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REPORT ON THE VEGETATIVE COVER

on

THE FLETCHER DEVELOPMENT CO LTD'S PROPERTY

at

STOKES VALLEY

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INTRODUCTION:

The following report and accompanying maps describe the vegetative cover on a property located at the head of Stokes Valley, Lower Hutt recently purchased by the Fletcher Development Co. Ltd., for urban sub-division and development. Recognising that remnant indigenous forest on the property may have some environmental values, a report was requested by Beca, Carter, Hollings and Ferner Ltd., Consulting Engineers and Surveyors, to assist in land use design and development.

BRIEF HISTORY OF VEGETATION CHANGES IN AND NEAR STOKES VALLEY:

Prior to the mid-19th century, the greater part of the eastern hills of the Hutt Valley were clothed with a forest cover dominated by two species of beech. On the higher and drier spurs and ridges, such as those on the Stokes Valley property, the forest consisted largely of Hard Beech (*Nothofagus truncata*). Repeated burning over the past 80-100 years, either by accident or for farmland development destroyed most of the forest and today very little remains. The hills have subsequently become covered with scrub of varying ages and having a varied composition. There is no evidence of fires over the last 20-25 years and accordingly the vegetation, except in areas of grassland, is in excess of 2 metres in height and consists for the greater part of two types of comparatively dense scrubland. Remnants of Hard Beech forest occur on spurs and slopes at the head of Stokes Valley Road.

COMMENT UPON VEGETATION REPORTS PREPARED FOR STOKES VALLEY PLANNING GROUP:

At the request of the Community Planning Group, Stokes Valley, Dr D.R. McQueen and Mr G.N. Park (both of Victoria University of Wellington) prepared two reports in September 1971, on forest remnants and regenerating vegetation in Stokes Valley.

These reports describe and discuss the present vegetation in the whole of Stokes Valley in terms of development of the valley, firstly for agriculture and more recently for housing purposes, and

draw attention to the desirability of making reservations of indigenous vegetation in a community development plan.

The reports present a botanically and ecologically correct and realistic account of the present vegetative cover. Vegetation descriptions are based upon ecological successional communities each characterised and recognised by dominant plant species. Evidently Park mapped the vegetation also but his maps are not available for study.

McQueen and Park draw attention to the significance of the Hard Beech and Pukatea dominant forest types at the head of Stokes Valley Road (part of each type being on the Fletcher Development property) and suggest that these stands should be reserved on account of their scientific and educational values. It may be argued however that because of the proximity of existing and proposed residential areas, the scenic and recreation values of these forests may be equally if not more important. Hard beech forest occurs in many areas of the North Island and northern districts of the South Island, the nearest extensive stands being in the Tararua Ranges. I suspect the authors of the reports have noted the ecological and educational values because of their accessibility and proximity to Wellington.

PRESENT VEGETATION UPON FLETCHER DEVELOPMENTS PROPERTY:

A widely recognised approach to vegetation description and mapping in New Zealand and elsewhere is to recognise plant "communities" or associations described in terms of the physically largest or more frequent species generally having a commanding or dominant influence upon the growth and frequency of all other plants. This method is adopted in this report.

Seven vegetation communities have been recognised following a field examination of the property and are the basis of mapping units used to map the vegetative cover. The map which forms a part of this report was prepared with the assistance of recent vertical aerial photographs examined stereoscopically. (Run 4736, photos 33,34 and 35, dated 21.1.74). The vegetation descriptions are generally arranged in ecological successional order from grassland-scrubland through to forest types. A glossary of common and botanical names are shown in the appendix.

(a) Pasture Grassland

Pasture grassland dominated by browntop occurs on the main ridge and in the heads of several gullies on and near the eastern boundary of the property. Formerly developed for pastoral agriculture this high, exposed ridge (elevation in excess of 1200ft a.s.l.) is probably marginal on account of poor soils and cool windy climate. Grazing was associated

with farming in Whiteman's Valley to the south-east. In the absence of livestock this grassland will be replaced rapidly (within 10 years) by scrubland dominated by manuka and tauhinu, indeed this succession is presently occurring where grassland and scrubland merge. In its present form the grassy ridge has the recreation value of providing walking opportunities and clear views for Stokes Valley residents.

(b) Manuka Dominant Scrubland

By far the largest proportion of the Fletcher property is covered with scrubland dominated by manuka. To recapitulate briefly, the slopes and spurs ascending to the main Hutt Valley ridge at the head of Stokes Valley formerly supported a beech dominant forest destroyed by fire about a century ago. Scrubland subsequently developed and excepting in a few sites where low kamahi forest is developing the vegetation has remained as manuka scrubland because of repeated burning up to about 35 years ago. This scrubland community is invariably dense and varies in height from 2 metres on exposed slopes and spurs to 7-8 metres in sheltered gullies. Manuka is frequently associated with tauhinu and the ferns, bracken and Paesia at elevations greater than 900 feet especially where soils are shallow and impoverished. Associated species on warm predominantly north aspect mid-slopes are rewarewa and kamahi. Gorse and Spanish heath are widespread and in some places broom and Himalayan honeysuckle also occur.

the orchids
occur in
manuka
scrub/scrubland
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Manuka scrubland has no outstanding scenic or unique botanical values. It does however, have an important soil and water conservation role and ecologically is valuable as it provides an environment in which several forest tree species can become established. The undergrowth characteristically contains a high frequency of tree species including kamahi, rewarewa, fivefinger, mahoe, and hard beech (close to the hard beech stands). These species can be expected to emerge through the manuka in 20-30 years time giving the hills a much more scenic character than they presently have. This trend is well advanced in some gullies. Six species of large ferns (including three treeferns) are common in manuka scrubland together with clematis, bush lawyer and a clubmoss.

Pinus radiata trees occurring singly or in groups are discussed in a separate section.

(c) Broadleaved Scrub Forest

Broadleaved scrub forest is a generic term for two sub-communities which are not dominated by manuka. On sheltered lower valley slopes and upon gully floors a scenically

attractive fern of broadleaved forest 7-12 metres high comprising rewarewa, fivefinger, kamahi, mahoe, manuka, four species of treefern, fuchsia and hinau is present. The undergrowth is equally attractive, relatively dense and comprises the shrubs pate, rangiora, putaputaweta, Geniostera, karamu and matipo. A number of fern species also occur.

The floristic and structural diversity of this sub-community is attractive to a number of birds which feed on the fruits of many of the species growing in these sites.

At elevations generally in excess of 750 feet a.s.l. the broadleaved scrub forest becomes dominated by rangiora and mahoe with kamahi, hinau and rewarewa being absent. Some manuka, cabbage trees, wineberry and koromiko occur. South aspect gully slopes in the two catchments draining the eastern side of the property are also dominated by rangiora/mahoe scrub forest probably because these areas being cooler and damper than northern aspects have not been burnt as frequently and the succession from manuka to forest has proceeded for a longer period.

(d) Kamahi Forest

Pure stands of kamahi forest occur in two small localities, both on well-drained north aspect sites. Trees are clearly even-aged within each of the stands and are 8-10 metres high. Superficially from a distance, these stands resemble hard beech and do in fact merge into beech/kamahi stands and also in to manuka scrubland having a significant kamahi component.

(e) Hard Beech Forest

Hard beech dominant forest occurs on spurs and slopes at the top of Stokes Valley Road forming part of a larger stand extending southwards onto the neighbouring property and running to the ridgeline between Stokes Valley and Naenae. The forest forms an almost continuous cover being broken only by a strip of Pukatea swamp forest in one gully on the property and strips of hard beech/kamahi forest in others. As McQueen and Park have noted, the stand is a relic of a forest which was formerly extensive over the property. The largest and oldest trees have a height of 20-22 metres, a crown spread of 12-15 metres and a stem diameter of 80-120 cms. On the basis of investigations elsewhere - including a study by Druce (1957) in the Soil Bureau reserve, DSIR, 2-3 kms westward - the age of these trees is probably between 300 and 400 years old. Most are healthy and growing vigorously but one or two trees have died quite recently.

The older forest is associated with expanding areas of much younger forest, generally on the upper slopes, and with an understory of kamahi and rewarewa. It is evident that fortuitously, destruction of the original forest by fire was coincident with heavy seed production by the old surviving trees which has led to immediately adjacent slopes becoming colonised by young beech forest.

Occasionally, other large trees occur. One miro and one black beech are growing on lower slopes whilst individual rimu, matai and terrestrial northern rata are growing a short distance outside of the Fletcher property. Kamahi dominates the sub-canopy zone of beech forest with frequent tawa, heketara, pepper tree, mingimingi and Karamu growing in association. Manuka, treeferns and the scrambling ropelike kiekie also occur as well as a comprehensive flora of ground plants found widely in the Wellington area.

What Values Does This Forest Possess?

Because of its accessibility, composition and history this forest does have ecological values suggesting that some form of reservation is desirable to allow for research and educational uses. However, I believe the forest has equally important aesthetic and recreation values for the residents of Stokes Valley. In association with nearby manuka, broadleaved scrub forest and kamahi communities, the forest provides an attractive backdrop to present and proposed residential areas and opportunities for pleasant bush walks. Perhaps more so than most indigenous forest communities, beech forest can be interfered with to a degree during roading and other earthworks without jeopardising the life of the canopy trees. Some damage to mesophytic ground plants, particularly ferns can however be expected.

In planning for residential development in this area, it is desirable to minimise sub-division in this forest remnant perhaps by placing at least some sections on or near the margin. This "minimum interference" criterion would not preclude roading through the area to provide access to other sections on the property. In due course, reservation under Town and Country Planning procedures should be made in terms of scenery and recreation rather than for science thus allowing for the formation of graded paths and legal use for recreation purposes. Construction of graded walking paths will not only be a positive step in providing for public recreation but would also discourage many people from moving at random thereby reducing interference with the ground and shrub flora and therefore indirectly contributing to its educational and research value.

(f) Hard Beech/Kamahi Forest

A number of gullies to the west of Stokes Valley Road display

a mixed hard beech/kamahi forest association representing various stages of recovery from initial beech forest destruction. These gullies have a varied, not unattractive appearance and generally contain rewarewa, toru, matipo, small tawa and rimu, large manuka, mamaku and gully tree ferns and a dense understory of Geniostoma, karamu and Blechnum ferns.

(g) Pukatea Dominant Swamp Forest

Located on the floor of a steep sided gully at the top of Stokes Valley Road and separating two pieces of beech forest is a relic of a swamp forest association dominated by pukatea. It is always wet and difficult to move through because of the density of supplejack and kiekie stems. Tawa, mahoe, hinau, swamp maire, pigeonwood, nikau palm and mamaku tree fern also occur. Two species of climbing rata and numerous ferns are epiphytic on the dominant trees. This community has an attractive appearance and compliments the immediately adjacent beech forest. It is desirable to include at least a part of this gully in a forest reserve.

RADIATA PINE TREES:

Scattered naturally established trees of radiata pine occur singly or in groups in manuka scrubland on several spurs and slopes generally below an altitude of 800ft. a.s.l.

In drawing attention to the probable merchantability of many of these trees it should be noted that because of their open grown nature and absence of any pruning or thinning treatment, timber quality will not be high. Standing (or tree) value will presently be 4 to 6 cents per cubic foot. Nevertheless, in the present buoyant timber market, the trees could probably be cut where they occur on proposed roadlines and sections and sold to a local saw-miller. Present value would be of the order of \$500-\$600.

WILDLIFE:

Indigenous wildlife is represented largely by a number of small scrub and forest inhabiting birds which occur commonly below an elevation of 1000ft. a.s.l. Species observed are waxeyes, grey warblers, fantails, tomtits and whiteheads. These are largely insectivorous but also eat small fruits and assist in the dispersal of a number of trees and shrubs. Larger and less common species are tuis and pigeons, the latter playing an important role in the dispersal of trees such as tawa, miro and pigeonwood all of which have large fruits. Harriers and the naturalised birds, magpies, chaffinches, starlings and goldfinches are not uncommon in the open country. The only species dependent upon true forest conditions

for a satisfactory habitat is the whitehead (or North Island Bush Canary) which was observed in the beech forest only, a habitat it is commonly found in elsewhere.

Wild (or feral) pigs and opossums are not uncommon on the property.

References:

A Vegetation Map of the Stokes Valley Catchment.
(A report for the Community Planning Group, Stokes Valley).
G.N. Park, Victoria University of Wellington, 1971.

Forest Remnants and Regenerating Vegetation in Stokes Valley, D.R. McQueen and G.N. Park, Victoria University of Wellington, 1971.

Botanical Survey of an Experimental Catchment, Taita, New Zealand. DSIR Bulletin 124, 1957. A.P. Druce.

A P P E N D I X

Glossary of Common and Botanical Names

of

Plants Mentioned in the Report

Indigenous Species

Trees:

Hard Beech	<u>Nothofagus truncata</u>
Black Beech	<u>N. solandri var. solandri</u>
Kamahī	<u>Weinmannia racemosa</u>
Hinau	<u>Elaeocarpus dentatus</u>
Rimu	<u>Dacrydium cupressinum</u>
Miro	<u>Podocarpus ferrugineus</u>
Northern Rata	<u>Metrosideros robusta</u>
Pukatea	<u>Laurelia novae-zelandiae</u>
Swamp Maire	<u>Eugenia maire</u>
Mahoe	<u>Meliccytus ramiflorus</u>
Rewarewa	<u>Knightia excelsa</u>
Pigeonwood	<u>Hedycarya arborea</u>
Tawa	<u>Beilschmiedia tawa</u>
Fuchsia	<u>Fuchsia excorticata</u>
Matai	<u>Podocarpus spicatus</u>
Nikau (palm)	<u>Rhopalostylis sapida</u>
Cabbage Tree	<u>Cordyline australis</u>

Shrubs:

Manuka	<u>Leptospermum scoparium</u>
Tauhina	<u>Cassinia leptophylla</u>
Rangiora	<u>Brachyglottis repanda</u>
Wineberry	<u>Aristotelia serrata</u>
Koromika	<u>Hebe stricta</u>
Geniostoma	<u>Geniostoma ligustrifolium</u>
Kawakawa	<u>Macropiper excelsum</u>
Pepper Tree	<u>Pseudowintera axillaris</u>
Five finger	<u>Pseudopanax arboreum</u>
Heketara	<u>Olearia rani</u>
Putaputaweta	<u>Carpodetus serratus</u>
Pate	<u>Schefflera digitata</u>
Karamu	<u>Coprosma robusta</u>
	<u>C. lucida</u>
	<u>C. australis</u>
Matipo	<u>Pittosporum tenuifolium</u>
	<u>Myrsine australis</u>
Toro	<u>Myrsine salicina</u>
Mingimingi	<u>Cyathodes acerosa</u>
	<u>C. fasciculatis</u>

Appendix (cont'd)

Climbing Shrubs:

White Rata
Red Rata
Supplejack
Clematis
Lawyer
Keikei

Metrosideros perforata
M. fulgens
Rhipogonum scandens
Clematis paniculata
Rubus cissoides
Freycinetia banksii

Ferns:

Mamaku Tree Fern
Silver Tree Fern
Gully Tree Fern
Ponga Tree Fern
Bracken
Paesia
Blechnum (Hard Fern)
Blechnum (Crown Fern)
Stag Fern
Clubmoss

Cyathea medullaris
C. dealbata
C. cunninghamii
Dicksonia dealbata
Pteridium acullinum
Paesia scaberula
Blechnum capense
B. discolor
Phymatodes diversifolium
Lycopodium volubile

Exotic Species

Trees:

Radiata Pine

Pinus radiata

Shrubs:

Gorse
Broom
Himalayan Honeysuckle
Spanish Heath

Ulex europeus
Cystisus scoparius
Lycesteria formosa
Erica lusitanica

Grasses:

Browntop

Agrostis tenuis