Wellington Region

Riversdale Wairarapa Coast Masterton District



Region Auckland Vaikato Bay of Plen Sisborne awke's E



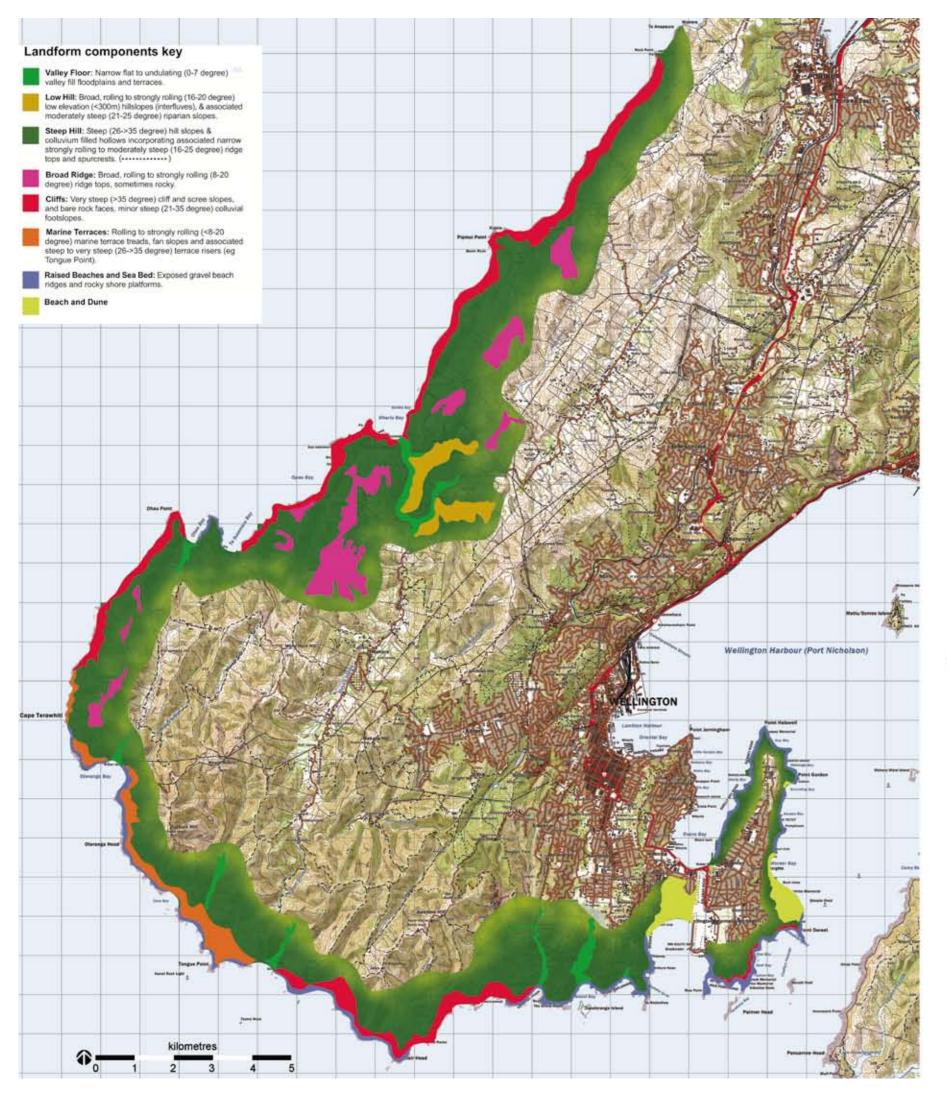
Land Types:





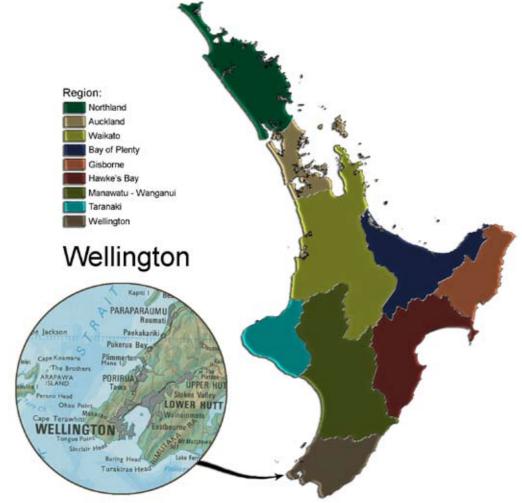
- 1. Elongated estuary
- 2. Prograding sand spit
- 3. Active foredune
- 4. Stabilised dunes and interdune complex
- 6. Lower riser slope
 - 7. Uplifted dissected marine terraces cut into weakly indurated mid Tertiary aged calcareous siltstones and sandstones
 - 8. Uplifted marine terraces
- 9. Weakly indurated mid Tertiary aged calcareous siltstones and sandstones

Lucas Associates with Ian Lynn, Landcare Research 2005 & 2009 9_11



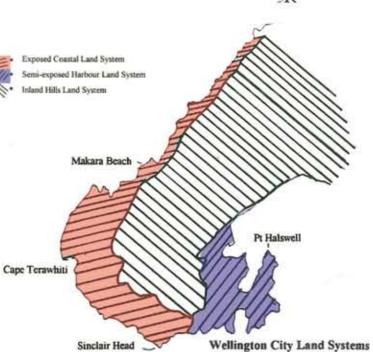
Wellington Region Wellington City





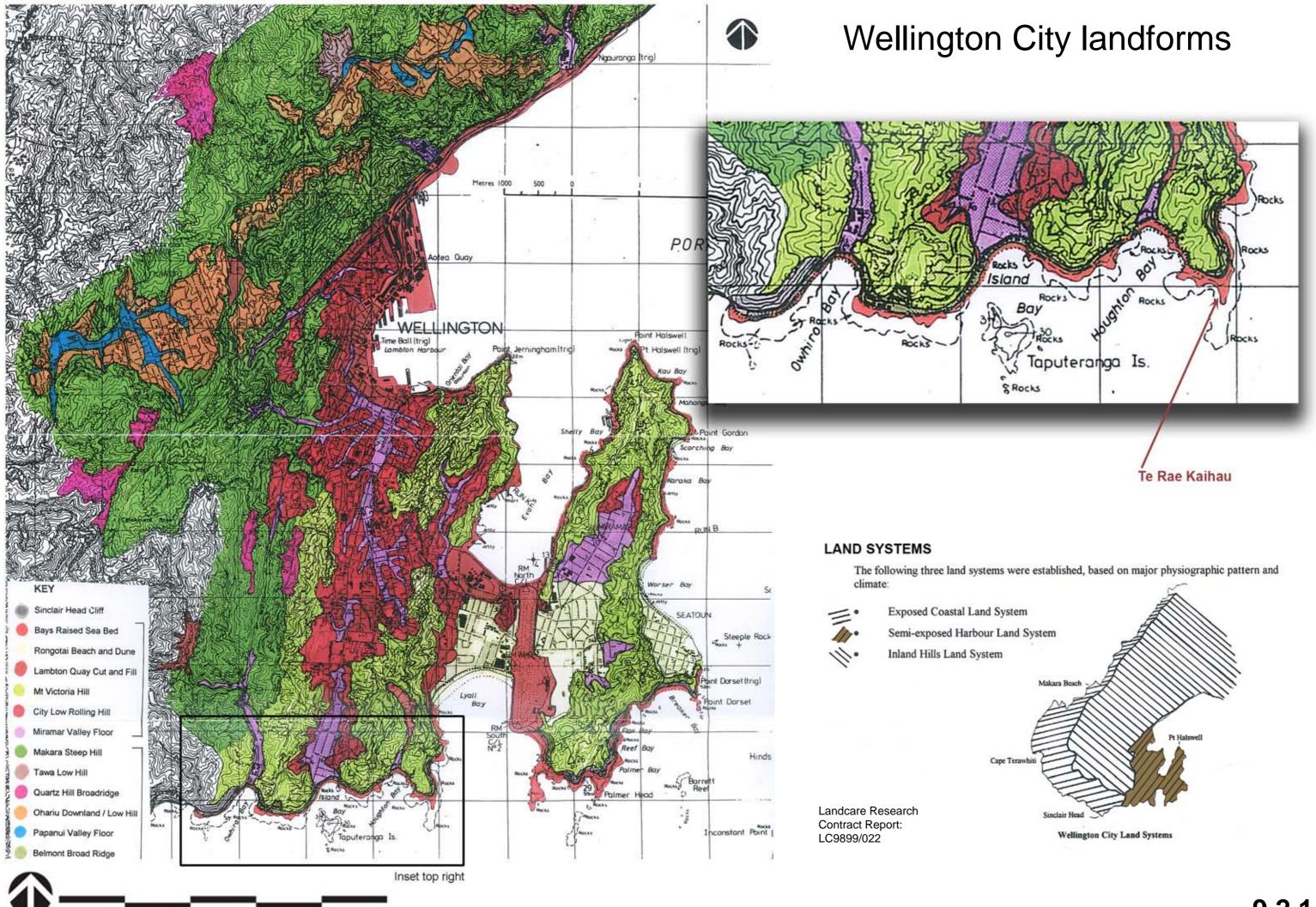
LAND SYSTEMS

The following three land systems were established, based on major physiographic pattern and climate: The



Lucas Associates with Mike Page & Ian Lynn, Landcare Research 2008 9.2

Landcare Research Contract Report: LC9899/022



5 Km

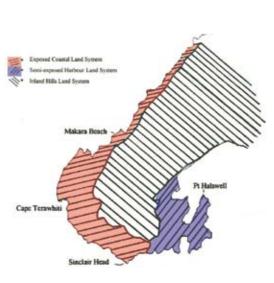
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Land Types of Wellington City



Exposed Coastal Land System

- Terawhiti steep hill
- White Rock broad ridge
- Sinclair Head cliff .
- Tongue Point marine terrace .
- Oteranga stream .
- Moa Point raised sea bed .
- Titahi low hill .





Sinclair Head Cliff Land Type - viewed from Red Rocks

TERAWHITI STEEP HILL LAND TYPE

TONGLE POINT MARINE TERRACE LAND TYPE

Landlerm	Rock type	Regulith depth	Slope	Soll	Altinale	Exposure	Ecosion	Vegetation	Climate
lus slopey	rollevian	80 - 200 em	4-18°	Forina of ham anner : new ell ham anner: vel dramd	30 - 100 -	anground	alight dependition	control with	
RITLE INCOME	exterior and locus even gravel and graywashe	40 - 200 cm	n - 10°	Perinar all loans pronover sile loans, free samly loans drain-ger, imperfactly to moderately will drained	19 - 100 m	typeanil	16	nutral screp	
lettus tiati	actab prescriptional gravity gravitatio	0-40 LN	>M*.	Terawhili sinegiand with nonero many saidy beam dramage: enopsirely dramad	R - 90 to	experiment.	slight some slight pally slight dura slight wird	jaamani obert tusseelä oraaniait sitratt	

OTERANGA STREAM LAND TYPE

Landform	Rock type	Regulith depth	Slope	Soil	Alitode	Exposure	Erosina	Vegetation	Climate
provely inver- body	these factorized	8-3 cm	01"	Walkatur purylly said actives - atop Autopy - ananology drawd	11-20.56	employed	seiett depaittint	han.	
bre stop briere	allarina oroi ganet	1-Um	8-3*	Waikane gravity cost evolver - even or gravity and duringer - even hat escentially during	I-20 K	exposed	moderne dependent modernie stamofiach	Baanto Banayaga	
million height many schedul	alterium mer graval	30 - 60 cm	6-F	Herminings way of basis Assure - shirty of true abarings : amounts analytical	10-22 m	cipned.	40	Billion Billion	

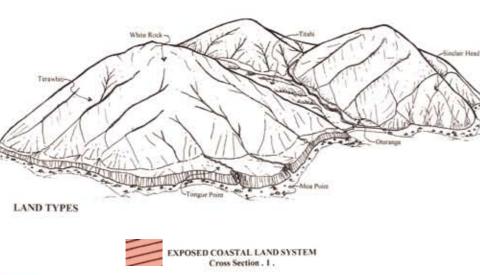
MOA POINT RAISED SEA BED LAND TYPE

Clima

Landform component	Rock type	Regolith depth	Slope	Soit	Attitude	Exposure	Erosion	Vegetation	Climite
gravel beach ridges	Basic) Balance	415 (24)	077	Tutalities provely and ansion : provely and distinger : proveling distinger :	0 = 10 m	espende	deposition.	hare constant servit	
malky angrowed west-band	grynafe	8.000	8-11-	Fast tock	() - 111 an	expense	94	forte: 1	

TITAHI LOW HILL LAND TYPE

Landform	Rock type	Regolith depth	Slope	Suit	Altitude	Exposure	Erosien	Vegetation	Climate
broad rolling metrflores	alghty emolidant units	>100 cm	14-20	Then NE ands sinters : fire sandy have, borry sand duringer) well to outership examinely drawed	20 000 m	soloccej poogranyji	- of gift shoul	ineier gesu minin	
moderately sloop ripation sloper	slightly convolutant unds	H00 cm	21-24.	Truto toll artic protect fine analy lease lowery send duringer ; well to converture expansionly during	20 - 100 m	and an and a second	digit dan sigtt gaby	arayaya Bula Deverto	

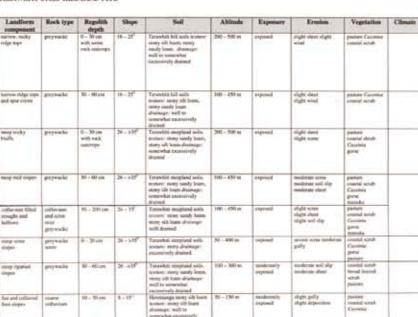


EXPOSED COASTAL LAND SYSTEM

1/ preywach % greywacke platform / beach grave A collownen and ser 200 colidated, weathered grave White rock-Wite allovial gravel Se loes

LAND TYPES

KEY



WHITE ROCK BROAD RIDGE LAND TYPE

Landform	Rock type	Regolith depth	Slope	Soll	Altitude	Exposure	Erosion	Vegetation	
hennad roviky ridger lage	lagas sent greywardio (anne collactane)	0-50 am with some tack outstups	4 - 20*	Renders of lease solar of lease only lease shalloge moderately well in will desired	290 - 400 m	taboug	slight sheet slight wind	juliui Carsilie gree	
hennel indep supe	base sing proyembs toone cirthenium	M - 100 um	ê - 77*	Koniskov oli loan manov oli loan ondy loan duringe: teoloratiy well to well design!	200 - 406 as	capani	slight short slight wind	panion Ganoling gang	

SINCLAIR HEAD CLIFF LAND TYPE

Landform	Rock type	Regulith depth	Slope	Seil	Alillade	Exposure	Erosios	Vegetation	Climate
hater mark faceto	goywahi .	Tem	2.39	hare reck	8-300=	support	igver guty.	hat	
which many	acant.	8-20am	235	Treasition assorptional and/o residence stories abasimages: excessionelly drained	11 - 300 m	and the second	alvest aides	countal workly	
very state sligen	any-sub-	28-20 cm	>15"	Termital asophital with feature story unity bath drahuser economicity drahuser	0 - 300 m	anticipation	onodecute obset modecute wited witght scree	usaakal surse sisist tanonch painter	
citte-sal fire stopes	ongenerate actes were bulkeringe	19-40 úm	21 - 35"	Terpoliti mephad web review many unity lases drainage: well drained in termenhat recessively drained	-0 100 M	reprint	anderes unu modern depositor sigts poly digit duri	anartai satuli shatti amusik pusitatti	

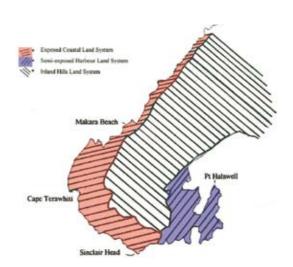
Landcare Research Contract Report: LC9899/022

Land Types of Wellington City, Mike Page, Landcare Research New Zealand Ltd 1996 9.2.2

Land Types of Wellington City

Semi-exposed Harbour Land System

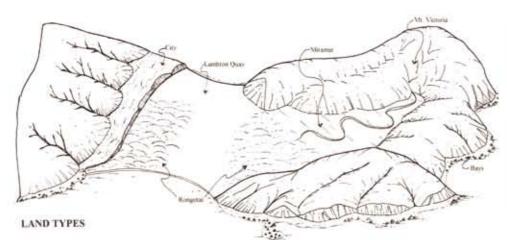
- Bays raised sea bed
- Rongotai beach and dune
- Lambton Quay cut and fill
- Mt Victoria hill
- City low rolling hill
- Miramar valley floor





Bays Raised Sea Bed Land Type - Kau Point viewed from Gordon Point

SEMI - EXPOSED HARBOUR LAND SYSTEM



MT VICTORIA HILL LAND TYPE

Landform	Rock type	Regolith depth	Slope	Sall	Altitude	Exposure	Ermion	Vegetation	Climate
ridge tops and spor cross	liess and collasium over greywacke (moderately to highly weathered)	> 100 on	8-15	Parements off loars, Parements bill soils Korokowi bill soils trenere: silt loars or samly loans over (lay boan, doalonge: moderanity well to importively dramed	100 - 200 m	moderately: sheltered	slight derit slight wind	thefic true point with	
scarward storp mid skoper	prywicks	0 - 40 cm with signe tock catcopy	30->35°	Terawhit isospland softs fermer: enny sandy laam, innery silt loam, ababage: well dramed to somewhat economy abained	0-200 m	moderately exposed	modetate soil slip slight scree slight sheet	gran constal scrub enotic trees broad- leaved scrub	
mid slopts	pryoate	30-80 cm	2) - 35*	Terawhiti hill oolis treisee: attery sandy loan, story silt loan dreisege: well draised to somewhat exercisely drained	њ- 200 м	markaul disper midecasely exposed, landward slepes moderately sheltered	elight mit dip afight screp elight sheat	grum essatul scroh broad-leuved scruh exotic trees	
collawson filled trenghs and Inslaws	collavian, inea and scree over greyworke	50 - 200 em	18-25	Karloro hill sells transe- satdy losin, silt loam dyshage moderately will to will drained	9-200 m	neaward dopps moderately exposed, laubward slopes moderately sluctured	nlight soil slip slight sone	grain broad-leaved scrub exclaments	

RONGOTAL BEACH AND DUNE LAND TYPE

Landform	Rock type	Regulith depth	Slope	Soil	Altitude	Exposure	Erosion	Vegetation	Climate
forehann.	wind hirws and	>300 cm	4 - 13"	Waltarere and instant: and distinge: estenisely dramof	0 - 19 cm	exposed	and and the second	herhacesat said dens vegetation ban:	
les back denes	wisdblown uani	>300 µm	8-15*	Walarery said striker: said destrage: excessively destrad	0 - 10 cm	cabosei cooguarith	slight wind	herhaceous nual dans regenation grave	
and plane	windhown sand	>300 µm	0-30	Hokio weakly method and itraney, and abainage: semewhat encessively drained	.0 - 10.cm	enderantly exposed	dight wind	R.m.	

LAMBTON QUAY CUT AND FILL LAND TYPE

Landform	Rock type	Regolith depth	Slope	Soil	Altitude	Exposure	Erosion	Vegetation	Climate
excented areas	prywarkz register	<100 cm.	8-3,	1	0 - 30 m	moderately exponent	st	hare grace	
filled areas	greywacke regolah	>100 cm	8+3,		0-100 m	contractly copool	41	hare grash	

MIRAMAR VALLEY FLOOR LAND TYPE

Landform	Rock type	Regulith depth	Slope	Sail	Altitude	Exposure	Erosian	Vegetation	Climate
tartes, importanty in poorty drained valley floors	allersum, abeviam over gravels	50 + 100 cm	0 - 1+	Wainhetu alt loans Gollann alt loans Anrtaer : sill loant Josinege : tesperfacily to poorty drained	0 - 80 m	shehmod	atl	B ariny	
namos, sell traised valley Occos	alloviam, alloviam over gravels	50 + 100 pm	9 - 3*	Walkener silt hare metary : silt hare drainage : well to moderarily well drained	0-10 cm	shiftered	ail	B.409	

CITY LOW ROLLING HILL LAND TYPE

Landform component	Rock type	Regolith depth	Slope	Soll	Altitude	Exposure	Erosion	Vegetation	Climate
ken refling ridges, interflaves and rafley sides	icess and collawings over griywachar (moderantly in highly weathered)	100 - 200 cm	4-35	Parentata silt loam, Poriva fore sandy loam. hatare + silt harm or fine sandy loam over clay loam. dromoger - medantacly well is importeolly strated.	0 - 100 m	moderately slachered	sil	grans scholie tipun hetsud-liebend scruth	

BAYS RAISED SEA BED LAND TYPE

Landform	Rock type	Regolith depth	Slope	Sol	Altitude	Exposure	Erosion	Vegetation	CI
gravel bruch ridges	greywacko greyel	<15 on	0+T [*]	Tankine gravely soul tenner / gravely soul dvaluage / statistically drated	0 – 10 as	moderately explosed	deposition.	han combal serve	
nacky amposed and bod	guywake	9 (m.	D - 15"	hare rock	0-10 m	exposed	eil	hars	

- Mr. Victoria-

SEMI - EXPOSED HARBOUR LAND SYSTEM Cross Section . 2 .

LAND TYPES

KEY

1/ poywarke

State alluvial gravel

Se loem

22 60

2 greywacke platform / beach gravel windbiewn sand

consolidated, weathered gravel

collimitat and scre

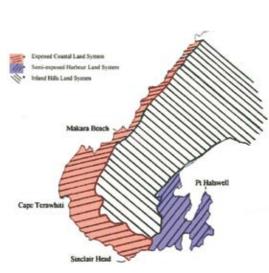
Landcare Research Contract Report: LC9899/022

Land Types of Wellington City, Mike Page, Landcare Research New Zealand Ltd 1996 9.2.3

Land Types of Wellington City

Inland Hills Land System

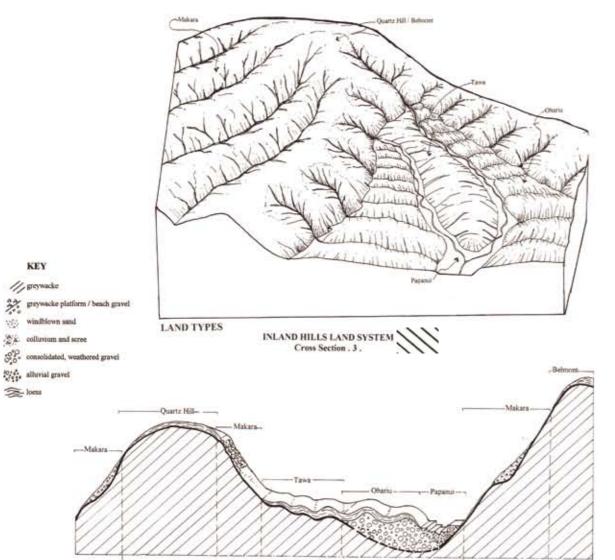
- Makara steep hill
- Tawa low hill
- Quartz Hill broad ridge
- Ohariu downland / low hill
- Papanui valley floor
- Belmont broad ridge





Makara Steep Hill Land Type - Makara Smiths Gully, from top of coastal escarpment, north of Makara Beach

INLAND HILLS LAND SYSTEM



Landform	Rock type	Regolith	Slope	Soil	Altitade	Exposure	Erosion	Vegetations	Climate
nariow, outhy citige sope	pi)esti	0 - 50 cm with some trulk outprogra	16-25'	Makara tall softs interest of the losses, many off learn drankage - well to somewhat economically	26 40 0	andersely exposed	digte sheet digte wind	give Garriso	
metton ridge tops and space conta	Internet	56 - 100 im	16-25'	Januar Mit with Makara Mit with Konstara Mit with Konstara Mit with Anatomic Constants distant distant distant moderaty with	-100 - 400 m	moderanely graphened	elight sheet elight wind	pushitt grea Cassing	
noe osky Nuffs	pryvacia	0 - 30 cm with rock trainings	24-518*	at well drained Milann storpland wells anner - sonny silt frant, -many saddy hann dramage : somewhat excessively drained	20-60-	arbowg argemely	slight sheet slight sener	puncer pitie Curvetie Immali Karoti simali	
stopp and stoppes	grywade	39 - 15 cm	26-035"	Makara stergiand solls iexture: slit hans, steny slit hans, fine sardy hans duringe: well durined to somewhat excessively denied	30+400 m	isoderately exposed	molerate sette molerate solet molerate soli elip	pantano gorcus rrunsoko Cansonias tecoad-beaved ucruth form gnotics comitter forens	
addresser filled yroughs and holicovs	enline turn and norm grownache	40 - 201 zav	26-199	Makara simpland web termen - alt huns, pany alt huns, fan nindy huns dratinger - makristely well to well drates)	100 - 400 m	andre andre engeneed	slight score slight doot slight soil slip	postan gara manaka Canotiky broad laneati wrsh kor, aneic can br force	
njođen njođen	greywacka sellosi	0 - 30 am	28->38,	Makara inceptand solis teature : storg dramoge : ancessively dealened	50-400 m	exposed	madarati sore	porse marsika Carsinio broad-lanved scrub pastare fore cantic conifer forest	
stoppen	goywaika	30 75 cm	28-535	Makura steepland soils feature = off loarn steep sill foarn free sandy fram. drainage / well drainad	30 - 200 m	noderandy abelluted	roderate sheet moderate will slip	broad-leaved scrub marioka postare porte forn axtotic contilio forest	

TAWA LOW HILL LAND TYPE or / will brass NUT NO D products game exotic combin freque broad learned settile interve 2 will beam outidy froms where will do

LAND TYPES

Landcare Research Contract Report: LC9899/022

Land Types of Wellington City, Mike Page, Landcare Research New Zealand Ltd 1996 9.2.4

MAKARA STEEP BILL LAND TYPE

QUARTZ HILL BROAD RIDGE LAND TYPE

Rock type

ridge topy	partwarks (score: calibrium)	
Landform	NLAND/LO	Re
component broad ording downland	Social event convolutional gravelitic consolicitation inghty weathered()	40-
head strengty rolling hills	lians over unter-lidenti grains modernerly weathern()	30-
modernicity mapping	Succe error	20-

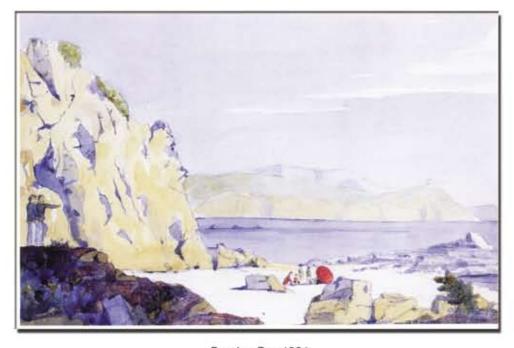
PAPANUI VALLEY FLOOR LAND TYPE

Landform	Rock type	Regolith depth	Slepe	Soll.	Altitude	Exposure	Erosion	Vegetation	Climate
sarrow. importantly to provity draintal nation floors	allerium allerium sver grazeli	50 - 50 cm	8-3.	Warubata olit loan Gallane olit loan manee : olit loan dramage : mpediatly to poolly firmed	1- 100 m	viaciaired	indenie strantiał	parties rustes	
sarrini, nell drainai salbiy Gaier	ollerium ollerium eren granels	59 - 80 cm	8-3*	Waltane dl hon woner slit hon diatoge : sell to motorarly well drived	-0 + 100 m	dichand	trodotate meantrasi weekean disposition	rahas	
nadium beight. Umlaum	grands	99 - 40 dei	8-91	Hermanya sili loan techner - sili loan techner - sell loan dramage - sell lo semechat executively dramad	16+100 m	shahund	**	Baule Design	
Landform	ROAD RIDG	Regolith	M. Slope	Sul	Altimate	Exposure	Ermion	Vegetation	Clinarie
component broad rolling ridge tops	bon and selffaction Appeals over graywachi	66pth 100-15is 276	8-30	Beinem of loan Beinem Ich with water: stit loan	300 - 450 m	molynacly sapsed	-	pasiate porse briad-leared writh	October 29, 1998

egolith depth	Slope	Soil	Altitude	Exposure	Erosion	Vegetation	Climate
- 200 am	4 ~ 20"	Parenara sit hant Ketakare hill mills Archere : sit loars or usedy hant over skip hant abainager metherately well to imporfectly distand	190 - 400 w.	iondernachy stapannel	slight start slight wind	periori printi stra	

ILL LAND TYPE

rgolith fepth	Slope	Soil	Altitude	Espmare	Ecotion	Vegetation	Climate
- 100 cm	8 - 39	Nguar silt beam Judgefood silt leany Instart : silt leans over silty chay issue druhage : moderately well druhage :	30 - 200 m	sisteral	98. 	Roper Sergeni	
Wirm	8-3	Ngain hit suits Judgeford bit ooth tothere / sill koan over silty dag have dramage / moderately well to well dramad	30-240 m	defored	slight will stig slight ident	poner gare cutic units fans	
-90'cm	31 - 25	Nguio hill solle Judgefart hill with restore - sith huma-ser sith choisage - molecumly well so well depend.	39 - 200 m	deland	slight skilt i slight skilt	protoci grava conte sonalite format	

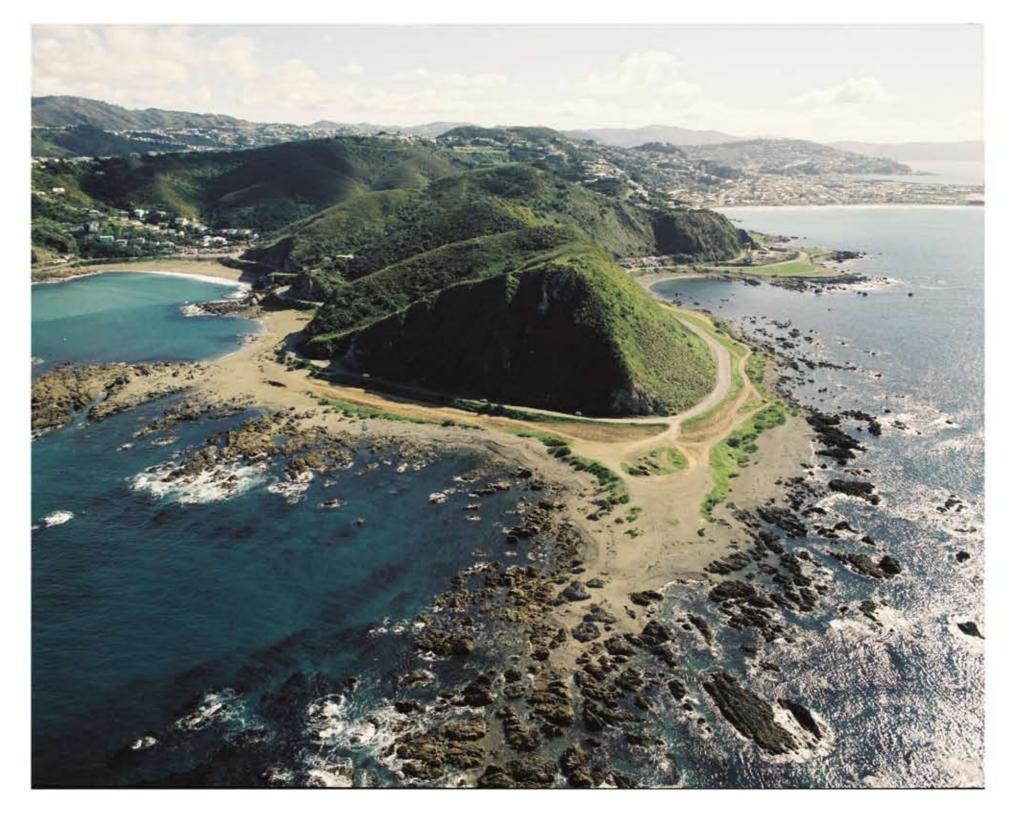


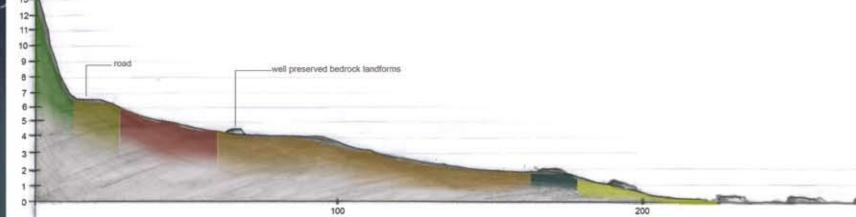
Breaker Bay 1931

Frederick de Jersey Clere Watercolour 175 x 252 mm









Section A--A



(Sourced: Dr Little)

300 metres