

**BEFORE THE THAMES COROMANDEL DISTRICT COUNCIL
INDEPENDENT HEARING COMMISSIONER**

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a Resource Consent Application by Serenity Retreat Limited for a land use consent to establish travellers' accommodation, and a function and wedding facility at Lot 17, 206A Silverstream Falls, Tairua Hill.

STATEMENT OF EVIDENCE OF LOUISE MARIA SAUNDERS

ON BEHALF OF SERENITY RETREAT LIMITED

12 April 2016

1.0 QUALIFICATIONS AND EXPERTISE

1.1 My name is Louise Maria Saunders. I am a Principal and Senior Ecologist with the environmental consulting company Boffa Miskell Ltd (**BML**). I hold the qualifications of Bachelor of Science (Zoology) from Massey University and Master of Science (Honours) from Canterbury University. I have been a professional ecologist and environmental scientist over the past twenty one years.

1.2 I have been part of the Ecology team in the Tauranga office of BML since 2003. Previously, I worked as an environmental Scientist for Tonkin & Taylor Ltd and as a freshwater ecology technician for the Bay of Plenty Regional Council.

1.3 My specialist skills lie in the fields of:

- Assessment of ecological values of freshwater, wetland, and terrestrial ecosystems;
- Ecological restoration of a range of ecosystem types; and
- Mitigation of the effects of land use and development.

I have undertaken ecological surveys in a wide range of native vegetation, wetland, and stream habitats and have prepared numerous assessments of the ecological effects of a diverse range of development projects, including the 120ha Rotokauri Structure Plan Area and associated industrial development, and the 822ha Ruakura Structure Plan Area and associated residential, commercial and industrial development. I have first-hand experience of the Silverstream Falls vegetation growth and development both through observation from State Highway 25 and brief site visits since approximately 2003, prior to subdivision occurring.

1.4 In this matter, I was engaged by Serenity Retreat Limited to provide ecological advice and complete an ecological assessment of the site (206A Silverstream Falls, Whenuakite) including the potential effects of the proposed activity on the ecological values of the site.

- 1.5 My statement of evidence is given in relation to the application for a land use consent for the development of travellers' accommodation units and a facility for weddings, conferences, and other functions. I have been asked to provide evidence in relation to the potential ecological effects of the Proposal.

2.0 CODE OF CONDUCT

- 1.1 I have read the 'Code of Conduct for Expert Witnesses' as contained in the Environment Court Practice Note 2014 and my evidence has been prepared in compliance with that Code. The evidence in my statement is within my area of expertise, except where I state that I am relying on the evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

3.0 SCOPE OF EVIDENCE

- 3.1 My evidence addresses the existing ecological values of Lot 17 and potential effects of the Proposal on the biodiversity values of the site. My evidence specifically considers the potential ecological effect of the Proposal compared to the existing uses of the site and surrounding areas, and in relation to the wider vegetation feature with which Lot 17 is contiguous.
- 3.2 The fact that this brief of evidence does not respond to every matter raised in the evidence of submitters within my area of expertise should not be taken as acceptance of the matters raised. Rather, I rely on:
- (a) Boffa Miskell Ltd letter dated 17 December 2014 providing expert response on landscape and ecology matters to Thames Coromandel District Council s92 Request for Further Information¹ (**BML letter 1**), and

¹ Boffa Miskell letter dated 17 December 2014. Prepared for Serenity Retreat Ltd, to Dave Lamason, Planners Plus Ltd.

- (b) Boffa Miskell Ltd letter dated 16 December 2015 providing expert response on ecology matters to Thames Coromandel District Council s92 Request for Further Information and in response to submitters² (**BML letter 2**).
- (c) This brief of evidence.
- (d) The evidence in chief of Mrs Rebecca Ryder regarding landscape values,
- (e) The evidence in chief of Mr John McLennan regarding North Island brown kiwi ecology, and
- (f) The evidence in chief of David Lamason regarding planning matters.

3.3 In this statement of evidence I will discuss the following:

- My involvement in the proceedings,
- A description of the ecological values on site,
- Potential adverse effects from the proposed development,
- Address submissions related to ecology, and
- Conclusions.

4.0 INVOLVEMENT IN THE PROCEEDINGS

4.1 My involvement in the proceedings has been to provide expert ecology advice. I visited the site with **Rebecca Ryder**, BML landscape architect, on 23 May 2014. I have reviewed the following documents:

² Boffa Miskell letter dated 16 December 2015. Prepared for Serenity Retreat Ltd, to Dave Lamason, Planners Plus Ltd.

- (a) Kessels and Associates Ltd (2006). Silverstream Falls: Ecological Assessment of Proposed Subdivision. Report prepared for Professional Contractors Ltd.
 - (b) Kessels Ecology Letter to Whenua Nature Care dated 10 September 2013. Ecological Significance Evaluation Lot 17 – Silver Stream Falls.
 - (c) Waikato Regional Council Proposed Regional Policy Statement. Chapter 11 Indigenous Biodiversity
 - (d) Waikato Regional Council and Wildland Consultants Ltd (2002). Areas of Significant Indigenous Vegetation and Habitats of Indigenous Fauna in the Waikato Region. Guidelines to apply Regional Criteria and Determine Level of Significance.
 - (e) Red Admiral Ecology (2013). Small scale kiwi surveys about Silverstream Falls, 2012/13. Contract report 2013/11
 - (a) Department of Conservation (1995) Coromandel Ecological Region Survey Report for the Protected Natural Areas Programme (1990, reprint with corrections 1995).
- 4.2 I provided North Island Brown Kiwi expert Mr John McLennan with a full written and verbal briefing on the Proposal and reviewed his report on potential effects on kiwi at the site.

5.0 SITE AND EXISTING ENVIRONMENT

Vegetation

- 5.1 The wider Silverstream Falls subdivision area, including Lot 17, was assessed by Kessels and Associates in 2006. The subdivision was observed to be vegetated in a mosaic of scrub, regenerating shrubland, and secondary forest. Historical activities, such as logging, fires and gum-digging, were considered to have removed the original forest and two small areas of regenerating forest are found in the gullies of the subdivision and adjacent land. I concur

with this assessment, noting that the vegetation has matured in the ten years since the Kessels assessment.

- 5.2 At that time, the Kessels report stated that the ecological significance of the Silverstream Falls vegetation was marginal at the time of survey. However, the subdivision site achieved regional significance as part of a larger vegetation feature because of its contiguousness with the adjacent portions of the Coromandel Forest Park. Protection of indigenous vegetation in the subdivision provided a complete ecological sequence from montane to coastal bioclimatic zones. I concur with this assessment.
- 5.3 Lot 17 has a total area of 16.38ha of which almost all is covered in indigenous broadleaved shrubland comprised of common indigenous species typical of lowland and semi-coastal shrubland. In areas that have been previously cleared, the vegetation is comprised of weeds such as gorse (*Ulex europaeus*), willow leaved hakea (*Hakea salicifolia*), and cotoneaster (*Cotoneaster glaucophyllus*) along with manuka (*Leptospermum scoparium*).

Native Fauna

- 5.4 BML has not carried out avifauna (bird and bat) surveys at the site. Based on my experience with habitats of this type and given that the site is part of a large contiguous tract of shrubland and forest vegetation, a range of indigenous birds are likely to be resident or occasionally present in Lot 17's vegetation. These include kereru (*Hemiphagia novaeseelandiae*), tui (*Prothemadera novaeseelandiae*), fantail (*Rhipidura fuliginosa*), waxeye (*Zosterops lateralis*), North Island rifleman (*Acanthisitta chloris granti*), morepork (*Ninox novaeseelandiae novaeseelandiae*), and kingfisher (*Halcyon sancta vagans*). It is possible that North Island tomtit (*Petroica macrocephala macrocephala*), kaka (*Nestor meridionalis septentrionalis*), and long-tailed cuckoo (*Eudynamis taitensis*) may be occasionally present. Wetland birds such as pukeko (*Porphyrio porphyrio melanotus*) and North Island fernbird (*Bowdleria vealeae*) may occupy the wetland areas. Common exotic birds such as sparrow (*Passer domesticus*), blackbird (*Turdus merula*), thrush (*Turdus philomelos*), and Welcome swallow

- (*Hirundo tahitica neoxena*) may also frequent the site. This aligns with the 2006 Kessels assessment.
- 5.5 Long-tailed bats (*Chalinolobus tuberculatus*) have been recorded in the Tairua Ecological District. Lot 17's vegetation does not provide suitable roosting habitat (namely mature cavity bearing trees) but bats may use the Silverstream Falls site intermittently for foraging if they are present in the wider area.
- 5.6 As documented in the Red Admiral report, North Island brown kiwi (*Apteryx australis mantelli*) have been heard within Lot 17. The value of Lot 17 vegetation for kiwi is discussed in the evidence of Mr McLennan.
- 5.7 BML has not carried out herpetofauna (lizard) surveys at the site. I provided a description of Lot 17's location and vegetation composition to Katherine Muchna, BML's herpetofauna expert, who is experienced with lizard habitat on the Coromandel Peninsula. Ms Muchna considers that Lot 17 may provide habitat for forest gecko (*Mokopirirakau granulatus*), green gecko (*Naultinus elegans*), and common gecko (*Hoplodactylus maculatus*) in the shrubland and forest canopy, and copper skink (*Oligosoma aenea*) and ornate skink (*Oligosoma ornatum*) in the forest floor, shrubland margins and cleared areas. This aligns with the 2006 Kessels assessment.
- 5.8 A tributary of the Manuka Stream flows north along the eastern boundary. BML has not carried out fish surveys at the site. The Kessel's report (2006) described the aquatic macroinvertebrate community assemblage of the tributary of the Manuka Stream as being dominated by species characteristic of high water quality. The report noted that the indigenous freshwater fish community of the stream is likely to include banded kokopu (*Galaxias fasciatus*), redfin bully (*Gobiomorphus huttoni*), longfin eel (*Anguilla dieffenbachii*), and koaro (*Galaxias brevipennis*). I concur that these indigenous fish species are likely to be present provided that barriers to fish passage are absent downstream.

Legal Protection and Ecological Significance

- 5.9 More than 61% of Lot 17's vegetation (10.00ha) has legal protection in perpetuity as a result of two QEII Open Space covenants. QEII covenants place a legal encumbrance on land titles preventing removal of or damage to protected vegetation and/or features. The protected vegetation within the QEII covenant areas of Lot 17 will not be affected by the Proposal. There are three Protected Natural Areas (PNA) and three Recommended Areas for Protection (RAP) identified by the Department of Conservation close to Silverstream Falls. None of these RAP or PNA will be affected by the Proposal.
- 5.10 The ecological significance of Lot 17 can be determined by assessing its values against the criteria of the Proposed Waikato Regional Policy Statement (RPS) as set out in RPS Section 11A. I concur with the Kessels 2006 evaluation of the site as meeting Criteria 10³ and 11⁴. The two QEII covenants subsequently applied to Lot 17 mean that the site now also meets Criterion 1⁵. The documented presence of North Island brown kiwi as well as potential (but undocumented) presence of other threatened species (namely longfin eel, redfin bully, koaro, rifleman, long-tailed cuckoo, green gecko, forest gecko, and ornate skink) means Lot 17 also meets Criterion 3⁶. Based on the guidance document⁷ for assessing the level of ecological significance, I concur with the Kessels 2013 assessment that the presence in Lot 17 of North Island brown kiwi

³ Proposed Waikato Regional Policy Statement Section 11A Table 11-1 Criterion 10: It is an area of indigenous vegetation or habitat that forms part of an ecological sequence, that is either not common in the Waikato region or an ecological district, or is an exceptional, representative example of its type.

⁴ Proposed Waikato Regional Policy Statement Section 11A Table 11-1 Criterion 11: It is an area of indigenous vegetation or habitat for indigenous species (which habitat is either naturally occurring or has been established as a mitigation measure) that forms, either on its own or in combination with other similar areas, an ecological buffer, linkage or corridor and which is necessary to protect any site identified as significant under criteria 1-10 from external adverse effects.

⁵ Proposed Waikato Regional Policy Statement Section 11A Table 11-1 Criterion 1: It is indigenous vegetation or habitat for indigenous fauna that is currently, or is recommended to be, set aside by statute or covenant or by the Nature Heritage Fund, or Nga Whenua Rahui committees, or the Queen Elizabeth the Second National Trust Board of Directors, specifically for the protection of biodiversity, and meets at least one of criteria 3-11.

⁶ Proposed Waikato Regional Policy Statement Section 11A Table 11-1 Criterion 3: It is vegetation or habitat that is currently habitat for indigenous species or associations of indigenous species that are:

- classed as threatened or at risk, or
- endemic to the Waikato region, or
- at the limit of their natural range.

⁷ Environment Waikato & Wildland Consultants Ltd 2002. Areas of significant indigenous vegetation and habitats of indigenous fauna in the Waikato Region: Guidelines to apply regional criteria and determine level of significance. Environment Waikato Technical Report TR2002/15. Report prepared for Environment Waikato. 39pp.

with a threat ranking of nationally vulnerable⁸ confers national significance on the site for its kiwi habitat value.

- 5.11 In summary, Silverstream Falls, are assessed as having regional significance due to being contiguous with a larger vegetation feature, namely within the Coromandel State Forest Park and other reserves. The significance of the Silverstream Falls subdivision (and its associated QEII covenants protecting indigenous vegetation) lies principally in the connectivity it provides between two portions of the Forest Park to achieve a complete ecological sequence between montane and sub-montane vegetation to the west and coastal vegetation to the east. Lot 17 achieves a higher degree of significance because of the documented presence of a species with a national threat status. Therefore, the ecological significance of Lot 17 vegetation is achieved by virtue of its physical position between two larger vegetation features and its habitat value for kiwi, rather than the intrinsic value of the vegetation itself.

6.0 THE PROPOSED ACTIVITY

- 6.1 Serenity Retreat Ltd wishes to establish a wedding reception facility and accommodation at 206A Silverstream Falls (Lot 17), off SH25, Tairua. The proposed development will consist of the construction of 14 travellers' accommodation units (units), a reception centre, access road and driveways, a parking area, and infrastructure associated with the buildings. A detailed overview of the proposed development is provided in the evidence of Mr Lamason.
- 6.2 Based on the information provided to BML, the total area of vegetation to be cleared for construction is approximately 14,621m². This includes 4,612m² of roads and driveways and 10,009m² for units, the function centre and carpark. This comprises 8.9% of the total 16.38ha site. Of this, 6,514m² is proposed to be revegetated with indigenous shrubland and canopy species to mitigate

⁸ Robertson HA, Dowding JE, Elliott GP, Hitchmough RA, Miskelly CM, O'Donnell CJF, Powlesland RG, Sagar PM, Scofield RP, Taylor GA. 2013: Conservation status of New Zealand birds, 2012. New Zealand Threat Classification Series 4. 22 p. Department of Conservation, Wellington, New Zealand.

landscape effects and prevent weed incursion as set out in the evidence of Ms Ryder at paragraph 6.2. Therefore after the proposed revegetation is completed, the net vegetation clearance will be approximately 8,107m² which equates to 4.9% of Lot 17.

6.3 My recommendation to the applicant was that a Construction Management Plan be prepared that all contractors are required to abide by as part of their contract. The Construction Management Plan should include, as a minimum, methods to:

- Minimise the vegetation clearance and disturbance,
- Avoid rubbish, debris and earthworks being pushed into the adjacent bush, and
- Avoid weed material being brought into the site.

7.0 ASSESSMENT OF ECOLOGICAL EFFECTS

7.1 When considering the potential effects of the proposal on ecological values, I consider the key effects are:

- Construction phase activities including vegetation removal, earthworks, and debris disposal.
- Operational phase activities including traffic movement, and increased light and noise levels.

Vegetation

7.2 None of the QEII covenant vegetation will be affected by the proposed vegetation removal. The travellers' accommodation unit sites close to the QEII covenant boundary are nestled into the bush such that only a small area of vegetation is being cleared to create the unit building sites. Further, the unit sites are located on the southern side of the QEII covenant boundary opposite the prevailing northerly wind flow, and the buildings themselves will provide a physical buffer. The potential for edge effects resulting from vegetation removal close to QEII covenant vegetation is considered to be very low. The location and scale of other

vegetation clearance areas for units, accessways, and the function centre in relation to retained vegetation and topography is such that I expect edge effects in adjacent vegetation to be minimal. The proposed revegetation will also minimise edge effects.

- 7.3 Botanical diversity of Lot 17 and the contiguous vegetation of the subdivision is expected to be unaffected by the small scale of vegetation clearance. Removal of the weed species cotoneaster and hakea on previously cleared areas will improve biodiversity and reduce threats to the vegetation. As recommended in the Construction Management Plan, all equipment to be brought on site will be cleaned and checked for seeds and plant fragments to prevent the introduction and/or spread of exotic plant species.

Native Fauna

- 7.4 Birds are highly mobile and will relocate to adjacent suitable habitat should they be present in the vegetation clearance areas. Most of the bird species mentioned readily occupy bush clad urban and peri-urban areas and are unlikely to be affected by noise, or will readily relocate to other parts of the site and surrounding areas. The effect of the small amount of vegetation removal on available habitat and food resources for indigenous birds, in the context of the very large surrounding vegetation feature, is expected to be negligible. Provided that vegetation clearance occurs in late summer or early autumn to avoid the main bird nesting season, I expect effects on avifauna to be negligible. Effects on North Island brown kiwi are discussed in John McLennan's statement of evidence.
- 7.5 Lot 17 does not contain vegetation suitable for bat roosting. Additional light and noise resulting from the proposal over such a small area is unlikely to have any effect on bat foraging. Long tailed bats have been observed hunting insects attracted to the flood lights at Waikato Stadium (Leaman 2012⁹). If long tailed bats are

⁹ Leaman A 2012. Bats have bird's-eye view of Waikato Stadium. Article published in Waikato Times on 23/06/2012.

occasionally present at Lot 17, night lighting may have a similar, if much smaller, benefit for bats.

- 7.6 Similar to birds, lizards are also mobile and will disperse into adjacent shrubland if present in cleared vegetation. The effect of the small amount of vegetation removal on available habitat and food resources for indigenous lizards, in the context of the very large surrounding vegetation feature, is expected to be negligible. Provided that cleared vegetation is lowered to the ground, piled at the bush edge, left to degrade naturally, and not mulched, lizards are expected to self-disperse and effects on lizards are expected to be negligible. If the vegetation is to be removed immediately from site, effects on lizards can be avoided by having a specialist herpetologist (with appropriate lizard handling permits required from DOC) supervising vegetation clearance, searching felled material, and transferring lizards immediately into adjacent vegetation.
- 7.7 The proposal has no effect on the Manuka Stream tributary, and therefore I expect there to be no effects from the proposal on indigenous fish or macroinvertebrates.

Ecological Significance

- 7.8 To establish the significance of a proposal's effect on ecological values, BML uses a two stage assessment process that first assesses the magnitude of the effect and then considers the significance of the effect. This approach has been supported on numerous occasions by hearings panels, Environment Court, and Boards of Inquiry. Effect magnitude is established using the decision matrix in Table 1 below:

**Table 1:
Effects Magnitude Decision Matrix (modified from Regini 2002)**

MAGNITUDE	DESCRIPTION
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions such that the post development character/ composition/ attributes will be fundamentally changed and may be lost from the site altogether.
High	Major loss or major alteration to key elements/ features of the baseline (pre-development) conditions such that post development character/ composition/ attributes will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline will be partially changed.
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns.
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation.

7.9 With a net vegetation removal of less than 5% of the total site area, the magnitude of the impact of the vegetation removal is considered to be negligible based on this matrix, representing a very slight change from baseline condition relating only to vegetation cover. I do not expect there to be any change away from baseline conditions in terms of botanical diversity or indigenous fauna diversity in Lot 17.

7.10 The significance of the effect is established using the matrix in Table 2 below:

**Table 2:
Significance of Effect Matrix (modified from Regini 2002)**

SIGNIFICANCE		ECOLOGICAL AND / OR CONSERVATION VALUE			
		Very High	High	Medium	Low
MAGNITUDE	Very High	Very High	Very High	Medium	Low
	High	Very High	Very High	Medium	Low
	Medium	Very High	High	Low	Very Low
	Low	Medium	Medium	Low	Very low
	Negligible	Low	Low	Very Low	Very Low

7.11 As I have described in paragraph 6.10, Lot 17 has regional significance for ecological connectivity and national significance as kiwi habitat. Its ecological or conservation value is therefore established as being high or very high. As set out in Table 2, when

high or very high values are exposed to an effect with a magnitude of negligible, the significance of the effect is considered to be low based on this matrix. However, I note that the applicant proposes to carry out mitigation measures including implementation of the Construction Management Plan and Landscape Mitigation Plan, timing of vegetation removal, and methods of vegetation removal to avoid weed incursion and minimise effects on native fauna.

Cumulative Effects

- 7.12 The Coromandel Forest Park, with which the Silverstream Falls vegetation is contiguous, encompasses an area of approximately 80,000ha. The Tairua Ecological District portion of that area encompassing the Motutapere Ecological Area, Kapowai Ecological Area and Coromandel Forest Park totals approximately 10,000ha. Even within the Ecological District, the proposed net vegetation removal comprises an extremely small area (0.008%) in relation to the total.
- 7.13 The cumulative effect of vegetation removal was assessed using Land Cover Database (LCDB) data from the years 1996, 2001, 2008 and 2012. The change in cover of the three vegetation classes relevant to the site (namely broadleaved indigenous hardwoods, indigenous forest, and manuka and/or kanuka) was calculated for the 16 year period of LCDB records. LCDB analysis is undertaken at a scale of 1:50,000 which is appropriate for assessment at the scale of Ecological District and Ecological Region.
- 7.14 For the Tairua Ecological District, the change in aggregate cover of these vegetation classes between 1996 and 2012 was a decrease of only 350ha across a total area of 49,770ha. This change of 1% is well within the 5% margin of error of LCDB. For the Coromandel Ecological Region, the change in aggregate cover of these vegetation classes between 1996 and 2012 was a decrease of only 240ha across a total area of 176,784ha. This change of 0.14% is well within the 5% margin of error of LCDB. The data shows that there is no substantive change in indigenous forest and shrubland cover occurring and the data does not show a trend of ongoing

indigenous vegetation removal. Notably there is no documented ongoing decrease in the classes of indigenous vegetation present at Silverstream Falls. On that basis, given that there is no evidence of ongoing reduction in indigenous vegetation cover in the Tairau Ecological District or Coromandel Ecological Region, I consider there are no notable cumulative adverse effects from the Proposal related to vegetation clearance.

Proposed District Plan Biodiversity Objectives and Policies

7.15 Section 6.3 of the Thames Coromandel Proposed District Plan has biodiversity objectives and policies. Objective 1 states: “*Indigenous biodiversity is maintained, restored or enhanced at the time of subdivision, use and development.*” Policy 1b states: “*Where subdivision, use and development will result in the clearance of indigenous vegetation, the clearance should be undertaken in a way that:*

- a) Retains the viability, integrity and sustainability of indigenous habitats and species; and*
- b) Does not increase the risk to nationally at risk threatened species; and*
- c) Maintains the function of ecological corridors;”*

7.16 As set out in paragraphs 8.3-8.8, 8.10 and 8.12, I expect indigenous biodiversity to be maintained at the site, meeting Objective 1 of Section 6.3. As set out in the same paragraphs, I consider that the net vegetation clearance is sufficiently small and can be managed appropriately to retain the viability, integrity and sustainability of indigenous habitats and species observed or considered likely to use the site. The evidence of Mr McLennan will consider the risks of the proposal to kiwi as a species with a threat status of nationally vulnerable. Given that the net proportion of vegetation removal is very small (less than 5%), I consider that the function of the site as an ecological corridor will be maintained. Therefore I consider that Policy 1 b points a) – c) will be met by the Proposal.

8.0 SUBMISSIONS

8.1 Submissions that oppose the proposed development with respect to ecological matters are summarised below:

- Four submissions are opposed to increased unspecified pollution, and impacts on kiwi and other wildlife.
- One submission is opposed to contamination of water, air and soil, and rubbish generation.
- One submission is opposed to vegetation loss, effects of vegetation clearance on biodiversity and indigenous fauna especially kiwi, and effects aquatic biodiversity, function and hydrology resulting from management of surface water, wastewater and stormwater.

8.2 Mr McLennan will address matters relating to kiwi. Matters relating to pollution sources, hydrology, stormwater, wastewater, and discharges to air are regional council matters. I confine myself to potential effects of the construction phase and operational phase of the proposal on ecological values.

8.3 Vegetation removal can result in loss of botanical diversity if key components of the vegetation assemblage are removed. However, most vegetation clearance in Lot 17 is proposed in previously cleared areas with botanical diversity limited to weed species and manuka. Where vegetation clearance extends into indigenous shrubland, the vegetation is comprised of common native shrubland species. As noted in paragraph 8.4, I expect the botanical diversity of Lot 17 to be unaffected by small scale vegetation removal. Provided that the Construction Management Plan is implemented as set out in paragraph 7.3, and revegetation occurs as set out in paragraph 7.2, I expect biodiversity will be improved as a result of weed removal from the clearance areas and botanical diversity will be unaffected by either the construction phase or operational phase of the proposal.

8.4 Increased noise and light can impact wildlife if these effects disturb breeding or foraging activities, or reduces available territory. As I

have noted in paragraphs 8.8 – 8.11, the indigenous fauna species likely to be present at Lot 17 are either known to occupy urban or peri-urban environments with equivalent or greater levels of disturbance, or are mobile and capable of moving away from disturbance. Provided that the mitigation measures I have described in paragraphs 8.8 and 8.10 are implemented, I expect native fauna diversity to be unaffected by either the construction phase or operational phase of the proposal.

9.0 CONCLUSION

- 9.1 Lot 17 of 206A Silverstream Falls has indigenous shrubland vegetation that has regional significance for its contribution to ecological connectivity and national significance as kiwi habitat. The proposed development at Lot 17 will result in the net removal of 4.9% of the 16.38ha of shrubland vegetation. Vegetation removal is concentrated principally on areas that have previously been cleared which are dominated by weeds and manuka.
- 9.2 I have assessed the potential effects of the proposed vegetation clearance, construction activities, and operation of the Proposal on ecological values. I conclude that the effect of the Proposal on indigenous vegetation and fauna values will be negligible provided that the mitigation measures to manage construction effects are implemented. There is no effect on the QEII covenant area.
- 9.3 Using an objective matrix method, the magnitude of the effect meets the definition of negligible. Given the high or very high ecological value of the site, the significance of the effect is considered to be low.

Louise Maria Saunders

ECOLOGIST

Boffa Miskell Limited

12 April 2016

