

Mr Chris Meehan  
Ayrburn Farm Development Limited  
c/o Winton Partners  
Level 2  
33 Shortland Street  
**Auckland 1010**

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Issued via email: [chris.meehan@wintonpartners.com.au](mailto:chris.meehan@wintonpartners.com.au)  
[john.edmonds@jea.co.nz](mailto:john.edmonds@jea.co.nz)

Dear Chris

**Ayrburn Farm Development**  
**Arrowtown-Lake Hayes Road Access**

Following your request, we have prepared a preliminary assessment of the access requirements onto Arrowtown-Lake Hayes Road for the proposed development at Ayrburn Farm.

**1. Proposed Development**

We understand that Ayrburn Farm Development Limited proposes development of a new subdivision at Ayrburn Farm on the northern side of Speargrass Flat Road and west of Arrowtown-Lake Hayes Road. The subdivision will create about 120-150 new residential lots which will be accessed via a new intersection on Arrowtown-Lake Hayes Road about 200m north of the Speargrass Flat Road intersection. The existing homestead will be maintained on a separate access and title.

**2. Existing Transport Environment**

State Highway 6 (SH6) represents the main strategic road in the area linking Wanaka to the north with Queenstown (via State Highway 6A) to the south. Arrowtown is located about 2km north of Ayrburn Farm along Arrowtown-Lake Hayes Road. Arrowtown-Lake Hayes Road represents the shortest route between Arrowtown and Queenstown via SH6 and is classified as an Arterial Road within the Queenstown Lakes District Plan. Arterial Roads are defined as dominant elements of the transport network connecting major settlements within the district and are managed to minimise their local access function.

North of Speargrass Flat Road, Arrowtown-Lakes Hayes Road has been constructed as a rural two lane carriageway with 3.6m wide traffic lanes and 0.4m wide shoulders. The road reserve is about 20m wide and has been grassed. On the Ayrburn Farm frontage, the current speed limit is 100km/h and the road has a straight and generally level alignment. The speed limit on Arrowtown-Lake Hayes Road south of Ayrburn Farm is 70km/h. TDG is aware that a reduction in the speed limit from 100km/h to 80km/h is under consultation.

Photograph 1 shows that a power line runs along the western side of the road in the vicinity of Ayrburn Farm. The power poles are 2.0-2.5m from the edge of the sealed carriageway. Photograph 2 shows a ditch along the eastern boundary of the road reserve.



***Photograph 1: View South on Arrowtown-Lake Hayes Road from Proposed Intersection Location***



***Photograph 2: View North on Arrowtown-Lake Hayes Road from Proposed Intersection Location***

Speargrass Flat Road meets Arrowtown-Lake Hayes Road at a priority controlled cross-roads intersection with Hogans Gully Road. The shoulders of Arrowtown-Lake Hayes Road have been widened on the approaches to the intersection to accommodate turning movements and provide space for through traffic to pass turning vehicles.

Traffic count information obtained from QLDC indicates that the average daily traffic volume on Arrowtown-Lake Hayes Road north of SH6 was about 3,400 vehicle movements per day (vpd) in November 2013. Current traffic volumes would be expected to be about 3,500vpd based on an average annual growth rate of 2% per annum. The peak period was 5:00pm to 6:00pm with a peak hourly volume of about 300 vehicles per hour (vph).



### 3. Expected Traffic Generation and Distribution

The concept subdivision plan shows 122 residential lots but it is understood that up to 150 lots could be created. The average daily traffic generation of the subdivision with 150 lots would be expected to be about 1,200 vehicle movements per day based on an average traffic generation rate of eight vpd per household. The NZTA Research Report No 453 “Trips and Parking related to land use” indicates that the median peak hour traffic generation rate for rural residential activity is 1.1vph per dwelling. On this basis, the subdivision could generate about 165vph in the morning and evening peak periods.

In the morning commuter peak period, about 80% of all vehicle movements generated by the site would be expected to be outbound with the majority being towards workplaces and other activities within Queenstown. In the evening, about 65% of movements would be expected to be into the subdivision again with the majority being from Queenstown. The following table provides an indication of the expected turning volumes in the morning and evening peak hours based on 75% of movements being to / from Queenstown<sup>1</sup>.

Period	Left-out	Right-out	Left-in	Right-in
AM	30	100	25	10
PM	15	45	75	30

**Table 1: Indicative Movement Patterns at New Intersection on Arrowtown-Lake Hayes Road**

### 4. Intersection Configuration

The industry-standard Austroads Guide to Road Design Part 4A provides warrants for turn treatments at unsignalised intersections. Based on the existing traffic volumes on Arrowtown-Lake Hayes Road and the forecast turning volumes at the subdivision access, the warrants for basic left and right turn treatments would be exceeded in the evening peak period and channelized treatments are preferred. Therefore, it is recommended that the intersection be designed to include a right turn bay and left turn deceleration lane. It is considered that the existing road reserve width will be sufficient to accommodate the road widening required to accommodate the additional lanes.

Since Arrowtown-Lake Hayes Road is generally straight, no issues are anticipated with providing adequate sight lines at the intersection.

The power poles on the western side of the Arrowtown-Lake Hayes Road however, represent a safety hazard because of their proximity to the carriageway. It is recommended that the poles are moved away from the carriageway when the new intersection is constructed. Similarly, the ditch on the eastern side of the road will also represent a hazard because of its proximity to the road when the new intersection is formed. It is recommended that the ditch is replaced by an underground pipe in the vicinity of the intersection.

The proposed location of the new intersection some 200m north of the Speargrass Flat Road intersection represents about nine seconds of travel time at 80km/h and is considered to be adequate to prevent any driver confusion and also provide sufficient space for signage to be provided.

We also recommend that some consideration is given to identifying suitable locations for a bus to stop clear of through traffic so that the subdivision becomes safely access by public

<sup>1</sup> This is consistent with the turning distribution patterns at SH6 / Howards Drive



transport. Subject to discussion with the bus operators, the preferred location would be between the new intersection and Speargrass Flat Road. The allowance for the future provision of a stop in this location is considered to be appropriate for this future residential activity making use of the existing (or future increase) in the bus services along the route. It is recommended that a footpath is provided adjacent to Arrowtown-Lake Hayes Road to link the bus stops with the subdivision.

## 5. Conclusions

Following this preliminary assessment, it is concluded that:

- (i) The proposed intersection location provides adequate separation from other intersections;
- (ii) The proposed development should be supported by an intersection constructed with a right turn bay and left turn deceleration lane;
- (iii) Power poles on the western side of Arrowtown-Lake Hayes Road should be relocated to increase clearance from the carriageway;
- (iv) The ditch on the eastern boundary should be replaced by an underground pipe; and,
- (v) Adequate sight distances can be provided to allow safe and efficient operation of the new intersection.

We trust that this report provides the information that you require but we would be happy to discuss any matters raised as necessary.

Yours sincerely

**Traffic Design Group Ltd**

Chris Rossiter  
**Principal Transportation Engineer**

chris.rossiter@tdg.co.nz

Don McKenzie  
**Technical Director**

don.mckenzie@tdg.co.nz

enc: Subdivision Concept Plan  
Site Location



+ **AYRBURN - DRAFT CONCEPT**  
 AYRBURN FARM DEVELOPMENTS LTD  
 BDG REF: 2514-SK05 - SCALE = 1:3000 T A3 - 12 FEB 2015





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