Before Hearing Commissioners

under: the Resource Management Act 1991

in the matter of: notices of requirement and resource consent applications by the NZ Transport Agency and Hamilton City Council for the Southern Links Project

Rebuttal evidence of John Turner (*Ecology*) on behalf of the **NZ Transport Agency and Hamilton City Council**

Dated: 8 July 2014

Hearing date: 21 July 2014

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REBUTTAL EVIDENCE OF JOHN PAUL TURNER ON BEHALF OF THE NZ TRANSPORT AGENCY AND HAMILTON CITY COUNCIL

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INTRODUCTION

1 My full name is John Paul Turner.

2 I have the qualifications and experience set out in paragraphs 3.1 to 3.7 of my statement of evidence-in-chief (*EIC*) dated 12 June 2014.

3 My rebuttal evidence is given in support of notices of requirement (*NORs*) and applications for resource consents lodged by the NZ Transport Agency (*the Transport Agency*) and Hamilton City Council (*HCC*) on 9 August 2013 in relation to the construction, operation and maintenance of the Southern Links Project (*Project*).

4 I repeat the confirmation given in my EIC that I have read and agree to comply with the 'Code of Conduct for Expert Witnesses' contained in the Environment Court Practice Note 2011.

5 In this statement of rebuttal evidence, I respond to the relevant sections of evidence of the following:

5.1 Kirsty Graveling (Planning) on behalf of Waikato Regional Council (**32**);

5.2 Kevin Collier (Instream Ecology) on behalf of Mangakotukutuku Stream Care Group Inc. (**45**);

5.3 Grant Blackie (Planning and consenting)on behalf of Mangakotukutuku Stream Care Group Inc. (**45**);

5.4 Dr Matthew Baber (Terrestrial and Wetland Ecology) on behalf of the Director-General of Conservation, including the memo provided as Appendix A to Dr Baber's evidence from Dr Michael Pingram on matters relating to freshwater ecology (**65**); and

5.5 Dr Colin O'Donnell (Long-tailed Bats) on behalf of the Director-General of Conservation (**65**).

6 I will also provide comment on ecological matters raised in the submission of Margaret and Murray Shaw (**88**) which has recently been provided to me and was not covered in my EIC.

7 The fact that this rebuttal statement does not respond to every matter raised in the evidence of submitter witnesses within my area of expertise should not be taken as acceptance of the matters raised. Rather, I rely on my earlier Ecological Assessment Report (*EAR*) provided as Appendix L to the Assessment of Environmental Effects (*AEE*), my EIC and this rebuttal statement to set out my

opinion on what I consider to be the key ecological matters for this hearing.

SUMMARY OF EVIDENCE

8 In my statement of rebuttal evidence, I have responded to the relevant sections of evidence presented by:

8.1 Kirsty Graveling, Senior Policy Advsior, on behalf of Waikato Regional Council (**32**);

8.2 Kevin Collier on behalf of Mangakotukutuku Stream Care Group (**45**);

8.3 Grant Blackie on behalf of Mangakotukutuku Stream Care Group (**45**);

8.4 Dr Matthew Baber on matters relating to terrstrial and wetland ecology on behalf of the Director-General of Conservation (**65**),

8.5 Appendix A to Dr Baber's evidence provided by Dr Michael Pingram on matters relating to freshwater ecology on behalf of the Director-General of Conservation (**65**); and

8.6 Dr Colin O'Donnell on matters relating long-tailed bats presented on behalf of the Director-General of Conservation (**65**).

9 I have also provided comment on ecological matters raised in the submission of Margaret and Murray Shaw (**88**) which has recently been provided to me and was not covered in my EIC.

10 I have agreed with a number of points raised in the expert evidence I have reviewed and the proposed conditions have been amended to reflect this.

11 With regard to matters of disagreement, I have disagreed with Ms Graveling's proposed inclusion of a condition requiring "like for like" replacement of habitats as most of the vegetation and habitat lost to the Project footprint has little or no resemblance to the original vegetation. What is proposed is replacement with vegetation and habitats much closer to the original which will ultimately have much higher biodiversity values than that lost. I therefore do not consider "like for like" to be an approporiate condition objective.

12 I disagree with Ms Graveling that further conditions regarding fauna are required at this time. Sufficient surveys have been undertaken to assess the effects of the Project on fauna (acknowledging the difficulties in accurately predicting effects on bats) to enable confirmation of the designations.

13 Dr Collier and Mr Blackie are both concerned that insufficient information (and in particular lack of fish and aquatic surveys) has been provided on the effects of the Project on ecology to be able to confirm the designation. I have disagreed with their positions. While, full quantification of effects was not undertaken until after the preferred route was determined, ecological values were a significant consideration during the route selection process. As much as possible has been done during route design to avoid key ecological features including gullies and stands of mature exotic and native trees. Avoiding known and likely bat habitat was given a high priority during this process. Subsequent to the determination of the Project footprint, detailed surveys of terrestrial and wetland habitats affected by the Project have been undertaken to quantify effects and habitat losses (noting remaining uncertainties concerning effects on bats) and these were provided with my EIC.

14 With respect to detailed surveys of the aquatic environment, including fish surveys, these matters will be addressed prior to lodgement of regional council consent applications when the stormwater system is designed in more detail. Conditions have been included in the HCC designation conditions requiring the the scope of pre-lodgement surveys to be specified in the EMMP. These conditions reflect the recommendations made by Dr Pingram on behalf of the Director-General of Conservation.

15 Dr Baber does not consider the 1:1 compensation ratio proposed in both sets of conditions provide adequate compensation for the indigenous dominated habitat lost for a variety of reasons. I disagree with him on this matter and have provided a detailed response to the points he raises to support his argument. However, most of the vegetation and habitats impacted by the Project and included in the compensation calculation are dominated by exotic vegetation and (bats aside) currently have low biodiversity value. The affected habitats are already dominated by edge effects and the construction of the road network will have no more than minor effect in this regard. The vegetation and habitat that is proposed to compensate for that lost will overall achieve significantly greater biodiversity value than the habitats lost within 10 years. In my opinion therefore the proposed 1:1 ratio is an appropriate compensation ratio. With respect to bats, while more habitat creation may be beneficial for bats, the orders of magnitude greater compensation requested by Dr O'Donnell, are unrealistic and cannot reasonably be justified.

16 A major thrust of Dr O'Donnell's evidence is that much more survey work is required to identify bat roost sites and then move the route if roost sites are found. In response I have noted that the location of known and likely bat habitats were a key consideration during the route planning stage along with a wide range of other issues and constraints. The Project team was successful in avoiding a known significant bat roost and much of the other known or likely bat

habitat. However avoidance of all habitat was not possible, nor is it a realistic expectation with a Project of the scale and a species that is so widely distributed within the landscape. To the extent possible the Project has already sought to minimise impact on bat habitat and the scope for route change is now very limited. The difficult, costly and likely onerous, surveys proposed by Dr O'Donnell, that carry no guaranteed outcome in terms of being able to successfully locate all bat roosts in the Project are, will not change this.

17 In conclusion, subsequent to these modifications and amendments to the conditions I reaffirm the conclusion of my EIC that apart from the uncertainties concerning the effects on long-tailed bats and the effectiveness of mitigation, I anticipate that the effects of the Project will be adequately avoided, remedied or mitigated and that the proposed conditions provide an opportunity to enhance and create habitats that will be of significantly higher quality than most of those lost to the Project footprint.

RESPONSE TO EXPERT EVIDENCE OF SUBMITTERS

Kirsty Graveling, Waikato Regional Council (WRC)

18 At paragraph 6.1 Ms Graveling notes that Policy 11.1 of the Proposed Regional Policy Statement (PRPS) refers to all indigenous biodiversity, including but not limited to section 6(c) of the RMA. Ms Graveling goes on to state that the approach in Policy 11.1 looks beyond just Significant Natural Areas (SNA's) to consider all the different elements that combine to provide ecosystem functioning. At paragraph 6.10, Ms Graveling states that in her opinion the following matters are outstanding:

18.1 WRC involvement in management plans;

18.2 Extension of the EMRP (now the EMMP for the HCC Designation conditions) applies to the Transport Agency designations to address all indigenous biodiversity across the whole designation;

18.3 Comprehensive indigenous fauna survey for the southern part of Hamilton; and

18.4 Supplementary Vegetation and Habitat Survey Report.

19 In response, with respect to the matter of all indigenous biodiversity I am unclear as to what is meant by the term. If the intent is to consider effects on all matters relating to biodiversity no matter how insignificant, then this is not an approach that I adopt or support when undertaking ecological assessments. The term all appears to set no lower limit on what is considered important or unimportant from a biodiversity perspective. I am of the opinion that introducing an all encompassing all into the RMA policy framework, without setting a lower limit on matters which are considered significant,

runs contrary to the intent of the RMA, as I understand it. In this respect I have not considered effects on all biodiversity and do not consider it necessary to account for every impact on biodiversity no matter how trivial in order to achieve a sustainable outcome.

20 That stated, I confirm that the ecological assessment undertaken by myself and my team has surveyed and assessed habitats that lie outside the SNA's. Only 1.1ha (~6%) of the 19.2ha of the total habitat surveyed and identified as being impacted by the Project footprint is located within SNA's. Furthermore, the areas lost to the Project footprint identified in my EIC[1] and for which it is proposed to replace with habitat restoration at a 1:1 ratio, includes areas within gullies that currently have low ecological value. In this respect I have considered the broader ecological context, recognising the importance of gullies as distinct physical and biological systems and their potential for future ecological restoration.

21 My responses to points raised by Ms Graveling (as set out in paragraphs 9.1 to 9.4 above) are as follows:

21.1 I agree that the inclusion of WRC in the preparation of the EMRP has merit. The Transport Agency designation conditions have been amended to reflect this[2]. Condition 12.1 of the HCC designation conditions already provides for consultation with WRC;

21.2 Proposed conditions 12 of the HCC designation conditions and the Transport Agency designations provide for the restoration of vegetation and habitats outside of SNA's, including areas of gully impacted by the Project footprint that currently have low ecological value both in terms of flora and fauna. This recognises the importance of the gullies as a system and their potential for future restoration. In order to provide greater certainty regarding the area in the south of Hamilton to be restored and what area is being replaced (which includes larger stands of mature trees outside gullies that are habitat for bats), an addition has been made to HCC's designation condition 12.3(c) to specify a minimum area of 13ha of vegetation and habitat restoration. The condition has also included no net loss as an objective of the EMMP[3]. However, I refer to the comments in my EAR[4] and EIC[5] that this cannot be guaranteed in the case of long-tailed bats. I disagree with Ms Graveling's proposed new clause 4[6]. "Like for like" habitats

[1] Paragraph 119, EIC.

[2] NZTA Designation Condition 12.1.

[3] Requested in paragraph 6.17, Ms Gravelings EIC.

[4] Section 5.5, EAR.

[5] Paragraph 105, EIC.

[6] HCC Desination Condition 12.3.

are for the most part not a suitable objective for restoration. Most of the vegetation and habitat lost to the Project footprint has little or no resemblance to the original vegetation (i.e. pre-human). It is proposed to restore vegetation that is quite different from most of that lost and much closer to the original. In my opinion, the proposed conditions 12proposed by the Requiring Authorities provide appropriate and adequate direction as to how the restoration should be carried out.

21.3 I disagree that further conditions regarding fauna are required at this time. Sufficient surveys have been undertaken to assess the effects of the Project on fauna (acknowledging the difficulties in accurately predicting effects on bats) and to enable confirmation of the designations. As has occurred for the Hamilton Section of the Waikato Expressway, surveys for "At Risk" and "Threatened" bird and lizard species will be required as conditions of regional council consents for vegetation clearance. This will adequately address the risks of threatened bird species (such as falcons) occupying breeding sites within the designation between now and when construction starts. These conditions will also address the small risk that "At Risk" or "Threatened" lizard species may occupy the Project footprint at the time of construction. Fish and aquatic fauna surveys will be required prior to lodging resource consents and conditions have been proposed for the HCC Designation to reflect the recommendations made by Dr Pingram on behalf of the Director-General of Conservation[7] with respect to pre-lodgement aquatic surveys. The requirements for further bat surveys are adequately addressed by the conditions proposed for all designations.

21.4 I agree with Ms Graveling's suggestion of including a condition[8] identifying restoration and mitigation opportunities at sites 8, 10 and 11, providing that such restoration is viewed as part of the mitigation for vegetation and habitats lost. A condition[9] has been included to this effect, noting that while restoration, enhancement and legal protection at these sites is desirable and would provide good mitigation for vegetation and habitats lost, such mitigation is dependent upon the goodwill of land owners.

[7] HCC Designation condition 12.6.

[8] Paragraphs 6.27 and 6.28, Ms Gravelings EIC.

[9] NZTA Designation condition 12.4.

Kevin Collier, Mangakotukutuku Stream Care Group (MSCG)

22 At paragraphs 2.1 to 2.5, Dr Collier outlines the ecological values of the Mangakotukutuku Stream and gully system, including values for bats.

23 I agree that the Mangakotukutuku Stream and gully system has significant ecological values and these have been recognised in the EAR and my EIC.

24 At paragraph 3.1, Dr Collier states that the route was established prior to assessment of values and quantum of effects.

25 I disagree with this statement. While full quantification of effects was not undertaken until after the preferred route was determined, ecological values were a significant consideration during the route selection process. Avoiding stands of mature native bush (which has been achieved), avoiding stands of mature exotic trees (particularly those known to contain roosting bats) and minimising the footprint on the gullies (to the extent possible) were key factors considered during the route selection process. Due to the high threat status of bats (Nationally Vulnerable), avoiding key bat habitat (stands of mature exotic and native trees) was given highest priority. However, when determining the route of a road network of this nature it is not realistic to expect that all ecological effects can be avoided, especially given that the Waikato River crossings within Hamilton City were fixed by previous decision making processes. Mr Eccles describes the process of route selection in greater detail in his EIC[10].

26 At paragraph 3.3, Dr Collier states that it is not clear from the information provided how much streambed will be lost. He also seeks a 3:1 ratio for stream habitat lost.

27 In response, I note that the Project team has gone to considerable lengths to avoid loss of streambed and gully habitat. Most of the gully stream crossings by the HCC designation will be via bridges which will avoid loss of instream habitat. Streambed habitat will be lost at two gully crossings: Site 5c and the crossing that includes Sites 5G and 5H[11]. The loss of stream habitat to culvert at Site 5c will be a length of ~80m. However, being close to the head of the gully and having been impacted by grazing, the stream channel in this location is poorly defined in places, having more the character of a wetland than a stream.

28 The length of stream lost within Sites 5G and 5H totals ~345m to the road footprint and stormwater wetland. Again these losses are from the head of the gully system where the gully is narrow and

[10] G. Eccles, EIC (Consultation and Assessment of Alternatives).

[11] J. Turner, EIC, Annexure 2.

shallow. There is a defined stream channel in this location and native fish may be present. However, while access to survey Sites 5G (access denied) and 5H (could cantact owners) could not be obtained, examination of aerial images and remote assessment from public roads shows that the impacted area is highly modified by grazing, weeds and a number of farm track crossings of the gully. My assessment based on the available information is that the values of this part of the gully are low relative to others. That stated, aquatic surveys will need to be undertaken prior to lodgement of resources consents to determine if mitigation is required e.g. rescue and relocation of fish.

29 I disagree that a 3:1 ratio for loss of streambed habitat is necessary to compensate for loss in streambed habitats in these locations. Firstly, in my opinion the highly modified nature of the streams in these locations do not merit a 3:1 mitigation ratio. Secondly, my proposed 1:1 ratio takes into account all habitats within the gully footprint, the gully slopes, the gully floor and wetlands, not just streambed. The approach is comprehensive and includes vegetation and habitats lost to the footprint within the gullies that currently have low ecological value e.g. weed communities and pasture. I am also of the opinion the gully restoration should include the whole gully profile from the top of the gully to the stream edge as recommended in Wall and Clarkson[12], and not just target the riparian zone.

30 At paragraph 3.5, Dr Collier expresses concern regarding the lack of mudfish surveys.

31 In response, the potential for mudfish to be present in some of the gully locations crossed by the Project is acknowledged. However, this matter will be dealt with when fish surveys are undertaken prior to lodgement of regional council consent applications. As Conditions[13] have been proposed for the HCC Designation to reflect the recommendations made by Dr Pingram on behalf of the Director-General of Conservation with respect to the scope of pre-lodgement aquatic surveys.

32 At paragraphs 3.6 to 3.8, Dr Collier raises a number of issues concerning online treatment, potential effects on aquatic life as a result of online treatment, and Mangakotukutuku Stream Care Group's (MSCG) preferred treatment approach and treatment standards. Dr Collier also expresses concern (at paragraph 3.9) about the lack of stormwater treatment proposals and considers that further assessment of the aquatic system should have been undertaken prior to designation.

[12] Wall, K.; Clarkson, B.D.; 2006. Gully restoration guide: a guide to assist in the ecological restoration of Hamilton's gully system. *Third Revised Edition. Hamilton City Council.*

[13] HCC Designation condition 12.6.

33 I note that Mr Hardy has responded to these matters in his rebuttal evidence[14] and has described the rationale for the approach taken and factors that are likely to influence the ultimate design of the stormwater system in the future. In view of his comments, the fact that the stormwater system has yet to be designed and the potential for the receiving environment to change between now and when resource consents are lodged, I am of the opinion that a detailed assessment of the aquatic environment would be premature at this time. However, the need for further assessment of the aquatic environment prior to lodgement of resource consent applications has been acknowledged and conditions have been proposed for the HCC Designation to reflect the recommendations made by Dr Pingram on behalf of the Director-General of Conservation.

Grant Blackie, Mangakotukutuku Stream Care Group (MSCG)

34 At paragraphs 3.1 to 3.5, Mr Blackie summarises key points of concern. I will respond to the following matters:

34.1 Lack of information;

34.2 Lack of certainty regarding mitigation; and

34.3 Section 42A Report recommendations.

35 My response to these points is as follows:

35.1 I disagree that the application lacks information on key ecological effects. Detailed information has been provided on key ecological effects of the Project on terrestrial and wetland ecosystems in the EAR and my EIC. However, I have acknowledged the difficulties in accurately predicting effects on long-tailed bats in both documents. I also acknowledge that detailed aquatic investigations have yet to be undertaken for reasons already stated in my response to Dr Collier. That stated, minimising the loss of instream habitat was a consideration during the selection and design of the Project footprint to the extent practicable. Most gully and stream crossings within the Hamilton City boundary will be via bridges which will avoid instream habitat loss and minimise permanent loss of gully vegetation. I note in this regard that the report produced for the MSCG by Tonkin and Taylor[15] stated, with respect to the proposed bridge crossing of the Mangakotukutuku Stream adjacent to the Waikato River, that "*potential effects on in-stream values and fauna as a result of the bridge are likely to be less than minor. Some gully vegetation will need to be cleared, but this is currently weed*

[14] C.A. Hardy, Rebuttal Evidence.

[15] Tonkin & Taylor, 2014. Mangakotukutuku Stream Project C Restoration Plan. *Report prepared for Mangakotukutuku Stream Care Group, T&T Ref: 61677, May 2014, page 11.*

dominated and projects such as this normally re-instate native vegetation". With regard to effects relating to those locations where culverts will be required and also effects of stormwater discharges, these matters will be addressed through aquatic surveys that will be undertaken prior to lodgement of Regional Council resource consent applications.

35.2 Apart from the aforementioned qualifications concerning aquatic ecosystems and long-tailed bats, I disagree that adverse effects have not been adequately quantified. All areas of vegetation and habitat lost from gullies, the margins of the Waikato River and larger stands of mature trees (that are known to be or likely to be bat habitat) have been described and quantified[16]. Comprehensive conditions have been proposed to avoid, remedy or mitigate adverse effects on affected ecosystems and their associated flora and fauna[17]. To provide greater certainty in terms of the quantum of area to be restored as compensation for habitat lost, HCC designation condition 12.3(c) has been amended to include a minimum restoration area of 13.0ha.

35.3 Based on my reading of the document, Mr Blackie misinterprets the conclusions of the Section 42A Report prepared by MWH. The conclusions identify a number of outstanding matters where further information is required before the s42A report authority consider the designation can be confirmed. With respect to ecology, the further information requested has been provided and was appended to my EIC[18].

36 At paragraph 6.3, Mr Blackie reiterates the proposal by MSCG that a Mangakotukutuku Stream and Gully Restoration framework or strategy be drawn up which identifies priority areas and locations for specific types of restoration activities. Dr Collier makes the same point in his evidence[19].

37 In response I note that the EMMP proposed in HCC's designation conditions provides for the identification of areas for restoration and timeframes[20] and will, in my opinion, achieve the objective sought by Mr Blackie without the need for preparation of an additional document. However, the preparation of the EMMP requires consultation with the MSCG and restoration activities could, at least in part, be aligned with the MSGC plans and priorities for the Mangakotukutuku Gully system, recognising that restoration work

[16] J. Turner, EIC, Annexure 2.

[17] HCC Designation condition 12.

[18] J. Turner, EIC, Annexures 1 and 2.

[19] K. Collier, EIC, paragraph 4.5.

[20] HCC Designation Condition 12.2(2).

also needs to include areas outside the Gully, notably the riparian margins of the Waikato River.

38 I have reviewed Mr Blackie's suggested re-wording of Condition 12 (at paragraph 7.6) and have recommended the acceptance of several of his proposed amendments where these are of a technical nature within my area of expertise[21].

Dr Matthew Baber, Director-General of Conservation

39 At paragraph 4.2, 5.3 and 5.4, Dr Baber takes the position that I have not provided contextual information and in doing so I have understated the significance of the indigenous dominated habitats.

40 I disagree with his statement for a number of reasons:

40.1 Indigenous dominated habitats form a very small proportion of the affected habitats. Only three locations of those surveyed (Sites 2, 12 and 13[22]) supported areas of vegetation dominated by native plant species greater than 500m^2. The total area dominated by natives and impacted by the designation footprint is 0.45ha or 2.3% of the vegetation and habitat lost to the Project footprint[23]. The majority of the vegetation and habitat impacted by the Project footprint is not indigenous dominated.

40.2 The ecological values of all the vegetation and habitats surveyed have been assessed against the criteria set out in Table 11-1 of the PRPS. Most of the sites surveyed did not meet any of the criteria relating to vegetation. In my opinion only one of the sites (Site 2) impacted by the Project footprint could be considered regionally significant although, given its compromised quality, this is a very conservative ranking. The remaining sites are at best, locally significant (Sites 12 and 13) on the basis of the vegetation present, with most areas impacted not achieving local significance on the basis of vegetation quality.

40.3 Most of the habitat surveyed is used, at least periodically, by long-tailed bats and indeed the same is likely to be true for a large percentage of the landscape to the south of Hamilton. I have discussed my reservation concerning defining areas as nationally significant purely on the basis of the presence of a threatened species in the EAR and my EIC[24]. However, I have acknowledged the gullies and Waikato River corridor, as well as large stands of mature trees, are likely to provide critical

[21] HCC Designation Conditions 12.2(1), 12.2(4), 12.4(7).

[22] J. Turner, EIC, Annexure 2.

[23] J. Turner, EIC, Annexure 2, Tables 3 & 4.

[24] EAR, Section 3.1, EIC paragraphs 66 to 68.

habitat for long-tailed bats[25]. I have also placed ranking of regional significance on these habitat for bats, with some aspects of the population (as a unique peri-urban population) being significant in a national context[26]. I have therefore already provided contextual information and have not understated ecological significance.

41 At paragraphs 4.3, 6.1 and 6.2, Dr Baber considers that I have not provided assessment of indirect effects and I have significantly underestimated the effects of the Project.

42 I disagree with his position on this matter. Edge effects can occur as a result of road projects but it does not necessarily automatically follow that significant edge effects always occur. Where habitats are highly modified and already dominated by edge effects, as is the case with the impacted habitats on this Project, the additional edge effects resulting from the road will be minimal. Dr Baber cites Young and Mitchell[27] to support his assertions. The Young and Mitchell paper is concerned with edge effects on mature native forest. Such forests, where they are of a large enough size have interiors that support micro-climatic conditions that are favoured by certain plants and animals. These are distinct from plant and animal species that favour the micro-climate that typically exists along forest edges. However, the forests described by Young and Mitchell need to have a mature canopy and be of a certain critical size to support a forest interior micro-climate. They state:

"Regularly shaped forest fragments of <9.0 ha are dominated by edge patterns and processes and that below 1.0 ha fragments do not support forest interior conditions or vegetation associations."

In other words, small areas of forest with a high edge to interior ratios are already dominated by edge effects and do not support a true forest interior micro-climate.

43 It is not appropriate in my opinion to compare vegetation and habitats impacted by the Project with mature native forest. There is no mature native forest impacted by the Project footprint. The native vegetation that is impacted does not have a mature native canopy. Furthermore, all of the vegetation and habitats impacted have a high edge to interior ratio and are already dominated by edge effects. Consequently, I consider that the edge effects that will result from this Project will be no more than minor.

[25] J. Turner, EIC, paragraph 68.

[26] J. Turner, EIC, paragraph 69.

[27] Young, A.; Mitchell, N.; 1994. Microclimate and vegetation edge effects in a fragmented podocarp-broadleaf forest in New Zealand. Biological Conservation 67, 1994, 63-72.

44 At paragraphs 4.5 and 7.2 to 7.6, Dr Baber states why he considers my approach to determining the magnitude and compensation proposed to be inadequate and that my proposed 1:1 mitigation ratio is unlikely to adequately address residual ecological effects. He makes a number of points in this regard:

44.1 It is good industry practice to specify how residual adverse effects on each vegetation type of habitat for indigenous fauna will be addressed[28] and he objects to a one-size-fits all multiplier;

44.2 The residual adverse effects on freshwater ecology do not appear to have been taken into account via the proposed ecological mitigation or compensation package;

44.3 A 1:1 mitigation or compensation multiplier will not be adequate due to the disproportionate loss of bat habitat in the short term;

44.4 Rarity and threat status of indigenous habitats that will be affected have not been adequately assessed in a local (ecological district), regional or national context; and

44.5 The proposed 1:1 ratio is lower than what is proposed for mitigation of similar habitat types for the Hamilton Section of the Waikato Expressway and the East-West Tamahere Link, and for every other development project that Dr Baber has been involved with where mitigation of residual adverse effects is considered desirable.

45 My response to these points are as follows:

<u>Industry good practice</u>

46 Compensation ratios are now often used to calculate the amount of habitat necessary to compensate for that habitat lost. However, while these are often presented as a robust approach to achievement of no net loss, there is no scientific consensus behind the numbers proposed. As an example, there was considerable debate on the matter of achievement of no net loss in connection with the Transmission Gully Board of Inquiry[29], and compensation ratios were a significant part of that debate. The Board stated with regard to the matter:

"It was not apparent to us why these particular compensation ratios were promoted and it appeared that there may have been a certain rule of thumb element to their selection. Ultimately we do not

[28] M. Baber, EIC, paragraph 7.4.

[29] Para 452, Final Report and Decision of the Board of Inquiry into Transmission Gully Proposal, Vol 1, June 2012.

consider that it is of any great moment in our decision, even appreciating the need for there to be a principled approach to the quantification of biodiversity offsets. It is not necessary for us to specify appropriate offset mitigation ratios in reaching our decision[30]".

47 The Board went on to specify three reasons for this. In summary these are:

47.1 *None of the witnesses identified any universally accepted ratio for the calculation of mitigation for vegetation loss;*

47.2 *The Board did not believe that it is a requirement of the RMA that no net loss be achieved in any given case;*

47.3 *Most significantly there was a certain academic ring about the debate in this regard*[31].

48 In my opinion these comments fairly reflect the state of development with regard to the matter of compensation ratios and the high level of subjectivity behind the figures proposed and agreed. Consequently, I am of the opinion that there is no agreed industry best practice.

Residual adverse effects on freshwater

49 Matters relating to residual effects on freshwater have been addressed in my response to Dr Collier.

Disproportionate loss of bat habitat

50 Dr Baber's statement is based on Dr O'Donnell's paragraph 9.18 where he requests replacement bat habitat of orders of magnitude greater than that lost for bats to have a chance of survival in Hamilton. I am unclear as to how such a requirement can be justified. The bats survive in a landscape that has been highly modified for over 100 years and in the past has supported significantly less habitat for bats than it does today. Most mature native trees were cleared from the landscape including the gullies and most of the exotic habitat used by bats today was not here 100 years ago. The Project will result in the removal of only a small proportion of the mature tree cover in the South Hamilton landscape. There are at least two known significant roost sites within the area that are completely avoided by the Project. The proposed restoration, given that it will be predominantly restored to forest, will provide more potential roost sites than the habitat that it

[30] Para 460, Final Report and Decision of the Board of Inquiry into Transmission Gully Proposal, Vol 1, June 2012.

[31] Paras 461 to 463, Final Report and Decision of the Board of Inquiry into Transmission Gully Proposal, Vol 1, June 2012.

replaces. I accept that there is a significant time lag between tree planting and cavity formation, however planting some areas with fast growing exotic trees such as poplars and English oaks, would help to partially counter this. Furthermore, planting more trees does not speed up the process of cavity formation so it is hard to see a justification for planting greater area to compensate for roost sites lost.

Rarity and threat status of indigenous habitats

51 The amount of indigenous dominated habitats lost to the Project footprint is small. While I concede that a higher compensation ratio may be appropriate for the loss of areas dominated by native vegetation, and in particular the regenerating native forest at Site 2[32], most of the vegetation and habitat lost is dominated by exotic vegetation and includes pasture and weed communities. Ordinarily vegetation and habitat of such poor quality would not merit mitigation. However, the application of a 1:1 multiplier to all vegetation and habitats impacted by the Project footprint, within gullies and along the margins of the Waikato River, recognises the overall importance of these corridors as distinct and connected physical and biological features. It also recognises the restoration potential of these environments. While some small areas of vegetation and habitat may merit a higher multiplier, most do not, and some arguably to do not merit mitigation at all. I am confident the proposed restoration and enhancement, following the principles set out in the conditions, will achieve a much higher quality of vegetation and habitat than most of that lost. Furthermore, these higher biodiversity values should be present within 10 years of planting establishment. On balance, with the exception of long-tailed bats, I anticipate that the proposed mitigation will achieve an overall net ecological gain. Consequently, I remain of the opinion that a 1:1 compensation ratio provides adequate mitigation for the ecological effects of the Project.

Lower mitigation ratios than other projects

52 There is no standard approach to arriving at compensation ratios. The habitats impacted on the Hamilton Section of the Waikato Expressway Project are of a different type and quality to vegetation impacted on the Project (i.e. large mature kahikatea trees are being lost on the Hamilton Section Project). Furthermore, I am of the opinion that the habitat creation to be undertaken on the Hamilton Section exceeds what is required to mitigate the effects of the Project in terms of habitat loss.

53 While Dr Baber may have proposed and had accepted higher compensation ratios on other projects, such ratios vary between

[32] J. Turner, EIC, Annexure 2.

projects and there is no universally accepted standard. I am aware of a recent resource consent application in the Wellington Region where a 1:1 compensation ratio was agreed as the basis for calculating the replacement area for loss of secondary native forest[33]. The Decision of the Commissioners accepted the proposed compensation based on this ratio[34]. The 1:1 ratio was only applicable to native dominated areas and not areas dominated by exotic species for which no compensation was required[35]. There are situations when a greater than 1:1 ratio is justified. However, where the vast majority of the affected area is dominated by exotics and is highly modified, and where the vegetation and habitat created or restored to replace it will achieve significantly greater overall biodiversity values within 10 years, I do not consider there to be a justification for a ratio greater than 1:1.

54 At paragraph 7.7, Dr Baber states a number of criteria on which he believes the compensation multiplier should be based:

54.1 Habitat significance;

54.2 Restoration lag;

54.3 Degree or significance of potential effects;

54.4 Degree of risk and uncertainty;

54.5 Mitigation effectiveness; and

54.6 Alignment with good practice.

55 Putting aside the issue of effects and mitigation of effects on bats, for which there is considerable uncertainty, I make the following responses to the points raised:

<u>Habitat significance</u>

56 I have already provided my rationale for the 1:1 multiplier.

<u>Restoration lag</u>

[33] Joint application by Burrell Demolition Limited / C & D Landfill Limited to Greater Wellington Regional Council and Wellington City Council to extend their existing construction and demolition landfill into an adjacent valley in the Owhiro Stream catchment. GWRC Reference WGN090036 [27108, 27109, 27110, 27111, 32267] WCC Reference SR215490. Decision of the Hearing Panel, 20th June 2014.

[34] Applications for resource consents and permits under the Greater Wellington Regional Council Reference 090036 and the Wellington City Council Reference SR215490, Burrell Demolition Ltd and C and D Landfill Ltd., Statement of Expert Evidenceof Roger MacGibbon, 4th December 2013.

[35] Roger MacGibbon, pers. comm.

57 There will be no mature native forest lost to the Project footprint. With respect to most of the habitat lost, greater biodiversity values will be achieved than currently provided by the habitats within a 10 year period.

Degree or significance of potential effects

58 My proposed 1:1 compensation ratio takes account of the fact that most of the vegetation and habitat that will be lost currently has low biodiversity value.

Degree of risk and uncertainty

59 The proposed approach[36] to restoration and enhancement has been successfully implemented within Hamilton City for many years. I consider the risk of failure to be low.

Mitigation effectiveness

60 The proposed approach to restoration and enhancement has been successfully implemented within Hamilton City for many years and shown to be highly effective in restoring biodiversity to gullies around Hamilton.

Alignment with good practice

61 I have already addressed the matter of good practice.

62 At paragraph 9.3, Dr Baber refers to the recommendations made by Dr Pingram with respect to freshwater ecology provided in Appendix A of his evidence.

63 In response I generally agree with Dr Pingram's assessment of values and potential effects. In order to provide certainty as to the scope of freshwater surveys to be undertaken prior to lodgement of applications for regional council consents, freshwater conditions, based on Dr Pingrams recommendation, have been included in the HC designation conditions [37]. I have not recommended inclusion of a condition relating to the management of sediments during the construction phase as typically these would be part of an Erosion and Sediment Control Plan which would be a condition of resource consents. I have also not included a condition relating to stormwater treatment as the system has not been designed in detail and specifying measures to avoid effects now would be premature.

64 Colin O'Donnell, Director-General of ConservationAt paragraph 3.6 Dr O'Donnell states that insufficient work has been done to identify

[36] Wall, K.; Clarkson, B.D.; 2006. Gully restoration guide: a guide to assist in the ecological restoration of Hamilton's gullt system. *Third Revised Edition. Hamilton City Council.*

[37] HCC Designation condition 12.6.

precisely where significant bat sites occur, particularly with regard to the location of roost sites and foraging habitats along the route. He goes on to state in paragraph 3.14 that the only real way to resolve potential impacts is to go through a rigorous process of roost identification and realignment of the Expressway to avoid both roost and feeding sites.

65 While I agree that we have not identified individual roost trees we have done sufficient work to identify key bat habitats within the Project area. Right from the Project outset the gullies, Waikato River corridor and stands of mature trees (native or exotic) were identified as known or likely bat habitat based on existing data and selective fieldwork. Considerable effort was made during the planning of the footprint alignment to minimise impact on these habitats. I note that Dr O'Donnell indicates that the bats will select the largest and oldest trees for roosting[38] and so our approach to minimising the loss of such trees is consistent with his statement. Most of the large stands of mature trees in the landscape have been avoided, and where stands of trees could not be avoided, loss of trees was minimised to the extent possible. Given that bats forage across much of the south Hamilton landscape designing a network to avoid all foraging habitat is an unrealistic objective. However, once again this has been minimised to the extent practicable.

66 Designing a road footprint is a complex process that needs to take into account a wide range of issues and constraints, not just effects on bats, as discussed in the EIC of Mr Eccles[39]. Further survey work is unlikely to reduce mature tree and bat habitat loss from its current levels. Not all potential roost trees could be avoided and I accept that there is a risk that some bat roost trees may be lost. On other projects in the area (Cambridge and Ngaruawahia Sections of the Expressway) tree roost removal protocols have been successfully used to reduce the risk of killing bats during tree felling. The effectiveness of the approach has been acknowledged by Dr Stuart Parsons[40].

67 At paragraph 3.8 and 7.11 Dr O'Donnell states that I have underestimated the potential impacts on bats.

68 In response I note my comments in my EAR[41] where I state that the effects of the Project and associated urban development could potentially exclude bats from the Hamilton City in the future and

[38] C. O'Donnell, EIC, paragraph 5.5.

[39] G. Eccles, EIC (Consultation and Assessment of Alternatives).

[40] S42A Supplementary Report and Proposed Resource Consent Conditions for: RMA 1991 Hearing of NZ Transport Agency (Applicant): Waikato Expressway – Hamilton Section, prepared by G. Cooper (WRC), 24th April 2014, Appendix F, Statement of Evideince of Stuart Parsons, paragraph 29.

[41] EAR, Section 5.5.

repeat the same comments in my EIC[42]. I therefore disagree that I underestimate the effects of the Project on long-tailed bats.

69 At paragraph 3.10 Dr O'Donnell indicates that the scale of the effects of the Project on the southern Hamilton bat population is likely to be significantly larger than other sections of the Waikato Expressway. He goes on to state that there are likely to be cumulative effects resulting from the construction of the various sections of the Expressway to the south of Hamilton.

70 I agree with this, particularly given the urbanisation that is planned for the Peacockes area.

71 At paragraph 3.12 Dr O'Donnell goes on to state that the conditions proposed for the designations are unlikely to ensure the maintenance of the bat population along the proposed route.

72 I agree that there is no certainty that with the implementation of the proposed conditions that bats will be retained with the City boundary and the risk that urbanisation will exclude bats is significant as I have already acknowledged. However, I disagree that all measures proposed to avoid, remedy and mitigate effects will necessarily be ineffective. The likely effectiveness of proposed measures is not known. The proposed avoidance, remediation and mitigation measures are a best endeavours approach, based on knowledge that has been accumulated concerning the local bat population and international experience concerning effects and appropriate mitigation.

73 I also note in this regard my EIC[43] and the statements of Dr Lloyd and Dr Parsons who estimate the baseline decline in the range 5 to 9%. Against such a baseline decline no mitigation for the effects of the Project no matter how effective could guarantee maintenance of the Hamilton bat population. For this reason the EMMP condition has been amended to refer to enhancing bat habitat.

74 At paragraph 3.13 Dr O'Donnell states that the suggested replacement of feeding habitats by replanting is unlikely to provide a viable alternative for > 50 years.

75 I disagree with this statement and it seems to be at odds with Dr O'Donnell's statement in paragraph 6.6 of his evidence, where he indicates that wetlands and small ponds can be important bat habitats. These can be established in much shorter timeframes < 5years. Furthermore, our surveys around the Waikato have found

[42] J. Turner, EIC, Paragraphs 93 and 94.

[43] J. Turner, EIC, Paragraph 91.

bats foraging around much younger stands of trees and shrubs than 50 years of age.

76 At paragraph 6.4 Dr O'Donnell disagrees with my evaluation of the non-native vegetation within the gullies.

77 These comments relate to the values of the gullies in terms of their vegetation quality and overall values for indigenous fauna, except bats. I acknowledge that exotic vegetation provides significant habitat for bats and I have also acknowledged that the gullies, Waikato River corridor and larger stands of mature trees are critical elements within this landscape for this species regardless of whether they are native or exotic[44].

78 At paragraph 6.6 Dr O'Donnell observes that we have not surveyed for bats around wetlands or ponds.

79 The wetlands and ponds impacted by the Project are mainly within gullies which have been identified as likely bat habitat.

80 At paragraph 6.7 Dr O'Donnell highlights the importance of the corridors and connectivity in the South Hamilton landscape.

81 I agree with his comments in this regard and have acknowledged the importance of the corridors in my EAR and EIC.

82 At paragraph 6.10 Dr O'Donnell disagrees with my position on the matter of national significance. At paragraph 6.11 Dr O'Donnell goes on to state that habitats supporting populations of threatened species are significant by definition and then discusses the importance of every individual in the population.

83 I agree that the Hamilton bat population is significant and in some respects is nationally important[45]. However, regional triggers[46] for national importance that are based on a simple presence/absence of a threatened species do not differentiate between populations and habitats in terms of their relative significance. As a consequence it becomes very difficult to put sites and populations into their proper context especially when species are found widely throughout a landscape. As Dr O'Donnell points out[47] a colony of long-tailed bats has been recorded ranging over 117km^2 and flying straight line distances of 19km. Such extensive ranges potentially result in large areas of landscape being determined as nationally important if

[44] J. Turner, EIC, Paragraph 68.

[45] J. Turner, EIC, Paragraph 69.

[46] Environment Waikato; Wildland Consultants Ltd. 2002: Areas of Significant Indigenous Vegetation and Habitats of Indigenous Fauna in the Waikato Region: Guidelines to applying Regional Criteria and Determine Level of Significance. Environment Waikato Technical Report TR 2002/15.

[47] C. O'Donnell, EIC, paragraph 5.11.

presence is the only trigger for significance. In this respect I do not consider the regional triggers as being particularly useful in terms of determining relative ecological values or conservation priorities.

84 At paragraph 7.4 Dr O'Donnell notes that there are no figures on the order of magnitude of how many bats might be killed, disturbed or displaced by the development in the Project Area.

85 I agree that no figures have been provided. Such information would be extremely difficult and costly to obtain. I do not consider that it is a realistic expectation that such information be provided with our current state of knowledge concerning bats and available methods of investigation. As with other road projects in New Zealand where bats are likely to be impacted, there is uncertainty in terms of effects and also effectiveness of mitigation.

86 At paragraph 7.6 Dr O'Donnell disagrees with my statement[48] concerning the significance of habitat loss and the impact of the Transport Agency designation.

87 In response I note that the extent of habitat loss associated with the Transport Agency's designations are about half that associated with the HCC designation. Furthermore, the construction of HCC's component of the Project in the Peacocke Structure Plan area will be accompanied byurbanisation. In terms of losing bats from within the City boundary the combined effect of the road and associated development in the Peacocke area presents a far greater risk than does the Transport Agency component of the Project, given the negative impact on long-tailed bats that appears to co-incide with urbanisation[49]. It is noted that the Transport Agency part of the Project impacts on a rural environment that already has roads and other transportation infrastructure, and the bats persist in this area despite this development.

88 At paragraph 7.7. Dr O'Donnell states that he would not assume that bats would move elsewhere or survive if displaced.

89 I agree, neither do I.

90 At paragraph 7.9 Dr O'Donnell disagrees with Mr Eccles statement that while in the worst case scenario the effects on bats might be high, the species is highly likely to remain present elsewhere in the Waikato landscape. He goes on to point out that long-tailed bats are threatened throughout their range and conservation efforts are required at other sites as well if the species is to recover.

[48] J. Turner, EIC, Paragraph 69.

[49] Kessels & Assocates 2012. Hamilton City Bat Survey 2011-2012. Kessels & Associates Ltd for Project Echo, 2012.

91 I agree that bats are threatened throughout their range. However, the decline in the wider landscape is not the responsibility of the Project. If bats do disappear from the surrounding landscape it is unlikely that this will be due to the Project. Furthermore, if more extensive and fully protected areas such as the Maungatautari Sanctuary were to fail as bat refuges, then there is very little hope for the Hamilton bat population, whether there is development to the south of Hamilton or not. Assuming that conservation measures are put in place by agencies such as the Department of Conservation that address the underlying baseline decline in bats, then it is reasonable to assume that if bats were to be lost from within Hamilton City they would persist in the wider Waikato landscape.

92 In paragraphs 8.1 to 8.9 Dr O'Donnell discusses the adequacy of the information provided to evaluate the Project and is critical of various aspects of the approach used.

93 The approach to survey and investigative techniques used on the Project is similar to approaches used to investigate the bats associated with other road Projects in the Region. While I accept that it is possible that not all roost sites have been avoided the approach taken has been to minimise the loss of known and likely bat roost habitat. Further surveying is unlikely to result in a reduction of potential roost tree loss since the determination of the footprint has had to take into account a wide range of other issues and constraints not just bats. There are likely to be residual effects on bats that cannot be avoided; the proposed conditions for the designations are designed to help address these residual effects. The conditions include provisions for further baseline surveys to assist in mitigation design.

94 At paragraph 9.5 to 9.9 Dr O'Donnell is critical of the proposal to fell trees using tree removal protocols that have been employed on other projects. He has particular concerns with respect to felling trees in the winter period.

95 On other projects in the area (Cambridge and Ngaruawahia Sections of the Expressway) tree roost removal protocols have been successfully used to reduce the risk of killing bats during tree felling. The effectiveness of the approach has been acknowledged by Dr Parsons[50]. However, if good evidence emerges between now and when the Project is constructed that winter felling should be avoided then I am sure that the protocols can be refined to accommodate this.

[50] S42A Supplementary Report and Proposed Resource Consent Conditions for: RMA 1991 Hearing of NZ Transport Agency (Applicant): Waikato Expressway – Hamilton Section, prepared by G. Cooper (WRC), 24th April 2014, Appendix F, Statement of Evideince of Stuart Parsons, paragraph 29.

96 At paragraphs 9.14 to 9.32 Dr O'Donnell states various reasons why he considers that the proposed measures have not been proved useful in New Zealand or will restore habitats over too long a timeframe. Amongst other matters his comments relate to:

96.1 Provision of artificial bat roosts;

96.2 Provision of new plantings;

96.3 Measures to minimise fragmentation; and

96.4 Monitoring and reporting.

97 In response I accept that given that effects of roads on bats in New Zealand is a relatively new issue and that effects of roads on bats in this country are poorly understood, it follows that any mitigation proposed will be somewhat experimental. However, I do not consider that to be a reason not to undertake mitigation.

98 My responses to Dr O'Donnell's specific comments are as follows:

98.1 Dr O'Donnell takes the position that artificial bat roosts are not worth providing. If there is a consensus of expert opinion that artificial roosts are not worth pursuing then artificial roosts should be excluded from the mitigation plan. However, given the lag time prior to construction, the opportunity exists to review trials of other designs and I am not yet convinced that all avenues have been explored with respect to this issue.

98.2 I acknowledge that it takes time for trees to reach a level of maturity where they will form cavities. However, the time lag before construction begins provides an opportunity to advance the process by early planting of roost trees. English oaks grow quickly in the Waikato and may form cavities at around 50 years, much earlier than many native species. Poplars, depending upon the species, could be cavity bearing within 30 years. Dr Brian Lloyd indicated[51] in his evidence concerning the Hamilton Section that cabbage trees could be cavity bearing within 20 years. I disagree with Dr O'Donnell's statement that for the bats to have some chance of persistence then the compensation ratio should be "orders of magnitude" greater. I can see no basis for this. Planting 100 times more trees will not make them cavity bearing any faster.

98.3 Dr O'Donnell's comments with respect to minimising fragmentation relate primarily to reduction of light spill and

[51] Hamilton Section of the Waikato Expressway, Statement of Evidence of Dr Brian Lloyd for the Director-General of Conservation, paragraph 11.8.

he points to the fact that there is no evidence of effectiveness. I accept there is no evidence of effectiveness at the present time with respect to long-tailed bats. However, based on my field observations, where I have observed bats feeding on the edge, but not within lit zones, I am of the opinion they merit inclusion in bat mitigation plans. This view is shared by Dr Lloyd[52] and Dr Parsons[53].

98.4 Monitoring and reporting is not being proposed as mitigation as such. However, monitoring is important in furthering our understanding of the South Hamilton bat population, our understanding of their response to development and assisting in refining our approach to mitigation. Without advancement in knowledge concerning the ecology of the species and how roads and other forms of development affect them, it will be difficult to conserve them. If monitoring results in advancement in knowledge that lead to more effective mitigation of the effects of development, then it is helping in the process of mitigating the effects of projects such as Southern Links and advancing the conservation of the species.

99 At paragraphs 9.29 to 9.30 Dr O'Donnell recommends further extensive surveying to include radio tracking and further acoustic surveying to be used to identify roost sites, and if necessary, re-align sections of the Project to avoid both roost and feeding sites.

100 I consider his recommendations to be unrealistic for a number of reasons:

100.1 I am not an expert in radio tracking however from what I understand of the method from discussions with colleagues, it is difficult, costly and onerous, with no guaranteed outcome in terms of being able to successfully locate all bat roosts in the Project area;

100.2 The alignment has already been determined through a robust process, which considered effects on bats, but also a wide range of other issues and constraints. I have been involved in many major road development projects and I know from experience that it is very rarely possible to design a route purely on the basis of avoiding ecological effects;

[52] Hamilton Section of the Waikato Expressway, Statement of Evidence of Dr Brian Lloyd for the Director-General of Conservation, paragraph 11.28.

[53] S42A Supplementary Report and Proposed Resource Consent Conditions for: RMA 1991 Hearing of NZ Transport Agency (Applicant): Waikato Expressway – Hamilton Section, prepared by G. Cooper (WRC), 24th April 2014, Appendix F, Statement of Evideince of Stuart Parsons, paragraph 26.

100.3 Bat feeding habitats are found throughout much of the landscape and include the Waikato River corridor and the gullies. Avoiding these habitats completely is not possible.

101 At paragraph 10.5 Dr O'Donnell states that long-tailed bats have the capacity to survive if enough forest or woodland habitat remains with suitable roosting and breeding habitats. He also points to the need for long-term strategies and collaboration between HCC and the community to ensure persistence of bats within Hamilton.

102 I generally agree with his comments. To the extent possible the Project has already sought to minimise impact on bat habitat and the proposed EMMP is intended to provide a platform aimed at helping to retain bats within the City.

RESPONSE TO SUBMITTERS

Margaret and Murray Shaw

103 Margaret and Murray Shaw in their submission highlight the improvements they have made to their property over a twenty year period and some of the ecological values that have resulted. Most notable is the fact that dabchick have bred on their ponds. They request compensation for the work they have put into the property and the improvements that have resulted.

104 I cannot comment on matters of compensation for personal effort. The Shaws' efforts will have resulted in some ecological biodiversity gains for some species. The occurrence of breeding dabchick is of note as this species is classified as threatened (nationally vulnerable). This species is capable of colonising newly created waterbodies if conditions are suitable, sometimes quite rapidly. The small extent of habitat lost from the Shaws' ponds should not have a significant impact on this species. I don't anticipate disturbance from the road to be a major issue either. I have experience of a site on the Kapiti Coast where a small shallow water body has been colonised by several pairs of breeding dabchicks despite being only 25m from the North Island Main Railway Line and 200m from State Highway 1. The habitat losses from the Shaw property have been included in the calculations of habitats lost and I am confident that the proposed mitigation will adequately compensate for any short-term biodiversity losses.

CONCLUSIONS

105 I have read the statements of expert evidence provided by submitters that are relevant to my area of expertise. I have agreed with a number of points raised in their evidence and the proposed conditions have been amended to reflect this. The main amendments that have been made are as follows:

HCC Conditions

105.1 Condition 12.2 has been amended to include an aim of achieving no net loss (requested by Ms Graveling);

105.2 Condition 12.2(1) now refers to enhancement of bat habitat (requested by Mr Blackie);

105.3 Condition 12.2(4) now includes reference to aquatic and wetland values (requested by Mr Blackie);

105.4 Condition 12.3(3) now refers to a minimum restoration area of 13ha to provide certainty as to the area of habitat that is being replaced (in response to the concerns raised by a number of submitters); and

105.5 Condition 12.6 specifying the scope of aquatic surveys to be undertaken prior to lodgement of resource consents (in response to recommendations made by Dr Pingram and in response to some of the matters raised by Dr Collier).

Transport Agency Conditions

105.6 Condition 12. has been amended to include WRC as a consultee in the development of the ERMP (requested by Ms Graveling);

105.7 Conditions 12.2 and 12.3 have been inserted to provide objectives for the EMRP and provide stronger linkage with the EMMP (in response to concerns raised by a number of submitters);

105.8 Condition 12.2 now includes reference to aquatic and wetland values (requested by Mr Blackie);

105.9 Condition 12.4 refers to a minimum restoration area of 6.5ha to provide certainty as to the area of habitat that is being replaced (in response to the concerns raised by a number ofsubmitters); and

105.10 Condition 12.4 provides for restoration, enhancement and protection of Sites 8, 10 and 11 as a mitigation option (requested by Ms Graveling).

106 Subsequent to these modifications and amendments to the conditions I reaffirm the conclusion of my EIC that apart from the uncertainties concerning the effects on long-tailed bats and the effectiveness of mitigation, I anticipate that the effects of the Project will be adequately avoided, remedied or mitigated and that the proposed conditions provide an opportunity to enhance and create habitats that will be significantly higher quality than most of those lost to the Project footprint.

John Paul Turner

8 July 2014