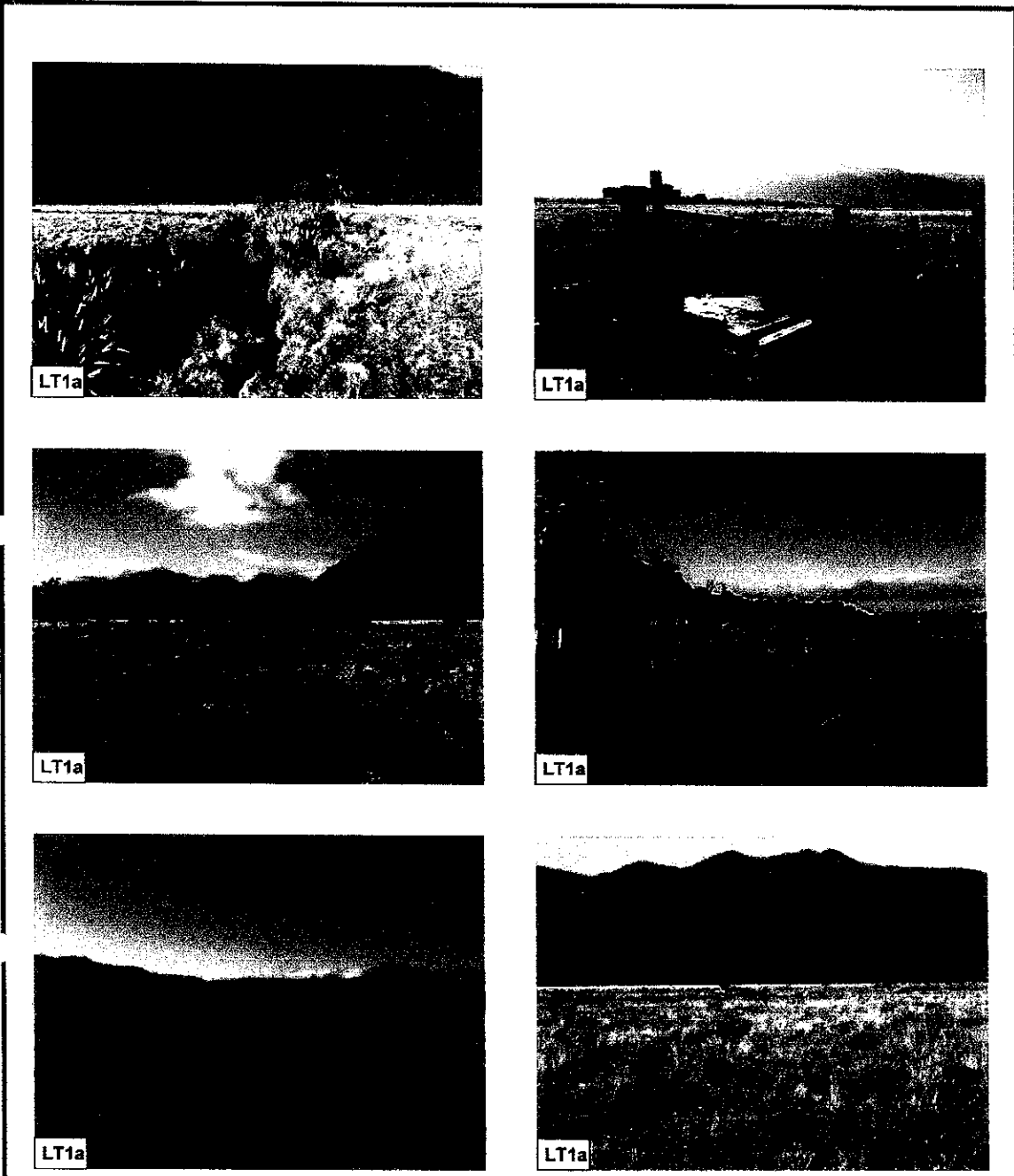


Appendices

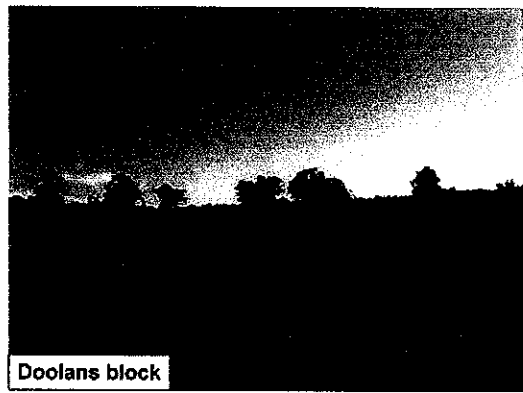
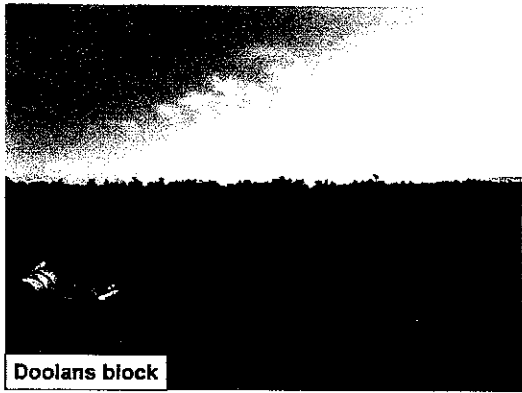
APPENDIX ONE

Landscape Type Photographs

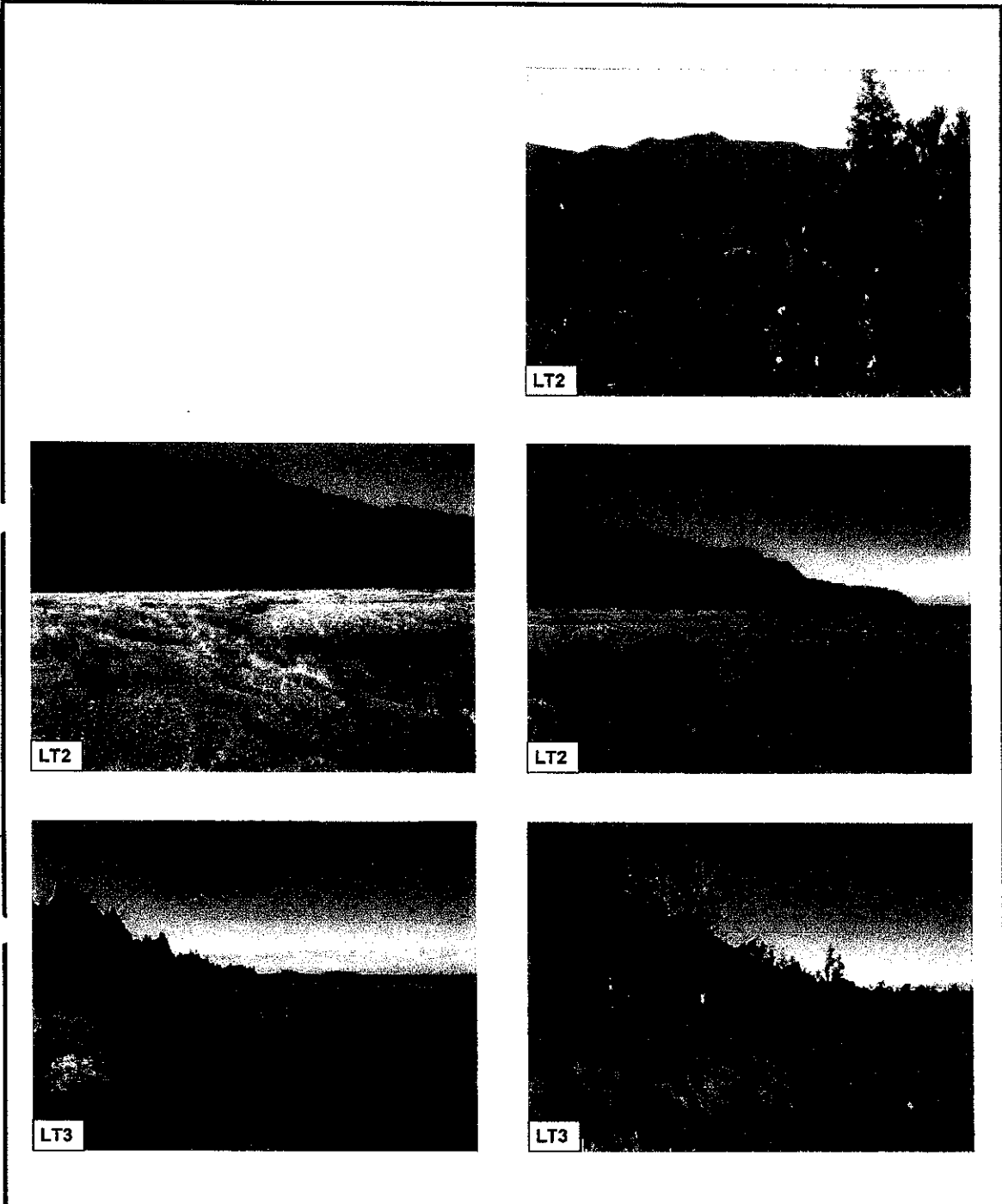


Drawn by Blakely Wallace Associates

Legend	Title	LANDSCAPE TYPE PHOTOGRAPHS		
	Scale	Property	LOWER CASCADE	
	Date	July 2003	Drawing	PHOTOGRAPHS 1
	Topo sheets			



Legend	Title		LANDSCAPE TYPE PHOTOGRAPHS
	Scale	Property	LOWER CASCADE
	Date	Drawing	
	Topo sheets	July 2003	PHOTOGRAPHS 2



Drawn by Blakely Wallace Associates

Legend	Title		LANDSCAPE TYPE PHOTOGRAPHS
	Scale	Property	LOWER CASCADE
	Date	July 2003	Drawing
	Topo sheets		PHOTOGRAPHS 3

APPENDIX TWO.

Vascular Plant Species List : Lower Cascade Pastoral Lease.

Observer: Phil Knightbridge, Rob Wardle, Eric Edwards, Phillippe Gerbeaux
Date: 22 – 24 April 2003
Time spent on survey: 16 hours
Access: Drive to Martyr homestead. On foot over area from there.
Ecological District: Cascade
Grid References: Centered on E38 450 710
Altitude: 11 – 20 m (higher altitude areas within lease but not surveyed during this visit)
Area: 1200 ha
Vegetation Tall forest on fans dominated by kahikatea, with silver
Communities/Habitats: beech, rimu and southern rata.
 Tall forest on colluvial slopes dominated by kamahi.
 Fertile wetland – manuka-flax-cabbage tree/*Carex secta*
 Rough pasture – dominated by adventive grasses Yorkshire fog, sweet vernal, browntop, chewings fescue, tall fescue.
 Shrubland patches including lowland ribbonwood, *Olearia lineata*, *Coprosma* spp.

SPECIES LIST

Adventive species denoted by an asterisk (*).
 Voucher specimens denoted by **

Trees and shrubs	Forest	Wetland	River flats	Comments
<i>Aristotelia fruticosa</i>		Y		
<i>Aristotelia serrata</i>	Y			
<i>Carmichaelia australis</i>		Y	Y	
<i>Carpodetus serratus</i>	Y			
<i>Coprosma acerosa</i>			Y	On recent alluvial surfaces
<i>Coprosma ciliata</i>	Y			
<i>Coprosma elatirioides</i>		Y		
<i>Coprosma foetidissima</i>	Y			
<i>Coprosma lucida</i>	Y			
<i>Coprosma propinqua</i>		Y	Y	Common in wetlands and shrubland
<i>Coprosma rhamnoides</i>	Y			
<i>Coprosma rigida</i>		Y		
<i>Coprosma rotundifolia</i>	Y		Y	
<i>Coprosma rugosa</i>			Y	
<i>Coprosma wallii</i> **			Y	A few individuals scattered throughout shrubland
<i>Coprosma</i> aff. <i>parviflora</i>		Y	Y	<i>Coprosma</i> sp. 't'

<i>Cordyline australis</i>		Y	Y	Common in wetlands and as isolated individuals in pasture
<i>Coriaria arborea</i>			Y	
<i>Dacrycarpus dacrydioides</i>	Y	Y		A canopy dominant in Dee Creek fan forest. Many individuals in heavy fruit during site visit.
<i>Dacrydium cupressinum</i>	Y			
<i>Elaeocarpus hookerianus</i>	Y	Y		
<i>Fuchsia excorticata</i>	Y			On fan
<i>Griselinia littoralis</i>	Y			
<i>Hebe paludosa</i>		Y		
<i>Hedycarya arborea</i>	Y			
<i>Ileostylus micranthus**</i>			Y	On <i>Coprosma wallii</i> , <i>C. aff. parviflora</i> , <i>C. propinqua</i> , <i>Neomyrtus pedunculata</i>
<i>Leptospermum scoparium</i>		Y	Y	Common throughout lease area.
<i>Libocedrus bidwillii</i>	Y			Occasional in forest
<i>Manoao colensoi</i>	Y	Y		In kahikatea forest and in wetland-forest ecotones
<i>Melicytus flexuosus**</i>			Y	Significant southern range extension for this species on West Coast
<i>Melicytus ramiflorus</i>	Y			
<i>Metrosideros umbellata</i>	Y			
<i>Myrsine divaricata</i>	Y	Y		
<i>Neomyrtus pedunculata</i>	Y			
<i>Nothofagus menziesii</i>	Y			On fan
<i>Olearia laxiflora**</i>		Y		Along margin of kahikatea forest
<i>Olearia lineata**</i>			Y	Common in shrubland
<i>Pennantia corymbosa</i>	Y			On fan
<i>Peraxilla colensoi</i>	Y			Common on silver beech hosts. A few individuals browsed by possums
<i>Pittosporum colensoi</i>	Y			
<i>Plagianthus regius</i>			Y	Common canopy in shrubland remnants on flats
<i>Podocarpus totara</i>			Y	Probably var. <i>waihoensis</i> , but a range of forms present
<i>Prumnopitys ferruginea</i>	Y			

<i>Prumnopitys taxifolia</i>	Y		Occasional in forest
<i>Pseudopanax colensoi</i>	Y		
<i>Pseudopanax crassifolius</i>	Y		
<i>Pseudowintera colorata</i>	Y		
<i>Raukaua anomalus</i>	Y	Y	
<i>Raukaua edgerleyi</i>	Y		
<i>Weinmannia racemosa</i>	Y		The dominant subcanopy tree

Lianes and related trailing plants

<i>Metrosideros diffusa</i>	Y		
<i>Muehlenbeckia australis</i>	Y	Y	
<i>Muehlenbeckia axillaris</i>		Y	Common ground cover on recent well drained flats
<i>Parsonsia heterophylla</i>	Y		
<i>Ripogonum scandens</i>	Y		
<i>Rubus australis</i>	Y		
<i>Rubus cissoides</i>	Y		
<i>Rubus fruticosus*</i>		Y	Scattered patches throughout lease
<i>Rubus schmidelioides</i>		Y	Common climber in shrubland throughout lease

Ferns and fern allies

<i>Asplenium bulbiferum</i>	Y		
<i>Asplenium flaccidum</i>	Y		
<i>Asplenium polyodon</i>	Y		
<i>Blechnum fluviatile</i>	Y		
<i>Blechnum minus</i>		Y	
<i>Blechnum penna-marina</i>		Y	
<i>Ctenopteris heterophylla</i>	Y		
<i>Cyathea smithii</i>	Y		
<i>Dicksonia squarrosa</i>	Y		
<i>Grammitis billardierei</i>	Y		
<i>Histiopteris incisa</i>	Y		
<i>Hymenophyllum flabellatum</i>	Y		
<i>Hymenophyllum ferrugineum</i>	Y		
<i>Hymenophyllum scabrum</i>	Y		
<i>Hypolepis rufobarbata</i>	Y		
<i>Leptopteris superba</i>	Y		
<i>Lycopodium varium</i>	Y		
<i>Microsorium pustulatum</i>	Y		
<i>Paesia scaberula</i>	Y		
<i>Polystichum vestitum</i>	Y	Y	
<i>Pyrrosia eleagnifolia</i>	Y		
<i>Rumohra adiantiformis</i>	Y		
<i>Tmesipteris tannensis</i>	Y		
<i>Trichomanes reniforme</i>	Y		

Dicotyledonous herbs

<i>Acaena anserinifolia</i>	Y			
<i>Callitriche petriei</i>		Y		
<i>Cardamine debilis</i>	Y			
<i>Cerastium fontanum*</i>				Y
<i>Cirsium vulgare*</i>				Y
<i>Epilobium brunnescens</i>				Y
<i>Epilobium sp.</i>				Y
<i>Euchiton involucratus</i>		Y		
<i>Galium palustre</i>		Y		
<i>Galium propinquum</i>		Y		
<i>Gonocarpus aggregatus</i>		Y		
<i>Gonocarpus micranthus</i>		Y		
<i>Gratiola nana**</i>	Y			Small patch under kahikatea forest.
<i>Hydrocotyle moschata</i>	Y			
<i>Hydrocotyle sulcata</i>		Y		
<i>Hypericum androsaemum*</i>				Y Occasional
<i>Hypochoeris radicata*</i>				Y Occasional in pasture
<i>Lagenifera pumila</i>				Y
<i>Leptinella squalida</i>				Y
<i>Lotus pedunculatus*</i>		Y		
<i>Lychnis flos-cuculi*</i>		Y		
<i>Microseris scapigera</i>		Y		
<i>Mimulus moschatus*</i>		Y		
<i>Myosotis laxa*</i>		Y		Along creek margins, sometimes submerged
<i>Myriophyllum propinquum</i>		Y		
<i>Nertera depressa</i>	Y			
<i>Nertera villosa</i>	Y			
<i>Oreomyrrhis colensoi</i>				Y
<i>Parentucellia viscosa*</i>				Y
<i>Persicaria decipiens agg.</i>		Y		
<i>Plantago australis*</i>				Y
<i>Plantago lanceolata*</i>				Y
<i>Plantago sp.</i>				Y Small rosette, hairy leaves and leaf bases
<i>Potentilla anserinoides</i>				Y
<i>Pratia angulata</i>				Y
<i>Prunella vulgaris*</i>				Y
<i>Ranunculus amphitrichus</i>		Y		
<i>Ranunculus cheesmanii</i>		Y		
<i>Ranunculus flammula*</i>		Y		Y
<i>Ranunculus repens*</i>		Y		Y
<i>Ranunculus trichophyllus*</i>		Y		
<i>Raoulia tenuicaulis</i>				Y Common ground cover on most recent river flats
<i>Rumex obtusifolius*</i>				Y

<i>Stellaria graminea*</i>			Y	
<i>Trifolium dubium*</i>			Y	
<i>Trifolium repens*</i>			Y	
<i>Urtica incisa</i>			Y	
<i>Viola lyallii</i>			Y	
<i>Wahlenbergia pygmaea</i>			Y	
Monocot herbs, rushes, sedges and grasses				
<i>Agrostis capillaris*</i>			Y	A dominant pasture grass
<i>Agrostis stolonifera*</i>		Y		
<i>Anthoxanthum odoratum*</i>			Y	
<i>Astelia grandis</i>		Y		
<i>Astelia solandri</i>	Y			
<i>Baumea tenax</i>		Y		Wetland margin under manuka.
<i>Carex dissita</i>		Y		
<i>Carex flagellifera</i>			Y	Common in places amongst pasture
<i>Carex gaudichaudiana</i>		Y	Y	Sward forming in damp hollows, including abandoned river channels
<i>Carex geminata</i>		Y		
<i>Carex maorica</i>		Y		Occasional
<i>Carex ovalis*</i>		Y		
<i>Carex secta</i>		Y		Common in ephemeral wetlands and permanent pools throughout river flats
<i>Carex sinclairii</i>		Y		A dominant species in some areas of wetland
<i>Carex tenuiculmis**</i>		Y		Significant southern West Coast range extension. Scattered through flax wetland.
<i>Carex virgata</i>		Y		
<i>Cortaderia richardii</i>			Y	Abundant in patches on river flats
<i>Dactylis glomerata</i>			Y	Occasional in pasture
<i>Deschampsia cespitosa**</i>			Y	Common in places amongst <i>Carex gaudichaudiana</i> and tall fescue in abandoned channel
<i>Earina autumnalis</i>	Y			
<i>Eleocharis acuta</i>		Y	Y	
<i>Festuca rubra*</i>			Y	Dominant pasture grass in patches

<i>Glyceria striata</i> * **		Y		forming dense swards Common in some ephemeral pools. Not common on West Coast.
<i>Holcus lanatus</i> *			Y	A dominant pasture grass
<i>Isolepis prolifer</i>	Y			In ephemeral pool in kahikatea forest
<i>Isolepis subtilissima</i>	Y			
<i>Juncus acuminatus</i> *		Y		
<i>Juncus articulatus</i> *		Y	Y	Common rush of ephemeral wetlands
<i>Juncus edgariae</i>		Y	Y	
<i>Juncus effusus</i> *			Y	
<i>Juncus planifolius</i>		Y		
<i>Juncus sarophorus</i>			Y	
<i>Juncus tenuis</i> *			Y	
<i>Lachnagrostis</i> sp.		Y		
<i>Lolium perene</i> *			Y	
<i>Luzula</i> sp.			Y	
<i>Microlaena avenacea</i>	Y			
<i>Phormium tenax</i>		Y		A dominant species in some wetlands
<i>Poa cita</i>			Y	Scattered tussocks in pasture and more open sites
<i>Potamogeton suboblongus</i>		Y		Occasional in pools
<i>Rytidosperma gracile</i>			Y	
<i>Schedonorus phoenix</i> *			Y	Common adventive grass, particularly in damper sites. Scattered along ephemeral channels
<i>Uncinia egmontiana</i>			Y	
<i>Uncinia rubra</i> ?			Y	Looks like <i>U. rubra</i> , but no seed head to confirm
<i>Uncinia rupestris</i>	Y			
<i>Uncinia uncinata</i>	Y			
<i>Winika cunninghamii</i>	Y			