

In the matter of	A Private Plan Change to the Matamata-Piako District Plan under Schedule 1 of the RMA by Rings Scenic Tours Limited to introduce a Development Concept Plan, to enable the ongoing operation and growth of tourism activities at Hobbiton Movie Set within an appropriate planning framework
between	Matamata-Piako District Council
and	Rings Scenic Tours Ltd

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Statement of Evidence of Robert Swears

For the NZ Transport Agency (Transport Engineering)

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## 1 Introduction

### 1.1 Credentials

- 1 My name is Robert Clive Swears. I am employed as a Principal Transportation Engineer in the Hamilton Office of WSP Opus.
- 2 My qualifications include a New Zealand Certificate in Engineering, a Bachelor of Engineering Degree with Honours from the University of Canterbury, and a Master of Engineering Science Degree (Transport) from the University of New South Wales.
- 3 I am a Chartered Member of Engineering New Zealand (CMEngNZ), and a member of the Engineering New Zealand (EngNZ) Transportation Group.
- 4 I have been carrying out professional engineering tasks related to investigation, design, and construction of roading and highway projects for 29 years.
- 5 I have been engaged by the NZ Transport Agency (Transport Agency) to prepare transport engineering evidence to present to this hearing.

### 1.2 Environment Court Code of Conduct

- 6 While I acknowledge that this is not an Environment Court hearing, I consider it good practice to have prepared evidence in accordance with the current Environment Court Practice Note (2014). I have read and am familiar with the Code of Conduct for Expert Witnesses, have complied with it, and will follow the Code when presenting evidence. I also confirm that the matters addressed in this Statement of Evidence are within my area of expertise, except where relying on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

## 2 Scope of Evidence

- 7 This Statement of Evidence provides the following (the relevant subheading is noted in brackets in each case):
- (i) A summary of my evidence (**Executive Summary**);

- (ii) An overview of my understanding of the existing activities at Hobbiton (**Existing Consent**);
- (iii) An overview of the Hobbiton Plan Change (**the Plan Change**);
- (iv) An overview of the NZ Transport Agency submissions (**Transport Agency Submissions**);
- (v) A broad description of the transport related effects associated with the Plan Change (**Transport Effects**);
- (vi) Consideration of the SH29 / Hopkins Road intersection (**SH29 / Hopkins Road Intersection**);
- (vii) Consideration of the SH1 / Karapiro Road intersection (**SH1 / Karapiro Road Intersection**);
- (viii) Description of travel routes and route guidance to Hobbiton (**Travel to Hobbiton**);
- (ix) Discussion regarding the number of vehicle movements potentially associated with the Plan Change (**Trip Generation**);
- (x) Comments on the Council Officer's report (**Council Officer's Report**);
- (xi) Comments on the transportation engineering evidence provided by the Applicant (**Applicant's Transportation Engineer Evidence**);
- (xii) Conclusions.

### 3 Executive Summary

8 The key findings and conclusions of this Statement are that I consider:

- (i) The Applicant's analysis does not appear to include consideration of peak hour traffic effects associated with the Plan Change and there do not appear to be conditions proposed that will address the efficiency effects (if any). Similarly, there does not appear to

be any obligation on the Applicant to monitor crashes and to identify mitigation to address adverse road safety effects.

- (ii) At present, it does not appear that works are required at the SH29 / Hopkins Road intersection as a result of the trip generation associated with the Plan Change. However, more information is needed from the Applicant before this can be confirmed.
- (iii) Access to the Site via Buckland Road west (and the SH1 / Karapiro Road intersection) should be strongly discouraged.
- (iv) The widespread tourist signage on the state highway network proposed by the Applicant should not be installed.
- (v) The Plan Change should incorporate daily (and desirably hourly) thresholds on visitor numbers and vehicle movements.

#### 4 Existing Consent

- 9 Based on the Integrated Transport Assessment (ITA) prepared by Bloxam Burnett and Olliver (BBO, 2018), I understand that Rings Scenic Tours Ltd (RST / the Applicant) manages and operates the Hobbiton Movie Set (Hobbiton / the Site).
- 10 RST presently has resource consent for up to 300,000 visitors per annum to visit Hobbiton. In addition, RST can host 12 events per year (BBO, 2018, page 2).
- 11 The majority of visitors to Hobbiton travel along the section of Buckland Road to the east of Hobbiton.
- 12 The practical maximum capacity of Hobbiton is 3500 visitors per day; based on vehicle occupancy identified by BBO (2018), the daily peak trip generation associated with the maximum visitor capacity is 2084 trips per day. Taking into account trips to and from the Site, the 7000 visitor movements (arrival is one movement and departure is another movement) per day imply a vehicle occupancy rate of  $(7000 / 2084 =) 3.36$  people per vehicle.

13 While the existing resource consent is for 300,000 visitors per annum, RST has been operating with visitor numbers of 552,000 per annum (BBO, 2018, page 2).

14 Consent is sought for 650,000 visitors per annum.

## **5 Transport Agency Submission**

### **5.1 Original Submission**

15 In its submission the Transport Agency (2018a) describes its understanding of the scale of the activities associated with the Plan Change; namely:

- (i) Increase maximum visitor numbers to 3500 per day (excluding visitors outside movie set tour hours);
- (ii) Up to 12 movie screenings and up to 6 amplified music events / concerts each year.
- (iii) Permit on-site visitor accommodation and overnight camping facilities.
- (iv) Require resource consents for activities (which are not permitted activities in accordance with the Plan Change) that exceed District Plan standards.
- (v) The Transport Agency (2018a) sought the following change to the Plan Change as notified:
  - (a) Vehicle movements not to exceed 387,000 vehicle movements per year.

### **5.2 Transport Agency Further Submission**

16 In its further submission the Transport Agency (2018b) noted its support in part for the submission of Matamata-Piako District Council (the Council). However, the Transport Agency also noted that it does not support some of the amendments proposed by the Council and other submitters; specifically:

- (i) Matamata-Piako District Council's proposed amendment in relation to signage.
- (ii) Carolyn and John Evans' submissions seeking a roundabout at the intersection of SH29 and Hopkins Road.
- (iii) J Swap Contractors' submission in relation to improvements to the western end of Buckland Road.

## 6 Transport Effects

- 17 BBO (2018) has provided comprehensive analysis of the transport effects associated with the Plan Change. My understanding is that (notwithstanding their involvement in supporting local authorities through funding for local road construction and maintenance) the main interest of the Transport Agency in relation to the Plan Change is the effect of the Plan Change on the state highway network.
- 18 In that regard, the Transport Agency has identified four key issues; namely:
- (i) SH29 / Hopkins Road intersection.
  - (ii) SH1 / Karapiro Road intersection.
  - (iii) Signage on the state highway network.
  - (iv) Trip generation associated with visitor numbers.
- 19 From a transport engineering perspective, the key matters of interest in relation to the Plan Change are the safe and efficient movement of vehicles (and, more particularly, the people in or on those vehicles) to, from, and on the state highway network.
- 20 With regard to efficiency of vehicle movements, while annual and daily trip generation information is useful, the focus of analysis is ordinarily based on peak hour vehicle movements. This can relate to vehicle movements between intersections and at intersections.
- 21 BBO (2018) has made five references to the "peak hour" in the ITA; however, none of these appear to relate to conventional peak hour
-

analysis of intersection efficiency. I have listed below the five references to “peak hour” I identified:

- (i) “Parking for events of up to 500 visitors after normal movie tour hours can easily be accommodated [...] The predicted **peak hour** trip generation [...] is less than the Movie Set tour peak periods at the site” [emphasis added] (BBO, 2018, page 4).
- (ii) Such an event of 500 people could generate 250 vehicle arrival trips and 250 vehicle departure trips [...] This 250 vph flow rate is less than the existing **peak hour** trip generation for the Movie Set Tour operation on a peak day, which generates approximately 350 vph.” [emphasis added] (BBO, 2018, page 28). While it does not affect the conclusions of this Statement, I note that 250 vehicle departure trips do not necessarily create a 250 vehicle per hour flow rate. For example, if those 250 vehicles departed within a 30-minute period that would result in a 500 vehicle per hour flow rate.
- (iii) “Under a peak day, the site has approximately 180 buses per day arriving at the site, which would result in a **peak hour** similar to that generated by an event of 1,000 people. Therefore, the site is able to accommodate the buses resulting from a 1,000-person event.” [emphasis added] (BBO, 2018, page 28).
- (iv) “Events of fewer than 500 people can be easily accommodated by infrastructure at the site. The predicted **peak hour** trip generation from an event of this size is estimated to be less than the **peak hour** trip generation during the peak period at the site.” [emphasis added] (BBO, 2018, page 40).

22 However, the ITA does not appear to include any consideration of the peak hour effects of Plan Change vehicle movements on the capacity of the roads used by vehicles moving to and from Hobbiton and / or the intersections through which those vehicles must pass. In this regard, I consider the ITA should have included a description of the queuing and delay at each of the key affected intersections when trip



generation for Hobbiton is within the existing consented range (300,000 visitors per annum) and when trip generation is aligned with the volumes that would be associated with the Plan Change. The associated analysis should also include consideration of growth in traffic volumes on the road network. It may be that the adverse effects of the Plan Change are no more than minor, however, the ITA does not appear to provide that information.

- 23 In my opinion, peak hour analysis should take into account peak hour movements at intersections and between intersections. In this regard, I note that the peak hour trip generation for Hobbiton may not coincide with peak hour traffic volumes on the road network. However, the data collected for use in the peak hour analysis would highlight those peak periods.

## **7 SH29 / Hopkins Road Intersection**

### **7.1 Crash History**

- 24 BBO (2018, page 13) has identified 6 crashes at the SH 29 / Hopkins Road intersection in the 2012-2016 five-year period. While BBO has provided crash data for the intersection they have not defined the basis on which they conducted their search of the crash database. I had a WSP Opus crash analyst extract information from the old CAS database (the new database was not available on 26 March 2019 when the search was conducted); the results described in Table 1 below were obtained from the crash search.
- 25 Based on the information in the first two rows of Table 1, it appears that the BBO (2018) search considered crashes within a 50 m radius of the SH29 / Hopkins Road intersection. While there is not a significant difference (one non-injury crash) between the 2012-2016 and 2013-2017 crash data, it is of concern to note that in 2018 there have been two serious injury, one minor injury and one non-injury crash. Given that the Plan Change is intended to increase trip generation to and from Hobbiton, I consider it important that the conditions associated with the Plan Change incorporate provision for reduced trip generation and / or improvements to the SH29 / Hopkins Road intersection if the

increased trip generation associated with the Plan Change results in increased crashes at the intersection.

**Table 1: Reported Crashes at SH29 / Hopkins Road Intersection**

Period and search radius	Number of crashes of each injury severity				
	Fatal	Serious	Minor	Non	Total
2007-2011 (50 m radius) <sup>1</sup>	0	0	0	0	0
2012-2016 (50 m radius)	1	1	1	2	5
2013-2017 (50 m radius)	1	1	1	3	6
2007-2011 (250 m radius)	0	0	1	1	2
2012-2016 (250 m radius)	1	1	2	2	6
2013-2017 (250 m radius)	1	1	2	3	7

- 26 In this regard, it is important to note that increased crashes may not necessarily involve a vehicle travelling to or from Hobbiton. However, the increased traffic associated with journeys to and from Hobbiton may result in (for example) increased driver frustration due to increased delay, which may in turn result in crashes. For this reason, I consider it important that crash criteria associated with Plan Change conditions do not simply focus on vehicles that are travelling to and / or from Hobbiton.

## 7.2 Intersection Form

- 27 The design of the SH29 / Hopkins Road / Puketutu Road intersection configuration is complex and, based on current design guidance, I consider it unlikely such an intersection would be designed and constructed in this form if it was being constructed today. However, I

<sup>1</sup> The table correctly describes there were no reported crashes in the 2007-2011 period.

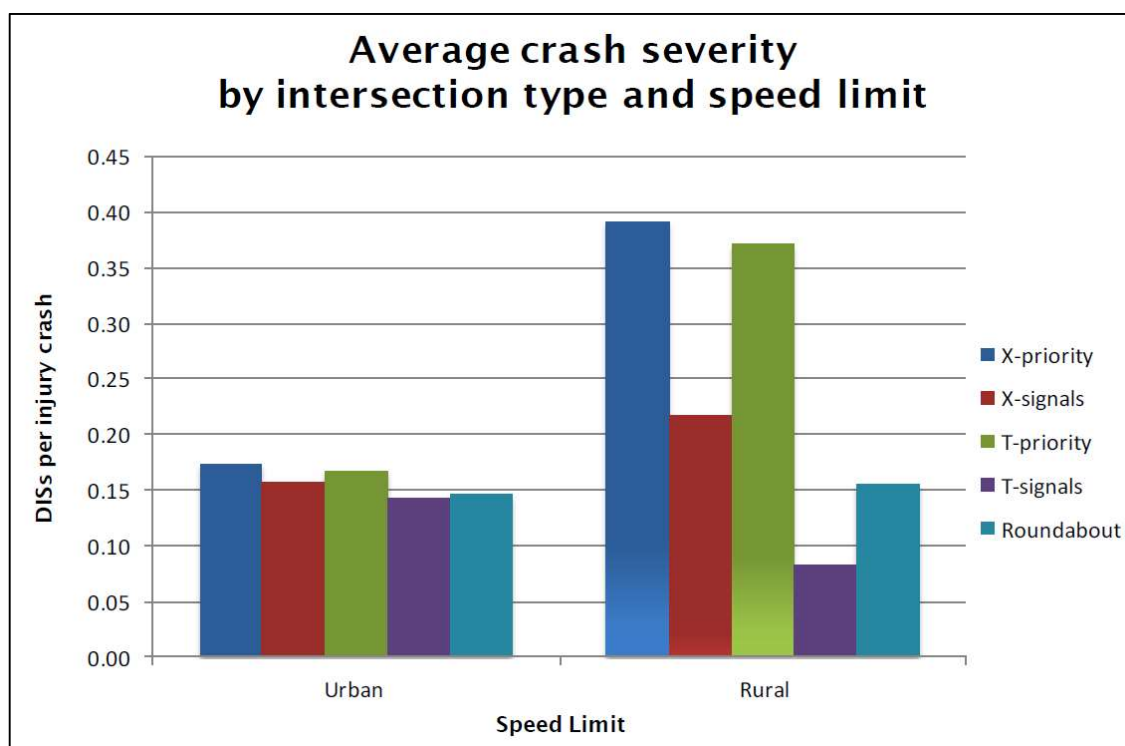
acknowledge intersection design is influenced by constraints such as existing road alignments and property boundaries.

- 28 In their submissions, Carolyn and John Evans propose the Plan Change could be accepted provided a roundabout is constructed at the SH29 / Hopkins Road intersection.
- 29 The diagram below (Figure 1) illustrates a schematic design for a roundabout at the SH29 / Hopkins Road intersection; the diameter of the central island of the roundabout is 44 m (based on the Austroads (2015, page 20) desirable minimum criteria for a roundabout where the desired driver speed on the fastest leg prior to the roundabout is greater than or equal to 90 km/h). As shown on the diagram, construction of a roundabout is likely to affect adjoining properties; notwithstanding that, I expect the cost for such a roundabout would be in the millions of dollars (as a rough guide somewhere between \$3 million and \$5 million).



*Figure 1: Schematic Design for Roundabout at SH 29 / Hopkins Road Intersection (image source: LINZ, 2019)*

- 30 From a safe system perspective, a roundabout is an appropriate intersection form. The diagram below (Figure 2) illustrates that for a rural intersection the number of deaths and serious injuries per injury crash is significantly lower if the intersection form is a roundabout than if the intersection form is a priority-controlled T intersection such as the existing SH29 / Hopkins Road intersection.



*Figure 2: DSI casualty ratios at intersections (source: Transport Agency, 2013)*

- 31 On this basis, I expect the crash severity at the intersection would reduce if the intersection was a roundabout rather than a priority-controlled T intersection. However, there is a wide range of factors that need to be considered when determining the intersections for which a roundabout is an appropriate form of control; these include prioritising intersections for treatment such that the locations where there is the greatest potential for reducing death and serious injury are treated before locations with lower potential for trauma reduction.
- 32 Based on my knowledge of road safety issues with various intersections on the state highway network, I consider it unlikely that the SH29 / Hopkins Road intersection is one that would have a high priority for conversion from a T intersection to a roundabout.

- 33 While there are sound arguments as to the appropriateness of a roundabout at the intersection, taken as a whole, I consider it unlikely that the adverse road safety effects associated with the Plan Change would warrant changing the intersection form.

## 8 SH1 / Karapiro Road Intersection

- 34 As noted by BBO (2018, page 14) the number of crashes at the SH1 / Karapiro Road intersection has increased in the past five years (2012-2016) compared with the previous five-year period (2007 / 2011). Similarly to the SH29 / Hopkins Road intersection, while BBO has provided crash data for the intersection they have not defined the basis on which they conducted their search of the crash database. I had a WSP Opus crash analyst extract information from the old CAS database (the new database was not available on 26 March 2019 when the search was conducted) and the following information was obtained:

**Table 2: Reported Crashes at SH1 / Karapiro Road Intersection**

Period and search radius	Number of crashes of each injury severity				
	Fatal	Serious	Minor	Non	Total
2007-2011 (50 m radius)	0	0	1	2	3
2012-2016 (50 m radius)	0	0	1	4	5
2013-2017 (50 m radius)	0	1	1	6	8
2007-2011 (250 m radius)	0	1	2	3	6
2012-2016 (250 m radius)	0	0	2	5	7
2013-2017 (250 m radius)	0	1	2	8	11

- 35 Based on the information in the first two rows of Table 2, it appears that the BBO (2018) search considered crashes within a 50 m radius of the SH1 / Karapiro Road intersection. Acknowledging that crashes are sometimes defined as rare, random, multifactor events, it is interesting

to note that there were three crashes at the intersection (within a 50 m radius) in 2017; one of which was a serious injury crash. Therefore, I agree with BBO (2018, page 14) that the number of crashes at the SH1 / Karapiro Road intersection has increased. However, I also note that the injury crash rate in the most recent period (2013-2017) has increased to 0.25 (= 2 / 8) from 0.2 (= 1 / 5) in the 2012-2016 period.

36 Based on available data in the old CAS database at the time our search was conducted (26 March 2019) there has been one fatal injury crash and one serious injury crash at the intersection in 2018.

37 I sought advice from the Transport Agency safety engineer for the area to determine whether any significant physical works are proposed for the intersection. I was advised (Transport Agency, 2019) there have been two recent crashes where vehicles failed to stop at the intersection. The Transport Agency is considering improving the intersection ahead signage, however, those works have not been confirmed.

38 I also contacted the Transport Agency's Safe Roads Regional Delivery Manager (Safe Roads, 2019) and was advised the confirmed safety improvements being undertaken in the vicinity of the SH1 / Karapiro Road intersection are associated with a roadside barrier; consideration is also being given to repositioning a bus stop that is presently located on SH1.

39 Therefore, given the increasing number of crashes at the intersection, the apparent increase in crash severity, and the relatively minor works being considered for the intersection, I consider it undesirable for any changes to be made to the road network and / or signage that may encourage the additional visitors to Hobbiton (that would be realised through the Plan Change) to use the SH1 / Karapiro Road intersection.

40 While I recognise there are also road safety issues at SH29 / Hopkins Road intersection, the increase in crashes at the SH1 / Karapiro Road intersection, combined with the constraints associated with the alignment of Buckland Road west, indicate that it would be

undesirable to encourage Plan Change traffic to use the SH1 / Karapiro Road intersection.

- 41 On this basis, I endorse the Transport Agency (2018b) further submission that improvements should not be made to the western end of Buckland Road that may encourage visitors to Hobbiton to travel to and / or from the Site via the SH1 / Karapiro Road intersection.

## **9 Travel to Hobbiton**

### **9.1 Travel Routes**

- 42 BBO (2018, page 36) is correct that, when using Google to obtain directions to Hobbiton from the north, the route automatically illustrated is along SH1 and SH29 to the eastern end of Buckland Road.

- 43 Despite my best endeavours, I was unable to get Google to illustrate a route to Hobbiton via the SH1 / Karapiro Road intersection that did not involve a long and convoluted journey. My attempts included dragging the route onto Karapiro Road and entering the street address for Hobbiton (501 Buckland Road) rather than using the “Hobbiton” name. None of my attempts to obtain a route to Hobbiton via Karapiro Road were successful. On this basis, I consider it unlikely that visitors to Hobbiton (that are unfamiliar with the road network) will use the SH1 / Karapiro Road intersection unless they are following a paper map.

### **9.2 Sign Strategy**

- 44 BBO (2018, Section 9.2 and Appendix B) describes a signage strategy to direct visitors to Hobbiton. This strategy incorporates some newly installed and additional proposed signs on the state highway network.
- 45 The Transport Agency (2017) provided advice to BBO regarding a request for installing tourist signs in which they noted (inter alia) “[...] tourist signs for a specific facility should only be used in the immediate vicinity of the tourist facility [...]”.
- 46 I agree with the Transport Agency approach in this regard. In part, my reasoning is due to the potential precedent effect that could be set by allowing widespread signage for tourist activities. Notwithstanding that Hobbiton may be a significant tourist destination, I consider it

important that caution is applied when contemplating increased signage on the road network.

- 47 In the Traffic Control Devices Manual (Part 2) the Transport Agency (2011) notes that “Tourist signs are advisory signs used to indicate tourist facilities [... but they] are not intended to fully meet all the desires and needs of road users [...] tourist signs do not guide road users through the road network in the same manner as route signs [...] Tourist signs that identify a specific facility should only be used in the immediate vicinity of the tourist facility.” Therefore, I consider it important the Council ensures that any decision it makes regarding conditions for tourist signage related to the Plan Change are aligned with national practice.
- 48 Notwithstanding that, I agree with BBO (2018, page 37) that signage should be positioned far enough in advance of an intersection to allow road users sufficient time to make decisions as to whether they will turn at that intersection. However, this does not mean tourist signage should be widely distributed around the road network. Otherwise, the potential exists for a plethora of tourist signs to be installed that will create confusion rather than clarity for road users.
- 49 Acknowledging that the proposal has not been raised by the Applicant, a matter I consider Council should take into account is the potential for advertising signage, which directs road users towards Hobbiton, to be installed on private land adjacent to state highways.
- 50 I have not evaluated the potential for such signage to be installed in accordance with the District Plan, however, I consider it desirable for the Plan Change conditions to prevent advertising signs being installed in lieu of the tourist signs proposed by the Applicant.

## **10 Trip Generation**

### **10.1 Applicant’s Calculation of Trip Generation**

- 51 In relation to vehicle occupancy (that is, the average number of people per vehicle) BBO (2018) notes:



- (i) “[...] 500 people per day resulting in approximately 250 vehicle trips assuming a conservative estimate of two people per vehicle.” (page 2).
- (ii) “[...] past records have shown a typical split of 15% inbound coach and 85% free independent traveller [...] During the busier summer months Hobbiton typically has at least 30 buses arriving per day at the site.” (page 11).
- (iii) “Based on this occupancy rate, a peak day at the site (3,500 visitors) is expected to result in a peak parking occupancy of approximately 343 vehicles.” (page 16).
- (iv) With regard to events:
  - (a) The parking capacity is sufficient “[...] even if all event visitors arrive by private car (which is rarely the case) with a low average occupancy of two people per vehicle.” (page 28).
  - (b) “Assuming an occupancy of 30 people per bus, 1,000 visitors could result in 33 buses arriving at the site.” (page 28).

52 While BBO (2018) has included various references to vehicle occupancy, the ITA does not appear to include a description of the basis on which they have determined 3500 visitors per day results in 2084 trips per day. As noted in paragraph 12 of this Statement, if the practical maximum capacity of Hobbiton is 3500 visitors per day and the daily peak trip generation associated with the maximum visitor capacity is 2084 trips per day the average vehicle occupancy rate is 3.36 people per vehicle (3500 people, with each person arriving (one trip) and departing (another trip) results in 7000 people movements divided by 2084 vehicle movements to give an average vehicle occupancy rate of 3.36).

53 If all vehicles travelling to and from Hobbiton were light vehicles, an occupancy rate of 3.36 people per vehicle would be unrealistically high, however, BBO (2018) has advised that a proportion of the visitors travel by bus.

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- 54 For comparison purposes, I considered trip generation based on other information provided by BBO (2018). If we (unrealistically) ignore trips associated with staff and deliveries, but we apply the BBO vehicle occupancy rates of 30 people per bus and two people per car, the 3500 visitors would generate 3010 trips; which I have calculated as follows:
- (i)  $2 \text{ (allowing for arrival and departure)} \times 3500 \text{ visitors} \times 15\% \text{ (travelling by bus)} / 30 \text{ people per bus} = 35 \text{ bus trips.}$
  - (ii)  $2 \text{ (allowing for arrival and departure)} \times 3500 \text{ visitors} \times 85\% \text{ (travelling independently)} / 2 \text{ people per vehicle} = 2975 \text{ trips.}$
- 55 Noting that I have not considered trips associated with staff and deliveries, adopting the BBO vehicle occupancy rates, 3500 visitors per day results in 3010 trips rather than 2084 trips as described by BBO (2018, pages 2 and 24).
- 56 In addition, BBO has not described the basis on which they have concluded vehicle occupancy rates of 30 people per bus and two people per independent traveller vehicle.
- 57 I contacted Mr Inder and sought clarification regarding the discrepancy between the 3010 trips I calculated and the 2084 trips he describes. In an email, Mr Inder (2019a) advised me (inter alia):
- (i) "Table 6 in the ITA, page 20 shows for the 7 days in February the average daily visitor number (movie set tours) was 1855."
  - (ii) "For the same period the average total number of vehicle movements [...] on the one-way Exit of Hobbiton [...] was 552 [...]".
  - (iii) "So total average trip generation per day associated with movie set tour visitors was  $552 \times 2 = 1105 \text{ vpd (rounded).}$ "
  - (iv) "Therefore the average number of visitors per trip can be calculated as  $1855/1105 = 1.68$ "
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- (i) “On the basis that 3500 visitors [...] would generate approximately 2084 trips per day. This includes all staff, visitor and delivery trips [...]”.

58 Notwithstanding the difference between the value I calculated and the value calculated by BBO, if a trip generation threshold is applied for the Plan Change, the BBO value of 2084 trips per day results in a more conservative outcome than if the trip generation is based on the 3010 trips I have calculated.

## 10.2 Transport Agency Submission

59 In its submission the Transport Agency (2018a) proposed that “Vehicle movements shall not exceed 387,000 movements per year.” I understand this value was taken from the ITA (BBO, 2018, page 24) where BBO notes “The expected maximum of 650,000 visitors per year as a result of the DCP<sup>2</sup> is predicted to result in a trip generation of 387,000 trips per year, [...]”.

60 However, as noted in this Statement:

- (i) Adverse effects are most evident during periods of peak hour vehicle movements; whether this be associated with Hobbiton or other vehicle movements.
- (ii) The manner in which BBO has determined there will be 2084 daily vehicle movements is unclear, therefore, there may also be uncertainty in relation to their calculation of 387,000 trips per year.

61 While there may be advantages from a monitoring and regulation perspective in setting an annual limit on the number of trips, from a transport engineering perspective my preference is that limits are placed on the daily and hourly numbers of trips and on the composition of the traffic stream resulting in those trips.

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<sup>2</sup> DCP = Development Concept Plan

62 I consider that a balance needs to be sought between minimising the potential for conflict by minimising the number of vehicle movements and the types of vehicles carrying out the movements. For example, if the 2084 trips were all taken by small motor vehicles the effects would be less than if the trips were all taken by buses.

63 Therefore, I consider it desirable for the conditions in relation to the Plan Change to minimise the effects of the Plan Change on the road network. This can be achieved by encouraging the Applicant to reduce the number of vehicle movements. The Council may consider it appropriate to specify maximums for daily visitor numbers, daily vehicle movements, hourly vehicle movements, and maximum proportions of the vehicles travelling to and from the Site using low occupancy vehicles (typically, private motorcars).

## **11 Council Officer's Report**

### **11.1 Overview**

64 The Gray Matter (2019) Updated Transportation Review includes a summary (Table 1) of the transport submissions received and the Gray Matter opinion on whether further mitigation is required to manage effects. With regard to the matters of particular interest to the Transport Agency, I note that Gray Matter considers:

- (i) No further mitigation is required by the Applicant in relation to the SH29 / Hopkins Road intersection (Topic 6).
- (ii) A cap on the activity is required. However, Gray Matter considers that a limit based on vehicle numbers is more appropriate than a limit based on visitor numbers. Gray Matter notes "[...] the cap should be set at 387,000veh/year and 2,084veh/day" (Topic 11).

### **11.2 SH29 / Hopkins Road Intersection**

65 Gray Matter (2019, page 5) refers to Transport Agency works to improve safety at the SH 29 / Hopkins Road intersection. I agree with the Gray Matter observation that reducing operating speeds will reduce crash severity.

66 While they do not make specific reference to the submitter's proposal for a roundabout to be constructed at the intersection, I note that Gray Matter does not support the submission. Therefore, it appears there is alignment between Gray Matter and me that (at this stage) a roundabout at the SH29 / Hopkins Road intersection is unnecessary as mitigation for the effects likely to be associated with the Plan Change.

### **11.3 SH1 / Karapiro Road Intersection**

67 While Gray Matter (2019) does not appear to specifically describe the use of the SH1 / Karapiro Road intersection as part of the route to Hobbiton; they state "The Applicant actively provides information to tour operates [sic] reminding them the recommended route to Hobbiton is via Buckland Road (east). It is desirable that staff are also encouraged to use Buckland Road (east), they could potentially be required to use Buckland Road (east) as a condition of employment." (page 14).

68 Based on the statement by Gray Matter, I understand they agree with me that it is undesirable for there to be any encouragement for journeys to and from Hobbiton to involve the use of the SH1 / Karapiro Road intersection.

### **11.4 Signage**

69 The Gray Matter (2019) report includes numerous references to signs and signage, however, with one exception, these do not appear to relate to signage on the state highway network. The exception is that Gray Matter (2019, page 21) considers "[...] it will be necessary to install signage at the SH5/SH28 intersection and the SH28/Rangitanuku Road intersection to encourage traffic to use the safer state highway network." (page 21).

70 The Gray Matter proposal appears to be at odds with the Transport Agency position that tourist signage should only be installed in accordance with the practices that have been adopted on a national basis. As noted previously, I agree with the Transport Agency position and consider it important for the Council to ensure any conditions for the Plan Change that relate to signage (whether on the local road or

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state highway network) ensures compliance with national standards. I also consider it important for the Plan Change provisions to prevent the Applicant from installing advertising signs on private land in lieu of the tourist signs proposed by the Applicant.

## **11.5 Trip Generation**

- 71 On 27 March 2019 I contacted Alastair Black (the author of the Gray Matter (2019) report) by phone and sought clarification in relation to the 2084 vehicle per day cap described in the report. Mr Black indicated (and confirmed by email) that in this context he has used the term “vehicles” to apply to vehicle trips; therefore, I understand that the “2,084veh/day” described by Gray Matter (2019) means 2084 vehicle movements. On the assumption that each vehicle arrives and departs, “2,084veh/day” equates to 1042 vehicles, with each vehicle making (on average) two movements per day (one arrival and one departure).
- 72 Gray Matter (2019, pages 27 and 28) also makes reference to “2,084 trips per day”, therefore, I consider it important that if any of the conditions associated with the Plan Change refer to vehicle movements, those conditions should use clear and unambiguous terminology in any reference to vehicle movement thresholds.

## **12 Applicant’s Transportation Engineering Evidence**

- 73 I have considered the evidence prepared by Mr Inder (2019b) with reference to the matters of particular interest to the Transport Agency.

### **12.1 SH29 / Hopkins Road Intersection**

- 74 Mr Inder (2019b, paragraph 6.22) notes that he supports “[...] the further submission of the NZ Transport Agency opposing the request for a new roundabout at SH29 and Hopkins Road by two Submitters.”
- 75 I agree with Mr Inder (and the Transport Agency) that it does not appear necessary or appropriate for a roundabout to be constructed at the SH29 / Hopkins Road intersection as a direct result of the effects associated with the Plan Change.
- 76 However, as noted previously in this Statement, the Applicant does not appear to have provided analysis of the peak hour effects at the

intersection. Therefore, it may be appropriate for the Council to include conditions for the Plan Change requiring the Applicant to fund mitigation at the intersection in the event that queuing, delay, and / or crashes at the intersection indicate that an intersection upgrade would be appropriate.

77 Alternatively, a more conservative approach would be for Council to not approve the Plan Change until such time as the Applicant has provided information to demonstrate that the peak hour effects associated with the Plan Change do not result in adverse traffic effects for which mitigation is required.

78 Notwithstanding my opinion in this regard, I note that the submission from the Transport Agency did not request for the Plan Change to be declined.

## **12.2 SH1 / Karapiro Road Intersection**

79 Mr Inder (2019b) makes various references to Buckland Road west, which, if upgraded, may encourage visitors to the Site to use the SH1 / Karapiro Road intersection. I agree with Mr Inder's view that it is undesirable for Buckland Road west to be used for access to the Site and, by extension, for the SH1 / Karapiro Road intersection to be used. Therefore, I also agree with the conclusion of Mr Inder (and Mr Black (Gray Matter, 2019)) that any improvements to Buckland Road west should be limited.

## **12.3 Signage**

80 Mr Inder (2019b, paragraph 5.21) notes that the Applicant's proposed signs strategy was not supported by the Transport Agency because the Agency "[...] saw the addition of signs as something that did not meet their signs policy for Tourist Activities."

81 As noted in Section 9.2 of this Statement, Mr Inder is correct to note that the Applicant's proposed strategy is not aligned with the Traffic Control Devices Manual (Transport Agency, 2011).

82 I agree with Mr Inder that a comprehensive signs strategy focused on guiding visitors to Hobbiton via the preferable route (Buckland Road

east) has the potential to reduce the amount of “[...] tourist traffic using Buckland Road west, or worse, attempting to u-turn on SH1 after going past Karapiro Road and then seeing they could have gone that way on a map.” (Inder, 2019b, paragraph 5.22). However, Mr Inder’s conclusion is based on one tourist attraction and presupposes that guiding visitors to Hobbiton should take priority over the need to guide road users to a wide range of destinations.

83 From a road network management perspective, it is desirable to optimise the number of signs on the network so that only those that are applicable for travel to a location (such as Taupō) warrant signing at a variety of key locations along the route. Signage to guide visitors to Hobbiton should not be a priority from a road network perspective because it simply reduces the focus drivers can apply to the driving task because they are required to consider and comprehend the extraneous signage.

84 In my opinion, the conditions associated with the Plan Change should consider not only Hobbiton but also the wider needs of road users that may be affected by visitors travelling to Hobbiton. On this basis, I endorse the Transport Agency’s position that the signs strategy proposed by the Applicant would result in additional unnecessary signage that is not in accordance with the national policy for tourist signage.

85 I also consider that the Plan Change provisions should prevent the Applicant from installing advertising signs on private land in lieu of tourist signs on state highways.

#### **12.4 Cap for Visitor Numbers and Vehicle Movements**

86 Mr Inder (2019b, paragraph 4.10) refers to the 3500-visitor cap and the approximate correlation of this value with 2084 vehicle movements per day.

87 Mr Inder (2019b, paragraph 4.17) disagrees with the proposed cap on vehicle movements and indicates a preference for any caps to be based on visitor numbers.



- 88 To an extent, I agree with Mr Inder, however, I note that it may be appropriate to apply limits to both visitor numbers and vehicle movements, rather than just one or the other. The basis for my opinion is that if there are only limitations on vehicle movements, the Applicant has only to use more high occupancy vehicles for transporting visitors to and from Hobbiton to be able to increase the number of visitors to the Site. However, if there is a cap on visitor and vehicle movement numbers, the Applicant is encouraged to use high occupancy vehicles, but there will still be a limit on the maximum number of visitors.
- 89 From a transport effects perspective, the number of visitors to the Site is largely irrelevant; the effects arise from the movement of vehicles, the types of vehicles moving, and the capacity of any parking facilities to accommodate those vehicles. However, from a monitoring perspective, it may be easier to review visitor numbers and have a requirement for the Applicant to actively promote the use of high occupancy vehicles for travel to and from the Site, but to have a threshold for trip generation in any case.
- 90 Mr Inder (paragraph 4.17) proposes that “[...] if the daily traffic volume it is [sic] to be used in a rule then it should be rounded up to the nearest 100 vehicles per day, i.e. 2,100 [...] However, I [Mr Inder] again state that including an absolute number is inappropriate and unnecessary given the maximum visitor number achieves the same purpose of limiting vehicle traffic on the transport network.”
- 91 I do not agree with Mr Inder that setting a cap on the number of visitors automatically applies a cap to the number of vehicle movements. As noted previously, I consider it desirable for there to be caps on both visitor numbers and vehicle movements; based on the figures described by the Applicant’s team, it appears these caps should be 3500 visitors per day and 2100 vehicle movements per day.
- 92 I recognise that submitters have made reference to caps on the number of vehicle movements per year. However, from a transport engineering perspective, adverse effects are most likely to be exhibited
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during peak days and peak hours rather than as a result of fluctuations in traffic volumes that are averaged over a year, which is what occurs in relation to specific maximum numbers of vehicle movements per year.

93 As noted previously, the Applicant does not appear to have considered the peak hour performance of intersections nor mitigation that may be required to address the adverse effects associated with the peak hour trip generation. I consider it desirable for the conditions for the Plan Change to include criteria that require the Applicant to identify adverse transport efficiency effects associated with peak hour trip generation and (if appropriate) to provide mitigation to address those peak hour effects. Similarly, there does not appear to be any obligation on the Applicant to monitor crashes and to identify mitigation to address adverse road safety effects that arise.

### 13 Conclusions

94 With reference to the Transport Agency (2018a) submission, they have sought a cap of 387,000 vehicle movements per year for the activity. The Transport Agency also notes they would accept alternative wording to achieve the same relief.

95 In my opinion, while limitations on the total number of vehicle movements per year or per day are useful criteria to define the level of permitted activity for a land use, those criteria do not necessarily address the adverse effects associated with that land use. I consider it preferable that any conditions relating to limits on numbers of vehicle movements are defined based on peak hour movements and the potential for interaction of Hobbiton peak hour movements with peak hour traffic volumes on the road network. The ITA does not appear to include consideration of those peak hour effects and there do not appear to be conditions proposed that will address the effects.

96 The key points of this Statement are that I consider:

- (i) At present, it does not appear that works are required at the SH29 / Hopkins Road intersection as a result of the trip generation associated with the Plan Change. However, I consider it

important that peak hour traffic modelling is carried out both now, and in the future, to identify mitigation that may be required to address the adverse effects associated with Plan Change trip generation. In addition, I consider that crash monitoring is required to identify deterioration in road safety (if any) from which mitigation can be developed to address those adverse road safety effects.

- (ii) There appears to be agreement between the transport engineering experts involved with this matter (namely, Mr Black, Mr Inder, and me) that access to the Site via Buckland Road west (and the SH1 / Karapiro Road intersection) should be strongly discouraged.
- (iii) The widespread tourist signage on the state highway network described in the ITA appears to be unnecessary and contrary to national practice, therefore, I consider that additional signage directing road users to Hobbiton should not be installed. However, any existing appropriate signage that has been installed, but is too close to a particular intersection, should be repositioned to give road users adequate advance warning of the need to turn at the intersection. Noting that the Applicant has not presented the proposal, I consider it desirable that the Applicant is not permitted to install advertising signs on private land in lieu of the tourist signage described in the ITA.
- (iv) The Plan Change should incorporate daily (and desirably hourly) thresholds on visitor numbers and vehicle movements. Based on the figures provided by the Applicant, it appears the appropriate values are 3500 visitors per day and 2100 vehicle movements per day.

## 14 References

I have referred to the following sources while preparing my evidence:

- Austroads, 2015, *Guide to Road Design Part 4B: Roundabouts*, Austroads, Sydney, Australia
- Bloxam Burnett and Olliver (BBO), 2018, *Rings Scenic Tours Ltd. Development Concept Plan, Integrated Transport Assessment*, Bloxam Burnett and Olliver, Hamilton
- Gray Matter, 2019, *Rings Scenic Tours Ltd - Development Concept Plan, Updated Transportation Review, Matamata-Piako District Council, Issue 2, 11 March 2019*, Gray Matter, Hamilton
- Inder, CI, 2019a, *RE: Calculating Trip Generation for Hobbiton*, email dated 28 March 2019 from Cameron Inder (BBO, Hamilton) to Robert Swears (WSP Opus, Hamilton)
- Inder, CI, 2019b, *Statement of Evidence by Cameron Bestwick Inder on Behalf of Rings Scenic Tours Limited, 25 March 2019*, Bloxam Burnett and Olliver, Hamilton
- Land Information New Zealand (LINZ), 2019, website - <https://data.linz.govt.nz/set/4702-nz-aerial-imagery/>, accessed on 26 March 2019
- NZ Transport Agency (Transport Agency), 2011, *Traffic Control Devices Manual; Part 2; Direction, Service and General Guide Signs*, First edition, NZ Transport Agency, Wellington
- NZ Transport Agency (Transport Agency), 2013, *High-Risk Intersections Guide*, NZ Transport Agency, Wellington
- NZ Transport Agency (Transport Agency), 2017, *Hobbiton Movie Set Tourist Signs Request*, letter dated 25 July 2017 from Mark Lilley (Transport Agency, Hamilton) to Cameron Stanley (Bloxam Burnett and Olliver, Hamilton)

- NZ Transport Agency (Transport Agency), 2018a, *NZ Transport Agency Submission on Matamata-Piako District Plan, Proposed Private Plan Change 50*, NZ Transport Agency, Hamilton, 2 May 2018
- NZ Transport Agency (Transport Agency), 2018b, *NZ Transport Agency Further Submission on Matamata-Piako District Plan, Proposed Plan Change 50 - Hobbiton Development Concept Plan, 487, 501 and 502 Buckland Road, Matamata*, NZ Transport Agency, Hamilton, 20 June 2018
- NZ Transport Agency (Transport Agency), 2019, *RE: Are Any Works Confirm for SH1/Karapiro Road Intersection*, email dated 29 March 2019 from Mark Lilley (Transport Agency, Hamilton) to Robert Swears (WSP Opus, Hamilton)
- Safe Roads, 2019, *RE: Are Any Works Confirm for SH1/Karapiro Road Intersection*, email dated 29 March 2019 from Jeremy Froger (Safe Roads Regional Delivery Manager (Waikato)) to Robert Swears (WSP Opus, Hamilton)