

Jane, I would like my presentation to go on the public record please.

My name is John Halse. I am a senior mechanical engineer and the safety spokesperson for We Love Wakatipu Incorporated Society. I wish to speak to the QAC Statement of Intent, specifically how a vote to increase the airport noise boundaries must disproportionately increase the risk to passengers and aircraft.

Today, I wish to inform you of the significant risk to aircraft posed by wind shear.

First, can I suggest that instead of wasting rate-payers money to conduct an economic, environmental and social impact study about the “benefits” of increasing the airport capacity as embodied in the QAC SOI, which will have a very predictable outcome due to the narrow terms of reference that will almost certainly be imposed, that you **demand a serious and unconstrained safety review of this airport as it relates to airborne aircraft (particularly commercial passenger jets) and insist that commercial passenger jet pilots are the primary source of information for that review.** Input from the CAA and from QAC should be treated at arms length. Please remember that the CAA and QAC do not control or manage airborne aircraft. That is solely the domain of pilots with a secondary role played by air traffic controllers. (*Note 1 if time permits*).

Under the Freedom of Information Act, I have recently obtained the Civil Aviation Authority incident reports for ZQN for the last 4 years. There are over 700 incidents listed in this 26 page log of which 6 relate to (severe) icing and 251 relate to aborted landings and go-arounds or diversions to other airports due to wind shear. Statistically, this is a staggeringly high and frightening number, as will be verified by any commercial passenger jet pilot who flies to ZQN. There are also a very large number of incidents where aircraft stray into ZQN’s small controlled airspace without warning. This log makes for very sobering reading indeed. I encourage you to take the time to peruse it. (*Refer Note 2*)

Windshear is defined as a sudden change in wind velocity and/or direction, either horizontally or vertically. Aircraft flying into ZQN are very much more likely to experience windshear than at any other NZ airport due to our airports proximity to mountains. Wellington and Dunedin both have a windshear problem, but it is very much less significant than at ZQN.

An aircraft stays airborne because of its speed relative to the air it is flying in – not because of its speed relative to the ground it passes over. An A320 typically lands at around 145 knots (approx 270km/hr) in still air and has a stall speed on landing

approach of around 123 knots (approx 225 km/hr) when loaded i.e. 22 knots (approx 40km/hr) below normal landing speed.

The turbines on a landing A320 with a 10 to 15 knot (18 to 27 km/hr) head wind typically run at around 60% power. This headwind provides an ideal landing condition because the speed over ground is relatively low and the turbines are spinning at speed and they can be brought to full speed/full power very quickly (within 2 to 3 seconds). With a modest tail wind coming into ZQN on the steeper approach angle we have, the turbines typically run not much above idle speed. If a pilot needs to abort a landing and start the aircraft climbing due to a slight increase in tail wind, starting with turbines spinning at not much above idle speed, it takes between 7 and 9 seconds from when the throttles are opened to when the aircraft starts to climb. The aircraft is still descending for those 7 to 9 seconds, even though the turbines are spooling up.

The maximum permissible tail wind landing speed of an A320 on a “normal length” runway is 15 knots (approx 28km/hr) in wet or dry conditions. An A320 can land at ZQN with up to 10 knots (18km/hr) tail wind when the runway is dry however pilots generally choose a maximum tail wind speed of 5 knots (8 km/hr) to de-risk the landing. A wet or iced runway at ZQN is considerably more restrictive. This is because the runway is so short that an A320 cannot safely come to a stop if it touches down a little late and/or a little fast and/or there is standing water or ice on the runway i.e. there is no margin for error (*Read Note 3 if time permits*).

An A320 can land using Auto-braking (preferred) or manual braking or a combination of both. Auto-braking is an automatic feature that engages approximately two seconds after the undercarriage makes contact with the runway and it is designed to minimise wear and tear on the aircrafts tyres and brakes. Manual braking is much more aggressive and it leads to premature wear of tyres and brakes and is more disconcerting for passengers. An A320 can land at ZQN under auto-braking however manual braking being more aggressive, provides the shortest stopping distance and pilots must often switch to manual braking during braking.

If a landing A320 flying in still air at 270km/hr relative to ground is suddenly subjected to a tailwind, its speed relative to the air it is flying in drops and its speed relative to the ground increases. What happens next?

1) Scenario 1 – If the aircrafts airspeed deteriorates due to a sudden increase in tailwind (very common in ZQN even in light winds) the engine RPM reduces to idle

thrust. From idle thrust, 7-9 seconds passes before full go round thrust is then available. During this 7-9 seconds, the aircraft is committed to a continued descent towards the ground to maintain speed above the stall speed. Impacting the ground short of the touchdown zones is a real possibility (Note 4)

2) Scenario 2 – If the airspeed falls below the stall speed due to a sudden increase in tail wind the “rate of descent” rapidly increases. Applying full power may be insufficient to avoid a heavy touch down in the touchdown zone or well short of the touchdown zone – maybe on the grassy bank to the west of the primary school or maybe into the bank above the Shotover River

3) Scenario 3 – if it’s speed approaches stall speed and it is close to the runway, the pilot is committed to apply full power to attempt to keep the aircraft under control. This may result in either a touch-and-go which should have a good outcome or if the aircraft cannot become airborne, a runway overshoot which could have a very bad outcome.

Of significant concern at ZQN is the number of private jet operators who are generally nowhere near as familiar with the rapidly changeable conditions experienced daily on the ZQN approaches that ONLY experience can prepare them for.

FYI, an aborted landing of an A320 that necessitates a go-around uses at best 1100kg of aviation fuel and at worst 1900kg of fuel. A diversion to another airport uses considerably more. Therefore, based on the 251 aborted landings listed in the CAA log over the last four years, if we assume an average fuel consumption of 1500kg, we have a wasted fuel tally of around 376,000 kg of fuel. If we project forward for 20 years and assume three times as many aircraft at the same relative frequency as the past four years, we have a total wasted fuel count of around 5,647,000 kg.

A vote to increase the ZQN air noise boundaries, is a vote to dramatically increase the number of aircraft in Queenstown air space, and therefore, it is a vote to significantly increase the likelihood of there being a runway undershoot or overshoot – either of which could well result in a mass casualty event and/or aircraft damage. It is simple mathematics. It is very, very simple mathematics.

When you vote, please allow your concern for the lives of others to take precedence over any commercial interests that you may have. And please do not contemplate voting on this issue until you have had a serious discussion with a commercial jet

pilot who flies into ZQN. **With all due respect, it is my opinion that no member of this council has got sufficient technical knowledge about the risks associated with increasing the airport noise boundaries to make an informed vote on whether this should happen.**

I shall email each of you a copy of this log and my presentation.

Thankyou

Does anyone have any questions?

**Note 1:** After previous public concerns regarding ZQN safety, our major Jim Boulton, wrote to the then CAA director Graeme Harris late in 2019 and asked him if the CAA had any safety concerns with respect to safety at ZQN. Graeme Harris's response is on the QLDC website and predictably says "the CAA has no issue with ZQN". I would liken the CAA's official endorsement of safety at ZQN from a regulators perspective to that of asking the NZTA if the Crown Range Rd, or the Devils Staircase Road or the Kawarau Gorge Rd is safe. From a technical position, these roads are adequate. They are wide enough, carry centre white lines and yellow lines, have speed signs, edge barriers on dangerous drop-offs and direction arrows etc. What the NZTA are not in a position to control/regulate are the number of foreign drivers who daily drive on the wrong side of the road, overtake on crests of hills and blind corners and the frequent presence of ice and grit, all of which turn technically safe roads into high risk roads. NZTA as regulator will say these roads are safe but almost everyone who lives here and drives these roads regularly would say otherwise.

**Note 2:** Unfortunately, despite asking the CAA to supply this ZQN incident log in chronological order with the aircraft type listed, they chose to provide it in what appears to be a random order with the aircraft type missing. It was also supplied in a PDF format with almost impossibly small text. The only way to successfully read this document is to print it out on A3 paper in portrait orientation. The cynic in me says this was a deliberate attempt to obfuscate.

**Note 3:** The newly completed runway is suffering serious degradation at both touch-down ends. Longitudinal depressions have formed in the new tarmac which pool typically 15 to 20mm of water which in freezing conditions can and does ice over.

This has a very dramatic impact on the permissible landing speeds and hence safety of large aircraft since they cannot use their wheel brakes on ice and they are vulnerable to aquaplaning on pooled water and therefore must apply reduced braking. I can only assume that this very serious failure is due to one or more of the following:

- 1) Inadequate engineering specification for fill and compaction
- 2) Poor construction and/or unauthorised substitution of fill
- 3) Inadequate compaction
- 4) A lack of suitably experienced construction supervision and testing

It is to be noted that some pilots have been asked to land their aircraft off-centreline of the runway to reduce the damage to the runway. The two pilots I have spoken to about landing off centre-line have ignored this ridiculous and dangerous request.

It is also to be noted that some half hearted repairs have been attempted to fill these longitudinal depressions. It is almost a certainty that these make-shift repairs will fail and in doing so, may create their own kind of problem.

**Note 4:** The CAA Incident Report identifies a number of occasions where 3 attempts have been made to land followed by a departure to another airport. Any commercial passenger jet pilot will tell you that this is starting to sail close to the wind due to the reduction in fuel load caused by multiple go-arounds and hence range and the possibility of an aborted landing at the alternative airport.

**Note 5:** The following is one of my previous presentations to council where I discussed the CAA's own documented concerns about safety at ZQN

My name is John Halse, and I wish to speak to the QAC Statement of Intent.

During my two previous presentations to council, I related two very serious in-air incidents that have occurred in Queenstown airspace, either or both of which, had the coin landed the other way, would almost certainly have resulted in a very different outcome for all on board.

It is not my intent to be alarmist as some at this table may think. It is my intent however, to inform council about real safety concerns that many with direct involvement in the aviation industry share. These incidents reflect the unique

challenges of flying in Queenstown's risky airspace – as will be clearly evidenced by the Civil Aviation Authority reports that I am about to read to you.

The CAA reports over the last 4 years show a very clear trend of increasing concern regarding air space risk at Queenstown Airport. These same reports make no mention of air space risk at any other airport in NZ.

- From the 2016 Annual Report – *“Queenstown airspace has a variety of flying activities, mountainous terrain, changeable weather and a high density of traffic; **all of which create a challenging operational environment with an increased potential for an accident to occur.**”*
- From the 2017 Annual Report – *“We conducted a gap analysis of the effectiveness of current controls, created a stakeholder plan and engaged with stakeholders to precisely define the risks associated with Queenstown operations. **Pleasingly, there were no major safety occurrences during the year.**”*
- From the 2017 Annual Report – *“The mountainous terrain, changeable weather and high and constricted density of traffic make Queenstown a challenging area to fly. **As such, there is increased potential for accidents to occur.**”*
- From the 2018 Annual Report – *“Queenstown air space has a variety of flying activities, mountainous terrain, changeable weather and high density traffic – **all of which create a challenging operational environment with increased potential for accidents to occur.**”*
- From the 2018 Annual Report – *“**Aviation accidents in the Queenstown area have the potential to damage New Zealand's reputation for safe and secure skies, and as a tourist destination, as well as incurring unnecessary social cost.**”*
- From the CAA's 2014 Airspace Classification Review – *“**Given that there are now significantly more passengers in the Queenstown airspace at any one time than ever before, and greater numbers of aircraft than before, the exposure risk of passengers to an airspace safety occurrence has increased markedly**”.*

- And from the CAA's 2018 Safety and Security Focus Area Report, a full page dedicated to air space risk of Queenstown operations, with no mention in the entire document of any other airport in New Zealand.

I have not been able to find any CAA document that comments on air space risk at any other airport in New Zealand but there are many that discuss air space risk at Queenstown. I hope you understand the significance of that.

- The CAA and the pilots hold heightened concerns about air space risk in Queenstown.
- A vote to increase the Queenstown air noise boundaries, is a vote to dramatically increase the number of aircraft in Queenstown air space, and therefore, it is a vote to significantly increase the likelihood of there being a mass casualty event in Queenstown airspace. It is simple mathematics.
- Please allow your concern for the lives of others to come to the fore when you vote.

The following links will take you to the pages I have quoted from.

[https://www.caa.govt.nz/assets/legacy/about\\_caa/Annual\\_Reports/CAA\\_Annual\\_Report\\_2012.pdf](https://www.caa.govt.nz/assets/legacy/about_caa/Annual_Reports/CAA_Annual_Report_2012.pdf) - Page 24

[https://www.caa.govt.nz/assets/legacy/about\\_caa/Annual\\_Reports/CAA-Ann-Rep-2016.pdf](https://www.caa.govt.nz/assets/legacy/about_caa/Annual_Reports/CAA-Ann-Rep-2016.pdf) - Page 36

[https://www.caa.govt.nz/assets/legacy/about\\_caa/Annual\\_Reports/CAA-Ann-Rep-2017.pdf](https://www.caa.govt.nz/assets/legacy/about_caa/Annual_Reports/CAA-Ann-Rep-2017.pdf) - Pages 25 and 101

[https://www.caa.govt.nz/assets/legacy/about\\_caa/Annual\\_Reports/CAA-Ann-Rep-2018.pdf](https://www.caa.govt.nz/assets/legacy/about_caa/Annual_Reports/CAA-Ann-Rep-2018.pdf) - Pages 25 and 103

[https://www.caa.govt.nz/assets/legacy/airspace/2014\\_queenstown\\_review.pdf](https://www.caa.govt.nz/assets/legacy/airspace/2014_queenstown_review.pdf) - Page 7

<https://www.caa.govt.nz/assets/legacy/publicinfo/Focus-Areas-2018-2020.pdf> - Page 8