TRAFFIC IMPACT ASSESSMENT

Hubble Traffic

October 2023 Updated

UNIT DEVELOPMENT 70 BEACH ROAD KINGSTON

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Version	Date	Reason for Issue
Draft	August 2023	Draft issued for client feedback
Final	September 2023	Final issued
Updated	October 2023	Location of units modified

Table of Contents

1. Introduction

Glanville Architects have engaged Hubble Traffic to prepare an independent Traffic Impact Assessment, to consider the traffic impacts from the provision of three townhouses at 70 Beach Road, Kingston.

This assessment has considered the amount of traffic this development is likely to generate, how the additional traffic movements will integrate into the existing road network and use the existing vehicular access with Beach Road to enter and leave the development site.

The development has been assessed against the Kingborough Interim Planning Scheme E5.0 Road and Railway Assets Code, E6.0 Parking and Access Code, and the Australian Standard 2890.1:2004.

This report has been prepared to satisfy the requirements of Austroads, Guide to Traffic Management Part 12: Traffic Impacts of Developments, 2019, and referred to the following information and resources:

- Kingborough Interim Planning Scheme 2015 (Planning Scheme)
- Road Traffic Authority NSW (RTA) Guide to Traffic Generating Developments
- Australian Standards AS2890 parts 1, 2 and 6
- Austroads series of Traffic Management and Road Design
  - Part 4: Intersection and crossings, General
  - Part 4a: Unsignalised and Signalised Intersections
  - Part 12: Traffic Impacts of Development
- Department of State Growth crash database
- Department of State Growth traffic database
- Autoturn Online vehicle turning software
- LIST – Land Information Database

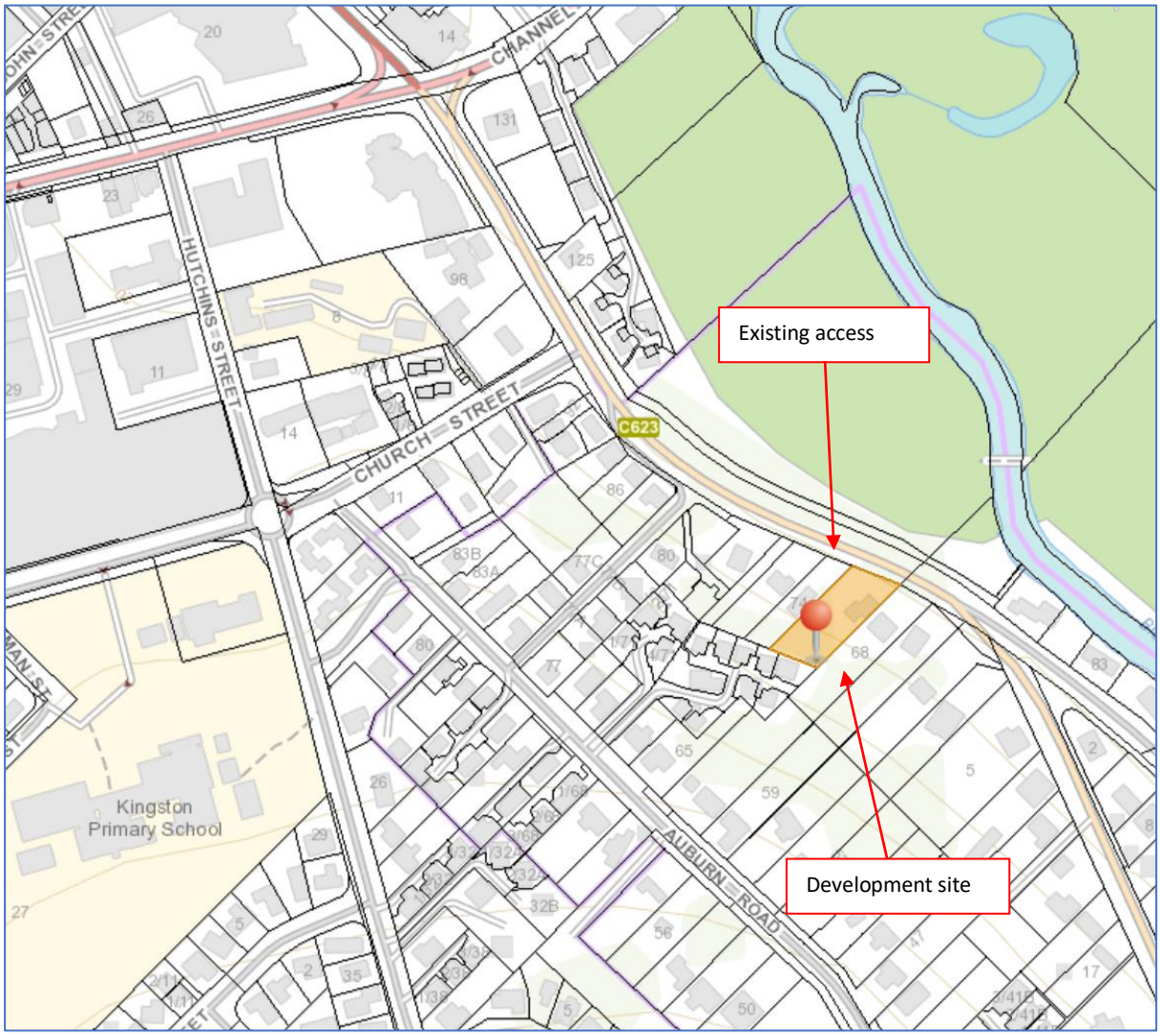
2. Site Description

The development site is located at 70 Beach Road, Kingston, and is situated on a steep embankment. An existing residential dwelling occupies the site, with an access to a shared driveway with the adjacent property at 74 Beach Road to Beach Road .

The site is situated within an established urban residential area along the southern side of Beach Road, with the Kingston Beach Golf Course located on the northern side.

The site is located south of the Channel Highway intersection, with the nearest arterial roads being the Southern Outlet and the Huon Highway. The site is within walking distance to the Kingston shopping precinct.

Diagram 2.0 – Extract from the LIST Land Information Database



3. Development proposal

The development proposal is for the construction of three three-bedroom townhouses, with the existing dwelling and access to be retained. For the purpose of this assessment the new townhouses and existing dwelling will be referred to as units.

All of the units will be supported with two on-site parking spaces, with enclosed garages for the new units and uncovered spaces for the existing unit and two on-site visitor parking spaces.

The existing shared driveway will be retained as part of the development site. The driveway operates within the road reserve and also serves an existing residential property at 74 Beach Road, which is occupied by a standalone dwelling.

Diagram 3.0 – Development proposal

4. Trip generation by this development

A trip in this report is defined as a one-way vehicular movement from one point to another, excluding the return journey. Therefore, a return trip to and from a land use is counted as two trips.

To determine the number of trips likely to be generated by this development, reference has been taken from the RTA Guide to Traffic Generating Developments (RTA Guide), section 3.3 residential housing.

This Guide recommends for low density residential dwellings in regional areas (RTA update 4a - August 2013):

- Daily vehicle trips of 7.4 per dwelling and
- Weekday peak trips of 0.78 per dwelling

The Guide recommends for medium density residential units, larger units (three or more bedrooms):

- Daily vehicle trips of 6.5 per unit
- Weekday peak trips of 0.65 per unit

From the RTA Guide the three units are predicted to generate an additional 20 daily trips, with two of these trips likely to occur during the morning and evening peak periods. The existing unit and adjacent property are already generating 15 daily trips, with two of these trips occurring during the morning and evening peak periods.

Table 4.0 – Predicted number of trips to be generated from the units

Dwelling Type	RTA Generation rate	Number of units/dwellings	Daily trips	Peak trips
3-bedroom unit	6.5 per day 0.65 per peak	3	20	2
New trips		**3**	**20**	**2**
Existing unit	7.4 per day 0.78 per peak	1	7.4	1
Dwelling at 74		1	7.4	1
Existing trips		**2**	**15**	**2**

5. Existing traffic conditions

Beach Road is managed by the Kingborough Council, with all vehicle movements generated by the development to use Beach Road. This road connects Kingston Beach and Blackmans Bay residential areas with Kingston, the Huon Highway, and the Southern Outlet, which are the nearest arterial roads.

5.1 Beach Road characteristics

Beach Road runs in an east to west direction, extending westerly from Huon Highway and continuing to Osbourne Esplanade. Within the surrounding road network, Beach Road would operate as a local urban collector road, built to a high standard and capable of carrying significant daily traffic volumes. The urban road standard consists of a sealed carriageway, 4.2 metre wide traffic lanes in each direction, concrete kerb and channelling, 1.5 metre wide concrete footpaths on both sides, accompanied with street lighting. The road alignment is delineated with a solid marked centreline, with sweeping horizontal curves either side of the development site, on a flat vertical grade.

Photograph 5.1A – Road standard of Beach Road west of the development site

Photograph 5.1B - Road standard of Beach Road east of the development site

5.2 Speed limit

Beach Road has a posted 50 km/h speed limit.

5.3 Traffic activity along Beach Road

In assessing the traffic impact from the development, it is important to understand the level of traffic flow on Beach Road passing the development site.

The Department of State Growth (Department) maintains all of the State traffic signalised sites and has provided traffic data recorded at the junction with Roslyn Avenue. This data has been used to determine the peak hour traffic flows operating on Beach Road past the development site.

The data in the table below is extracted from the Department's traffic database and provides directional and two-way traffic flows for the morning and evening weekday peak hour periods. The evening period is generating slightly higher two-way traffic flows of 1,525 compared with the morning flow of 1,304. The heaviest directional traffic flow is in the evening peak hour, with 1,092 vehicles recorded travelling east towards Kingston Beach.

Table 5.3 – Extract of peak hour traffic flows on Beach Road

Peak hour	Eastbound (towards Kingston Beach)	Westbound (towards Kingston)	Total
8:00am – 9:00am	594	710	1,304
4:00pm – 5:00pm	1,092	433	1,525

This data indicates moderate to busy traffic flows along Beach Road during the weekday peak periods. Either side of the development site there are traffic signals operating, at the intersection of Beach Road and Channel Highway, and Beach Road and Roslyn Avenue. When the traffic signals change phases (the green light changes to a different traffic direction), it creates gaps in the traffic stream passing the development site; these regular interruptions in traffic flows provide gaps for vehicles downstream of the signals, allowing residential vehicles to enter and leave Beach Road more efficiently.

5.4 Vehicular access to adjacent property

Access to 74 Beach Road at the top of the shared driveway, intersects at approximately ninety degrees, as shown in the following photograph.

Photograph 5.4 – Access to property 74 (view from shared driveway)

5.5 Traffic safety along Beach Road

The Department maintains a database of reported road crashes, a check of this database for the last five years found no reported crashes along Beach Road, between Auburn Road and Roslyn Avenue.

This indicates that motorists are not having any difficulty with the road layout or entering and leaving the residential properties, even though the traffic flow is busy.

6. Impact from traffic generated by this development

As determined by section 4 of this report, the development site is estimated to generate up to an additional 20 daily trips, with two of these trips likely to occur during the morning and evening peak periods. The existing shared driveway is already generating 15 daily trips, with two of these trips occurring during the morning and evening peak periods.

It is common with residential properties, that 90 percent of the trips leave the site during the morning peak, with the opposite occurring in the evening peak. Based on the surrounding road network, it is expected that vehicles will turn left out during the morning peak, and right in during the evening peak.

6.1 Lane capacity and level of service on Beach Road

In evaluating the impact of additional vehicle movements on Beach Road users, it is important to understand the Level of Service (LOS) motorists are currently receiving. The RTA Guide provides guidance for urban roads, based on peak hour directional traffic flows.

Extract 6.1 – RTA Guide for level of service for urban traffic lanes

Table 4.4
Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

From the traffic flows obtained from the Department's traffic database, the level of service along Beach Road can be quantified, based on peak hour directional lane flows.

During the morning peak hour, the eastbound lane is operating at level of service LOS C, with the westbound lane operating at LOS D. While in the evening peak hour, the eastbound lane is operating at LOS E, and the westbound lane is operating at LOS C.

Level of service is a qualitative assessment of the traffic conditions that considers speed, volume of traffic, delays, and freedom to manoeuvre, with six levels of service. LOS C describes the traffic flow is stable, with most drivers restricted to some extent in their freedom to select their desired speed and manoeuvre within the traffic stream, and the level of comfort and convenience is declining. While LOS E means traffic volumes are nearing the lane capacity, there is no freedom to select desired speeds or manoeuvre within the traffic stream, and minor disturbances within the traffic stream have the potential to cause traffic-jams.

Although the development will intensify the directional traffic flow by an additional two vehicle movements, the level of service for existing users will not deteriorate. The table below compares the existing traffic flows and level of service, and the future predicted traffic flows when the development is operating.

This data demonstrates that while the road is busy, additional traffic movements will not cause any deterioration in traffic performance, with the predicted increase in directional traffic flow being less than one percent.

Table 6.1 – Level of service for Beach Road users

Beach Road	Existing traffic flows				With development traffic			
	Morning		Evening		Morning		Evening	
	East	West	East	West	East	West	East	West
Directional flows	594	710	1,092	433	594	712	1,094	433
Level of Service	C	D	E	C	C	D	E	C

While traffic lanes along Beach Road are busy during the weekday peak periods, there are adequate gaps in the traffic stream generated by the downstream traffic signals. This allows for vehicles to enter and leave Beach Road in a safe and efficient manner, without causing adverse impact to other users. This is reinforced by no reported road crashes occurring along this section of Beach Road involving vehicles accessing residential properties.

7. Access arrangement

7.1 Existing vehicular access with Beach Road

The development site has an existing 10.3 metre wide concrete crossover, 3.8 metre wide shared driveway, with a vertical incline of 21 percent, retaining wall and safety barrier.

The wide concrete crossover driveway is required as the shared driveway intersects Beach Road at an acute angle. Overall, the shared driveway is considered fit-for-purpose, having consideration to the topography and constraints.

Photograph 7.1 – Existing vehicular access with Beach Road

7.2 Sight distance at the existing vehicular driveway access

Safe Intersection Sight Distance (SISD) is the optimum distance to enable a vehicle leaving the development site, to see approaching vehicles, and then have sufficient time to enter Beach Road without impacting other vehicles, meaning that vehicles do not need to slow.

Planning scheme table E5.1 specifies the minimum required sight distance for different speed environments. For a 50 km/h speed environment, the minimum required sight distance is 80 metres.

Available sight distance was measured on-site, based on a driver positioned 1.05 metres above the driveway surface, with an approaching vehicle being 1.2 metres high, with sight distance 80 metres to the right and in excess of 100 metres to the left.

In both directions the available sight distance meets or exceeds the SISD for the prevailing operating speed of approaching vehicles, with vehicles able to leave the development site in a safe and efficient manner, without impacting other road users. The available sight distance is shown in the following two photographs.

Photograph 7.2A – Available sight distance to the left (exceeds 100 metres)

Photograph 7.2B – Available sight distance to the right (80 metres)

7.3 Creating a safe and efficient access to the development site

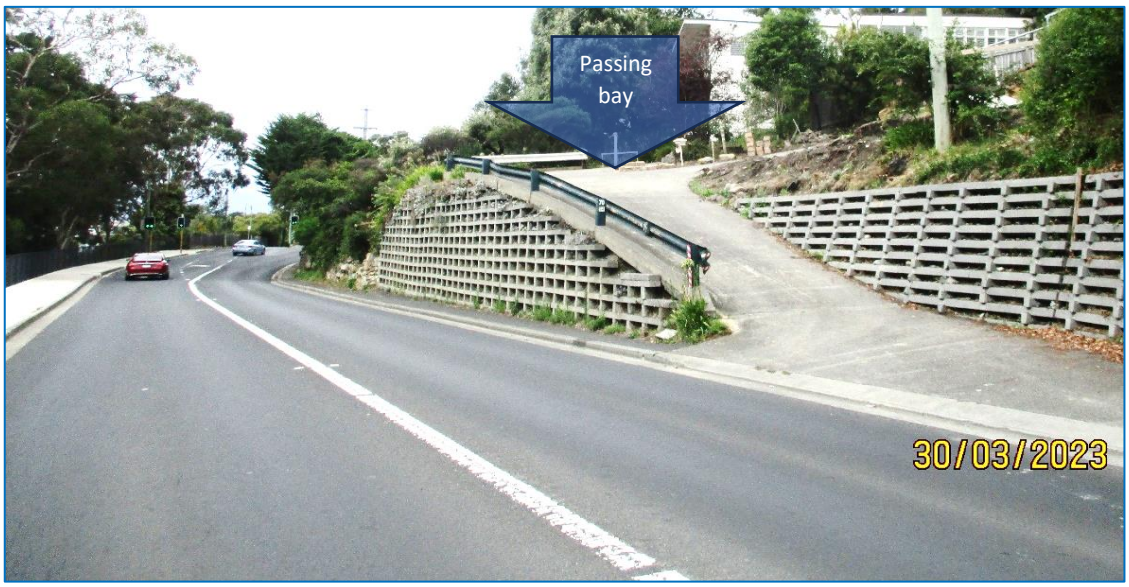
While the width of the existing driveway between Beach Road and the top of the driveway, do not allow for two-way traffic flow, a passing bay will be established at the top of the driveway with suitable sight lines to Beach Road traffic lanes.

Based on the surrounding facilities and location of the nearest arterial roads, it is expected all vehicles will enter the driveway from turning right off Beach Road. This is reinforced by the acute intersecting angle of the driveway, making it difficult for a vehicle turning left into the driveway from the Kingston Beach direction.

The driver of a vehicle entering the driveway from Beach Road will have unrestricted visibility of the passing bay at the top of the driveway, allowing the vehicle to enter, to avoid conflict with an opposing vehicle. Conversely, drivers leaving the development site and adjacent property, will be able to see if another vehicle is using the access, or waiting to turn right into the driveway.

This passing bay at the top of the driveway is expected to provide safe and efficient access to the development site and the adjacent property. The number of vehicle movements generated by these two properties (including the three townhouses) is predicted to be low, with a maximum of four vehicles per hour. During the weekday peak hour periods, vehicles using the driveway are expected to be directional, leaving in the morning and returning in the evening. Overall, the likelihood of opposing vehicles using the driveway at the same time is considered very low.

Photograph 7.3A – View for motorist approaching development



Photograph 7.3B - View from the passing bay for motorist leaving the development

8. Internal layout and parking spaces

8.1 Standard of the internal driveway extension

As noted in item 7.1 the existing driveway is considered fit for purpose. The driveway will need to be extended, as the new units will be located behind the existing unit.

With the site being constrained, this section of driveway will be a minimum three metres wide and continue to support one traffic lane, supported with passing bays located at the front of each of the double enclosed garages. With the driveway alignment being straight, drivers will have adequate visibility between the passing bays.

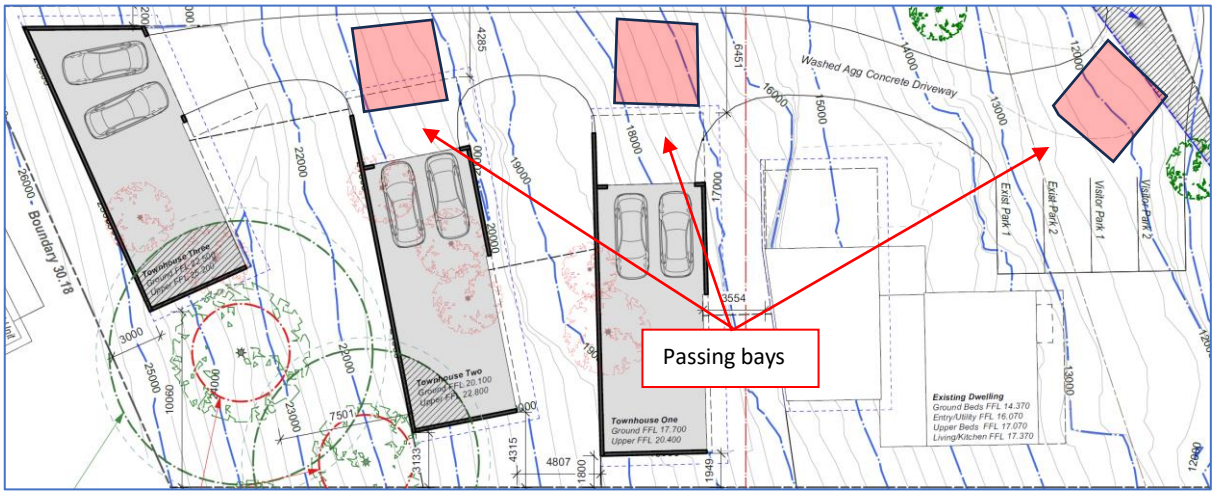
The driveway will have a hard-wearing concrete surface, with kerbing along one side to direct surface water to an approved stormwater drainage system. Transverse catch drains at regular intervals will be used to catch surface water and prevent the surface water from flowing down the driveway to Beach Road.

8.2 Passing bays

As the existing driveway operates within the road reserve, a passing bay will be provided at the top of the driveway within the development site, in the nearest and most practicable location.

Passing bays within the driveway extension, will have sufficient width to allow for efficient passing of opposing vehicles and be within 30 metres of each other.

Diagram 8.2 – Location of passing bays



8.3 Number of parking spaces

In total the development site will provide 10 on-site car parking spaces, with each of the three new units supported with a double enclosed garage, while the existing unit will have two dedicated uncovered parking spaces located adjacent to the unit. Two dedicated visitor parking spaces will be located adjacent to the existing unit.

8.4 Dimensions of parking spaces

The development site is located on the side of a steep embankment generating a constrained site, the parking spaces will be designed to comply with the Australian Standard 2890.1:2004 (the Standard), as user class 1A, suitable for residential or domestic use.

Double enclosed garages for the new units will be designed to comply with section 5.4 and figure 5.4 of the Standard, with the garage openings to be 4.8 metres wide, with a minimum manoeuvring area behind the garages to be seven metres.

Uncovered spaces for the unit and the visitor parking space, will be designed to comply with the Standard user class 1A for domestic and residential users. Each space will measure 2.4 metres wide, 5.4 metres long, with a minimum manoeuvring area of 5.8 metres, be delineated with pavement markings and supported with wheel stops.

Any parking deck or driveway, where the surface is greater than 600 millimetres above the ground surface, will be provided with a suitable safety barrier.

8.5 Gradient of parking spaces

The parking spaces will have grades that complies with Section 2.4.6 of the Standard and shall not exceed five percent.

8.6 Gradient of the driveway

Civil plans have been prepared by Aldanmark Consulting Engineers. The vertical design incorporates frequent grade changes along the driveway extension, to balance the existing steep land topography, and providing suitable grades at the driveway access to the new units.

The Standard provides guidance of vertical grades for a domestic and residential driveway, with the standard indicating a domestic driveway is a property comprising three or less domestic units. Assuming the existing unit is serviced by the existing driveway, with the proposed driveway extension only serving the new three townhouses, it would be appropriate to consider the driveway extension under the domestic gradient requirements. The design of a domestic driveway is specified in section 2.6 of the Standard, indicating the maximum gradient is 25 percent. However, the Standard notes that limiting the maximum gradient to 25 percent in hilly residential locations may not be practicable.

As discussed, the grades along the driveway change frequently, and there are a number of sections where the gradient exceeds 20 percent, with a maximum grade of 25.8 percent. The driveway will exceed 25 percent for two short sections, with the first section having a grade of 25.4 percent for 10 metres, the second section having the maximum grade of 25.8 percent for three metres.

The vertical design incorporates vertical curves at locations where there is significant change in grade, with the civil designer advising there will be sufficient ground clearance to ensure vehicles can negotiate the driveway without scraping their undersides.

8.7 Gradients on driveway at turning areas

Due to the steep slope of the development site, the extension of the driveway will require relatively steep vertical grades. The design incorporates the steeper gradients occurring outside of the turning areas and parking spaces, with the turning areas located on lesser grades.

While the Standard provides guidance on designing residential driveways, in respect to width and vertical grade, and grades of parking spaces, there is no guidance on the turning grade into the parking spaces. While minimising this turning grade is a desirable outcome, this is not always possible with steep sites.

The impact of steep turning grades on the performance of vehicles is best considered by examining existing situations. An example that demonstrates that light vehicles accessing parking spaces from a steep grade cause no adverse safety or traffic impact, is a residential property in Howrah. The parking spaces are accessed from Myoora Street, where the vertical grade adjacent to the parking spaces exceeds 21 percent, as shown in the photograph below. There are numerous locations where parking spaces are adjacent to steep vertical grades, and users are not experiencing any adverse impact, this includes the Glebe area where parking spaces are located adjacent to roads with 24 percent vertical grade.

Photogrpah 8.7 – Vertical grade of 21 percent adjacent to car parking spaces in Howarh

Along the proposed driveway there will be three locations where ninety degree parking spaces are accessed, the first location is for the existing dwelling and visitor parking spaces, the grade of the driveway adjacent to these spaces is expected to range from 8.8 to 11.1 percent. The second location is adjacent to the parking spaces for unit 1, where the driveway grade is expected to be 3.1 percent. The third location adjacent the parking spaces to unit 2, where the grade is expected to be 3.5 percent.

The grade of the driveway adjacent to the turning areas are considered appropriate, fit-for-purpose for a residential development, acknowledging the driveway will be used by light vehicles, turning at a low operating speed.

8.8 Manoeuvrability of vehicles into and out of the parking spaces

Although the development site is constrained, the design provides sufficient manoeuvring area behind all the car parking spaces to allow for vehicles to enter and leave in an efficient manner, complying with the Standard for user class 1A.

The Standard acknowledges that a residential development generates low vehicle turnover, with users generally prepared to accept some inconvenience when entering and leaving the parking spaces, and where necessary it is acceptable for vehicles to undertake a three point turn.

Autoturn Online software has been used to show the swept path of a B85 vehicle entering and leaving the parking spaces for each unit, as well as the visitor car parking space. The swept paths can be found in Appendix A.

9. Planning scheme

9.1 E5.0 Road and Railway Assets Code

E5.5.1 Existing road accesses and junctions

The development site will increase the use of the existing access with Beach Road by more than 20 percent and will need to be assessed against the performance criteria P3, ensuring the safety and efficiency of the access.

Performance criteria	Assessment
To ensure that the safety and efficiency of roads is not reduced by increased use of existing accesses and junctions:	
a) The increase in traffic caused by the use;	The three new units are predicted to generate an additional 20 daily vehicle movements, with two of these expected to occur during the morning and evening peak periods. The existing unit and adjacent property are already generating 15 daily vehicle movements, with two of these movements occurring during the morning and evening peak periods.
b) The nature of the traffic generated by the use;	The development is expected to generate light vehicles (less than 5.5 metres in length) associated with urban residential living, and this type of vehicle is compatible with existing vehicles using Beach Road.
c) The nature and efficiency of the access or the junction;	The development will use the existing constrained shared vehicular driveway onto Beach Road, that operates as a single traffic lane. Traffic flow along the shared driveway will be enhanced with a passing bay located at the top of the driveway, providing drivers adequate sight lines between opposing vehicles. This assessment predicts a low increase in traffic movements, with a maximum of four vehicles operating within the peak hours, with opposing vehicles using the driveway unlikely. All vehicles will enter and leave the site in a forward-driving direction, and the available sight distance at Beach Road is appropriate for the prevailing operating speed. Overall, the existing driveway access to Beach Road is fit-for-purpose, having consideration to the existing driveway constraints.
d) The nature and category of the road;	Beach Road operates as an urban collector road within the surrounding road network, which has been constructed to a high urban standard, capable of carrying significant traffic volumes.
e) The speed limit and traffic flow of the road;	Beach Road has a posted speed limit of 50 km/h, in recognition of being within an established urban environment. From available traffic data, it is evident that the traffic flow along Beach Road during the morning and evening peak hour periods are busy, but with traffic signals operating at either side of the development site, the changing in signal phases creates gaps in the traffic stream, allowing for vehicles to enter and leave the

	development site in a safe and efficient manner, without adversely impacting other road users. Additional traffic generated by the development will not cause any deterioration in the level of service for existing road users.
f) Any alternative access to a road;	None.
g) The need for the use;	Urban infill in established suburbs is an excellent method to increase the supply of housing, while optimising the current infrastructure and community facilities.
h) Any traffic impact assessment;	An independent traffic assessment found there was no reason for this development not to proceed.
i) Any written advice received from the road authority;	Aware of none.

E5.6.2 Road accesses and junctions

The development site will use the existing access with Beach Road, which complies with the acceptable solution A2.

E5.6.4 Sight distance at accesses, junctions, and level crossings

The existing driveway access onto Beach Road, has sufficient sight distance in both directions for the prevailing operating speed of approaching vehicles, to enable vehicles to enter and leave the development in a safe and efficient manner.

The development meets the acceptable solution under this clause.

9.2 E6.0 Parking and Access Code

E6.6.1 Number of parking spaces

Each unit will have two dedicated on-site car parking spaces, supported with two on-site visitor parking spaces, complying with the acceptable solution.

E6.6.2 Number of accessible parking spaces

The need for accessible parking spaces is not required for a residential development.

E6.6.3 Number of motorcycle parking spaces

The development site is providing 10 on-site car parking spaces and is not required to provide a dedicated motorcycle parking space.

E6.6.4 Number of bicycle parking spaces

Planning scheme table E6.2 specifies a residential use does not require bicycle parking.

E6.7 Development standards

Development standards	Comment
6.7.1 Number of Vehicular Accesses;	The development will operate using the existing vehicular access onto Beach Road, complying with the acceptable solution.
6.7.2 Design of Vehicular Access;	The existing access with Beach Road is shared with the adjacent property 74 Beach Road and is considered fit-for-purpose, having consideration to the driveways existing constraints.
6.7.3 Vehicular Passing Areas Along an Access;	The extension of the driveway will be a single traffic lane, supported with passing bays to provide efficient traffic flow and allow opposing vehicles to pass. Traffic flow on the existing driveway will be enhanced with a passing bay located at the top of the driveway at the commencement of the development site, with adequate sight lines for opposing drivers. Overall, the driveway complies with the intent of the acceptable solution.
6.7.4 On-site Turning;	Sufficient manoeuvring space will be provided on-site allowing vehicles to enter and exit in a forward-facing direction.
6.7.5 Layout of Parking Areas;	The layout of the car parking areas and driveway providing access to the parking spaces will comply with the Australian Standards 2890.1:2004, with the gradient of the driveway extension complying with the domestic driveway requirements. Overall, vehicles will be able to enter and leave the parking spaces in a safe and efficient manner, complying with the acceptable solution.
6.7.6 Surface Treatment of Parking Areas;	The driveway and parking areas will be constructed with a durable all-weather concrete surface, supported with kerbing to direct surface water to approved stormwater system, with transverse catch drains preventing surface water from flowing down the driveway onto Beach Road. The design complies with the acceptable solution.
6.7.7 Lighting of Parking Areas;	Lighting of the development site driveway is expected to meet the acceptable solution.
6.7.8 Landscaping of Parking Areas;	Landscaping will be provided in the development site.

Development standards	Comment
6.7.9 Design of Motorcycle Parking Areas;	The development is not required to provide any motorcycle parking spaces.
6.7.10 Design of Bicycle Parking Facilities;	Not applicable for a residential development.
6.7.11 Bicycle End of Trip Facilities;	Not applicable for a residential development.
6.7.12 Siting of Car Parking;	Not applicable for a residential development.
6.7.13 Facilities for Commercial Vehicles;	Not applicable for a residential development.
6.7.14 Access to a Road;	The development has an existing vehicular access with Beach Road that will be retained.

10. Conclusion

The proposed development at 70 Beach Road will provide additional urban residential units, compatible with the surrounding land-use, and the traffic generated from these new units are expected to be residential in nature.

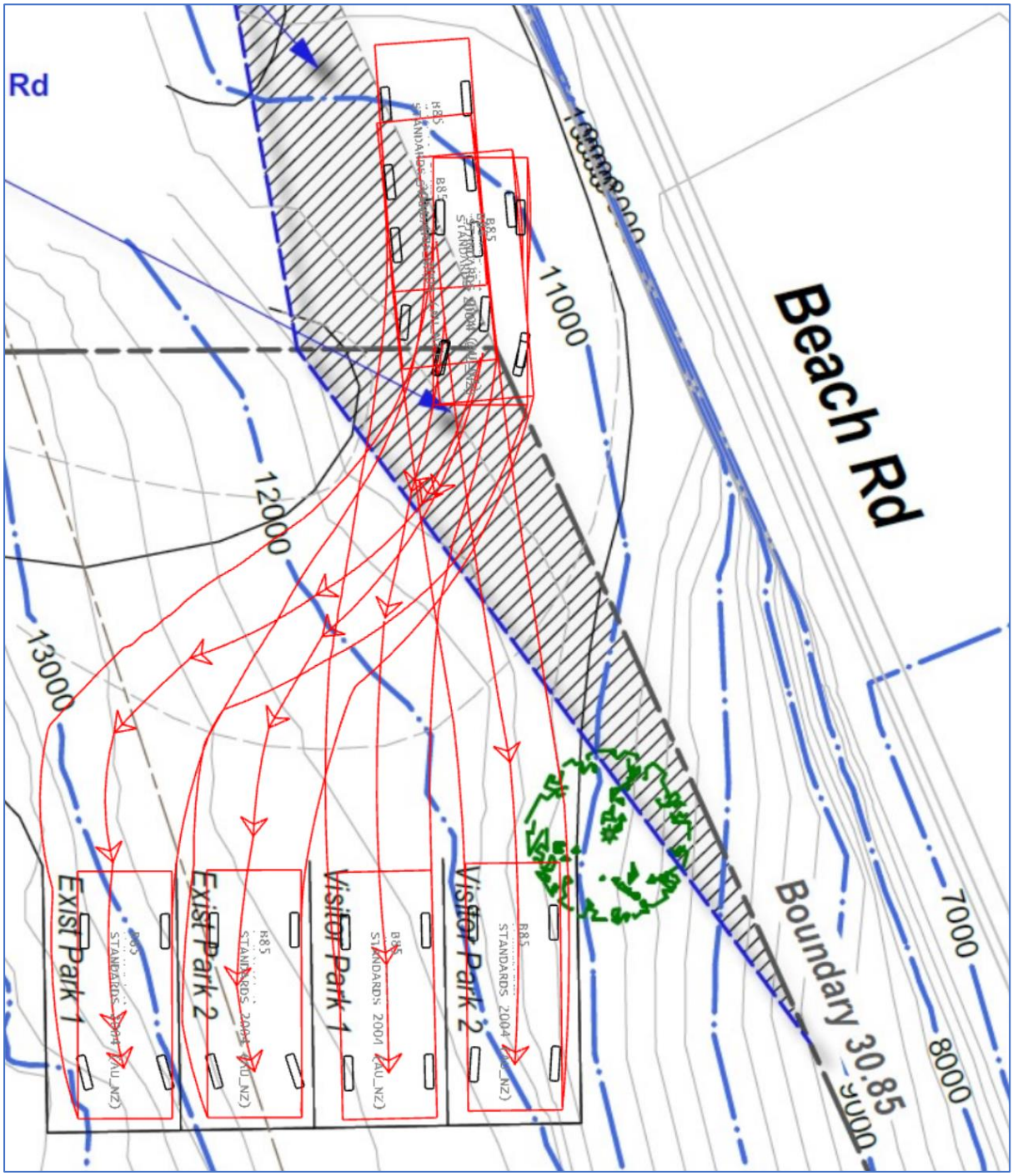
This assessment found from a traffic engineering and road safety perspective, additional traffic generated from the development site is not expected to cause any adverse safety, or traffic efficiency issues, as:

- Traffic generated by the development is considered to be low and there is sufficient capacity within the current road network to absorb these movements, without causing a deterioration in the level of traffic performance.
- The existing driveway access onto Beach Road has sufficient sight distance, ensuring vehicles can enter and leave the site in a safe and efficient manner, and in a forward-driving direction,
- The existing driveway although constrained, is considered fit-for-purpose, and traffic flow will be enhanced by a passing bay located at the top of the driveway, providing adequate sight distance for opposing drivers.
- A sufficient number of on-site parking spaces will be provided to meet the reasonable demand and minimise any parking overflow.

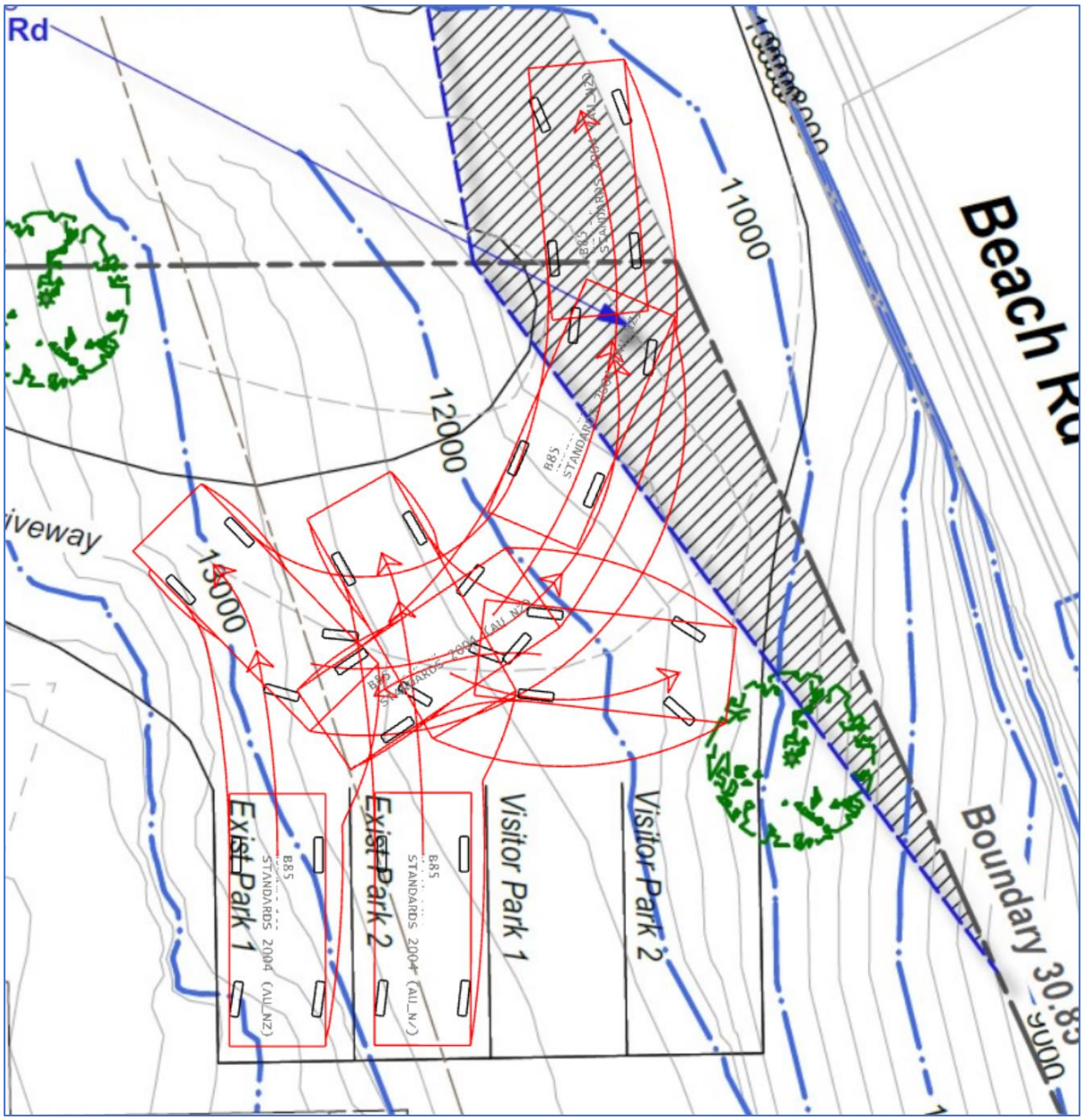
This Traffic Impact Assessment found no reason for this development not to proceed.

11. Appendix A – Swept paths

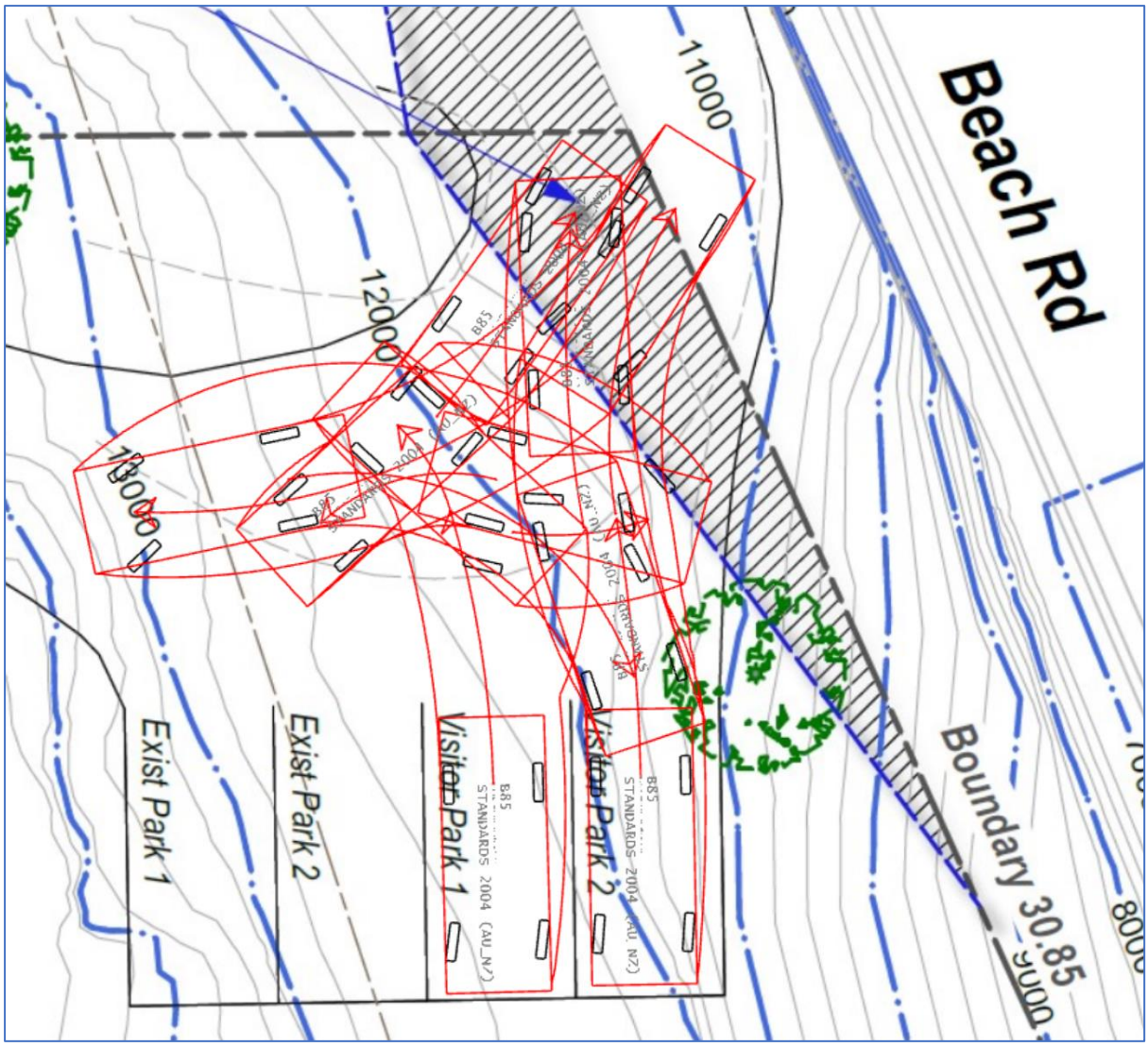
Swept path – B85 vehicle entering the parking spaces for the existing unit and visitor



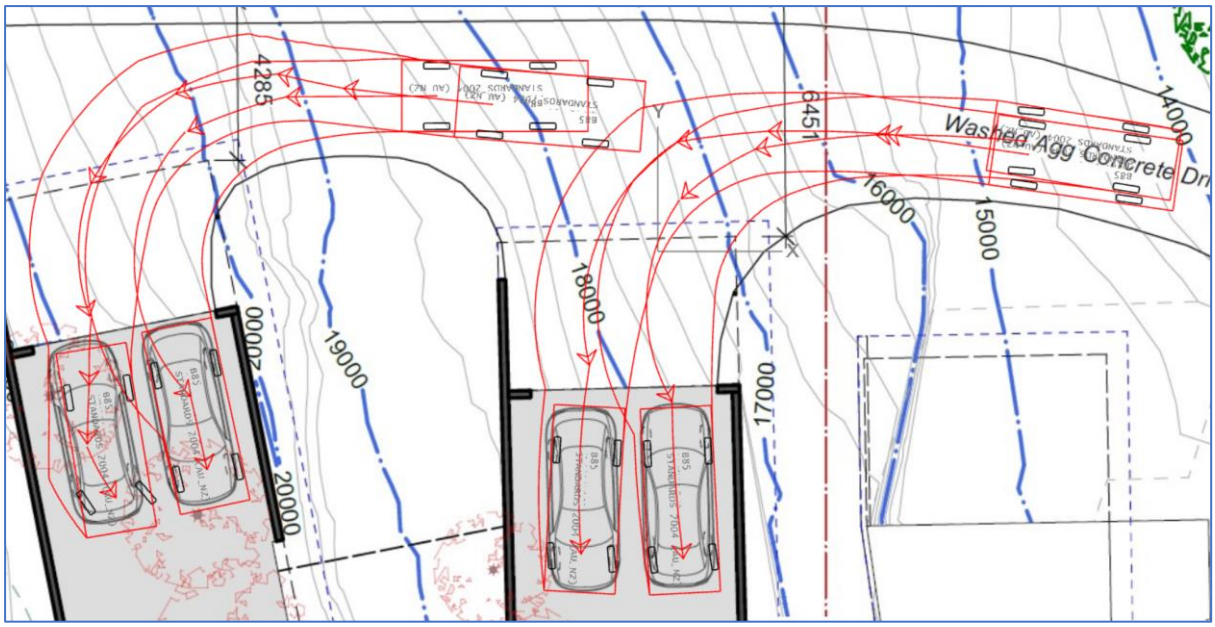
Swept path – B85 vehicle leaving the parking spaces for the existing unit



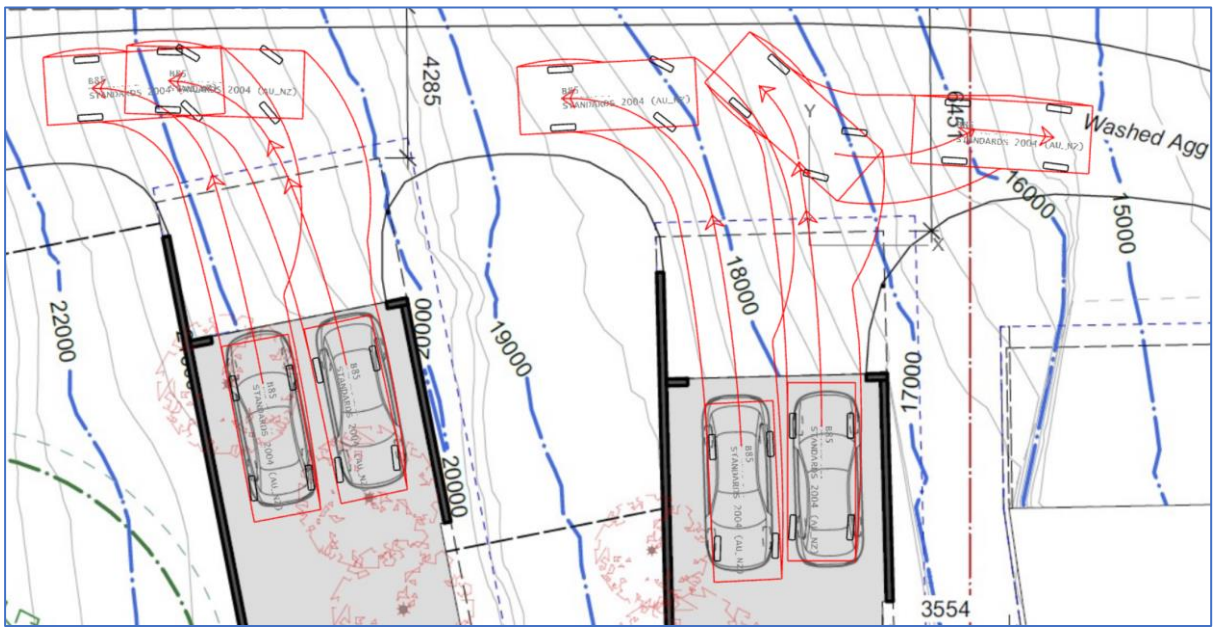
Swept path – B85 vehicle leaving the parking spaces for the visitor spaces



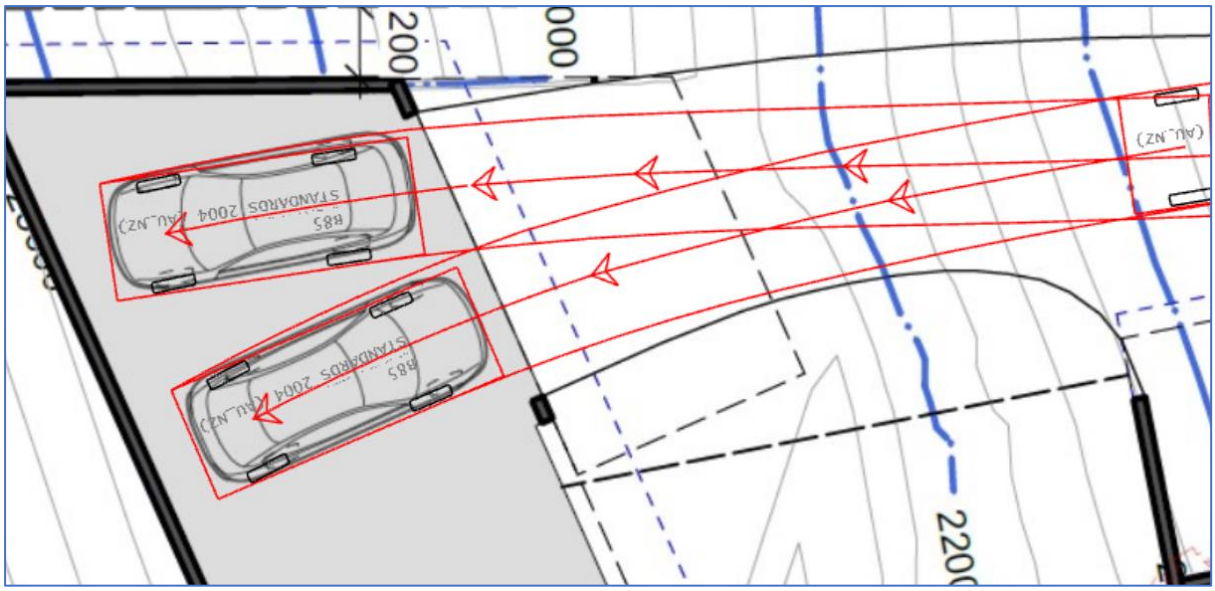
Swept path – B85 vehicle entering the parking spaces for units 1 and 2



Swept path – B85 vehicle leaving the parking spaces for units 1 and 2



Swept path - B85 vehicle entering the parking spaces for unit 3



Swept path - B85 vehicle leaving the parking spaces for unit 3