IN THE MATTER OF	**THE RESOURCE MANAGEMENT ACT 1991**
AND IN THE MATTER OF	**AN APPLICATION FOR SUBDIVISION AND LAND USE CONSENT FOR THE AMBERFIELD DEVELOPMENT**
BETWEEN	**WESTON LEA LIMITED** Applicant
AND	**HAMILTON CITY COUNCIL** Consent Authority

STATEMENT OF EVIDENCE OF BRUCE DUDLEY CLARKSON

Dated: 23rd April 2019

STATEMENT OF EVIDENCE OF BRUCE DUDLEY CLARKSON

1. Witness introduction

1.1 My full name is Bruce Dudley Clarkson. I am a restoration ecologist based at the University of Waikato in Hamilton.

1.2 I hold the following qualifications and experience:

(a) I hold the degrees Master of Science (First Class Honours) and Doctor of Philosophy in Biological Sciences from the University of Waikato and have been employed as a professional researcher and scientist for almost 38 years. I am the author of 101 quality assured publications (including 61 journal papers, 11 book chapters, 10 full conference papers, and 12 books/formally published government reports, 5 edited or revised editions) on various aspects of plant ecology and restoration of ecosystems, including those in urban environments. I have also produced more than 250 contract reports, mainly on indigenous flora and vegetation, conservation management, and the ecological values of sites under consideration for development or protection.

(b) I am the programme leader of a Ministry of Business, Innovation and Employment-funded national research programme, People, Cities and Nature, which undertakes research directly relevant to this case.

(c) I have studied the biodiversity of Hamilton and its environs for more than 40 years and published on biodiversity and wildlife issues, mainly plants, vegetation and habitat but also on birds and bats.

(d) I have also published on significance assessment, ecological compensation, mitigation and offsetting.

(e) I have been involved with the practical aspects of ecological restoration for more than 30 years, including in a private capacity, and via the Hamilton gully restoration programme and the establishment of Waiwhakareke Natural Heritage Park.

(f) I was project leader for the identification of Hamilton key sites (Significant Natural Areas) and have been on the advisory board for the Local

Indigenous Biodiversity Strategy co-convened by Hamilton City Council and Waikato Regional Council.

(g) My national contribution to the field has been recognised by two major awards: the Loder Cup in 2006 (New Zealand's premier conservation award) and the Royal Society of New Zealand Charles Fleming medal in 2016 for environmental protection.

(h) My national contribution has been recognised by appointment to the science panel for revision of the NZ Biodiversity Strategy and to the Governance Group of the Building Better Homes, Towns and Cities National Science Challenge.

2. Expert witness

2.1 My evidence contains opinion based on my expert qualifications and experience. I believe that I am able to present this opinion because of my qualifications and experience in the fields of botany, ecology and restoration ecology.

2.2 I have read the code of conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2014 prior to preparing my evidence. I have complied with that code of conduct in preparing this evidence and I will comply with that code of conduct in presenting this evidence and in the course of the hearing.

2.3 I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

2.4 I have participated in an expert witness conference and have signed an agreed witness statement that has been produced as result of that conference.

2.5 The evidence that I give in these proceedings is within my area of expertise, except when I rely on the evidence of another witness or other evidence, in which case I have explained that reliance.

3.0 Scope of evidence

3.1 My evidence is given on behalf of the Riverlea Environment Society Inc.

3.2 My evidence addresses the following issues:

(a) The ecological context
(b) Avoid, remedy and mitigate from an ecologist's perspective
(c) Response to the s 42A Appendix E and applicant's evidence
(d) Response to the consent conditions
(e) Conclusion

4.0 The ecological context

4.1 The proposed Amberfield subdivision (105 hectares) adjoins the Waikato River to the south of the Riverlea suburb of Hamilton City. The whole site can likely be considered ecologically significant because long-tailed bats (*Chalinolobus tuberculatus*) use the habitat within and adjacent to the site for commuting, foraging and roosting.

4.2 The long-tailed bat population is dependent on the current spatial and habitat resource configuration for its existence, and the adverse effects of the subdivision development in the absence of avoidance, remedy and mitigation could potentially compromise its survival.

4.3 In terms of the Resource Management Act section 6c vegetation significance, the vegetation on site is of low to moderate botanical value. Two listed SNAs are located near the site (SNA 54 and SNA 48), both on the river margin. SNA 54 comprises a 3.3 ha kānuka-mahoe-privet forest that runs 1.2km along the Waikato River. This SNA has moderate

ecological value (ecological rank 3). SNA 48 is a 2.4 ha kānuka-privet-mamaku forest with high ecological value (ecological rank 2). However, the SNAs were identified entirely on vegetation attributes (see Cornes et al. 2012), with fauna and fauna habitat not specifically considered in the assessment process. With the knowledge now of the importance of this habitat to long tailed bats, the whole of the river and gully corridors in this area can be considered significant habitat.

4.4 Directly across the river within Hammond Park is Hammond Bush, one of the botanically most important native forest remnants in Hamilton City. This forest and its surrounding vegetation harbour the core roosting population of bats that utilise the proposed Amberfield subdivision. Hammond Bush is floristically rich and has forest types now uncommon and under-represented in Hamilton City, including pukatea (*Laurelia novaezelandiae*)-swamp maire (*Syzygium maire*) forest and tawa (*Beilschmiedia tawa*)-titoki (*Alectryon excelsus*) forest. Some of the old-growth native trees are greater than 200 years old, and the forest is structurally complex with multiple tiers and growth forms, and abundant nest epiphyte communities.

4.5 In addition to the significant biological attributes of the proposed Amberfield subdivision and its surrounds, it is important to note the broader geomorphology and landforms of the site. The Waikato River has shaped the landscape with a series of alluvial terraces adjoining the river, and the Mangakotukutuku gully network provides further complexity to the landscape. Hammond Bush is backed by a distinctive cliff terrace feature (amphitheatre), which restricted urban development in that area and greatly limits the intrusion of human impacts, including traffic and street lighting (Figure 1 a & b).

4.6 The riverbanks and the gully network of Amberfield and the broader Peacocke area provide an excellent in-built opportunity to restore native-dominated ecosystems, and this is recognised in the Operative District Plan in terms of ecological, amenity, landscape and cultural values. An approach to subdivision development which works with nature would recognise these

values and plan accordingly. The Peacocke Structure Plan foreshadowed these opportunities but they do not appear to have been taken up to the level expected, at least as expected by the Riverlea Environment Society.

4.7 The gully feature, which runs north to south in the proposed subdivision and is referred to by the applicant as the “minor gully” to be restored, is a critical component of such an approach. This is particularly the case since it can in future, as part of broader development of Peacocke, connect to wider restoration of the Mangakotukutuku gully network as shown on the Peacocke Structure Plan map (see Figure 2a and 2b).

4.8 The main purpose of this introduction to my evidence is to set the scene and foreshadow the importance of an ecological approach to subdivision planning and development. While individual components of the ecosystem, for example vegetation patches, can be subjected to individual assessment and ranking, such a reductionist approach runs the serious risk of compromising an ecosystem that currently functions in a way that supports a thriving urban-based population of long tailed bats. At a national scale, this scenario appears to be rare with only three urban or closely peri-urban environment long-tailed bat populations currently known in New Zealand.

5.0 Avoid, remedy and mitigate from an ecologist’s perspective

5.1 As a matter of first principle, I do not consider that any of the scenarios currently being proposed are a form of “avoidance”. At present, what is being considered is a hopeful experiment of a type that apparently has not been undertaken anywhere in New Zealand before. The consequences are uncertain and the risks considerable. In essence, a pastoral farming landscape will be largely converted to an urban subdivision with some limited restoration provided on its fringes. The residual adverse effects of the development are likely to be in play for longer than 20 years, and a net positive effect will take even longer. Then there is the issue of uncertainty

around timing, staging and completion of the restoration works to an acceptable standard and the need for aftercare to ensure effective ongoing development (e.g., enrichment or enhancement planting). The staging of subdivision development and the progressive implementation of restoration planting to provide high quality habitat and enable continued bat commuting, foraging and roosting will be crucial.

5.2 Remediation and mitigation or offsetting can be aggregated under the general umbrella term “ecological compensation”, and adequacy of ecological compensation can be assessed on six main internationally accepted criteria: equivalence; spatial proximity; additionality; timing; duration and compliance; currency and ratios (see Brown et al. 2014). In the present case, no explicit assessment or mitigation or offset plan that addresses all of these criteria is available, creating considerable uncertainty around the likelihood of success.

6.0 Response to s 42A Appendix E and applicant’s evidence

6.1 In general, I concur with the evidence of Mr G Kessels in the section 42A report. Overall, I consider it is an ecologically sound assessment because it takes a holistic approach.

In particular, I agree with the following views:

1. That the development will disrupt commuting corridors and remove high value habitat along the river and across the site and wider landscape to the known high value habitats;
2. That the effects assessment does not justify any category less than ‘very high’ and therefore that the avoidance and/or high intensity mitigation actions are warranted;
3. That offsite mitigation and/or biodiversity offsetting should be considered if consent is granted, because adverse effects cannot be avoided;

4. That the species composition proposed for restoration planting is generally suitable but that the species palette is too limited and the proposed meadow planting is of doubtful value and will be difficult to maintain;
5. That biodiversity offset/compensation and mitigation would be needed if consent is granted, in addition to corridor widening and buffering.

6.2 I give qualified support to the view that the whole Amberfield site is significant because of its importance to long-tailed bats (see evidence Stirnemann). The data are insufficient to know the full extent of bat usage of the whole site. However, lack of evidence is not evidence of absence. In situations like this it is advisable to adopt an environmental precautionary principle (Akins et al. 2019).

6.3 I consider the corridor widening and buffering approaches proposed by the applicant are insufficient on several grounds. These include the magnitude of:

I. Likely adverse effects on long-tailed bats. The corridor and buffer recommended by Mr Kessels is about 100 m on the basis that long-tailed bats are commonly not recorded within 100 m of built up urban areas. But the usage by bats is both within corridors and along the margins of such corridors. In the latter case it is the *setback* from the corridor which is important, as light spill and traffic will likely deter bats from using it. In Amberfield the setback will amount to the distance between the riverside road and the buffer.

II. Restoration planting needed to remedy or mitigate significant effects and provide resilience to disturbance and enable self-sustaining regeneration. The determination of a suitable corridor width is not just a question related to long-tailed bats but also of aspects of plant ecology. In establishing a corridor, a wider range of ecological goals needs to be considered, including resilience to disturbance and ensuring the plant community is representative of the flora of the locality and capable of self-sustaining regeneration. Most notably, corridors of 100 m wide will be subject to edge effects (higher light, lower humidity and greater temperature fluctuations than are conducive to the survival of many important plant species), which are of the order of 50 m (Young & Mitchell 1994). Thus, with a corridor width of about 100 m, the whole corridor will be likely to be adversely affected by edge effects and a core area unaffected by edge effects will develop only slowly, if at all. The geomorphology on the Amberfield side of the river is different to the

opposite riverbank, where a steep scarp on one side provides protection against edge effects in Hammond Bush (see Figure 1).

III. Insufficient information on the nature, timing and staging of restoration planting is provided to be confident that the remedy/mitigation will be effective. Various figures are provided in the Applicant's evidence and s 42A report regarding the age at which vegetation will become functional and achieve its mitigation purpose, for example to protect bats from light spill and other impacts of urban development, but no references are given on how these estimates have been arrived at. On the basis of several published papers with a focus on restoration plantings within Hamilton City (MacKay et al. 2011; Overdyck et al. 2012 & 2013; Wallace et al. 2017 & 2018; Laughlin & Clarkson 2018), I consider the estimates provided by Mr Kessels and the applicant's ecologists to be overly generous. I consider that 20-25 years is a minimum age when these attributes may be beginning to occur and that 10 years is well short of the mark. I also note the caution that these vegetation attributes are characteristic of sites such as Waiwhakareke Natural Heritage Park, which has strong active management in all restoration stages undertaken by a volunteer group, Friends of Waiwhakareke, and by Hamilton City Council staff, and has closely followed the current best practice for establishing and maintaining native restoration planting in urban and peri-urban settings (Clarkson et al. 2012; Clarkson & Bylsma 2016). To date, more than 30 ha of restoration plantings have been successfully established at Waiwhakareke Natural Heritage Park.

6.4 In particular, I am concerned that the important north/south oriented corridor in the south of the proposed subdivision that is capable of linking to the Mangakotukutuku gully network (see Figure 2b) is not sufficiently catered for. The Hamilton City Council, local community groups and private landowners have been intermittently undertaking restoration within the gullies since the mid-1970s, with a more ecologically guided approach from the early 1990s (Clarkson & Downs 2001; Clarkson & McQueen 2004). This has involved a range of different restoration strategies, from complete weed clearance (in particular grey willow *Salix cinerea* and crack willow *Salix fragilis*) and replanting of the site, to canopy manipulation of grey willow and other exotics, to enhancement and enrichment planting.

6.5 In brief, best practice, as outlined by Clarkson et al. (2012) and Clarkson & Bylsma (2016), involves using a successional framework for planting and

carefully matching species to their soil, topographic and drainage preferences; that is, planting the right plant in the right place. Then, as pioneer and early succession species planting matures, it is important to undertake enhancement or enrichment planting (usually at about 10 years) to introduce middle and late successional species, which require more shelter or shade, into the stand. By mimicking natural succession in this way, a forest progressively develops along a trajectory towards the composition and structure typical of a reference old-growth ecosystem e.g., Hammond Bush.

6.6 By 20 years a threshold is reached and the early signs of a functioning self-regenerating forest become evident. Height growth rates of densely planted stands (one plant per m^2) in the early years average a little less than one metre per year, and by year 5 canopy closure plateaus at about 80% (see Figure 3). Data available for stands older than 8 years and up to 15 years shows that canopy closure and height growth varies according to species mix and site conditions. For example, kahikatea (*Dacrycarpus dacrydioides*) can be 15 m tall after 15 years on well drained sites, but less than 10 m on poorly drained sites. In general, canopy closure declines as the pioneer and early successional trees and shrubs decline in vigour and canopy gaps appear. This is the crucial stage for enhancement or enrichment planting, particularly utilising light wells created by canopy dieback for planting mid-successional trees like rimu (*Dacrydium cupressinum*), or utilising well-shaded areas for sensitive late successional trees like tawa. Restoring a native forest is an intergenerational task; it is unrealistic to expect reconstruction of a forest similar to Hammond Bush in less than 50 or 100 years.

6.7 This systematic process of restoration planting and maintenance would need to apply to the proposed buffer as well as the gully landforms. Enhancement of the SNAs, too, should follow a similar approach, as advocated in the Operative District Plan.

6.8 I consider that the north/south gully corridor is critical for the longer-term vision for the restoration of Hamilton gullies and for the opportunities this could provide for bats to enter and traverse major portions of the Mangakotukutuku gully network across the wider Peacocke area. The evidence of Georgia Cummins confirms use of this gully by long-tailed bats. This opportunity is, I contend, a potentially more significant mitigation response than the E-W corridor, which is based on an expansion of an existing shelterbelt planting.

6.9 I consider the shelterbelt enhancement important as an immediate form of mitigation, but in the long term, a high quality ecological corridor connecting the north/south gully feature to the headwater gullies of the Mangakotukutuku is also a necessity (Figure 2b). The shelterbelt option would require that the zigzag series of connected shelterbelts west of the Amberfield subdivision are retained to ensure the linkage to the Mangakotukutuku gully. I note the proposed composition of the shelterbelt is exotic deciduous trees, and I am uncertain about the implications for light spill, but it would definitely be more than for evergreen trees. I also note that Sean Stirling's memo foreshadows potential issues with the root protection zone and recommends increasing the buffer between the shelterbelt and the adjoining residential lots.

6.10 SNA 48 Riverside Kānuka, Peacocke: a 2.4ha kānuka-privet-mamaku forest described as having high ecological value (ecological rank 2) is located where the north/south gully meets the Waikato River and could be expanded and extended as a part of developing an ecological corridor. A small section (approximately 0.18 ha) of this SNA is apparently earmarked for clearance within the proposed development site in the north-western corner. There is, in my professional opinion, no good justification for removing part of an SNA given the scale of the project.

6.11 The current staging of work on the north/south ecological corridor appears to be currently so late (Stage 10) in the subdivision development that it will not protect against the adverse ecological impacts on bats until too late.

The proposed gully restoration planting should occur well in advance of the onset of the proposed development, particularly of the southern half of the subdivision, if it is to serve the purpose of a high quality ecological corridor for the bats given the loss of the commuting, foraging and roosting opportunities across the wider area where bats have been detected.

6.12 Similarly, the restoration and mitigation planting proposed for the northern part of the subdivision is problematic. Parts of the subdivision across the river from Hammond Park are indicated as stage 1 development, giving insufficient time for the development of the tall hedge of rewarewa (*Knightia excelsa*) and totara (*Podocarpus totara*) to be sufficient to protect the core bat population at Hammond Bush and environs from the light spill associated with housing and traffic. It is also not clear whether the proposed river corridor is 100 m wide, nor that the setback from the corridor is sufficient to protect the bats from the adverse effects of subdivision development (see also point 6.3 l).

6.13 The proposed meadow of meadow grasses and exotic trees (an open habitat) will be difficult to maintain being in what is fundamentally a native forest environment, as it is likely to be quickly invaded by problem shrubs such as Chinese privet (*Ligustrum sinense*) which is abundant in parts of the river corridor and bird-dispersed.

6.14 The overall approach signalled in the Open Space Framework document 28 February 2019 (which I assume is what Mr Kessels calls the "Gully and Reserve Vegetation Strategy") including the Landscape/Visual Effects/Open Space addendum (20 February 2019) is one based on a landscape architecture philosophy and approach and not on the ecological science needed to underpin an ecological compensation and mitigation plan. For example, tall old trees (the type most likely to enable an increase in bat success) are likely to be restricted in many places by viewing requirements.

6.15 As noted previously, the species palettes provided are generally suitable, but many of the mid and late successional species selected will only be able to be successfully established after a pioneer stage has been well established, i.e., after 10-15 years. While the cross sectional diagrams give a strong visual sense (including an over-abundance of bats) of what might be restored, there is insufficient information to determine whether what is being proposed will be effectively implemented.

6.16 The restoration of the north/south gully and the riverside corridor does not appear to meet the compensation additionality criterion (Brown et al. 2014) in that reserve contribution to subdivision, including gully restoration, is an expectation of the Operational District Plan and the Peacocke Structure Plan regardless of the bat mitigation issue (see for example Appendix I Parks and Open Spaces Memo by Sean Stirling).

6.17 In essence, consent to this proposal is being sought on the basis of trust that the applicant will develop appropriate management and monitoring plans, and implement best practice ecological restoration.

6.18 The research that I have been involved with relating to ecological compensation, mitigation and offsets (Brown et al. 2013; Brown et al. 2014) gives some insights into the likelihood of the applicant complying with consent conditions, based on studies undertaken across New Zealand. Overall compliance with resource consent conditions (administrative and non-administrative) for 245 conditions over 81 case studies was shown to be 64.8% and for subdivision 73.1%. However, for administrative conditions the compliance rate was 82.61% while compliance requiring action on the ground was 49.61%. Compliance rates for monitoring, maintenance/pests, restoration intention, planting and fencing were 63.6%, 55.3%, 30%, 51.7%, and 47.1% respectively.

6.19 The main conclusions of our national study (Brown et al. 2013) on ecological compensation were that:

- Unambiguous goals are needed to specify what compensatory mechanisms are to achieve;
- Goals should be measurable;
- Increased emphasis on monitoring and compliance by agencies is necessary so that instances of default can be identified and rectified as soon as possible;
- The application of ecological compensation under the Resource Management Act in New Zealand requires significant improvement if the ongoing erosion of natural capital is to be slowed and reversed.

6.20 I am concerned that we are being asked to comment on a consent application which does not contain some of the most vital information needed in advance of consent being granted, namely an ecological compensation plan, an ecological management plan and a bat mitigation plan.

7 Response to the consent conditions

7.1 I have concerns about the consent conditions and do not accept that they are adequate. In relation to the consent conditions, I note the following issues which in my professional opinion require attention and revision:

7.2 Condition 66: the Ecological Management Plan should be subject to review by two appropriately qualified external and independent reviewers; my understanding is that HCC does not have staff qualified to assess the merits of such a plan as they do not have staff with sufficient ecological qualifications, breadth or experience required for this complex situation.

7.3 Condition 75: the reference Clarkson et al. 2007: Indigenous vegetation types of the Hamilton Ecological District should be added to the already-

listed Gully Restoration Guide, as this covers landforms on the peripheries of gullies to ensure appropriate species selection.

7.4 Condition 77: that the key principles outlined in Clarkson & Bylsma (2016) namely, using a successional framework and right plant in the right place are specifically addressed and incorporated into the plan, as has already been done for ecosourcing.

7.5 Condition 77 I (i): this condition, in my professional opinion, based on monitoring results from around Hamilton City, cannot be met within a time frame of 5 years. To achieve structural and life form complexity of the type described i.e., including ground cover, subcanopy and canopy species, requires at least 20 years of best practice restoration planting effort. While canopy cover of around 80 to 90% can be achieved in 4-6 years, the composition of the vegetation is not comparable to mature habitat, because it will be dominated by a limited set of pioneer species and will lack ground cover and subcanopy species. Structural complexity and diversity of plant life forms does not begin to emerge until at least 20 years, and only with an active enhancement or enrichment programme throughout that period.

7.6 Condition 78: If plant maintenance ceases at 5 years or when the canopy cover reaches 75%, the initial investment in planting will be compromised. As noted previously, and based on restoration planting best practice in Waiwhakareke Natural Heritage Park and elsewhere in Hamilton, the limited set of pioneer species normally used requires enrichment or enhancement planting at 10 to 15 years. This enables the introduction of middle and late successional species to increase diversity and maintain canopy cover, as earlier short-lived pioneer species, such as karamu (*Coprosma robusta*), mānuka (*Leptospermum scoparium*), lacebark (*Hoheria sexstylosa*), koromiko (*Hebe stricta*) etc., lose vigour, become moribund and die. As stated previously, the structural complexity and species diversity required to establish a self-sustaining native forest does not begin to emerge until at least 20 years and only with an active enhancement or enrichment programme along with weed control. Failure

to manage appropriately beyond 5 years will not produce a high quality resource both in terms of the vegetation and/or bat mitigation requirements.

7.7 Condition 79: While condition 79 has many of the key ingredients of a plant monitoring programme, the timescale is inappropriate and asynchronous with what has been learnt from restoration planting projects around Hamilton City. The timescale would need to be extended to at least 20 years, with the sampling intervals amended accordingly to annual in the first five years and every 3-5 years thereafter. Further, the monitoring should be undertaken in a way that aligns with existing monitoring programmes in Waiwhakareke Natural Heritage Park and elsewhere in the city to ensure comparability.

7.8 Finally, I agree with Mr Kessels (point 120) that an offset mitigation/compensation package for bats needs to be developed, quantified, finalised and agreed by HCC, the applicant and appropriate stakeholders to address the residual effects on bats in this subdivision.

8 Conclusion

8.1 In concluding my evidence, I reiterate the key points, listed below as point 12.2, that I have made in the body of my evidence. I suggest that there are currently too many information gaps and too much uncertainty to risk that this hopeful experiment to protect a species, whose risk of extinction is nationally critical, would be successful. The ecological compensation proposed does not appear to meet the additionality criterion and also appears to be deficient on two other criteria, namely timing, and duration and compliance, underscoring the need for an explicit assessment or mitigation or offset plan that addresses all of the criteria. In short, in my professional opinion, the ecological compensation proposed is not a robust trade off. By addressing the deficiencies I have identified, taking a more ecologically-based approach to subdivision development, and providing

more certainty around the quality, nature, timing and staging of restoration and mitigation works, it should be possible to reduce the risks considerably.

8.2 On that basis, I recommend that the post-hearing approach to the ecological plan and related plan development be rejected and that the Applicant produce such plans to a satisfactory standard as part of the hearing process, and in an open, transparent and collaborative manner. Without seeing such plans now, in sufficient detail, neither experts nor the Commissioners can draw conclusions about the nature and extent of the adverse environmental effects, so cannot make an informed decision about effects mitigation or offsets.

8.3 My key concerns are:

1. The overall significance of the site is underestimated; it is more than just the high value vegetation habitats and includes other areas used for bat commuting, foraging and roosting.
2. The lack of a systematic ecological compensation analysis and plan.
3. The underestimation of the north/south gully importance as a potential high value ecological corridor connected to the Mangakotukutuku headwaters. Restoring the important northern portion of this connection (the north-east or “minor” gully) should be prioritised by the applicant, but I acknowledge that the remainder of the connection lies outside the boundaries of the proposed Amberfield site. I hope that neighbouring landowners and Hamilton City Council will urgently plan for and expedite this connection.
4. The north/south gully and the riverside corridor restoration is not just about bat mitigation, as the importance of protecting, restoring and enhancing gullies and corridors is signalled in the ODP and Peacocke Structure Plan.
5. The uncertainty around completion and the standard of implementation of ecological compensation.

6. The uncertainty around whether best practice ecological vegetation management and restoration planting procedures will be used.
7. The uncertainty around the content, quality and implementation of various plans yet to be developed.
8. The need to revise the consent conditions as outlined.
9. The lack of a coherent plan to address residual effects via offsite mitigation or in the event that there is a decline in the bat population.

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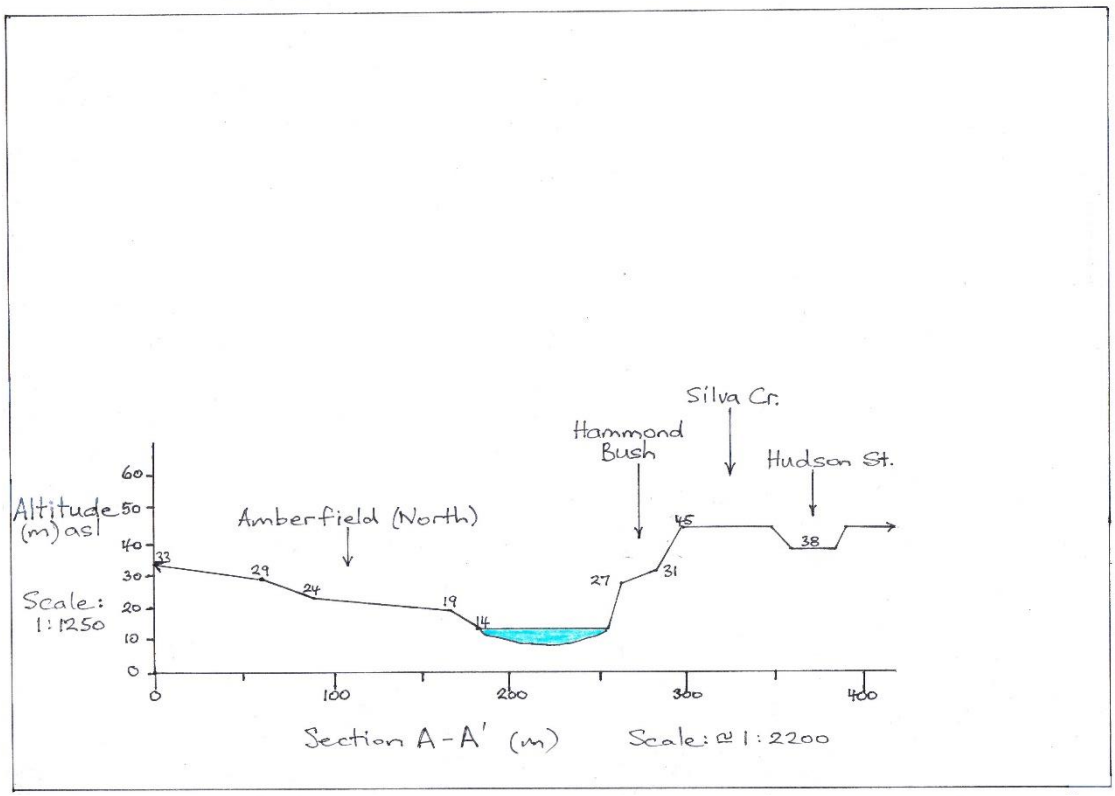
Figure 1 a & b: Profile of Section A-A1 from the northern end of the proposed Amberfield subdivision across the Waikato River to Hammond Bush and Hudson Street.



4/19/2019 LocalMaps

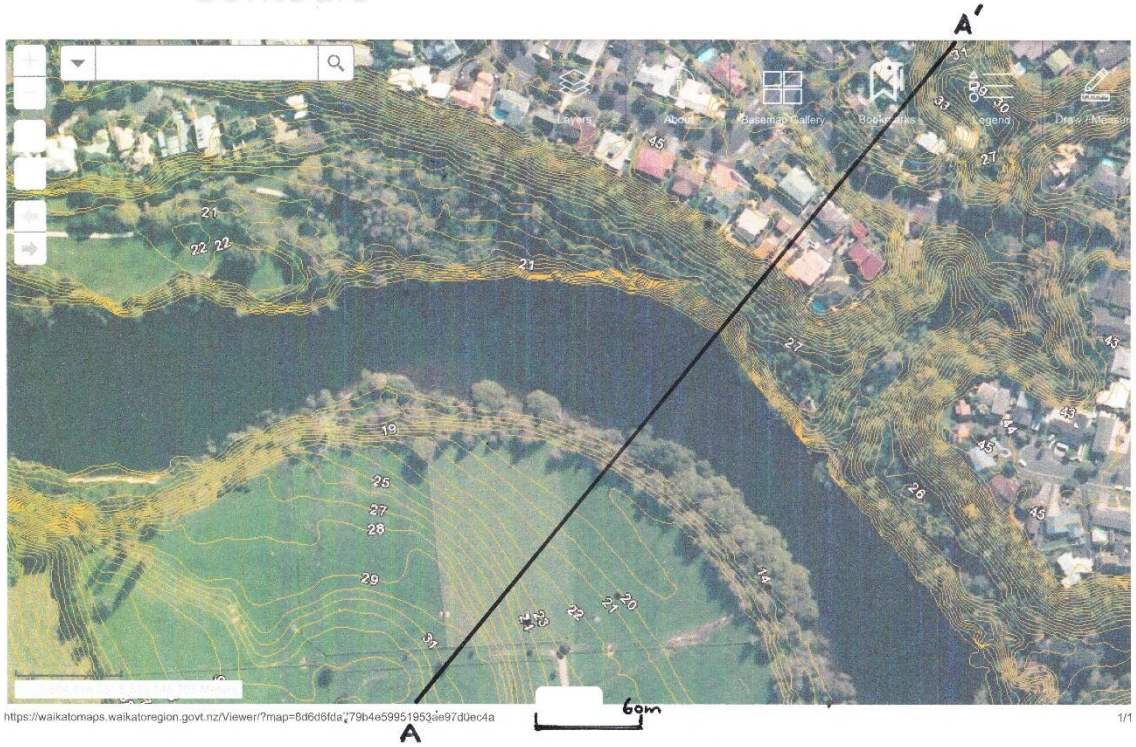


Figure 2a: Map of North-South gully

(Map, minus orange text and arrows, copied from Adare I9 Open Space Framework Addendum, Received 26-02-2019.pdf)

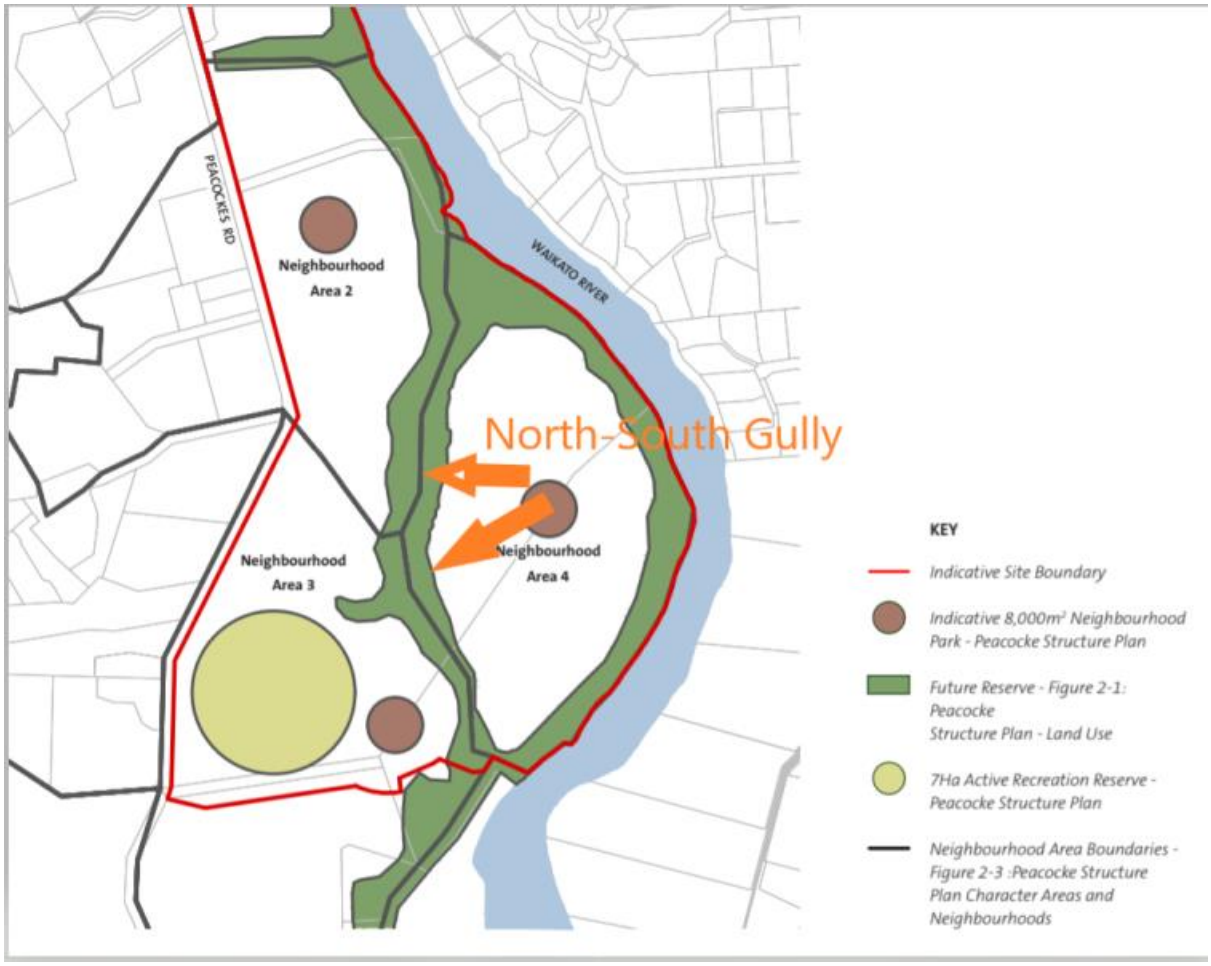
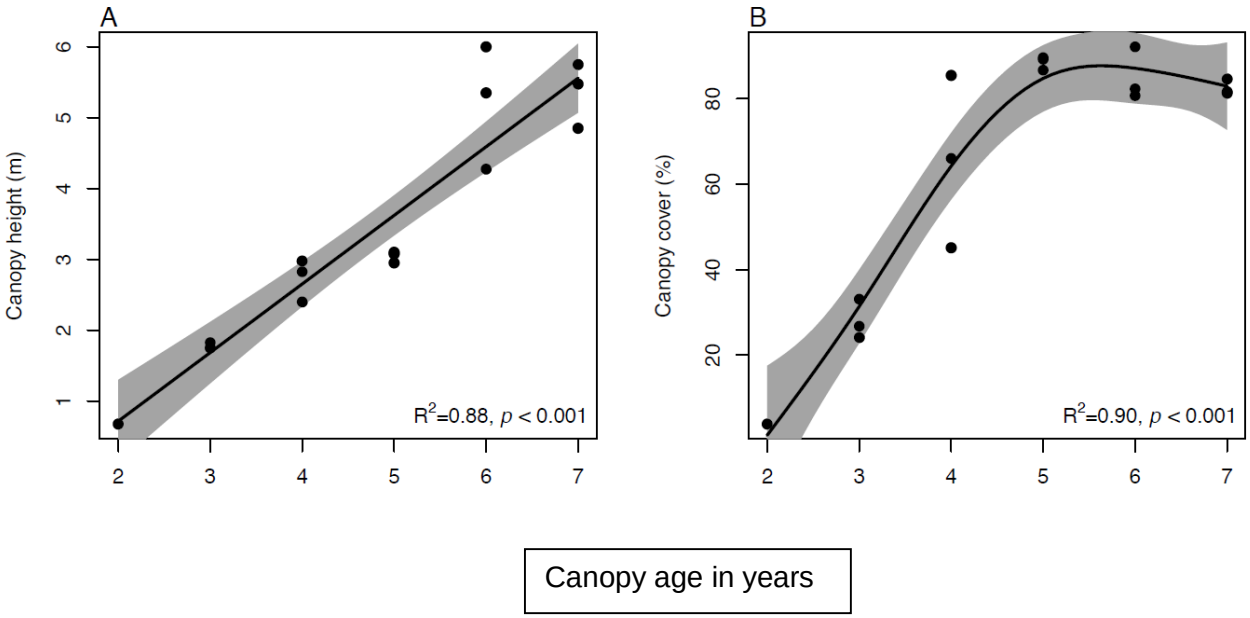


Figure 2b: Peacocke Structure Plan Land Use map (partial) showing future connection between North-East gully and the Mangakotukutuku gully.

Connection is highlighted in translucent orange.

Figure 3: Relationships between canopy age (yrs) and canopy height (m) and canopy cover (%) in restoration plantings at Waiwhakareke Natural Heritage Park, Hamilton (from Laughlin & Clarkson 2018)



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