Waterfall Park Developments Limited

Proposed Screen Hub Ayrburn

Transportation Assessment

CARRIAGEWAY
CONSULTING
traffic engineering | transport planning

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1. Introduction

1.1. Waterfall Park Developments Limited is seeking consents through Schedule 2 of the Fast-Track Approvals Act 2024 for the construction and operation of a 'screen hub' on a site within Ayrburn. The proposal includes two sound stages, a 'back lot' for filming and also laydown of materials and storage. Accommodation is also included in the proposal. When the sound stages are not in use, the accommodation will be used for standard visitor accommodation. However when a production is using the screen hub, part of this will be used for production offices, and for accommodating the cast and crew, with the balance (should it not all be booked out for film use) used as standard visitor accommodation.

1.2. This Transportation Assessment sets out a detailed analysis of the transportation issues associated with the proposal including changes in travel patterns that are likely to arise from development of the site. Where potential adverse effects are identified, ways in which these can be addressed are set out.

1.3. This report has been prepared by Andy Carr in accordance with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note (2023), and whose qualifications and experience are summarised in Appendix A. It is cognisant of the guidance specified in the New Zealand Transport Agency's '*Integrated Transport Assessment Guidelines*' and although travel by private motor vehicle is addressed within this report, in accordance with best practice the importance of other transport modes is also recognised. Consequently, travel by walking, cycling and public transport is also considered.

2. Site Overview

2.1. Location

2.1.1. The site is located approximately 2.3km southwest of Arrowtown and 8km northeast of Queenstown Airport, immediately adjacent to the Ayrburn hospitality area. The site has frontage only onto the private road that serves Ayrburn, known as Ayr Avenue. It is zoned as Wakatipu Basin Rural Amenity Zone in the proposed Queenstown Lakes District Plan ('*District Plan*').

2.1.2. The location of the site in the context of the local area is shown in Figure 1 and in more detail in Figure 2.

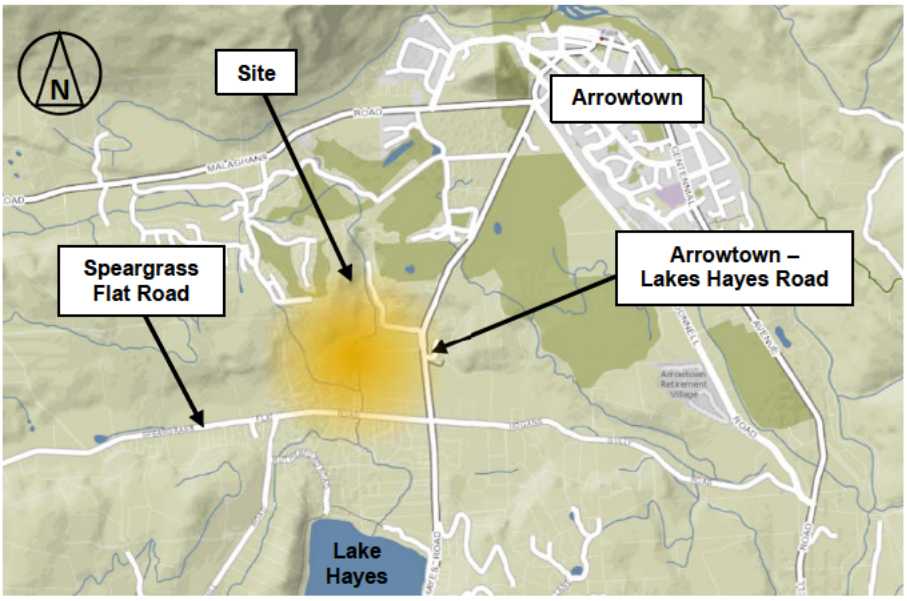


Figure 1: General Location of Development Site

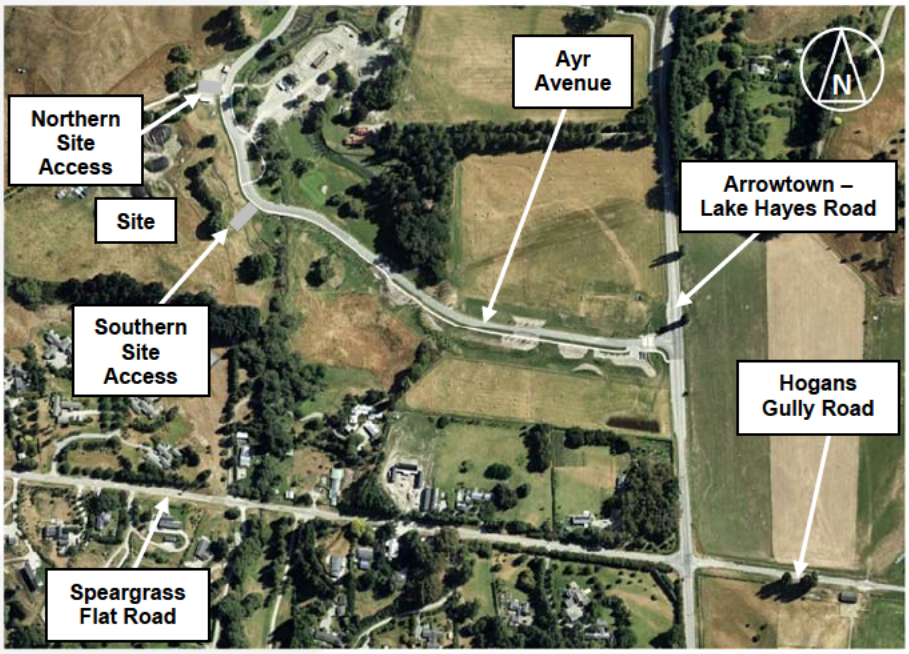


Figure 2: Aerial Photograph of Development Site and Environs

2.2. Roading Classification

2.2.1. The proposal has frontage onto, and will be accessed from, Ayr Avenue. This road serves the Waterfall Park Zone and was consented under RM171280. The road is not vested, but in effect operates as a Local Road with a role of providing for property access.

2.2.2. In turn, Ayr Avenue connects to Arrowtown – Lakes Hayes Road, which is an Arterial Road under the roading hierarchy indicating a role in primarily providing for through traffic and a limited property access function.

2.2.3. Further south, Speargrass Flat Road and Hogans Gully Road are Collector Roads under the roading hierarchy indicating a role carrying both through traffic and providing local access.

3. Current Transportation Networks

3.1. Roading Network

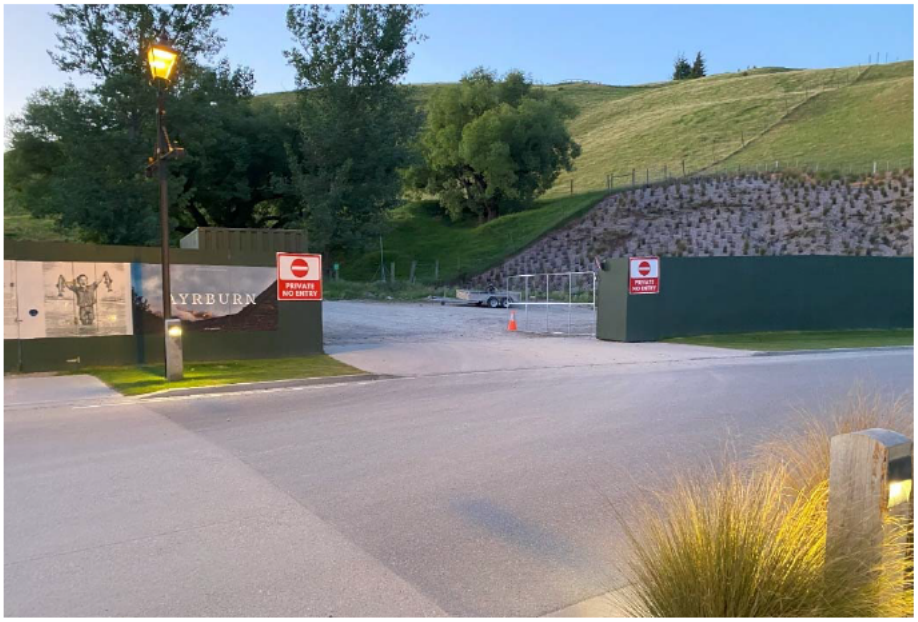
3.1.1. The site is presently served by two existing accesses onto Ayr Avenue, as shown on Figure 2 above. The southern site access is constructed as a vehicle crossing with no traffic signs or markings, and it currently provides two traffic lanes (but for clarity, the existing formation is temporary and will be upgraded as part of the proposal).

Photograph 1: Southern Site Access

3.1.2. Sightlines in both directions at the southern vehicle crossing along Ayr Avenue are excellent and appropriate for the operating speed of the road. For clarity, although there is a bridge parapet towards the east, an appropriate sight distance is provided.

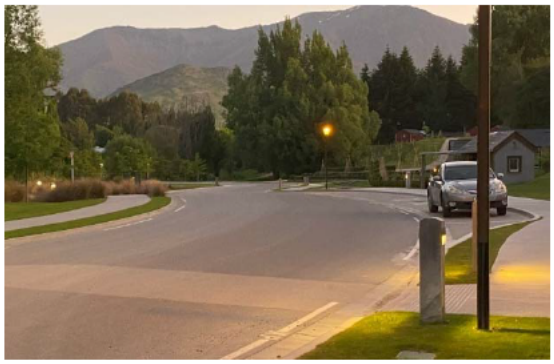
Photographs 2 and 3: Sightlines to the Left and Right from the Southern Site Access

3.1.3. The northern site access is located 130m to the north of the southern site access. The current formation of the northern vehicle crossing is also temporary, and will be improved as part of the proposed development. It is presently constructed as a vehicle crossing with no traffic signs or markings, with the access itself being gated.



Photograph 4: Northern Site Access

3.1.4. Sightlines in both directions at the northern vehicle crossing are excellent and appropriate for the operating speed of Ayr Avenue.



Photographs 5 and 6: Sightlines to the Left and Right from the Northern Site Access

3.1.5. Ayr Avenue itself has a gently curving alignment, and one traffic lane in each direction with a total carriageway width of 7.2m. However, two sections of single-lane working have been introduced in order to provide a traffic calming effect, thereby supporting the posted speed limit of 30km/h. Due to the topography and also for flood protection, at some locations the road is slightly elevated above the ground level on each side and in other locations there is a fill slope on one side.

Photograph 7: Eastern End of Ayr Avenue Looking West

Photograph 8: One-Lane Section of Ayr Avenue

3.1.6. Ayr Avenue terminates at a priority intersection with Arrowtown – Lakes Hayes Road, approximately 550m east of the site. The Arrowtown – Lakes Hayes Road / Ayr Avenue intersection has recently been constructed and therefore meets current guidelines and sight distances for turning traffic are excellent. The intersection has auxiliary turning lanes for vehicles entering Ayr Avenue from both the north and the south.

Photograph 9: Ayr Avenue / Arrowtown – Lake Hayes Road Intersection Looking South

3.1.7. At the location of the intersection, Arrowtown – Lakes Hayes Road has a rural road formation with a 7.2m carriageway with one traffic lane in each direction, and gravelled shoulders on each side. On the western side of the road is a 6m grassed verge with a swale, and there is a drainage ditch on the eastern side. The speed limit of the road is 70km/h.

Photograph 10: Arrowtown – Lake Hayes Road Looking North

3.1.8. The alignment of Arrowtown – Lakes Hayes Road over much of the frontage of Ayrburn is flat and straight, but towards the north the road starts to rise and it turns slightly towards the northeast (as can be seen on Photograph 10).

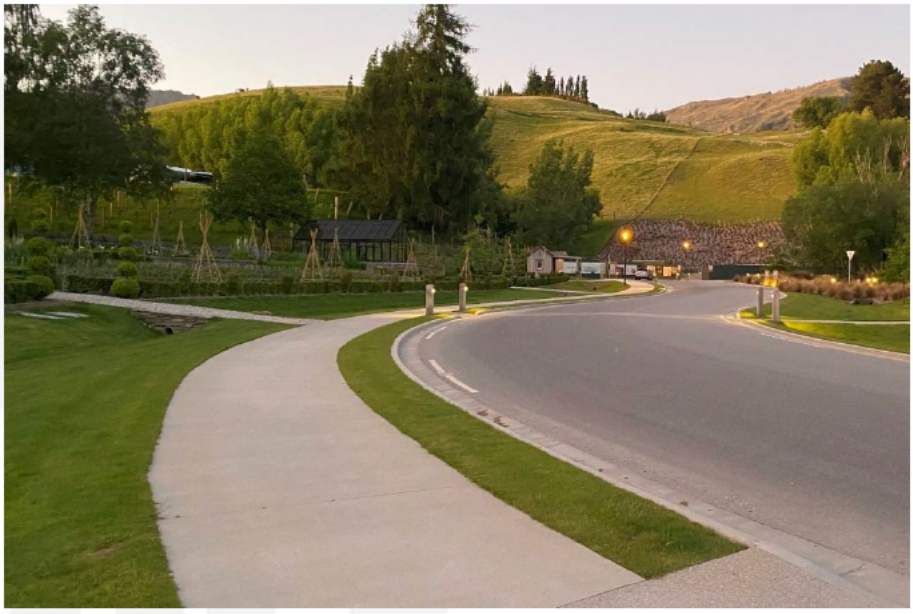
3.1.9. Approximately 250m south of the Arrowtown – Lake Hayes Road / Ayr Avenue intersection, Speargrass Flat Road and Hogans Gully Road join Arrowtown – Lake Hayes Road at a priority ('give-way') controlled crossroads where traffic on Arrowtown – Lake Hayes Road retains priority. No auxiliary turning lanes are formed at the intersection although there is shoulder

widening on Arrowtown – Lake Hayes Road that enables vehicles turning left to slow and move clear of through traffic. Each of these roads lies within a 20m legal width.

Photograph 11: Arrowtown – Lakes Hayes Road / Speargrass Flat Road Intersection Looking South

3.2. Non-Car Infrastructure

3.2.1. Over much of its length, Ayr Avenue has a 2.0m shared walking/cycling route provided on one side only (the southern side) which runs the full length of the road from the site to Arrowtown – Lake Hayes Road. The southern vehicle crossing crosses this shared route but it terminates just south of the northern vehicle crossing.



Photograph 12: Shared Walking and Cycling Route on Southern Side of Ayr Avenue

3.2.2. There is also a footpath over part of the northern side of Ayr Avenue but this is limited to a section between (but on the other side of the road to) the northern and southern site accesses.

3.2.3. The low speed limit on the road of 30km/h also supports cyclists to share the road with motorised traffic.

3.2.4. There is currently no specific infrastructure provided for pedestrians or cyclists on Arrowtown – Lake Hayes Road adjacent to the site. However, there are wide grassed berms which could be used for walking trips.

3.2.5. Although there are no public transport services that operate along Ayr Avenue, there is a bus stop located on the northbound traffic lane, just south of the northern site access. This is provided within an indented bus layby, and can cater for two parked coaches.

Photograph 13: Bus Layby in Ayr Avenue

3.3. Future Changes

3.3.1. There are no known changes to the roading infrastructure in the area. However there are consented developments within Ayrburn that have not yet been constructed, meaning that the receiving environment for the current proposal will differ in respect of the traffic flows on the network. These are described and discussed below.

4. Current Transportation Patterns

4.1. Traffic Flows

4.1.1. The MobileRoad website records traffic count data throughout the country. This shows the following daily traffic volumes in 2024[1]:

- Arrowtown – Lake Hayes Road: 4,700 vehicles per day (two-way);
- Speargrass Flat Road: 1,000 vehicles per day (two-way); and
- Hogans Gully Road: 440 vehicles per day (two-way).

4.1.2. As part of RM180584 (for a hotel complex served by Ayr Avenue, presently unconstructed), traffic surveys were carried out in October 2017 at the Arrowtown – Lake Hayes Road / Speargrass Flat Road / Hogans Gully Road intersection. Data is also available for the traffic flows on these three roads in 2017, meaning that the traffic growth between 2017 and 2023 can be found:

- Arrowtown – Lake Hayes Road:
  - 4,700 vehicles per day (two-way) in 2024;
  - 4,000 vehicles per day (two-way) in 2017;
  - Growth of 17.5%
- Speargrass Flat Road:
  - 1,000 vehicles per day (two-way) in 2024;
  - 750 vehicles per day (two-way) in 2017;
  - Growth of 33.3%
- Hogans Gully Road:
  - 440 vehicles per day (two-way) in 2024;
  - 150 vehicles per day (two-way) in 2017;
  - Growth of 293.3%

4.1.3. The observed 2017 traffic volumes at the Arrowtown – Lake Hayes Road / Speargrass Flat Road intersection are shown below.

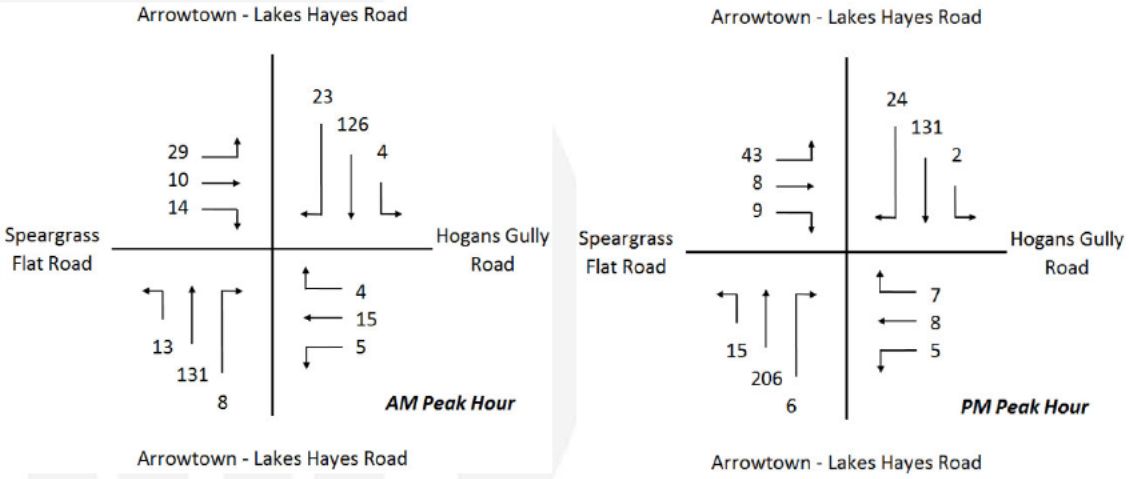


Figure 3: 2017 Weekday Surveyed Peak Hour Traffic Flows, Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection

[1] These are set out in the MobileRoad database as estimated traffic volume

4.1.4. The percentage growth figures set out above have been used to factor the observed 2017 traffic volumes at the Arrowtown – Lake Hayes Road / Speargrass Flat Road intersection. Because the growth has been different on each road, a Furness procedure has been used with the volumes factored to a convergence of at least 2%.

Road and Direction		Morning Peak Hour				Evening Peak Hour			
		2017 obsrved	Factor	2017 factored	Furness	2017 obsrved	Factor	2017 factored	Furness
Arrowtown – Lakes Hayes Road (south)	N	152	17.5%	179	178	227	17.5%	267	263
	S	145		170	170	145		170	170
Hogans Gully Road (east)	E	22	293.3%	87	86	16	293.3%	63	63
	W	24		94	93	20		79	77
Arrowtown – Lakes Hayes Road (north)	N	164	17.5%	193	193	256	17.5%	301	301
	S	153		180	176	157		184	179
Speargrass Flat Road (west)	E	53	33.3%	71	70	60	33.3%	80	79
	W	51		68	68	47		63	63

Table 1: Comparison of 2017 Volumes Factored to 2023 and Furnessed

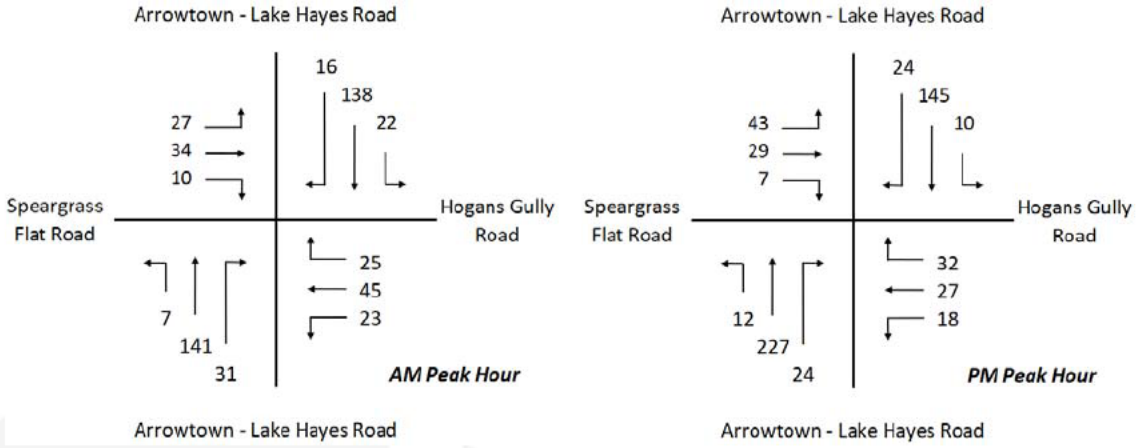


Figure 4: Factored Weekday Peak Hour Traffic Flows, Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection (2024 Base)

4.1.5. There have been a series of consented developments within Ayrburn which can also be expected to have affected traffic flows at this intersection. These are:

- RM210591 (Change of Use of Cart Shed and Dairy)
- RM211193 (Ayrburn Domain Extension)
- RM220829 (Barrel Room)
- RM230163 (Frost Ponds)
- RM230352 (Commercial Services Building)
- RM240244 (Orangerie)
- RM230229 (Vary Hotel Consent for Maintenance Shed)
- RM221133 (Northbrook Display Suite)
- RM220874 (Variation to Ayrburn Domain Extension (RM211193) & Bakehouse)

4.1.6. It is understood that the consents set out above have already been implemented, in which case the traffic flows will be included in the factored 2024 volumes, or the activities will not

generate traffic in their own right (such as the frost ponds). Irrespective, in and of themselves, none of the activities consented have a substantial trip generation.

4.1.7. There are five resource consents which have not been implemented. The details for two of these are noted below:

- RM200791 (Lot 3 Residential Building Platform): This consent is for a single dwelling; and
- RM230425 (Haybarn): This consent is for a function venue with 432sqm Public Floor Area and able to accommodate up to 180 guests.

4.1.8. Importantly both of these consents are located on exactly the same site. This means that if one of them progresses, the other cannot. Of the two, the Haybarn has the greatest traffic generation, which was assessed within the application as generating a peak hour traffic volume of 62 vehicle movements. As the consent is in place, it is appropriate to take this into account when considering the receiving environment for the proposed development.

4.1.9. There are a further two consents which could have a substantial traffic generation if implemented:

- RM180584 (Hotel). This consent allows for the construction and operation of a 380-room hotel, dining facilities and bars, and a conference facility for up to 685 people; and
- RM220926 (Northbrook Arrowtown) and RM220252 (Northbrook Arrowtown Variation). This consent allows for the construction and operation of a large retirement village.

4.1.10. Again, these two consents are located on exactly the same site and so if one progresses, the other cannot. It is understood that at the current time, the retirement village is being progressed rather than the hotel, with a retirement unit display suite in place, construction underway of one of the residential apartment buildings, and pre-sales progressing[2]. As such, it appears very unlikely that the consented hotel will ultimately progress.

4.1.11. Nevertheless, as the hotel consent remains in place and has the higher traffic generation, this consent has been taken into account for the purposes of assessing the receiving environment for the proposed development.

4.1.12. Finally, RM240314 / RM240462 / RM240457 are presently being processed, but will allow for concerts to be held at Ayrburn. However the temporary events do not relate to activities that occur frequently and will all operate under temporary traffic management arrangements. Given this, they have not been considered further within this analysis.

4.1.13. Any consents that have been applied for but not yet granted have not been included in this analysis.

4.1.14. The traffic generation of the hotel (RM180584) as presented in the resource consent application, is set out below.

[2] The Applicant, Winton, is listed on the NZ and Australian stock exchanges and the development of the retirement village has also been included in formal communications under relevant statements.

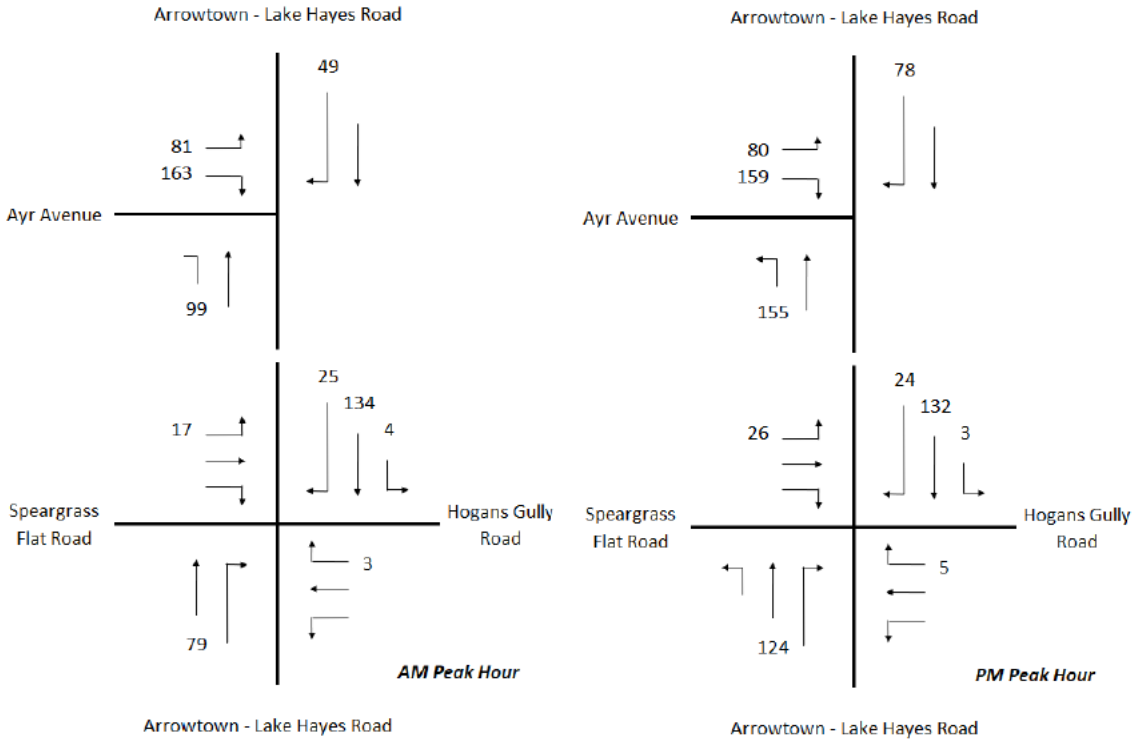


Figure 5: Peak Hour Traffic Generation of Consented Hotel

4.1.15. An allowance has also been made for a further 62 vehicle movements associated with The Haybarn, with these vehicles been apportioned in accordance with the traffic generation of the hotel. The Haybarn traffic, plus the addition of Figures 4 and 5 therefore leads to the following traffic flows for the receiving environment for the current application.

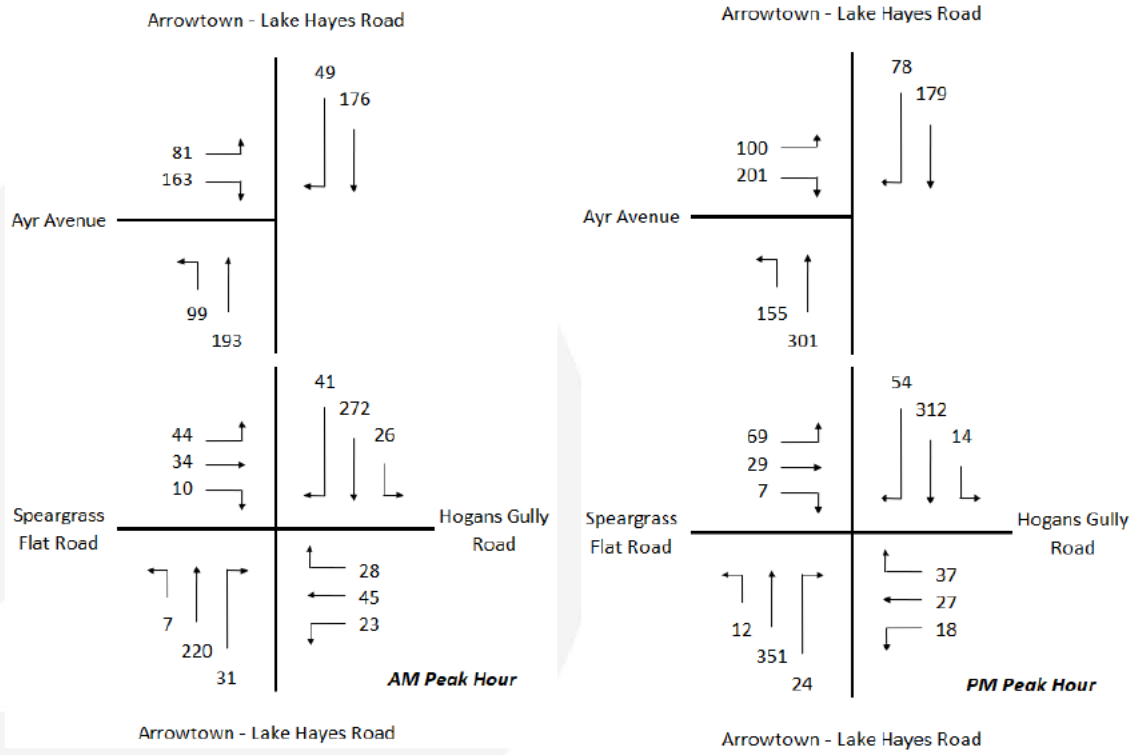


Figure 6: Factored Weekday Peak Hour Traffic Flows, Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection Plus Consented Hotel and Haybarn Development

4.1.16. The Arrowtown – Lakes Hayes Road / Ayr Avenue and Arrowtown – Lakes Hayes Road / Speargrass Flat Road intersections have been modelled using the computer software package Sidra Intersection for the traffic flows set out above and the results are summarised below.

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lake Hayes Road (south)	L	7.0	0.0	A	7.0	0.0	A
Arrowtown – Lake Hayes Road (north)	R	7.9	0.2	A	8.7	0.3	A
Site Access	L	5.7	0.3	A	6.5	0.5	A
	R	8.2	1.0	A	11.7	1.9	B

Table 2: Performance of the Arrowtown – Lake Hayes Road / Ayr Avenue Intersection (With Hotel and Haybarn but No Screen Hub Development)

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lakes Hayes Road (south)	L	8.2	0.3	A	8.3	0.3	A
	R	8.0	0.3	A	8.4	0.3	A
Hogans Gully Road (east)	L	8.8	0.6	A	9.1	0.7	A
	T	10.7	0.6	B	13.2	0.7	B
	R	12.4	0.6	B	15.3	0.7	C
Arrowtown – Lakes Hayes Road (north)	L	7.8	0.4	A	8.7	0.6	A
	R	7.9	0.4	A	8.8	0.6	A
Speargrass Flat Road (west)	L	8.3	0.2	A	9.4	0.4	A
	T	10.5	0.3	B	12.8	0.3	B
	R	11.7	0.3	B	13.9	0.3	B

Table 3: Performance of the Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection (With Hotel and Haybarn but No Screen Hub Development)

4.1.17. It can be seen that both intersections provide a good level of service, with low queues and delays on all turning movements.

4.2. Non-Car Modes of Travel

4.2.1. Given that the surrounding area is presently largely rural, it can reasonably be expected that pedestrians and cyclists will be infrequent road users. Although no formal surveys have been carried out, informal observations on Ayr Avenue and Arrowtown – Lake Hayes Road have not identified any substantial volume of walking or cycling movements along either side of the roads.

4.2.2. It can be expected that as Ayrburn develops, the existing infrastructure along Ayr Avenue will be increasingly well used. However it is unlikely that there will be significant increases in pedestrian and cyclists using Arrowtown – Lake Hayes Road.

4.2.3. Overall, it is considered that the current levels of infrastructure provided for both pedestrians and cyclists are appropriate for likely current and future demands.

4.2.4. Bus service 2 (Arthurs Point – Arrowtown) passes the site on Arrowtown – Lake Hayes Road, although there are currently no stops adjacent to the site. It operates with a one-hour frequency in each direction.

4.3. Road Safety

4.3.1. The NZTA Crash Analysis System has been used to establish the location and nature of the recorded traffic crashes in the vicinity of the site. All reported crashes between 2019 to 2024, plus the partial record for 2025, were identified on the full length of Ayr Avenue, at the Arrowtown – Lake Hayes Road / Ayr Avenue intersection and for a distance of 300m along Arrowtown – Lake Hayes Road (a distance which therefore includes the Arrowtown – Lake Hayes Road / Speargrass Flat Road intersection).

4.3.2. This period of time is slightly longer than usual (a six-year period rather a five-year period) to take into account the reduction in traffic volumes which arose in 2020/21 due to restrictions on overseas tourists from Covid-19 travel restrictions.

4.3.3. This showed that there has been only one reported crash over this timeframe. This occurred at the Arrowtown – Lake Hayes Road / Speargrass Flat Road intersection, when a driver travelling westbound on Hogans Gully Road failed to give-way and struck a vehicle on Arrowtown – Lake Hayes Road. The crash did not result in any injuries.

5.3.3 Based on the reported crashes, it is not considered that there is any evidence of any safety-related deficiencies on this part of the roading network.

5. Proposal

5.1. The proposed development is for a 'screen hub', which will have several components.

5.2. With regard to the studio, two sound stages are proposed and these will have ancillary offices and workshops. The total floor area for these is 8,554sqm GFA, with 3,200sqm of studio, 3,180sqm of workshops and 2,174sqm of offices. There is also a 'back lot' area for exterior productions and for storage and laydown of materials. No studio tours for tourism purposes will be offered.

5.3. On-site accommodation is also proposed for cast and crew, with a total of 201 units being proposed. Some 62 of these will have kitchens, with the remaining 139 only having tea and coffee facilities.

5.4. However the accommodation will serve several purposes. When a production is underway, some of the rooms may be converted to act as offices for the production. Under this scenario, the configuration will be:

- 52 units become offices;
- 40 accommodation units remain with kitchens;
- 109 accommodation rooms remain with no cooking facilities

5.5. When a production is underway, it is also expected that a number of the units will be occupied by people that are working on that production. Some productions will not use the whole of the available accommodation, and in such cases, the remaining units will be available to be used for visitor accommodation.

5.6. When there is no production using the studio, all of the units will be able to be used for visitor accommodation (with 62 units having kitchens and 139 not having cooking facilities, as noted earlier).

5.7. There is also a wellness centre proposed, and this will remain available for use by the public even if a production is using the studios. This will offer a range of treatments including a pool and steam room, and shared gym / yoga area. The facility is approximately 800sqm in size.

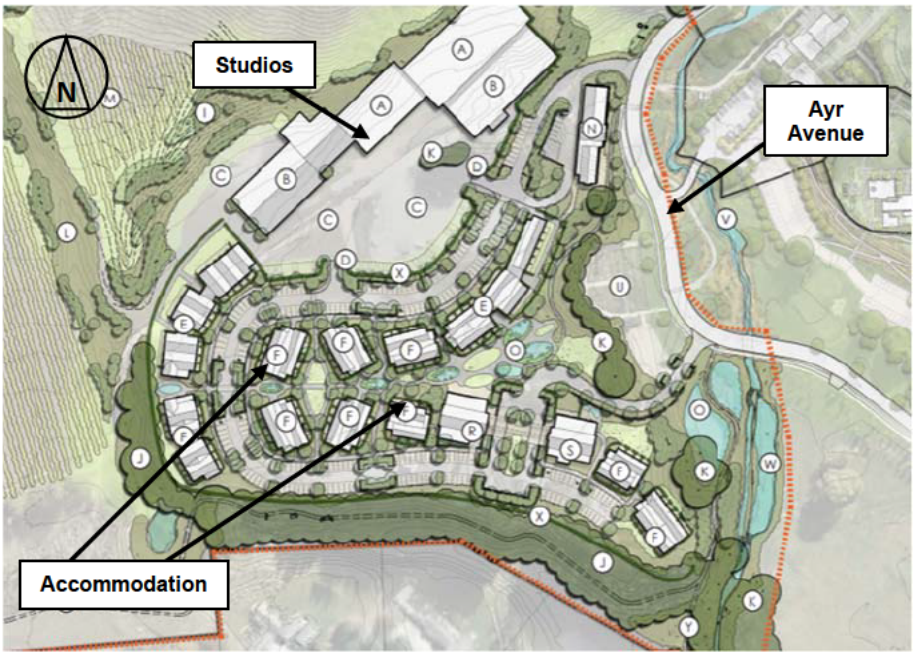


Figure 7: Proposed Site Layout (Extract from Winton Drawing, Annotated)

5.8. In respect of access to the site, two vehicle crossings are proposed. These are located on the southern side of Ayr Avenue, in the locations of the two existing accesses described previously and shown on Photographs 1 and 4. Both of the vehicle crossings and associated accessways will however be upgraded to reflect that they will be used by a greater number of vehicles including heavy vehicles.

5.9. The accesses connect to a parking aisle which runs through the site. In total, 226 parking spaces are to be provided.

6. Traffic Generation and Distribution

6.1. Traffic Generation

Introduction

6.1.1. As noted above, the studios will be operating (in which case the accommodation will be used by those working at the site), or the accommodation will be available for use as visitor accommodation. In either of these cases, the wellness centre and the function room will remain available to the public.

Studio

6.1.2. The traffic generation of a studio was considered in detail when a recent application for studios in Wanaka was consented. This drew on a literature review of overseas jurisdictions to identify traffic generation rates, as shown below (expressed in vehicle movements per 100sqm GFA):

- Shepperton Studies (London), average day:
  - 7am to 8am: 0.447 vehicles arriving / 0.041 vehicles departing;
  - 5pm to 6pm: 0.065 vehicles arriving / 0.258 vehicles departing;
  - 6pm to 7pm: 0.059 vehicles arriving / 0.334 vehicles departing.
- Shepperton Studies (London), 90th percentile day:
  - 7am to 8am: 0.618 vehicles arriving / 0.056 vehicles departing;
  - 5pm to 6pm: 0.088 vehicles arriving / 0.357 vehicles departing;
  - 6pm to 7pm: 0.082 vehicles arriving / 0.462 vehicles departing.
- Warner Bros Leavesden:
  - Morning peak hour: 0.178 vehicles arriving / 0.056 vehicles departing;
  - Evening peak hour: 0.054 vehicles arriving / 0.520 vehicles departing.
- TriBro Studios, Ottawa:
  - Morning peak hour: 0.86 vehicles arriving / 0.13 vehicles departing;
  - Evening peak hour: 0.13 vehicles arriving / 0.73 vehicles departing.
- Cape Town Film Studios:
  - Morning peak hour: 0.34 vehicles arriving / 0.06 vehicles departing;
  - Evening peak hour: 0.06 vehicles arriving / 0.34 vehicles departing.
- Founders Studio, Georgia:
  - Morning peak hour: 0.37 vehicles arriving / 0.10 vehicles departing;
  - Evening peak hour: 0.1 vehicles arriving / 0.29 vehicles departing.
- Pinewood East, London:
  - Morning peak hour: 0.789 vehicles arriving / 0.05 vehicles departing;
  - Evening peak hour: 0.038 vehicles arriving / 0.612 vehicles departing.

6.1.3. For the proposed studio of 8,554sqm GFA, this gives rise to traffic generation of:

- Morning peak hour:
  - 15 to 74 vehicles arriving; and
  - 4 to 11 vehicles departing
- Evening peak hour:
  - 3 to 11 vehicles arriving; and
  - 25 to 62 vehicles departing

6.1.4. It can be seen that the range of traffic volumes is large, but the volumes themselves are modest. Given that the purpose of the integrated site development is to enable people to live

and work in the same area, it can be expected that the extent of travel to and from external locations will be limited – in essence, those working at the studio will also live in the on-site accommodation and will therefore many will walk to work, with most travel to external destinations occurring outside the morning and evening peak hours. This manner of operation also means that accommodation is unlikely to generate traffic itself, since no person will be required to check-in or check-out or will be visiting attractions in the area.

6.1.5. Recognising that the range of traffic generation values for the studio is large, the standard traffic generation approach of adopting the 85th percentile value has been adopted. This yields the following:

- Morning peak hour:
  - 68 vehicles arriving; and
  - 9 vehicles departing
- Evening peak hour:
  - 8 vehicles arriving; and
  - 51 vehicles departing

Visitor Accommodation

6.1.6. When the studios are not in use, all of the accommodation will be able to be used for visitors. The hotel (RM180584) was consented using a net rate of 0.68 vehicle movements per room/unit (which used a maximum occupancy rate of 85%, as adopted for other visitor accommodation in the district). For consistency, the same rate has been adopted for the current application, and this indicates a peak hour volume of 137 vehicles (two-way) for the proposed 201 rooms/units.

6.1.7. When the studio is in use, 52 units become converted to offices with 149 units remaining for other purposes. In practice, some of these will be used by those that are working on a production. For the purposes of assessment, a conservative allowance has been made for 25% of the remaining units to be used by studio staff with 75% remaining for use as visitor accommodation. This yields a traffic generation of 76 vehicles (two-way).

Wellness Centre

6.1.8. The consented hotel included a wellness centre, and the floor area of this was the same size as the wellness centre currently proposed. Accordingly, the same traffic generation has been adopted, with 42 vehicle movements (two-way) expected at the busiest times.

Summary

6.1.9. In summary then, the peak hour traffic generation would be:

Scenario	Period	Traffic Generation (Vehicles Per Hour)							
		Studio		Visitor Accom		Wellness Centre		Total	
		In	Out	In	Out	In	Out	In	Out
Studio operating	Morning	68	9	11	65	21	21	100	95
	Evening	8	51	49	27	21	21	78	99
Studio not operating	Morning	-	-	21	116	21	21	42	137
	Evening	-	-	89	48	21	21	110	69

Table 4: Traffic Generation of Proposal

6.1.10. It is unlikely that the traffic generation of all of these activities would coincide. For example, people that are leaving the visitor accommodation in the morning will be likely to travel at a later time to employees arriving at the studio. However in order to demonstrate a robust assessment, the analysis has been carried out assuming that all activities generate their peak traffic flows at the same time.

6.1.11. It can be seen that the traffic generation of the two scenarios is similar (179 and 180-190 vehicles (two-way)).

6.2. Trip Distribution

6.2.1. With regard to the distribution of these vehicles, the same distribution for the visitor accommodation and the wellness centre has been adopted as for the consented hotel, which included for both of these activities. This was consented on the basis of two thirds of traffic being associated with Arrowtown – Lakes Hayes Road (south) with the remaining one third travelling via Arrowtown – Lakes Hayes Road (north).

6.2.2. The distribution of the traffic associated with the studio is likely to be more variable but anticipating that there is a bias towards the centres of accommodation (Queenstown, Frankton and Shotover Country / Lake Hayes Estate), then the majority of trips will likely be made to and from the south. Accordingly, the same two thirds / one third distribution noted above has been adopted.

6.2.3. The anticipated traffic generation of the proposal is shown below[3].

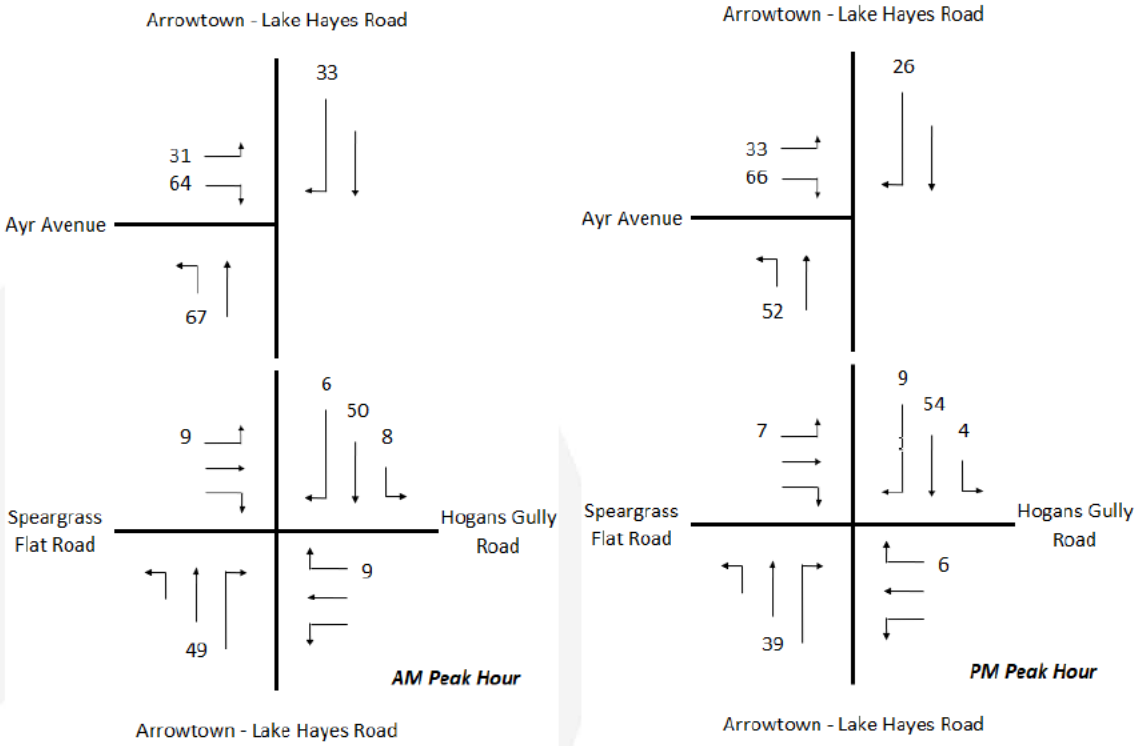


Figure 8: Traffic Generation of Proposed Development (With Studio Operating)

[3] Note that fractions of vehicles have been rounded up or down, and so the numbers below differ very slightly from those in paragraph 6.1.11 above

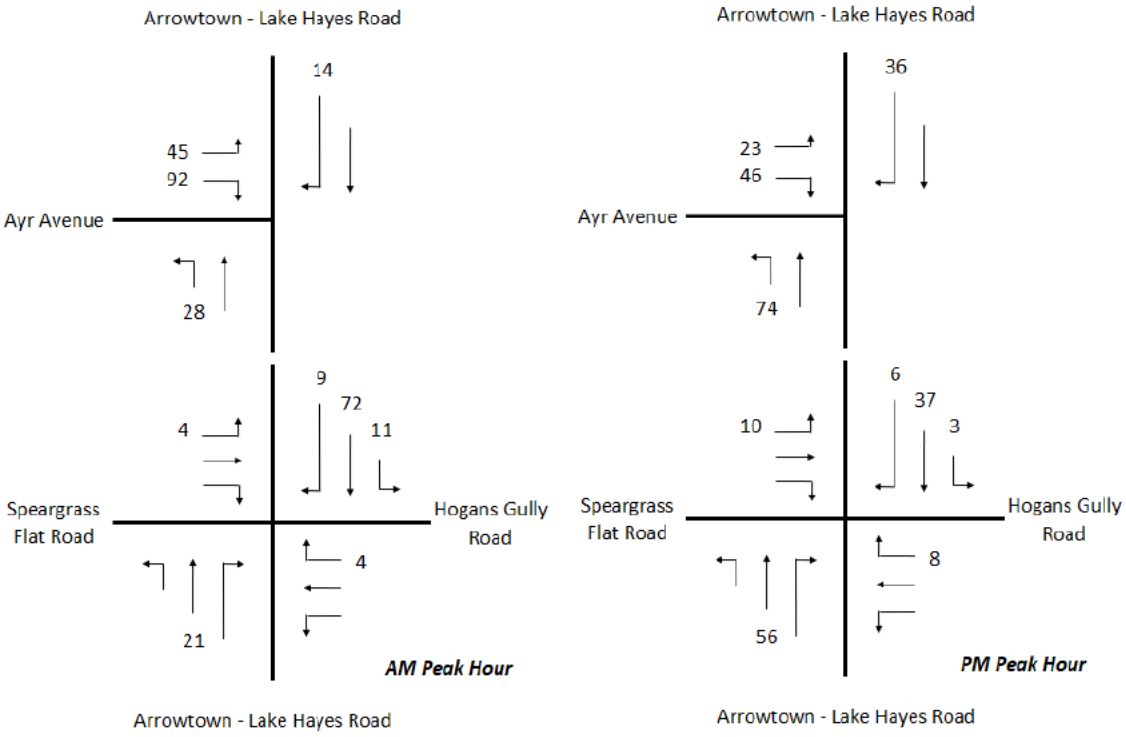


Figure 9: Traffic Generation of Proposed Development (With Studio Not Operating)

6.2.4. Notwithstanding that the traffic generation of the two scenarios is similar, the direction of travel differs, and this different increase on different approaches can affect the efficiency of intersections. Consequently both scenarios have been tested.

7. Effects on the Transportation Networks

7.1. Intersection Capacity

7.1.1. The Arrowtown – Lakes Hayes Road / Ayr Avenue and Arrowtown – Lakes Hayes Road / Speargrass Flat Road intersections have been remodelled using the computer software package Sidra Intersection using the traffic flows from the receiving environment shown on Figure 6 and the expected traffic flows from the development shown on Figure 8 (that is, with the studio operating). The results are summarised below.

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lake Hayes Road (south)	L	7.0	0.0	A	7.0	0.0	A
Arrowtown – Lake Hayes Road (north)	R	8.2	0.3	A	9.0	0.5	A
Site Access	L	5.7	0.5	A	6.6	0.7	A
	R	10.0	1.9	B	14.6	3.3	B

Table 5: Performance of the Arrowtown – Lake Hayes Road / Ayr Avenue Intersection (With Hotel plus Screen Hub Development, and Studio Operating)

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lakes Hayes Road (south)	L	8.6	0.4	A	8.7	0.3	A
	R	8.5	0.4	A	8.8	0.3	A
Hogans Gully Road (east)	L	9.4	0.8	A	10.2	0.9	B
	T	12.5	0.8	B	16.0	0.9	C
	R	14.5	0.8	B	18.4	0.9	C
Arrowtown – Lakes Hayes Road (north)	L	8.0	0.6	A	9.1	0.8	A
	R	8.3	0.6	A	9.2	0.8	A
Speargrass Flat Road (west)	L	8.7	0.2	A	9.8	0.4	A
	T	12.1	0.4	B	14.9	0.4	B
	R	13.2	0.4	B	15.8	0.4	C

Table 6: Performance of the Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection (With Hotel plus Screen Hub Development, and Studio Operating)

7.1.2. A comparison of the changes arising from the proposed development is shown below.

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lake Hayes Road (south)	L	-	-	-	-	-	-
Arrowtown – Lake Hayes Road (north)	R	+0.3	+0.1	-	+0.3	+0.2	-
Site Access	L	-	+0.2	-	+0.1	+0.2	-
	R	+1.8	+0.9	A to B	+2.9	+1.4	-

Table 7: Comparison of the Performance of the Arrowtown – Lake Hayes Road / Ayr Avenue Intersection (With / Without Screen Hub Development, and Studio Operating)

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lakes Hayes Road (south)	L	+0.4	+0.1	-	+0.4	-	-
	R	+0.5	+0.1	-	+0.5	-	-
Hogans Gully Road (east)	L	+0.6	+0.2	-	+1.1	+0.2	A to B
	T	+1.8	+0.2	-	+2.8	+0.2	B to C
	R	+2.1	+0.2	-	+3.1	+0.2	-
Arrowtown – Lakes Hayes Road (north)	L	+0.2	+0.2	-	+0.4	+0.2	-
	R	+0.4	+0.2	-	+0.4	+0.2	-
Speargrass Flat Road (west)	L	+0.4	-	-	+0.4	-	-
	T	+1.6	+0.1	-	+2.1	+0.1	-
	R	+1.5	+0.1	-	+1.9	+0.1	B to C

Table 8: Comparison of the Performance of the Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection (With / Without Screen Hub Development, and Studio Operating)

7.1.3. It can be seen that both intersections continue to provide a good level of service, with low queues and delays on all turning movements. As would be expected for priority intersections, the greatest changes arise for the right-turn movements from minor approaches to the intersection. However the highest increase in delay on any approach is only 3.1 seconds, and at worst, Level of Service C is provided. This remains in the zone of stable flow.

7.1.4. The performance of the intersections anticipating that the screen hub is not operating (that is, the receiving environment shown on Figure 6 and the expected traffic flows from the development shown on Figure 9) are summarised below:

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lake Hayes Road (south)	L	7.0	0.0	A	7.0	0.0	A
Arrowtown – Lake Hayes Road (north)	R	8.0	0.2	A	9.2	0.5	A
Site Access	L	5.7	0.6	A	6.6	0.6	A
	R	9.8	2.2	A	14.6	3.0	B

Table 9: Performance of the Arrowtown – Lake Hayes Road / Ayr Avenue Intersection (With Hotel plus Screen Hub Development, and Studio Not Operating)

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lakes Hayes Road (south)	L	8.7	0.4	A	8.3	0.3	A
	R	8.6	0.4	A	8.7	0.3	A
Hogans Gully Road (east)	L	9.6	0.8	A	10.1	1.0	B
	T	12.6	0.8	B	16.3	1.0	C
	R	14.6	0.8	B	18.2	1.0	C
Arrowtown – Lakes Hayes Road (north)	L	7.9	0.7	A	9.3	0.8	A
	R	8.1	0.7	A	9.4	0.8	A
Speargrass Flat Road (west)	L	8.5	0.2	A	10.0	0.5	A
	T	12.4	0.4	B	14.9	0.4	B
	R	13.4	0.4	B	15.9	0.4	C

Table 10: Performance of the Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection (With Hotel plus Screen Hub Development, and Studio Not Operating)

7.1.5. A comparison of the changes arising from the proposed development is shown below.

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lake Hayes Road (south)	L	-	-	-	-	-	-
Arrowtown – Lake Hayes Road (north)	R	+0.1	-	-	+0.5	+0.2	-
Site Access	L	-	+0.3	-	+0.1	+0.1	-
	R	+1.6	+1.2	-	+2.9	+1.1	-

Table 11: Comparison of the Performance of the Arrowtown – Lake Hayes Road / Ayr Avenue Intersection (With / Without Screen Hub Development, and Studio Not Operating)

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Arrowtown – Lakes Hayes Road (south)	L	+0.5	+0.1	-	-	-	-
	R	+0.6	+0.1	-	+0.3	-	-
Hogans Gully Road (east)	L	+0.8	+0.2	-	+1.0	+0.3	A to B
	T	+1.9	+0.2	-	+3.1	+0.3	B to C
	R	+2.2	+0.2	-	+2.9	+0.3	-
Arrowtown – Lakes Hayes Road (north)	L	+0.1	+0.3	-	+0.6	+0.2	-
	R	+0.2	+0.3	-	+0.6	+0.2	-
Speargrass Flat Road (west)	L	+0.2	-	-	+0.6	+0.1	-
	T	+1.9	+0.1	-	+2.1	+0.1	-
	R	+1.7	+0.1	-	+2.0	+0.1	B to C

Table 12: Comparison of the Performance of the Arrowtown – Lake Hayes Road / Speargrass Flat Road Intersection (With / Without Screen Hub Development, and Studio Operating)

7.1.6. As with the scenario with the studio operating, when the site is solely used for visitor accommodation both intersections continue to provide a good level of service, with low queues and delays on all turning movements. As would be expected for priority intersections, the greatest changes arise for the right-turn movements from minor approaches to the intersection. However the highest increase in delay on any approach is slightly above 3 seconds, and at worst, Level of Service C is provided. This remains in the zone of stable flow.

7.1.7. As noted previously, it is considered that these analyses represent a robust assessment because they allow for:

- The consented hotel to be in place, when it presently appears that the retirement village will be progressed (which has a lower traffic generation); and
- All activities within both the consented hotel and the proposed development generating peak traffic flows at the same time.

7.1.8. Notwithstanding this, a sensitivity test has been carried out to ascertain the extent to which there is available capacity remaining at the intersections. For this assessment, the traffic flows passing through the most critical intersection of Arrowtown – Lakes Hayes Road / Ayr Avenue intersection has been increased until any movement changed to Level of Service D (which, while being somewhat arbitrary, is a typical 'rule of thumb' indicating a rural intersection is starting to operate with higher levels of congestion). The particular scenario assessed has been the studio operating, as the model shows that this is the scenario with the highest degree of saturation (56.5% with the studio operating compared to 53.8% with the studio not operating).

7.1.9. This analysis shows that the intersection is able to accommodate traffic flows that are 15% higher on all approaches before Level of Service D arises. Taking into account that the volumes used in the analysis are calculated on a highly robust basis, it is considered that this shows the intersection has ample capacity remaining. It can also be concluded that even if there is some differences in the traffic generation rate of the studio (noting that the range of trip generation rates set out above is large), then there remains capacity in the adjacent roading network to accommodate this.

7.1.10. Given that the two external intersections provide ample capacity, it can be reliably concluded that the two proposed site accesses, which carry far less traffic, will also operate with very good levels of service.

7.2. Non-Car Modes of Travel

7.2.1. The development is unlikely to lead to any significant increase in walking and cycling in the area due to the distances to potential destinations, but if there is an increase, it is considered that the existing infrastructure is easily able to accommodate these.

7.2.2. The increase in traffic does not create any large changes in delays on the roading network, meaning that public transport use is unlikely to be affected by the proposal. However it may be possible for those using the activities at the development to travel by public transport if stops were to be introduced and it is understood that the district and regional councils are supportive of improving public transport services to the site.

7.2.3. There are two generic options that are available. Firstly, it would be possible to introduce bus stops onto Arrowtown – Lake Hayes Road in the vicinity of Ayr Avenue, with an expectation that those visiting the site then walk or cycle between the bus stops and the site. As set out above, there is already a bus service which uses Arrowtown – Lake Hayes Road and so this option would not result in any changes to the bus routing, rather, the bus would simply stop on a road that it already travels along. This would likely have advantages for scheduling because the change in service frequency (that is, the delay due to the bus stopping) would literally be a matter of seconds

7.2.4. A bus stop could potentially be located ether north or south of Ayr Avenue but Arrowtown – Lake Hayes Road is subject to a 70km/h speed limit and therefore there is a need to ensure that passengers can safely cross the road from one side to the other. In practice this means that a pedestrian refuge is justified. To ensure that pedestrians then use the refuge rather than crossing the road elsewhere, the refuge needs to be in close proximity to the bus stops.

7.2.5. A refuge also needs to be located outside the taper for the auxiliary right-turn lane at the Arrowtown – Lake Hayes Road / Ayr Avenue intersection, otherwise it could be struck by right-turn vehicles. Thus to meet the criteria that the refuge is suitably located, and also to ensure that distances for passengers travelling to and from the bus stop are minimised, this means that the bus stops need to be located to the south of the Arrowtown – Lake Hayes Road / Ayr Avenue intersection.

7.2.6. In this location the legal road reserve is some 20m wide, which is sufficient to construct indented bus laybys such that the flow of passing traffic is not impeded, plus the refuge. Short sections of footpath will also be required on Arrowtown – Lake Hayes Road in order to connect the bus stops and refuge with the footpath which presently runs along the southern side of Ayr Avenue; again, these can be accommodated with the 20m legal width of the road.

7.2.7. An indicative layout for these bus stops is shown below:

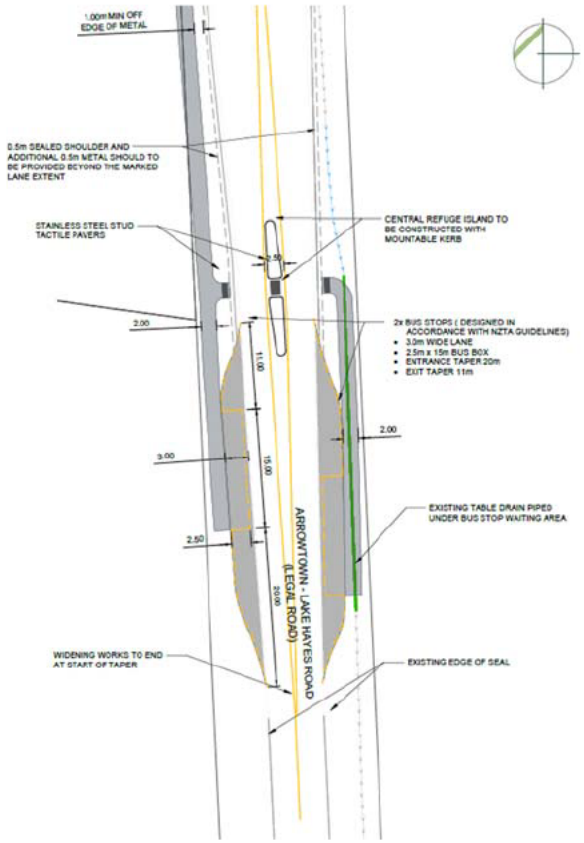


Figure 10: Indicative Layout for Proposed Bus Stops on Arrowtown – Lake Hayes Road

7.2.8. The second option for a bus service would be for the scheduled route to divert onto Ayr Avenue. This would introduce additional journey length and may therefore be more complex for re-timetabling the service, and would give rise to additional operation costs due to the increased route length. However this service would be more convenient for the proposed development because it would make use of existing bus stops provided on Ayr Avenue (as part of private shuttle services that already operate along the road) and these are immediately adjacent to the site (as shown on Photograph 13 above). It would also create a highly convenient travel option for those visiting the wider Ayrburn Precinct (and Northbrook Retirement village or Waterfall Park Hotel). Consequently the increase in operating costs for the service would be offset by a potential increase in passengers numbers and farebox revenue.

7.2.9. Ayr Avenue has been constructed to accommodate tour coaches (associated with travel to/from the consented hotel discussed previously) and as regular scheduled public transport buses are typically of a shorter wheelbase to tour coaches (10m compared to 12.6m), then the road is easily capable of accommodating these vehicles.

7.2.10. Once a bus has entered Ayr Avenue, it must then turn around in order to be able to exit again. Both the hotel and the retirement village include provision for formal turning areas, which have been designed to allow buses/coaches to turn without the need for any reverse movements to be carried out. These can therefore be used by scheduled public transport services.

7.2.11. The decision to serve the site by public transport is ultimately a commercial decision for the operator rather than the applicant. However it is considered that either of the options set out above are technically viable, and it is understood that the applicant is willing to fund the necessary infrastructure improvements to support a scheduled public transport service.

7.3. Road Safety

7.3.1. Based on a review of the road safety records, the proposal is unlikely to result in adverse road safety effects arising as a result of the increase in traffic flows on the road network. The Arrowtown – Lakes Hayes Road / Ayr Avenue intersection is newly constructed and a safety audit was carried out of the layout prior to construction. While the Arrowtown – Lakes Hayes Road / Speargrass Flat Road intersection has been in place for some considerable time, the prevailing crash rate shows that it is presently operating safely and there are no reasons why this should not continue with the additional traffic loadings generated by the proposal.

7.3.2. The Arrowtown – Lakes Hayes Road / Ayr Avenue intersection is constructed with auxiliary turning lanes. No auxiliary lanes are in place at the Arrowtown – Lakes Hayes Road / Speargrass Flat Road intersection and so an assessment has been undertaken using the warrants set out in the Austroads Guide to Traffic Management Part 6 ('Intersections, Interchanges and Crossings Management').

7.3.3. Taking into account the traffic flows set out previously (which to reiterate, are based on a worst-case assessment), at the current time the warrants indicate the following, assuming that the consented hotel was to proceed:

- Receiving environment of current traffic flows plus the consented hotel and The Haybarn:
  - an auxiliary right-turn lane **is** warranted for traffic turning right from the north to the west;
  - an auxiliary right-turn lane **is not** warranted for traffic turning right from the south to the east.
- Receiving environment (as above) plus the additional traffic generated by the proposed development (under either scenario of the studio operating or not operating):
  - an auxiliary right-turn lane **is** warranted for traffic turning right from the north to the west;
  - an auxiliary right-turn lane **is** warranted for traffic turning right from the south to the east.

7.3.4. Taking into account the traffic flows set out previously, at the current time the warrants indicate the following, assuming that the retirement village was to proceed:

- Receiving environment of current traffic flows plus the retirement village and The Haybarn:
  - an auxiliary right-turn lane **is not** warranted for traffic turning right from the north to the west;
  - an auxiliary right-turn lane **is not** warranted for traffic turning right from the south to the east.
- Receiving environment (as above) plus the additional traffic generated by the proposed development (under either scenario of the studio operating or not operating):
  - an auxiliary right-turn lane **is** warranted for traffic turning right from the north to the west;
  - an auxiliary right-turn lane **is not** warranted for traffic turning right from the south to the east.

7.3.5. No auxiliary left-turn lanes are warranted under any of the potential development scenarios.

7.3.6. At the present time, no auxiliary turning lanes are in place but the 20m legal width of the roads and the existing wide shoulder mean that right-turn lanes can easily be introduced.

7.4. Staging and Construction

7.4.1. At the present time, the details of how the screen hub will be constructed have not been finalised. It is possible that the site will be developed in stages, but it is also possible that the whole site will be developed in one pass. Clearly, if the site is staged then this may result in certain areas becoming operational before others, and equally, those operational areas may be adversely affected through the construction of subsequent stages.

7.4.2. The measures that can be taken to mitigate any disruption cannot be finalised until the construction methodology and staging is known, and equally, it is possible that the construction methodology will be able to be amended in order to minimise disruption.

7.4.3. It is common that activities experience some degree of disruption when construction works are being carried out nearby – the core issue is to ensure that the safety of all road users (and people using the parts of the development that are already operational) is maintained at all times. Such matters are typically addressed through mechanisms and working practices other than the Resource Management Act and Fast-track Approvals Act.

8. Car Parking Provision

8.1. Proposed Number of Parking Spaces

8.1.1. The drawings provided show that 226 car parking spaces are proposed.

8.2. Anticipated Demand for Parking Spaces

8.2.1. There are two scenarios which may arise with regard to the site operation, being times when the studio is operating and those working at the studio are living on the site, and times when the studio is not operating and the accommodation is being used as visitor accommodation. The operation of the wellness centre and the function venue will create additional car parking demand for each of these two scenarios.

When Studio is in Operation

8.2.2. As noted above, the total floor area of studio is 8,554sqm GFA. Based on other studies of proposed studios, the following parking rates are seen:

- Shepperton Studies (London), average day:
  - 1.26 parking spaces per 100sqm GFA of studio and offices;
- Warner Bros Leavesden:
  - 2.50 parking spaces per 100sqm GFA of studio and offices;
- TriBro Studios, Ottawa:
  - 2.89 parking spaces per 100sqm GFA of studio and offices;
- Cape Town Studios:
  - 60 spaces per sound stage; plus
  - 1 space per 50sqm GFA for offices
- Founders Studio, Georgia:
  - 0.89 parking spaces per 100sqm GFA of studio and offices;
- Pinewood East, London:
  - 2.20 parking spaces per 100sqm GFA of studio and offices;

8.2.3. Of note is that several of these studies set out that the studio itself should be considered as 'warehousing' with the offices being considered as standard offices.

8.2.4. In this case, the studios are a total of 8,554sqm GFA but Units B1 and B2 are also indicated for offices being an additional 2,111sqm and 2,369sqm GFA respectively. Thus the studios *plus the additional offices* total 13,034sqm GFA. This then indicates the following parking is required:

- Shepperton Studios (London):
  - 164 parking spaces;
- Warner Bros Leavesden:
  - 325 parking spaces;
- TriBro Studios, Ottawa:
  - 376 parking spaces;
- Cape Town Studios:
  - 163 spaces;
- Founders Studio, Georgia:
  - 116 parking spaces;

- Pinewood East, London:
  - 287 parking spaces.

8.2.5. Although the National Policy Statement on Urban Development resulted in the removal of parking ratios from the District Plan, immediately prior to this, the parking provisions had been through a review as the District Plan was updated. Accordingly, it can reasonably be concluded that the resultant parking ratios were deemed appropriate by the Council. Applying these in this case for warehousing and offices activities:

- Studio, plus workshop and storage:
  - 6,380sqm GFA proposed
  - Previous parking ratio for warehousing was 1 space per 100sqm
  - Therefore 64 spaces required
- Offices:
  - 6,654sqm GFA proposed
  - Previous parking ratio for offices was 2 spaces per 100sqm
  - Therefore 133 spaces required
- Total: 197 spaces

8.2.6. There are also published parking rates for warehousing and parking set out in the NZTA Research Report 453 ('Trips and Parking Relating to Land Use). In view of the improved options for alternative travel modes associated with the proposed bus stops, it is considered appropriate to apply the 50th percentile rates in this instance:

- Studio, plus workshop and storage:
  - 6,380sqm GFA proposed
  - Parking ratio for warehousing is 0.9 spaces per 100sqm
  - Therefore 57 spaces required
- Offices:
  - 6,654sqm GFA proposed
  - Parking ratio for offices is 2.7 spaces per 100sqm
  - Therefore 180 spaces required
- Total: 237 spaces

8.2.7. The median value of the observed parking at other studios is 226 spaces, which is within 20% of the calculated value using parking ratios previously within the District Plan and also within 5% of the values calculated using the parking ratios of NZTA Research Report 453. This suggests that a parking demand in the order of 200-230 parking spaces can be expected.

8.2.8. When the studio is operating, 52 visitor accommodation units are converted to production offices, and an allowance has been made for 25% of the remaining units to be occupied by people associated with the production. As such, it is not considered that additional car parking demand will arise for this, but rather, this will be encompassed in the figures above. In other words, staff may own and need to park a car, but the parking demand associated with this is included within the parking demand for the studio as those people walk between the accommodation, the studio and the studio offices.

8.2.9. However the balance of the units will remain available for visitor accommodation. As noted above, for this analysis an anticipated (but conservative value) of 112 units has been adopted as remaining available for the public. It can reasonably be expected that those units with cooking facilities are occupied by those that are living on-site and working at the screen hub, which means that these remaining units used for visitor accommodation have been assessed as having no cooking facilities.

8.2.10. The previous parking provisions of the District Plan would require the following provision to be made:

- Rooms without kitchens:
  - 112 rooms proposed:
  - 30.4 car parking spaces required for guests
  - 5.6 car parking spaces for staff
  - Total: 36 car parking spaces for staff

8.2.11. NZTA RR453 contains data from three hotels[4], but one of these has large conference facilities which may distort the results. When the other two sites are considered, the range is extremely large of 0.55 to 1.36 parking spaces per room. This latter value appears implausibly high as it suggests that on average, each room is associated with more than one car. The ITA Guide to Traffic Generating Developments sets out 1 parking space is appropriate to serve 4 hotel-type rooms. These values indicate that 28 to 62 spaces are required, with a mean value of 45 spaces, slightly higher than indicated by the previous parking ratios of the District Plan.

8.2.12. For the purposes of this assessment, to ensure a robust assessment the value of 45 spaces calculated above has been used.

When Studio is not in Operation

8.2.13. As noted above, there are 201 units proposed with 62 of these having kitchens and the remaining 139 units only having only tea and coffee facilities.

8.2.14. The previous parking provisions of the District Plan would require the following provision to be made:

- Rooms with kitchens:
  - 62 proposed:
  - 38.5 car parking spaces for guests
  - 6.2 car parking spaces for staff
- Rooms without kitchens:
  - 139 proposed:
  - 35.8 car parking spaces for guests
  - 14.0 car parking spaces for staff
- Total:
  - 74 car parking spaces for guests
  - 20 car parking spaces for staff

8.2.15. As noted above, NZTA RR453 sets out an extremely large of 0.55 to 1.36 parking spaces per room. There is more data available for motels[5], with 35 observations and an 85th percentile value of 0.57 parking spaces per unit. Adopting these values indicates that 113 to 164 parking spaces would be required in this instance (but with this upper limit likely to be too high).

8.2.16. The ITA Guide to Traffic Generating Developments sets out that each motel-type room should have one parking space whereas 1 parking space is appropriate to serve 4 hotel-type rooms. This then indicates that 97 spaces are required. This aligns well with the previous parking ratios of the District Plan which shows 94 spaces being required.

[4] It is assumed that as hotel rooms, no cooking facilities are provided within the room

[5] As motel rooms, these are assumed to have cooking facilities in each unit

Wellness Centre

8.2.17. As noted above, the wellness centre is the same size as that proposed for the consented hotel. This was consented on the basis that a proportion of patrons would be staying within the associated visitor accommodation, such that an additional 5 spaces would be required. This scenario is also the case here, as even when the studio is in use, it is likely that visitor accommodation remains available. However as the number of rooms will be diminished at that time, an allowance has been made for 10 parking spaces to be required.

8.3. Assessment of Parking Supply and Demand

8.3.1. When the studio is in operation and assuming a conservative scenario where some accommodation is still available outside of the on-site film crews:

- 226 spaces are provided on the site;
- The studio generates demand for 200-230 spaces;
- The visitor accommodation generates demand for 45 spaces;
- The wellness centre generates demand for up to 10 spaces;
- Total demand for up to 255-285 spaces, therefore shortfall of 29 to 59 spaces

8.3.2. When the studio is not in operation:

- 226 spaces are provided on the site;
- The visitor accommodation generates demand for 97 spaces;
- The wellness centre generates demand for up to 5 spaces;
- Total demand for up to 102 spaces, therefore 124 spaces unallocated.

8.3.3. It can be seen that when the screen hub does not have a production, there is an overprovision of parking spaces. However with the screen hub fully in use, there is a shortfall in the number of spaces. The extent of this shortfall depends on the scale of the production, but also on the extent to which the visitor accommodation remains available for use. The approach taken above has been conservative, but it is intuitive that with a large production, the parking demand associated with the studio will be towards the upper end of the range, but there is a greater potential that much more of the visitor accommodation will be used by production staff and thus the parking demand for this activity will be lower. In other words, there is an inherent offsetting effect. On this basis, it is considered that the most likely outcome of the screen hub being in use is a parking demand in the order of 255 spaces, which indicates a shortfall in the order of 30 spaces.

8.3.4. Productions at the screen hub will be scheduled well in advance, and the extent to which the visitor accommodation remains available will therefore be also known well in advance, which enables parking demand to be managed. In the event that a parking shortfall is expected, it is understood that the 'back lot' of the studio can be used for parking.

8.3.5. It is also highlighted that providing additional permanent parking at the screen hub is unlikely to be an efficient use of the land resource, because at times when there is no production, the proposed parking exceeds the expected demand.

9. District Plan Matters

9.1. Introduction

9.1.1 The District Plan sets out a number of transportation-related Rules with which any development is expected to comply. An assessment of the proposed development against these has been undertaken and the results are summarised below.

9.2. District Plan Chapter 29: Activities

9.1.1 Rule 29.4.11: High Traffic Generating Activities

9.1.1.1 As set out above, the proposal will generate more than 50 vehicle movements in the weekday peak hours, which therefore means the development is classified as a High Traffic Generator. This Transportation Assessment has been prepared to respond to this Rule.

Matter a. an Integrated Transport Assessment has been provided with the application and is sufficiently detailed to provide a full understanding of the projected trip generation by all modes of transport, the accessibility of a proposal by all modes of transport, the transport effects of the proposal, and the proposed methods of avoiding or mitigating the transport effects.

9.1.1.2 The traffic generation of the proposal is set out above. The roading network in the vicinity of the site has been assessed and the vehicles generated by the proposal can be accommodated without adverse effects on efficiency.

9.1.1.3 There is no evidence of any road safety related issues on the roading network, and therefore no reason to anticipate that the additional vehicles will give rise to any safety issues.

9.1.1.4 There is a shared walking and cycling route on Ayr Avenue adjacent to the site which can be used by pedestrians and cyclists. The modest traffic volume in Ayr Avenue means that it is not expected that there will be any difficulties for pedestrians crossing the roads. Public transport services in the vicinity of the site will be encouraged through the provision of bus stops.

9.1.1.5 It is therefore considered that the trip generation of the proposal can be accommodated on the surrounding transport networks without adverse safety or efficiency issues arising.

9.1.1.6 In terms of potential mitigation, it is noted that when the studio is in use, those employees will be housed within the accommodation. This considerably reduces the need for these people to travel to/from the site.

Matter b. the trip generation and transport effects of the proposed landuse or subdivision will be the same or similar in character, intensity and scale to those assessed in an approved Integrated Transport Assessment for any existing resource consent approved for the site;

9.1.1.7 There are no existing resource consents at the site for which an Integrated Transportation Assessment has previously been prepared.

Matter c. the proposed landuse or subdivision is in accordance with district plan provisions that were informed by a detailed Integrated Transport Assessment and will result in associated trip generation and transport effects that are the same or similar in character, intensity and scale to those identified in the previous assessment;

9.1.1.8 No Integrated Transportation Assessment has been prepared for the underlying land zoning where the transportation-related effects are similar in nature.

Matter d. any improvements to the transport network either within the site or in the vicinity of the site are proposed, including additions or improvements to the active and public transport network and infrastructure and the road

9.1.1.9 As noted above, the transport-related effects of the proposed development are not expected to give rise to adverse impacts on safety or efficiency.

9.1.1.10 It is noted however that the traffic flows associated with already-consented development in the area means that an auxiliary right-turn lane is required at the Arrowtown – Lakes Hayes Road / Speargrass Flat Road intersection for the movement from north to west (although one is not in place). With the additional traffic generated by the proposed development, an auxiliary right-turn lane is also warranted for the south-to-east movement, should the consented hotel proceed (but this auxiliary lane is not required if the retirement village proceeds).

9.1.1.11 Public transport measures are proposed to improve connectivity. This will include either new bus stops on Arrowtown – Lake Hayes Road to serve an existing bus service (as per Figure 10 above), or the bus service can be supported to divert into the site itself where there is already provision for coaches and shuttle services (as per Photograph 13 above).

Matter e. the site and/ or its frontage have been designed to accommodate any planned public transport infrastructure proposed by Council;

9.1.1.12 There are no planned Council-led public transport infrastructure measures in the vicinity. However the proposal includes measures to support and potentially extend existing public transport services in the immediate area.

Matter f. public and active transport infrastructure is proposed to be provided or upgraded or, where planning for such infrastructure is not sufficiently advanced, space is provided for such infrastructure to be installed in the future

9.1.1.13 The proposal includes measures to support public transport through either the introduction of bus stops on Arrowtown – Lake Hayes Road which will serve an existing bus service, or alternatively this bus service can divert into the site itself where there is already provision for coaches and shuttle services.

Matter g. public transport stops are provided in locations and at spacings that provide safe and efficient access to users;

9.1.1.14 The site is presently some distance from the nearest public transport route (on Arrowtown – Lake Hayes Road). However the proposal includes provision for either the introduction of bus stops on Arrowtown – Lake Hayes Road which will serve an existing bus service, or alternatively this bus service can divert into the site itself.

9.1.1.15 In the case of new bus stops being constructed on Arrowtown – Lake Hayes Road, provision will be made for passengers to walk to and from the stops through provision of a footpath,

and also to safely cross the road by way of a pedestrian refuge (as shown on Figure 10 above).

Matter h. a Travel Plan is proposed to be provided containing travel demand management techniques;

9.1.1.16 No formal Travel Plan is proposed. The site is well connected to the walking and cycling network, with a shared route running along the southern side of Ayr Avenue. Measures are proposed to ensure that public transport is also an attractive option. However the nature of studio activities is that they are bespoke to each production, and can even vary on a day-to-day basis due to different shooting schedules. This therefore results in practical difficulties in devising a generalised Travel Plan that will be suitable for implementation.

Matter i. the amount of accessory parking proposed will contribute toward travel demand management;

9.1.1.17 The underlying provisions for car parking are discussed above, but in short, have been designed to balance parking demand and supply as much as possible.

Matter j. a Development Agreement has been agreed to, as provided for by the Local Government Act

9.1.1.18 No agreement has been entered into.

Matter k. electric vehicle charging points/ parking spaces are proposed to be provided.

9.1.1.19 No charging points are proposed as part of this application. However, the existing Ayrburn Domain car park contains provision for these to be installed in the future.

9.2 District Plan Chapter 29: Parking and Loading

9.2.1 Rule 29.5.1: Location and Availability of Parking Spaces

9.2.1.1 The layout indicates that each space will be unobstructed and can be accessed independently, and none are located within an access or other area used for other purposes. All car parking spaces are located on the development site itself.

9.2.1.2 Under this Rule, the development requires the following coach parking spaces:

- Units with kitchens:
  - 1 space per 30 units
  - 62 units proposed
  - Therefore 2.07 coach spaces required
- Units without kitchens:
  - 1 space per 50 units
  - 139 units proposed
  - Therefore 2.78 coach spaces required

9.2.1.3 In accordance with Part 29.8.41.1a, these values are added together and then rounded up or down. On this basis, 5 coach parking spaces are required.

9.2.1.4 The site itself does not provide any dedicated coach parking. However under the provisions of this Rule, coach parking spaces may overlay car parking spaces. Accordingly, the car park

has been designed in such a manner that a row of car parking spaces can be cordoned off when a coach party is due to be present and the area used for parking of the coach.

9.2.1.5 This arrangement is possible for two reasons. Firstly coach parties do not arrive at any visitor accommodation on a speculative basis but rather, parties book well in advance because they need to know that sufficient rooms are available for the group. Hence the operator of the visitor accommodation knows when a coach is due. Secondly, when guests arrive via coach, they are not travelling by private car and so the area that would have otherwise been used by a car can be repurposed. If a coach carries (say) 50 people, then this would equate to travel that would otherwise have been made by around 20-30 cars.

Photograph 14: Example of Coach Parking within a Cordoned Off Area in a Car Park

9.2.1.6 The layout shows that five areas are available for coach parking in this way, as shown below. In these Figures, the cyan line is the area occupied by the vehicle bodywork, the red line is a clearance of 0.5m around the bodywork, and the yellow area is a notional parking space for the coach.

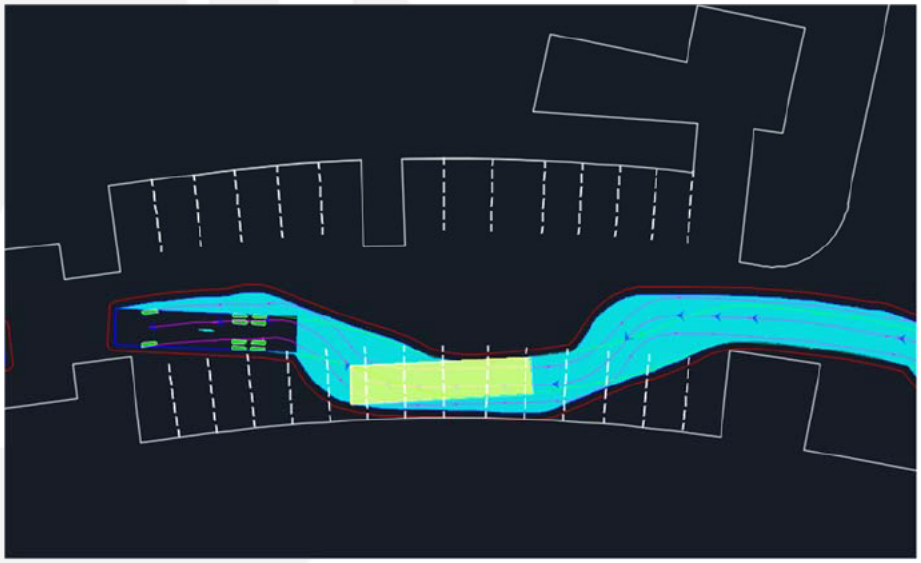


Figure 11: Coach Entering and Exiting Parking Area

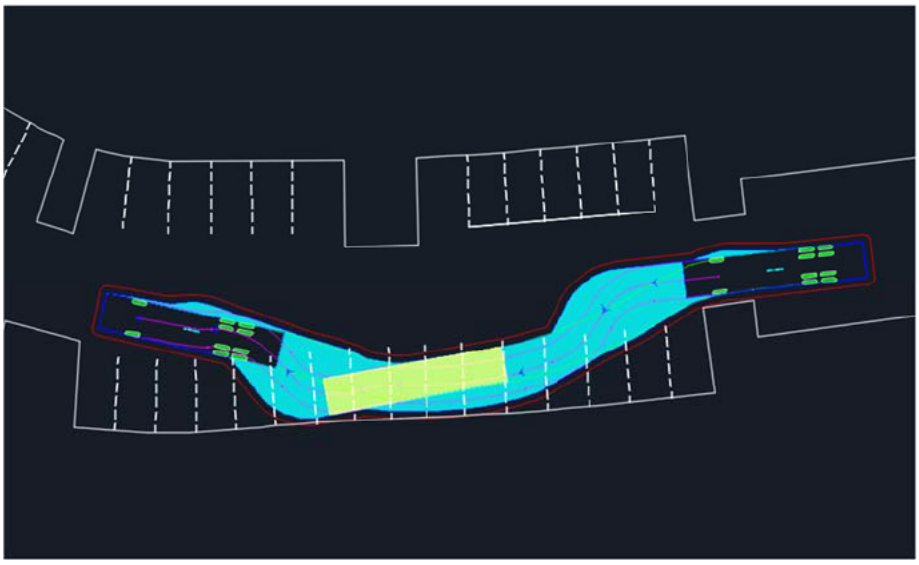


Figure 12: Coach Entering and Exiting Parking Area

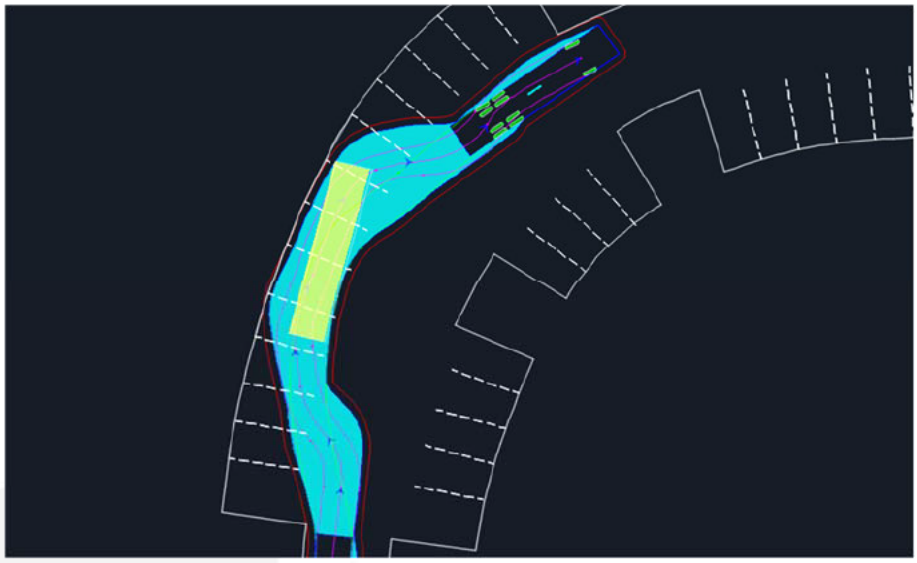


Figure 13: Coach Entering and Exiting Parking Area

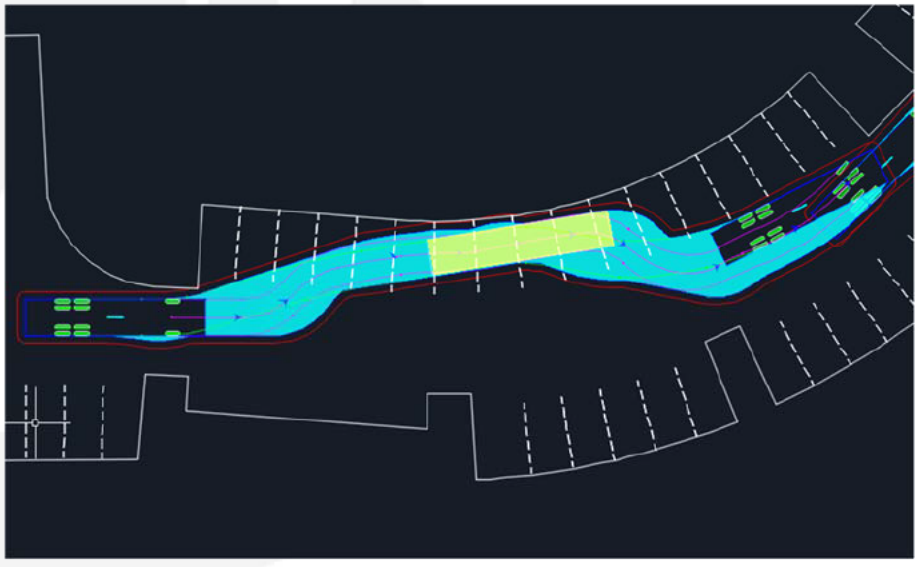


Figure 14: Coach Entering and Exiting Parking Area

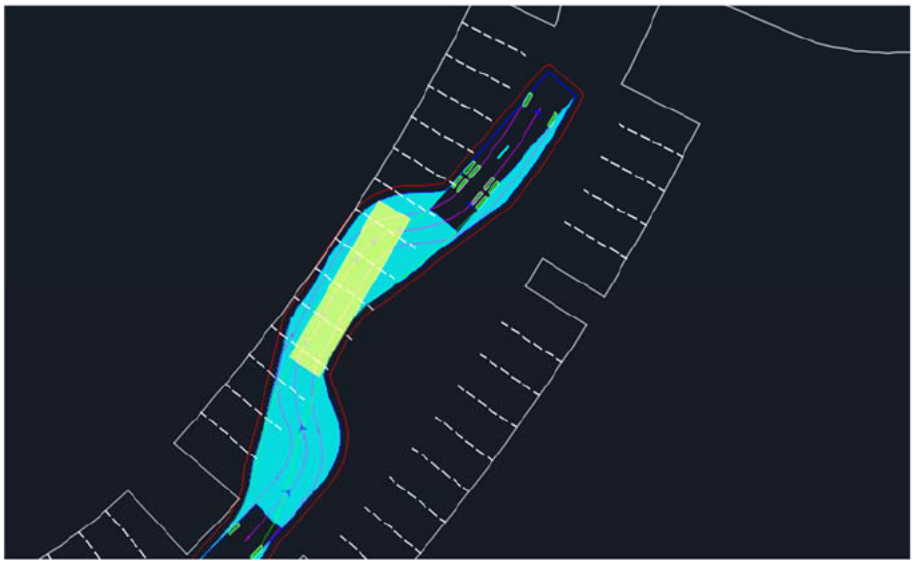


Figure 15: Coach Entering and Exiting Parking Area

9.2.1.7 It can be seen that at most 12 car parking spaces would be cordoned off and unavailable if a coach was to be parked. As set out above, a coach would be able to carry passengers equivalent to at least 20 spaces, meaning that the repurposing of the car parking spaces for coach parking provides a net overall benefit for the site.

9.2.2 Rule 29.5.2: Size of Required Parking Spaces and Layout

9.2.2.1 The general layout of the car parking is one long aisle with parking spaces located on either side. This is a layout that will be familiar to drivers.

9.2.2.2 Because the aisle is curved, the width of the parking spaces varies. However as a minimum, the standard spaces are all 5.0m long and at least 2.5m wide (at their narrowest point) with an aisle of 8.0m. In a small number of locations, the aisle reduces to 7.0m wide and in these locations the parking spaces are a minimum of 2.6m wide. All of these are suitable for use by Class 2 users (those that are unfamiliar with the car park).

9.2.2.3 The mobility spaces shown are 5.0m long, 3.6m wide and have an aisle of 8m. These dimensions also meet the District Plan requirements.

9.2.3 Rule 29.5.3: Gradient of Parking Spaces and Parking Areas

9.2.3.1 The plans provided show that the parking spaces will have a maximum gradient of at most 1 in 20 (5%) and flatter than this in many locations.

9.2.4 Rule 29.5.4: Mobility Parking Spaces

9.2.4.1 As set out above, the proposal will include 62 units with kitchens and 139 rooms without kitchens. The former requires 3 spaces for mobility impaired people (2 for guests and 1 for staff) with the latter requiring 4 spaces for mobility impaired people (2 for guests and 2 for staff). The provisions of part b of the Rule means that only the higher number of spaces applied, meaning that 4 mobility spaces are required.

9.2.4.2 The overarching requirement for mobility spaces derives from the Building Act, which in turn sets out that an acceptable solution is to provide the number of spaces required under Standard NZS4121:2001 ('*Design for Access and Mobility: Buildings and Associated*

Facilities'). As the layout provides 226 spaces, the Standard requires 5 mobility spaces. These are provided.

9.2.5 Rule 29.5.5: Drop Off / Pick Up (Set-Down) Areas

9.2.5.1 Under this Rule, additional drop-off / pick-up spaces are required for day care, educational and health care facilities. These are not proposed at the site.

9.2.6 Rule 29.5.6: Reverse Manoeuvring

9.2.6.1 Under this Rule, reversing onto Ayr Avenue is not permitted from any of the car parking areas due to the number of spaces provided. Further, under this Rule, no more than one reverse movement is to be carried out by a vehicle or entering a "required" parking space. This is applied by the Council as meaning that a vehicle entering a parking space and then exiting again can undertake no more than one reverse movement in total (rather than one reverse movement upon entry plus one reverse movement on exit).

9.2.6.2 As noted above, the dimensions of the spaces exceed the District Plan and/or overarching Standard and so it is not expected that there will be any difficulties in achieving this requirement for one reverse movement. The parking aisle connects two points of access onto Ayr Avenue and thus drivers can travel through the majority of the parking areas and exit again if necessary without any reversing taking place.

9.2.6.3 There is no turning head provided at the eastern end of the parking aisle. The aisle is 8m wide in this location, which provides sufficient width for a B99 car to turn if necessary.

9.2.7 Rule 29.5.7: Residential Parking Space Design

9.2.7.1 In the event that the accommodation is used by those working at the studio, then they may be present for some time and thus the parking spaces may function as those they were associated with residential activity. However the provisions of this Rule relate to garages, which are not proposed in this instance.

9.2.7.2 The spaces are appropriate for Class 2 users (those unfamiliar with the car park) but will also be suitable for Class 1 users (regular users of the car park).

9.2.8 Rule 29.5.8: Queuing

9.2.8.1 Under this Rule, queuing space can be apportioned in accordance with the expected use of the accesses. In view of access to the external roading network being from the south/east we expect that the majority of vehicles will enter via this route and accordingly, 30m queuing length is required at this access. This is achieved.

9.2.8.2 The northern access will have less traffic. A queuing space of over 24m is provided, which is sufficient for the access to serve up to 150 spaces, and this is ample.

9.2.9 Rule 29.5.9: Loading Spaces

9.2.9.1 Loading facilities are only required under the District Plan for specific land use zones, and the site is zoned in a different way to these. This under the District Plan, this Rule is not triggered. However it is understood that, as the activity is non-complying, loading is a matter that can be assessed.

9.2.9.2 For the studios, deliveries will be made via the northern access. There is a large 'back lot' area provided adjacent to the studios for deliveries to be made by trucks, with these vehicles then being able to turn within this area and exit the site in a forwards direction. The movement of these vehicles is addressed when the cross-sections of the internal roading is considered, below.

9.2.9.3 There is an area located towards the north of the site and east of the studios, where a small car parking area (6 spaces) is provided, and loading is expected to occur in this area also but using smaller vehicles.

9.2.9.4 Although there is no dedicated loading area provided at the visitor accommodation, there is ample space available at the porte cochere area for service vehicles to be present. While this would also be the area used for coach parties, the nature of service vehicles is that they are not present at peak times of guest arrivals and departures.

9.2.10 Rule 29.5.10: Surface of Parking Spaces, Parking Areas and Loading Spaces

9.2.10.1 The parking spaces can be formed, sealed and marked as required.

9.2.11 Rule 29.5.11: Lighting of Parking Areas

9.2.11.1 As the parking areas serve non-residential activities, they are required to be illuminated. There are no reasons why this cannot be achieved.

9.2.12 Rule 29.5.12: Bicycle Parking and the Provision of Lockers and Showers

9.2.12.1 Cycle parking facilities are not required at visitor accommodation or for residential activity.

9.2.12.2 In practice, although no cycle parking is required within the site, the site is large and there are therefore no constraints to cycle parking being provided if demand arises.

9.3 District Plan Chapter 29: Access

9.3.1 Rule 29.5.13: Access and Road Design

9.3.1.1 The site gains access in two locations onto Ayr Avenue. In practice the northern access is an extension to the car parking aisle, and is formed with a width of 7.2m. This is the minimum necessary to enable large trucks to enter from this direction, due to the accessway being slightly curved. The southern access is more akin in design to a roadway, and the width varies between 6m and 10m, with the latter being widening on curves to enable a coach to pass a car.

9.3.1.2 Both accesses achieve the expected carriageway widths set out in the Council's Land Use and Subdivision Code of Practice.

9.3.1.3 In respect of the way that the accesses will operate, coaches will only be permitted to enter the site from the south and circulate clockwise. This is to ensure that they are positioned to pull into cordoned off areas, rather than attempting to use unsuitable car parking areas, or discharging passengers into the main roadway, both of which would be unsafe. Tracking curves for coaches passing cars on the access are shown below. In these Figures, the cyan line is the area occupied by the vehicle bodywork and the red line is a clearance of 0.5m around the bodywork.

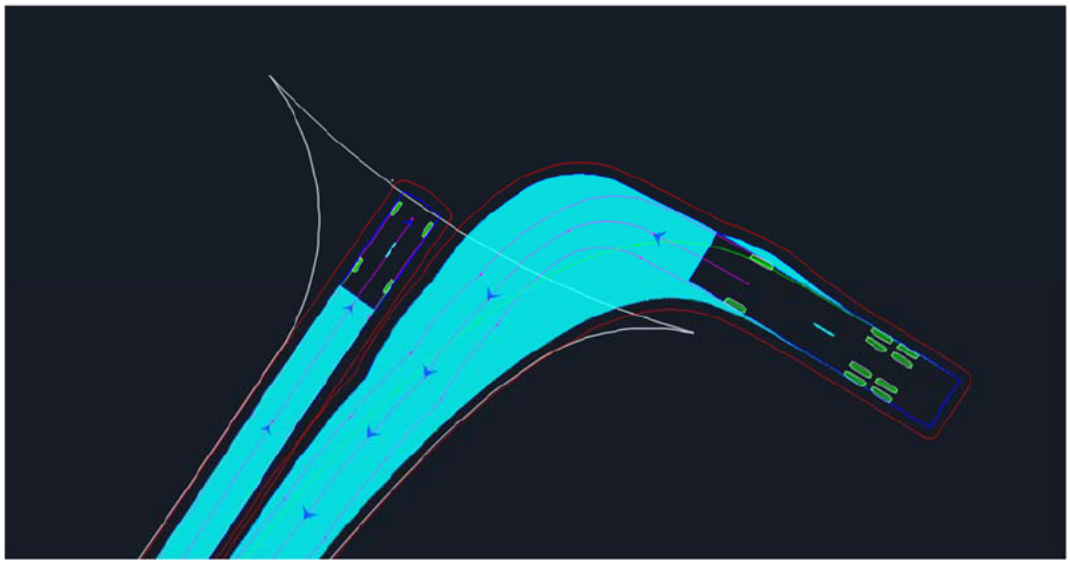


Figure 16: Coach Entering and B99 Car Exiting at Southern Access

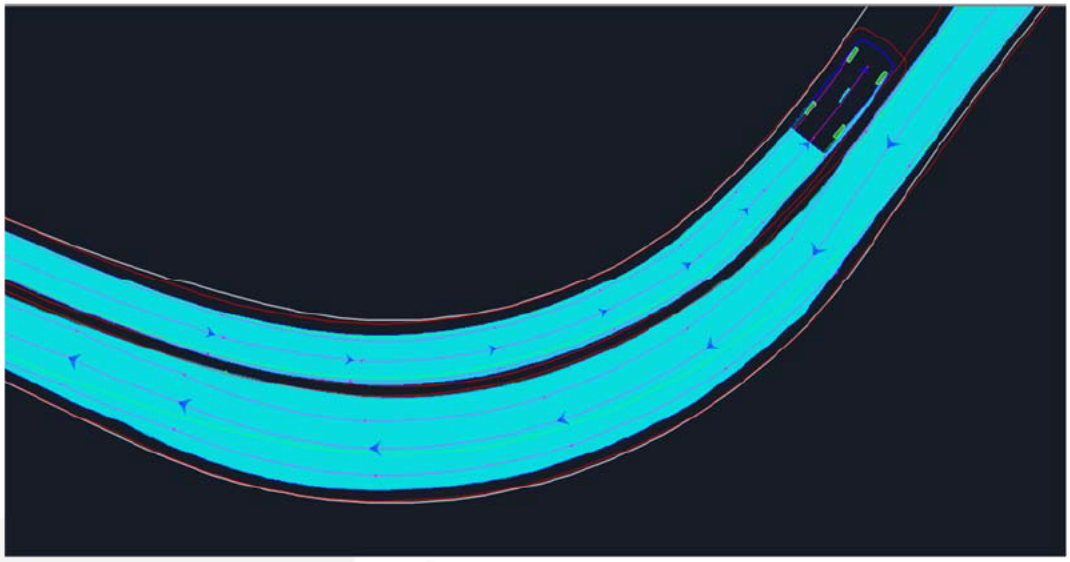


Figure 17: Coach and B99 Car Passing at First Curve

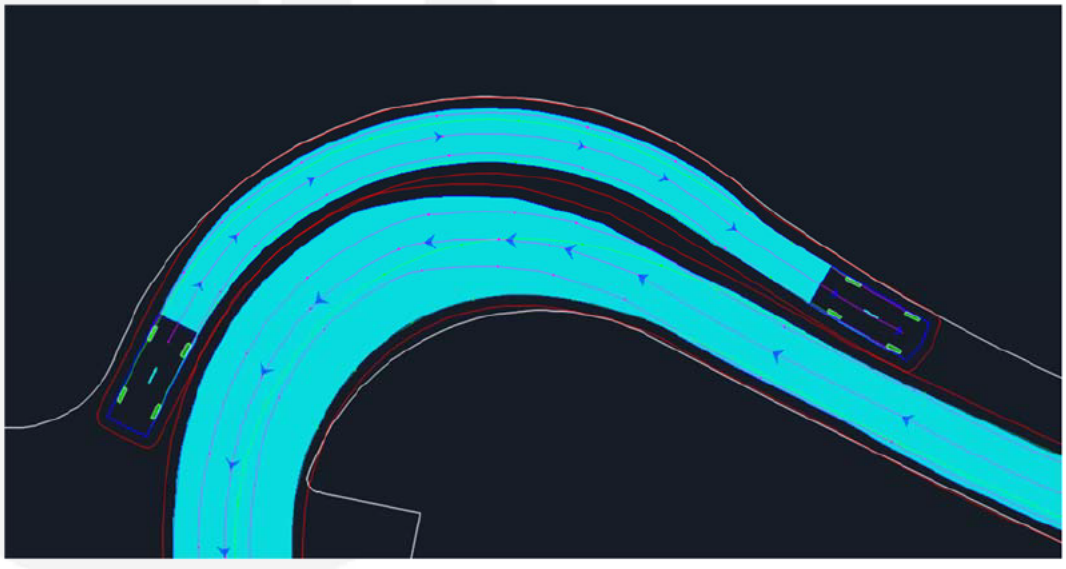


Figure 18: Coach and B99 Car Passing at Second Curve

9.3.1.4 It can be seen that the vehicles are able to pass one another without issue.

9.3.1.5 The northern access will accommodate trucks entering and exiting the site associated with the studio (these will not be permitted to use the roading network within the southern parts of the site). Tracking for an 11.5m rigid vehicle and a B99 car is shown below. Entering trucks will firstly pass through the small service yard, so that they can enter the 'back lot' at a 90-degree angle

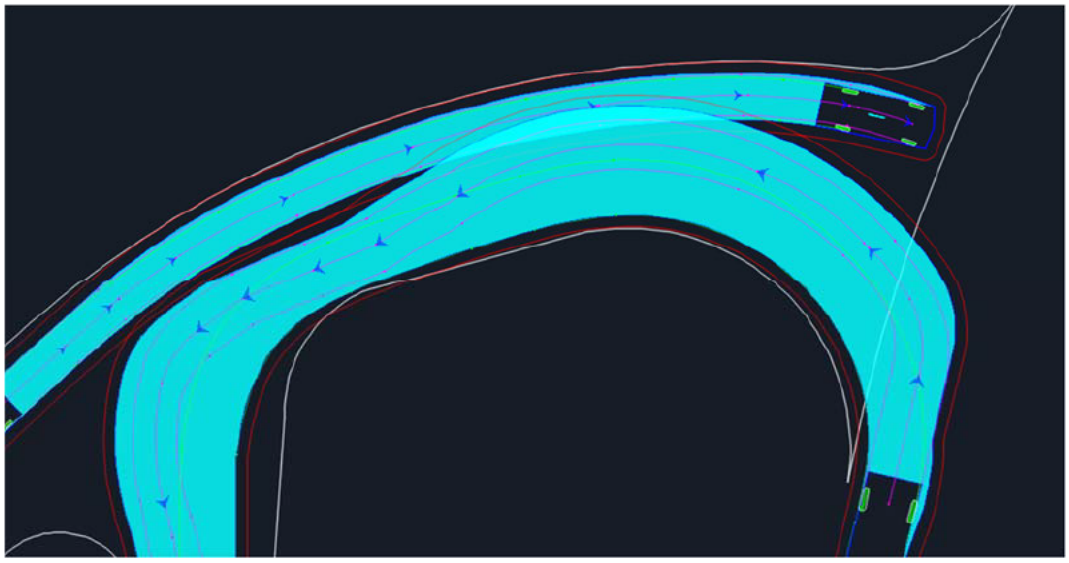


Figure 19: 11.5m Truck Entering and B99 Car Exiting at Northern Access

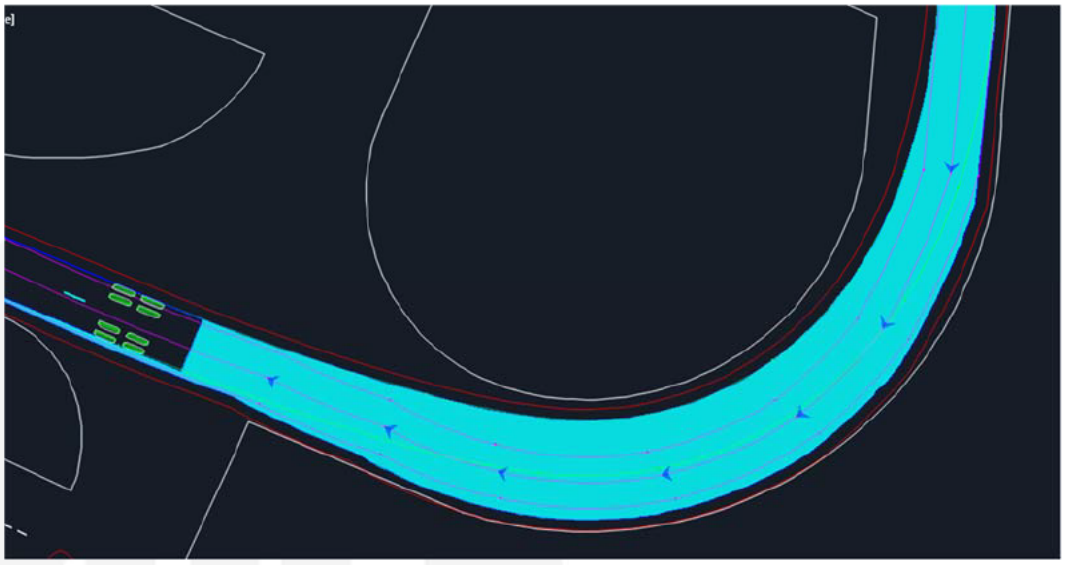


Figure 20: 11.5m Truck Entering Back Lot

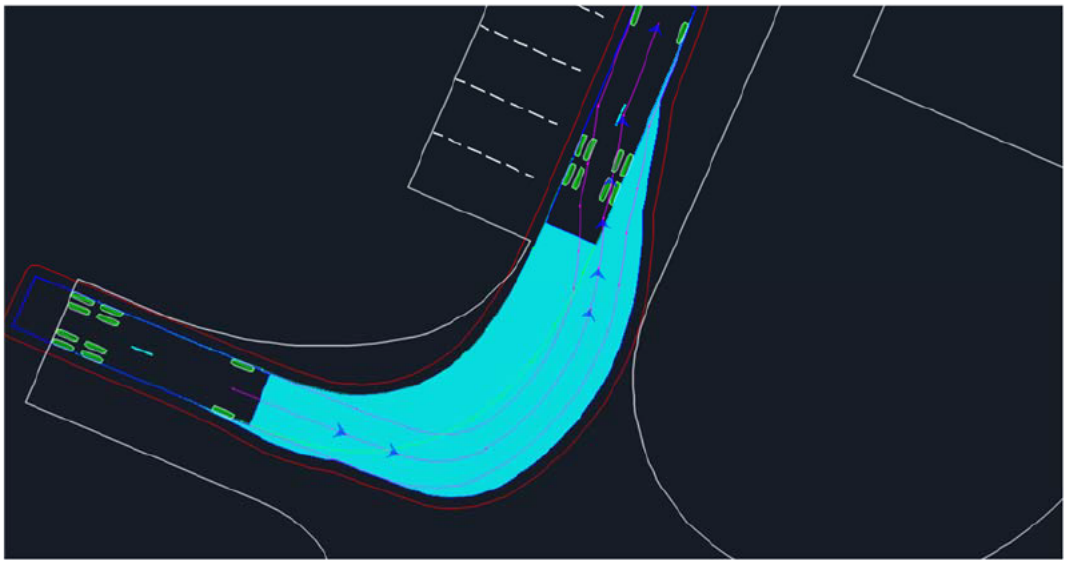


Figure 21: 11.5m Truck Exiting Back Lot

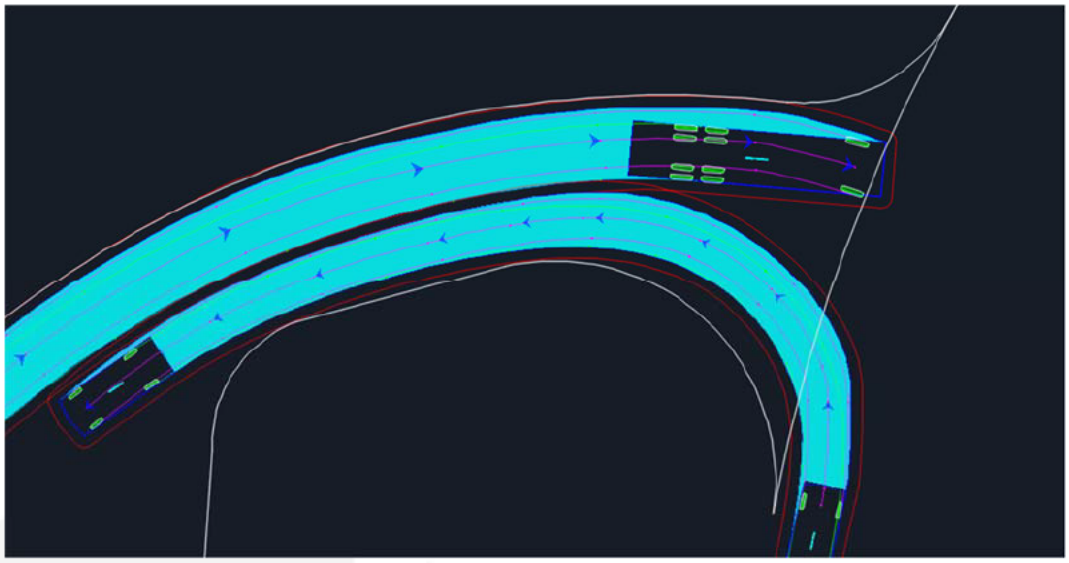


Figure 22: 11.5m Truck Exiting and B99 Car Entering at Northern Access

9.3.1.6 It can be seen that there are two scenarios where vehicles occupy the same area of roadspace. One scenario is where a B99 car is existing the site while an 11.5m truck enters (Figure 19 above) where the vehicles occupy the same area over a distance of around 15m. Trucks will not be particular frequent visitors to the site, and are likely to be present at times when other traffic volumes are low, and this mitigates the potential for them to meet. While widening the carriageway to avoid this outcome would be possible, it would mean that for the remainder of the time a higher-speed environment would arise due to the greater width available and this in turn would create road safety issues. Intervisibility between drivers in this location will be excellent, and so if two vehicles were to meet, there is the opportunity for one to give-way to the other. On balance then, the proposed layout can be supported.

9.3.1.7 The second location where drivers may occupy the same roadspace is when a truck exits the 'back lot' and turns onto the main roadway. A truck driver would only make this movement when the way is clear, and occupying the opposing traffic lane is permitted under Clause 2.3(3) of the Land Transport (Road User) Rule 2004. Since it is lawful on the vested road network, it is considered appropriate for this circumstance also, and can therefore be supported.

9.3.1.8 In view of the likely usage of the access roads, it is not unreasonable for them to be considered as Road Type E12. Consequently it is anticipated that cyclists (if any) can share the movement lane, but that separate footpaths are required for pedestrians. The plans provided show a network of walking routes in the area leading between the site and Ayr Avenue, albeit not necessarily running parallel to the access roadways. However, it is considered that the provision made for walking movements to and from the site is appropriate.

9.3.1.9 In respect of the gradients of the accessways, these fall well within the maximum of 1 in 8.

9.3.1.10 For clarity, under part (c) of this Rule, no vehicle access is anticipated to serve sites with a potential to accommodate more than 12 units on the site (and adjoining sites). The consented hotel breaches this Rule already, and by way of comparison, whereas 12 units could be expected to generate 96 vehicle movements per day (two-way), the traffic generation of the consented hotel is nearly 3,000 vehicle movements per day (two-way). However Ayr Avenue has been constructed to a high standard (essentially the same as a vested road), and the additional traffic generated by the proposed development will not have adverse effects on the safety or efficiency of the road.

9.3.2 Rule 29.5.14: Width and Design of Vehicle Crossings – Urban Zones

9.3.2.1 Although the zone is rural, the activity itself and Ayr Avenue are commensurate with an urban environment and so the vehicle crossings have been assessed as urban.

9.3.2.2 Because Ayr Avenue is not vested, the location of the vehicle crossing at the boundary of the lot is difficult to identify in practice. However for non-residential activity, a width of up to 9m is permitted, and this is achieved. The vehicle crossings enter the site at a 90-degree angle, and they can be constructed to meet Diagram 7.

9.3.3 Rule 29.5.15: Width and Design of Vehicle Crossings – Rural Zones

9.3.3.1 As noted above, the vehicle crossings have been assessed as urban.

9.3.4 Rule 29.5.16: Maximum Gradient for Vehicle Access

9.3.4.1 The plans provided show that the access gradients are considerably flatter than the maximum of 1 in 6.

9.3.5 Rule 29.5.17: Minimum Sight Distances from Vehicle Access on all Roads other than State Highways

9.3.5.1 Ayr Avenue is subject to a maximum speed limit of 30km/h, but the speed limit values set out within this Rule only extend to 50km/h. However, extrapolating the values of the Rule shows that a sight distance of 38m is appropriate for non-residential activities.

9.3.5.2 It is helpful that vehicle crossings are already formed in the location of the crossings that will serve the site, as this enables measurement of the existing sight distances. On-site measurements show that over 80m is provided in each direction and at both locations.

9.3.6 Rule 29.5.18: Minimum Sight Distances from Vehicle Access onto State Highways

9.3.6.1 The site does not have frontage onto a state highway.

9.3.7 Rule 29.5.19: Maximum Number of Vehicle Crossings

9.3.7.1 Two vehicle crossings are proposed, which meets the expectations under the Rule for a Local Road.

9.3.8 Rule 29.5.20: Minimum Distance Between Vehicle Crossings onto State Highways

9.3.8.1 The site does not have frontage onto a state highway.

9.3.9 Rule 29.5.21: Minimum Distances of Vehicle Crossings from Intersections

9.3.9.1 There are no intersections within 25m of the vehicle crossings.

9.3.10 Rule 29.5.22: Minimum Distances of Vehicle Crossings from Intersections onto State Highways

9.3.10.1 The site does not have frontage onto a state highway.

9.3.11 Rule 29.5.24: Service Stations

9.3.11.1 The proposed activity is not a service station.

9.4 Summary of District Plan Compliance

9.4.1 On the basis of this analysis, only one non-compliance with the transportation Rules of the District Plan has been identified. This is in respect of Rule 29.5.13(c) which requires that no vehicle access serve sites with a potential to accommodate more than 12 units. Ayr Avenue is not vested and therefore falls within this Rule. However the consented hotel generates vastly more traffic than the 12 units noted in the Rule, and as it has been constructed to a high standard, the additional traffic generated by the proposed development will not have adverse effects on the safety or efficiency of Ayr Avenue.

9.4.2 For completeness, the site design differs from the expectations of two Rules:

- Rule 29.5.9: Loading Spaces
  - No dedicated loading facility is proposed for the site when used as visitor accommodation. However the porte cochere provides an area where such vehicles can be present
- Rule 29.5.13: Access and Road Design
  - Pedestrian provision for walking movements between the site and Ayr Avenue is not made via footpaths alongside the access roads, but via off-road routes.

9.4.3 It is not considered that these design differences would give rise to adverse effects that are more than minor.

10. Conclusions

10.1. This report has identified, evaluated and assessed the various transport and access elements of a proposed 'screen hub' complex at Ayrburn. The proposal includes accommodation, which would be used as visitor accommodation when not required by a production based at the proposed studios.

10.2. From a transportation perspective, the greatest potential traffic generation arises from the presence of a production at the same time as a proportion of the visitor accommodation remains in use. However even adopting conservative assumptions (or all activities taking place at the same time), and also allowing for traffic associated with the consented hotel in the area, the changes due to the use of the site for visitor accommodation are modest. Accordingly, it is considered that the traffic generated by the development can be accommodated on the adjacent roading network without capacity or efficiency issues arising, with changes in queuing and delay at the closest intersections being small.

10.2.1. While the existing Arrowtown – Lakes Hayes Road / Ayr Avenue and Arrowtown – Lakes Hayes Road / Speargrass Flat Road intersections are able to accommodate the additional traffic, the analysis indicates that auxiliary right-turn lanes will be required under various scenarios for the consented and proposed developments.

10.2.2. The crash history in the vicinity of the site does not indicate that there would be any adverse safety effects from the proposal.

10.2.3. The development is unlikely to lead to any significant increase in walking and cycling in the area due to the distances to potential destinations, but if there is an increase, it is considered that the existing infrastructure is easily able to accommodate these.

10.2.4. The proposal includes public transport provision. One option is for services to enter the site, in which case they are able to make use of an existing bus stop directly adjacent to the site. Ayr Avenue has been constructed to allow for the movement of tour coaches, meaning that scheduled bus services can be easily accommodated, and bus turning facilities are provided towards the north using either the roading for the consented hotel or retirement village. Alternatively, buses can stop at proposed new bus stops on Arrowtown – Lake Hayes Road, which will be connected to the site via new footpaths.

10.2.5. It is not confirmed whether construction of the screen hub will be staged or not, but if so, then construction traffic will move under the control of a Construction Traffic Management Plan to ensure the safety or all road users

10.2.6. The site layout provides sufficient car parking spaces to meet demand, other than the scenario where the studios are in use and a high proportion of the visitor accommodation remains available for general (public) use. Under this scenario, any overflow car parking can take place using the 'back lot' of the studio.

10.2.7. A review of the site layout has identified only one non-compliances with the transportation Rules of the District Plan, in that Ayr Avenue is not vested but will serve more than 12 units. However the consented hotel generates vastly more traffic than the 12 units noted in the Rule, and as Ayr Avenue has been constructed to a high standard, the additional traffic generated by the proposal will not have adverse effects on the safety or efficiency of the road.

10.2.8. As permitted under the District Plan, coach parking is provided through repurposing car parking, and the site layout has been designed with this in mind. Tracking shows that this arrangement works satisfactorily, and cars and coaches can pass one another.

10.2.9. Tracking also shows that trucks are able to enter and exit the back lot of the studios without difficulty. Although there are two locations where trucks may need to use the same roadspace as other vehicles, these have been assessed and are not considered to give rise to adverse road safety or roading efficiency effects.

10.2.10. Overall, and subject to the preceding comments, the proposal can be supported from a traffic and transportation perspective and it is considered that there are no traffic and transportation reasons why it could not be approved.

Carriageway Consulting Limited
August 2025

Appendix A

Qualifications and Experience of Report Author

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Qualifications and Experience

Report Author: Andy Carr

Professional Qualifications

1988	Bachelor of Science with Honours (Computing Science), University of Newcastle upon Tyne
1989	Master of Science (Transport Engineering and Operations), University of Newcastle upon Tyne
1998	Master of Business Administration (Distinction): University of Newcastle upon Tyne
2006 - present	Chartered Professional Engineer (Practice field: Transportation engineering)
2006 - present	International Professional Engineer (NZ)
2006 - present	APEC Engineer
2006 - present	Chartered Member, Engineering New Zealand

Employment Profile

2014 - present	Director and Owner, Carriageway Consulting Limited – involved in numerous transportation engineering projects from transportation assessments for new developments and plan changes, to roading design, road safety audits, and independent peer reviews for local authorities and government departments. Preparation and presentation of expert evidence to Council Hearings and the Environment Court.
2012 - 2014	Associate Principal, Abley Limited - leading a range of transportation assessments for land-use projects throughout the country, and provision of expert evidence.
2005 - 2012	Senior Transport Planner and progressing to Senior Associate / Office Manager, Traffic Design Group - responsible for sourcing, managing and overall technical direction of the transportation assessments for land use development projects throughout the South Island.
2004 - 2005	Senior Transport Planner, Beca - assisting in a variety of roading projects with particular responsibility for writing the first New Zealand Pedestrian Planning Guide.
1990 - 2004	Traffic engineer in various private sector roles in the UK, ranging from Graduate (1990-1992) to Principal (2000-2004) with a range of roles, initially assisting with a variety of projects assessing land use changes, road safety and strategic transportation studies, and ultimately managing a local team with technical oversight of all work carried out, client liaison and sourcing commissions.

Additional Information

Member, Resource Management Law Association

Member, Engineering New Zealand Transportation Group

Associate Member, New Zealand Planning Institute

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8 August 2025

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George Watts
Winton Limited

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Dear George

Further Assessment of Warrants for Turning Lanes at the Arrowtown - Lake Hayes Road / Speargrass Flat Road Intersection

In our recent Transportation Assessment addressing the transport-related effects of the proposed film hub, we identified that under certain configurations of development within Ayrburn, turning bays or lanes may be required at the Arrowtown - Lake Hayes Road / Speargrass Flat Road intersection. This letter develops a threshold through which the need for turning bays or lanes can be considered in response to evolving development within Ayrburn.

Background

The Arrowtown - Lake Hayes Road / Speargrass Flat Road intersection is located approximately 250m south of the Arrowtown – Lake Hayes Road / Ayr Avenue intersection, and is formed as a priority ('give-way') controlled crossroads where traffic on Arrowtown – Lake Hayes Road retains priority. No turning lanes or bays are currently present at the intersection although there is shoulder widening on Arrowtown – Lake Hayes Road that enables vehicles turning left to slow and move clear of through traffic.

Photograph 1: Arrowtown – Lakes Hayes Road / Speargrass Flat Road Intersection Looking South

The road is formed within the centre of the legal road reserve, which is some 20m wide. Any seal widening needed to form turning bays or lanes can therefore be accommodated within the legal road.

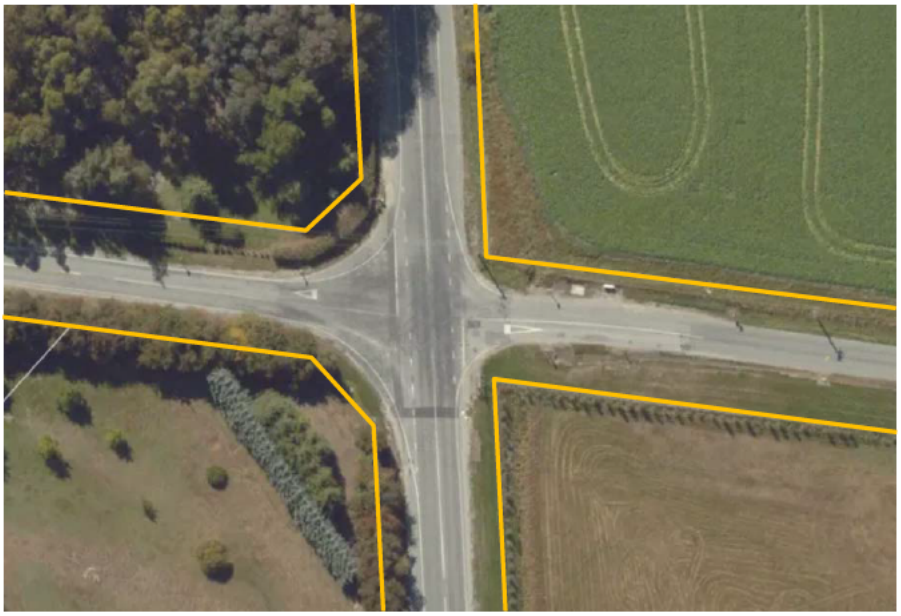

Figure 1: Formation of Roads within Legal Boundaries at Arrowtown – Lakes Hayes Road / Speargrass Flat Road Intersection

The need for turning bays and lanes is determined by warrants set out in the Austroads Guide to Traffic Management Part 6 ('*Intersections, Interchanges and Crossings Management*'). Broadly, the process followed is to identify the through traffic and turning traffic, and to then read off a graph to identify whether the resultant combination of traffic volumes means that a turning bay or lane is required. The methodology does not involve engineering judgement, but simply a 'yes / no' conclusion based on the traffic flows and the graph.

Assessment Methodology used in Transportation Assessment

The analysis of the proposed film hub adopted in the Transportation Assessment is based on the consented development within Ayrburn. This includes the hotel complex, the retirement village, and The Haybarn. However while these are consented, they might not be constructed or they could be constructed or operated in a way that results in lower traffic generation than expected. The particular traffic generation adopted in the Transportation Assessment was:

- [redacted]180584)
  - [redacted]s exiting and 148 vehicles entering in the morning peak hour;
  - 239 vehicles exiting and 233 vehicles entering in the evening peak hour;
- Retirement village (RM220926)
  - 61 vehicles exiting and 49 vehicles entering in the morning peak hour;
  - 80 vehicles exiting and 78 vehicles entering in the evening peak hour;
- Haybarn (RM230425):
  - 0 traffic in the morning peak hour;
  - 62 vehicles exiting in the evening peak hour;
  - Since the Haybarn is a function venue, it is unlikely to generate traffic in the morning 'commute' peak hour. Evening functions typically also start later than evening 'commuter' peak hour. Consequently the scenario modelled is The Haybarn having an event that ends at the same time as the commuter peak hour.

It can be seen that the greatest traffic generation arises from the consented hotel complex. However, and importantly, the hotel and the retirement village occupy the same physical area of land and so if one is construction, the other cannot be. We understand that construction of the retirement village buildings has recently commenced, and thus the hotel consent cannot be given effect to. As such, it has not been considered further within this letter.

The distribution of the retirement village and Haybarn traffic adopted the same basis as evaluated for RM180584, with one third of the traffic travelling to/from the north and two thirds travelling to/from the south (and therefore passing through the Arrowtown - Lake Hayes Road / Speargrass Flat Road intersection). At that intersection, the generated traffic is assumed to be distributed as per the current directions of travel (broadly, this is around 80-85% travelling north-south, 15% travelling along Speargrass Flat Road and 0%-5% travelling along Hogans Gully Road).

The traffic generation of the proposed film hub has then been added onto these 'baseline' traffic flows.

Assessment of Right-Turn Bays

The warrants for right-turn bays are based on the 'worst case' combination of traffic flows at any time. Taking into account the calculated traffic flows as per the above, the need for right-turn bays is found as follows:

Space	Morning Peak Hour			Evening Peak Hour		
	Major Road (veh)	Minor Road (veh)	Right-Turn Bay Needed?	Major Road (veh)	Minor Road (veh)	Right-Turn Bay Needed?
Current volumes plus retirement village plus Haybarn (purple '+' on graph)	372	31	No	480	24	No
Current volumes plus retirement village plus Haybarn plus studio (green '+' on graph)	569	31	No	690	24	No

Table 1: Intersection Volumes, Assessment of Right-Turn Bay, South-to-East

Space	Morning Peak Hour			Evening Peak Hour		
	Major Road (veh)	Minor Road (veh)	Right-Turn Bay Needed?	Major Road (veh)	Minor Road (veh)	Right-Turn Bay Needed?
[redacted] (purple 'X' on graph)	356	25	No	480	34	No
Current volumes plus retirement village plus Haybarn plus studio (green 'X' on graph)	545	44	Yes	687	53	Yes

Table 2: Intersection Volumes, Assessment of Right-Turn Bay, North-to-West

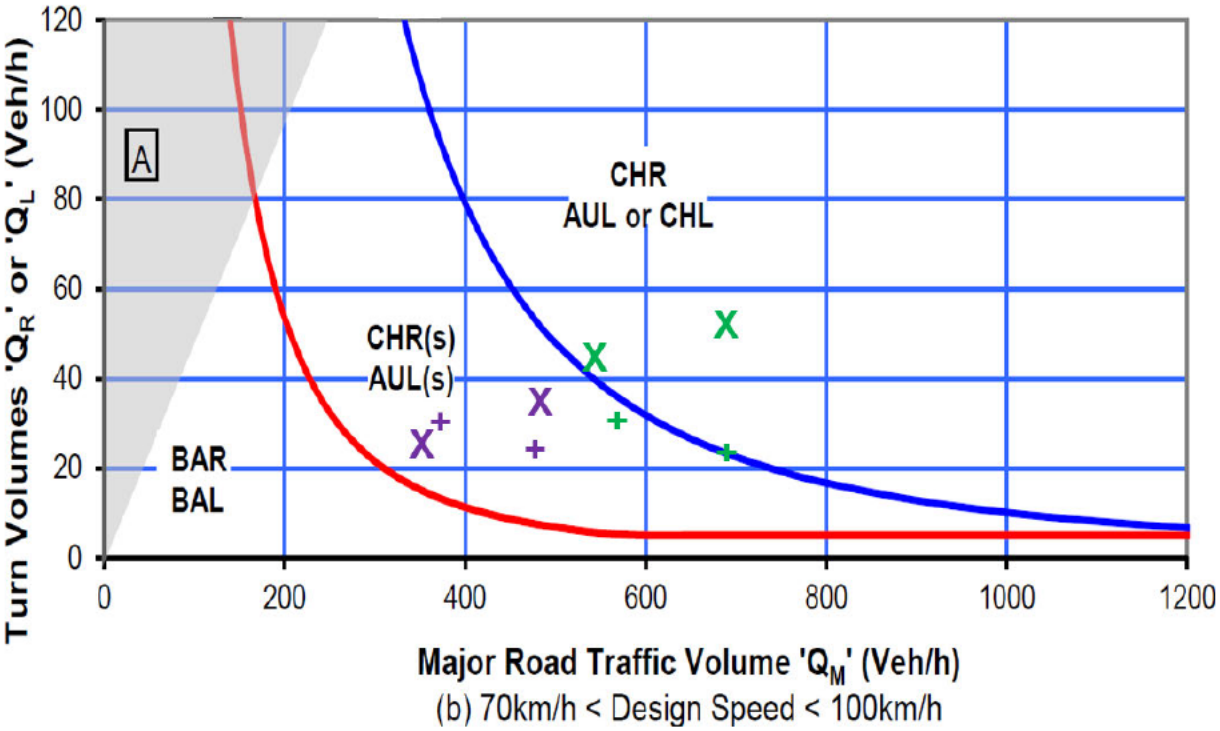

Figure 2: Right-Turn Bay Warrants

It is clearly not possible to have a right-turn bay at some times of the day and not at others, meaning that the bay is installed when the need for it is first met. This leads to the following outcomes for the retirement village scenario, as summarised in the Transportation Assessment:

- Receiving environment of current traffic flows plus the retirement village and The Haybarn:
  - A right-turn bay **is not** warranted for traffic turning right from the north to the west;
  - A right-turn bay **is not** warranted for traffic turning right from the south to the east.
- Receiving environment (as above) plus the additional traffic generated by the proposed development (under either scenario of the studio operating or not operating):
  - A right-turn bay **is** warranted for traffic turning right from the north to the west;
  - A right-turn bay **is not** warranted for traffic turning right from the south to the east.

In summary, there is no scenario where a right-turn bay is required for the movement from south to east. However, at full development of the retirement village and the Haybarn, a right-turn bay is warranted for the movement from the north to the west.

[redacted]

Given that the traffic generation of Ayrburn is not yet confirmed, we have considered the point at which the right-turn bay is warranted.

As set out above, the need for a right-turn bay is dependent on the traffic flows, which in turn is dependent on the generation and distribution of traffic generated at Ayrburn. Consequently it is possible to 'reverse engineer' the scenario as considered above. However because the process involves reading the figures from a graph rather than an equation-based approach, this requires repeatedly assessing different scenarios and checking them against the graph to identify whether the combination of through and turning traffic means a right-turn bay is warranted.

The key movements to and from Ayrburn are the left-turn entry movement into the site from the south, and the right-turn exit movement out of the site to the south. The traffic undertaking these movements will pass through the Arrowtown - Lake Hayes Road / Speargrass Flat Road intersection and hence then affect whether a right-turn bay is required or not. We note that the Arrowtown - Lake Hayes Road / Ayr Avenue intersection is constructed with a left-turn lane for vehicles entering from the south and a wide traffic lane for exiting vehicles. This layout enables easy identification of vehicles that are turning left into the site and right out of the site for the purposes of a traffic survey.

Photograph 2: Aerial Photograph of Arrowtown – Lakes Hayes Road / Ayr Avenue Intersection Showing Possible Locations for Traffic Count Stations (in Red)

If these locations were adopted for identifying the traffic volumes then this would eliminate any reliance on anticipated traffic distribution (identified through resource consents) in favour of the observed distribution and actual traffic volumes.

Based on the traffic volumes shown in Tables 1 and 2, and Figure 2, the warrants would be met when:

- The two survey locations show a combined total of 287 vehicles in the morning peak hour; or
- The two survey locations show a combined total of 196 vehicles in the evening peak hour

[redacted] of the thresholds needs to be met for the turning lane to be required oth the morning and evening thresholds need to be fulfilled.

Ultimately the warrant for any right-turn bay depends on the traffic volumes turning at an intersection, rather than any particular land use activity as such. Consequently, we consider that specifying the timing for implementing turning bays on the basis of observed traffic flows provides a better approach than triggering by any particular type or scale of activity within Ayrburn because it removes any reliance on the assumed/anticipated traffic generation or direction of traffic flows expected at the time of resource consent. In other words, having the provision of a right-turn bay related to the actual observed traffic volumes rather than being related to any land use activity provides a robust way to ensure that the bay is provided when it is warranted.

Potential Condition of Consent

We are mindful that although there is consented development within Ayrburn, this still requires building consents to be issued by the Council. As such, it is unlikely that any new development could proceed without the Council being aware. However it is possible that there could be a change in the way that an existing activity operates, which would not require the Council to be informed, and which could increase traffic passing through the Arrowtown - Lake Hayes Road / Speargrass Flat Road intersection.

We also highlight that at present, a right-turn bay is not warranted for the current traffic volumes, and this may remain the case for some time if there is no further development and traffic volumes remain largely unchanged.

Accordingly, we consider that these factors should be reflected in a condition of consent relating to the future provision of a right-turn bay.

We consider that the following provisions would be appropriate:

1. *Within three months of the consent for a film hub being given effect to, the consent holder shall arrange for traffic surveys to be carried out of the right-turn movement out of Ayr Avenue onto Arrowtown - Lake Hayes Road and the left-turn movement into Ayr Avenue from Arrowtown - Lake Hayes Road.*

2. *To ensure the surveys reflect the normal operating conditions of the intersection, they shall be carried out:*

   (i) between 7am to 9am, and 4pm to 6pm, over five consecutive weekdays; and
   (ii) during school term-times; and
   (iii) when there are no events being held at Ayrburn or in the immediate area.

3. *The morning peak hour traffic flow shall be calculated as the highest combined traffic flow (that is, the sum of the right-turn movement out of Ayr Avenue onto Arrowtown - Lake Hayes Road plus the left-turn movement into Ayr Avenue from Arrowtown - Lake Hayes Road) observed in any contiguous 60-minute period between 7am to 9am on any of the survey days.*

4. *The evening peak hour traffic flow shall be calculated as the highest combined traffic flow (that is, the sum of the right-turn movement out of Ayr Avenue onto Arrowtown - Lake Hayes Road and the left-turn movement into Ayr Avenue from Arrowtown - Lake Hayes Road) observed in any contiguous 60-minute period between 4pm to 6pm on any of the*

5. *If the morning peak hour traffic flow exceeds 287 vehicles, or the evening peak hour traffic flow exceeds 196 vehicles, the consent-holder shall appoint a suitably qualified independent traffic engineer to review all of the data gathered, and to collect any additional data they deem necessary, to advise on whether the warrants for a right-turn bay from Arrowtown - Lake Hayes Road (north) to Speargrass Flat Road are met.*

6. *The traffic engineer shall provide a written report of their findings within two weeks of the traffic surveys being completed, and the consent-holder shall provide a copy to the Council as road controlling authority.*

7. *If the traffic engineer concludes that a right-turn bay is warranted for the vehicle movement from Arrowtown - Lake Hayes Road (north) to Speargrass Flat Road, then*

within four months of the date of the report, the consent-holder shall submit a detailed design for the right-turn bay to the Council for approval.

8. *Surveys shall be carried out once every 12 months, but shall cease once a right-turn bay is constructed for the vehicle movement from Arrowtown - Lake Hayes Road (north) to Speargrass Flat Road.*

9. *At any time, but not less than six months after any previous survey, the Council may request that the consent-holder carries out the surveys and analysis described in parts 1 to 7 above. If surveys are carried out in response to a Council request, the consent-holder shall ensure that the traffic engineer's written report is provided to the Council within two weeks of the traffic surveys being completed.*

Summary and Conclusions

Having reviewed our previous assessment, we remain of the views expressed in the Transportation Assessment regarding the scenarios at which right-turn bay are warranted at the Arrowtown - Lake Hayes Road / Speargrass Flat Road intersection. However we consider that rather than these turning lanes being triggered by the development of particular activities at the site, a more robust approach would be to put in place a condition of consent that requires them to be provided once the traffic volumes show that the warrants are met. This approach would take into account the current flexibility in the consented activities at Ayrburn, as well as the potential for those activities to be staged.

We recommend that monitoring is carried out by surveying the left-turn lane at the Arrowtown - Lake Hayes Road / Ayr Avenue intersection for vehicles entering the site and the right-turn lane at the Arrowtown - Lake Hayes Road / Ayr Avenue intersection for vehicles exiting the site. These locations mean that only the Ayrburn traffic that is passing through the Arrowtown - Lake Hayes Road / Speargrass Flat Road intersection will be identified. This can then be used to identify whether the warrants for a right-turn bay are met.

We have suggested some wording for a possible condition of consent above.

Please do not hesitate to contact me if you require anything further or clarification of any issues.

Kind regards
Carriageway Consulting Limited

Andy Carr
Traffic Engineer | Director

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