



**Muriwai Downs, Muriwai  
Golf Project**

**Integrated Transportation Assessment Report**

25 November 2021





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## Table of Contents

1	Introduction.....	1
2	Existing Environment.....	2
2.1	Site Location.....	2
2.2	Road Network.....	3
2.3	Traffic Volumes.....	3
2.4	Crash History.....	3
3	Proposed Development.....	3
4	Trip Generation.....	4
4.1	Assumptions.....	4
4.1.1	Visitors.....	5
4.1.2	Staff.....	6
4.2	Anticipated Trip Generation.....	8
4.3	Trip Distribution.....	10
5	Access.....	11
5.1	General.....	11
5.2	Sight Distance.....	11
5.3	Unitary Plan Requirement – E27 Transportation.....	13
5.3.1	Vehicle Access Restrictions.....	13
5.3.2	Number Of Vehicle Crossings And Separation Distance.....	14
5.3.3	Width Of Vehicle Access.....	15
5.3.4	Gradient Of Vehicle Access.....	15
5.4	Access Design.....	15
5.4.1	Academy / Service Access.....	15
5.4.2	Lodge / Clubhouse Access.....	16
6	Internal Rooding Network.....	17
6.1	General.....	17
6.2	Road Function.....	17
6.2.1	Vehicle Access Roads.....	17

6.2.2	Development Circulation .....	18
6.2.3	Secondary Link.....	18
7	Pedestrian And Cyclists .....	18
8	Servicing.....	18
9	Parking .....	19
9.1	General.....	19
9.2	Unitary Plan Requirments.....	19
9.3	Unitary Plan Dimensions .....	20
9.4	Cycle Parking .....	21
9.5	Accessible Parking .....	22
10	Wider Effects .....	22
10.1	Overview .....	22
10.2	Trip Generation.....	23
10.3	Muriwai Road.....	23
10.4	Muriwai Road / SH16 Intersection.....	23
11	Construction Traffic.....	23
12	Conclusions .....	24
	Appendix A – Trip Generation.....	25
	Appendix B - Lodge / Clubhouse Access .....	26
	Appendix C – Academy / Service Access .....	27

## 1 INTRODUCTION

Commute Transportation Consultants (Commute) has been engaged by Bears Home Project Management Limited to prepare an Integrated Transport Assessment (ITA) for a proposed golf resort facility at Muriwai Downs, Muriwai, Auckland (referred to as the 'site').

The proposal intends to provide a new golf course, clubhouse, sports academy and luxury standard short stay lodge accommodation at the site. Access to the site will be via two new connections onto Muriwai Road.

The site is zoned Rural – Rural Production Zone in the Auckland Unitary Plan Operative in Part 15 November 2016 (Unitary Plan).

Key transportation considerations of the proposed development are:

- compatibility with the Unitary Plan provisions;
- the accessibility of the site to the various modes of transport; and
- the ability of the surrounding road network to safely and efficiently accommodate traffic generated by potential development.

These and other transportation issues will be addressed in this report.

## 2 EXISTING ENVIRONMENT

### 2.1 SITE LOCATION

Figure 1: Site Location

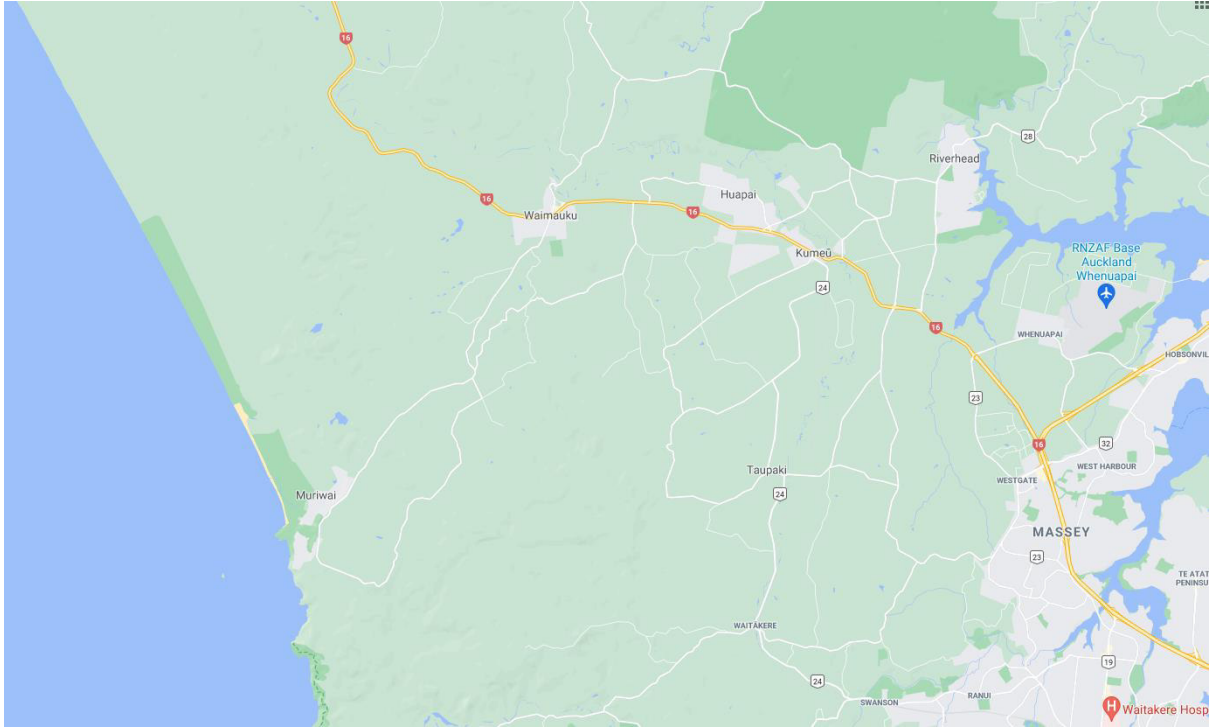
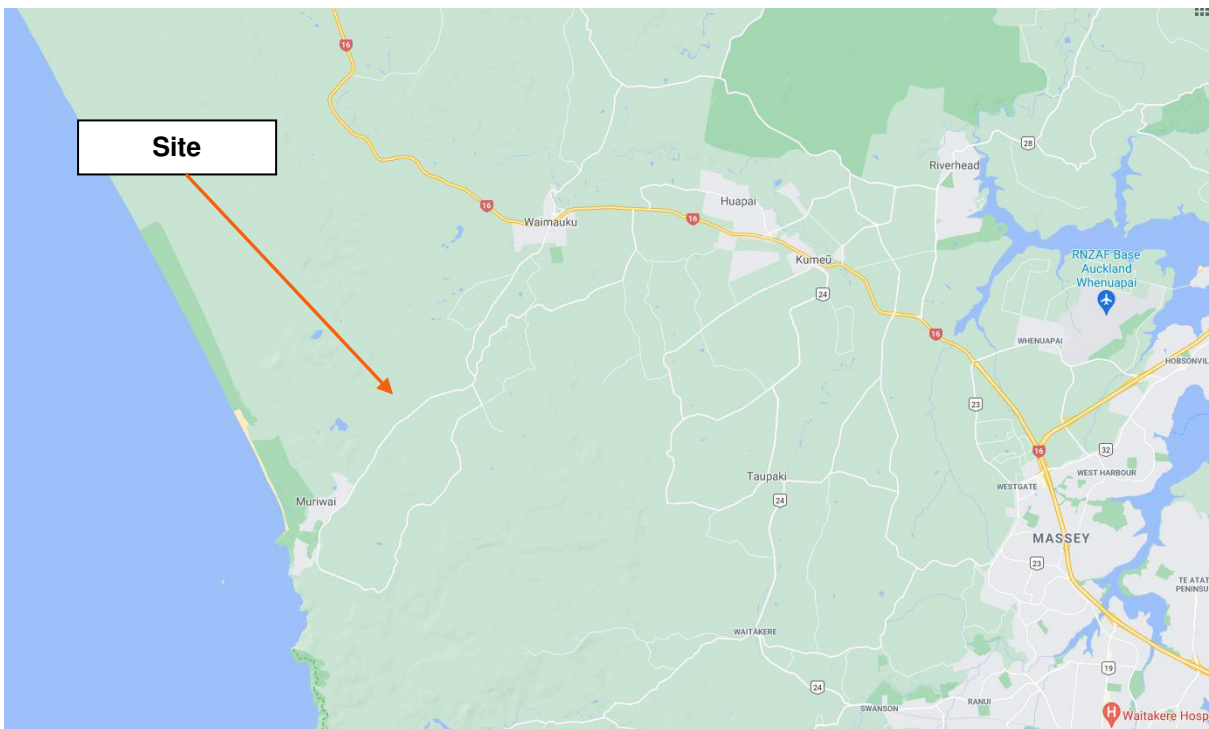


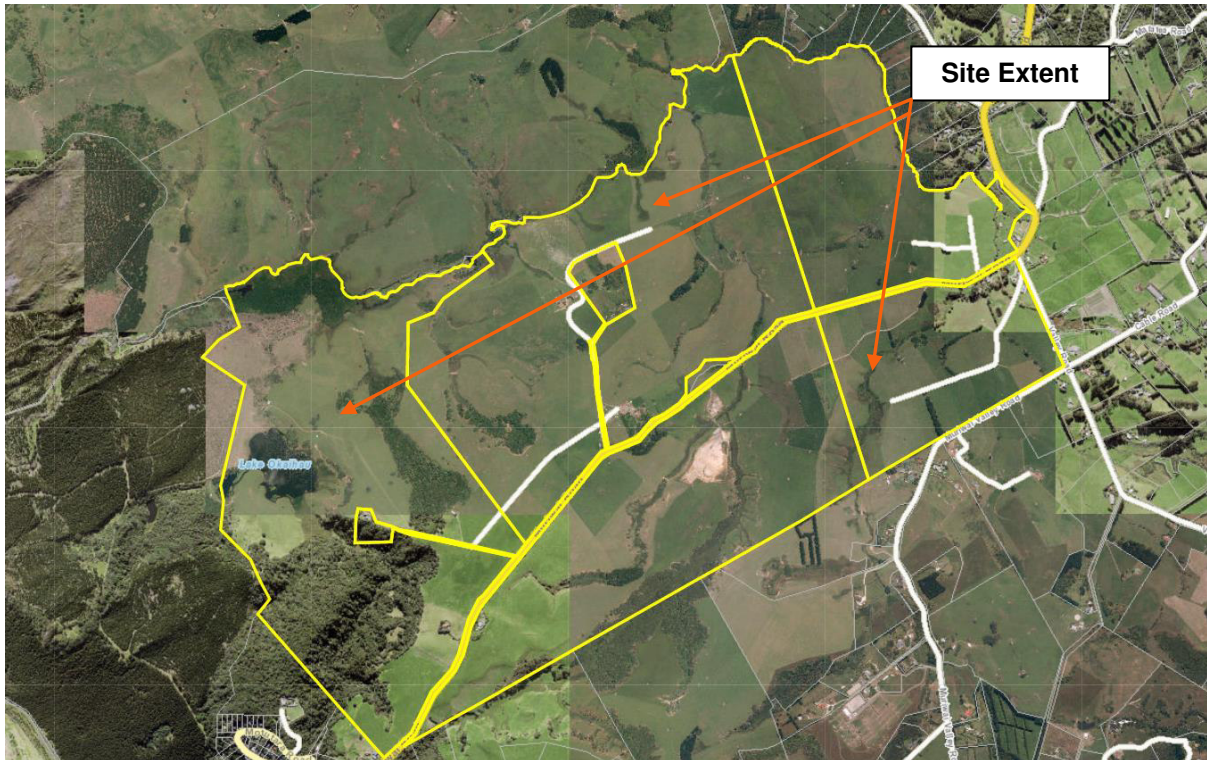
Figure shows the location of the site and Figure 2 shows the surrounding road environment.

Figure 1: Site Location





**Figure 2: Surrounding Road Environment**



The development site is located in Muriwai, Auckland.

## 2.2 ROAD NETWORK

Muriwai Road is classified as an Arterial Road in the Unitary Plan and provides a key connection between Waimauku and Muriwai Beach. Muriwai Road connects to SH16 to the north and Oaia Road to the south. Muriwai Road has a general carriageway width of approximately 6.5m with an additional 1.0m shoulder width on each side.

No specific pedestrian or cycle facilities are located on this section of Muriwai Road. Muriwai Road has a posted speed limit of 100 km/hr.

## 2.3 TRAFFIC VOLUMES

Existing traffic volumes near the site have been sourced from Auckland Transport counts. Muriwai Road, between Oaia Road and Valley Road recorded a 5-day ADT of 3,500 vehicles per day (vpd) and AM and PM peak hour volumes of 360 vehicles per hour (vph) and 620vph, respectively (June 2018).

Muriwai Road carries relatively low daily and peak hourly traffic volumes when compared to a typical arterial road in Auckland.

## 2.4 CRASH HISTORY

A search of the road safety record using the Waka Kotahi New Zealand Transport Agency Crash Analysis System (CAS) has been carried out to identify all reported crashes near the site during the five-year period from 2016 to 2020 as well as all available data in 2020. The search area included 100m radii around the two proposed accesses, as well Muriwai Road along the frontage of the site.



A total of 1 crash was identified. The crash involved an eastbound vehicle losing control when travelling around the bend near the existing northern access. The crash resulted in minor injury.

This level of crashes is considered low for an arterial road and importantly the crash did not involve vehicles turning into or out of either existing access. As will be described, the proposed development is considered to add relatively minor additional traffic movements onto Muriwai Road and is therefore not expected to exacerbate this good safety record.

### 3 PROPOSED DEVELOPMENT

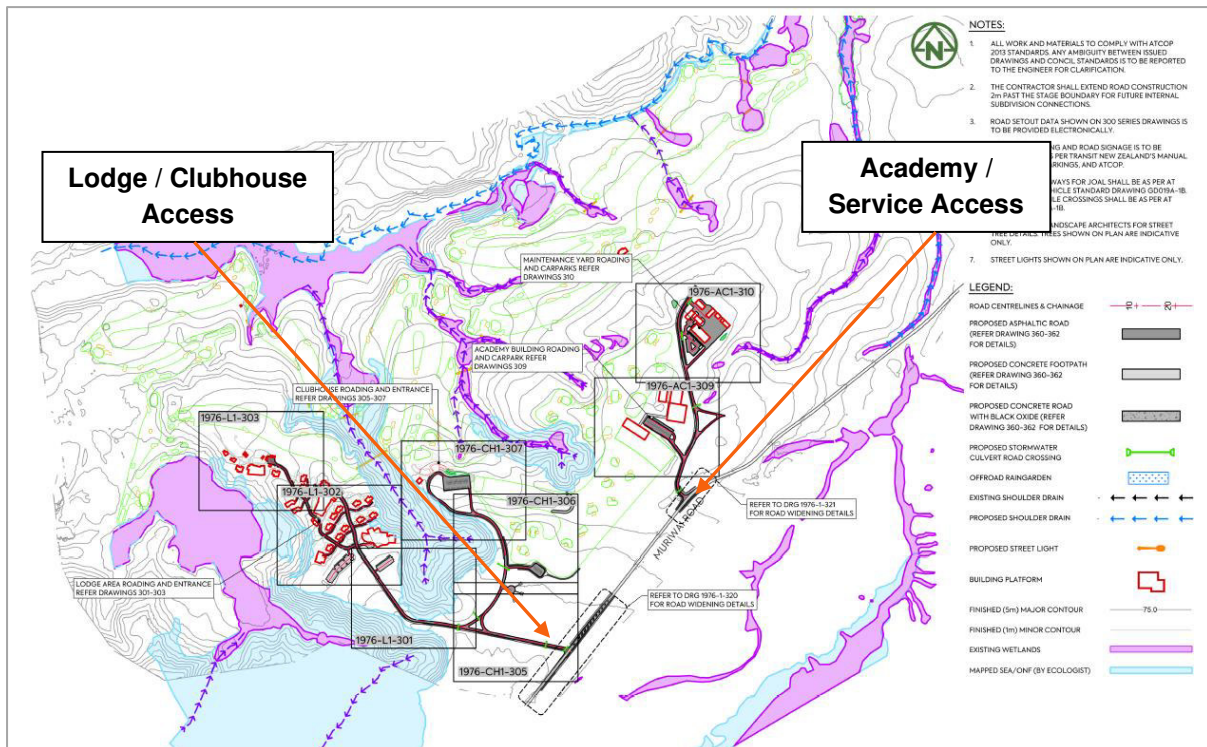
The development is for a proposed golf resort facility at Muriwai Downs, Muriwai, Auckland (referred to as the 'site').

The proposal intends to provide a new golf course, clubhouse, sports academy and luxury standard lodge accommodation at the site. Access to the site will be via a new connection onto Muriwai Road). The development includes:

- A 19-hole golf course;
- Club house complex, including a restaurant / bar and administration space (office);
- Sports academy including a 9-hole short golf course, a café and commercial office space;
- Golf and Property Maintenance Complex;
- Visitor Accommodation;
- A Lodge and Clubhouse access at the western extent of the site;
- A separate Sports Academy and Service access at the eastern extent of the site; and
- Parking provide on-site as detailed below:
  - Clubhouse – 104 spaces;
  - Sports Academy – 69 spaces;
  - Golf and Property Maintenance – 50 spaces;
  - Lodge Building – 12 spaces;
  - Guest Parking – 48 spaces;
  - Staff Car Parking – 35 spaces; and
  - Wellness Centre Car Parking – 5 spaces.

The proposed site layout is detailed in Figure 3 below.

Figure 3: Proposed Site Layout



## 4 TRIP GENERATION

### 4.1 ASSUMPTIONS

The peak hour trip generation is detailed and assessed below. Although the development provides various different activities, not all of these activities will generate movements to the external road network. Several of the activities will be used by the same person at the development. For example, a golfer visiting the course will also likely use the restaurant and bar. The restaurant and bar are unlikely to generate significant trips in their own right, as the majority of visitors to the restaurant and bar will already be on-site, as detailed below.

Further trip generation assumptions are detailed below:

- The peak hour assessed below is the peak hour of the development, rather than that generated in a typical commuter peak hour. Existing commuter peak hour volumes on Muriwai Road have however been used for analysis, to enable a conservative assessment;
- The analysis below has been undertaken for Year 3, where the golf development will be operating at a 'mature' level, where all aspects of the development are operational;
- The analysis below has been undertaken for the summer peak season; and
- A proportion of visitor trips will be via helicopter. Information provided by the applicant indicates up to 24 trips per week. This will reduce the number of visitors accessing the site via vehicle, however the helicopter trips have been ignored for the trip generation assessment detailed below.

#### 4.1.1 VISITORS

The assumptions for each activity for **visitors** are detailed below:

- 19-hole golf course;
  - The golf course is likely to generate trips according to the number of available tee slots on a typical day. Information for the anticipated number of rounds played per year has been provided by the applicant.
  - The course will accommodate 10,100 rounds within the peak period (7 months). This equates to approximately 50 rounds per day (assuming 210 days), and 5 rounds within the peak hour. A trip rate of 1 trip per round per peak hour has been assumed.
  - The majority of these trips will not occur within the peak hour, as the times are evenly spread throughout the day.
  - Golf course users are also likely to use the club house complex on-site.
- A 9-hole short course;
  - The short course will not be open for traditional green fee play; it will be bundled with training and practice sessions. As such, the trip generation of the short course is accounted for under the sports academy trip generation.
  - The majority of these trips will not occur within the peak hour.
- Club house complex, including a restaurant / bar and administration space (office);
  - The restaurant / bar will generate 5 trips per 100sqm in the peak hour, as per typical RTA Guide <sup>1</sup>.
  - The restaurant / bar will be predominantly used by golfers or visitors staying at the visitor accommodation.
  - As such, trips generated by the restaurant / bar to the external network are assumed to be approximately 20% of the typical rates.
  - The office will not generate visitor trips.
- Sports academy;
  - The sports academy provides four teaching bays, 16 covered hitting bays, two physio rooms and a café.
  - The four teaching bays and two physio rooms have been assumed to generate 1 trip per bay/room in the peak hour.
  - The hitting bays have been assumed to generate 1.5 trips per bay in the peak hour, based on a typical hitting bay session of 30 minutes to 1 hour.
  - The café will generate 5 trips per 100sqm in the peak hour, as per typical RTA Guide.
  - The sports academy will be used by those already on-site (either by club members or those staying at the visitor accommodation) and by the public. This is assumed to be split 60% / 40% between those already on-site / public.
  - The sports academy café will only be used by those already using the sports academy.

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<sup>1</sup> RTA guide to Trip Generating Developments, Version 2.2, October 2002

- Commercial office space;
  - The office will not generate visitor trips.
- Golf and Property Maintenance Complex;
  - The GPMC will not generate visitor trips.
- Visitor Accommodation;
  - The development provides a total of 29 accommodation units, with a maximum occupancy of 89 people.
  - The development has a targeted occupancy rate of approximately 60%.
  - A typical trip generation rate of 0.4 trips per unit has been used for analysis as per the RTA Guide.

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#### 4.1.2 STAFF

The assumptions for each activity for **Staff** are detailed below:

- 19-hole golf course;
  - The golf course itself will not generate any staff trips to the external network. The golf course is serviced via the GPMC (detailed below).
- A 9-hole short course;
  - The golf course itself will not generate any staff trips to the external network. The golf course is serviced via the GPMC (detailed below).
- Club house complex, including a restaurant / bar and administration space (office);
  - The clubhouse will have an estimated 25.5 FTEs plus a maximum of 40 caddies per day.
  - All FTEs have been assumed to generate 1 trip per FTE in the peak hour.
  - Clubhouse staff will arrive at 6:30am in the summer and 7:00am in the winter, and therefore arrive outside of the peak hour.
  - Therefore 10% of clubhouse staff have been assumed to arrive in the peak hour.
  - Of the caddies, 20% have been assumed to arrive in the peak hour.
- Sports academy;
  - The sports academy will feature an estimated 12 FTEs plus 9.5 café FTEs.
  - All FTEs have been assumed to generate 1 trip per FTE in the peak hour.
  - Academy staff will arrive from 7:00am, with the hours of operation for the Academy expected to be from 8:00am until 8:00pm.
  - Therefore 20% of sports academy staff have been assumed to arrive in the peak hour.
  - Café staff will arrive from 6:30am while café hours of operation will be from 7:00am until 10:00pm.
  - Therefore 10% of sports academy staff have been assumed to arrive in the peak hour.

- Commercial office space;
  - The commercial office space will feature 25 FTEs.
  - All FTEs have been assumed to generate 1 trip per FTE in the peak hour.
  - The commercial office space staff will arrive and leave in typical peak hours, as such 80% have been assumed to arrive in the peak hour.
  
- Golf and Property Maintenance Complex;
  - Golf course maintenance will feature 23 FTEs.
  - All FTEs have been assumed to generate 1 trip per FTE in the peak hour.
  - Golf course maintenance staff arrivals will be from 6:00am in the summer, and 7:00am in the winter. The majority of the golf maintenance staff will finish work by 3:00pm.
  - Therefore 20% of the golf and property maintenance staff have been assumed to arrive in the peak hour.
  - Landscape and property services will employ 5 FTEs when business levels become consistent.
  - Landscape and property services staff will arrive between 7:00 – 9:00am year-round, and finish work by 6:00pm.
  - Therefore 50% of landscape staff have been assumed to arrive in the peak hour.
  - Housekeeping and laundry will employ 17.5 FTEs when business levels become consistent.
  - Housekeeping and laundry staff arrive between 6:00 - 7:00am year-round and work in multiple shifts until 9:00pm based on occupancy in the lodge and other property demands. Staff numbers will gradually rise in the first half of the day, and gradually decline during the second half.
  - Therefore 20% of housekeeping and laundry staff have been assumed to arrive in the peak hour.
  - Deliveries will employ 1 FTE to accommodate any goods arriving on-site.
  - Most deliveries for the property will be directed to the GPMC, reducing vehicle movements to the individual buildings (clubhouse, lodge, academy).
  - Therefore 100% of deliveries staff have been assumed to arrive in the peak hour.
  - Shared services should have 7.5 FTEs on staff throughout the year.
  - Shared services staff will arrive on site at approximately 9:00am and depart at approximately 5:00pm, with minor fluctuations based on personal preferences and work situation. This group will function similar to a normal office setting.
  - Therefore 80% of shared services staff have been assumed to arrive in the peak hour.
  
- Visitor Accommodation;
  - The visitor accommodation will feature 51 FTEs.
  - All FTEs have been assumed to generate 1 trip per FTE in the peak hour.
  - The lodge will be staffed to a level expected of a premium accommodation, with the first staff arrivals at 6:00am to begin preparation for breakfast service. The majority of staff arrivals will begin from 7:00am and follow in shifts throughout the day, ending with the conclusion of dinner service in the evening.
  - Therefore 20% of visitor accommodation staff have been assumed to arrive in the peak hour.

The full trip generation spreadsheet is shown in **Attachment A**.

## 4.2 ANTICIPATED TRIP GENERATION

The peak hour trip generation for visitors to the site is detailed in Table 1 below for the weekday peak hour. Saturday peak hour volumes are considered to be significantly lower than these, as none of the office activities will be in operation.

**Table 1: Anticipated Traffic Generation – Visitors**

Activity		Trip Rate	Number	Percentage of External Trips <sup>2</sup>	Generated Trips
<b>Golf</b>	19 Hole Course	1 / round	5	100%	<b>5</b>
<b>Club House Complex</b>	Restaurant	5 / 100sqm	160	20%	<b>1.60</b>
	Bar	5 / 100sqm	155	20%	<b>1.55</b>
	Office	-	-	-	<b>0</b>
	Caddies	-	-	-	<b>0</b>
<b>Sports Academy</b>	Teaching Bays	1 / bay	4	50%	<b>2</b>
	Physio Rooms	1 / room	2	50%	<b>1</b>
	Hitting Bays	1.5 / bay	16	50%	<b>12</b>
	9 hole course	-	-	-	<b>0</b>
	Café	5 / 100sqm	55	0%	<b>0</b>
<b>Commercial Office Space</b>	Office	-	-	-	<b>0</b>
<b>GPMC</b>	Maintenance	-	-	-	<b>0</b>
	Landscape	-	-	-	<b>0</b>
	Housekeeping	-	-	-	<b>0</b>
	Deliveries	-	-	-	<b>0</b>
	Shared Services	-	-	-	<b>0</b>
<b>Visitor Accommodation</b>	Accommodation	0.4 / unit	29	60%	<b>6.96</b>
<b>TOTAL</b>	-	-	-	-	<b>30.1</b>

<sup>2</sup> As per assumptions detailed in Section 4.1.1 above

The peak hour trip generation for staff at the site is detailed in Table 2 below for the weekday peak hour. Saturday peak hour volumes are considered to be significantly lower than these, as none of the office activities will be in operation.

**Table 2: Anticipated Traffic Generation – Staff**

Activity		Trip Rate	Number (FTEs)	Percentage of External Trips <sup>3</sup>	Generated Trips
<b>Golf</b>	19 Hole Course	-	-	-	-
<b>Club House Complex</b>	Restaurant	1 / FTE	25.5	10%	<b>2.55</b>
	Bar	1 / FTE	0 <sup>4</sup>	10%	<b>0</b>
	Office	1 / FTE	0 <sup>4</sup>	10%	<b>0</b>
	Caddies	1 / FTE	40	20%	<b>8</b>
<b>Sports Academy</b>	Teaching Bays	1 / FTE	12	20%	<b>2.4</b>
	Physio Rooms	1 / FTE	0 <sup>4</sup>	-	<b>0</b>
	Hitting Bays	1 / FTE	0 <sup>4</sup>	-	<b>0</b>
	9 Hole Course	1 / FTE	0 <sup>4</sup>	-	<b>0</b>
	Café	1 / FTE	9.5	10%	<b>0.95</b>
<b>Commercial Office Space</b>	Office	1 / FTE	25	80%	<b>20</b>
<b>GPMC</b>	Maintenance	1 / FTE	23	20%	<b>4.6</b>
	Landscape	1 / FTE	5	50%	<b>2.5</b>
	Housekeeping	1 / FTE	17.5	20%	<b>3.5</b>
	Deliveries	1 / FTE	1	100%	<b>1</b>
	Shared Services	1 / FTE	7.5	80%	<b>6</b>
<b>Visitor Accommodation</b>	Accommodation	1 / FTE	51	20%	<b>10.2</b>
<b>TOTAL</b>	-	-	-	-	<b>61.7</b>

<sup>3</sup> As per assumptions detailed in Section 4.1.2 above

<sup>4</sup> Incorporated within the 12 FTEs above



Based on the above, the overall trip generation for the site (visitors and staff) is **92** traffic movements per hour.

This results in a net increase of approximately 92vph in the peak hour. This level of trip generation is below the 100vph threshold detailed in the Unitary Plan which would require a wider effects assessment. As such, no additional assessment is considered necessary in this instance. Additional assessment of the access designs is detailed within Section 5.6 below.

### 4.3 TRIP DISTRIBUTION

A worst-case scenario of all vehicles turning right into the site and left out of the site (i.e. towards State Highway 16) has been further assessed in Section 5.6 to inform the access design. This is considered a conservative assessment, as it is likely some staff will live locally (to the west) in Muriwai.

All trips associated with the GPMC and academy will use the northern Academy / Service access. All other trips will use the southern Lodge / Clubhouse access. This equates to **36vph** and **56vph** using the Academy / Service access and the Lodge / Clubhouse access in the peak hour, respectively.

Typical peak hour inbound / outbound splits have been assumed for the Academy / Service access:

- 80% / 20% in the AM peak hour; and
- 20% / 80% in the PM peak hour.

The Lodge / Clubhouse access is anticipated to feature more consistent inbound and outbound trips throughout the day due to the nature of activities. As such, the following peak hour inbound / outbound splits have been assumed for the Lodge / Clubhouse access:

- 60% / 40% in the AM peak hour; and
- 40% / 60% in the PM peak hour.

These splits have been used for further analysis within this report.

## 5 ACCESS

### 5.1 GENERAL

Access to the site will be via two new connections onto Muriwai Road. The Lodge / Clubhouse access will be located in a similar location to the existing vehicle crossing. The Academy / Service vehicle crossing will be relocated slightly to the west.

### 5.2 SIGHT DISTANCE

The sight distance requirements are set out in the Austroads Guide Road Design. Safe intersection sight distance (SISD) is considered the relevant standard for sight distance on arterial roads. Austroads requires an SISD of 220m for 100km/h (2.0s reaction time, 2.0s observation time).

Photograph 1 and Photograph 2 below detail the sight distance to the north and south for the northern crossing and the main southern crossing, respectively.

**Photograph 1: Sight distance to the north (Academy / Service access)**



**Photograph 2: Sight distance to the south (Academy / Service access)**





**Photograph 3: Sight distance to the north (Lodge / Clubhouse access)**



**Photograph 4: Sight distance to the north (Lodge / Clubhouse access)**



As detailed Photographs 1 and 2 above, sight distance is more than 300m to the south and more than 220m to the north from the northern (service) access, and therefore satisfies Austroads requirements.

As detailed Photographs 3 and 4 above, sight distance is more than 300m in both directions from the Lodge / Clubhouse access, and therefore satisfies Austroads requirements.

### 5.3 UNITARY PLAN REQUIREMENT – E27 TRANSPORTATION

#### 5.3.1 VEHICLE ACCESS RESTRICTIONS

Unitary Plan Rule E27.6.4.1 (3) requires that vehicle crossings should not be provided if they are located within 10m of an intersection, are subject to a Vehicle Access Restriction, located with frontage to an arterial road or if they are located within 30m of a railway crossing. Muriwai Road is an arterial road, and therefore a restricted discretionary assessment is required. This is detailed in Table 3 below.

**Table 3: Assessment Criteria**

Assessment Criteria	Comment
<b>(11) construction or use of a vehicle crossing where a Vehicle Access Restriction applies under Standard E27.6.4.1(3):</b>	
<b>E27.8.2 (11) (a)</b>	
<b>i) effects of the location and design of the access on the safe and efficient operation of the adjacent transport network having regard to:</b>	
<ul style="list-style-type: none"> <li><b>visibility and safe sight distances;</b></li> </ul>	Sight distances from the proposed vehicle crossings satisfy relevant Austroads sight distance requirements.
<ul style="list-style-type: none"> <li><b>existing and future traffic conditions including speed, volume, type, current accident rate, and the need for safe manoeuvring.</b></li> </ul>	There is no evidence of existing safety issues associated with vehicle movements in and out of driveways within the vicinity of the site. Vehicle volumes and speeds are not expected to change in the vicinity of the site as a result of the proposed development, as the area is already built-up. As such, the proposed development is expected to have a negligible effect on the local road network.
<ul style="list-style-type: none"> <li><b>proximity to and operation of intersections</b></li> </ul>	No intersections are located within the vicinity of the site.
<ul style="list-style-type: none"> <li><b>existing pedestrian numbers, and estimated future pedestrian numbers having regard to the level of development provided for in this Plan;</b></li> </ul>	The volume of pedestrians travelling along the frontage of the site is not expected to change as a result of the proposed development. It is noted that no footpaths exist on this section of Muriwai Road.
<ul style="list-style-type: none"> <li><b>existing community or public infrastructure located in the adjoining road, such as bus stops, bus lanes and cycleway;</b></li> </ul>	No community or public infrastructure will be affected by the proposal.
<b>ii) the effects on the continuity of activities and pedestrian movement at street level in the Business – City Centre Zone, Business – Auckland Unitary Plan Operative in part 53 E27 Transport Metropolitan Centre Zone, Business – Town Centre Zone and Business – Local Centre Zone;</b>	
	Not applicable.

Assessment Criteria	Comment
<p>iii) <b>the practicability and adequacy of the access arrangements considering site limitations, arrangement of buildings and activities, user requirements and operational requirements, proximity to and operation of intersections, having regard to:</b></p>	
<ul style="list-style-type: none"> <li>• <b>the extent to which the site can reasonably be served by different access arrangements including:</b> <ul style="list-style-type: none"> <li>○ access from another road;</li> <li>○ shared or amalgamated access with another site or sites;</li> <li>○ via a frontage road, such as a slip lane or service road;</li> </ul> </li> </ul>	<p>The site only has frontage onto Muriwai Road only. There are no slip lanes or service roads along the frontage of the site.</p>
<ul style="list-style-type: none"> <li>• <b>the extent to which the need for access can reasonably be avoided by entering into a shared parking and/or loading arrangement with another site or sites in the immediate vicinity.</b></li> </ul>	<p>There are no other sites in the vicinity of the site by which a shared parking arrangement could be entered, as all sites in the immediate vicinity of the site are residential dwellings or retail buildings with private parking.</p>

As detailed above, the proposed development is considered to align well with the assessment criteria.

### 5.3.2 NUMBER OF VEHICLE CROSSINGS AND SEPERATION DISTANCE

Rule E27.6.4.2.1 specifies that a minimum separation distance of 6m for vehicle crossings serving the same site be provided as well as a minimum separation for crossings serving adjacent sites of 2m. The site provides two crossings, separated from each other and adjacent crossings by more than 100m and therefore complies with the Unitary Plan.

Table E27.6.4.2.1 specifies that one driveway per 50m of frontage (or part thereof) can be provided for arterial road sites. The site provides over 1,400m of site frontage, and provides two crossings and therefore satisfies requirements.

### 5.3.3 WIDTH OF VEHICLE ACCESS

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

For rural zones, the Unitary Plan requires the following:

- A minimum width of 3.0m at the site boundary; and
- A maximum width of 6.0m at the site boundary.

The northern vehicle crossing measures 9.7m wide and the southern vehicle crossing measures 10.1m wide and therefore both crossings exceed this requirement. It is noted that the maximum width requirements are primarily included in the Unitary Plan to minimise pedestrian crossing distances (which in this case is irrelevant).

The accesses have been designed according to the Austroads Guide to Road Design turning warrants, as further detailed and assessed in Section 5.6 below, and therefore are considered acceptable in this instance.

### 5.3.4 GRADIENT OF VEHICLE ACCESS

Rule E27.6.4.4.1 of the Unitary Plan outlines the requirements for vehicle access gradients. The requirements are detailed below:

- Maximum gradient of 1 in 6 (16.7%) for all other activities;
- Maximum gradient of 1 in 8 (12.5%) for accesses used by heavy vehicles;
- Gradient changes exceeding 1 in 8 (12.5%) at the summit or 1 in 6.7 (15%) at a sag must include transition sections. Transition sections are typically a minimum of 2m long; and
- A 4m long platform with maximum gradient of 1 in 20 (5 per cent) is required adjacent to and within the property boundary.

The Academy / Service access vehicle crossing is essentially flat at the road boundary and for the first 20m within the site and therefore complies with the Unitary Plan. The internal access design is detailed in Section 6 below.

The Lodge / Clubhouse access vehicle crossing is essentially flat at the road boundary and for the first 10m within the site and therefore complies with the Unitary Plan. The internal access design is detailed in Section 6 below.

## 5.4 ACCESS DESIGN

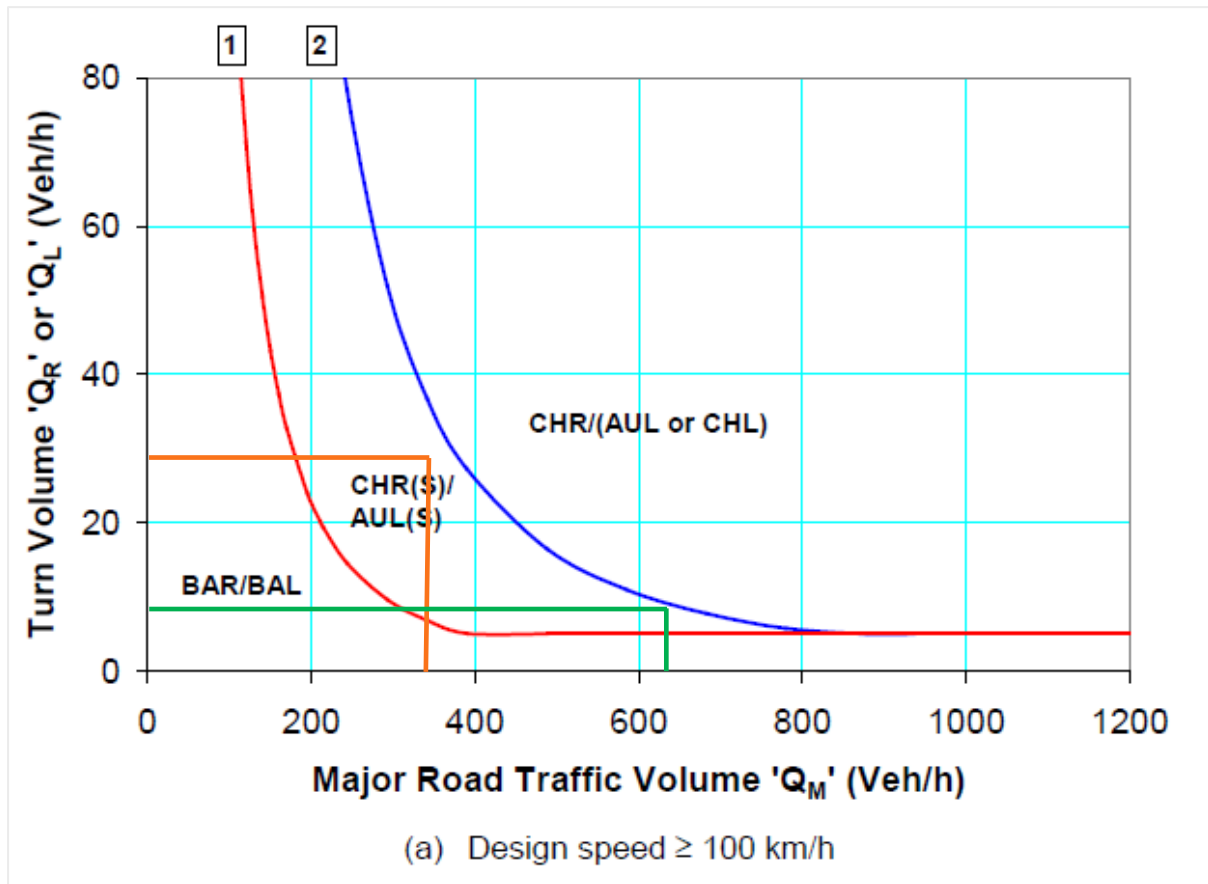
### 5.4.1 ACADEMY / SERVICE ACCESS

The Austroads Guide to Road Design has been reviewed to inform the recommended treatment for turning vehicles. Through volumes are taken from the Auckland Traffic count on Muriwai Road.

The peak hour flow on Muriwai Road in the vicinity of the site measured **360vph** and **620vph** (two-way movement) in the AM and PM peak hours, respectively. From Section 4.3 above, and assuming all service movements will turn right into the site, results in **28** right turning movements and 8 right turning movements into the site in the AM and PM peak hours, respectively.

Figure 4 below details the turning warrants, sourced from the Austroads Guide, for the development. The AM volumes are shown in orange, the PM volumes are shown in green.

Figure 4: Recommended Turning Treatment



As detailed above, Austroads Part 4 recommends a basic right turn treatment or a short channelised treatment to serve the development. The access design has been designed according to the NZTA PPM Diagram D. Although Muriwai Road is not a State Highway, this is considered the most appropriate design standard for this service access. The access design and vehicle tracking are detailed in **Attachment C1**.

#### 5.4.2 LODGE / CLUBHOUSE ACCESS

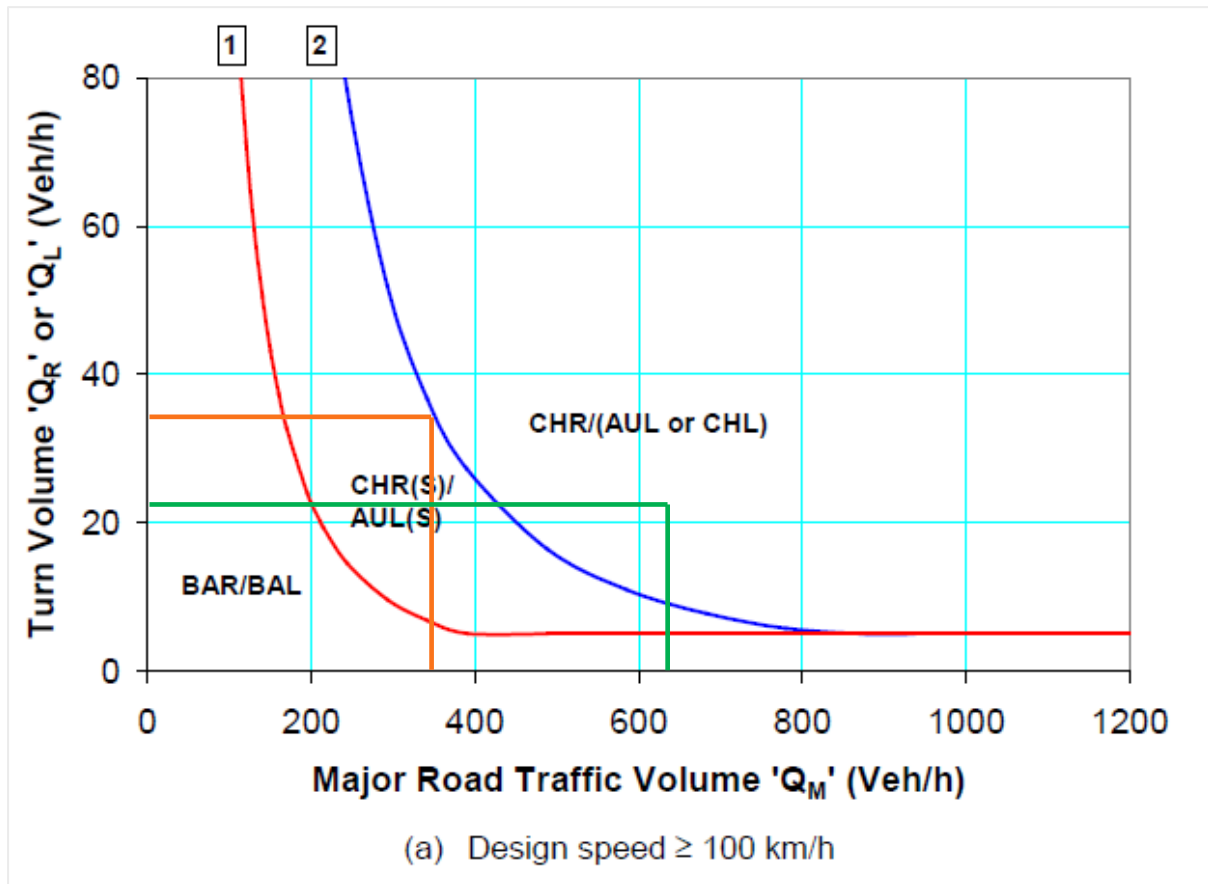
The Austroads Guide to Road Design has been reviewed to inform the recommended treatment for turning vehicles. Through volumes are taken from the AT traffic count on Muriwai Road.

The peak hour flow on Muriwai Road in the vicinity of the site measured **360vph** and **620vph** (two-way movement) in the AM and PM peak hours, respectively. From Section 4.3 above, and assuming all service movements will turn right into the site, results in **34** right turning movements and **22** right turning movements into the site in the AM and PM peak hours, respectively.

Figure 5 below details the turning warrants, sourced from the Austroads Guide, for the development. The AM volumes are shown in orange, the PM volumes are shown in green.



Figure 5: Recommended Turning Treatment



As detailed above, Austroads Part 4 recommends a channelised right turn and a full right turn treatment to serve the development in the AM and PM peak hours, respectively. The access design has been designed to accommodate a full right turn bay. The access design and vehicle tracking are detailed in **Attachment B1**.

## 6 INTERNAL ROADING NETWORK

### 6.1 GENERAL

A comprehensive internal road network is proposed to be provided within the development to facilitate the efficient, safe and scenic movement of guests, staff and supplies with the Site. This road network will have a hierarchy of usage and construction with differing levels of facility depending on the intended usage.

The internal roads intended for the priority transport of supplies and guests will be afforded a wider carriageway than the internal paths intended solely for pedestrian use. A speed limit of 30km/h is proposed for all internal roads / paths.

### 6.2 ROAD FUNCTION

#### 6.2.1 VEHICLE ACCESS ROADS

The vehicle access roads are intended to provide access to and from the Accommodation Units via golf cart or similar vehicle, and access for service / maintenance vehicles. Walking and cycling

modes will be accommodated either within the carriageway or on a 1.2m wide footpath set flush to, and alongside the vehicle carriageway.

Typically vehicles using these roads will be smaller than a standard private car or smaller (e.g.: golf carts or small shuttle vehicles), however we understand that occasional servicing access will be required by an LPG tanker vehicle to replace / replenish LPG tanks at various locations around the resort. Therefore we recommend that the construction of these roads is of sufficient durability to sustain the passage of these vehicles.

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### 6.2.2 DEVELOPMENT CIRCULATION

The primary development circulation route includes a main circulation route, with intermediate link sections throughout the development. The development circulation route is not intended for use by standard motor vehicles, but rather golf carts and service vehicles. The 5.5m carriageway width of the proposed primary loop network would be wide enough for two of these vehicles to pass in opposing directions and afford some clearance to pedestrians who may be on the path.

Peak traffic volumes on the circulation route network is likely to occur during check-in / check-out periods for large groups and, potentially, when groups are being transported to/from the accommodation areas.

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### 6.2.3 SECONDARY LINK

A secondary link road runs approximately parallel to Muriwai Road. At night / during the hours of darkness due to the position of the link road in relation to Muriwai Road there is the possibility that the headlights of vehicles on the link road may appear to drivers eastbound on Muriwai Road to be approaching from the wrong side of the road.

Due to the low height and illumination of the headlights on the shuttle vehicles we do not consider that this is a significant concern, however to mitigate any potential negative effects we recommend that planting is installed between the circulation route and Muriwai Road. Depending on the final design of shuttle vehicle chosen a planting height of 1m should be sufficient to provide a cloaking effect.

## 7 PEDESTRIAN AND CYCLISTS

Pedestrians and cyclists are well catered for within the development, with the internal accessways all providing suitable pedestrian and cycle infrastructure. As detailed above, the internal roading network will provide for pedestrians via pedestrian paths and shared with development vehicles on the carriageway. A speed limit of 30km/h is proposed for all internal roads / paths. This will enable safe movement for pedestrians, with any potential safely mitigated by the low speed traffic environment.

It is noted that no footpaths exist on Muriwai Road in the vicinity of the site, given its rural nature and therefore few people are expected to walk to the development. Cyclists are able to be accommodated on the Muriwai Road carriageway.

## 8 SERVICING

For all activities within rural zones such as the proposed development, no minimum loading space requirement is detailed within the Unitary Plan. As such, the proposal complies with Unitary Plan loading requirements.

The Academy / Service access has been designed to accommodate the vehicle tracking of an 8m rigid truck. This vehicle tracking is detailed within **Attachment C1**. As shown, the proposed access

design can safely accommodate the turning of these trucks. The anticipated vehicle volumes at this service access have been previously detailed in Section 4 of this report.

The service access will have a carriageway measuring 6.0m wide, suitable for the movements of heavy vehicles and service vehicles. As detailed previously, the service access will have a maximum gradient of 11.7%, again suitable for heavy vehicle movement. As such, the servicing access provisions are considered acceptable to serve the development.

## 9 PARKING

### 9.1 GENERAL

A total of 323 parking spaces will be provided throughout the development. Parking is provided as detailed below:

- Clubhouse – 104 spaces;
- Sports Academy – 69 spaces;
- Golf and Property Maintenance – 50 spaces;
- Lodge Building – 12 spaces;
- Guest Parking – 48 spaces;
- Staff Car Parking – 35 spaces; and
- Wellness Centre – 5 spaces.

### 9.2 UNITARY PLAN REQUIREMENTS

Table E27.6.2.3 of the Unitary Plan set out the parking requirement for various activities. Table 4 below details the Unitary Plan parking requirements for the various activities in the Rural – Rural Production Zone.

**Table 4: Unitary Plan Parking Requirement**

Activity		Unitary Plan Rate (min.)	Number	Parking Required (min.)
<b>Golf</b>	19 Hole Course	0.2 per person <sup>5</sup>	50 <sup>6</sup>	10
<b>Club House Complex</b>	Restaurant / Bar	1 per 25sqm GFA	198	8
	Office / Admin	1 per 45sqm GFA	105	2
<b>Sports Academy</b>	Teaching Bays	No minimum	4	0
	Physio Rooms	1 per 20sqm GFA	27	1
	Hitting Bays	No minimum	16	0

<sup>5</sup> Assessed as 'clubrooms'

<sup>6</sup> 50 rounds played per day in peak periods

Activity		Unitary Plan Rate (min.)	Number	Parking Required (min.)
	9 Hole Short Course	0.2 per person <sup>7</sup>	0	0
	Café	1 per 25sqm GFA	55	2
<b>Commercial Office Space</b>	Office	1 per 45sqm GFA	145	3
<b>GPMC</b>	Maintenance	0.7 per FTE	23	16.1
	Landscape	0.7 per FTE	5	3.5
	Housekeeping	0.7 per FTE	17.5	12.25
	Deliveries	0.7 per FTE	1	0.7
	Shared Services	0.7 per FTE	7.5	5.25
<b>Visitor Accommodation</b>	Accommodation	1 per unit	29	29
<b>TOTAL</b>	-	-	-	<b>93</b>

As detailed above, the Unitary Plan requires a minimum of 93 parking spaces. The site provides 323 parking spaces and therefore satisfies this requirement.

### 9.3 UNITARY PLAN DIMENSIONS

Table E27.6.3.1.1 of the Unitary Plan sets out the minimum car parking space and manoeuvring dimensions. The relevant excerpt from this table is detailed in Table 5 below.

**Table 5: Unitary Plan Parking Dimensions**

Car parking angle		Width of parking space	Depth of parking space		Manoeuvring space <sup>3</sup>	Total
			From wall <sup>1</sup>	From kerb <sup>2</sup>		
(T117)	90 degrees (regular users) <sup>4</sup>	2.4	5.0	4.0	7.1	12.1
(T118)		2.5			6.7	11.7
(T119)		2.6			6.3	11.3
(T120)		2.7			5.9	10.9
(T121)	90 degrees (casual users) <sup>4</sup>	2.5	5.0	4.0	7.7	12.7
(T122)		2.6			7.0	12.0
(T123)		2.7			6.7	11.7

<sup>7</sup> Assessed as 'clubrooms'

The parking space dimensions and compliance with Unitary Plan requirements is detailed in Table 6 below.

**Table 6: Parking dimensions and compliance**

Carpark Area	Length x Width (m)	Manoeuvring space (m)	User	Compliance
Lodge Carpark Zone A	6 x 3	7	Casual	<b>Complies</b>
Lodge Carpark Zone B	6 x 3	7	Casual	<b>Complies</b>
Golf Lodge Carpark (Sheet 6)	6 x 3	6	Casual	<b>Complies<sup>8</sup></b>
Wellness Centre Carpark (Sheet 7)	5 x 2.7	5.9	Casual	<b>Does not comply</b>
Golf Clubhouse Carpark (Sheet 11)	5.7 x 3	6.3	N/A	<b>Complies<sup>9</sup></b>
Golf Clubhouse Carpark (Sheet 12)	6 x 3	7	Casual	<b>Complies</b>
Golf Academy Carpark (Sheet 15)	6 x 3	5	Casual	<b>Does not comply</b>
Golf Academy Carpark (Sheet 16)	5 x 2.4	7.7	Casual	<b>Complies</b>
Golf Academy Carpark (Sheet 17)	5 x 2.4	7.7	Casual	<b>Complies</b>

As detailed above, the spaces generally comply with Unitary Plan requirements and vehicles are considered to be able to safely and efficiently manoeuvre into and out of the parking spaces, and enter and exit the site in a forwards direction, and therefore are considered acceptable. The two areas detailed above that do not comply are recommended to be modified within Engineering Plan Approval stage to satisfy Unitary Plan requirements.

#### 9.4 CYCLE PARKING

Table 7 outlines the Unitary Plan bicycle parking requirements for the development.

**Table 7: Unitary Plan Bicycle Parking Requirements**

Activity		Unitary Plan Rate (min.)	Number	Parking Required (min.)
<b>Golf</b>	19 Hole Course	No minimum	-	0
<b>Club House Complex</b>	Restaurant / Bar	No minimum (if less than 350sqm GFA)	198	0
	Office / Admin	No minimum (if less than 200sqm GFA)	105	0
<b>Sports Academy</b>	Teaching Bays	No minimum	4	0

<sup>8</sup> Complies with total width requirement

<sup>9</sup> Complies with 60 degree parking space requirements

Activity	Unitary Plan Rate (min.)	Number	Parking Required (min.)	
	Physio Rooms	1 space plus 1 space per 10 FTE practitioners	2 FTE	1
	Hitting Bays	No minimum	16	0
	9 Hole Short Course	No minimum	-	0
	Café	No minimum (if less than 350sqm GFA)	55	2
<b>Commercial Office Space</b>	Office	No minimum (if less than 200sqm GFA)	145	0
<b>GPMC</b>	Maintenance	No minimum	23 FTE	0
	Landscape	No minimum	5 FTE	0
	Housekeeping	No minimum	17.5 FTE	0
	Deliveries	No minimum	1 FTE	0
	Shared Services	No minimum	7.5 FTE	0
<b>Visitor Accommodation</b>	Accommodation	1 space plus 1 space per 20 rooms/beds; and 1 per 10 FTE employees	29 rooms; and 51 FTE	7 (2 + 5)
<b>TOTAL</b>	-	-	-	<b>10</b>

The total cycle parking provisions can be determined at subsequent resource consent stages however the site is considered to be capable of accommodating the required number of cycle parking spaces.

## 9.5 ACCESSIBLE PARKING

The Unitary Plan requires that accessible parking be provided as per the requirements of the Building Code and NZS 4121<sup>10</sup>. For a total parking provision of 323 spaces NZS 4121 requires 8 accessible spaces. The development can readily provide this number of accessible spaces and therefore can comply with the requirement. These should be included within EPA stage of the development.

## 10 WIDER EFFECTS

### 10.1 OVERVIEW

The site gains direct access to Muriwai Road, an arterial road, and connects to the State Highway network at SH16 to the east at a recently constructed roundabout. This network helps to facilitate the safe and efficient movement of people and goods between urban and rural centres. In this regard with

<sup>10</sup> NZS4121:2001, Design for Access and Mobility: Buildings and Associated Facilities

direct access provided to the arterial road network, vehicles are able to directly access a road which is specifically designed to accommodate all vehicles / goods.

## 10.2 TRIP GENERATION

As detailed previously, the overall trip generation for the site (visitors and staff) is anticipated to be 92 traffic movements per hour. This level of trip generation is below the 100vph threshold detailed in the Unitary Plan which would require a wider effects assessment. Although, no additional assessment is required, an assessment of the effects of the development on Muriwai Road and the Muriwai Road / SH16 intersection is detailed below.

A worst-case scenario of all vehicles turning right into the site and left out of the site (i.e. towards State Highway 16) is evaluated. This is considered a conservative assessment, as it is likely some staff will live locally (to the west) in Muriwai. The inbound / outbound splits were previously detailed in Section 4.3 of this report.

## 10.3 MURIWAI ROAD

Austrroads Guide to Traffic Management Part 3 defines the ideal capacity for a single traffic lane as 1,800 vehicles per hour, allowing for the influence of such side friction effects as intersections with side roads, road alignment and parking (of which little occurs on Muriwai Road) a practical lane capacity of 1,500-1,600vph may be assumed.

The additional development traffic will take peak volumes on Muriwai Road from 620vph to 710vph in holiday periods, which are both well below this upper bound.

Therefore we do not consider that the additional traffic volumes will have anything other than a minimal effect on the operation of Muriwai Road. The development has the following additional advantages:

- The site has direct access to the arterial road network and does not require any vehicles to travel along roads that have not been designed to regularly accommodate vehicles;
- The golf development generally generates peak movements outside commuter peaks; and
- The access is suitable in terms of both sight distance and design.

In terms of localised effects beyond the site driveways it is noted the increase in volumes is expected to be negligible and as such at any driveway / intersection in proximity of the site, the increase will not be noticeable.

## 10.4 MURIWAI ROAD / SH16 INTERSECTION

The Muriwai Road / SH16 intersection has been recently upgraded to a large roundabout, accommodating state highway traffic. The intersection is observed to operate well, with safe and efficient movement provided for all approaches in all peak periods. The addition of 89vph is not anticipated to detrimentally affect this existing good operation. The effects on the operation of this intersection are considered to be negligible.

## 11 CONSTRUCTION TRAFFIC

The development site is currently farmland and earthworks would be required before any new development could be constructed. Again, this would be subject to subsequent resource consent processes.



It is noted that the existing accesses to Muriwai Road would be used to accommodate truck movements to and from the site. The volume of earth works is detailed within Table 4 of the Project Description document provided as part of this application.

As is typical with a development of this scale, it is recommended that as part of any resource consent, a Construction Traffic Management Plan (CTMP) should be required as a condition. It is considered that this Construction Traffic Management Plan should include:

- Construction dates and hours of operation including any specific non-working hours for traffic congestion/noise etc, aligned with normally accepted construction hours in the Auckland Region;
- Truck route diagrams between the site and external road network.
- Temporary traffic management signage/details for both pedestrians and vehicles, to manage the interaction of these road users with heavy construction traffic; and
- Details of site access/egress over the entire construction period and any limitations on truck movements. All egress points should be positioned to achieve appropriate sight distances.

Based on experience of constructing similar projects, and bearing in mind capacity within the existing road network, with the appropriate Construction Traffic Management Plan in place and the above measures implemented, it is considered that construction activities can be managed to ensure any generated traffic effects are appropriately mitigated.

## 12 CONCLUSIONS

Following a review of the proposal for a Golf Project located at Muriwai Downs, Muriwai, the following can be concluded:

- The existing good safety record is not anticipated to be detrimentally affected by the proposal;
- The local road network is considered to be able to readily accommodate the development traffic, subject to the implementation of the vehicle access designs as detailed and assessed in this report;
- The accesses generally comply with the relevant Unitary Plan access requirements, with the exception of the access width detailed and assessed in Section 4.2.3;
- The development complies with the relevant Unitary Plan parking requirements;
- The development complies with the Unitary Plan loading requirements;
- The effects on the wider road network are considered to be minimal; and
- Construction activities can be managed to ensure any generated traffic effects are appropriately mitigated.

It is recommended that the two parking areas that do not comply with parking dimensional requirements should be modified within Engineering Plan Approval stage to satisfy Unitary Plan requirements.

Overall, subject to the recommendation above, it is concluded that there are no traffic engineering or transportation planning reasons that would preclude the development of the subject site as proposed and the development will have minimal effect on the local road environment.

## APPENDIX A – TRIP GENERATION

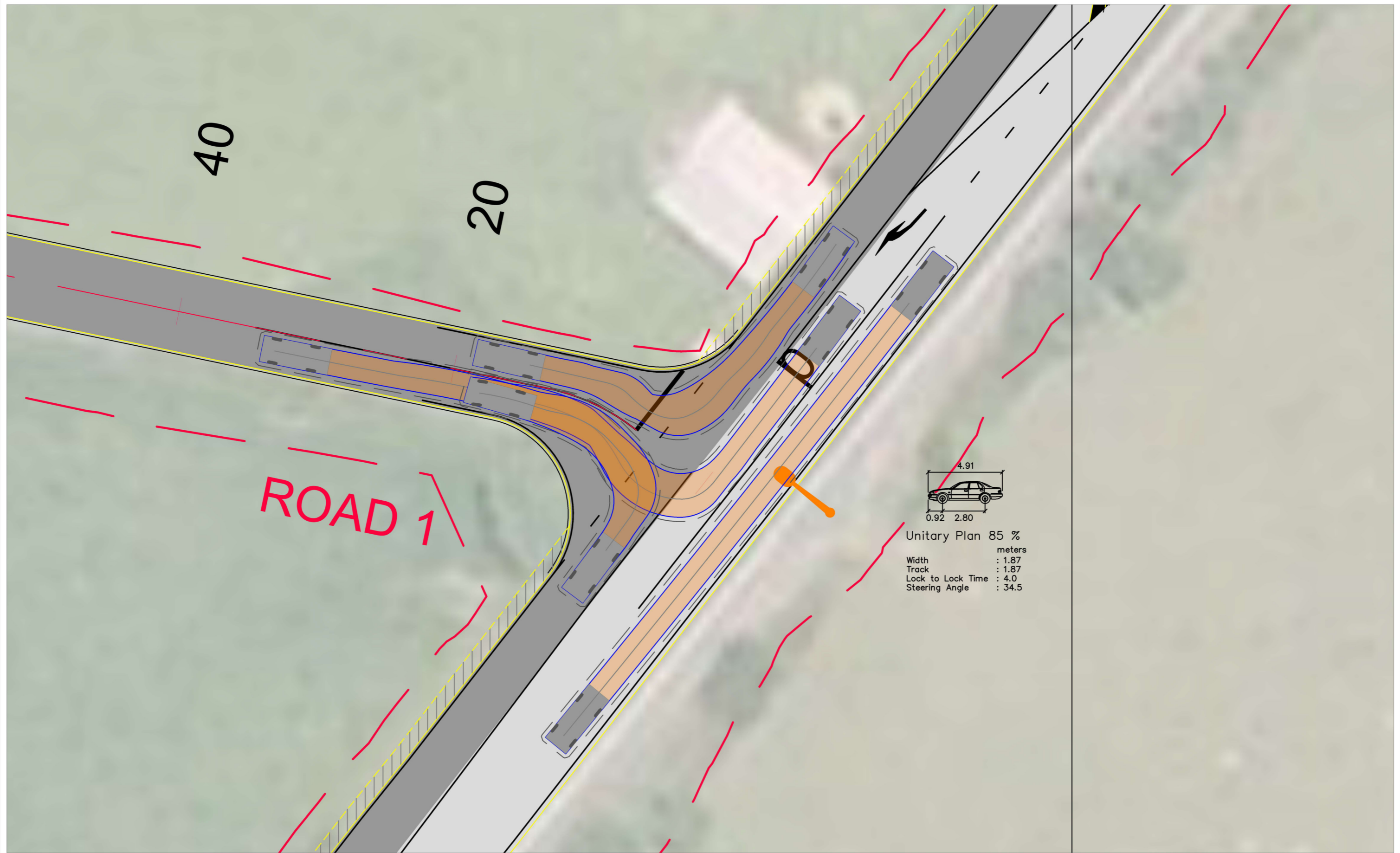
<b>Weekday Peak Hour</b>											
	Activity	Visitor Trip Rate	Unit	Percentage of External Number <b>8</b>	Visitor Trips	Staff Trip Rate	Unit	Assumption <b>7</b>	Number	Staff Trips	
<b>Golf</b>	19 Hole Course	1	vph <b>2</b>	5	5	N/A <b>5</b>					
	9 Hole Course	0	vph <b>3</b>	5	0	N/A					
<b>Club House Complex</b>					0						
	Restaurant	5	per 100sqm	20%	160	1	per FTE	10%	25.5	2.55	
	Bar	5	per 100sqm	20%	155	1	per FTE	10%	0 <b>6</b>	0	
	Office	N/A			0	1	per FTE	10%	0 <b>6</b>	0	
	Caddies	N/A			0	1	per FTE	20%	40	8	
<b>Sports Academy</b>	Teaching bay	1	per bay	50%	4	1	per FTE	20%	12	2.4	
	Physio	1	per room	50%	2	1	per FTE		0 <b>6</b>	0	
	Hitting Bays	1.5	per bay	50%	16	1	per FTE		0 <b>6</b>	0	
	Café	5	per 100sqm	0%	55	0	1	per FTE	10%	9.5	0.95
<b>Commercial Office Sp</b>	Office	N/A			0	1	per FTE	80%	25	20	
<b>GPMC</b>	Maintenance	N/A			0	1	per FTE	20%	23	4.6	
	Landscape	N/A			0	1	per FTE	50%	5	2.5	
	Housekeeping	N/A			0	1	per FTE	20%	17.5	3.5	
	Deliveries	N/A			0	1	per FTE	100%	1	1	
	Shared Services	N/A			0	1	per FTE	80%	7.5	6	
<b>Visitor Accom</b>	Accomodation	0.4	trips / unit	60% <b>4</b>	29	6.96	1	per FTE	20%	51	10.2
<b>Farm / Quarry</b>	Farm / Quarry	N/A			0	0	per FTE	0%	2	0	
<b>TOTAL</b>					<b>30.11</b>					<b>61.7</b>	

**Total both** 92

**Northern Access** 36  
**Southern Access (Main)** 56

- 1 Reduction Due to users already being on-site
- 2 10,100 round per 7 months (peak period). 50 rounds per day. 5 rounds peak hour. Assume 1 trip per round.
- 3 Assume half of 18 hole course
- 4 60% occupancy rate
- 5 Staff trips detailed under GPMC
- 6 FTEs incoprated in above figure
- 7 reduction due to staff not arriving in peak hour
- 8 Academy café gfa not listed, assume same as club house café
- 9 All GPMC Staff movements via northern access

## APPENDIX B - LODGE / CLUBHOUSE ACCESS



Revision notes:

Rev:	Date:	Notes:

Drawn by:  
JB  
Muriwai Downs

Client:

Project:  
**Muriwai Downs**  
Golf Development

Drawing Title:  
Vehicle Tracking

Date:  
25/11/21

Scale @ A3:  
1:250

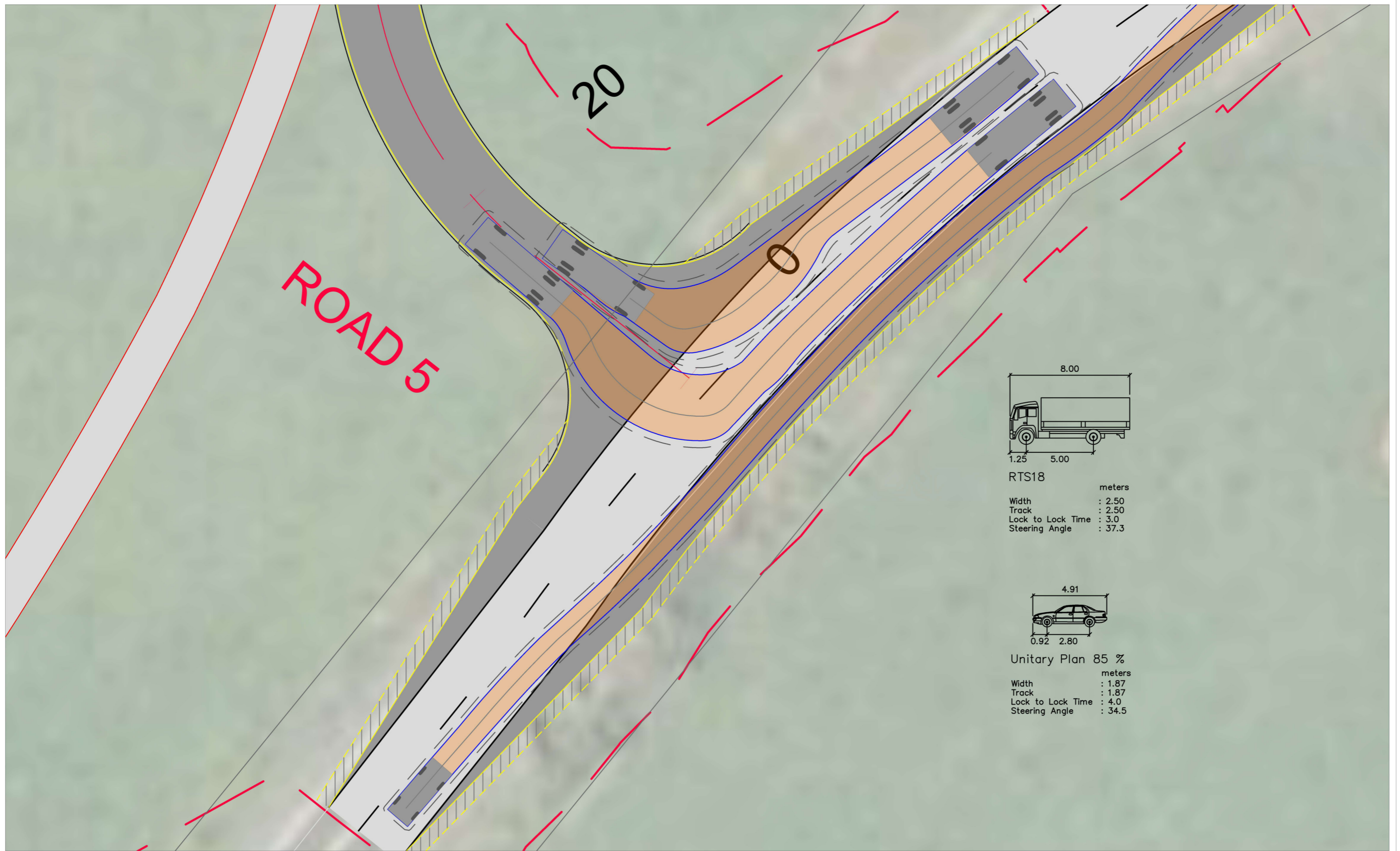
Revision:  
A



Figure:  
**B1**

## APPENDIX C – ACADEMY / SERVICE ACCESS





Revision notes:		
Rev:	Date:	Notes:

<b>Drawn by:</b> JB Muriwai Downs
<b>Client:</b>

<b>Project:</b> Muriwai Downs Golf Development
<b>Drawing Title:</b> Vehicle Tracking

<b>Date:</b> 25/11/21
<b>Scale @ A3:</b> 1:250
<b>Revision:</b> A



Figure:  
**C1**