 will fit in with the existing footpath.
- Vehicle tracking curves analysis to ensure safe ingress/egress

2.0 Site Description

The site (legally described as PT LOT 1 DP 34220) has an area of 809 m² and is accessed from a long driveway, off Kaurilands Road. An Auckland Council GIS plan has been attached, refer to Appendix 1.

Location: 52 Kaurilands Road, Titirangi

Legal Description: PT LOT 1 DP 34220

Size: 809 m²

Zoning: Residential - Mixed Housing Suburban Zone

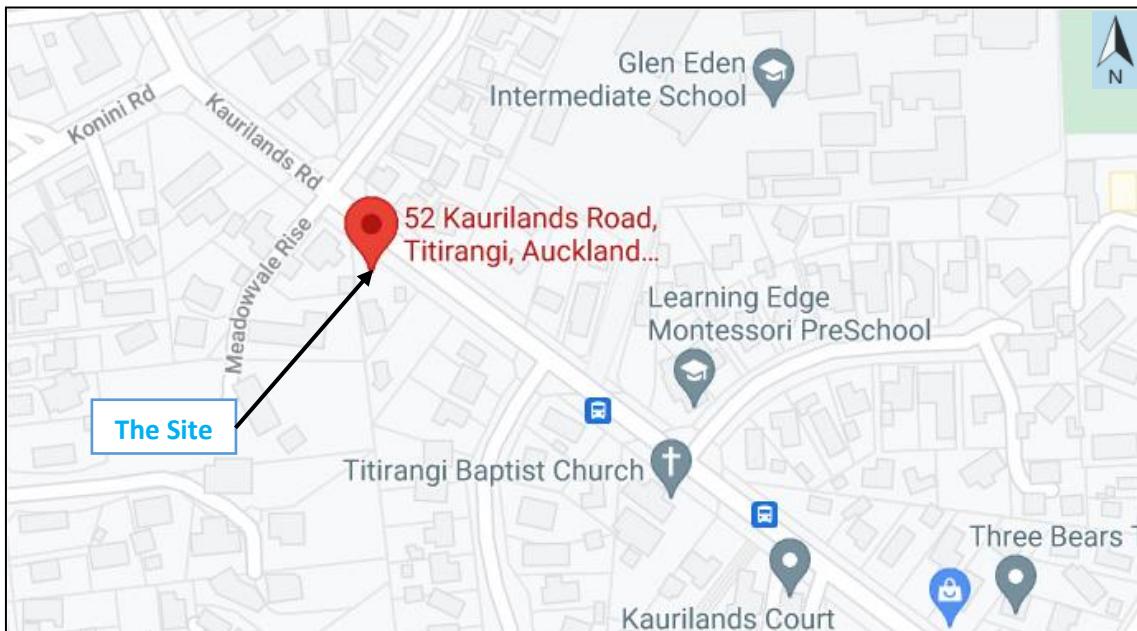


Figure 1: Locality Map (image source: Google Maps)

The site is located within the Residential - Mixed Housing Suburban Zone as per the Auckland Unitary Plan Operative in Part (AUP OiP) and has a steep grade, sloping towards the east.



Figure 2: Map of Site location (image source: Auckland Council Geomaps)

3.0 Proposal Summary

The proposed development involves removing the existing dwelling and constructing three new dwellings in a 3-lot subdivision as shown in Figure 3. The existing vehicle crossing is to be removed and replaced with two new vehicle crossings. The new vehicle crossings and driveway are proposed to ensure compliance to Auckland Council standards.

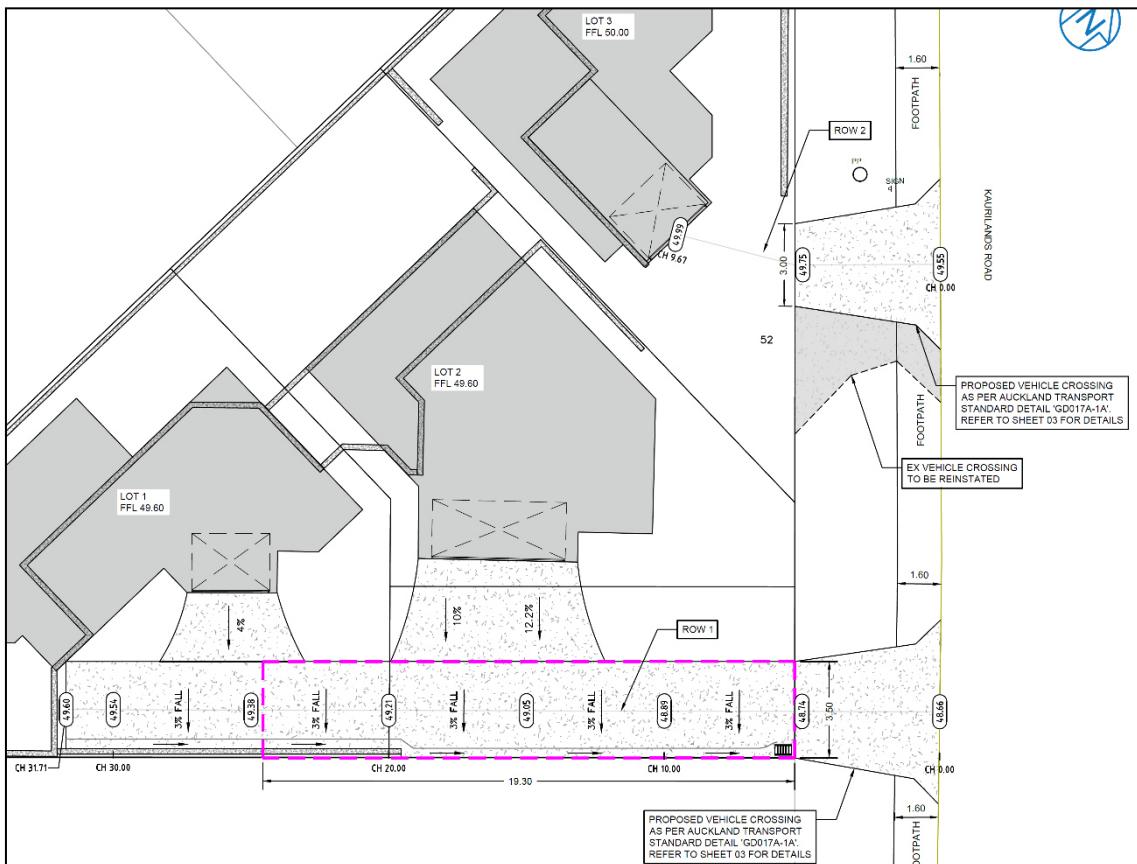


Figure 3: Proposal Scheme Plan

4.0 Traffic Flows and Volumes

Kaurilands Road is Classified as an Arterial Road. An arterial road is defined under the one network classification as a road in “urban areas they may have significant passenger transport movements and numbers of cyclists and pedestrians using the road”.

Kaurilands has the following traffic volumes:

- 7461 estimated as of June 2020 (extracted from Mobileroads.org)
- 2% heavy as of June 2020 (extracted from Mobileroads.org)
- Bus Route 151 travels during peak hours only, 10 trips in both directions
- School Bus-Routes 025, 073, 074 travel once in the morning and once in the afternoon, with a total of 6 trips in both directions daily on school days

Both intersections at either end of Kaurilands are priority give-way intersection, which indicates traffic flows are relatively low throughout the day. Using SCATS data from the closest signalised intersection on Titirangi Road, we can determine traffic flows are tidal, with AM peak occurring between 7am and 8am for traffic travelling towards the city, and the PM peak occurring between 5pm and 6pm with traffic traveling home (figure 4). Traffic flows are occurring between the hours of 6am and 9pm, with the majority of traffic movements between the 6am and 6pm.

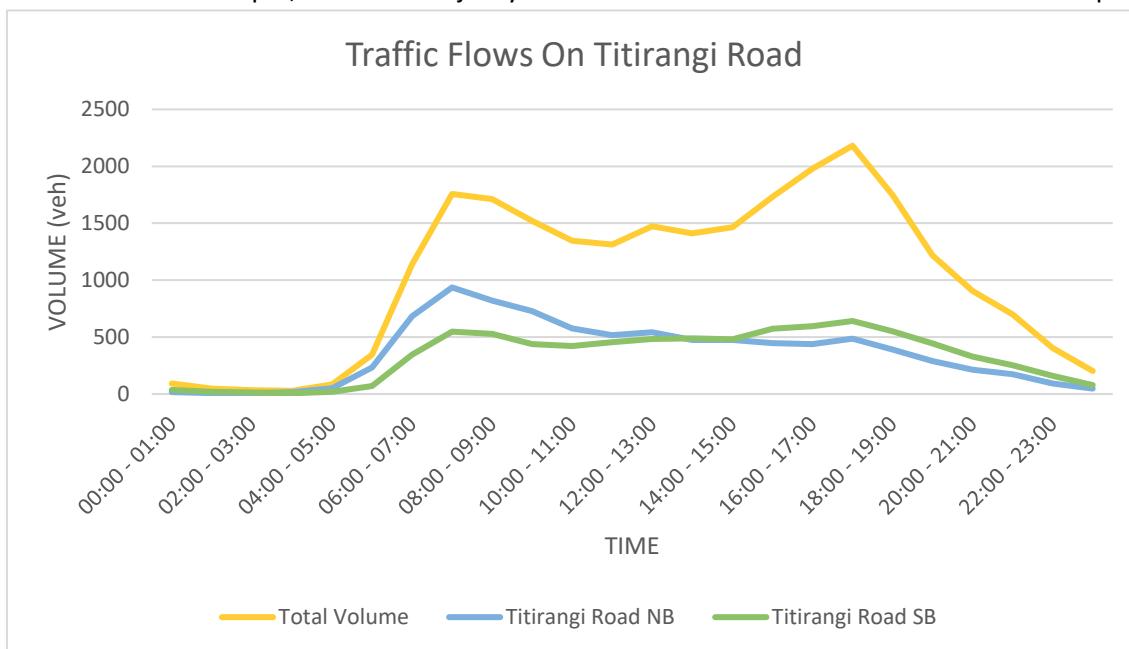


Figure 4: Traffic flows on Titirangi Road, using SCATS data from the intersection of Titirangi Road, Atkinson Road and Pleasant Road.

5.0 Trip Generation

The RTA Guide (The Roads and Traffic Authority of New South Wales – Guide to Traffic Generating Developments (RTA), Version 2.2, October 2002) is commonly used by traffic engineering practitioners in Australasia to assess the traffic generating potential of various land uses. In New Zealand, the RTA Guide is frequently used for assessing residential developments.

The proposed residential dwellings are ‘dwelling houses’. The RTA predicts a trip generation rate of 0.85 trips per dwelling in the peak hours and 9 trips per dwelling daily.

Based on the above, the proposed dwellings are expected to generate 4 vehicle trips in the peak hours and an additional 36 vehicle trips per day. This increase is considered small and unlikely to be discernible to existing users of Kaurilands Road.

Rule E27.6.1 ‘Trip Generation’ of the Unitary Plan sets out trip generation limits as to when resource consent for a restricted discretionary activity is required. For residential dwellings, this limit is 100 dwellings (or generally 100 vehicle movements per hour). The proposal for the additional dwellings and an additional 4 peak hour trips therefore does not trigger this assessment threshold. As such, no traffic modelling has therefore been undertaken.

6.0 Crash Analysis

There has been a total of 5 crashes in near the proposed vehicle crossing (Figure 5), 1 of which has occurred in the past year. All the crashes are minor and are just north of the site. Two of the crashes occurred due to the intersection, with the remaining three are crashes due to drive error (leaving the trafficable lanes). Of the five crashes, none of them would have resulted in vehicles exiting or entering a vehicle crossing.



Figure 5: Crashes near the site

7.0 Road Environment

The road environment is required to determine the required "Sight Distance "(sections 8.7).

- Carriageway Width is 9.8m, if cars are parked next to the kerb than available lane width is 2.9m
- The southern footpath is directly next to the kerb with a back berm
 - o Power poles and signage in back berm
- The northern footpath has either a front berm or back berm.
 - o Power in front berm and in back berm
- 3x7 (Dotted) line marking dividing the Carriageway
- No trees in the front berm on either side of the Road
- 13m to the north and 60m to the South there a T-intersection. Road traveling on Kaurilands Road have the right of Way
- Asphalt Road
- The stretch of road has a dip/sag in the middle of two crests (Vertical alignment). The sag is located just south of the southern Vehicle crossing
- Due to the Topography, there is a retaining right next to the edge of seal. Atop of the retaining wall is a fence
- The road is relatively straight, without any horizontal curves
- Schools and early childhood centers Nearby



Figure 6: Road View on Kaurilands Road Northbound



Figure 7 – Road View on Kaurilands Road Northbound

The speed environment of this section of Kaurilands can be estimated to be approximately 40 to 50km/hr and is due straight wide road, right of way, and available lane widths (even when cars are parked kerbside).

Notes: Cars are likely to avoid parking next to the retaining wall shown in figure 6 and will only park there as a last resort (if other parking spaces are not available elsewhere). This is due to the ability to access the passenger side of the road, and no easy access to the footpath.

8.0 Access

8.1 General

This 3-lot subdivision is proposed to have two new vehicle crossings and a new Right Of Way (ROW). The new concrete ROW access will provide access to the two lots. The new ROW grade and layout are illustrated in Appendix 2. Figure 8 below shows the layout plan.

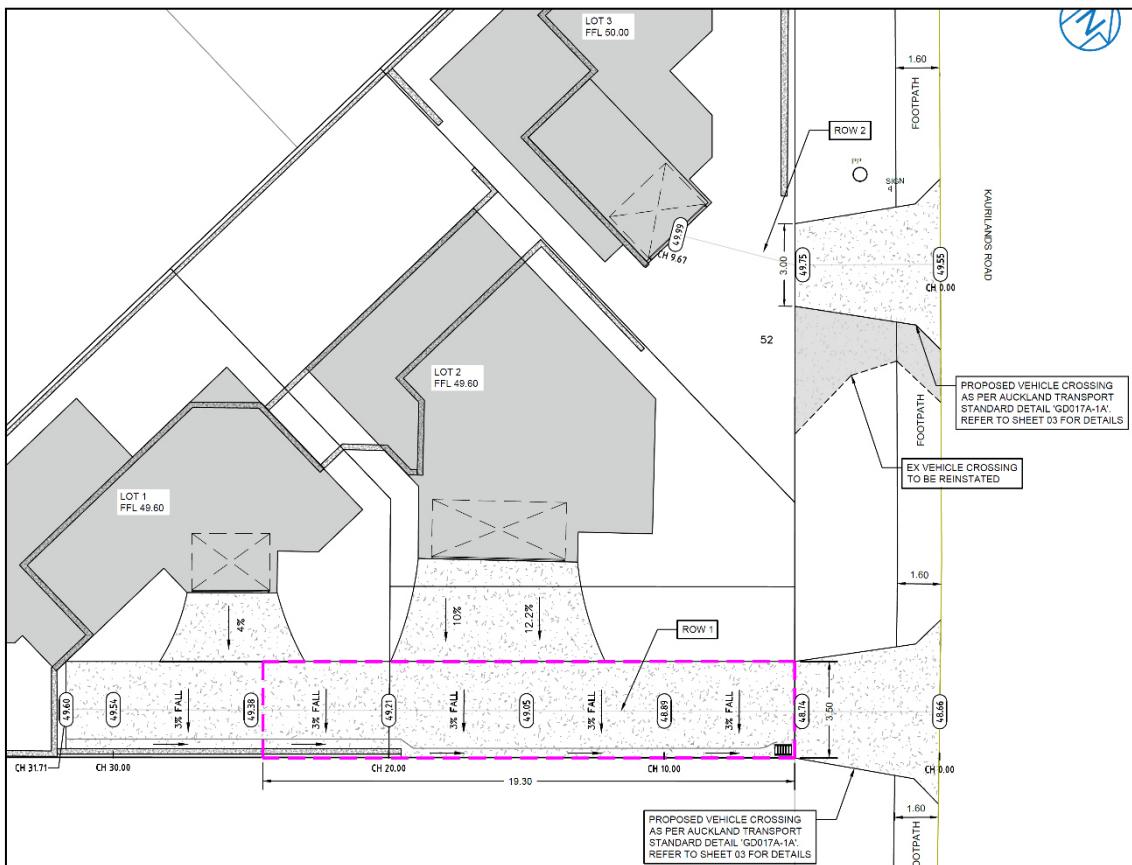


Figure 8: Layout Plan

8.2 Width

Table E27.6.4.3.2 of the Unitary Plan outlines rules regarding vehicle crossing and vehicle access widths. The Unitary Plan requires the following:

For one-way residential zones (serving one or two parking spaces):

- ‘A minimum width of 2.75 m (one-way) at the site boundary’; and
- ‘A maximum width of 3.0 m (one-way) at the site boundary’.

For one-way residential zones (serving three to nine parking spaces):

- ‘A minimum width of 3.0 m (one-way) at the site boundary’; and
- ‘A maximum width of 3.5 m (one-way) at the site boundary’.

The proposed vehicle crossings are 3.5 m and 3.0 m. Therefore, it complies with the Unitary Plan requirements.

8.3 Passing Bay Requirement

Table E27.6.4.3.1 suggests that a passing bay should be provided where Parking spaces are more than 50m away from the road boundary.

Since the right of way is less than 50m long, then a passing bay is not required for this development.

8.4 Distance to Intersection

The Unitary Plan E27.6.4.1 (3) requires that vehicle crossings should not be provided within 10 m of an intersection or with any other “vehicle crossing restriction” area, measured from boundary projections. The proposed access is located more than 10m from the Kaurilands Road / Meadowvale Rise Intersection, therefore it does not require a consent as a restricted discretionary activity.

8.4.1 Distance Between crossing

Rule E27.6.4.2.1 specifies that a minimum separation distance of 6 m serving the same site be provided and the minimum separation from crossings serving adjacent sites is 2 m (however this can be combined to one crossing as long as it is 6m in width or less). The proposal complies with this requirement.

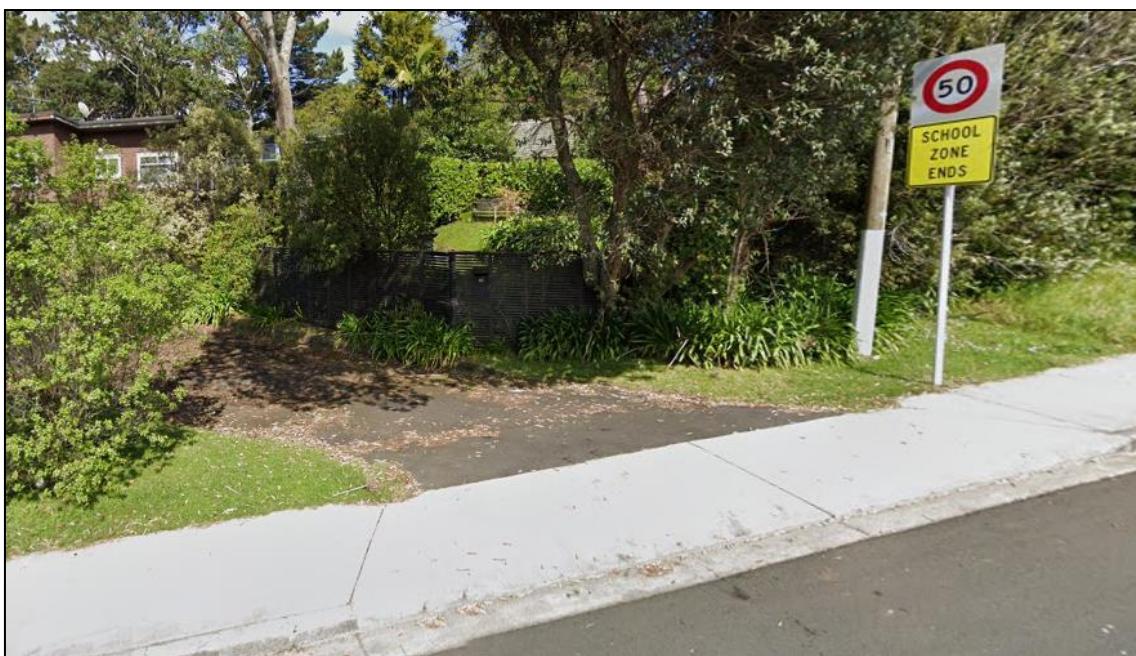


Figure 9: Existing Power pole

8.4.2 Number of Crossings

Table E27.6.4.2.1 specifies that a vehicle crossing per 50m of frontage (or part thereof) can be provided for residential sites which have frontage to an Arterial Road. The proposal does not comply with the Unitary Plan requirement as two crossings are proposed for this development.

The following points have been considered to assess the effects of this infringement:

- Sufficient visibility is available as demonstrated by approaching site distance plans included in section 8.7 and Appendix 3. Drawing 27 and 28 illustrate that excess of 55 m distance is available in both directions from the vehicle crossings.
- Given the low trip generation, there will be a limited number of pedestrian and vehicles affected by this additional crossing.
- There were no reported crashes due to vehicle exiting or entering properties on Kaurilands Road.
- Kaurilands Road is 9.8 m wide and has street parking along the road which provides a low-speed environment. Low vehicles' speed may arise from vehicles parked, hence, any visibility issues relating to the additional crossing is unlikely.
- Current Road frontage is not far from 50m and given the shape of the site, it is impractical if one crossing is proposed to serve all three lots.

Based on points mentioned above, adverse impact of the proposed design is considered minor. As a result, the proposed development is not expected to exacerbate any safety concerns with the additional proposed crossing.

8.5 Gradient of Access

Rule E27.6.4.4.1 of the Unitary Plan states the following requirement for the gradient of vehicle access:

- The gradient of the access must not be steeper than 1 in 5 (20 per cent) for residential activities;
- To avoid the underside of the car striking the ground, access with a change in gradient exceeding 1 in 8 (greater than 12.5 per cent change) at the summit or 1 in 6.7 (15 per cent change) at a sag must include transition sections to achieve adequate ground clearance. Typically, a transition section requires a minimum length of 2 m; and
- All vehicles must be designed so that where the access adjoins the road there is sufficient space onsite for a platform so that vehicles can stop safely and check for pedestrians and other vehicles prior to exiting. The platform must have a maximum gradient no steeper than 1 in 20 (5 per cent) and a minimum length of 4 m for residential activities and 6 m for all other activities.

The above requirements are met. Refer to Appendix 2 for driveway layout plan and long section.

8.6 Reverse Maneuvering

Rule E27.6.3.4 of the Unitary Plan states:

"Sufficient space must be provided on any site so vehicles do not need to reverse off the site or onto or off the road from any site where any of the following apply:

- *Four or more required parking spaces are served by a single access;*
- *There is more than 30 m between the parking space and the road boundary of the site; or*
- *Access would be from an arterial road or otherwise within a Vehicle Access Restriction covered in standard E27.6.4.1."*

Proposed dwellings will be more than 30 m from the site boundary and access is onto an Arterial Road. Reverse maneuvering is therefore not permitted. The dwellings are designed to enable forward in and forward out maneuvers. With this operation, we consider that the operation of the vehicle crossing is acceptable.

8.7 Sight Distance

The Safe Stopping Distance (SSD) is required to be calculated for the vehicles on Kaurilands Road

Equation 1 – extracted from State highway geometric design manual, transit NZ 2000

$$SSD = \frac{V_t}{3.6} + \frac{V^2}{254(f+G)}$$

Using Equation 1, the required SSD on Kaurilands is **55m**

Figure 10, 11 and 12 below show the sight distance either direction from the proposed crossing. As shown in the photographs below, the available sight distance is more than approximately 70m to the north, and 100m plus to the south, hence, it is considered adequate.

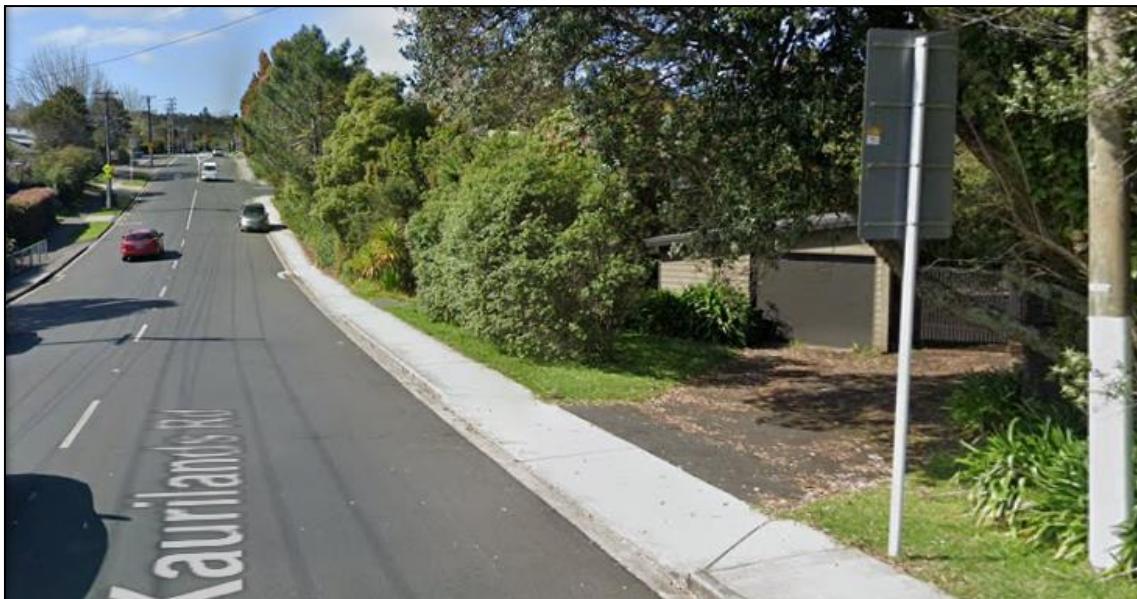


Figure 10: Sight Distance along Kaurilands Road (east of the vehicle crossing)



Figure 11: Sight Distance along Kaurilands Road (west of the vehicle crossing)



Figure 12: Sight distances along Kaurilands

8.8 Power Pole and Signpost

Ideally all street amenities should be at least 1 m from the vehicle crossing; however, the signpost is located 0.65 m from the vehicle crossing edge. Given the geometry of the vehicle accessway in relation to the crossing, vehicles are required to swing away from the east side, this is shown via tracking curves which suggest sufficient clearance as shown in Figure 13 below (i.e. 1.38 m from the wheel path) is available and it is unlikely that the sign post would be a hazard.

As such, modification to the proposal is not deemed necessary in this instance.

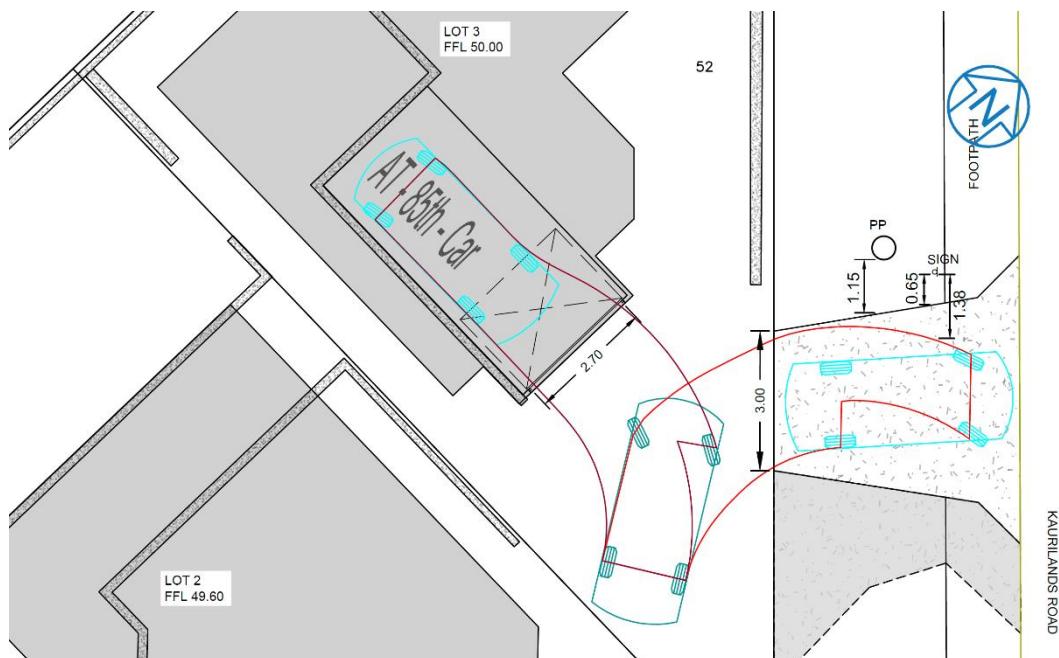


Figure 13: Existing Power pole and signpost

9.0 Parking

9.1 Parking Requirements

Table E27.6.2.3 of the Unitary Plan set out the parking requirement for various activities. For dwellings within the ‘Residential - Mixed Housing Suburban Zone’ the Unitary Plan requires the following:

For dwellings with one bedroom:

- ‘A minimum rate of 0.5 per dwelling’, and
- ‘No maximum rate’.

For dwellings with two bedrooms or more:

- ‘A minimum rate of 1 per dwelling’, and
- ‘No maximum rate’.

The proposed dwellings will be supported by at least one parking space each, therefore satisfying Unitary Plan requirements.

9.2 Parking Dimensions

Table E27.6.3.1.1 of the Unitary Plan sets out the minimum car parking space and maneuvering dimensions. For a 2.7 m wide parking space (regular user), the Unitary Plan requires:

- 5.0 m depth of parking space; and
- 5.9 m manoeuvring space.

Parking design for the lots provides a 2.7 m wide parking space with 5.5 depth of parking space and an excess of 5.9 m manoeuvring space. Therefore, it meets Auckland unitary plan requirements.

Conclusion

From a review of the proposal to develop a residential development at 52 Kaurilands Road, Titirangi, the following can be concluded:

- No major traffic safety issues have been identified near the site which could impact on or be caused because of the proposed development;
- The traffic expected to be generated by the proposed development can be accommodated within the existing road network. The effects of this additional traffic is considered negligible;
- The crash history does not raise any concerns relating to safety that may be worsened as a result of this development;
- The proposed accesses and formed width are generally 3.5 m and 3.0 m. Therefore, the accesses meet the Unitary Plan requirements;
- The existing access is located more than 10m from the Kaurilands Road / Meadowvale Rise Intersection. Therefore, it does not require a consent as a restricted discretionary activity;
- The proposed vehicle crossing meets Auckland Unitary Plan requirement of the 2m separation distance with adjacent vehicle crossing;
- The proposal does not comply with the Unitary Plan requirement as two crossings are proposed for this development. An assessment criterion for this is provided in section 8.4.2 of this report;
- An existing power pole is located less than 1m from the proposed vehicle crossing which is proposed for lot 3. Tracking shows that this will not affect the operation of this vehicle crossing and is therefore considered acceptable;
- The available sight distance at the vehicle crossings is acceptable in both directions along Kaurilands Road and complies with relevant standards;
- The Unitary Plan meets parking requirements;

Overall, it is concluded that with the above recommendations, the development is generally in accordance with the Unitary Plan and there are no traffic engineering or transportation planning reasons that would preclude the approval of the development as proposed

10.0 Limitations

This report has been prepared for the sole benefit of MAQ Enterprises in support of a Consent application for the proposed development. It is not to be relied upon or used out of context by any other person without reference to LANDEV Consulting.

We trust that the above is satisfactory to your needs. Should you have any queries please contact this office.

Appendix 1: Auckland Council GIS plan



DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action.
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52 KAURILANDS ROAD

0 3.5 7 10.5
Meters
Scale @ A4
= 1:500

Auckland Council
Te Kaunihera o Tāmaki Makaurau

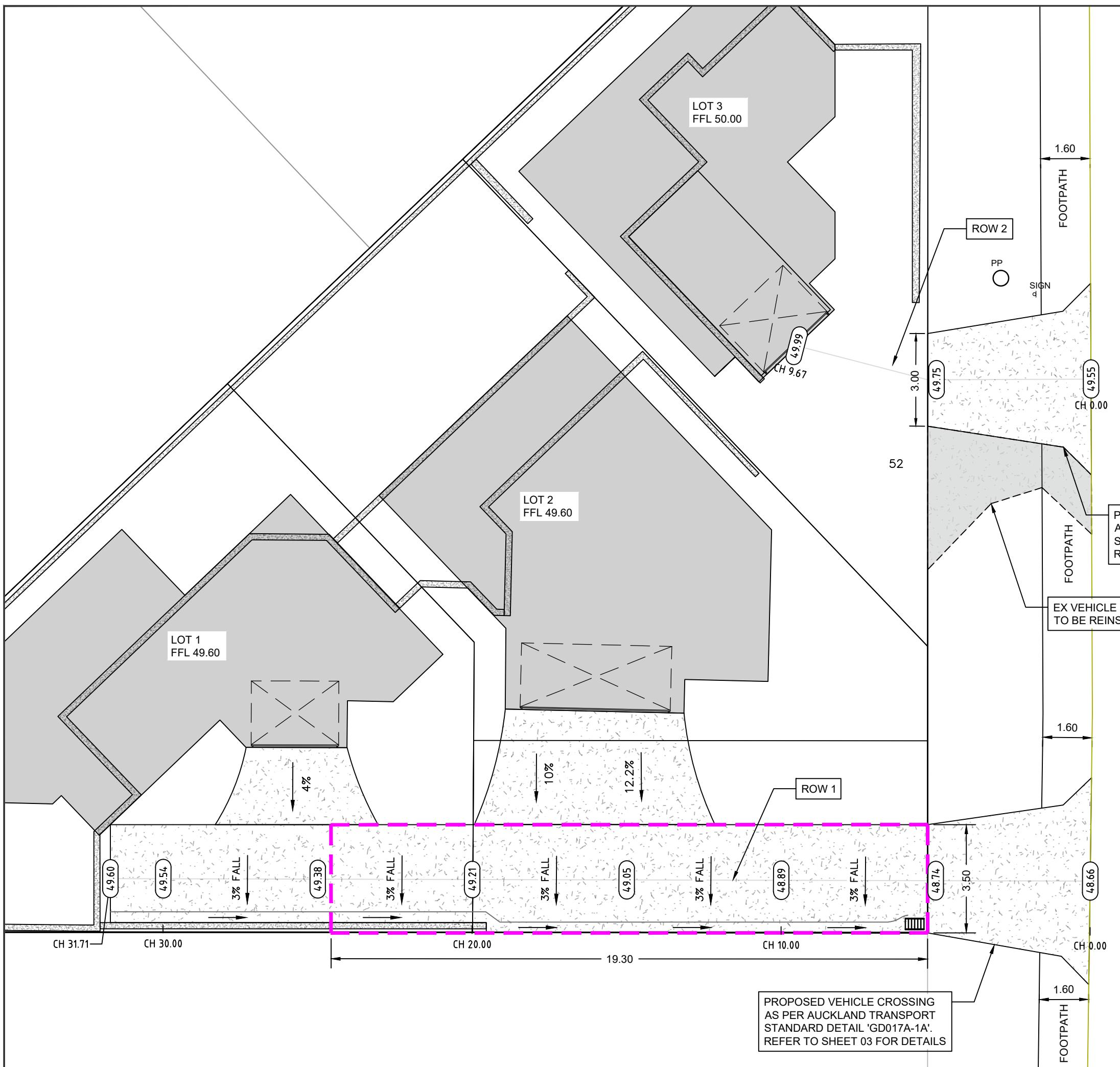
Appendix 2: Right of Way Layout, Long Section and Vehicle Tracking

- NOTES:**
1. All works to comply with Auckland Council Standards.
 2. All existing services to be located on site by the Contractor prior to commencing the new works.
 3. The Contractor shall reinstate any damages to existing services at their own expense.
 4. The Engineer is to be contacted if any discrepancies are encountered between the standards, calculations and drawings.
 5. All dimensions (not to be obtained by scaling from drawings), levels and underground services etc shall be checked on site by the Contractor prior to commencement of construction works.



LEGEND:

	EASEMENT
	RETAINING WALL



A	FOR ENGINEERING APPROVAL	OA	10.05.21
REV:	DESCRIPTION:	BY:	DATE:
STATUS: EPA			

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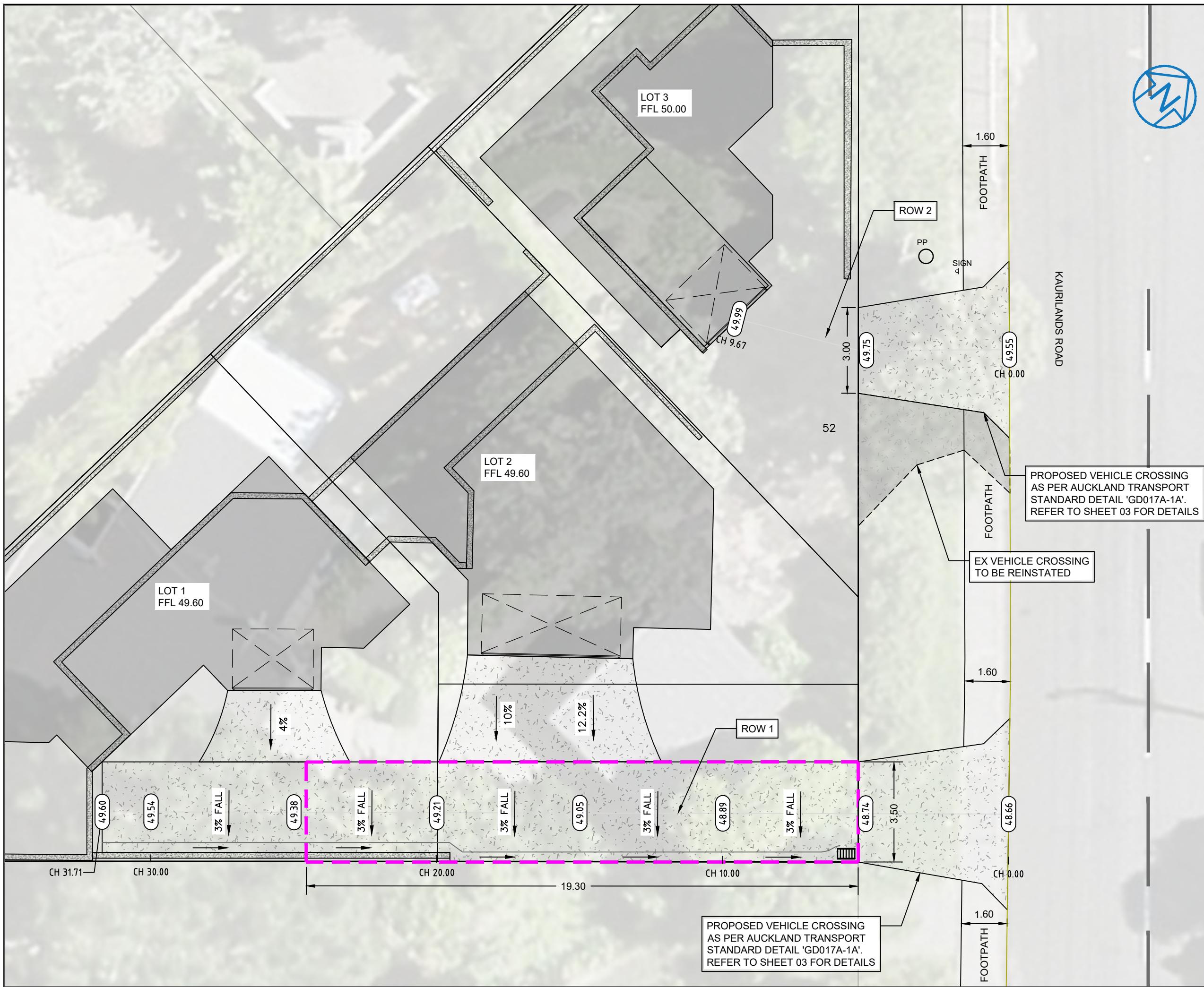
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52 KAURILANDS ROAD
TITIRANGI
AUCKLAND 0604

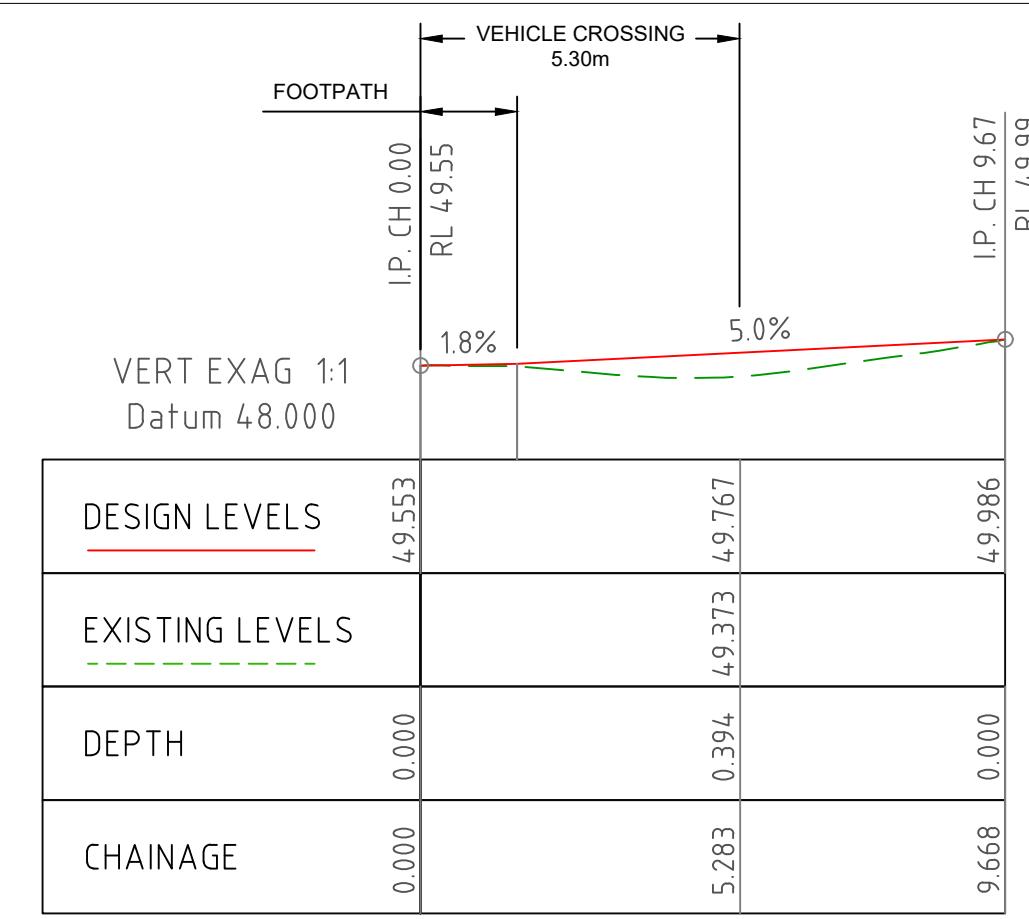
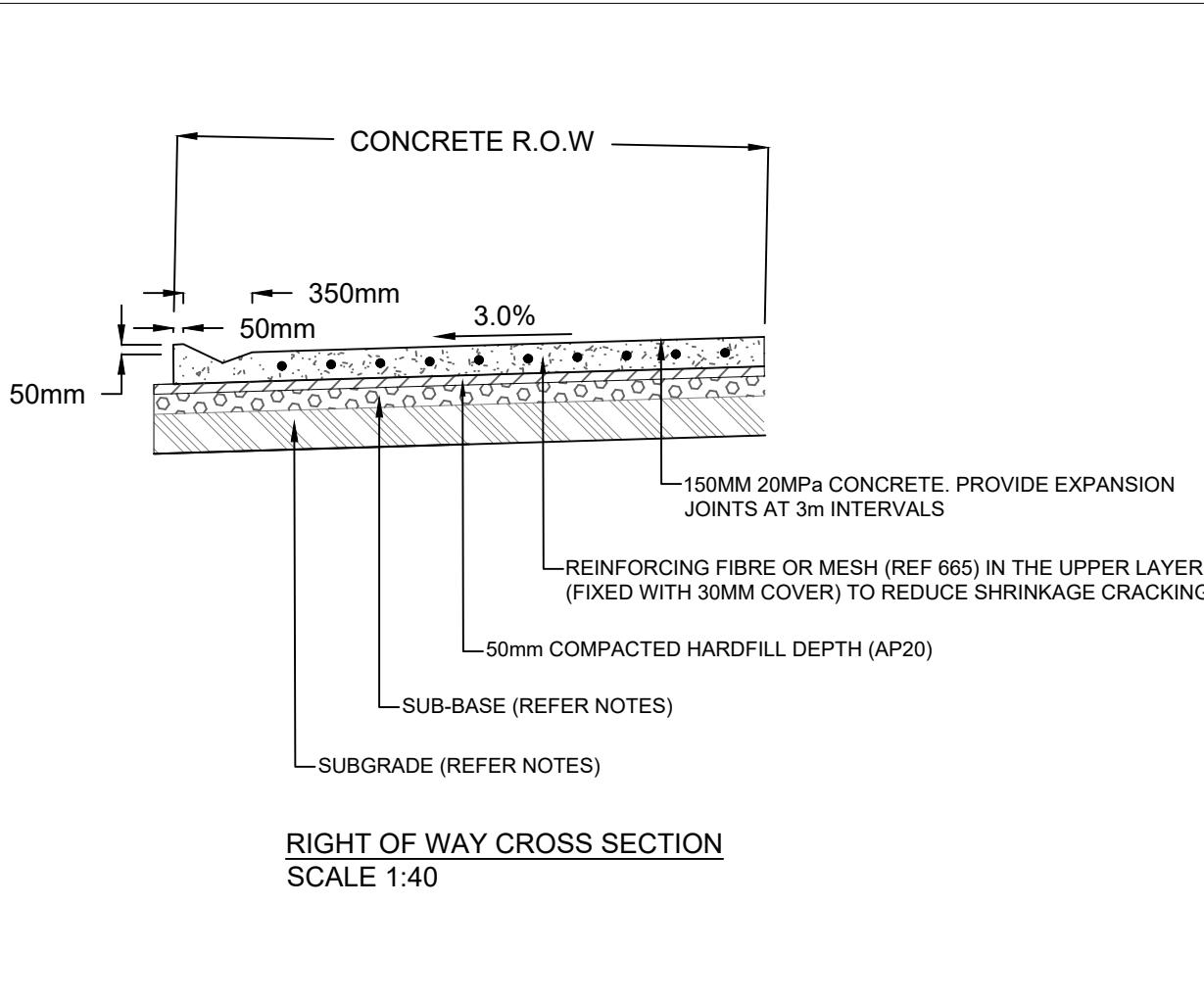
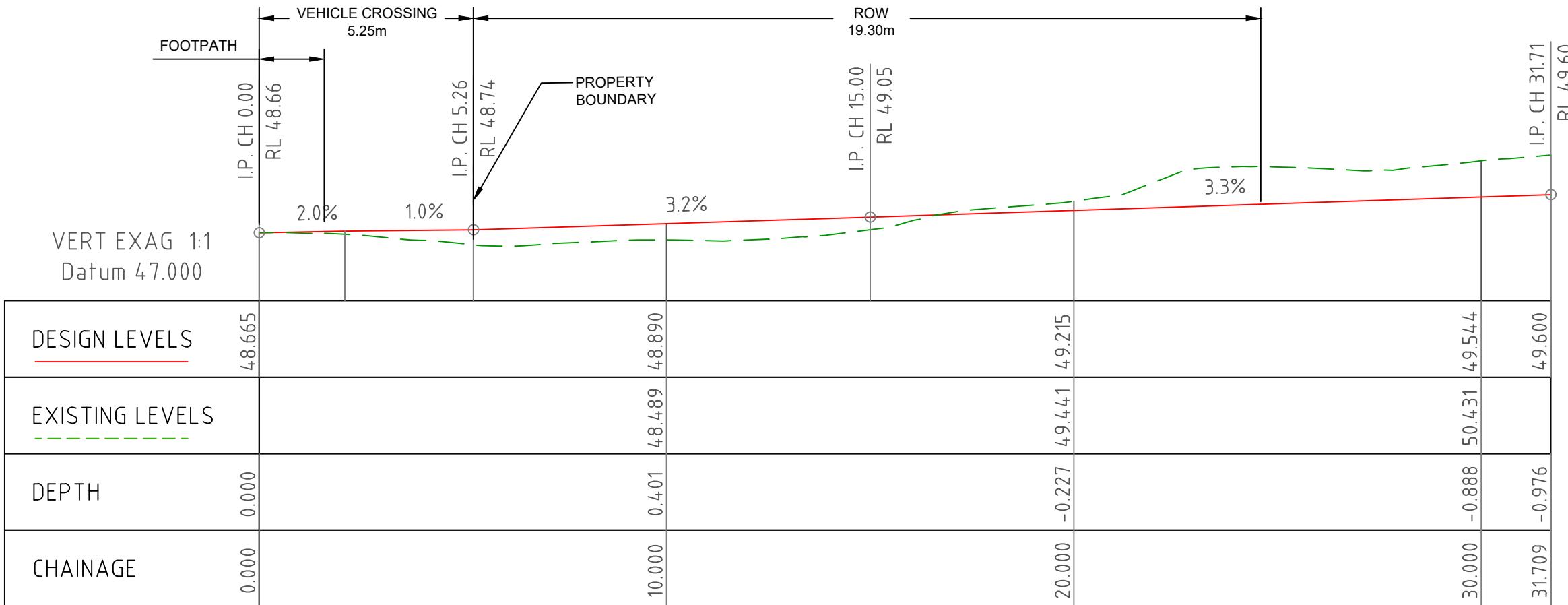
SITE: 52 KAURILANDS ROAD
TITIRANGI
TITLE: RIGHT OF WAY LAYOUT PLAN
SCALE AT A3: 1:125 **DATE:** 07/05/21 **DRAWN:** MHS **CHECKED:** OA
PROJECT NO: 21123 **DRAWING NO:** 01 **REVISION:** A

- NOTES:**
1. All works to comply with Auckland Council Standards.
 2. All existing services to be located on site by the Contractor prior to commencing the new works.
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LEGEND:

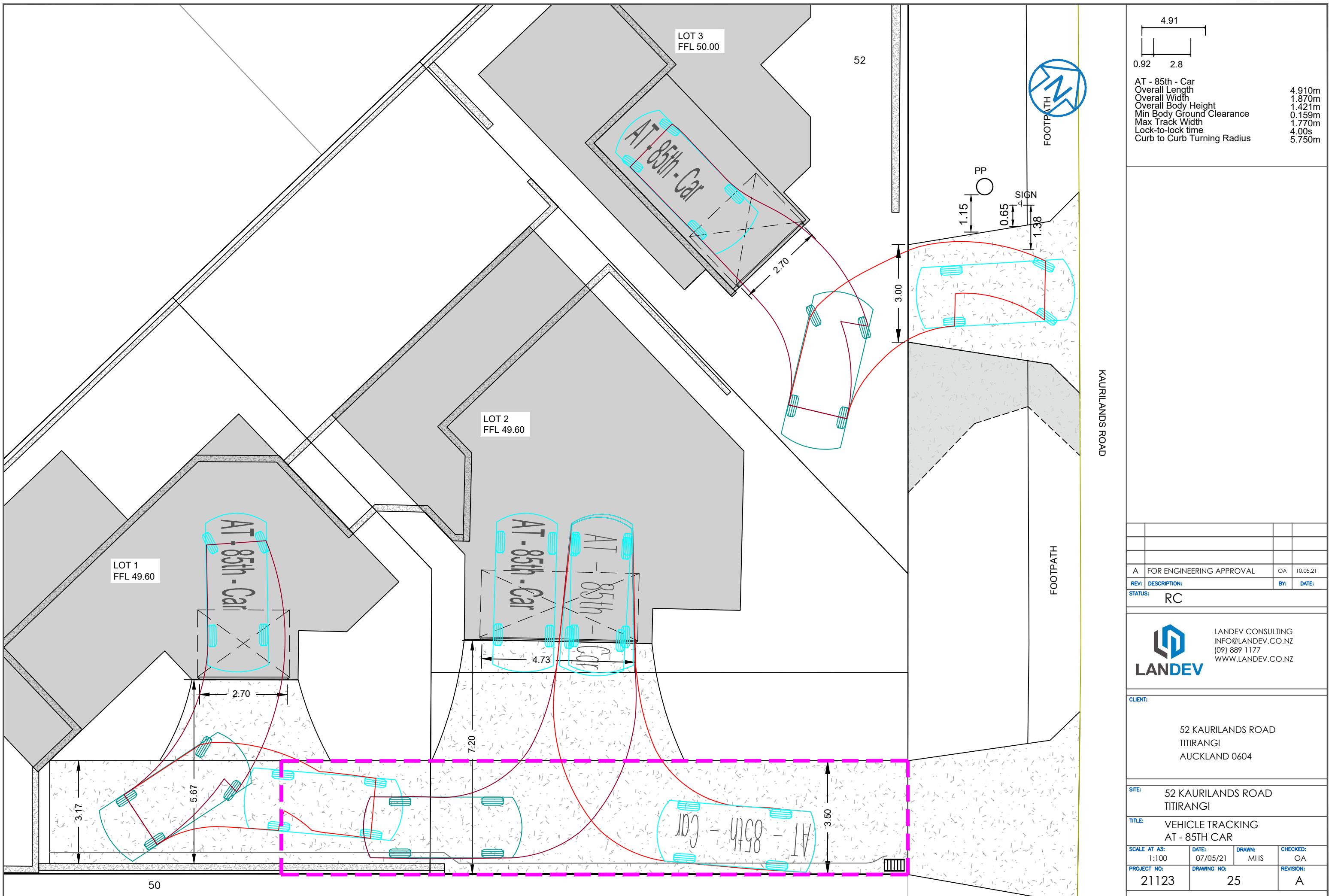
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	RETAINING WALL

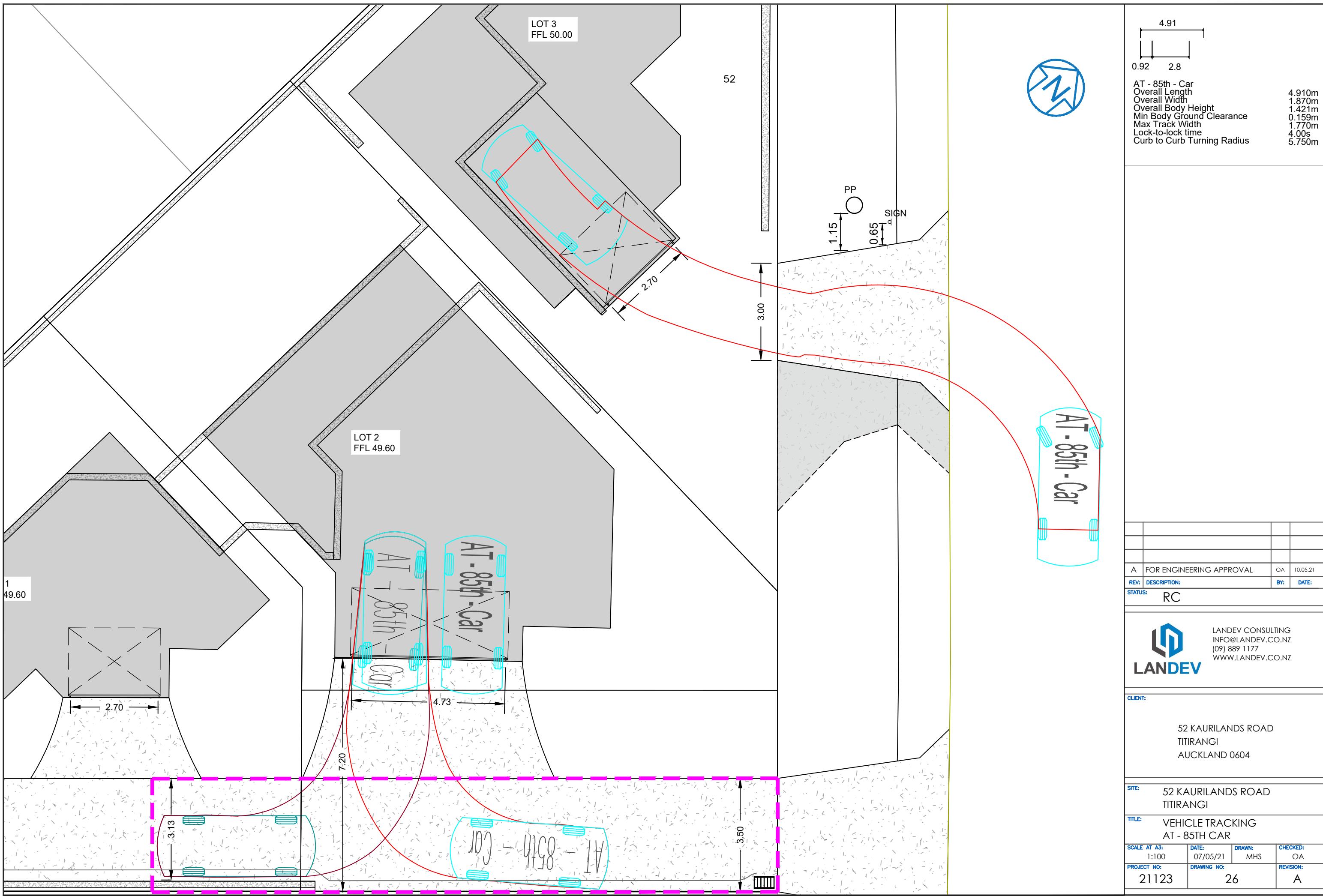




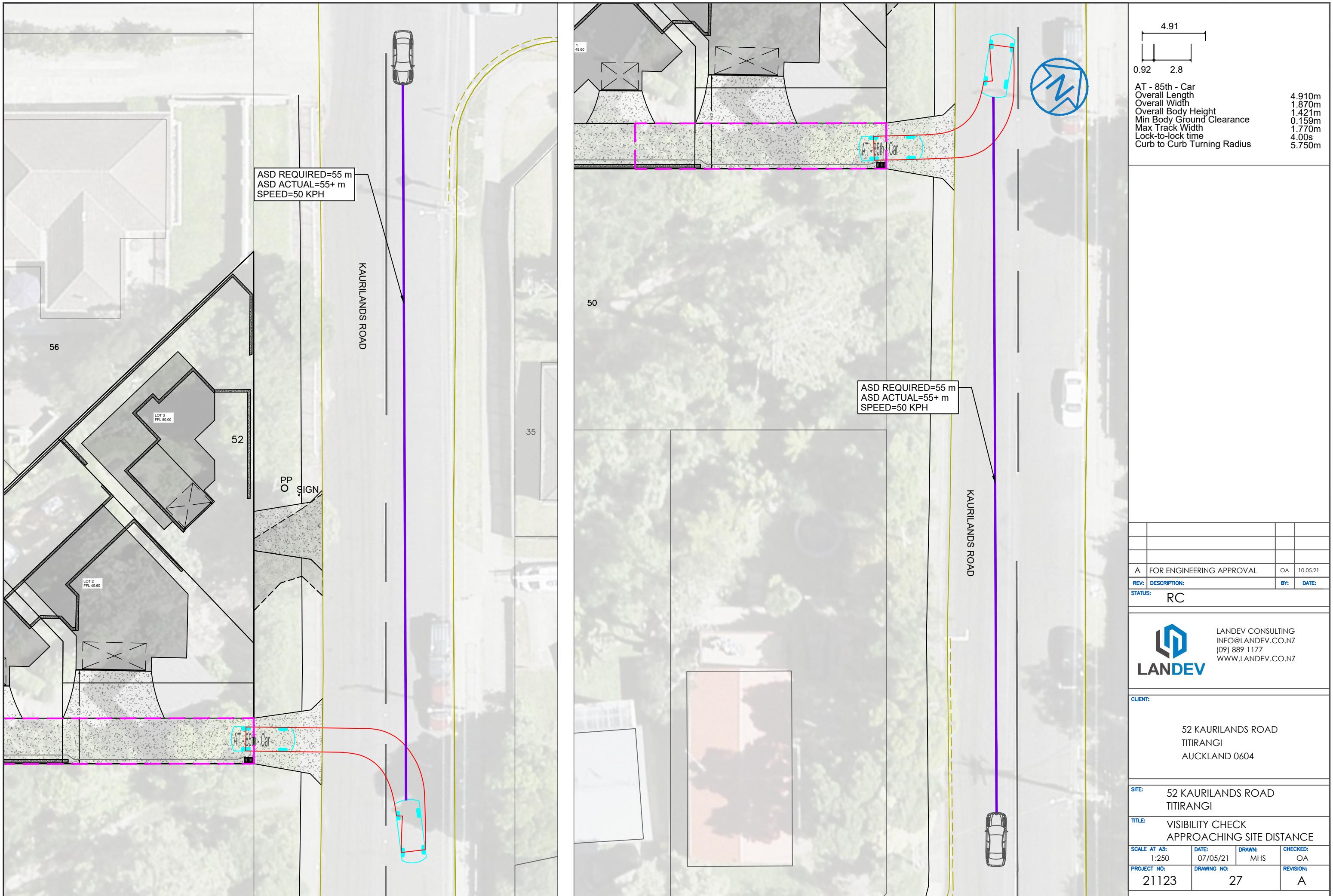
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 - All dimensions (not to be obtained by scaling from drawings), levels and underground services etc shall be checked on site by the Contractor prior to commencement of construction works.
 - Below the 50mm AP20:
AP40 or GAP65 sub-base may be required
min 150mm thick if subgrade CBR < 3
min 100mm thick if subgrade CBR > 3 to < 7
not required if subgrade CBR ≥ 7
 - Refer to drawing 01 for Right of Way layout.

A	FOR ENGINEERING APPROVAL	OA	10.05.21
REV:	DESCRIPTION:	BY:	DATE:
STATUS: EPA			
 LANDDEV LANDEV CONSULTING INFO@LANDEV.CO.NZ (09) 889 1177 WWW.LANDEV.CO.NZ			
CLIENT: 52 KAURILANDS ROAD TITIRANGI AUCKLAND 0604			
SITE: 52 KAURILANDS ROAD TITIRANGI			
TITLE: RIGHT OF WAY LONG SECTION AND CROSS SECTION			
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:125	07/05/21	MHS	OA
PROJECT NO:	DRAWING NO:	REVISION:	
21123	02	A	





Appendix 3: Visibility Check Approaching Site Distance



4.91
0.92 2.8

AT - 85th - Car
 Overall Length
 Overall Width
 Overall Body Height
 Min Body Ground Clearance
 Max Track Width
 Lock-to-lock time
 Curb to Curb Turning Radius

4.910m
 1.870m
 1.421m
 0.159m
 1.770m
 4.00s
 5.750m

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STATUS: RC			



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CLIENT: 52 KAURILANDS ROAD TITIRANGI AUCKLAND 0604			
SITE: 52 KAURILANDS ROAD TITIRANGI			
TITLE: VISIBILITY CHECK APPROACHING SITE DISTANCE			
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:250	07/05/21	MHS	OA
PROJECT NO:	DRAWING NO:	REVISION:	
21123	28	A	

