Appendix 6: Ecological Assessment by Blaschke and Rutherford Environmental Consultants

Proposed Plan Change over land at Kelso Grove, Kelson, Lower Hutt
Ecological Assessment

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Report for Hutt City Council

May 2011

Executive Summary

1. Hutt City Council asked me to carry out an assessment of possible ecological effects of a Proposed Plan Change in respect of a portion of the Kelso Sportsground located at 6 -15 Kelso Grove, Kelson. I was asked to investigate the ecological significance of the portion of the site subject to the Proposed Plan Change in the context of the wider environment, and to comment on whether the site can accommodate future residential development, in terms of potential ecological effects.
2. The site contains a regenerating bush area and the edges of a pine plantation surrounding a grassed recreation surface. Mahoe, mamaku, fivefinger and kohuhu are the most prominent species in the canopy of the regenerating broadleaved forest and treefernland in the bush area.
3. The most significant ecological values associated with the site are:
    - the advanced mahoe-mamaku regeneration in much of the vegetation,
    - some significant individual trees within the vegetation,
    - its proximity to a Significant Natural Resource area and Key Native Ecosysystem area,
    - proximity to a high-quality stream habitat directly connected to the Hutt River,
    - its very good bird habitat.
4. The significance of the vegetation is compromised by weed infestation, particularly with flowering cherry, wattle, banana passionfruit, blackberry, Himalayan honeysuckle and wandering willie.
5. The principal adverse ecological effect of re-zoning this land would be the loss of some vegetation on the northern and eastern sides of the site. Any loss of vegetation would be moderated by the requirements of General Residential Activity zoning of rezoned land.
6. There would be some other actual and potential adverse ecological effects including
    - loss of bird and other animal habitat
    - construction effects (sedimentation)
    - increase in peak stormwater flows; and
    - potential for further weed and animal pests from residential lots.

7. Overall, the combination of the above actual and potential effects amounts to a potentially significant adverse ecological effect of residential development resulting from the Proposed Plan Change.
8. However, I consider that there are avoidance and mitigation measures possible which would reduce these effects to no more than minor. These include
    - removal of Lot 15 from the from the indicative subdivision plan for the Site; or placing a protective covenant on vegetation in some parts of this Lot
    - protection of tarata trees in Lot 2
    - a weed control and replanting programme
    - sediment and stormwater control measures to be applied at the time of consent for any earthworks on residential Lots
    - consideration of restrictions on cat ownership for residential Lots on the site.
9. While not all these proposed mitigation measures would be appropriate to be incorporated within the Proposed Plan Change, I recommend that they should be addressed at the time of consent for subdivision or earthworks, or in complementary Council programmes.
10. With the above avoidance and mitigation measures in place I consider that adverse ecological effects of the Proposed Plan Change would be no more than minor and that the residential zoning proposed for a proportion of the site is appropriate.

Introduction

1. Hutt City Council (the Council) has proposed a Plan Change in respect of a portion of the Kelso Sportsground located at 6 -15 Kelso Grove, Kelson. The site is presently within the General Recreation Activity Area of the District Plan and the Council seek to rezone part of the site to a residential activity area to facilitate future development.
2. The Council, through its consultant Cuttriss Consultants Ltd, has asked me (7 December 2010) to carry out an assessment of possible ecological effects of rezoning of the land in question for residential use, as part of the plan change process. In particular, I was asked to investigate the ecological significance of the portion of the site subject to the Proposed Plan Change in the context of the wider environment, and to comment on whether the site can accommodate future residential development in terms of potential ecological effects.
3. To this end I have examined relevant documents, including:
    - Plans showing the areas proposed for rezoning;
    - An indicative scheme plan showing a possible residential subdivision which could result if the site was rezoned;
    - Documentation of the decisions of the Land Review Project Working Group (26 March 2009) in which initiation and investigation of the proposed plan change was approved;
    - Preliminary geotechnical and landscape appraisals of the land subject to the proposed plan change.[1]
4. I made a reconnaissance site inspection on 21 January, 2011, and a more thorough inspection of the site on 2 February 2011, walking around the perimeter of the grassed recreation surface, traversing bush sections of the site at several points and examining the

[1] Tonkin and Taylor Ltd (2009). *Preliminary geotechnical suitability assessment, Kelso Grove, Kelson.* Report for Hutt City Council.
PAOS Ltd (2007). *Assessment of Reserve Values, Kelson.* Report for Hutt City Council.

site from the Kelson School playground. I futher visited the area on 14 February 2011 to survey the position of specific trees and to examine the streams in the vicinity of the site.

5. This assessment is made in the context of my general knowledge of the vegetation of Kelson, the Western Hutt hills, Belmont Regional Park and Hutt City. I have previously carried out several ecological assessments in other parts of Kelson and the Western Hutt hills.

Site description

6. The general features of the site have been fully described in other documentation of the site, and here I will only summarise the features that are relevant to the ecological assessment. Note that in this report I generally refer to the entire site (Lot 527 DP 42342), although only a portion of it is proposed to be rezoned for residential use, as shown in the indicative development plan for the site.

7. The total size of the site is 4.215 ha, of which about half is a levelled and grassed recreation surface (Kelso Sportsground). It is situated on the upper slopes (between about 135 – 155 m asl) of the eastern Western Hutt hills, east of Kelso Grove, Kelson, generally at about 28 to 35 degree slope and with a generally eastern aspect. The site is bordered on its western and northwestern sides by the Kelson School sportsfield and the neighbouring Kelson playground, a stand of large pine trees on the southeast side and by regenerating native bush elsewhere.

8. The site was formed in its current configuration in 1974 following earthworks for subdivision in Kelson, when fill from subdivision works was placed in the upper slopes of a small gully system in a tributary of the Hutt River, and formed into a grassed recreation surface. The flat to slightly undulating grassed surface is thus predominently a fill surface, partly cut into the upper hill slopes.

9. The stream draining the southern part of the site flows to the Hutt River under Gurney Road and the stream draining the eastern part of the site flows to the Hutt River under Hebden Crescent, in both cases less than one kilometer away from the Hutt River.

10. The hill portions of the site are largely natural slopes of typical Wellington greywacke, with a shallow overlay of regolith. Soils are typical hill and steepland soils in the Firm Brown Soils group[2]. The grassed recreation surface, which is rather poorly drained, consists of fill over greywacke[3]. There are likely to be some areas on the slopes above the grassed recreation surface where the hill surface is fill pushed over the edges of cuts made for the formation of the Kelson School sportsfield and the Kelson Playground.

11. The grassed recreation surface is periodically mown by Council contractors, but otherwise the site receives little maintenance.

Vegetation

12. The original vegetation on the site would have been dense podocarp-broadleaved forest dominated by tawa with some emergent large podocarps (especially rimu) and rata[4].

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[2] These soils are mainly Korokoro soil series. See further details in Bruce JG 2000: The soils of Wellington. Pp 93-121 *in:* McConchie, J, Winchester, D and Willis R eds. *Dynamic Wellington: a contemporary synthesis and exploration of Wellington.* Institute of Geography, Victoria University of Wellington.

[3] Further details of the fill surface and soils are in the geotechnical report on the site.

[4] See Gabites I (1993): *Wellington's Living Cloak: a guide to the natural plant communities,* Victoria University Press; and Crocker BH (1953) Forest regeneration on the Western Hutt Hills, Wellington. *Trans. Roy. Soc. NZ: 81:* 11-21.

13. The forest was largely cleared from the site in the late nineteenth century or early twentieth century and the area used for grazing although there are areas of remnant primary forest on nearby areas of the Western Hutt hills (see below) and it is likely that some rough bush remained in gully bottoms. Grazing ceased and regeneration of bush commenced in the second half of the twentieth century. Pines were planted on spurs and upper hillslopes to the south of the grassed recreation surface.

14. The vegetation on the recreation surface is introduced grassland dominated by older ryegrass cultivars with some browntop and a range of dicot herbs such as creeping buttercup present.

15. The drainage on the grassed recreation surface is very poor and there are a number of hollows and holes within the surface. Moss, rush and *Cyperis* sedge species grow on these poorly drained surfaces.

16. The grassed recreation surface is surrounded by regenerating bush on all sides. I would describe the bush surrounding most of the sportsfield, structurally, as regenerating broadleaved forest and treefernland. Mahoe, mamaku, fivefinger and kohuhu are the most prominent species in the canopy. In some parts there are emergent pines and gum trees. The size and extent of mamaku in the canopy is relatively unusual in my experience.

17. The canopy of the most well-developed native vegetation on the site is up to 12 m high and contains large diameter mahoe and mamaku that I estimate would be well over 50 years old. The most well-developed vegetation is on the north-eastern corner of the site, close to the stream that runs down close to the eastern edge of the site. This vegetation is mostly outside the area subject to the Proposed Plan Change but overlaps slightly with the eastern side of Lot 15 on the indicative subdivision plan, as discussed below.

18. The understorey is relatively diverse, containing a range of native broadleaved shrubs and trees such as mamaku, karamu, kanono, kawakawa, tarata, fivefinger, pate, hangehange, manuka, and occasional hinau and ponga. The ground cover is also diverse, containing seedlings of the above species and a number of ground fern species. There were also frequent native vines such as bush lawyer, native jasmine, and pohuehue (the latter dominant in parts of the bush edges). I also noted a few small plants of kiekie, a native vine which I consider to be a marker species of relatively undisturbed old forest such as tawa forest.

19. The bush on the other (eastern) side of the stream below Mossburn Grove (i.e. outside the area subject to the Proposed Plan Change) is more advanced regeneration of the same type as within the site. It was characterised by more large emergent trees such as rewarewa, hinau, kamahi, manuka and kohuhu.

20. There were some seedlings of larger forest trees such as rewarewa, pigeonwood and hinau. I noted one hinau tree growing on a small spur descending from the end of Kelso Drive to the northeast corner of the grassed recreation surface (on the eastern side of Lot 15 as shown on the indicative subdivision plan). Although this tree is not particularly large (about 10 m tall) or old I regard its presence as significant because hinau do not emerge above the canopy of regenerating forest until several decades of regeneration have occurred, and then can be long-lived, prominent in the canopy and understorey of mature forest and provide food and habitat for a number of forest bird species.

21. I also noted several particularly large tarata trees (more than 12 m high) within the lower parts of proposed Lots 1 and 2 on the western side of the base of the driveway leading down from Kelso Drive to the sportsfield.

22. Attachment 1 shows the extent of the most well-developed vegetation at the edge of Lot 15 including the hinau tree refered to above, as plotted by GPS survey undertaken by Cuttriss Consultants Ltd under my supervision.

23. Weeds are abundant in the vegetation of the bush areas. The most troublesome weed species I observed were flowering cherry, wattle, broom, banana passionfruit, blackberry, Himalayan honeysuckle and wandering willie.

24. These weeds were particularly prevalent on the edges (approximately first ten metres) of the bush areas. These bush edges were dominated by thickets of blackberry and gorse, with trees and vines of all the above species also occurring frequently and wandering willie abundant on the ground.

25. On the north and west of the site (Lots 1-15 as identified on the indicative subdivision plan), flowering cherry and wattle were particularly common throughout all parts of the bush areas. In my assessment, flowering cherry in particular has the potential to dominate regenerating vegetation in the future.

26. The Western Hutt hills are known to generally provide good habitat for a range of bird species. I did not personally observe a large number or diversity of birds during my inspections but am aware of surveys carried out by members of the New Zealand Ornithological Association and local residents that list a large number of species that use (feed or roost in or fly over) residential suburbs and bush areas of the Western Hutt hills. These species include New Zealand pigeon, New Zealand falcon, tui, bellbird, waxeye, harrier hawk, shining cuckoo, fantail, grey warbler, kingfisher, morepork, rosella parrot, as well as common introduced species such as spur-winged plover, sparrow, yellowhammer, starling, blackbird, etc.

27. These observations are consistent with the proximity of the site to Speedys Reserve, the Belmont Regional Park and a range of forest and scrub habitat that would provide habitat for a wide range of bird species, or at least these species would pass over. The site also has a diversity of habitat available, with open space, damp areas and bush edges as well as being close to mature forest.

28. The site is adjacent to the Significant Natural Resource Area (SNR) Kelson Bush, identified in the Hutt City Plan. Kelson Bush (SNR 23) is described as a "regionally representative example of relatively unmodified lowland Mahoe forest. Large numbers of bird species, including NZ Pigeon".

29. The southwest and southeast corners of the site slightly overlap the boundary of the SNR, although none of the land subject to the Proposed Plan Change lies within the SNR. In my opinion all the vegetation on the eastern side and northeastern corner of the Site is ecologically comparable in significance to the vegetation described in the SNR description.

30. Developments on areas within the SNR on the site require resource consent under the District Plan. As part of any resource consent, the effects on the intrinsic values of the local ecosystem would require consideration.

31. The whole of the site is contained within an identified Key Native Ecosystem (KNE) within Greater Wellington Regional Council's KNE programme, designed to "reduce and maintain introduced pest species to levels that give remnant native habitats a fighting chance, allowing natural ecosystem processes to thrive". KNEs are regarded as regionally exceptionally important in terms of their ecological value and/or biodiversity. They do not have specific statutory protection in Hutt City's District Plan, except to the extent they overlap with identified SNRs.

32. The KNE in question is the Kelson Bush/Woodroyd Bush KNE (DOC 1023) which is described as "a nice piece of native forest with a variety of different vegetation types". The significant values are described as tawa, kohekohe and karaka stands, with large rimus and northern rata, breeding populations of New Zealand pigeon and a nikau understorey.

33. The KNE includes all of the Kelson Bush SNR and all woody vegetation between Kelson and SH2 (i.e. largely private land). The current site is not a core part of the KNE as described and most of its vegetation would not be as significant as that described in the KNE description. However, the site has ecological value in that it protects the integrity of the KNE as a whole.

34. Greater Wellington Regional Council undertakes regular pest control of the site and surrounding area under its KNE programme. The main animal species targeted are possums

and rats, on an area over 243 hectares, extending up to the Dry Creek and Speedys Reserve areas of Belmont Regional Park.

35. There are likely to be other animal pest species which impact on the site, including cats (I observed one probably feral cat crossing the driveway during an inspection).

36. Hutt City also periodically controls pest weeds in this areas, notably the climbers old mans' beard, bomarea, banana passionfruit and mile-a-minute.

Stream

37. As described above, the site contains the headwaters, or some of the headwaters, of two small first order streams. The streams themselves are outside of the site and well outside the area subject to the Proposed Plan Change. They both had a small flow in them at the time of inspection in summer after several fine days, and therefore I would assume these to be permanent streams or nearly so. Both streams had a similar morphology as they were 0.5 – 1 m wide, were somewhat incised, and a had generally stable rocky substrate.

38. The vegetation in the vicinity of the streams is well-developed and likely to have been little disturbed for many decades. Many mamaku were particularly large (up to 15m high). There was an abundance of ground ferns, and I noted one small nikau sapling.

39. There is a current stormwater outlet from the end of Kelso Grove into the eastern stream near the northeastern corner and below this outlet there was some piping/gully erosion.

40. I briefly examined the lower parts of these streams on the Western Hutt escarpment in the vicinity of Gurney Road, Hebden Crescent and Owen Street. The lower stream portions are very steep, with a number of small waterfalls and rockfalls. They are piped in their lower approx. 300 metres between Hedben Cresent and their outfall close to the Hutt River riverbed. Fish passage would not be possible in all seasons but I consider it likely that at least some native fish species would be able to pass from the Hutt River to these streams in the Western Hutt hills.

41. I consider it likely that these streams would support a good invertebrate fauna and (depending on the confirmation of fish passage in the lower stream) it is also reasably likely that at least the eastern stream supports a fish fauna.

Ecological Values

42. In the absence of any comprehensive inventory and assessment of remaining vegetation in Hutt City, it is very difficult to make definitive assessments of vegetation significance. However, from my experience of vegetation in Hutt City and the Wellington region, the forest vegetation and habitats of parts of the site are of moderate significance in several aspects.

43. The vegetation types on the site are relatively common in the Western Hutt hills and the Wellington region. The tall mamaku and advanced mahoe-mamaku regeneration present in parts of the site, particularly near the northeast corner of the site, are distinctive and hence have moderate ecological significance.

44. A few individual trees add to the significance of the mahoe-mamaku regeneration, notably the single hinau tree in Lot 15, and the tall tarata trees at the base of Lots 1 and 2.

45. I regard the tarata trees as of lesser significance because, although tall, they are not likely to be particularly old (i.e. probably less than 40 years) and are growing in generally less advanced, more weed-infested vegetation.

46. The forest generally is significant because it is located in close proximity to SNR Area 23 and is wholly within the Kelson Bush/Woodroyd Bush KNE control area. Arguably it enhances the

integrity of both the SNR and the KNE Areas although it does not form part of the core area of either.

47. The site lies within unit C2.1e of the Land Environments of New Zealand classification, occurring on terraces and lower hillslopes in the southern North Island[5]. This is a unit that, nationally has lost more than 90% of its former forest land cover, and therefore, intact forest on this unit would be considered ecologically significant.

48. As I have discussed above, all the forest on the site has regenerated from its former forest cover. It has also been heavily modified and degraded by weeds and other disturbances. As noted in paras 17-22 above there are some areas where the forest is more developed. In later sections I discuss measures to protect these areas.

49. The site appears to offer very good bird habitat to a range of native and introduced bird species, as discussed above.

50. Finally, the proximity of the site to an apparently high-quality stream habitat directly connected to the Hutt River is of some ecological significance because of the regional significance of the Hutt River and the site lies on the headwaters and has the potential to protect the ecological values of this tributary.

51. I note that there are likely to be amenity values associated with the vegetation on the site, but consideration of these values and effects of the proposal on these values is outside my brief and expertise.

52. I note that many of the above ecological values are compromised by the high degree of weed infestation on most of the site, as discussed above.

Summary of ecological issues raised in submissions on reserve status

53. In an earlier phase of the council's land review in mid 2008, public submissions were invited on the proposed revocation of the reserve status of the site. The majority of submitters opposed to the proposed revocation of reserve status raised potential amenity or recreation effects or were concerned by the principle of re-zoning recreation reserve.

54. Some submitters did raise ecological issues, such as the effect of loss of vegetation on amenity values, as discussed above. The amenity issues raised by several submitters included reference to values provided by vegetation or a natural environment, such as views of vegetation, "bush views", appreciation of biodiversity.

55. A number of submitters specifically referred to the value of the site as bird habitat and noted their enjoyment of birds in the area, such as NZ Pigeon, tui and fantail. Some of these submitters specifically referred to seeing these birds on the site, while others appeared to be more general, referring to birds in the general environment in Kelson.

56. Some submitters noted that the site was close to a Hutt City SNR area and felt that the proposal would have adverse effects on the values managed in the SNR (or KNE).

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[5] Leathwick J, Wilson G, Rutledtge D, Wardle P, Morgan F, Johnston K, McLeod M and Kirkpatrick R. 2003: *Land Environments of New Zealand.* David Bateman. Auckland, New Zealand. 184 pp. The threatened environment classification is a broad scale information source showing how much native vegetation remains within land environments in New Zealand and how much is protected. It contains information from three national databases; Land Environments of New Zealand (LENZ), classes of the second land cover database (LCDB2) and the protected areas network.

Assessment of effects of re-zoning the land as General Residential

57. The following assessment applies to the ecological effects of the Proposed Plan Change, applying to the specific area which is proposed to be rezoned, in the context of the wider environment of the site and surrounding areas.

58. The principal adverse ecological effect of re-zoning this land would be the loss of some vegetation on the northern and eastern sides of the site, likely to be cleared for Lots 1 -15 of the proposed residential development. The size of the area subject to the Proposed Plan Change is approximately 1.64 hectares. As discussed above the vegetation likely to be lost is of moderate ecological significance, although compromised by the prevalence of troublesome weed species.

59. Although Lots 1-15 contain some of the most weed-infested areas on the site, the clearance on these Lots would not significantly reduce the weed presence on the site as a whole because all the species observed were present over all parts of the site and would be likely to re-emerge as problems in the newly-created bush edges.

60. Not all vegetation would necessarily be cleared for Lots 1-15, as the geotechnical report does not specify the proposed method of residential development. If flat building sites were to be created at the base of each Lot then the loss of vegetation would be greater, although some vegetation may be retained in the upper parts of each lot. If other methods of development are chosen then the extent of vegetation loss may be less.

61. The site does not have high connectivity values because it is at the edge of a large tract of bush and woody vegetation.

62. The most significant area of likely vegetation loss is on the eastern side of the northern row of Lots, i.e. Lots 14 and 15, as the vegetation here is taller-statured, possibly less disturbed at the time of the formation of the flat recreation surface, and closer to the eastern gully.

63. There will be some loss of bird and other animal habitat. Given that at least one of the bird species is likely to be present in the area that is regarded as threatened (New Zealand pigeon) and potentially others (e.g. New Zealand falcon) the loss of habitat would be of some ecological significance. However, the vegetation affected is very small in area in relation to the large area of comparable vegetation on the Western Hutt hills and is not prime habitat for NZ pigeon or NZ falcon, both of which have a reasonable area of much higher quality habitat available in the vicinity. Also, as discussed above, the variety of habitats currently present on the site is of some ecological value, and the Proposed Plan Change will not result in a significant reduction in the *variety* of habitats available, so I regard the loss of habitat as being of minor significance.

64. As discussed in a previous section, loss of bird habitat was a significant ecological effect raised by submitters. As discussed above, I consider that although there would be some effects on bird habitat through loss of vegetation if the Proposed Plan Change is approved, because of the very small size of the site and (in relation to nearby available bird habitat) relatively poor quality of habitat, this loss would be minor.

65. The Proposed Plan Change will create a permanent "village green" area on the parts of the current grassed recreation surface not proposed to be rezoned. The retention of these areas is not likely to directly enhance ecological values. However, the permanent retention of the *variety* of habitats currently present on the site is of some ecological benefit.

66. There will be some adverse effects on aquatic environments in the northeast gully adjacent to the land subject to the Proposed Plan Change through a likely increase in peak stormwater flows from the site resulting from a higher proportion of hard surfaces after residential development. I consider any such effects would be minor because of the relatively low level of increased peak flows.

67. A further potential effect on the aquatic environment is a decrease in water quality resulting from sedimentation caused as a result of earthworks for the development of the rezoned

land. As the proposed method of development and the likely volume of earthworks have not been discussed the magnitude of this effect is not known. This effect would largely be temporary, occurring during the time of land development. There is also possibly a small cumulative effect occurring because of the longer term loss of habitat resulting from sediment resting in the stream bed and occupying space which can be used by fish and other aquatic species.

68. There is a potential for further weed incursions into the remaining native vegetation of the site, and surrounding vegetation, resulting from residential use of the land (mainly gardening activities) and the presence of current or potential weed species used in residents' gardens[6].

69. There is also potential for loss of birds and other native animals (mainly insects) from domestic pets (mainly cats) being brought into the area as a result of new residential development[7].

70. It is hard to quantify the significance of several of these potential adverse effects, especially the last two. However, the issue of biodiversity losses resulting from animal and plant pest species is of significance on this site because it involves the development of housing into a "new" area somewhat separated from housing currently, and into an area of acknowledged ecological significance.

71. Overall, the combination of the above actual and potential effects amounts to a potentially significant adverse ecological effect of residential development resulting from the Proposed Plan Change. On the balance of probabilities, I consider that potentially significant adverse effects could occur even bearing in mind the probability of only a partial clearance of the site as discussed in paras 58-59 above.

72. As discussed in the next section, I consider that there are avoidance and mitigation measures possible which would reduce any actual or potential adverse effects to no more than minor.

Measures to avoid, remedy or mitigation adverse effects

73. I consider that the following mitigation and avoidance measures should be proposed or considered by Hutt City Council in order to avoid or mitigate actual and potential adverse ecological effects of the Proposed Plan Change.

74. I consider it highly desirable that significant vegetation (as discussed above) in the northeast portion of the site proposed to be rezoned should be protected. I note that the existing subdivision rules of the District Plan require the ecological effects of any subdivision to be considered as part of the process.

75. Protection could be achieved in a number of ways, including:

    - Deleting Lot 15, or part of this Lot, from the indicative subdivision plan for the Site. This is the Lot at the northeastern corner of proposed development and closest to the gully area. It includes the best-developed and least disturbed vegetation, and in particular the fine specimen hinau tree described above.
    - Protecting the most valuable vegetation within this indicative Lot at the time of subdivision by placing the house site at the base of hillside, with a protective covenant on the vegetation in the upper part and eastern margin of the Lot.

76. If the covenanting option is favoured, I recommend that all bush-covered land on the site east of the grassed recreation surface (i.e. outside of the site of the Proposed Plan Change) is

[6] See for example, Sullivan J, Meurk C, Whaley KJ and Simcock R 2009. Restoring native ecosystems in urban Auckland: urban soils, isolation, and weeds as impediments to forest establishment. *New Zealand Journal of Ecology 33*: 60-7

[7] See for example, Gillies C and Clout M. The prey of domestic cats (*Felis catus*) in two suburbs in Auckland City, New Zealand. *Journal of Zoology 259*: 309-315 (2003)

also considered for covenanting. As discussed above, I consider that this land has ecological values at least equal to other land included in SNR Area 23, and the covenanting mechanism would confer an equivalent degree of protection of appropriate land on the site.

77. It would also be desirable to protect at least some of the fine specimen tarata trees near the base of Lots 1 and 2. It would not be possible to protect all of the vegetation on this Lot but would probably be feasible to protect some of these trees as they are in a clump with a relatively small ground area, in a way that the building platform is set back from the front of the Lot and access to the building platform skirting the Lot. I recommend that this area is addressed at the time of resource consent for subdivision.

78. I recommend that, as a complementary programme to the Proposed Plan Change, HCC should consider a weed control and replanting programme to be developed for the site and surrounding areas (i.e. the current site, the recreation reserve to the northwest Lot 1 DP 47792, and the fee simple land Pt Lot 1 DP 6963). This programme should concentrate on control of the most troublesome woody weeds and vines on the site, which are likely to be flowering cherry, wattle, pines[8], banana passionfruit, and possibly karo. It would also target gorse, blackberry Himalayan honeysuckle and wandering willie on the bush edges. Planting would replace the weed species and also enhance the edge areas. Species should be chosen to include food sources for bids, and at the edge of the bush areas they could include non-weedy introduced species.

79. This programme should be conducted in association with Greater Wellington Regional Council and with private landowners in the area.

80. I note that all of these proposed measures are also likely to enhance amenity values considerably.

81. In addition, some avoidance measures could protect stream values at the time of subdivision and construction. These measures would include maximum site coverage rules (to reduce the amount of hard surfaces increasing stormwater peaks), and erosion and sediment control measures such as silt fences, grit traps and possibly sediment retention ponds to minimise sedimentation into the stream.

82. I would expect these measures to be applied at the time of subdivision, as application to Hutt City Council[9] for land disturbance activities would need to be made at that time. I note that under the District Plan there is a level of protection on site coverage and permeability aspects under the rules of the General Residential Activity Area.

83. Finally, I recommend that restrictions on cat ownership be considered at the time of resource consent for subdivision on this site, in order to avoid the most significant effects of animal pests on native bird populations. I am aware that statutory restrictions on cat ownership are a controversial and sensitive issue for councils, and I consider that they are only appropriate in a small number of situations. In my opinion they should be considered in this case for the following reasons:

    a. The abundance and variety of native birds on and around this site is high.

    b. The subdivision is located in a bush area somewhat separated from other areas of housing and the area is therefore probably somewhat less affected by existing cat populations.

    c. There is a high degree of awareness and appreciation of the native bird populations among local residents, judging from submissions received (and see below). Thus it is likely that there would be considerable local support for such a move.

[8] Pines within the native bush areas, excluding the large pine stand to the south of the sportsground and specimen pine trees on edge of the playground.

[9] and possibly also to Greater Wellington Regional Council, depending on the volume of earthworks required.

d. This measure would be highly complementary to the recommended weed control and replanting programme and the package of measures could be promoted as a positive contribution to enhancement of the local environment.

84. I note that one submitter, Mr Wayne Wootton, is the owner of a neighbouring block, Woodroyd Estate (approx 30 ha, accessed from Hebden Cresent) which borders some of the southern boundary of the site and is the heart of the Kelson/Woodroyd SNR and KNE. This submitter noted the pest control and replanting efforts of GWRC, himself and other private owners and noted a voluntary cat-free policy by three houses on his property in order to protect native birds on the property. He was concerned that an increase in animal or plant pests (particularly cats) could have an adverse effect on native bird populations in the KNE

85. With the above avoidance and mitigation measures in place I consider that adverse ecological effects of the Proposed Plan Change would be no more than minor.

Conclusions

86. I have assessed the ecological values associated with the site and the actual and potential ecological effects associated with the Proposed Plan Change. I have concluded that overall, the combination of actual and potential effects amounts to a potentially significant adverse ecological effect of residential development resulting from the Proposed Plan Change. However, I consider that there are a number of avoidance and mitigation measures possible which would reduce these effects to no more than minor.

87. Some of my recommended avoidance and mitigation measures are not appropriate to be incorporated within the Proposed Plan Change but should be addressed at the time of consent for subdivision or earthworks, or in complementary Council programmes. With the above avoidance and mitigation measures in place I consider that adverse ecological effects of the Proposed Plan Change would be no more than minor and that the residential zoning proposed for a proportion of the site is appropriate.

Dr Paul Blaschke

9 May 2011

Appendix: Scientific names of plant species in text

Banana passionfruit*	*Passiflora tripartita*
Blackberry*	*Rubus fruticosus*
Bomarea*	*Bomarea caldasii; B.multiflora*
Broom	*Cytisus scoparius*
Bush lawyer	*Rubus australis*
Creeping buttercup*	*Ranunclulus repens*
Fivefinger	*Pseudopanax arboreus*
Flowering cherry*	*Prunus serrulata*
Gorse*	*Ulex europaeus*
Hangehange	*Geniostoma ligustrifolia*
Himalayan honeysuckle*	*Leycestaria formosa*
Hinau	*Eleaocarpus dentatus*
Kanono	*Coprosma grandifoloia*
Karaka	*Corynocarpus laevigatus*
Karamu	*Coprosma robusta*
Kawakawa	*Macropiper excelsum*
Kiekie	*Freycinetia banksii*
Kohekohe	*Dysoxylum spectabile*
Kohuhu	*Pittosporum tenuifolium*
Mahoe	*Melycytus ramiflorus*
Mamaku	*Cyathea medullaris*
Manuka	*Leptospermum scoparium*
Mapou	*Myrsine australis*
Mile-a-minute*	*Dipogon lignosus*
Montbretia*	*Crocosmia x crocosmiiflora*
Native jasmine	*Parsonsia spp, mainly P. heterophylla*
Nikau	*Ropalostylus sapida*
Northern rata	*Metrosideros robusta*
Old mans's beard*	*Clematis vitalba*
Pate	*Schefflera digitata*
Pigeonwood	*Hedycarya arborea*
Pine*	*Pinus radiata* and possibly *P. ponderosa* (western yellow pine)
Pohuehue	*Muehlenbeckia australis*
Pohutukawa**	*Metrosideros excelsum*
Ponga	*Cyathea dealbata*
Porokaiwhiri	*Hedycarya arborea*

Ragwort*	*Senecio jacobaea*
Rangiora	*Brachyglottis repanda*
Rewarewa	*Knightia excelsa*
Rimu	*Dacrydium cuppresinum*
Ryegrass	*Lolium perene*
Tarata	*Pittosporum eugeniodes*
Tawa	*Beilschmedia tawa*
Wandering willie*	*Tradescantia fluminensis*
Wattle (brush wattle)*	*Paraserianthes lophantha*

* Introduced species to New Zealand

** Native to New Zealand but not to Wellington region

AMENDMENT		NAME	DATE
A	LEMONWOOD TREES SHOWN	JHM	04/11

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Hutt Valley, Wellington, Kapiti Coast

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PLAN SHOWING SIGNIFICANT VEGETATION
KELSO GROVE RECREATION RESERVE
6-15 KELSO GROVE, KELSON

CLIENT

HUTT CITY COUNCIL

SCALE 1:1000			SIZE A3
	NAME	DATE	DRAWING NUMBER
FIELDWORK	ESM	02/11	27618V
DESIGNED			SHEET 1 OF 1 SHEETS
DRAWN	RFH	02/11	
CHECKED	JOB	02/11	REVISION A

Attachment 1