



Planning | Surveying | Engineering | Environmental

A25368 – 22 & 22A Summit Drive, Mount Albert

RFI Response

Document Control

CKL Reference	A25368
Filename:	A25368-TR-ITA-RFI Response
Site Location:	22 Summit Drive, Mount Albert
Author:	Chloë Davison Senior Transportation Engineer 
Reviewed and Authorised By:	Judith Matkinson Director 
Revision No.	2
Document Status:	Approved
Date:	15 January 2026

Contents

1	Introduction	1
2	S92 Response	1
2.1	Additional requests from Council on 13 January 2026	16
3	Conclusion	18

1 Introduction

CKL has been engaged by A&Y Contractor Limited to provide a transportation assessment for a proposed residential development of two houses, one on each existing property, located at 22 & 22A Summit Drive, Mount Albert (the Site).

A subdivision consent under Auckland Council reference R/SUB/2016/743 was granted on 12 May 2016 and the separate titles were created in July 2024 after completion of physical works and due process for that subdivision consent.

A resource consent was lodged in May 2025 under Auckland Council reference LUC60456483 and a Section 92 request for further information (RFI) was received on 16 October 2025 which pertain to the following transport engineering matters:

- Driveway gradients, sight distance and intervisibility between exiting drivers and pedestrians.
- Operation of the proposed garages, including a request for vehicle tracking analysis of the proposed garages.
- Dimensions of the proposed car parking within the garages, including vertical clearances.
- Requirements under Plan Change 79 (PC79).

CKL has been engaged to respond to the RFI queries and was not involved in the original application.

Since the first RFI request in May 2025, a subsequent transport request was received from Council on the 13 January 2026 pertaining to the location of the vehicle crossing being within 10.0m of an intersection which infringes E27.6.4.1(3) and further consideration to the requirements under PC79. These matters have also been included in this report for completeness.

The Site is zoned as ‘Residential: Single House Zone’ and is subject to a number of overlays. Summit Drive is not classified as an arterial road under the Unitary Plan maps and provides connection between the parking area to Mount Albert summit car park (Ōwairaka) and Mount Albert Road. The surrounding area is residential in nature.

These and other matters will be addressed in the detail of the report that follows. By way of summary, it is concluded that the proposed development can be established such that there will be less than minor effects to the function, capacity and safety of the surrounding transportation network.

The transport-related requests from Council are provided in italics, with numbering used to match that within the request, and a response is provided below each item.

2 S92 Response

Item 10. Please provide appropriate long sections to verify compliance with the following Auckland Unitary Plan (UP) standards:

- *E27.6.3.6 – Formation and Gradient;*
- *E27.6.4.4(2) – Vehicle Access Transition Gradient; and*
- *E27.6.4.4(3) – Vehicle Access Platform*

The shared driveway was consented and constructed under R/SUB/2016/743 and complied with the standards that applied at the time consent was granted. It is legally established to serve two properties and forms part of the existing environment. No physical changes are proposed to the recently constructed shared access and the proposed scale and intensity is consistent with what was anticipated when subdivision was approved. Accordingly, no formal assessment against any new standards, and no additional reasons for consent under those standards, are required as part of this proposal.

Notwithstanding this, an overview of the existing shared driveway is provided below for Council’s information. The long section provided with the subdivision application (R/SUB/2016/743) is shown in Figure 1. The application documentation is attached as Appendix A, for reference.

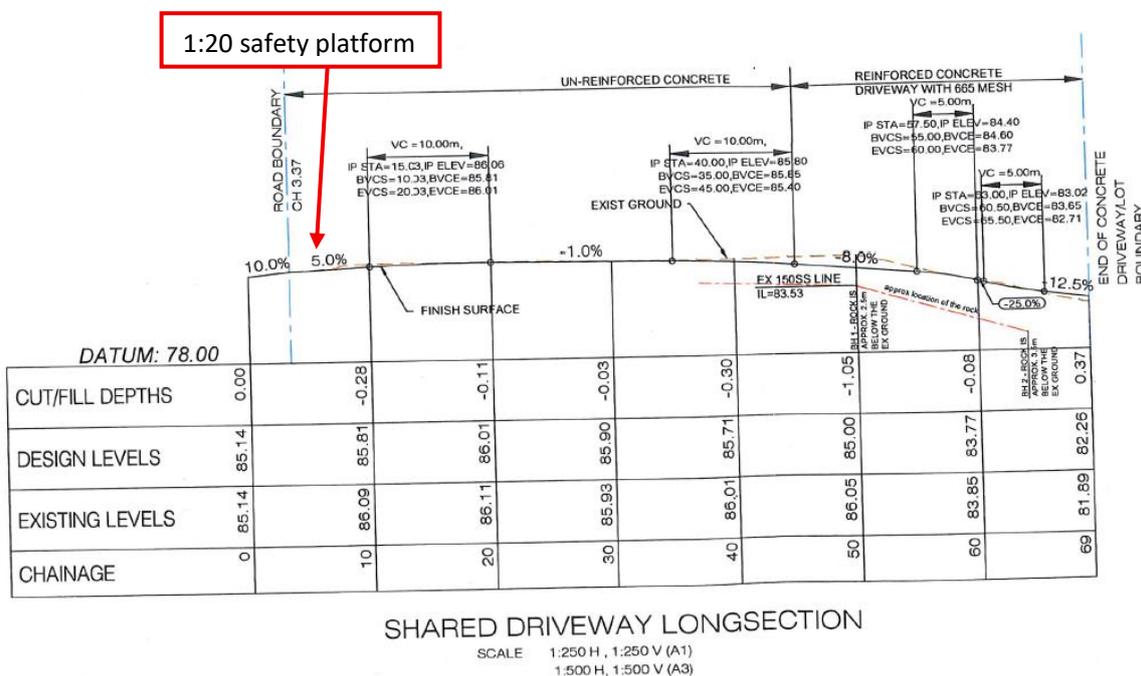


FIGURE 1: LONG SECTION (R/SUB/2016/743)

The long section shows gradient, transition sections and a 1:20 access platform. The maximum gradient is -12.5% and as such complies with development control T157 of the Unitary Plan. It is noted that transition sections are not required as the change in gradient is gradual. No grounding or safety issues are expected based on the driveway gradient design.

11. Please demonstrate on the plans the proposed surface gradient for the manoeuvring spaces to demonstrate compliance with standard E27.6.3.6 Formation and Gradient.

In accordance with Standard E27.6.3.6, the gradient for manoeuvring area must not exceed 1 in 8 (12.5%). The maximum manoeuvring gradient for Lot 1 is 5% and the maximum manoeuvring gradient for Lot 2 is 12.5% and as such comply with the Unitary Plan requirements.

Refer to the Anchor drawing RC-104 Rev B dated April 2025 and the red ellipses detailed in Figure 2 and Figure 3.

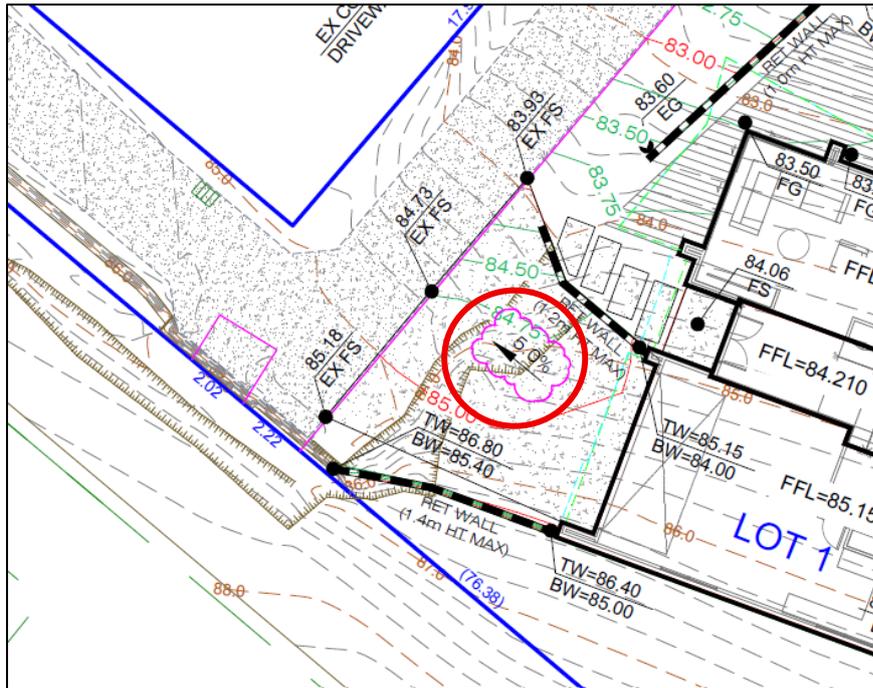


FIGURE 2: LOT 1 MANOEUVRING GRADIENT

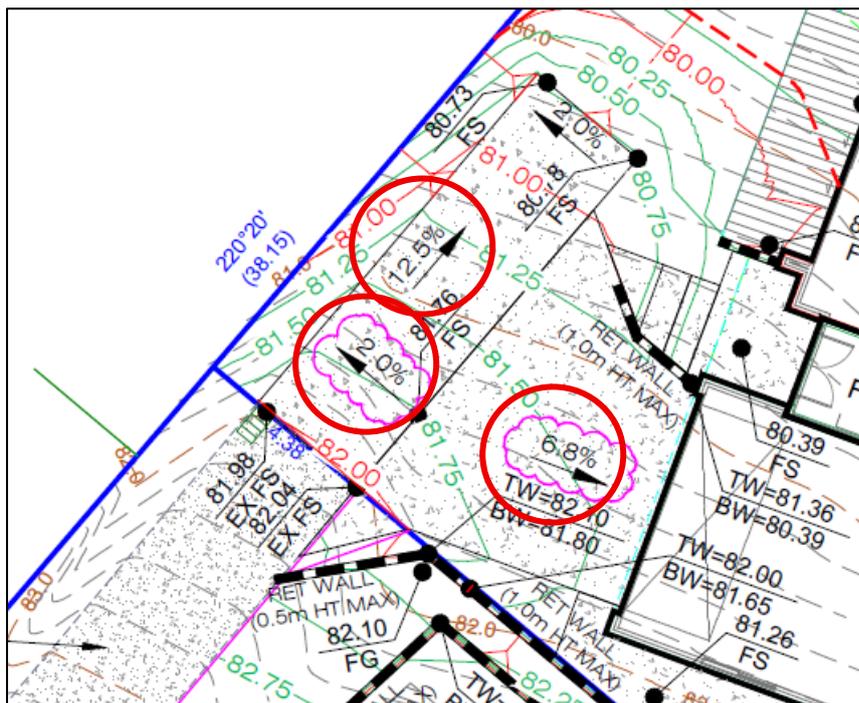


FIGURE 3: LOT 2 MANOEUVRING GRADIENT

12. Please demonstrate on-site vehicle manoeuvring from all proposed parking spaces. Please provide vehicle tracking curves that clearly specify the design vehicle used, the tire path, vehicle body outline, and a 300mm clearance envelope to demonstrate that the vehicles can safely ingress and egress all parking areas.

Vehicle tracking analysis has been undertaken to demonstrate operational feasibility. A B85 vehicle has been used in accordance with Figure E27.6.3.3.1 of the Unitary Plan. A clearance envelope of 300mm around the vehicle body is shown in blue, the vehicle body is shown in red, and the front wheel tracking

line is shown in orange. As requested, the design vehicle profile is shown in Figure 10. In all instances the wheel lines are contained within the driveway although there are some instances where the bonnet of the vehicle will overhang slightly the kerb and low-level planting. Drivers are able to enter and exit the car parking spaces within the garages, turn around, and leave in a forward's facing direction. No safety or operational issues have been identified based on the vehicle tracking analysis.

Vehicle tracking is shown in Figure 4 to Figure 9.

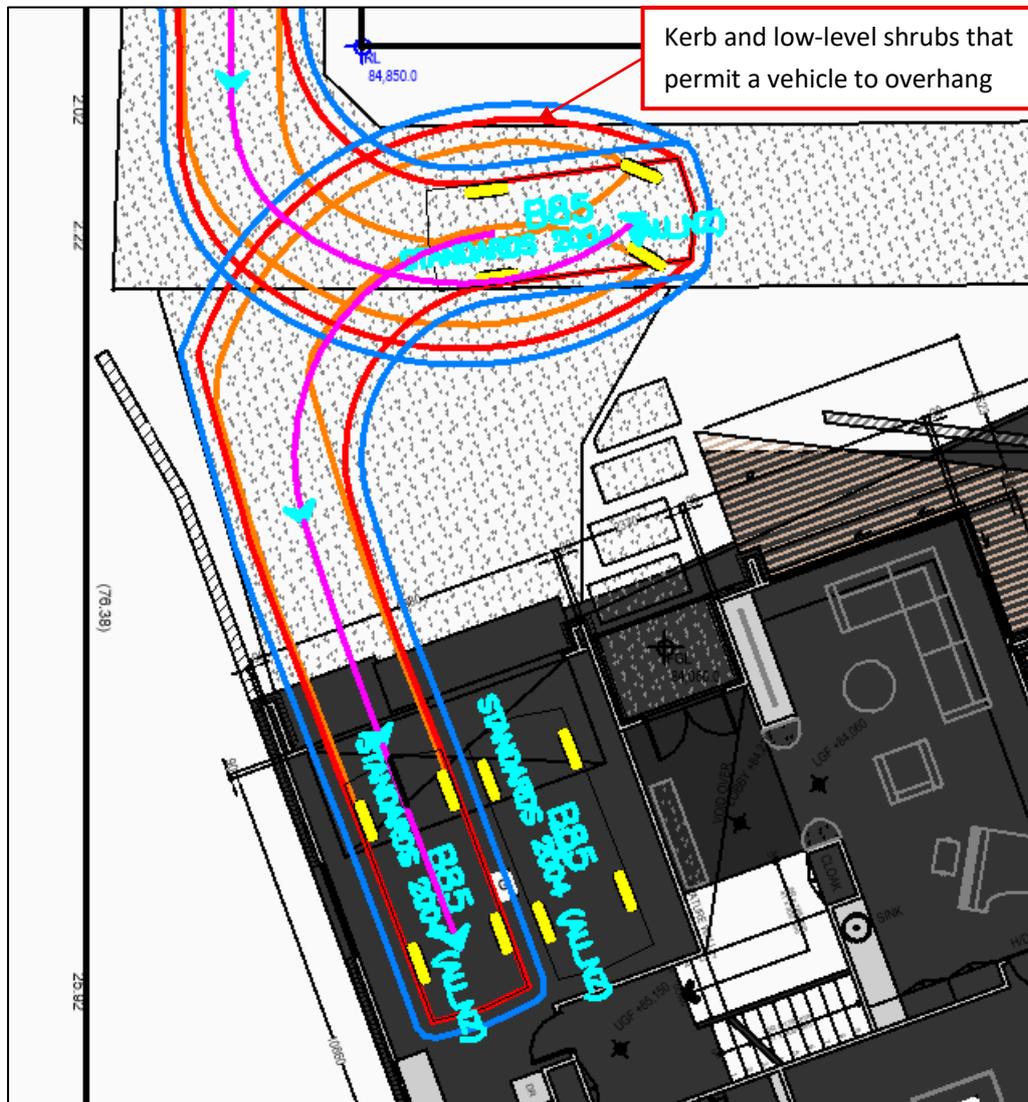


FIGURE 4: LOT 1 ENTRY (WESTERN SPACE)

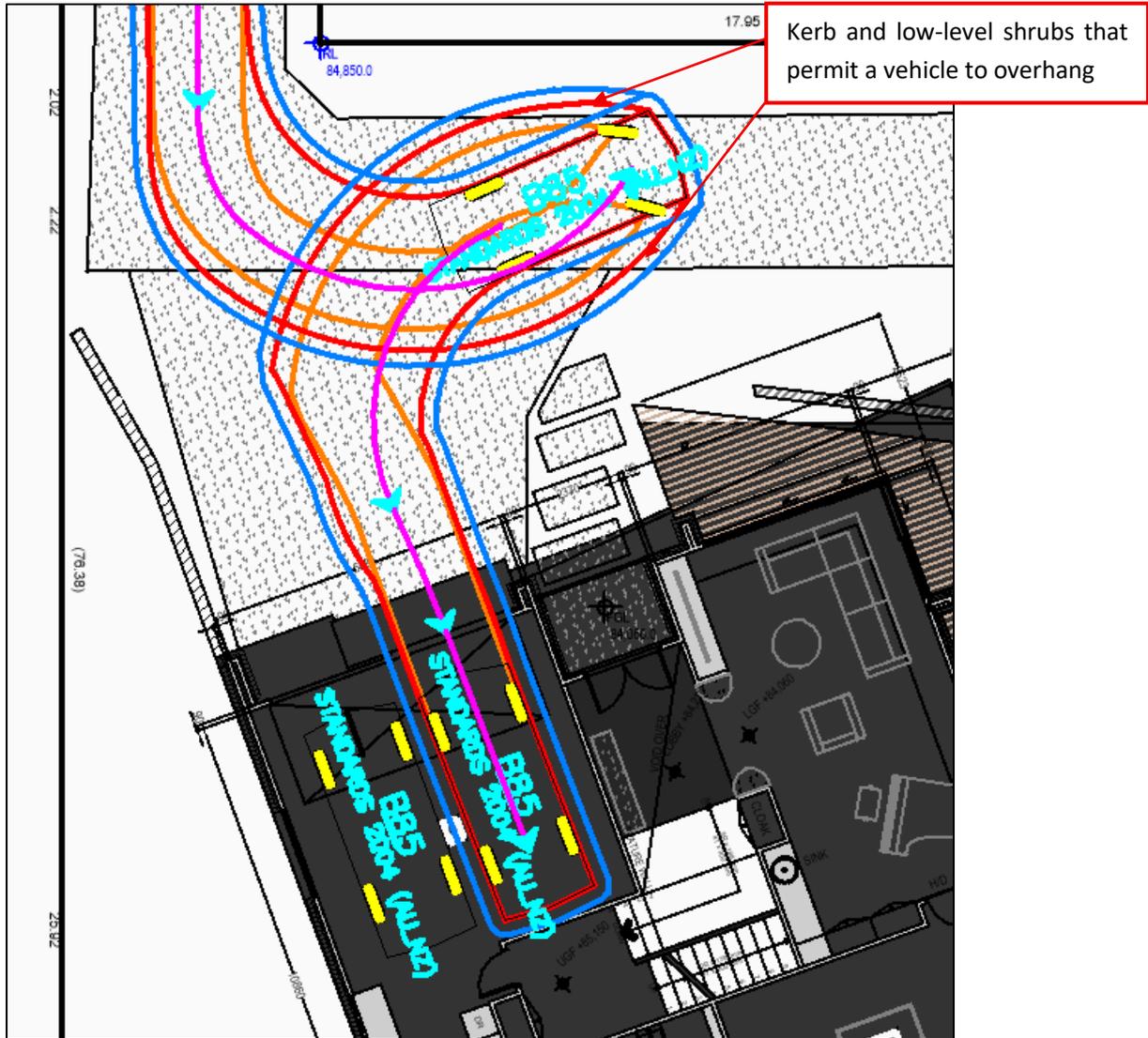


FIGURE 5: LOT 1 ENTRY (EASTERN SPACE)

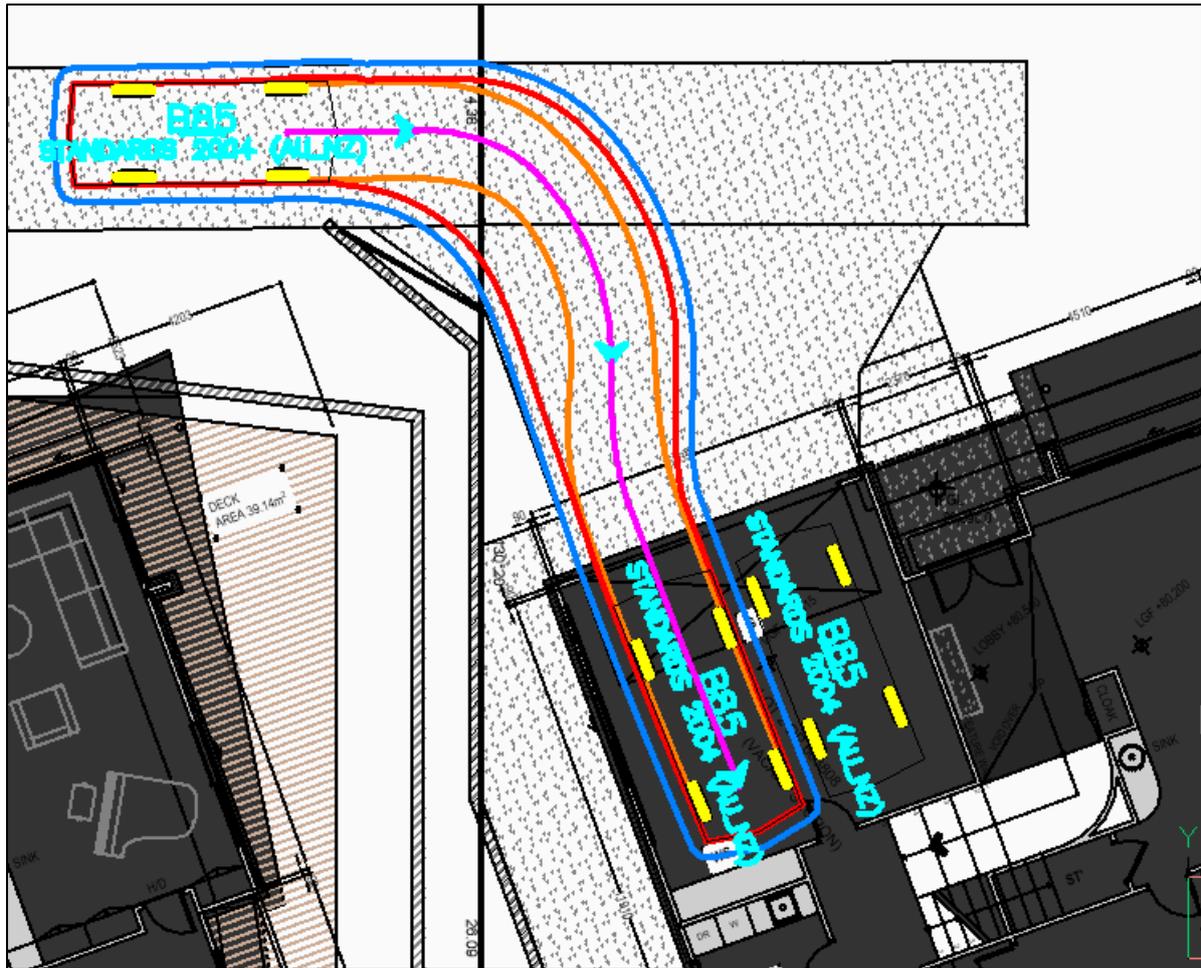


FIGURE 6: LOT 2 ENTRY (WESTERN SPACE)

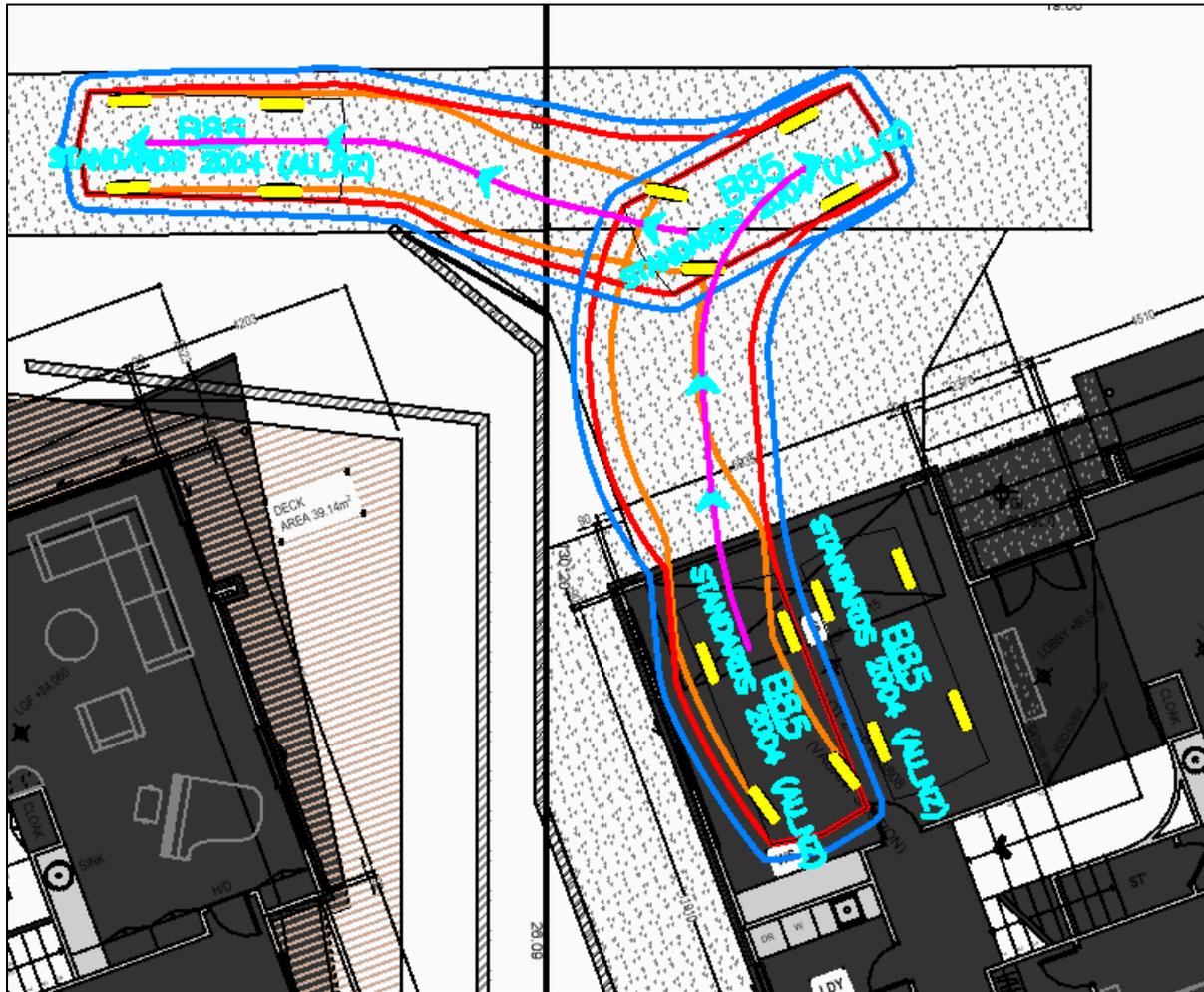


FIGURE 7: LOT 2 EXIT (WESTERN SPACE)

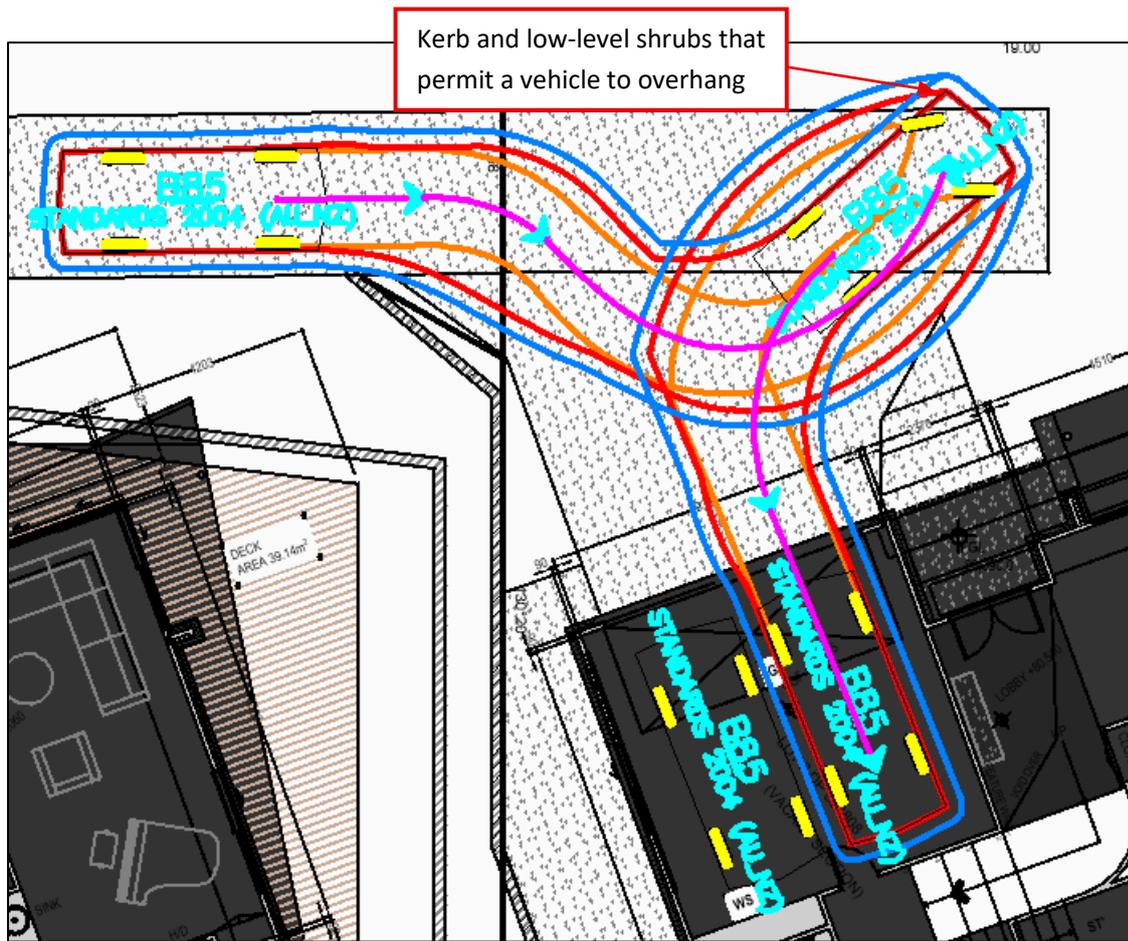


FIGURE 8: LOT 2 ENTRY (EASTERN SPACE)

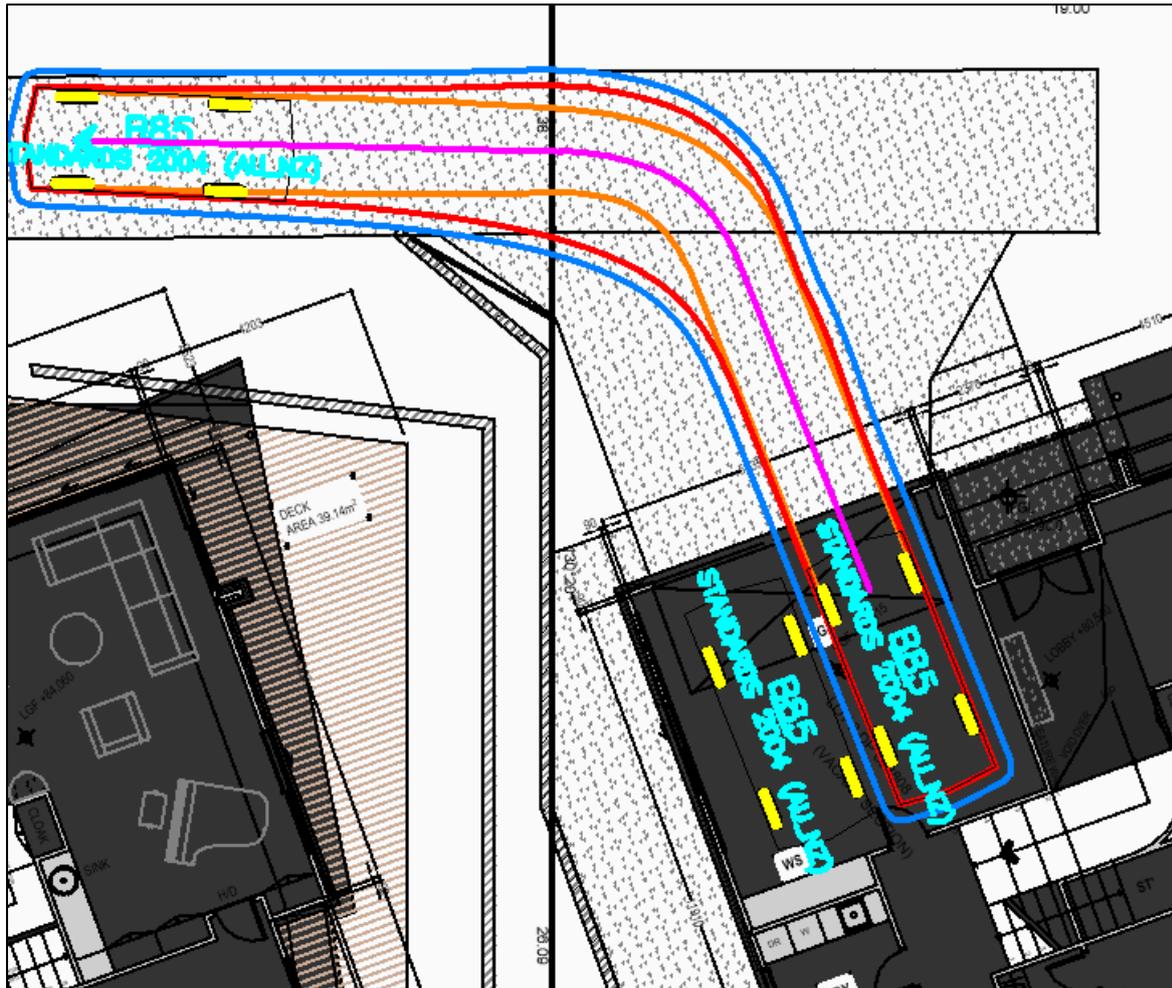


FIGURE 9: LOT 2 EXIT (EASTERN SPACE)

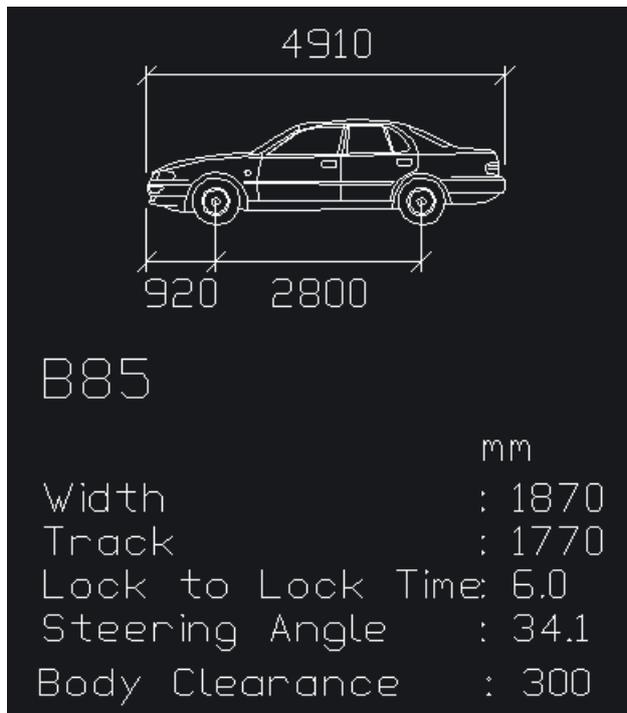


FIGURE 10: B85 PROFILE USED

13. Please clearly show on the plans dimensions for the proposed car parking spaces.

The proposed car parking spaces are located within the garages, with a depth of 5.9 m, a total width of 5.88 m (2.9m per space), and a garage door opening of 4.93 m. The dimensions are shown within the architectural drawings prepared by 10x10 dated November 2025 and shown in Figure 11 and Figure 12.

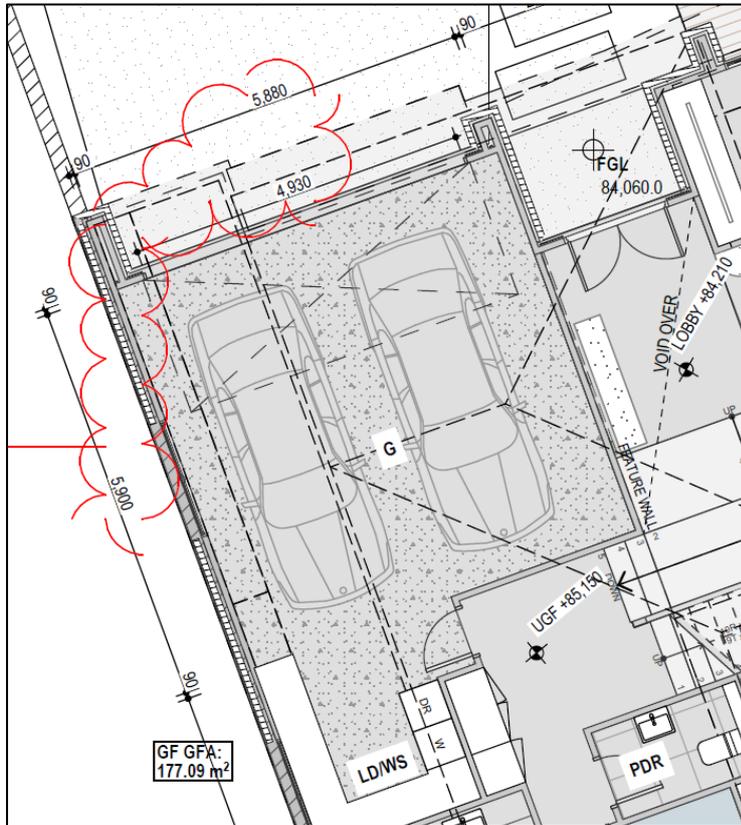


FIGURE 11 - 22 SUMMIT DRIVE - GARAGE DOOR DIMENSIONS

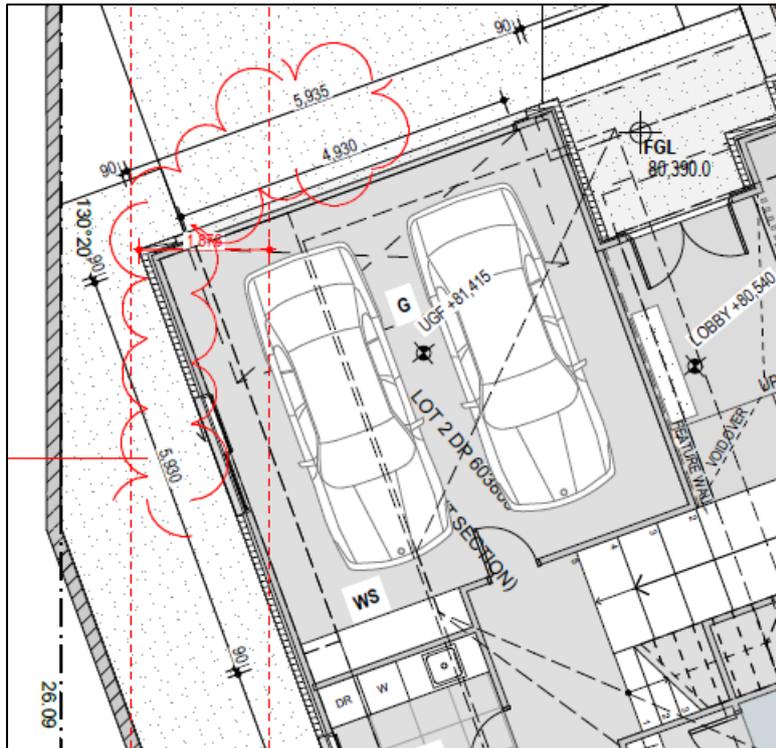


FIGURE 12 - 22A SUMMIT DRIVE - GARAGE DIMENSIONS

The dimensions are considered appropriate to cater for two vehicles within a double garage. It is further noted that the dimensions comply with development control T120 of the Unitary Plan that stipulate that for car parking spaces that are 2.7m wide and 5.0m long, a manoeuvring aisle depth of 5.9m is required. There is in excess of 8.0m manoeuvring aisle available for both 22 and 22A Summit Drive and as such the car parking space dimensions comply with the requirements of the Unitary Plan. The dimensions supported with the vehicle tracking analysis demonstrate that the proposed car parking spaces can operate safely and efficiently.

14. The proposed location of planting and retaining walls shown on the plans may compromise sightlines for both vehicle drivers and pedestrians at or near the access points. This potential obstruction could create a safety hazard, particularly in relation to safe vehicle manoeuvring, pedestrian visibility, and overall site accessibility. Please provide confirmation that the planting will not adversely affect the safe and efficient operation of the vehicle access, pedestrian movement, or any other relevant safety considerations.

Sight distances and pedestrian visibility splays were assessed as part of the R/SUB/2016/743 application and no changes, other than the provision of landscaping are proposed to what has previously been consented and constructed.

The proposed landscape design plans dated 04/06/2025 prepared by Bridget Gilbert Landscape Architecture have been reviewed. There are existing walls on either side of the access and it is proposed as part of the landscape plan to provide a *parsonia heterophylla* trained to the wall on the western side using wires and to provide a *griselinia lucida* hedge between the edge of the sealed driveway and the wall on the eastern side. The walls and the wall heights in context of the existing driveway are shown in Figure 13.



FIGURE 13 EXISTING DRIVEWAY (VIEW FROM SUMMIT DRIVE)

The height of the wall on the western side is approximately 1.4m and the height of the wall on the eastern side is approximately 900mm.

A driver's eye height is 1.1m as per 'Austroads Part 4a Unsignalised and Signalised Intersections' and exiting drivers will be able to see pedestrians taller than 900mm over the eastern wall.

It is therefore recommended that the *griselinia lucida* hedge does not exceed 900mm in order to ensure the available sight distances can be maintained as per the original assessments within the subdivision application. The *parsonia heterophylla* is a New Zealand jasmine and a climbing plant and should also be maintained to ensure that the climber does not encroach over the height of the wall.

Alternatively, the planting could be setback 1.0m from the property boundary, and this would also achieve the same outcome.

On the basis that the one of the recommendations is adopted with respect to landscaping at the entrance to the driveway, it is confirmed that the proposed planting will not adversely affect the safe and efficient operation of the access and pedestrian movement. Council can nominate a condition of consent to cover this matter.

15. Please demonstrate the vertical height for both garage doors to verify clearances are provided for in respect of Standard E27.6.3.5 Vertical Clearance – Plan Change 79.

In accordance with E27.6.3.5 Vertical Clearance, residential activities are required to provide 2.1m of vertical clearance.

The architectural drawings prepared by 10x10 dated November 2025 show that 2.42m of vertical clearance is provided within the garages to both Lots. This complies with the requirements of the Unitary Plan.

16. Please identify the driveway length, and subsequent compliance with Standard E27.6.4.3 Width of vehicle access, queuing and speed management requirements of Plan Change 79. In particular, given the driveway length, please identify proposed speed management devices, e.g. speed hump.

As described in response to Item 10, the driveway was consented and constructed in accordance with as R/SUB/2016/743 and complied with the standards at the time consent was granted. It is therefore legally established to serve two dwellings as well as the minimum of four carparking spaces that were required at the time of granting of that consent. Retrospective application of new standards to existing access where the scale and intensity of the land use activity has not changed, is not appropriate.

Notwithstanding that, to provide Council with an overview, a review has been undertaken against the Plan Change 79 provisions.

Plan Change 79 is intended to manage impacts of development on Auckland's transport network, with a focus on pedestrian safety, accessible car parking, loading and heavy vehicle management, and catering for EV-charging and cycle parking. The decision was notified by Auckland Council on the 9th of August 2024. The appeal period closed on the 20th of September 2024. The appeals have been reviewed, many of which are targeted at all of the new provisions established by Plan Change 79, including (but not limited to) the appeals brought about by Simplicity Living, Classic Builders, Sentinel Planning. While the new provisions are operative from the time the decision was notified pursuant to Section 86B, given the nature of the appeals, until such time as the appeals have been determined, withdrawn or dismissed; little weight can be applied to the new standards and in this particular case all weight should be applied to the operative Unitary Plan provisions under E27 prior to the amended provisions of Plan Change 79 having legal effect.

Plan Change 79 introduces minimum path width of 1.4m where an access serves more than 4 dwellings or 4 or more car parking spaces and a 1.8m path where it serves more than 20 dwellings. A driveway serving fewer than four dwellings and car parking spaces is not required to provide a dedicated separated walkway.

As previously noted, the shared driveway was lawfully established under an earlier consent at a time when a minimum of four car parking spaces was required. On this basis, we consider that there is no requirement to reassess the driveway or seek consent in relation to new standards. Notwithstanding this, and to respond to Council's concerns and interpretation, an assessment has been provided given the proposal includes four parking spaces and is considered by Council to give rise to a technical reason for consent.

Due to the property boundary extent, it is not possible to widen the accessway in order to provide a separate 1.4m wide footpath. In terms of effect of the non-compliance with PC79, there is good visibility along the accessway and inter-visibility around the bend is facilitated by a proposed convex mirror, refer to Figure 15 for the proposed location and details. The number of vehicle movements on the driveway associated with two dwellings is low. In accordance with The New Zealand Transport Agency Research Report 453, Table 8.10, the peak hour trip rate for a standalone dwelling is 1.3vp/h with a daily trip rate of 10.7 per dwelling. Adopting these rates for the two proposed dwellings results in two or three inbound and outbound trips during the peak hour and a daily trip generation in the region of 22vp/d. This demonstrates that the driveway is low volume. Furthermore, speeds along the accessway are also expected to be low, given the narrow width for manoeuvring and short length that restricts drivers' ability to accelerate to speed. As such, the non-provision of the dedicated pedestrian walkway is considered to have a negligible effect on safety.

This approach is consistent with the industry-accepted standard *NZS 4404:2010 Land Development and Subdivision Infrastructure*, Table 3.2, which recognises that within low-volume residential roads and access lanes, pedestrian facilities may be shared within the movement lane where traffic speeds and volumes are low. In accordance with Table E27.6.4.3.2. (T150), the minimum formed access width for a driveway serving 3-9 car parking spaces is 3.0m provided it is contained within a corridor clear of buildings or parts of buildings with a minimum width of 3.5m. The formed driveway width is 3.0m and is clear of buildings. The width of the driveway is 5.0m and includes the establishment of services and offset to the existing stone wall that bounds the driveway.

The speed management requirements in Table E27.6.4.3.3 specify that traffic calming devices are to be installed at a maximum spacing of 30 m, with the first device located within 10 m of the property boundary. The shared driveway has a total length of approximately 50m, and therefore two speed management measures would typically be required under Plan Change 79.

It is noted that the existing driveway already functions as a low-speed environment due to its L-shaped alignment and narrow carriageway width, both of which naturally create shy lines, the lateral offset drivers maintain from perceived roadside constraints. These shy lines cause drivers to reduce speed and track more cautiously.

The decision report of PC79 prescribes acceptable speed calming measures and includes speed humps, lane narrowing, lateral shifts, surface treatments and landscaping. As the driveway is already constructed, and legally established to serve two residential lots, dwellings and the corresponding four parking spaces in our view there is no technical reason for consent pursuant to PC79 for non provision of additional speed calming measures. However, to appease Councils differing view, a speed bump is proposed, as indicated in Figure 14 and Figure 15 which will be sited in the first 10m of the property boundary and retrofitted to the existing driveway, the installation and specification of the speed bump can be supported by an appropriately worded condition of consent.



FIGURE 14: PROPOSED SPEED BUMP PROPRIETARY PRODUCT EXAMPLE

The second traffic calming measure is the 90-degree bend in the driveway that ensures drivers slow down to safely negotiate the angle.

17. Proposed access is shown to be greater than 50 m. A passing bay is required as per E27.6.4.3.1. Please provide an assessment of effects for the non-compliance and appropriate mitigation for this.

There is 50.0m between the property boundary and 22 Summit Drive and constructed vehicle access and therefore the straight one-way section does not exceed 50.0m. Nevertheless, there is space within the driveway of 22 Summit Drive in front of the proposed garages, for an occupier at 22 Summit Drive to stop and wait for an incoming driver. Similarly to Item 10 and Item 16, driveway width and passing bay requirements would have been assessed under the R/SUB/2016/743 application.

It is further proposed to provide a small 450mm wide convex mirror at the corner of the L shaped driveway to provide intervisibility along the length and to assist with drivers' decision making.

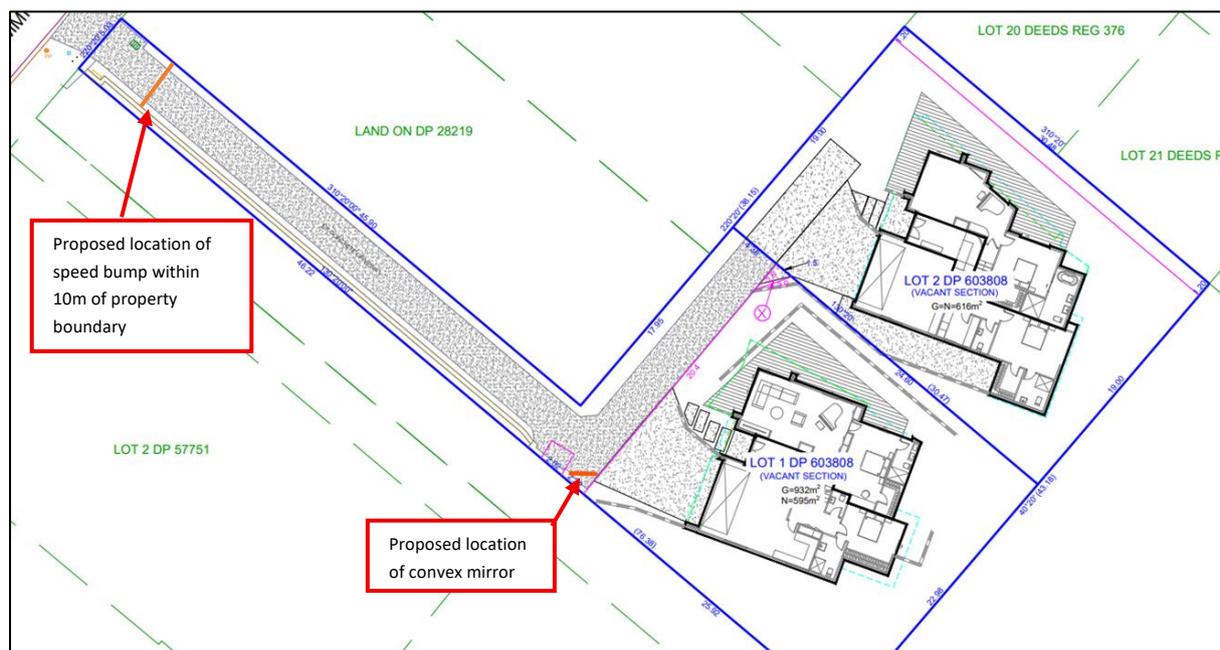


FIGURE 15: PROPOSED CONVEX MIRROR AND SPEED BUMP LOCATIONS

From an operational perspective, potential conflict on the driveway has been further analysed in order to respond to Council's RFI. The existing driveway will provide access to 4 car parking spaces and the length of the one-way section is 50.0m. Operational speeds are low and are estimated to be 5-10km/h. Therefore, time on the driveway would be between 18 seconds and 36 seconds. Furthermore, given the low car parking provision and adopting a rate of 1.3 vehicles per hour per dwelling in the peak periods (based on the New Zealand Transport Agency Research Report 453), and a directional distribution split of 80% and 20% during the peak periods, using a Poisson distribution, the probability of at least one departure and one arrival within 36 seconds is 0.0107%. There is therefore a low probability of drivers meeting on the one-way section of the driveway and if two drivers travelling in the opposing directions do meet on the driveway, drivers will give-way accordingly.

Overall, given the low probability of conflicting movements on the driveway and the provision of the convex mirror, the effect of not providing a passing bay from a safety or operational perspective is negligible.

24. It is assumed that the proposed development will be serviced by public kerbside waste collection. However, this is only feasible if there is sufficient space on the street berm for the placement of bins, and the property's limited frontage may restrict this.

Please demonstrate both:

- *adequate berm space to accommodate kerbside collection; and*
- *where the waste bins will be located onsite.*

25. If onsite collection is necessary, please provide details regarding the designated onsite areas for the placement, manoeuvring, and loading of bins onto waste collection vehicles.

Consideration has been given to rubbish collection for the site. Each dwelling will use the public collection service. A single dwelling typically requires approximately 1.2m of road frontage for the temporary placement of bins on collection day; therefore, a combined frontage of 2.4 m is required to accommodate bins for 22 and 22A Summit Road. There is over 11.0m of berm available in front of 20 Summit Road, which can comfortably accommodate the bin requirements for 20, 22, and 22A Summit Road. The proposed collection location is shown in Figure 16. The shared use of the front berm, located within the public road reserve, is consistent with typical practice for bin placement on collection days. The key transport consideration is ensuring bins are kept clear of the footpath, which can be readily achieved given the generous berm width.



FIGURE 16 PROPOSED BIN LOCATION FOR 22 AND 22A SUMMIT ROAD

In terms of placement within 22 and 22A Summit Road, there is sufficient space within the garages to accommodate the bins.

2.1 Additional requests from Council on 13 January 2026

An additional request for further information was received on 13 January 2026 and is provided below. Further correspondence relating to the interpretation of PC79 was also provided and this report has been updated to reflect these changes.

1. *The vehicle crossing is located within 10 m of an intersection which does not comply with E27.6.4.1(3). Please provide an assessment of effects for the non-compliance and appropriate mitigation for this.*

Development control E27.6.4.1.3.(a) 'Vehicle Access Restrictions' applies and vehicle crossings must not be constructed or used to provide vehicle access across a site boundary which is located within 10m of any intersection as measured from the property boundary. The existing vehicle crossing is legally established and was designed to serve a minimum of four parking spaces, and in our view does not require consent on technical grounds. Notwithstanding this, and to address Council's concerns and differing interpretation, the analysis below has been provided.

The consented and constructed vehicle crossing is situated opposite the terminating arm of a T-intersection. Although this arrangement infringes the aforementioned development control, it is important to note that the AS/NZS 2890.1:2004 standard, widely accepted as a guiding document for the design and location of vehicle accessways in the Unitary Plan, does not require a 10m separation for domestic driveways located opposite the closed end of a T-intersection.

In particular, Clause 3.2.3 of AS/NZS 2890.1:2004 states that for low-volume domestic driveways, restrictions related to proximity to intersections primarily apply on the same side of the road as the intersection, to avoid conflict with turning movements and reduced sight distances. Driveways located opposite a T-intersection arm do not typically interfere with priority movements or visibility triangles, especially within low-speed road environments.

A search was made of the Waka Kotahi Crash Analysis System for all reported crashes that had occurred within 100m of the Summit Drive/Stilwell Road intersection over the last five-year period. The study area is shown in Figure 17.



FIGURE 17: CRASH SEARCH AREA

There were no recorded crashes under the search parameters which indicates that there are no existing road safety issues at the intersection that might be exacerbated by the proposed activity. It is also noted that there are other existing vehicle crossings within 10m of this intersection (serving 18, 20, 26 and 28

Summit Drive), further confirming that the presence of a residential vehicle crossing to the intersection is unlikely to result in adverse road safety effects.

Traffic counts for Summit Road were sourced from the Auckland Transport website for January 2025 and are displayed in Table 1.

TABLE 1: EXISTING TRAFFIC VOLUMES

Road	Location	AM Peak (vph)	PM Peak (vph)	Daily (vpd)
Summit Road	Between Mount Albert Road and Sadgrove Terrace	128	112	992

The data demonstrates that existing traffic volumes are very low and this is expected given that Summit Drive is a cul-de-sac road terminating at the car park to Ōwairaka.

It is confirmed that:

- Sight distances at all affected lots exceed the minimum requirements for safe egress, consistent with AS/NZS 2890.1:2004 Clause 3.2.4;
- There are no recorded crashes within the vicinity of the intersection over the past 5-year period;
- Drivers will exit the site in a forward facing direction; and
- Existing traffic volumes and expected movements from the vehicle crossing are low, with limited likelihood of vehicle conflicts.

Taking these factors into account, any technical or retrospective departure from the Unitary Plan standards is minor and does not give rise to any practical safety or operational concerns.

3 Conclusion

It is proposed to construct two residential developments at 22 and 22A Summit Drive, Mount Albert.

The existing driveway was constructed under R/SUB/2016/743 and accommodates compliant gradients under the Unitary Plan and no grounding or safety issues are expected based on the driveway gradient design. This shared driveway access forms part of the existing environment. The operation of the shared driveway is considered to be acceptable in respect to the existing consented use of the shared access to serve two lots and dwellings, the later which are the subject of this application for resource consent.

Vehicle tracking analysis has been undertaken to demonstrate operational feasibility. All car parking spaces within the garages have been assessed and drivers can enter and exit each space in one or two manoeuvres. No safety or operational issues have been identified based on the vehicle tracking analysis.

As additional measures to appease any Council concern relating to PC79, a convex mirror is proposed within the driveway to facilitate intervisibility. A speed bump is also proposed to be located within the first 10.0m of the property boundary which will further ensure speeds on the driveway are low.

The proposed planting as part of the landscaping treatments will not adversely affect the safe and efficient operation of the access and pedestrian movement, subject to the Recommendations set out in this memo being conditions by the Council.

The development is able to be serviced by public waste collection and there is space for bins at the kerbside of Summit Drive.

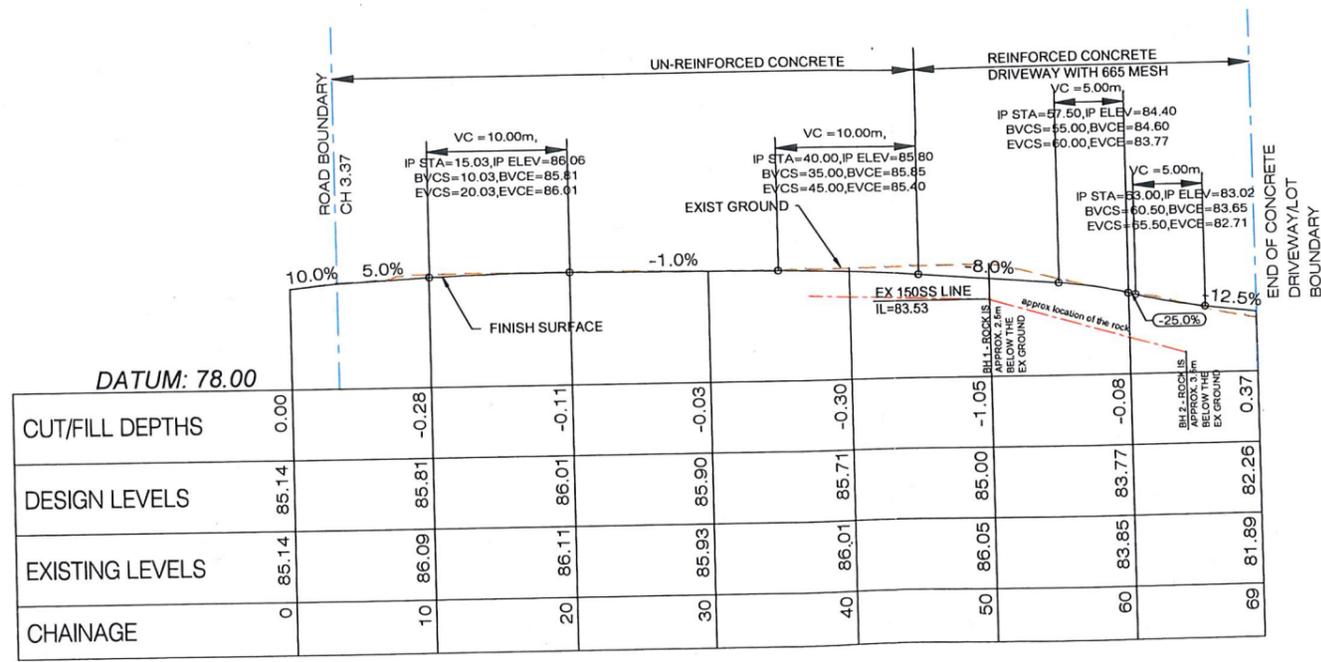
As such, it is concluded that all traffic requests for further information have been addressed and no safety or operational issues have been identified. Therefore, there are no traffic engineering or transport planning reasons to preclude approval of the proposed development.

CKL

Appendix A: R/SUB/2016/743 Application Documentation

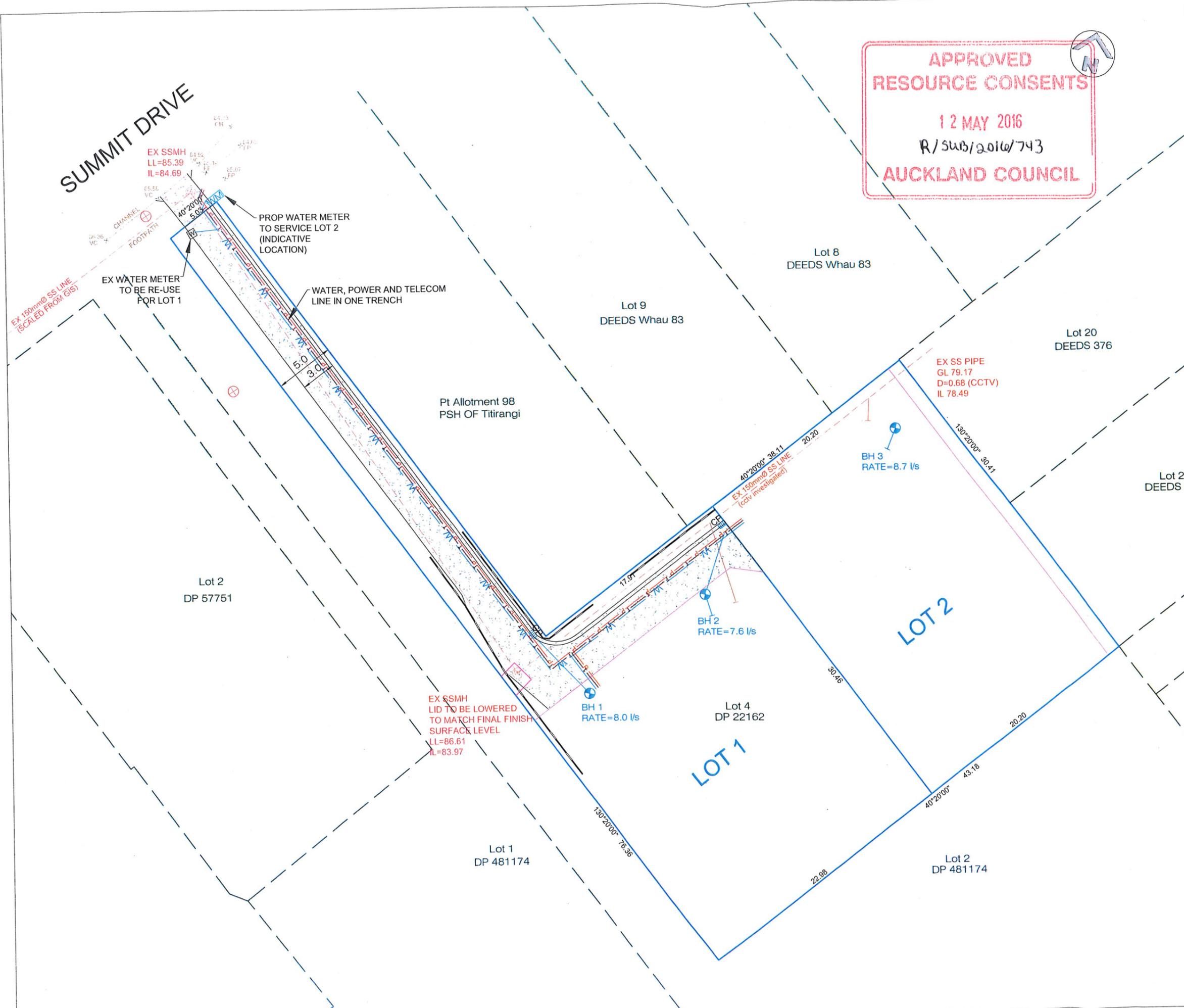
REVISION				
ISSUE	DATE	DETAILS	CHKD	DWN
A	15/01/16	RC APPLICATION	CK	AZ
B	15/04/16	LS ADJUSTED	CK	AZ

APPROVED
RESOURCE CONSENTS
 12 MAY 2016
 R/SUB/2016/743
AUCKLAND COUNCIL



SHARED DRIVEWAY LONGSECTION
 SCALE 1:250 H, 1:250 V (A1)
 1:500 H, 1:500 V (A3)

DRAWING TITLE			
DRIVEWAY LONGSECTION			
CLIENT			
ALAN			
PROJECT			
22 SUMMIT DRIVE, MT ALBERT			
 ANCHOR CONSULTING LTD ANCHOR CONSULTING LTD Tel: 021 66 99 46 PO Box 34810, Birkenhead 0746 Auckland, New Zealand			
SCALE :	AS SHOWN		
DATE:	DECEMBER 2015		
SURVEYED BY :	BS & MH	DESIGNED BY :	N/A
DRAWN BY :	CL	CHECKED BY :	CK
PROJECT No.	A15-0082	DWG No.	RC-09
		REV.	B



**APPROVED
RESOURCE CONSENTS**
12 MAY 2016
R/Sub/2016/743
AUCKLAND COUNCIL

REVISION				
ISSUE	DATE	DETAILS	CHKD	DWN
A	15/01/16	RC APPLICATION	CK	CL
B	15/04/16	DRIVEWAY WIDTH ADJUSTED	CK	AZ

LEGEND	
	EXISTING WATER METER
	PROP. WATER METER BOX (INDICATIVE LOCATION)
	PROP. 25mmØ WATER LOT CONNECTION
	PROP. TELECOM CONNECTION
	PROP. POWER CONNECTION
	EXISTING SEWER MANHOLE AND LINE
	PROP 100mmØ PVC SS LOT CONNECTION
	PROPOSED PRIVATE Upvc SW LINE (PIPE SIZE AS PER COUNCIL SOAKAGE DESIGN MANUAL DWG NO 05)
	PROP. FIELD CESSPIT
	BOREHOLE (REFER TO RC 11-13 FOR SW CALCULATION)

DRAWING TITLE	
DRAINAGE AND UTILITY PLAN	
CLIENT	
ALAN	
PROJECT	
22 SUMMIT DRIVE, MT ALBERT	
 ANCHOR CONSULTING LTD ANCHOR CONSULTING LTD Tel: 021 66 99 46 PO Box 34810, Birkenhead 0746 Auckland, New Zealand	
SCALE:	1:150 @ A1 1:300 @ A3
DATE:	DECEMBER 2015
SURVEYED BY:	BS & MH
DESIGNED BY:	N/A
DRAWN BY:	CL
CHECKED BY:	CK
PROJECT No.	DWG No.
A15-0082	RC-10
	REV.
	B

ISSUE	DATE	DETAILS	CHKD	DWN
A	15/01/16	RC APPLICATION	CK	CL

APPROVED
RESOURCE CONSENTS
 12 MAY 2016
 R/505/2016/743
AUCKLAND COUNCIL

Intorock
Drilling Ltd

BORE LOG SHEET DATE: 24.11.15

CLIENT: Anchor Consulting		DESCRIPTION OF WORK: Drill bore for soakage & test	
LOCATION: 22 Summit Drive, Mt Albert		METHOD OF BORING: Percussion DTH	
BOREHOLE NO: Two	BOREHOLE DIA: 100mm		
BOREHOLE LOC: Middle bore			

Depth	Description	FLOW TEST			
		Meter Start	Meter Finish	Duration	
1m	Stiff Ash				
2m					
3m					
4m					
5m					
6m	Scoria (large rubbles)				
7m					
8m					
9m					
10m					
11m					
12m					
13m					
14m			Pre	Soak	10mins
15m			N/A	N/A	10mins
16m		=	4,560L	/600sec	
17m					
18m			Full	Hydrant	
19m				Flow	
20m					

Flow test result is only relevant to the actual time of testing.

Phone: 09 294 6181 Fax: 09 294 6182 Email: info@intorockdrilling.co.nz
www.intorockdrilling.co.nz PO Box 79 DRURY 2247

WORKSHEET 2. CONSTANT-HEAD PERCOLATION TEST **W2**

Site Address: 22 Summit Drive, Mt Albert Lot 1 B+2
 Completed by: Anchor Consulting
 Date of test: 24/11/15 Signature: _____

- Attach the following:
- Log of borehole showing depth, geological layers and water table
 - Site-plan showing the location of the hole (tick when attached)
 - Civil Engineer
 - Engineering Technician
 - Engineering Geologist (tick one)
- Ensure the following procedures are followed:
- A permit is obtained from Metrowater
 - Hole is pre-soaked for 10 minutes prior to test
 - Test is continued for 10 to 15 minutes
 - Rockbores are maintained full
 - Testpits are maintained 1/2 full
 - Bores within 10m of each other are tested simultaneously
 - Borehole drilling is attempted before constructing a testpit (tick when complete)

3. Test Details

Time	Flowrate (L/s)	Time	Flowrate (L/s)
			7.6

4. Determine capacity of rockbore/testpit:

(a) Capacity of bore = $P_2 = \frac{\text{Flowrate} \times}{1.3} = \frac{5.8}{1.3} = 4.5$ L/s

* Use the end-of-test flowrate.

6. Percolation Rate (testpit only)
(do not complete this step for rockbores)

(a) Soakage surface (1/2 total wall area + base area) = _____ m²

(b) Percolation rate = $P_1 = \frac{P_2 \times 60}{(\text{soakage_surface})} = \frac{4.5 \times 60}{\dots} = \dots$ L/m²/min

SOAKAGE DESIGN MANUAL
AUCKLAND CITY

WORKSHEET 4. ROCKBORE SOAKHOLE **W4**

Site Address: 22 Summit Drive, Mt Albert B+2
 Design by: Anchor Consulting Date: 07/01/16

1. Equivalent Impervious Area

Cover Type	Area (m ²)	Ratio, R _E	Area x R _E (m ²)
Roof	A _R = 250	1	250
Paved	A _C = 72	1	72
Pervious (lawn etc)	A _P =	0.3	

(e) Equivalent impervious area (A_E): $\Sigma A_E = 322$ m²

2. Rockbore Capacity (if no storage provided)

(a) Constant-head flow (from WORKSHEET 2) = P₂ = 5.8 L/s

(b) Maximum area that can be served by bore = $\frac{P_2 \times 60}{1.1} = \frac{5.8 \times 60}{1.1} = 316$ m²

(c) If area from (b) > A_E, no storage is needed and step 3 does not need to be completed.

3. Storage Required

(a) Catchment soakage ratio = $P_3 = \frac{P_2 \times 60}{A_E} = \frac{5.8 \times 60}{322} = 1.08$

(b) Read off storage ratio (from CHART 2) = R₂ = 0.002 m³/m²

(c) Calculate storage required = R₂ x A_E = 0.64 m³

(d) Compare to available storage = 1.73 m³

* Unit (m³ equivalent impervious area)

SOAKAGE DESIGN MANUAL
AUCKLAND CITY

DRAWING TITLE
SOAKAGE CALCULATION (BH2)

CLIENT
ALAN

PROJECT
22 SUMMIT DRIVE, MT ALBERT



ANCHOR CONSULTING LTD
Tel: 021 66 99 46
PO Box 34810, Birkenhead 0746
Auckland, New Zealand

SCALE:	NTS		
DATE:	DECEMBER 2015		
SURVEYED BY:	BS & MH	DESIGNED BY:	N/A
DRAWN BY:	CL	CHECKED BY:	CK
PROJECT No.	DWG No.	REV.	
A15-0082	RC-12	A	

REVISION				CHKD	DWN
ISSUE	DATE	DETAILS		CK	CL
A	15/01/16	RC APPLICATION			



BORE LOG SHEET

DATE: 24.11.15

CLIENT: Anchor Consulting		DESCRIPTION OF WORK: Drill bore for soakage & test	
LOCATION: 22 Summit Drive, Mt Albert		METHOD OF BORING: Percussion DTH	
BOREHOLE NO: Three	BOREHOLE DIA: 100mm	BOREHOLE LOC: 5m x 3m from front left corner	
Depth	STRATA	Meter Start	FLOW TEST
1m			
2m	Stiff Ash		
3m	2.5m Basalt Rock		
4m	3.4m Broken Rock		
5m	4.0m → 4.7m Basalt Rock	Pre Soak	10mins
6m	Broken Rock	N/A	10mins
7m	6.5m	E.O.B	5,220L /600sec
8m			
9m		Full	Hydrant Flow
10m			
11m			
12m			
13m			
14m			
15m			
16m			
17m			
18m			
19m			
20m			

Flow test result is only relevant to the actual time of testing.

Phone: 09 294 6181 Fax: 09 294 6182 Email: info@intorockdrilling.co.nz
www.intorockdrilling.co.nz PO Box 79 DRURY 2247

WORKSHEET 2. CONSTANT-HEAD PERCOLATION TEST

W2

Site Address: 22 Summit Drive, Mt Albert Lvt 2 BH3
Completed by: Anchor Consulting
Date of test: 24/11/15 Signature: _____

- Attach the following:
- Log of borehole showing depth, geological layers and water table
 - Site-plan showing the location of the hole (tick when attached)
 - Civil Engineer
 - Engineering Technician
 - Engineering Geologist (tick one)

- Ensure the following procedures are followed:
- A permit is obtained from Metrowater
 - Hole is pre-soaked for 10 minutes prior to test
 - Test is continued for 10 to 15 minutes
 - Rockbores are maintained full
 - Testpits are maintained 1/2 full
 - Boreholes within 10m of each other are tested simultaneously
 - Borehole drilling is attempted before constructing a testpit (tick when complete)

3. Test Details

Time	Flowrate (L/s)	Time	Flowrate (L/s)
			8.7

4. Determine capacity of rockbore/testpit:

(a) Capacity of bore = $P_2 = \frac{\text{Flowrate}^*}{1.3} = \frac{6.7}{1.3} = 5.15$ L/s

* Use the end-of-test flowrate.

6. Percolation Rate (testpit only)

(do not complete this step for rockbores)

(a) Soakage surface (1/2 total wall area + base area) = _____ m²

(b) Percolation rate = $P_1 = \frac{P_2 \times 60}{\text{soakage surface}} = \frac{5.15 \times 60}{\text{surface}} = \text{_____} \text{ L/m}^2/\text{min}$

SOAKAGE DESIGN MANUAL AUCKLAND CITY

WORKSHEET 4. ROCKBORE SOAKHOLE

W4

Site Address: 22 Summit Drive, Mt Albert BH3
Design by: Anchor Consulting Date: 07/01/16

1. Equivalent Impervious Area

Cover Type	Area (m ²)	Ratio, R _E	Area x R _E (m ²)
Roof	A _R = 220	1	
Paved	A _C =	1	
Pervious (lawn etc)	A _P =	0.3	

(a) Equivalent impervious area (A_E): $\sum A_E = 220 \text{ m}^2$

2. Rockbore Capacity (if no storage provided)

(a) Constant-head flow (from WORKSHEET 2) = P₂ = 6.7 L/s

(b) Maximum area that can be served by bore = $\frac{P_2 \times 60}{1.1} = \frac{6.7 \times 60}{1.1} = 365 \text{ m}^2$

(c) If area from (b) > A_E, no storage is needed and step 3 does not need to be completed.

3. Storage Required

(a) Catchment soakage ratio = $P_1 = \frac{P_2 \times 60}{A_E} = \frac{6.7 \times 60}{220} = 1.83$

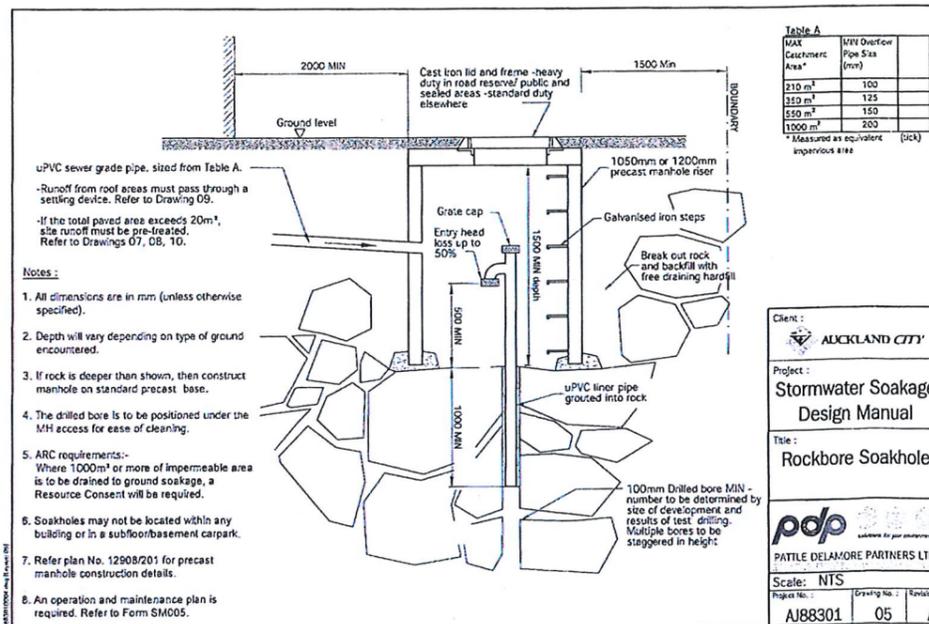
(b) Read off storage ratio (from CHART 2) = R₂ = _____ m³/m²

(c) Calculate storage required = R₂ x A_E = _____ m³

(d) Compare to available storage = _____ m³

1. Unit (m³ equivalent impervious area)

SOAKAGE DESIGN MANUAL AUCKLAND CITY



APPROVED
RESOURCE CONSENTS

12 MAY 2016
R/SUB/2016/743
AUCKLAND COUNCIL

Client: AUCKLAND CITY
Project: Stormwater Soakage Design Manual
Title: Rockbore Soakhole
Scale: NTS
Project No.: AJ88301
Drawing No.: 05
Revision: A

DRAWING TITLE
SOAKAGE CALCULATION (BH3) & SOAKAGE DESIGN STD STANDARD DETAILS

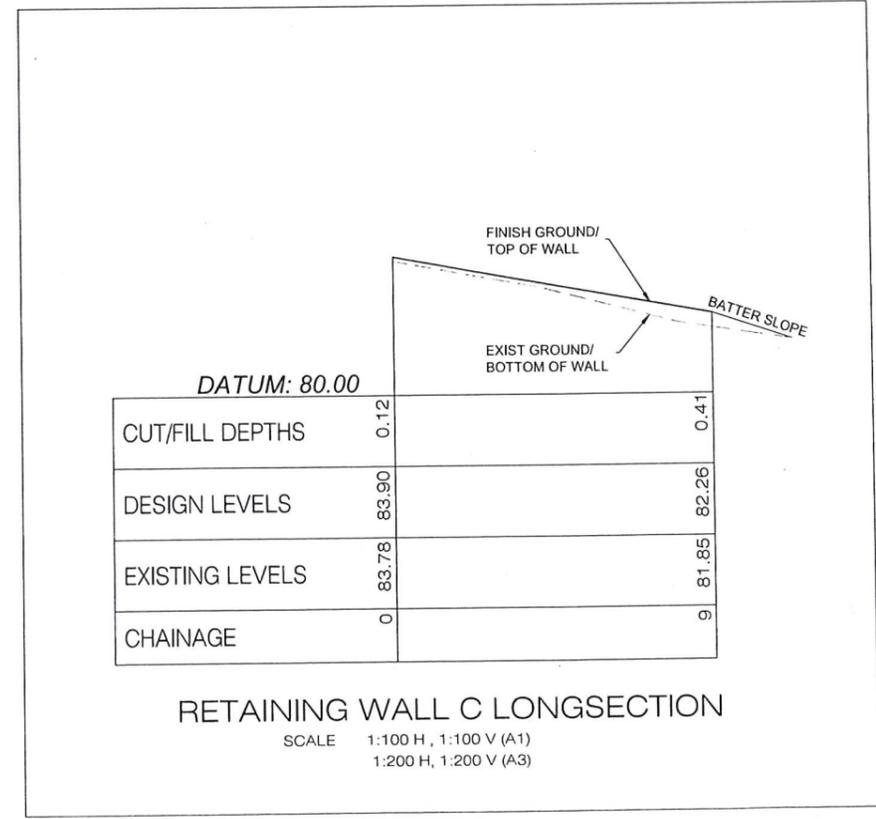
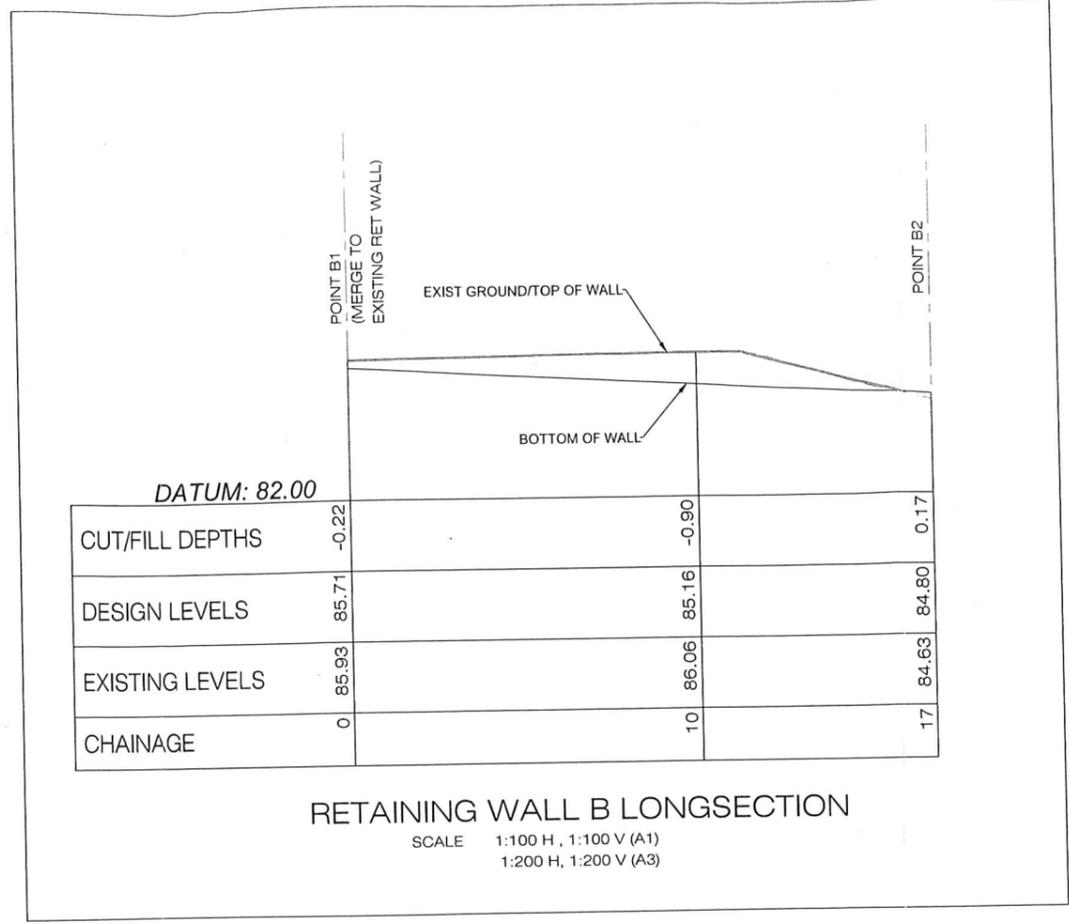
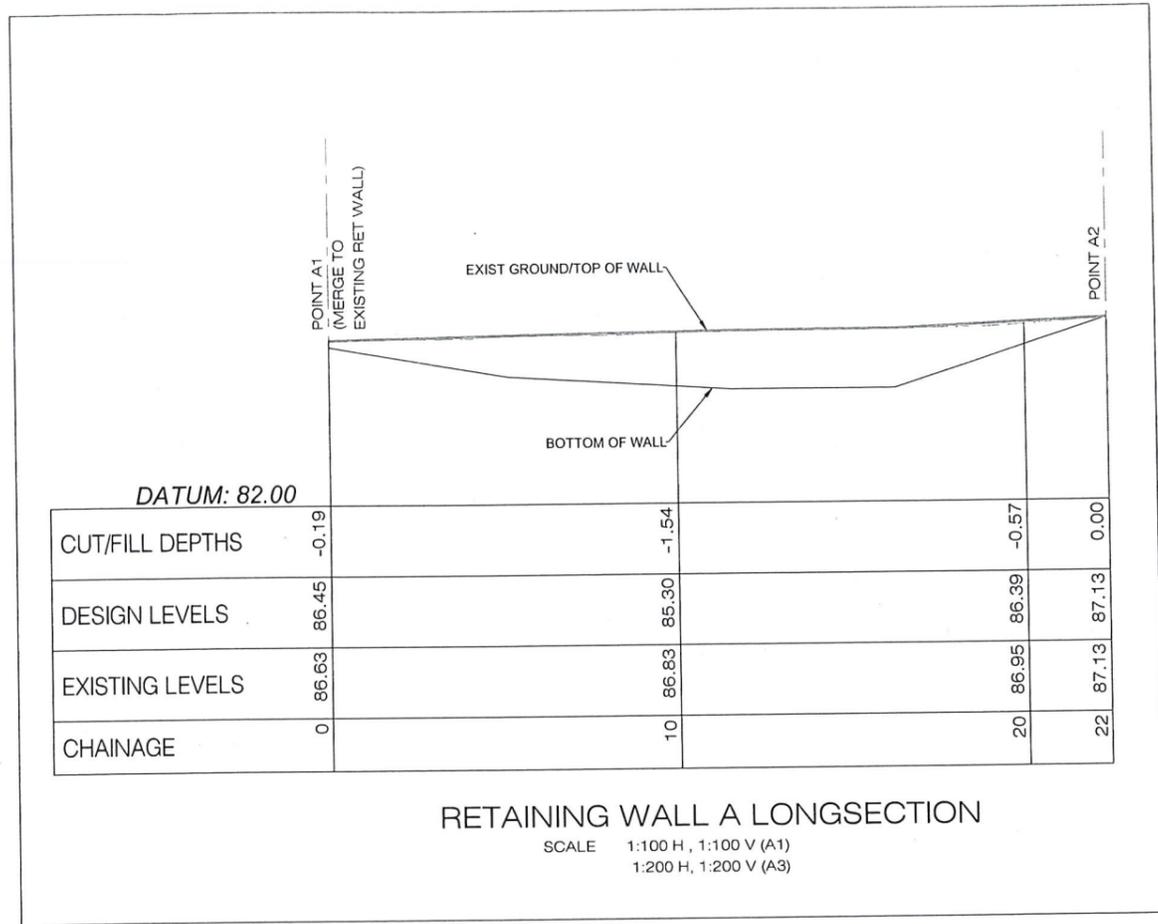
CLIENT
ALAN

PROJECT
22 SUMMIT DRIVE, MT ALBERT

ANCHOR CONSULTING LTD
ANCHOR CONSULTING LTD
Tel: 021 66 99 46
PO Box 34810, Birkenhead 0746
Auckland, New Zealand

SCALE: NTS
DATE: DECEMBER 2015
SURVEYED BY: BS & MH DESIGNED BY: N/A
DRAWN BY: CL CHECKED BY: CK
PROJECT No. DWG No. REV.
A15-0082 RC-13 A

REVISION				
ISSUE	DATE	DETAILS	CHKD	DWN
A	15/04/16	RC APPLICATION	CK	AZ



APPROVED
RESOURCE CONSENTS
 12 MAY 2016
 R/sub/2016/743
AUCKLAND COUNCIL

DRAWING TITLE			
RETAINING WALL LONGSECTION			
CLIENT			
ALAN			
PROJECT			
22 SUMMIT DRIVE, MT ALBERT			
 ANCHOR <small>CONSULTING LTD</small> ANCHOR CONSULTING LTD Tel: 021 66 99 46 PO Box 34810, Birkenhead 0746 Auckland, New Zealand			
SCALE:	AS SHOWN		
DATE:	DECEMBER 2015		
SURVEYED BY:	BS & MH	DESIGNED BY:	N/A
DRAWN BY:	CL	CHECKED BY:	CK
PROJECT No.	A15-0082	DWG No.	RC-014
		REV.	A