

Before an Independent Hearing Commissioner at Hurunui District Council

under: the Resource Management Act 1991

in the matter of: application RC210098 for land use consent to install
and operate a Gravity-Based Recreation Activity within
the Conical Hill Reserve, Hanmer Springs

between: **Hanmer Springs Thermal Pools & Spa**
Applicant

and: **Hurunui District Council**
Consent Authority

Statement of Evidence of Jeremy Trevathan

Dated: 23rd of September 2021

REFERENCE: J M Appleyard (Jo.Appleyard@chapmantripp.com)

Chapman Tripp
T: +64 3 353 4130
F: +64 3 365 4587

60 Cashel Street
PO Box 2510, Christchurch 8140
New Zealand

www.chapmantripp.com
Auckland, Wellington,
Christchurch



STATEMENT OF EVIDENCE OF JEREMY TREVATHAN

INTRODUCTION

- 1 My full name is Jeremy William Trevathan.
- 2 I am the Principal Acoustic Engineer and Managing Director of Acoustic Engineering Services Limited (AES), an acoustic engineering consultancy with offices in Auckland, Wellington and Christchurch. I hold the degrees of Bachelor of Engineering with Honours and Doctor of Philosophy in Mechanical Engineering (Acoustics) from the University of Canterbury. I am an Associate of the New Zealand Planning Institute, and a Member of the Acoustical Society of New Zealand (ASNZ). I am the AES Member Representative for the Association of Australasian Acoustical Consultants (AAAC), a judge for the Association of Consulting Engineers of New Zealand (ACE NZ) Innovate Awards, and a member of the MBIE College of Assessors. I was a member of the ASNZ working group advising the Ministry for the Environment (MfE) regarding the National Planning Standards (2019).
- 3 I have more than fifteen years' experience in the field of acoustic engineering consultancy and have been involved with a large number of environmental noise assessment projects throughout New Zealand. I have previously presented evidence at Council and Environment Court Hearings, and before Boards of Inquiry. I have provided expert evidence on behalf of applicants, submitters and as a peer reviewer for Councils.
- 4 I have been involved in a number of situations where potential noise sources are similar to those anticipated in this case, including a number of expansions of the Hanmer Springs Thermal Pools & Spa, the Christchurch Adventure Park and the Maize Maze in the Selwyn District.
- 5 My wife and I own a section in Hanmer Springs, and I visit the area regularly.
- 6 In preparing my evidence I have reviewed the following:
 - 6.1 My original Assessment of Environmental Noise Effects report dated 23 December 2020 and addendum dated 24 June 2021
 - 6.2 The Councils Section 42a Report
 - 6.3 Submissions received (55 in total)
 - 6.4 Parking assessment titled *Hanmer Springs Thermal Pools and Spa - Conical Hill* as prepared by Novo Group and dated May 2021

CODE OF CONDUCT

- 7 Although these proceedings are not before the Environment Court, I have read the Environment Court's Code of Conduct for Expert Witnesses in its Environment Court Practice Note 2014 and I agree to comply with it as if these proceedings were before the Court. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise, except where I state I am relying on facts or information provided by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

- 8 My evidence will deal with the following:
- 8.1 Background
 - 8.2 Site and Proposal
 - 8.3 Appropriate noise levels
 - 8.4 Noise generated by the activity
 - 8.5 Response to submissions
 - 8.6 Section 42A Report

BACKGROUND

- 9 In December 2020, my company was engaged by Hanmer Springs Thermal Pools & Spa (the Applicant) to provide acoustic engineering advice in relation to a proposal for an adventure switchback ride to be located in the Conical Hill Reserve, in Hanmer Springs.
- 10 My company prepared an Assessment of Environmental Noise Effects report (AES reference: AC20335 – 02 – R1, dated 23 December 2020). I reviewed and oversaw the issue of that document. The assessment appears at Appendix 4 of the original resource consent application.
- 11 An addendum to the application with modifications to the design, was submitted to the council on 24 June 2021 including an acoustic assessment of the effect of tower height changes (AES reference: AC20335 – 03 – R1, dated 24 June 2021) that I oversaw. The additional noise assessment appears at Appendix 4 of the addendum to the original application.
- 12 The application was publicly notified.

SITE AND PROPOSAL

- 13 The proposal is to build a new adventure attraction on the western part of the Conical Hill Reserve in Hanmer Springs settlement. The site is zoned Open Space.
- 14 The neighbouring sites to the west, north, and east are outside the area of Hanmer Springs settlement and classified as Rural zone. The nearest occupied site is the Alpine Adventure Holiday Park - some 1,000 metres to the northwest, beyond a ridge.
- 15 Sites to the south are zoned Residential 1H, some of which contain residential dwellings and others are undeveloped.
- 16 The proposal involves a ride down the hill between a top and bottom station, suspended from an overhead wire with portions of rigid track using a system call Switchback.
- 17 The proposal is similar to a zip-line but differs from traditional zip-line systems in that the trolley can switch between cable and rigid track elements, and the trolley contains an onboard motor for speed control, which can be controlled by the rider or a master control.
- 18 The total ride length is approximately 500 metres, taking 70 – 120 seconds. The ride has 8 spans between the top and bottom stations with 7 towers, one at each corner. The corners vary in tightness from a slight bend of approximately 20 degrees, to an almost hairpin 160-degree bend.
- 19 The ride starts at a station, which is a wooden platform, to the north of the summit of Conical Hill. It terminates at a station down the hill, some 60 metres from the nearest residential section.
- 20 I understand that users of the FlyRide attraction are largely expected to walk up the existing Conical Hill summit pathway to reach the top of the ride. That path starts from the top of Conical Hill Road and climbs up the eastern face of Conical Hill.
- 21 Users of the FlyRide attraction who arrive in vehicles are expected to use on street parking on Conical Hill Road or nearby side streets.
- 22 Operations will be limited to 0900 – 1900 hours in the summer with shorter hours at nonpeak times. This is within the Hurunui Operative District Plan day-time hours (0700 – 1900 hours).

APPROPRIATE NOISE LEVELS

- 23 I have considered what noise levels may be appropriate in this environment, based on the type of noise generated, reference to relevant accepted acoustic guidance and a study of the existing noise environment in the vicinity of the site.

Hurunui District Plan noise standards

- 24 As stated above, the Conical Hill Reserve site is located within an Open Space zone. The District Plan outlines that the following standards apply when measured at or outside the boundary of the site:

55 dB LAeq(1-hr) 7am – 7pm daily

45 dB LAeq(1-hr) 7pm – 7am daily

75 dB LAFmax all days between 10pm and 7am

- 25 Noise measurements are to be undertaken in accordance with New Zealand Standard NZS 6801:2008 Acoustics – Measurement of Environmental Sound.
- 26 As these noise limits apply at the boundary of the site generating noise, no account is taken of the nature and noise sensitivity of adjoining sites; however, the noise limits for activities in the Residential Zone (Rule 4.6.7) are the same as those for the Open Space Zone.
- 27 Noise limits for activities conducted in the Rural Zone apply at the notional boundary of any dwelling and the levels are also the same as those given above.
- 28 I note these limits are relatively lenient (being at the upper end of the range of guidance I discuss below) and there is no LAFmax limit during the daytime. The Hurunui District Plan therefore does not provide an unusually high level of amenity protection in Hanmer Springs.
- New Zealand Standard NZS 6802:2008 Acoustics – Environmental Noise**
- 29 NZS 6802:2008 Acoustics – Environmental Noise outlines a guideline daytime limit of 55 dB LAeq (15 minutes) for “the reasonable protection of health and amenity associated with the use of land for residential purposes”.
- 30 The standard also states that for sounds of a unique spectral character the intrusiveness of a sound is not just a function of its sound pressure level. It is also affected by its character. Sounds that have Special Audible Characteristics are provided for by adding a 5 dB penalty to account for the higher likelihood of annoyance.
- World Health Organisation**
- 31 The World Health Organisation (WHO) document, Guidelines for Community Noise, recommends a guideline limit of 55 dB LAeq (16 hours) to ensure few people are seriously annoyed in residential situations. The WHO’s recommendation is based on extensive international research. A guideline limit of 50 dB LAeq (16 hours) is recommended to prevent moderate annoyance.
- 32 The WHO document does not directly address sounds such as those that may be generated by ride users in this case, but does acknowledge that short, impulsive, repeated noises can lead to annoyance and other negative social and behavioural effects. It acknowledges that time-averaged approximations of noise such as LAeq are not suited to assessing these types of noises and recommends that attention is paid to other parameters such as LAmx.
- Existing noise levels**
- 33 Mr Hutchison from my company visited the site on a typical weekday afternoon at 1530 hours on Monday the 14th of December 2020 to observe and measure the existing ambient noise in the daytime. Based on the Hanmer Springs Thermal Pools & Spa patron data, we expected this to be an ‘off peak’ time, and therefore the ambient noise levels observed would be at the lower end of the range typically observed in the town.

- 34 Measurements were taken in close proximity to the location of the proposed end station of the ride, and on the road outside 1 Oregon Heights.
- 35 Noise sources audible in the area included birds and the natural environment, as well as noise from typical residential activity and residential building. Noise from the natural environment (birds, trees rustling, etc.) dominated the measurements.
- 36 The ambient noise level in the area was observed to be:
- 36.1 53 dB LAFmax, 41 dB LAeq, and 37 dB LA90 in close proximity to the location of the proposed end station of the ride; and
- 36.2 56 dB LAFmax, 44 dB LAeq, and 39 dB LA90 outside 1 Oregon Heights.
- 37 When compared with, say, the District Plan daytime noise limit of 55 dB LAeq, these ambient noise levels are relatively low, suggesting that during these off-peak periods noise levels on average are in the range of 40 to 45 dBA, falling to 35 – 40 dBA for brief periods, and punctuated by occasional louder noise events in the order of 50 to 55 dBA.

Discussion about sensitivity to noise generated by rider users

- 38 As mentioned above, sound created by riders on the proposed adventure ride is unlikely to be meaningfully quantified by time-averaged noise standards given in the District Plan NZS 6802:2008 and by the WHO. This is due to their impulsive nature and high pitch.
- 39 The noises are different from the types of noise that are usually associated with the assessment of intrusive noise in residential situations (traffic noise, industrial noise, machinery, etc.), and noise from ride users may be noticeable above ambient noise even when at a low level.
- 40 However, while the noise will have a distinctive character compared to more benign sounds, I expect it will typically be subjectively better described as 'whoops of joy' as are generated by users of the hydrosides at the Hanmer Springs Thermal Pools & Spa or the zip lines at the Christchurch Adventure Park. This can be contrasted to the vocalisations of people in genuine existential stress which are typically louder, harsher and more abrupt (for example, the Maize Maze in the Selwyn District ran a night time 'Horror Maze', which generated this different character of participant noise).

Discussion regarding appropriate noise levels

- 41 In terms of assessing compliance with the Hurunui District Council Operative District Plan, and in line with the guidance of NZS 6802:2008, modelling of LAeq(1h) from users on the ride should include a 5 dB penalty for Special Audible Characteristics.
- 42 With regard to assessing effects of the activity, I consider that the District Plan limits are not suitable for determining potential effects of noise from users of the ride, due to character of the noise. In line with the WHO guidance, and that of other literature consulted, an assessment of the LAFmax level for this noise in the context of the ambient environment is more appropriate when seeking to understand the potential effects of this noise.

- 43 In light of the measured existing ambient noise levels, as well as the guidance above (which studied the level of 'emergence' of these types of sounds above the ambient noise level), I consider that where sounds from ride users typically do not exceed a level of 45 dB LAFmax at dwellings and outdoor living areas, the noise effects will be minimal. Noise at this level would be perceived as 'half as loud' as the other occasional louder noise events which already regularly occurring in the receiving environment. These brief events – while still being audible from time to time – will be of a similar level to the 'average' noise level on a typical non-peak weekday. I would not expect noise at this level to cause startling or distress for an average receiver or be a particularly notable or defining component of the ambient environment. The measured ambient noise levels will not change. I am not aware of any guidance which recommends a more conservative approach. To the contrary, a level of 45 dB LAFmax is recommended by the WHO as appropriate *within bedrooms* during the night time, to prevent awakening. As above, the Hurunui District Plan has no daytime LAFmax limit, and a night time limit of 75 dB LAFmax.
- 44 Noise effects experienced by users of the Conical Hill summit pathway may also be of interest. I consider that higher noise levels from users of the ride will be acceptable in this location. It is only occupied intermittently, by people who are in the area for a brief period, and who are also engaged in an active outdoor pursuit.

NOISE GENERATED BY THE ACTIVITY

- 45 As discussed above, the dominant noise source from the proposed adventure activity is expected to be noise from users on the ride.
- 46 There will also be noise from people accessing the attraction by walking up and down the existing Conical Hill summit pathway and vehicles manoeuvring and parking on Conical Hill Road
- 47 Other noise sources from the activity are expected to be noise from trolleys moving on the Switchback system track and noise produced by the electric motor and gearing of the trolley return system. Based on discussions with the Switchback system supplier I understand that only low levels of noise are produced by the system. Therefore, noise from the system will have a less than minor effect, and no change will be noticeable in the wider area and these sources have not been assessed further.

Modelling of noise from people on the ride

- 48 SoundPlan computational modelling based on ISO 9613 Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation has been used to calculate the propagation of noise from the site. Modelling has considered the topography of the area, worst-case downwind conditions, and sound power levels of the noise sources.
- 49 The source level in our analysis has been based on measurements of users of an existing adventure ride, and comparison with values reported in the literature. A sound power level of 118 dB LwAFmax, has been used which is a reasonable approximation of what may be 'typical'. The analysis is otherwise 'worst case'. A spectrum of a measured female peak effort vocalisation has been used, and it has been assumed that sounds will be generated in worst-case locations.

As above, it has also been assumed that meteorological conditions exist which will enhance the propagation of sound from source to receiver. This means the assessment is conservative in the majority of situations, and measured noise levels would be expected to be lower.

Predicted LAFmax noise levels

- 50 The closest residential properties and the Conical Hill summit pathway are well shielded from most of the ride's route due to the topography of the site. Only part of span 7, the final corner, and span 8 have a line-of-sight view to neighbouring dwellings. If users of the ride exert high levels of vocal effort at the final corner, or along the final span of the route, my analysis confirms that this would generate noise levels greater than 45 dB LAFmax when modelled in the worst-case way described above. The controlling location is the outdoor living area to the north-west of the 17 Oregon Heights dwelling.
- 51 Depending on the actual tower/track configuration it is also possible that a rider generating these levels of noise in the vicinity of Pole T4 will result in a noise level of greater than 45 dB LAFmax at the upper clerestory windows of the house at 17 Oregon Heights.
- 52 Sounds generated on other parts of the ride will be received at less than 45 dB LAFmax at the closest residential locations, due to the shielding provided by the terrain.
- 53 I have therefore recommended that the design and operation of the Conical Hill Switchback ride be managed so as to limit as far as practicable, the likelihood of users generating loud noises as they traverse the final two spans (7 and 8) of the ride. Management may also be required in the vicinity of Pole T4 depending on exact configuration of the track in this area.
- 54 I understand that it will be possible to control the speed of the trolleys in these areas. I do not expect the elevated sounds I have modelled to be generated by users when travelling at slower speeds, where there is typically no cause for alarm or exhilaration.
- 55 Noise levels of up to 65 dB LAFmax are expected over a small portion of the Conical Hill summit pathway – reducing quickly to 45 dB LAFmax due to terrain shielding. Because this pathway is only occupied intermittently, and by people who are in the area for a brief period and are also engaged in an active outdoor pursuit, I do not expect this aspect of the noise to have any adverse effect. Users of the walkway will continue to be more regularly exposed to higher and more frequent noise events associated with other walkers in close proximity to them.
- 56 Noise levels of up to 75 dB LAFmax are expected over a small portion of the 'cross-town' link track referred to in the submission of the Hanmer Springs Horse Riders. Occasional noise events of this level are typical in shared-use environments – generated for example by vehicles, mountain bikers, bird calls or broken branches.

Noise from vehicles parking on the road

- 57 Mr De Verteuil has advised me that he anticipates that there may currently be more than 40 vehicle movements during a typical peak daytime hour on the upper portion of Conical Hill Road, associated with the dwellings and motels in this area. Additional movements

would also currently be associated with the Conical Hill Walkway. The traffic analysis also suggests that the Flyride may result in a demand for an additional 23 - 34 vehicle parking spaces² in the peak hour, which would result in an associated vehicle movement on the road.

- 58 As a rough guide this would cause the 'average' traffic noise level in the area to increase by 2 - 3 dB, compared to the current situation. This is a just noticeable average noise level change. However, the number of vehicle movements remains low, and the sounds that neighbours will hear associated with each vehicle arriving, parks and leaving will remain the same – these events will just occur more often.

Noise from additional people in the area

- 59 I understand that in 2019 / 2020 53,000 walkers used the Conical Hill track, and that 47,000 rides per year are predicted for the Flyride. Even if each of these rides generate new walkers on the track, the average 'people noise' increase in the area would only be 3 dB - which is a barely discernible change.
- 60 As with the traffic, the sounds that neighbours will hear associated with walkers will remain the same – they will just occur more often. In terms of actual noise levels, these will remain well below all relevant guidance – for example 50 to 100 people per hour walking past a property talking in loud voices would still generate a noise level of less than 50 dB LAeq.

District Plan compliance

- 61 A scenario with multiple users on the ride generating noise over the course of one hour of operation has been analysed to determine whether the operation will 'comply' with the District Plan noise limits.
- 62 My conservative analysis (including a 5 dB penalty for Special Audible Characteristics) indicates that noise levels are expected to be below 50 dB LAeq(1 hr) at all residential receivers.
- 63 Non-compliances may be experienced at the northern and western site boundaries, as these pass within relatively close proximity to the ride route, with no shielding. However, these areas are infrequently occupied, and I do not expect this noise to have any adverse effect. I also note that the analysis is conservative, and any areas of non-compliance at the site boundary would likely be smaller than the modelling suggests.

Noise from external plant associated with the Stations

- 64 External plant associated with the start and stop stations may include extraction systems from the toilets. It is reasonable to expect that these systems can be designed, installed, and operate in compliance with the District Plan noise limits at the site boundaries using standard good practice.

² Paragraphs 30 and 31 - Parking assessment titled *Hanmer Springs Thermal Pools and Spa - Conical Hill* as prepared by Novo Group and dated May 2021

RESPONSE TO SUBMISSIONS

- 65 A total of 55 submissions were received in response to the proposal. Of these, there were 13 in support, one supporting it in part, 39 in opposition, one opposing it in part, and one neutral.
- 66 Noise was raised as a concern in 31 submissions. Specific noise concerns of submitters can be generally grouped into the following issues:
- Concerns relating to existing ambient noise levels.
 - Mental health effects.
 - Predicted noise levels.
 - Noise from increased vehicle and foot traffic.
 - Noise effects on animals.
- 67 The majority of the submitter's concerns have been addressed in the AENE and subsequent RFI response, as well as in the preceding sections of this evidence. I have provided a number of further specific comments below.
- Concerns relating to existing ambient noise levels**
- 68 Some submitters are concerned about the disturbance to low existing background noise in the area both on the Conical Hill walkway and at specific residences.
- 69 As discussed above, our measurements indicate that on a non-holiday weekday the area is relatively quiet at 41 – 44 dB LAeq; however, this was taken into account in determining how to assess and manage the noise effects of the activity.
- 70 I also note that some submitters describe the already existing high level of noise in the area from users of the Conical Hill track, mentioning laughter and cries from the Hanmer Springs Thermal Pools & Spa. While this may appear to contradict those who consider the area to be quiet, I think overall the picture painted by submitters of the ambient environment is a reasonable one – at times it is quiet (and our approach has been to ensure the noise is acceptable, even at these times). The reality is however that at other times there are a wide range of moderate anthropogenic and natural noise sources audible in the area.
- 71 An additional mitigating effect that was not taken into account in my analysis is that on average the use of the ride is expected to reflect the occupancy of the town. That is, when the town and hot pools are busy, the ride will be busy and when the town is quiet the ride will also be used less frequently. Therefore, at times of peak use of the ride there will be high use of the Conical Hill walkway and a higher level of activity in the village generally, and it is unlikely that these are the times when the residents currently find the village to be tranquil or peaceful.
- 72 As I mentioned earlier, I was involved with the Resource Consent relating to the zip lines in Christchurch Adventure Park. The general arrangement in that case is similar from an acoustic point of view – with nearest residences within 200 to 400 metres of some locations where zip line users may make noise, a variety of terrain shielding

and low ambient noise levels at receiver locations. The zip lines have been operating for 6 years with no noise complaints.

Mental Health concerns

- 73 Two submitters mentioned mental health effects, one mentioning general stress from the increased noise and the other PTSD due to hearing screams.
- 74 The WHO guidelines have been developed to protect residents from health effects due to noise.
- 75 I understand that noise from raised voices can be triggering for some people and that is why a noise descriptor which best captures that aspect of the sound has been selected (LAFmax) and the modelling results have been compared to a low threshold of 45 dB LAFmax. This accounts for increased sensitivity to these types of sounds. I note that for the majority of receivers – for example the dwellings off Conical Hill Road, the predicted noise levels from users of the ride are very low – below 30 dB LAFmax. As above, this is lower than the measured background noise in the area, even at the quietest times.

Predicted noise levels

- 76 Some submitters have raised concerns about the predicted noise levels both regarding the validity of the source noise level, and the analysis to determine levels at the nearest receivers stating that high pitched noise travels and noise in certain wind directions will carry.
- 77 As stated above, SoundPlan noise propagation modelling has been used and the analysis is based on research and measurements of actual human voices including the specific spectrum. In addition, a typical 'worst-case' sound power has been used. The modelling also assumes a 'worst-case' for noise propagation of downwind conditions in all directions. Therefore, in the majority of real situations, noise levels will be even lower than those predicted.

SECTION 42A REPORT

- 78 Mr Gary Walton of Marshall Day Acoustics (MDA) has provided a peer review of our noise assessment. There appears to be a very high level of technical agreement between us. Mr Walton agrees with our assumptions, and modelling and assessment approach. He considers that our key assumption relating to the expected noise level generated during 'vocalisations' is conservative. Mr Walton anticipates a noise effect which is less than minor overall.
- 79 Mr Walton suggests that further information could be provided relating to any potential noise issues associated with parking and recreational use of the forest area to assist submitters. I have provided more detail on those issues in this evidence.
- 80 In his sub-section titled "Noise from ride users is the dominant source" on page 2 of his report, Mr Walton cites a paper which concludes that male voices may produce higher noise levels than female voices (which is the opposite of what we have assumed). I note the loudest voice levels recorded in the paper which he refers to are in the order of 20 dB lower than those we have assumed, and were associated with test subjects shouting an entire sentence. I expect there are simple physiological reasons why males are able to

sustain a higher sound power in that scenario, and I do not expect that type of activity to be typically associated with the ride (and if it was, as above the research demonstrates that noise levels would be much lower than we have assumed).

- 81 In his sub-section titled "17 Oregon Heights" on page 5 of his report, Mr Walton suggests that some sort of operational noise measurements may be appropriate to verify that the outcome has been as expected. I would be happy to work with Mr Walton to attempt to draft a suitable monitoring Condition – however I note that as above my analysis is conservative, and even then the predicted loudest noise level events are not likely to be directly measurable over the other ambient noise at residential receiver locations. Thought would need to be given as to what was required to be measured, where and why. My view on the possible usefulness of such a condition is influenced by my experience at the Christchurch Adventure Park where regular monitoring is required at specified locations – however in reality noise is seldom audible in those locations. When noise is audible there, it is not measurable over other ambient sound.
- 82 In that same section Mr Walton discusses the outdoor area at 17 Oregon Heights. I can confirm that we were aware of the location of the outdoor area from the outset of our modelling – as the noise received at the north-west corner of that property has determined the management that will be required of the final two spans (7 and 8) of the ride.

CONCLUSIONS

- 83 All potential noise sources and effects from the proposal for a new adventure thrill ride in the Conical Hill Reserve site in Hanmer Springs have been considered.
- 84 I expect the main source of noise from the activity to be the peak effort vocal sounds created by users of the ride.
- 85 I consider that the District Plan noise limits are not suitable for quantifying the potential for annoyance and other adverse community impacts potentially caused by this noise, for nearby residential properties. Based on our review of international guidance and the existing ambient noise environment, I consider that if noise from ride users is typically less than 45 dB LAFmax at the nearest residential properties, the effects will be minimal.
- 86 My analysis indicates that noise levels at the nearest dwellings due to rider users will typically not exceed 45 dB LAFmax provided the design and operation is managed so as to limit as far as practicable, the likelihood of users generating loud noises as they traverse the final two spans (7 and 8) of the ride. Management may also be required in the vicinity of Pole T4 depending on exact configuration of the track in this area.
- 87 There may be a noticeable change in the occurrence of other noise sources in the area (such as vehicles and increased pedestrian traffic) however noise levels associated with these sources will remain low.
- 88 Based on the above, I expect the adverse noise effects of the proposal to be minimal.

Dated: 23 September 2021

A handwritten signature in blue ink, appearing to be 'J. Trevathan', written in a cursive style.

Jeremy Trevathan