2 The current situation, problems and opportunities

2.1 Characteristics of our economy and transport network

The base of the economy in Otago and Southland

In 2015/6, Otago accounted for 4.3 per cent of national GDP, and Southland 2.0 per cent. The economy of both our regions relies largely on agriculture and other primary industry, and on downstream manufacturing industries. These industries are heavily dependent on land transport infrastructure for their continued economic growth.

Both Otago and Southland also have a strong tourism industry, with the coastal, lake and mountain areas and scenery being major attractions. Tourism is one of the three fastest growing sectors of the combined regions' economies; tourism growth - particularly from international visitors accessing southern New Zealand through Queenstown – is projected to continue to increase. The tourism sector depends on both the roading network and air services, as well on as the cruise ship visits to Milford Sound, Bluff and Dunedin.

The economic base of Southland region is relatively narrow, while Otago's is somewhat broader. Rural activities provide the main driver for Southland's economy, which relies heavily on a small number of products such as farming and the aluminium smelter at Tiwai Point near Bluff. The main urban area of Southland, Invercargill, is the thirteenth largest city in NZ. Invercargill primarily services the farming community, and also houses the Southern Institute of Technology.

Much of southern NZ is provincial. While parts of Otago are experiencing rapid growth, the population of other parts, and of Southland is relatively stable or declining. Several townships are strong and thriving, but demographic change and depopulation threatens the survival of others.

Dunedin is the largest city in the Otago Southland area, and the sixth largest city in New Zealand. Education and health care are the focus of its economy, with just over a quarter (26.4 per cent) of all employment being in one of those two industries[4]. This reflects the importance of Dunedin's education assets; the University of Otago alone has been estimated to contribute to around 15 per cent of the city's GDP[5].

After education, business services and health services Dunedin's largest employment sectors are accommodation, cafés and restaurants, retail, community services, construction, food retailing and manufacturing. Manufacturing employment has been declining in Dunedin, although this is being offset with gains in the high-tech and ICT sectors. Major employers are the University of Otago, Otago Polytechnic and the region's base hospital in Dunedin, which includes specialist services.

The Queenstown economy is a challenging one. As a key selling point for NZ's tourist industry, the district has a large impact on the national tourism economy. Distance from markets for goods and services, coupled with the small local market, mean that local businesses struggle to achieve the economies of scale in the same industries in larger markets. This constrains productivity and thus profitability and incomes[6]. Moreover, high housing prices and high building costs challenge affordability.

[4] Ministry of Business, Innovation and Employment (MBIE) Regional Economic Activity Report (REAR) report. 2015.

[5] See the University of Otago's Annual Economic Impact Report for 2015.

[6] Queenstown Lakes District Council land transport activity management plan 2018/19 – 2032/33. September 2017.

Summary of the transport network

Otago and Southland are the southernmost regions in New Zealand, together comprising nearly half of the South Island's land area and are similar in size. They are among the largest regions in New Zealand. Southland's land area is 34,000 km^2 and Otago's is 32,000 km^2. Stretching from the Waitaki River in the north to the Brother's Point / Waiparau Head in the Catlins, Otago is bounded by the Southland, Canterbury and West Coast regions, and to the east by the Pacific Ocean. Southland region, covering the south of the South Island plus Stewart Island, is flanked by coastal waters on the east, south and west. To the north, Southland adjoins Otago and, in the northwest corner at Awarua Point, the West Coast region.

The Otago region has:[7]

- 1,300 km of state highway (managed by NZTA)
- 9,219 km of local roads (managed by TAs), 39.5 per cent of which is sealed
- 279 km of main trunk rail line and 10 km of branch line
- Two urban bus networks and long-distance buses between Otago towns and to other regions.

The Southland region has:[1]

- 777 km of state highway (managed by NZTA)
- 6,418 km of local roads (managed by TAs), 41.3 per cent of which is sealed
- 90 km of main trunk rail line and 105 km of branch line
- One urban bus network and long-distance buses between Southland towns and to other regions.

Figure 1 shows the state highways in Otago and Southland. Figure 2 shows key freight and tourism journeys; local roads connects these journeys with local businesses and communities. This RLTP has identified these freight and tourism journeys to enable cross-boundary monitoring using the ONRC system; these do not represent the entire collection of key journeys in southern NZ. The next RLTP (in 2021) will identify additional key journeys.

The key tourism and (internal) freight journeys, which are shown on Figure 2, are:

Freight journeys

- Timaru – Invercargill: SH 1 via Clinton, Mataura to Invercargill.
- Timaru – Invercargill: SH 1 via Gore, Mataura to Invercargill.
- Christchurch – Queenstown: SH1, SH8, SH 79, SH8, SH6 and SH 6A.

Tourist journeys

- Haast – Milford Sound: SH6, Kawarau Gorge, SH6, SH97 and SH94.
- Haast – Milford Sound: SH6, SH84, Crown Range Road, SH6 and SH94 to Milford Sound.
- Omarama – Milford Sound: SH83, SH6, SH97, SH94 to Milford.
- Dunedin – Invercargill – Te Anau / Southern Scenic Route: SH1 to Balclutha, Owaka, Papatowai, (plus alternate route via Purakanui Falls), Chaslands, Niagara, Gorge Rd, Invercargill, SH1, SH6, SH99 via Tuatapere and Clifden, Blackmount, Manapouri and Te Anau.

[7] Ministry of Transport statistics for roads available at http://www.transport.govt.nz/ourwork/tmif/infrastructureandinvestment/; the measures of state highways are for 2014/15 and the measures of local roads are for 2013/14. For rail: Neil Campbell, KiwiRail Dunedin, *pers. comm*. 27 January 2015.

Large parts of Otago and Southland are within three national parks, with limited roading: Fiordland National Park (New Zealand's largest national park) and Rakiura National Park on Stewart Island, are in Southland. Aspiring National Park is partly in Otago and partly in the West Coast region.

Stewart Island, which is part of Southland district, is connected to the 'mainland' by air and ferry services, including a freight ferry.

Modes of travel

Land transport in Otago and Southland is mainly road-based and focused on the use of private cars and trucks e.g. as illustrated by responses in the last census, summarised in Table 4. It is likely that road transport will continue to be the primary mode of transport in the years to come.

In the 2013 census, areas that were mostly rural had higher proportions of people working at home. Southland district had the third highest proportion of employed people working at home, for all NZ territorial authorities – 25 per cent (3,897 people), see Table 4.

The appendix sets out in detail the role the RTCs expect each mode of transport take under these RLTPs.

Table 4: Percentage of people travelling to work by a particular mode

District/city	Percentage of people in each district travelling to work by a particular mode, census day, 2013 (%)								
	Drove a private car, truck or van	Drove a company car, truck or van	Passenger in a car, truck, van or company bus	Public bus	Motor or power cycle	Bicycle	Walk-ed or jogged	Work-ed at home	Did not go to work that day
Central Otago	42	17	4	0	1	4	7	14	11
Clutha	44	11	5	0	3	1	6	20	9
Dunedin	51	10	5	3	1	2	9	6	12
Gore	49	14	4	0	1	2	6	13	11
Invercargill	56	13	6	1	1	2	5	4	12
Queenstown Lakes	43	13	3	1	1	3	11	11	12
Southland	36	12	3	0	6	1	6	25	10
Waitaki	46	12	4	0	2	2	7	14	12

Source: Statistics NZ table builder

On and off-road cycle network

There are urban cycle networks in Dunedin and Invercargill. Queenstown is currently planning how to expand its incipient commuter cycling network.

The two regions have an extensive off-road cycle network, which is economically important. The network includes both official and unofficial trails. There are around 500 km of official trails, including several Great Rides, listed below:

- Alps 2 Ocean Cycle Trail
- Around the Mountain Cycle Trail
- Clutha Gold Trail
- Otago Central Rail Trail
- Roxburgh Gorge Trail
- The Queenstown Trails.

Several other trails are under construction or planned to connect Dunedin and Queenstown via Lawrence.

There are two Heartland Rides. One of which is partially in Otago and partially in Southland: along SH6, on the West Coast road, to Wanaka. The other is in Southland between Mossburn and Invercargill (Bluff). Heartland Rides aim to encourage cyclists away from busy state highways and onto scenic, quiet, back-country roads where they will experience heartland New Zealand.

The roading network

The two regions have an extensive network of state highways and local roads, as well as a freight rail connection linking Invercargill and Dunedin. Key transportation routes cross Otago and Southland, linking cities and towns in Otago and further north with those in Southland.

Figure 1 shows the infrastructure links between Otago and Southland, West Coast and Canterbury. One of these key links, SH1, runs north-south along the eastern coast of Otago, through key population centres in Southland, ending at the bottom of the Southland region at Stirling Point. This state highway provides the key transport link for internal freight, export freight and movement of people through the South Island. As such maintaining this link is considered critical to the whole South Island transport network.

SH6, SH8 and SH90 provide links between inland Otago, Southland, West Coast and Canterbury.

The remaining state highways in Otago and Southland form strategic links throughout the region for freight, visitors, and other traffic.

SH6 and SH94 connect two of New Zealand's iconic tourist destinations: Queenstown and Milford Sound. SH6 also provides the key links into and out of Queenstown: east to Cromwell and south to Invercargill. It is worth noting that just over half of all visitors are believed to be arriving in Queenstown by road (although there is no current, reliable evidence on this). Also worth noting is the congestion occurring in Milford Sound, as visitor numbers continue to increase.

Most of the freight to Queenstown comes from Christchurch on SH6 over the Lindis Pass and via Cromwell, which acts as a freight hub. Smaller trucks are then used to distribute the goods to Queenstown along SH6.

A large proportion of the roading network within Otago and Southland is local roads (rather than state highways): 88 per cent in Otago and 89 per cent in Southland. On Stewart Island, the short network of roads is part of Southland District Council's roading network.

The extensive local network across the two regions is vital for travel across the large land area, for carrying freight link between farm gate and the state highway network, and for linking to Port Otago and South Port.

This extensive road network in Otago and Southland, combined with a sparse population and the rising costs of road maintenance, places a relatively high burden of road maintenance on the population.

Generally, the capacity of the road network in Otago Southland is adequate, except in the Queenstown area. While most of the congestion in the Queenstown is confined to the state highways at present, the capacity of the network is under pressure. Passenger transport, in the form of coach tours, shuttle buses and courtesy coaches, plays a part in managing congestion levels in and around Queenstown and (for coaches) on SH6, SH97 and SH 94.

Until recently, the forecasted increase in freight (which has been based on increasing visitor numbers and on anticipated population growth) has been expected to come within the capacity of SH 6, from Queenstown east to Cromwell, to handle. But two issues have highlighted the need to revisit this assumption. The first is Queenstown Airport Corporation's master planning, which has identified the desirability of a dual airport approach of a "one airport business, two complementary airports", using both Wanaka and Queenstown airports to support economic growth across Otago. The second is the realisation that the projections of visitor numbers currently used for transport modelling in Queenstown need to be revisited as they are probably underestimating the rate of growth in visitors[8].

Private vehicle use dominates transport in Queenstown, with public transport and alternative transport modes comprising a small proportion of total trips. The critical elements of the transport system are SH6A connecting the airport at Frankton with Queenstown, and the network within the Queenstown CBD itself. Growing traffic demand, coupled with narrow streets and limited vehicle capacity within the town centre, constrains the dispersal of traffic entering the town from SH6A. This will continue to cause significant traffic congestion, particularly during the afternoon/evening peak period and during the winter, until rectified with better use of public passenger transport and active transport, coupled with some improvements in transport infrastructure.

To this end, the recently-completed programme stage of the business case being developed for Queenstown integrated transport proposes managing travel demand by addressing car dominance in Queenstown and thereby optimising the existing transport infrastructure. This optimisation focuses on improving the use of the existing network through both public transport interventions and use of technology. Proposed improvements to public transport include the introduction of bus priority along the SH6A corridor, the introduction of public transport hubs and park and ride services. The application of technology aims to improve network productivity through the introduction of Mobility as a Service and workplace travel plans[9].

[8] Tony Sizemore, NZTA, *pers. comm*. 12 October 2017.

[9] Queenstown Integrated Transport Strategy. Item 10 Queenstown Lakes District Council Agenda, 28 September 2017: see http://www.qldc.govt.nz/assets/Uploads/Council-Documents/Full-Council-Agendas/2017/28-September-2017/10a.-Attachments-Queenstown-Integrated-Transport-Strategy.pdf .

Private vehicle use dominates transport in Dunedin as well, with public transport comprising only a small proportion of total trips. Trips by active modes make up a significant contribution in some locations (particularly the city centre and North Dunedin) due to the comparatively short distances and flat terrain. In capacity terms, the Dunedin transport network is generally fit for purpose with sufficient capacity to cope with demand.

Southland's transport system is broadly fit for purpose as well. Although the main roads in Southland are largely sealed, some of the tourist roads, particularly in western and south-western Southland, have variable levels of service.

The rail network

The railway line south of Christchurch, the Main South Line, mirrors the route of SH1 along the eastern coast, linking coastal towns and cities, including Timaru, Oamaru, Dunedin, Gore, Invercargill and Bluff. In Otago and Southland, this line is used primarily for freight transport. Freight rail services are an important means of transferring bulk and containerised freight to and from Port Chalmers and South Port at Bluff. There are branch lines to Ohai (used to transport coal) and through the Taieri Gorge (used for visitor excursions).

Of the various inter-regional rail origin-destination trips nationally, Southland to Otago is the fourth largest in terms of tonnage (748,000 tonnes in the 12 months to April 2017). Trips within Otago are ninth largest at 500,000 tonnes over the same period. Of the product types carried, milk and dairy products, and shipping containers, feature large in both Southland-Otago and Otago-Otago origin-destination trips[10].

Rail moves significant volumes of bulk and containerised freight into Port Chalmers; around 60 to 65 per cent of exports arriving at this port come by rail[11]. Parts of the rail network in southern NZ are underutilised, however. There may be opportunities to move some goods onto rail. An investigation is being undertaken (in 2018) into the feasibility of moving logs onto rail in Southland (this is a Provincial Growth Fund project.)

In 2018, the funding of rail for freight still sits outside of these two RLTPs and the National Land Transport Fund as explained in section 1.1.

Airports and air travel

Queenstown, Dunedin, Invercargill, Te Anau, Wanaka, Alexandra, Oamaru, Balclutha, Stewart Island and Milford Sound all have regional or local airports, with the Queenstown and Dunedin airports also providing international services.

The three main airports, Queenstown, Dunedin and Invercargill, are shown on Figure 1.

Up to 45 per cent of all visitors to Queenstown are believed to be arriving by air (there is little reliable, current evidence on this). Queenstown International Airport is located on the Frankton Flats besides Lake Wakatipu. This airport has experienced the fastest growth rates for both international and domestic passengers of all NZ airports, and over the last decade has overtaken Dunedin to become the fourth busiest airport in NZ in terms of passenger numbers for domestic and international passengers combined[12]. The domestic service between Queenstown and Auckland was the fourth busiest of all domestic services nationally in 2016, carrying 967,000 passengers[2]. This airport handled 1,779,867 passengers in 2016,

[10] See: http://www.transport.govt.nz/sea/figs/rail/ Accessed 15 September 2017.

[11] Peter Brown, Port Otago *pers. comm*. 4 December 2017.

[12] New Zealand Transport Outlook Current State 2016. Ministry of Transport. 2017.

up 18 per cent on the previous year. Of these 508,902 (29 per cent) were international arrivals or departures[13].

Dunedin International Airport is located approximately 35 km south west of the City. In SH1 and SH86 provide the key connection between the city and airport.

In 2016, Dunedin airport received 909,624 passengers, including 49,964 international visitor arrivals[14]. Dunedin is the sixth largest airport in New Zealand for domestic passengers[2]. Invercargill airport is the 12th largest airport in New Zealand in passenger numbers terms[2.] It handled 289,836 passengers in the year ending 30 June 2016, up 4.3 per cent on the previous year[15].

Recent research has shown that both Queenstown and Invercargill airport have considerable suppressed demand[16] (This may also be the situation for Dunedin airport, but research would be needed to confirm this).

There is considerable road traffic out of Southland, to airports in Queenstown and Dunedin. Research showed demand for direct flight connections between Invercargill and Auckland.

Ports

Port Otago, at Port Chalmers in Dunedin, is New Zealand's fifth largest port (by value) with over $3,500 million worth of exports in 2015, mainly primary commodities originating from the Southland and Otago regions. Port Otago is a freight port for regional and international import/export and a key South Island port, exporting containerised produce from throughout Otago and Southland.

South Port at Bluff is the southern most commercial port in New Zealand. It services Southland's export and import industries, with bulk non-containerised cargo making up the majority of tonnes handled, and is vital for the economic wellbeing of the Southland region. South Port is New Zealand's seventh largest port by gross weight handled (Port Otago is tenth).

The locations of these ports are shown on Figure 1.

[13] *See http://www.queenstownairport.co.nz/corporate/airport-statistics*

[14] 2016 Annual report. Dunedin Airport.

[15] Annual report 2016. Invercargill airport.

[16] Queenstown: research undertaken on behalf of QAC for its masterplanning; Invercargill: research undertaken on behalf of Invercargill Airport and Venture Southland.

2.2 Drivers of change

Summary

The key drivers of change in transport activity in southern New Zealand, discussed in this section, are:

- population growth and changing demographics
- growth in tourism and changing patterns of tourist travel
- regional economic development initiatives, especially opportunities to benefit from tourism growth
- access to the back country
- intensification and land use changes, including forestry
- port activity
- changing technology
- changing awareness and expectations of risk including climate change
- emerging demand for active travel.

Projected changes in population and demography

Both regions are sparsely populated compared to New Zealand as a whole. Otago's main population centres are along the east coast and around the central lakes. Southland's main centres of population are along the southern coast and inland near the border with the Clutha District, with smaller towns towards the eastern edge of Fiordland National Park.

Otago's population is projected to reach 225,800 in 2018 (4.6 per cent of the national population); and Southland's population to reach 99,200 (2.0 per cent of the national population): see Table 5. Table 6 shows projected population numbers for each territorial authority area.

Table 5: Present and projected population of the Otago and Southland regions

	Projected population under Statistics NZ medium growth scenario						
Region	**2017**	**2018**	**2023**	**2028**	**2033**	**2038**	**2043**
Otago	224,200	225,800	236,000	242,700	248,300	252,700	256,100
Southland	98,300	99,200	100,100	100,600	100,600	100,000	99,000

Source: Statistics NZ website, accessed 14 September 2017; Present population is provisional 2017 figure, accessed 2 November 2017.

Regionally, Southland's population is forecast to be relatively static out to at least 2043 while Otago's is projected to grow at 0.7 per cent per annum primarily based in the Queenstown Lakes area (noting, this could be higher if Queenstown grows faster than the medium growth scenario predicts).

There is an increasing number of people on fixed incomes (in part due to the aging population). This is likely to affect the ability of territorial and regional councils to fund the transport system through rates.

Although many parts of Otago's population are relatively stable or declining over the last 10 or so years, population growth in Queenstown Lakes and Central Otago has been among the highest in New Zealand. Growth is predicted to continue in these areas, and the pressure this creates is discussed below.

Table 6: Present and projected population for territorial authorities in Otago and Southland

	Projected population under medium growth scenario						
District/City	**2017**	**2018**	**2023**	**2028**	**2033**	**2038**	**2043**
Clutha	17,550	17,600	17,550	17,500	17,300	17,000	16,500
Central Otago	20,300	20,500	21,400	22,200	22,900	23,300	23,600
Dunedin	128,800	129,000	132,000	133,900	135,300	136,200	136,500
Gore	12,450	12,500	12,400	12,300	12,100	11,800	11,450
Invercargill	54,800	55,300	55,900	56,300	56,300	56,000	55,500
Queenstown Lakes	37,100	38,300	44,000	47,700	51,100	54,300	57,400
Southland (district)	30,300	31,400	31,800	32,100	32,200	32,100	32,000
Waitaki	22,200	22,300	22,800	23,300	23,600	23,900	24,100

Source: Statistics NZ website, accessed 14 September 2017. Present population is provisional 2017 figure, accessed 2 November 2017.

Table 7: Projected population for urban areas in Otago and Southland

Urban area	**Actual population**	**Projected population under Statistics NZ medium growth scenario**					
	2013	**2018**	**2023**	**2028**	**2033**	**2038**	**2043**
Dunedin	115,100	120,100	122,800	124,500	125,700	126,500	126,700
Oamaru	13,400	13,900	14,100	14,200	14,300	14,400	14,400
Queenstown*	12,100	14,200	15,100	15,900	16,500	17,200	17,800
Waikouaiti	1,200	12,00	1,200	1,200	1,200	1,200	1,100
Milton	2,000	2,000	1,900	1,900	1,900	1,800	1,700
Balclutha	4,000	3,900	3,800	3,700	3,600	3,500	3,300
Alexandra	4,900	5,200	5,300	5,400	5,500	5,500	5,500
Cromwell	4,300	5,100	5,300	5,600	5,700	5,800	5,900
Wanaka	6,800	9,300	10,600	11,400	12,100	12,700	13,300
Arrowtown	2,600	2,900	3,000	3,200	3300	3400	3,500
Invercargill	49,300	51,300	51,800	52,100	52,000	51,700	51,100
Winton	2,300	2,300	2,300	2,300	2,300	2,300	2,300
Gore	9,800	9,900	9,800	9,700	9,500	9,200	8,900
Bluff	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Te Anau	2,000	2,100	2,200	2,200	2,200	2,200	2,200
Riverton	1,500	1,500	1,400	1,400	1,400	1,400	1,300

Source: Statistics NZ website access 14 September 2017

* Note, for Queenstown Lakes, the medium growth scenario projections in Table 6 forecast a slower growth rate than QLDC's own growth projections do[17]. The latter fit better with the rates of growth currently being seen in this area. So, the population projections for Queenstown in Tables 6, 7 and 8 should not be relied on and are included only for comparative purposes. The next sub-section discusses this matter further, and includes the growth projections for Queenstown that QLDC considers to be more realistic than Statistics NZ's medium growth projections: see table 9.

[17] See: QLDC growth projections to 2058. Resident population, visitors, dwellings, rating units. Rationale. June 2017.

Table 7 above and Table 8 below show the population growth forecast for urban areas in Otago and Southland, in absolute terms and as a percentage on the 2013 population. Table 11 shows Wanaka is projected to grow fastest, followed by Queenstown and Cromwell. This trend is already evident today.

Table 8 highlights the need for forward planning of Wanaka's transport system, so that this area, as it grows, does not experience the congestion issues faced by Queenstown in recent years.

Table 8: Projected population growth for fastest growing urban areas in Otago and Southland, in percentage terms compared to 2013

Urban area	Projected growth (%) (medium growth scenario)	
	2013-23	2013-43
Wanaka	56	96
Queenstown	25	47
Cromwell	23	37
Arrowtown	15	35
Alexandra	8	12
Te Anau	10	10
Dunedin	7	10
Oamaru	5	7
Invercargill	5	4

Source: Statistics NZ table builder, accessed 14 September 2017

As in most of New Zealand, an aging population is predicted for Otago and Southland. Therefore, the provision of access and mobility through reliable transport services will become of increasing importance.

Dunedin's population is comparatively young however, due to the annual influx of students to Otago University and Otago Polytechnic. Around 21.5 per cent of the city's population is aged between 15 and 24 years in the 2013 census, compared to the national average of 14.1 per cent.

The age profile of population of Queenstown Lakes is also unusual in that the percentage of the total population in the 25-44 age bracket (36 per cent) is much higher than in other districts and cities in Otago Southland (24 per cent) or in New Zealand as a whole (26 per cent).

Growth of the Queenstown Lakes district

The Queenstown Lakes area is New Zealand's premier tourism destination. Although the resident population of Queenstown is relatively small, growing numbers of overseas and domestic visitors boost this significantly.

As the fastest growing district in New Zealand, the population of Queenstown Lakes is increasing at around seven per cent per annum. Much of the growth is concentrated on Queenstown and its surrounds, and in Wanaka.

The district is forecast to continue to receive strong growth in both residential population and tourist visits. Tables 7 and 8, above, which show the growth projected in the urban areas in

southern NZ, highlight the growth expected in the Queenstown Lakes and Central Otago area. The actual growth in these tables is probably an underestimate. Historically, the growth in Queenstown has always been underestimated. The best-available estimate of projected growth in Queenstown is probably the high growth projection prepared for QLDC in 2017.

Over the next 30 years, the population of the greater Queenstown Lakes area is projected to increase from 29,730 in 2013 to a forecast 66,355 by 2048 (see Table 9 below). Visitor numbers are expected to grow at an even faster rate.

Table 9: Expected growth in Queenstown Lakes District (the high growth scenario)

Number of:	2013	2018	2018	2048	2058	Average annual growth rate, 2018-2028 (%)
Usually resident population	29,730	38,048	49,277	66,355	74,731	2.6
Total visitors (average day)	17,982	24,861	31,488	39,037	42,055	2.3
Total visitors (peak day)	63,879	79,301	99,747	126,374	138,658	2.3
Total dwellings	15,800	19,718	24,674	31,595	35,030	2.4

Source: High growth projection in QLDC growth projections to 2058. Rationale. June 2017[18]

The rate of growth being experienced in the district is challenging the ability of the transport system to maintain accessibility, connectively and, more generally, protect the liveability of the area for residents.

Queenstown growth

The Queenstown economy is driven by tourism and the increasing demand for infrastructure and services to support the growing numbers of people. Queenstown is one of the five high-growth urban areas identified in the National Policy Statement on Urban Development Capacity.

The major employers in Queenstown are the construction and service sectors, particularly accommodation, food services and the retail trade. These two sectors are expected to continue to underpin forecast employment growth.

Mountains, lakes and rivers surround Queenstown, placing physical constraints on the growth of the town centre. Much of the projected growth in population and business can be expected to occur in and around Frankton. The Frankton business park is likely to provide the hub for the construction and commercial activities that support future Queenstown growth.

Since 2005, visitor numbers through Queenstown airport have increased by 200 per cent to nearly 1.8 million passengers in the year to June 2017. Sustained growth is forecast for Queenstown Airport Corporation. If growth at Queenstown airport was not constrained by airport capacity or the noise restrictions, total passenger movements could theoretically reach 3.2 million by 2025 and 7.1 million by 2040[19].

[18] QLDC growth projections to 2058. Resident population, visitors, dwellings, rating units. Rationale. June 2017.
[19] Queenstown Airport Corporation Ltd – Queenstown Airport Masterplan (2017).

In community engagement in its master plan, the Queenstown Airport Corporation is looking at three options, one of which caps passenger movement at 3.2 million per annum, and two which cap it at 5.1 million per annum. Moving to the dual airport option, using both Queenstown and Wanaka airports would allow growth beyond 5.1 million passenger movements per annum.

This is also likely to lead to increased use of the Kawarau Gorge and Crown Range route by visitors. The Queenstown Airport Corporation has signalled the desirability of moving to a "one airport business, two complementary airports" approach, using both Queenstown and Wanaka airports[20]. In April 2017, Queenstown Lakes District Council decided to grant the Corporation a long-term lease for Wanaka Airport.

Along with a potential increase in day flights, night flights are expected to be introduced to Queenstown Airport (evening flights are already in place). These changes would increase both peak and off-peak movements in the traffic network[21].

The freight task is also expected to grow over time, in line with the projected population growth: particularly the movement of manufactured and retail goods, construction materials and waste. The Frankton business park is likely to provide a hub for construction and retail activities to support Queenstown's growth, and will remain the focus for heavy vehicle movements into Queenstown[22].
The significant population growth projected from the Queenstown area will lead to increased demand for residential and commercial properties, land use and increased volumes of traffic, placing the transport system under even greater pressure[23].

Wanaka growth

Wanaka is the fastest growing urban area in the South Island and its growth is accelerating, with both tourism and land development increasing. On a peak day at present, combined resident and visitor numbers reach 42,000 (compare to the population projections in Table 7).

There is limited recognition by Government of these growth issues. On the one hand, Wanaka was added to the Housing Accord in 2017, recognising this area has the same sort of housing affordability pressure as in the Wakatipu Basin. On the other hand, although Wanaka meets the criteria for high growth set out in the National Policy Statement on Urban Development Capacity, this status has yet to be recognised by government.

The growth in population and visitors is creating problems locally. The transport network does not adequately provide for the differing needs of visitors and residents and parts of the transport network are no fit-for-purpose. For traffic into, out of, and through Wanaka, the route choices from new development areas to the centre are limited, leading to delays and risk taking on the road. Moreover, key tourism routes are vulnerable to road closure, which impacts on visitor travel and on the number of visitors reaching Wanaka. Furthermore, Wanaka's transport network does not support mode choice very well– even though walking and cycling is popular in this area. There are no public transport services.

[20] Queenstown Airport Corporation Ltd – Queenstown Airport Masterplan (2017).

[21] Queenstown Integrated Transport Strategy, see http://www.qldc.govt.nz/assets/Uploads/Council-Documents/Full-Council-Agendas/2017/28-September-2017/10a.-Attachments-Queenstown-Integrated-Transport-Strategy.pdf.

[22] Queenstown to Rangitata corridor management plan 2018-2028. NZTA 2017.

[23] Queenstown Integrated Transport Strategy, see http://www.qldc.govt.nz/assets/Uploads/Council-Documents/Full-Council-Agendas/2017/28-September-2017/10a.-Attachments-Queenstown-Integrated-Transport-Strategy.pdf.

Wanaka risks facing the problems that Queenstown has been facing: severe congestion, highly variable travel times, disgruntled residents and a very real risk to the area's reputation as a high-quality visitor destination. At the moment, we lack suitable mechanisms for addressing the issues that Wanaka is predicted to face, before they become real problems as they did in Queenstown.

Central Otago growth

Growth in Queenstown Lakes District directly affects development along the corridor around Cromwell, Clyde and Alexandra. Increasing land prices and housing costs in Queenstown are encouraging lower income residents to relocate to neighbouring areas within commuting distance of Queenstown, increasing traffic volumes through the Kawarau Gorge[24]. Displacement of residential growth outside Queenstown due to high land prices and housing costs is projected to increase[25].

Cromwell acts as a service and retail gateway to central Otago and the Southern lakes area. As tourism grows, the commercial and industrial hubs are expanding to support this growth. Alexandra's industrial hub is also expanding to support Queenstown's growth. This trend will increase commercial traffic on the corridor between Alexandra and Queenstown, making it challenging to maintain consistent levels of service on this journey[26].

Several new subdivisions are proposed for Cromwell. If these go ahead, the town of Cromwell will be bisected by SH6.

Projected visitor numbers

Growth in visitor numbers affects transport demand both directly (e.g. extra coaches, campervans and rental cars on the road, increased use of public transport on routes serving tourist destinations) and indirectly (e.g. an increased workforce placing extra pressure on commuter routes and travel to/from new satellite housing developments).

Projected visitor numbers for Otago and Southland regions are not available at either regional or pan-regional scale. MBIE no longer provides forecasts at this scale.

Queenstown visitor numbers are projected to grow at around 2.9 per cent per annum on an average day, and around 2.5 per cent per annum on a peak day (under the high growth scenario shown in Table 9)[27].

The seven South Island regional and unitary councils, in consultation with key tourism management stakeholders, have developed a business case looking at the way that the transport system caters for tourism and manages the impacts of visitor travel on communities and the environment. This business case highlighted the need to undertake, as a first step, a desktop assessment of visitor flows into, through and out of the South Island in order to identify current work being undertaken to quantify or project these visitor flows. This work is being undertaken in 2018 as a NZTA research project, with some funding assistance from the Ministry of Transport (MoT).

[24] Milton to Cromwell corridor management plan 2018-2028. NZTA 2017.

[25] Queenstown Integrated Transport Strategy, see http://www.qldc.govt.nz/assets/Uploads/Council-Documents/Full-Council-Agendas/2017/28-September-2017/10a.-Attachments-Queenstown-Integrated-Transport-Strategy.pdf

[26] Milton to Cromwell corridor management plan 2018-2028. NZTA 2017.

[27] Rationale (2017), Queenstown Lakes District projections for resident population, dwellings and rating units to 2065.

The next step, to be decided in consultation with tourism sector stakeholders, and the government departments (MBIE, MOT and NZTA), may well be the development of a new visitor flows model for the South Island. This would help fill the gap in these RLTPs concerning projected visitor numbers.

Demand for visitor travel: the journey between Queenstown and Milford Sound

Growth in Queenstown is also coupled with increasing demand for the journey between Queenstown, Te Anau and Milford Sound. This is causing a number of problems including road safety along this journey especially on Milford road, inadequate visitor facilities at key visitor locations along the way, and congestion at Milford Sound.

There is an urgent need to make this route into a fit-for-purpose tourist route. This requires adequate passing opportunities, more signs including signage placed well in advance of pull-off areas, picnic spots and the like.

Proposed global geopark in Waitaki

Waitaki District Council – along with Ngai Tahu, Vanished World Incorporated, Tourism New Zealand, the University of Otago, the North Otago Museum, Tourism Waitaki, Environment Canterbury, the Waitaki Tourism Association, the Otago Museum, and the Department of Conservation – are proposing to establish New Zealand's first Geopark. The Council, on behalf of its partners, have submitted an expression of interest to UNESCO for the whole of Waitaki district to become a global geopark: the Waitaki Whitestone Geopark.

A geopark would increase the volume of tourist travel in Otago and South Canterbury. Accordingly, the Council plans to collect and analyse visitor and traffic volume data, to inform forward planning and to help it address infrastructure concerns including impacts on rural roads, State highways and on environmentally sensitive areas[28].

Back country access

Several local roads in Otago and Southland provide well-used access to the back country e.g. to the Routeburn, Dart, Rees, Kepler and Hollyford Tracks, the Matukituki Valley, the Motatapu Track, the Hump Ridge Track and various access points for the Te Araroa Trail. Many southern townships, including Te Anau, Halfmoon Bay (Stewart Island) Glenorchy, Arrowtown and Wanaka are key access points to the back country.

Traffic volumes on these access roads are growing as track usage (including day walking / running) increases. These are largely unsealed, however, making them unsuitable for growing traffic volumes and for visitors who are only used to driving on sealed roads. Moreover, councils receive no rates income from the Crown Estate (national parks and other protected land) that generates much of the traffic on these access roads.

Moreover, over the past decade, a significant amount of high country has been dedicated as conservation estate (e.g. in Central Otago), increasing the pressure to maintain roads that were previously maintained by landowners for their own use[29].

[28] Waitaki Whitestone Geopark Aotearoa New Zealand. UNESCO Global Geopark expression of interest application 2018 available from Waitaki District Council. For information on the proposed geopark, see https://www.whitestonegeopark.nz/

[29] Central Otago District Council Activity Management Plan 2017.

Regional development in Southland

The SORDS Action Plan has identified three main challenges to enable social and economic development over the next decade: to grow the population, diversify the economy and strengthen local business[30]. The action plan identifies transport as being one of the enablers of population growth, by providing for rural transport and bulk haulage to South Port, to meet increasing tourist traffic and to support town/city redesign in Invercargill and Gore.

Southland faces a projected fall in its population: see tables 5, 6 and 7 above. Parts of Southland face depopulation, not just urban areas such as Gore and Riverton (see projections in Table 7 above) but also smaller areas such as Ohai and Nightcaps.

Nevertheless, Southland region is hosting increasing numbers of visitors. For the foreseeable future, tourism traffic to the region is likely to be hubbed from Queenstown (as discussed above), and the connection to Queenstown will become increasingly important.

Although traditional destinations such as Queenstown and Milford are experiencing significant increases in traffic, visitors are also increasingly travelling independently and exploring places that are more out-of-the-way.

Growing visitor numbers pose a challenge, raising questions around whether parts of the transport network will meet the requirements of increased tourist traffic, as well as around the compatibility of tourism and rural heavy traffic on some roads.

Clutha development

A large area of the Tokomairiro Plain (approximately 330ha) stretching from Milburn in the north to the outskirts of Milton in the south is proposed to be rezoned industrial. This location has long been earmarked for industrial purposes given it locational attributes. The site is flat and generally flood free; and is away from all major residential areas. It is located within close proximity to a large forestry resource, evidenced by the two wood processing facilities in this area along with Calder Stewart's headquarters and steel manufacturing facility.

The site has access to both SH1 and the Main South Railway Line. There are potential rail sidings in the area, able to facilitate the movement of freight to and from the area, and changes can be made to the roading network to enable access.

Dunedin's development

Dunedin city is well positioned to build on the strength of the existing education and health sectors to develop high value niches within the health technology, biotechnology, food processing, manufacturing, engineering and ICT sectors. There is also scope to increase the contribution that tourism makes to the economy of Dunedin and surrounding areas.

Future population growth is expected to be concentrated in the Mosgiel, Wingatui and Saddle Hill areas to the west of the city, and further intensification in the central city e.g. the Warehouse Precinct. In contrast, economic and employment growth is expected to be focused in the city centre and around the tertiary campus in North Dunedin, and Anderson Bay Road in South Dunedin.

Several initiatives are likely to shape the central city area: The University of Otago's $650m investment in infrastructure over 15 years from 2014, the Southern District Health Board

[30] Southland Regional Economic Development Strategy (SORDS) Action Plan.

rebuild of Dunedin hospital and delivery of Dunedin City Council's Central City Plan. Construction of the new hospital will create opportunities for improving the state highway route through central Dunedin.

Intensification and landuse changes

In southern New Zealand, the maturation of forests to be harvested is expected to drive increased freight movement and increase pressure on the road network. The greatest impact that forest production has on roads is during the harvesting period, when logs are carted to processing plants or export. There can be significant deterioration of roads when large volumes are harvested around the same time from one or more forests, or from a large number of smaller blocks in the same geographical area. Waitaki District faces this situation, with a wave of forest harvesting due in ten years' time.

The rail sidings proposed alongside existing timber processing facilities at Milburn (Clutha) present significant opportunities to reduce the volume of timber transported by road to both Port Otago and Southport.

Although there is a trend towards on-farm wintering undercover in Southland, off-farm wintering of dairy herds (dairy support) is likely to continue, placing pressure on the road network. In Southland, there is opportunity for further conversion of dry stock land to dairy farming. DairyNZ estimates that approximately a third of the land that could be used for dairying (Land Use Classification Class 1-3) is currently being milked on (164,000 hectares). A further 43,000 hectares of land (Land Use Classification Class 4-8) is also currently milked on. DairyNZ does not, however, estimate expansion in the latter areas. The rate at which conversion to dairy occurs in Southland is likely to be largely dictated by international commodity prices of dairy compared to other industries, land prices relative to other regions, and environmental regulation or compliance rules [31]. Regional plan provisions are being finalised and are likely to restrict land availability.

There is little available data about projected dairy conversions in Otago. Anecdotally, there is an increasing trend to dairy support (beef and cropping farmers taking dairy herd over winter). Increasing dairy farming activity is believed to be occurring in Maniototo, Manuherikia and the Roxburgh area[32]. Additionally, the intensification of land use from investment in irrigation is seeing previously arid land now being used for dairy farming and cropping (e.g. along areas of SH82 and SH83 along the northern edge of Waitaki District).

As land use changes in such areas, the journey experience changes, impacting tourists, local communities and freight operators. To avoid adverse impacts on these customers, both the pace of this change and the areas of the transport system where infrastructure is no longer fit-for-purpose, need to be identified. Unless pro-actively managed, this type of change could potentially cause assets to deteriorate faster than previously expected[33].

Port activity

Since primary production and processing is likely to continue to be a key economic driver in Otago and Southland, high quality access to the ports and airports will continue to be important to the success of the wider Otago and Southland economies.

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[31] Moran, E., Pearson, L., Couldrey, M., and Eyre, K. (2017). The Southland Economic Project: Agriculture and Forestry. Technical Report. Publication no. 2017-02. Environment Southland, Invercargill, New Zealand. 340pp. Report available at https://contentapi.datacomsphere.com.au/v1/h%3Aes/repository/libraries/id:1tkqd22dp17q9stkk8gh/hierarchy/Scientific%20reports/Agriculture%20and%20Forestry%20Report.pdf.

[32] Central Otago District Council Activity Management Plan 2017.

[33] Queenstown to Rangitata corridor management plan 2018-2028. NZTA. 2017.

The volumes of freight being moved are projected to increase steadily[34]. The corridor to South Port has the capacity to cope with increases in freight projected[35]. Rail already moves significant volumes of bulk and containerised freight into Port Chalmers. Demand for road access to interface with rail services would place increasing pressure on the roading corridor[36].

Increasing heavy traffic volumes on SH88, a commuter route between Port Chalmers and Dunedin, which traverses residential areas, pose safety concerns for the local community. Port Otago has expressed interest in dredging the Victoria Channel to a depth that allows log ships to load fully at the Upper Harbour. This would remove the need for logs to be carried to the Lower Harbour at Port Chalmers by road or rail.

The opportunity presented by the proposed industrial zone at Milburn (Clutha) for a freight hub and/or inland port should assist in reducing the volume of heavy traffic travelling to and from Port Otago and Southport, particularly if rail sidings are developed as part of this zone.

Changing technology

The changing nature of technology is expected to drive change – not just emerging transport technologies such as autonomous vehicles, electric bike technology, and electric public transport technologies, but also information technology in general.

Smart phone technology is providing better travel information for those travelling, e.g. for rapid notification of events, road conditions and delays, as well as for real time information about bus services. Use of webcams and weather stations on the network – on passes for instance and the Crown Range Road – is providing travellers with a real-time view of road conditions there, to help with their travel decision-making. This type of technology advance is likely to continue. Sensors and robotics are also changing the transport sector by enabling more automation.

The use of electric cars is increasing steadily slowly albeit from a small base. Electric vehicle charging stations are being installed across parts of the network, and their prevalence is likely to increase.

Emerging demand for active travel and public transport

There is emerging demand for safe walking and cycling infrastructure and an interconnected network of medium to long distance walkways and cycleways. Research undertaken by Ben Wooliscroft from Otago University has showed that many New Zealanders see roads as more than just car places, and are supportive of measures to improve walking and cycling. According to this research, there's a strong groundswell of support for prioritising active transport in NZ[37]. We are seeing this groundswell in Dunedin, Wanaka and Queenstown, in particular[38], through the respective consultations undertaken by the city and district councils, for example.

[34] See: Forecasts for the Future - National Freight Demands Study. Ministry of Transport updated 1/12/2015 http://www.transport.govt.nz/research/nationalfreightdemandsstudy/forecastsforthefuture-nationalfreightdemandsstudy/ , updated 1/12/2015.
[35] Southern Arterial & primary Collection Cluster corridor management plan 2018-2028. NZTA. 2017.
[36] Christchurch to Dunedin corridor management plan 2018-2028. NZTA. 2017.
[37] September 2017 eBulletin of Living Streets Aotearoa report of the New Zealand Walking Summit July 2017.
[38] See the Activity management plans for Dunedin City and Queenstown Lakes District Councils.

As levels for active transport increase, the need to provide for the physical separation of these two modes increases. In busy places, safety becomes compromised when pedestrians and cyclists are expected to use the same corridor space. Elderly or less mobile pedestrians are particularly at risk.

Demand for public transport services is also increasing, as evidenced by recent patronage rises in Dunedin and the Wakatipu Basin[39]. Patronage in the Wakatipu Basin network has been rising each month since the launch of the new network on 20 November 2017. On the Dunedin network, patronage growth shows a seven percent increase for the period 1 July 2017 to 31 March 2018, compared to the previous twelve months.

Changing awareness and expectations of risk including climate change

There is growing awareness about the threat that climate change and other issues pose to network resilience and thus to community resilience, especially in areas where change is already visible e.g. the coastal erosion alongside the Katiki Straight on SH1 in North Otago. Climate change poses a major challenge to Dunedin. Low lying terrain in South Dunedin means around 2,683 houses, 116 businesses and 35 km of road are vulnerable to sea level rise (being less than 50 cm above sea level). The magnitude of this exposure to risk from sea level rise is significantly higher in Dunedin than in other New Zealand centres[40]. The increased frequency of weather events, especially rainfall, is impacting the resilience of the transport network, as land instability causes a greater number of road closures.

Other such issues include the disruption to transport that large scale natural hazard events such as earthquakes and landslips can cause. The Christchurch and Kaikoura earthquakes have heightened community awareness of the need to pre-actively plan for this type of event in Otago Southland. Growing awareness around the impact of an earthquake on the Alpine Fault has led to a regional, multi-agency approach to understanding more about community resilience and to improved organisational preparedness.

Community awareness about road risk is also changing, as the *Any Number is Too Many* campaign is showing[41]; this change in awareness of road risk is also evident in calls for safer roads in districts such as Waitaki.

[39] Queenstown and Dunedin public transport network patronage figures are reported to ORC's Finance and Corporate Committee every six weeks: see https://www.orc.govt.nz/our-council-our-region/council-meetings-and-agendas . P

[40] Preparing New Zealand for rising seas, report of the Parliamentary Commissioner for the Environment. 19 November 2015, available at http://www.pce.parliament.nz/publications/preparing-new-zealand-for-rising-seas-certainty-and-uncertainty .

[41] See: anynumberistoomany.org and the Waitaki District Council transport activity management plan.