

# **PROPOSED RESIDENTIAL APARTMENTS**

## **STAGE 2**

### **4 VICTORIA AVENUE, REMUERA**

## **Traffic Impact Assessment**

Date: Issue A: 18 December 2019

Client: Hubhome Limited  
P O Box 28-611  
Remuera  
Auckland 1050

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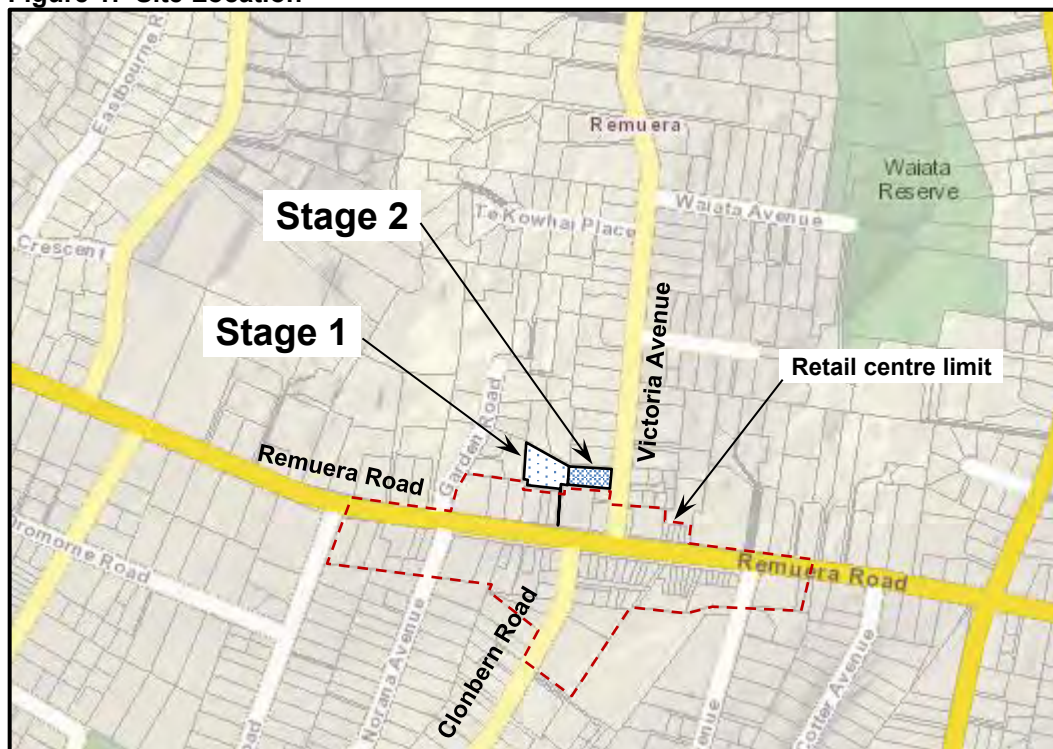
## 1. INTRODUCTION

This report assesses the transportation effects of a residential apartment development to be located at 4 Victoria Avenue in Remuera. The site is in front of a previous apartment development at 4A Victoria Avenue, which has already been granted resource consent.

In this report I describe the consented development at 4A Victoria Avenue as Stage 1, and the proposal now being considered as Stage 2.

The site is located near the intersection of Victoria Avenue with Remuera Road, as indicated on Figure 1. The site has frontage only to Victoria Avenue, although there is an access strip direct to Remuera Road.

**Figure 1: Site Location**



Details of the development are indicated on the plans prepared by Leuschke Group Architects Limited (job 1293 Resource Consent Issue dated 12/12/2019).

This assessment includes:

- a description of the existing and proposed activities on the site
- description of the adjacent transport network;
- compliance with Auckland Unitary Plan requirements;
- assessment of traffic generation effects on the operation of the transport network;
- vehicle and pedestrian access;
- parking provision;

- servicing;
- the layout of the parking on the site;
- conditions of resource consent.

Traffic Solutions Limited prepared the traffic report<sup>1</sup> that assessed the now consented Stage 1 apartments. That report is referred to as necessary in this report.

## **2. EXISTING, CONSENTED AND PROPOSED DEVELOPMENTS**

### **2.1 Consented Stage 1 Development**

The Stage 1 development has resource consent for 17 apartments within a 6-level building, although only 14 are now proposed. The building will be accessible only off Victoria Avenue for motor traffic, but there will be a direct pedestrian access into the Remuera shopping strip, via the access strip.

Stage 1 also includes a basement carpark level containing 11 carpark spaces, plus another 2 visitor spaces external to the building. A loading space is also proposed.

Access to the basement carpark is to be managed by traffic signals.

### **2.2 Proposed Stage 2 Development**

The site at 4 Victoria Avenue is presently occupied by a single level office building. The building has a floor area of approximately 200m<sup>2</sup>, scaled off an aerial photograph. It will be removed.

A new 6-level building will be constructed on the site, which will contain 9 new apartments, making a total of 23 apartments on the whole site. The building will be physically separated from the Stage 1 building by a central courtyard. The courtyard will be covered.

The existing vehicle crossing for Stage 1, which is presently located at the southern end of the site frontage, will be removed and replaced by a new vehicle crossing near the northern end of the site frontage. Part of the main access driveway will be wide enough for two-way vehicle flow, and part will be one-way at a time. The one-way part will be controlled by traffic signals, the same as in the Stage 1 consented development.

A pedestrian walkway will also be provided to Victoria Avenue. The pedestrian walkway to Remuera Road will remain the same as already consented in Stage 1.

The two buildings will be connected via their respective basements to form one parking level for the whole development. The Stage 1 basement carpark layout will include some changes from the consented layout to accommodate the extension into Stage 2, and also to provide some tandem stacked parking. There will be a total of 46 parking spaces on the site, including 3 visitor spaces in the central courtyard.

Bicycle parking for 23 bicycles is also shown on the plans, including 3 cycle spaces in the central courtyard for visitors.

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<sup>1</sup> Proposed Residential Apartments, 4A Victoria Avenue, Remuera, Traffic Impact Assessment  
– Traffic Solutions Limited Issue A dated 10 August 2018

The courtyard will be located between the two buildings on the ground level. Adjacent to the courtyard will be a loading space for service vehicles to load and unload.

### 3. UNITARY PLAN REQUIREMENTS

#### 3.1 Zone

The site is located in the Residential – Terrace Housing and Apartment Building zone in the Auckland Council Unitary Plan - Operative in Part (AUP).

#### 3.2 Parking Requirement

According to Table E27.6.2.3 in the AUP there is no minimum or maximum parking requirement for residential development in the Residential – Terrace Housing and Apartment Building zone.

#### 3.3 Cycle Parking Requirement

According to Table E27.6.2.5, the whole development (i.e. Stages 1 and 2 combined) is required to provide the following bicycle parking:

Residential 23 units @ 1 park per 20 units (visitor)	2
Residential 23 units @ 1 park per unit (long stay)	23
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	25

Cycle parking for a total of 23 bicycles is shown on the plans. The requirements for visitor and long-term cycle parking will be exceeded.

#### 3.4 Loading Space Requirement

Table E27.6.2.7 does not require that any loading spaces be provided at residential developments with a floor area less than 5,000m<sup>2</sup>.

Nevertheless, one loading space is proposed.

#### 3.5 Access

Table E27.6.4.3.2 requires vehicle crossings serving 10 or more parking spaces to be between 5.5m and 6.0m wide. The proposed new vehicle crossing will be 5.5m wide in accordance with the requirement.

Access driveways to parking are also required to be 5.5m to 6.0m wide, although this may be narrowed to 2.75m if there are clear sight lines along the entire access and passing bays at 50m intervals can be provided. The one-way part of the access driveway into the basement carpark will be 3m wide and about 40m long, which is within the 50m maximum. Clear sight lines will not be available along that part, but the access will be controlled by traffic signals. The requirement is effectively met.

Table E27.6.4.2.1 requires at least 2m separation between vehicle crossings serving adjacent sites, although two adjacent crossings can be combined into one providing

that the total width does not exceed 6m at the site boundary. The proposed new crossing will be separated from the next crossing to the north by not less than 2m, in accordance with the requirement.

Rule E27.6.4.1(3) requires that vehicle crossings be separated from road intersections by at least 10m. The vehicle crossing will be separated from the nearest intersection at Remuera Road by 55m, which complies.

### **3.6 Building Lines**

There are no building line designations for road widening that affect this site.

## **4. EXISTING TRANSPORT ENVIRONMENT**

### **4.1 Road Classifications**

Roads close to the site are classified in the New Zealand Transport Agency “One Network Road Classification” system as follows:

- Victoria Avenue                      arterial
- Remuera Road                        arterial
- Clonbern Road                        primary collector

### **4.2 Road Geometrics**

Victoria Avenue is 14.5m wide between kerbs and is two-laned. Opposing lanes are separated by a continuous white centreline. The road has a straight horizontal alignment and an almost level vertical alignment in the site vicinity. Street parking is permitted along both sides of the roadway except in the vicinity of the intersection at Remuera Road, where “no stopping” lines apply. Street parking is mostly P120 time restricted although there is a short P15 restriction along the western side between the site access and Remuera Road.

Remuera Road is 19m wide between kerbs and consists of two traffic lanes in each direction. The road has a straight and level alignment through the Remuera shopping centre. Street parking is permitted close to the intersection at Victoria Avenue and Clonbern Road, but “no stopping” lines apply through the intersection itself. Street parking is “pay and display”. There are bus stops in both directions within the shopping centre.

The intersection of Victoria Avenue, Clonbern Road and Remuera Road, which is effectively a staggered cross-intersection, is controlled by traffic signals.

The legal speed on all roads is 50 km/h.

### 4.3 Traffic Volumes

Traffic count data provided by Auckland Transport shows that Victoria Avenue close to the site carried the following daily and peak hourly traffic flows, in 2017:

- Daily (7-day average) 8,016 vehicles per day
- Weekday AM peak hour 897 vehicles per hour
- Weekday Midday hour 694 vehicles per hour
- Weekday PM peak hour 891 vehicles per hour

The above traffic flows are within the capacity of a two-laned road.

The following traffic flows were recorded on Remuera Road just east of Victoria Avenue in August 2018:

- Daily (7-day average) 15,518 vehicles per day
- Weekday AM peak hour 1,780 vehicles per hour
- Weekday Midday hour 1,236 vehicles per hour
- Weekday PM peak hour 1,615 vehicles per hour

The traffic flows on Remuera Road are within but getting close to capacity.

### 4.4 Traffic Safety

A study of accident records held by the New Zealand Transport Agency shows that the following accidents were recorded on Victoria Avenue between Remuera Road and Tirohanga Avenue, and at the intersections of Victoria Avenue and Clonbern Road with Remuera Road, during the 5-year period 2014 to 2018:

**Table 1: Accident History**

Accident Type	Victoria Avenue (mid-block)	Victoria/Remuera Intersection	Clonbern/Remuera Intersection
Right turn	1	1	1
Hit object	1	-	-
Pedestrian	1	-	1
Rear end in queue	-	-	4
Overtaking, lane change	-	-	1
Manoeuvring	3	-	-
Loss of control	-	1	-
	6	2	7

A small number of collisions involving manoeuvring vehicles were recorded on Victoria Avenue. None of these involved vehicles manoeuvring at property accesses. Otherwise there are no dominant accident types to suggest there are any existing traffic safety issues in the site vicinity.

Just two accidents were recorded at the intersection of Victoria Avenue with Remuera Road. Considering the traffic volumes using this intersection, it appears to be operating safely.

A number of rear end collisions were recorded at the intersection of Clonbern Road with Remuera Road. Reasons for these include following too closely and aggressive driving behaviour.

Accident records do not indicate any existing traffic safety issues that would affect, or be affected by, the proposed Stage 2 development.

#### 4.5 Passenger Transport

Available passenger transport services in Remuera are indicated on Figure 2:

**Figure 2: Passenger Transport Services**



Victoria Avenue and Remuera Road are both bus routes.

Victoria Avenue carries a service to Orakei, Mission Bay, Meadowbank, Newmarket and Auckland Museum. On Victoria Avenue there are bus stops in both directions within 550m walk of the site.

Remuera Road carries services to Auckland City, Grafton, Newmarket, St Johns, Glen Innes, Stonefields and Panmure. On Remuera Road there are bus stops in both directions within 150m walk from the site.

The site is located 1.2 km walk from the Remuera railway station, and 1.4 km walk from the Greenlane railway station, both on the Southern Line, from which there is access to the entire Auckland rail network. These distances are not very convenient, for walking but are within easy range for cycling, so residents at the apartments could choose to use rail services.

The site is reasonably well served by public transport services.

## **5. TRAFFIC GENERATION**

In this report the traffic generation characteristics of the Stage 2 development are assessed using the same methodology as was used to assess the now consented Stage 1 development. These are based on the RTA Guide<sup>2</sup>.

RTA suggests that residential units of three or more bedrooms within medium-density developments generate traffic at ratios between 0.5 and 0.65 vehicle trips per hour (tph) per unit. Using these ratios the whole development will generate traffic flows between 12 and 15 tph in a peak hour. The consented development would have generated 8 to 11 tph in a peak hour, and thus the traffic generated by the additional apartments to those consented will increase by about 4 tph.

I estimate that the existing office building presently generates about 5 tph in a peak hour, so the peak traffic flows the site generates are unlikely to change except by a negligible amount.

Therefore I conclude that the proposed development will have almost no effect on network capacity.

## **6. SITE ACCESS**

### **6.1 Vehicle Access**

The existing vehicle crossing on Victoria Avenue, which is located at the southern end of the site frontage, will be removed and replaced by a new vehicle crossing near the northern end of the site frontage. The redundant crossing should be removed, and the kerb and footpath reinstated in accordance with Auckland Transport requirements.

The new vehicle crossing will be 5.5m wide at the site boundary, which is wide enough to cater for simultaneous two-way vehicle flow. This avoids the need for vehicles to wait on Victoria Avenue unnecessarily and obstructing the roadway if another vehicle is leaving the site.

The proposed vehicle crossing will be located far enough in from the northern site boundary to provide the 2m minimum required separation from the next vehicle crossing to the north. The adjacent vehicle crossing is located close to but slightly separated from the common site boundary.

A security gate will be installed at the access. The gate will be located 6m inside the site, which will provide sufficient room for one car to wait for the gate to open without obstructing the footpath. For the number of apartments proposed, I consider it is improbable that more than one car will queue at the gate.

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<sup>2</sup> Roads and Traffic Authority New South Wales (RTA) "Guide to Traffic Generating Developments"  
- October 2002



The relocated access will conflict with existing marked parking bays and parking signage on Victoria Avenue. Appendix A shows how the markings and signage would likely need to be modified to accommodate the access. There would be no change to the street parking supply, only the location of two car spaces, which would be moved southwards by about 7m. A traffic resolution will likely need to be prepared and submitted to Auckland Transport for approval, as a separate process. A small street tree in the footpath will also need to be relocated southwards.

Available sight distances from the location of the proposed vehicle crossing are:

- towards north >200m
- towards south 70m (to Remuera Road)

The recommended minimum sight distance specified in the New Zealand Transport Agency publication RTS 6 "Guidelines for Visibility at Driveways", is 70m at accesses on arterial roads operating at 40 km/h, and 90m where the operating speed is 50 km/h. The sight distance northwards easily exceeds the recommendation for the 50 km/h operating speed, the southward sight line exactly meets the recommendation for the 40 km/h operating speed. The lower operating speed from the south is considered appropriate given the slower speed of vehicles turning into Victoria Avenue from Remuera Road.

I consider that there is ample visibility in both directions to enable the proposed access to operate safely. Additionally, visibility southwards will be improved because the proposed new access will be further from the intersection than the existing access.

## 6.2 Pedestrian Access

A separate pedestrian access will be provided into the site off Victoria Avenue. It will be located directly adjacent to the vehicle access driveway.

The proposed pedestrian walkway direct to Remuera Road from the site that was consented as part of the Stage 1 development, will be retained.

I consider that the proposed pedestrian access arrangements will provide convenient and safe walking routes on and off the site, separate from the vehicle access.

## 7. SITE LAYOUT

The same as in the consented development, the majority of on-site parking will be located on the basement level. The parking spaces will almost all be oriented at 90-degrees to the vehicle aisle.

The carpark spaces will typically be 5m long x 2.5m wide with a 6.7m wide vehicle aisle, or 5m long x 2.7m wide with a 5.9m wide aisle. Table E27.6.3.1.1 in the AUP requires manoeuvring aisle widths of at least 6.7m for regular users at parking spaces of 2.5m width, and 5.9m where the parking spaces are 2.7m wide. The carparking will comply with these dimension requirements.

Appendix B shows tracking paths to parking spaces at various locations within the basement. The tracking paths represent a B85 car (as defined in Figures E27.6.3.3.1 and E27.6.3.3.2 in the AUP), and were generated using Autodesk Vehicle Tracking software.

There will be some spaces where two vehicle manoeuvres will need to be carried out to enter the space, mainly due to structural features within the basement. The need for more than one manoeuvre is commonly accepted at domestic residential car parks, and is allowed for in AS/NZS 2890.1:2004, the national Standard for off-street parking. A vehicle exiting from the end space nearest Victoria Avenue (Space 13) may need to reverse a short distance to turn around to exit in a forward direction. Smaller vehicles will be able to turn directly at the space.

In my opinion, the proposed carparking spaces will be reasonably accessible.

The basement carpark will include 12 pairs of tandem stacked spaces. Tandem stacking is often used at residential development and is permitted for residential development in Rule E.27.6.3.3 in the AUP. Providing that both spaces in a tandem stacked pair are allocated to the same apartment, I consider the stacked parking will be satisfactory.

Similar to Stage 1, the basement carpark will be accessed via a vehicle ramp. The ramp will have a maximum gradient of 1 in 8, which is easily negotiable by cars. It should not be necessary to provide transitions at the top and bottom of the ramp because the changes of grade will not be sufficient to cause a design car to scrape the ramp on the under- and over-verticals.

The driveway in from Victoria Avenue will be 5.5m or wider where it passes alongside the front building as far as the proposed central courtyard. Beyond the courtyard the driveway will reduce to single lane width of 3.0m width where it passes alongside the rear building and into the basement. Traffic signals will be installed at the courtyard end and within the basement carpark to manage traffic on the one way part, similar to that which was proposed in the consented Stage 1 development. Limit lines will be located so that vehicles waiting at them will not obstruct opposing vehicle flows.

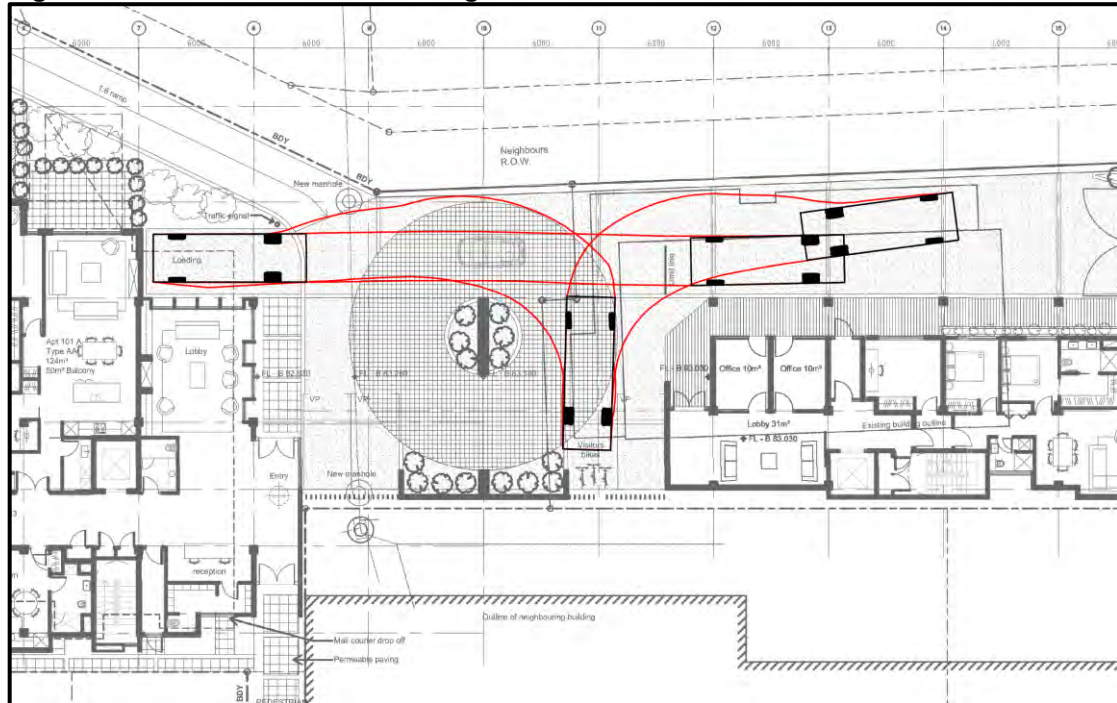
I have assessed the capacity of the traffic signal arrangement to test that there is enough capacity to accommodate the number of vehicles that will use the ramp. The travel distance between the opposing limit lines will be about 70m. If it is assumed that the average travel speed on the ramp is 8 km/h then the capacity of the one-way system is at least 90 tph, assuming one vehicle per green signal. As indicated above, the maximum demand will be 15 tph, so the traffic signals should be able to accommodate the demands easily. Assessment of queuing indicates that there will be no queue for 83% of the time, a queue of one vehicle for 14% of the time, and a 2 vehicle queue for 2% of the time. Queue lengths of 3 or more vehicles will only occur 1% of the time.

I consider that the traffic signals will have adequate capacity to accommodate the demands, and that they will be an effective measure to manage vehicles accessing the basement on the one-way driveway.

The proposed loading space will be located adjacent to the central courtyard. The loading space will be suitable for service activities that occur typically at residential development such as refuse collection or household deliveries. The rubbish room will be provided on the basement level, where wheelie bins can be manhandled to and from a vehicle in the loading space via one of the two proposed lifts, the same as in the consented proposal.

Figure 5 shows the tracking path of an 8m long medium rigid track (as defined in RTS 18 ("NZ On Road Tracking Curves for Heavy Vehicles) accessing the loading space.

**Figure 5: 8m Medium Truck Tracking Path**



The Figure shows that these vehicles can enter the loading space from Victoria Avenue, reverse out, and manoeuvre in the courtyard to exit back to Victoria Avenue in a forward direction. The courtyard will have about 4.5m height clearance under the roof, which is sufficient for a truck to manoeuvre under. I consider there will be no reason for vehicles to reverse onto or off Victoria Avenue as a result of the proposed development.

I consider that the proposed on-site parking and layout and loading arrangement will operate satisfactorily.

## 8. CONDITIONS OF RESOURCE CONSENT

I have reviewed the conditions in the existing land use consent (Council reference LUC60328748) that apply to transport and parking. I expect that these conditions, or similar ones, will become part of any resource consent for the development now proposed. Some of these will require modification to suit.

Condition 10 requires that a Construction Traffic Management Plan be provided. Adverse effects from construction traffic should generally be considered to be no more than minor because the construction phase is temporary. A Construction Traffic Management Plan will help to minimise those effects that could occur. This condition should remain in any resource consent for the development now proposed.

Condition 31 requires that the 11 residential and 2 visitor carpark spaces be marked and identified through signage to the satisfaction of the Council's Team Leader

Monitoring Central. If resource consent is granted for Stage 2 then this condition should be reworded to include 43 residential spaces and 3 visitor spaces.

Condition 32 requires that signage and line marking be provided at the loading space to deter others from parking in the area. I consider that the same condition should be included in any consent for the development now proposed.

Condition 33 requires that traffic signals and limit lines be installed. I consider that the same condition should be included in any consent for the development now proposed.

Condition 34 requires that the redundant vehicle crossing on Remuera Road be removed and reinstated as kerb and footpath. This condition should be reworded to include the existing vehicle crossing on Victoria Ave, which will also become redundant.

A new condition should be added, requiring that the street parking and street tree being relocated to accommodate the new vehicle crossing, be carried out in accordance with Auckland Transport requirements.

## **9. CONCLUSIONS**

The convenient location of the site to many facilities including a major shopping centre, employment, and bus services, will provide future residents in the apartments with a range of travel mode options, which is what the AUP seeks to achieve in the zone.

The amount of traffic that the site will generate on the road network as a result of the proposed development will remain almost unchanged from that which the existing and consented developments generate. In my opinion there will be no noticeable effect on the capacity or operation of the transport network.

The proposed new vehicle access on Victoria Avenue will comply with the relevant access controls in the AUP with respect to width, separation from other accesses, and separation distances from intersections. There will be adequate visibility to enable it to operate safely

Pedestrian access will also be provided to both Victoria Ave and Remuera Road.

I consider that access arrangement for vehicles and pedestrians will operate effectively. The existing vehicle crossing should be removed, and footpath and kerb reinstated to normal.

The development will comply with the minimum and maximum parking requirements in the AUP. There will be ample on-site parking to avoid additional demands for the use of street parking.

The carparking proposed will comply with dimension requirements, and tracking shows that the spaces will be accessible by the design car. Some parking spaces within the basement will be in a tandem stacked arrangement. I consider that for tandem stacking will be satisfactory providing that both spaces in a given pair are associated with the same apartment.

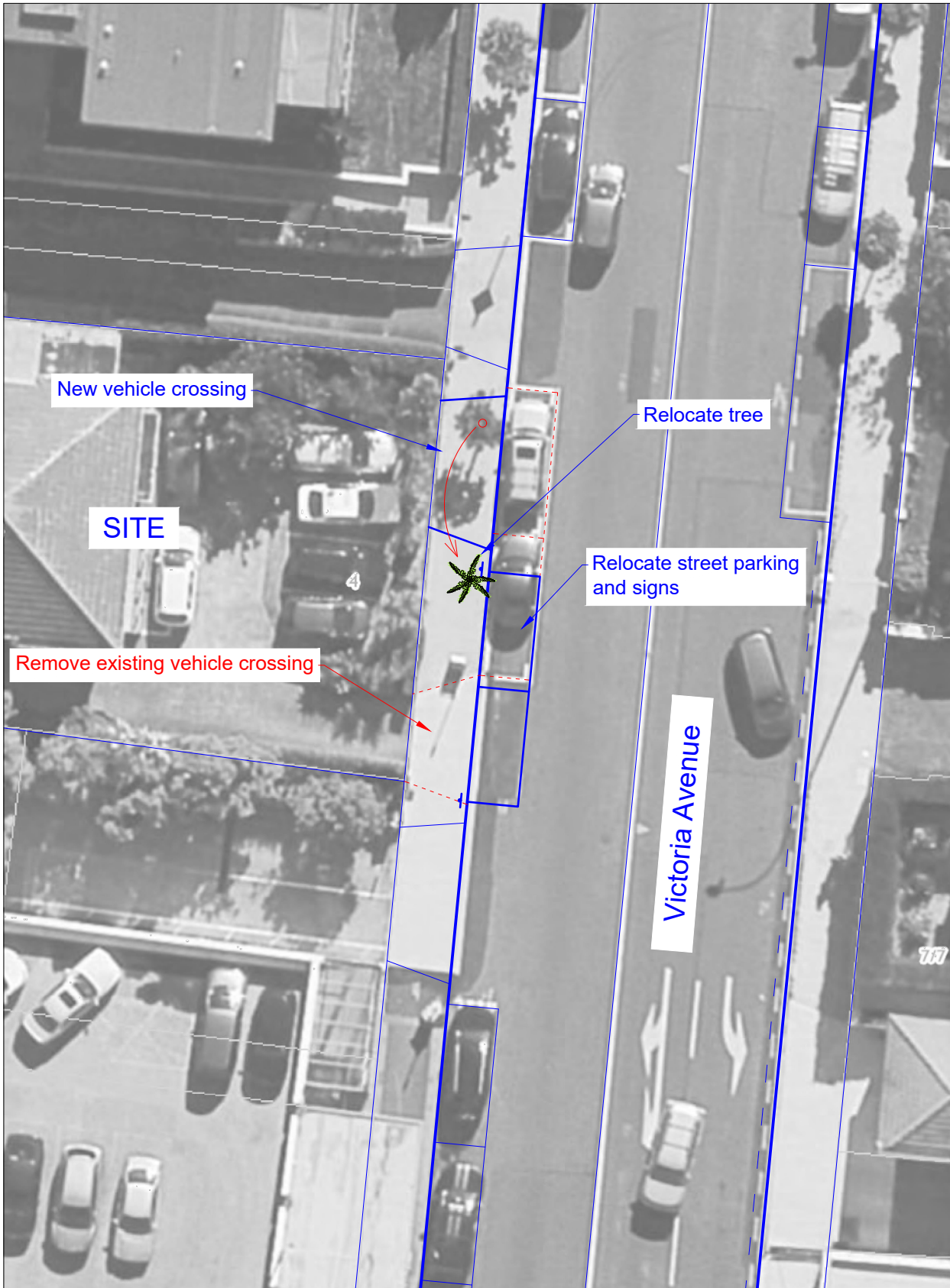
Taking all the above into consideration, and subject to the following recommendations, I consider that the traffic and parking effects of the proposed development will be less than minor, and that resource consent could be granted from a traffic engineering perspective.

I recommend the following:

1. *That a Construction Traffic Management Plan be provided.*
2. *That the redundant vehicle crossing on Remuera Road, the kerb, berm and footpath be reinstated to Auckland Transport requirements.*
3. *That street works needed to accommodate the proposed relocated vehicle crossing be carried out in accordance with Auckland Transport requirements.*
4. *That both parking spaces in a given pair of tandem stacked spaces be allocated to the same residential unit.*

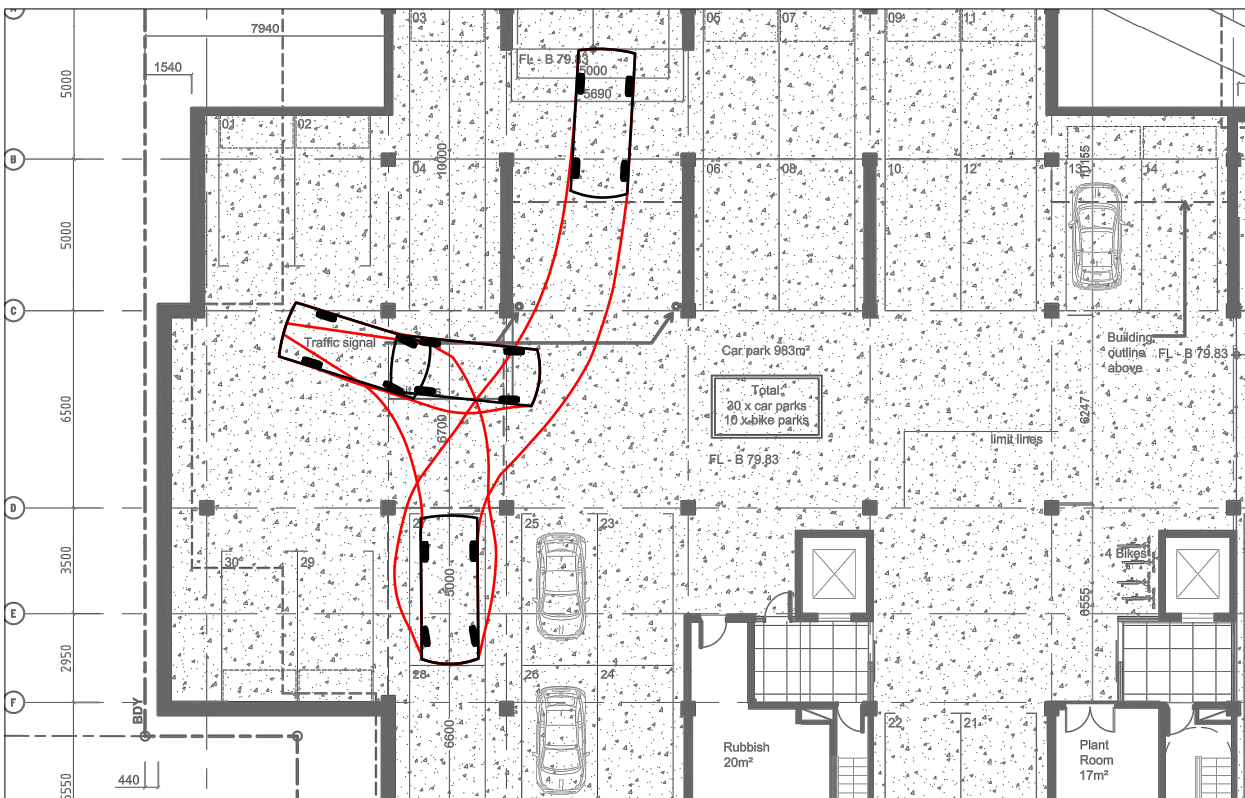
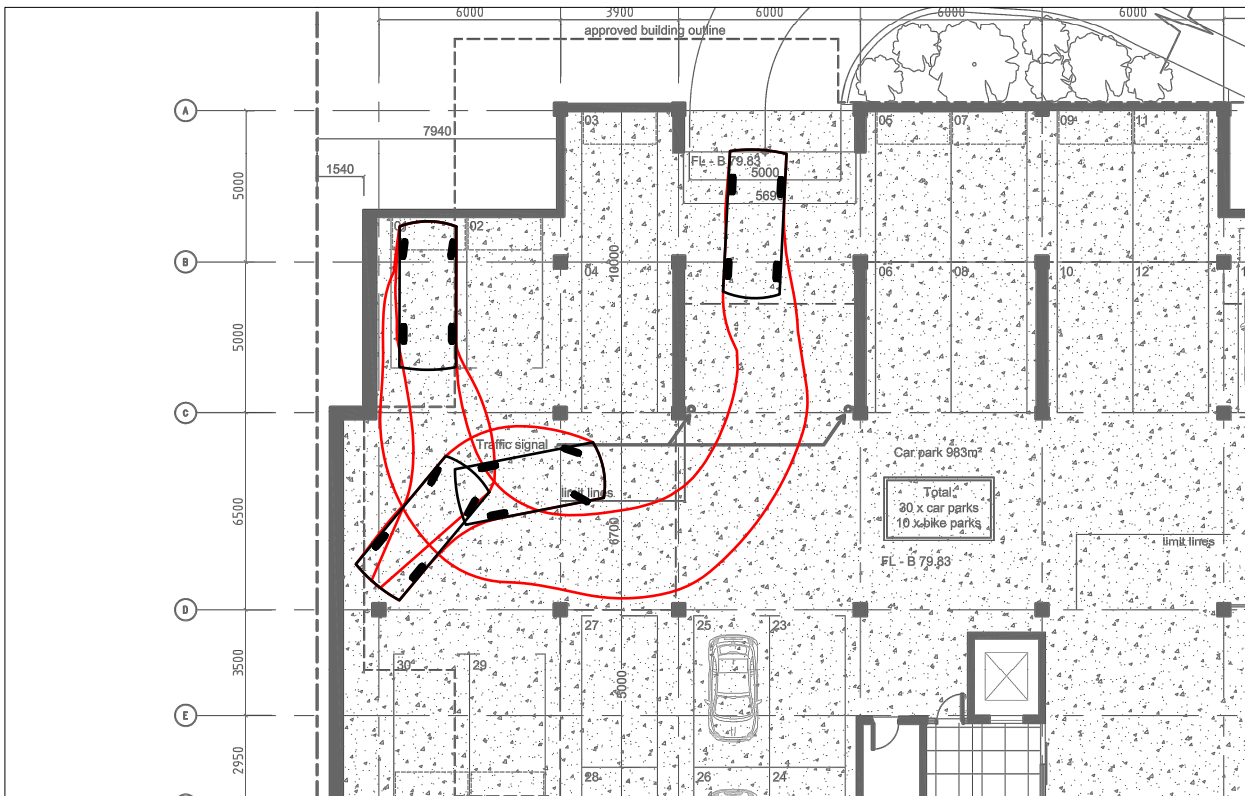


Ian Constable  
Traffic Engineer

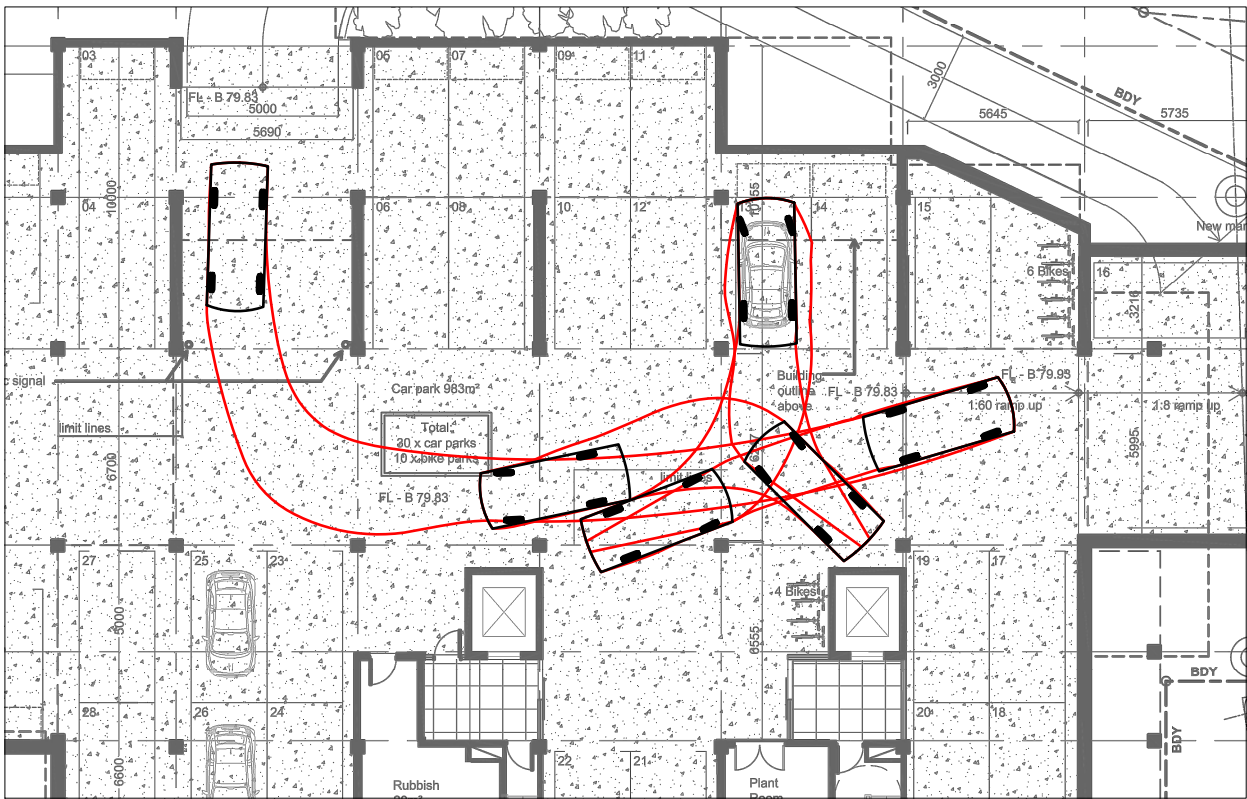
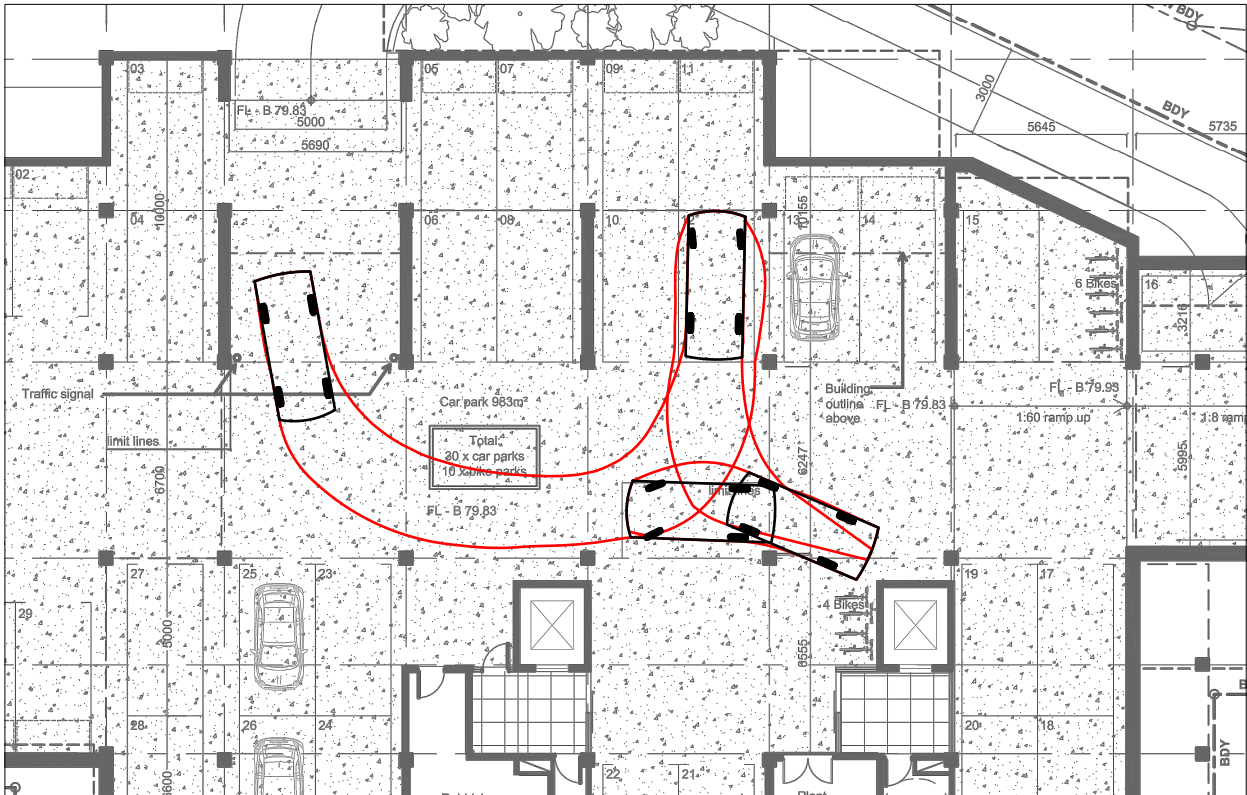


**DEVELOPMENT AT 4 VICTORIA AVENUE, REMUERA**  
**Relocated Street Parking**

(A4 Scale 1:250)

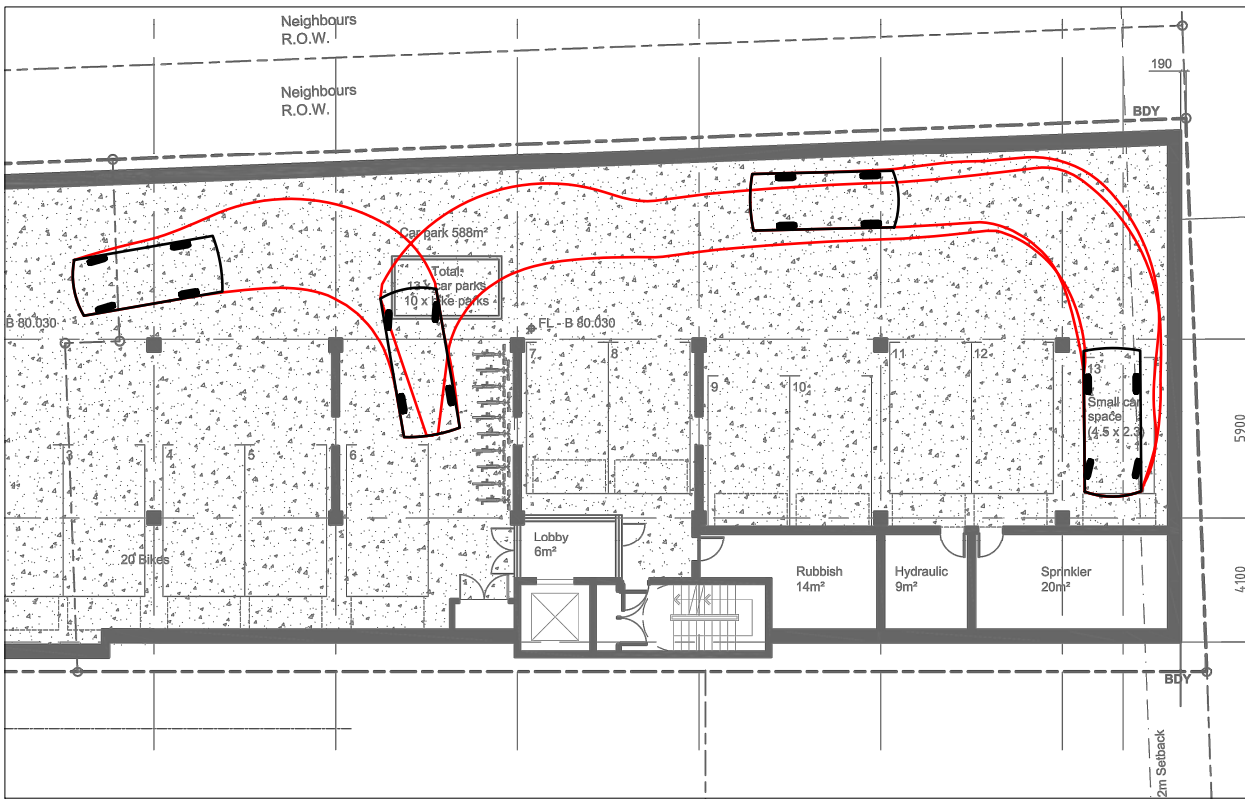
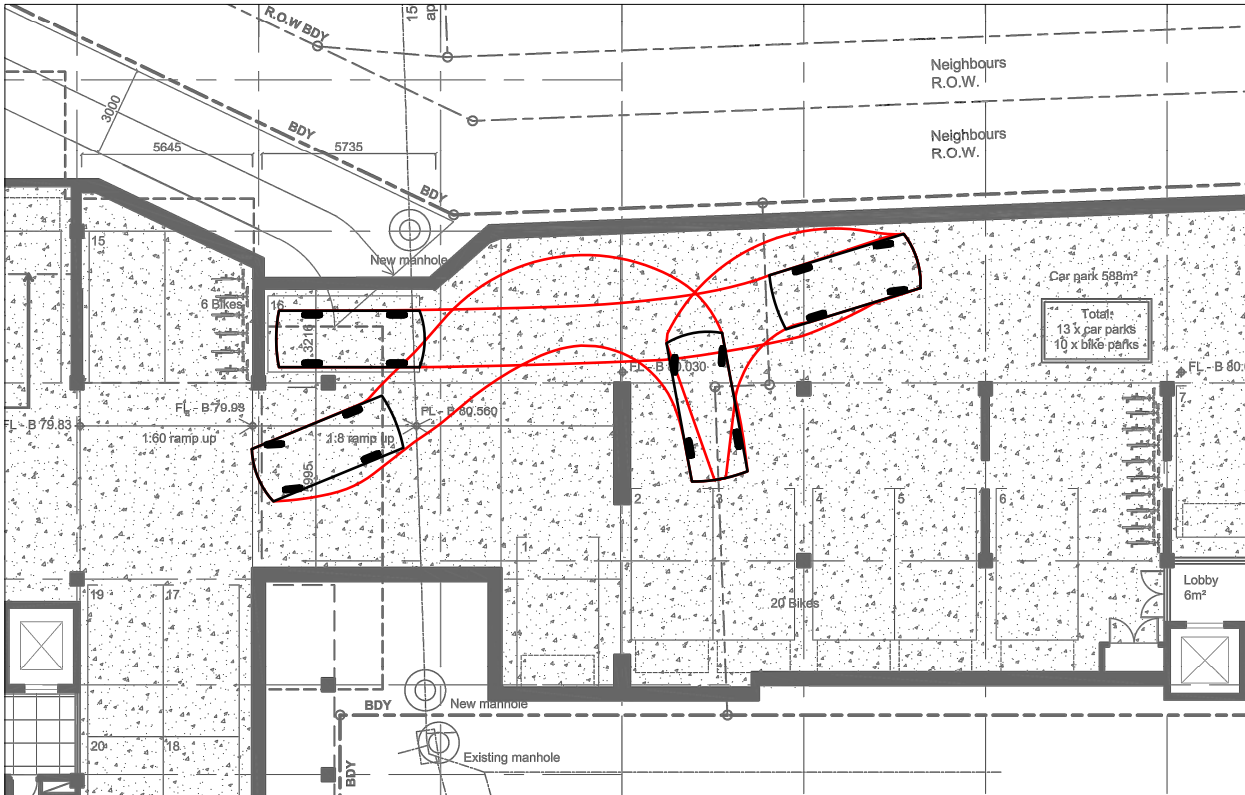


**DEVELOPMENT AT 4 VICTORIA AVENUE, REMUERA**  
**B85 Car Tracking - 1**  
 (A4 Scale 1:250)



**DEVELOPMENT AT 4 VICTORIA AVENUE, REMUERA**  
**B85 Car Tracking - 2**  
 (A4 Scale 1:250)





**DEVELOPMENT AT 4 VICTORIA AVENUE, REMUERA**  
**B85 Car Tracking - 3**  
 (A4 Scale 1:250)