

STRATIGRAPHIC COLUMNS LEGEND

for R. Baggs

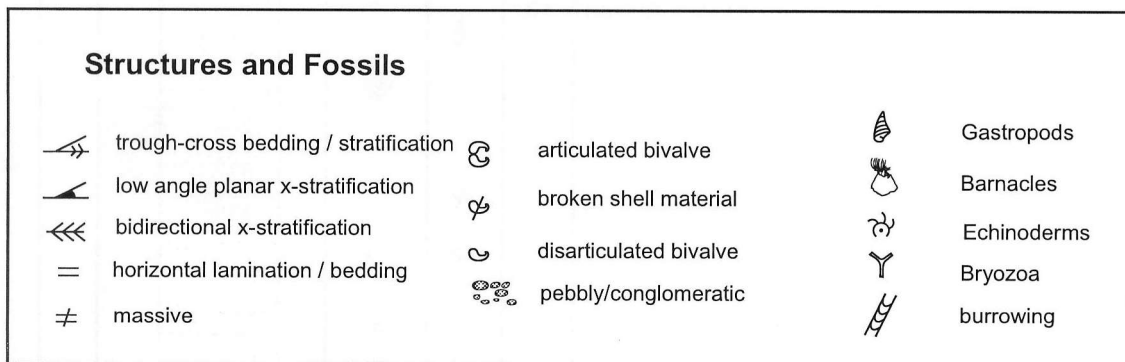
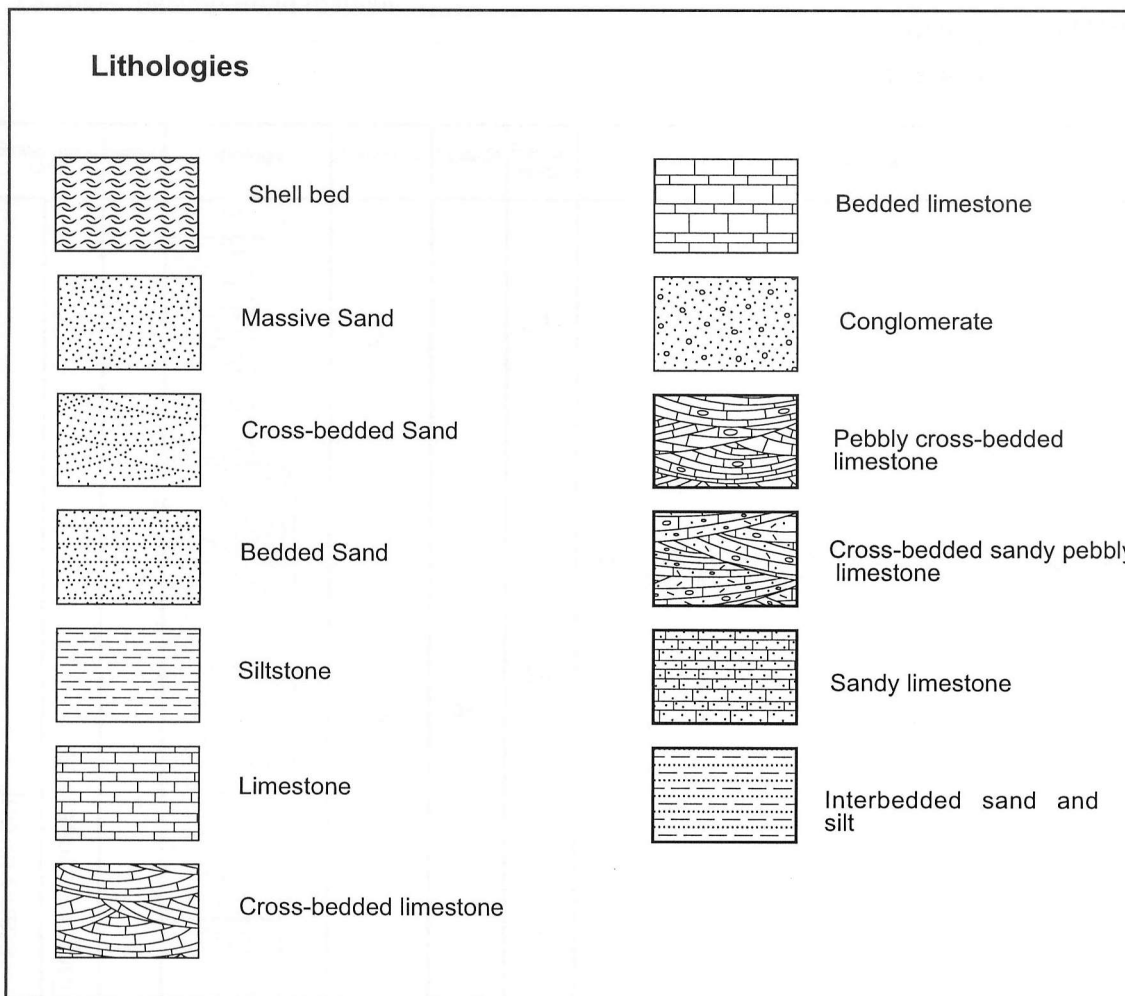
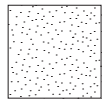


Fig. 12. Legend for stratigraphic columns by R. Baggs.

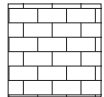
STRATIGRAPHIC COLUMNS LEGEND

for K. Bland

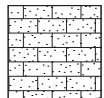
LITHOLOGY



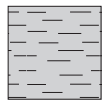
Sandstone



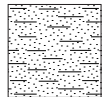
Limestone



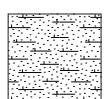
Sandy limestone



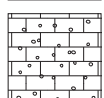
Siltstone



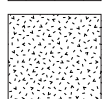
Silty sandstone



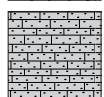
Calcareous sandstone



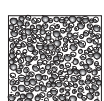
Pebbly limestone



Volcaniclastic sediments



Muddy limestone



Greywacke conglomerate

OTHER INFORMATION



Rip-up clasts



Pebbles



GPS Waypoint



Sample



Fossils



Fossils in general



Fossils in general



Disarticulated concave down bivalves



Photo label and location

Cg₁

Lithofacies code

MACROFAUNAL ASSOCIATIONS



Atrina association



Austrovenus association



Crassostrea association



Crassostrea-Phialopecten sub-association



Crepidula-Sigapatella association



Dosinia (Kereia) association



Dosinia association



Eumarcia association



Fellaster association



Maoricolpus association



Maorimactra association



Neilo association



Neothyris association



Ostrea association



Ostrea-glycymerid sub-association



Ostrea-Purpurocardia sub-association



Paphies association



Patro association



Pratulium association



Stiracolpus-Talochlamys association



Struthiolaria (Callusaria) association



Talochlamys association



Tawera association



Tawera-Crepidula sub-association



Tawera-Patro sub-association



Tawera-Sigapatella sub-association



Tegulorhynchia-Talochlamys sub-association



Tucetona association



Zeacolpus association



Zethalia association

Fig. 13. Legend for stratigraphic columns by K. Bland.

STRATIGRAPHIC COLUMNS LEGEND

for S. Boyle

STRATIGRAPHIC COLUMNS

Symbols and abbreviations from Andrews (1982)

Symbol

	cross-bedded
	trace fossils
	well-bedded
	indistinctly-bedded
	massive
	calcareous
	flaser bedded
	concretions
	normally graded
	inversely graded
	sandstone
	limestone
	mudstone
	siltstone
	conglomerate
	loess
	tephra bed
	Pleistocene cover beds

Abbreviations

<u>calc.</u>	very calcareous
calc.	moderately calcareous
(calc.)	weakly calcareous

Wt sample numbers held by the Earth Sciences Department, University of Waikato

Note: Bedding shown in graphic logs is not drawn to scale

Fig. 14. Legend for stratigraphic columns by S. Boyle.

STRATIGRAPHIC COLUMNS LEGEND


for V. Caron

KEYS TO STRATIGRAPHIC SECTIONS

Where possible, all sedimentary structures have been represented as they were observed at outcrop. For features such as burrows, dewatering structures, convolute bedding, and slump structures, the scale of representation is exaggerated.

6 Running column numbers refer to localities on location map in Caron 2002

CONTACTS

 Erosional surface

 Sharp surface

 Gradational

MICROFACIES ASSEMBLAGE

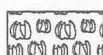
 Detrital

 Bimol


 Barbital

 Mixed skeletal

 Bryotal


 Barnamol

MACROFAUNA


 Oysters

 Scallops


 Biomoulds

 Bryozoans

 Bivalves

 Brachiopods

 Barnacles

 Gastropods

 Echinoids

SAMPLES

● 5.36 Rock sample

● F.5.32 Macrofauna sample

Te = Tephra layer

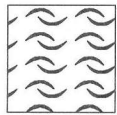
Fig. 15. Legend for stratigraphic columns by V. Caron.

STRATIGRAPHIC COLUMNS LEGEND

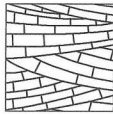
for S Dyer

Page 1 of 2

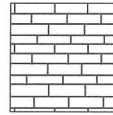
Lithology



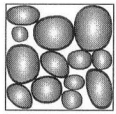
Shellbed



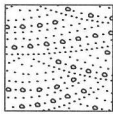
Cross bedded limestone



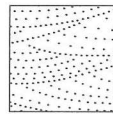
Limestone



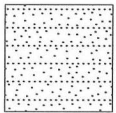
Gravel



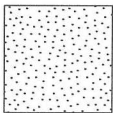
Crossbedded gravel



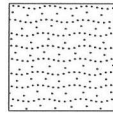
Crossbedded sand



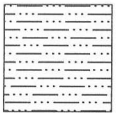
Horizontally bedded sand



Massive sand

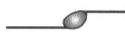


Ripple bedded sand



Siltstone

Structures



Pebble imbrication



Concretionary layer



Laminated bedding



Weak bedding



Massive bedding



Wavy bedding



Wavy horizontal bedding



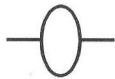
Weak convolute bedding



Convolute bedding



Burrows



Burrows - vertical or horizontal



Crossbedding

mm

Millimetre scale bedding

cm

Centimetre scale bedding

g

Glauconite

V

Volcanic material



Mudstone/
Siltstone
inclusions

Fig. 16. Legend for stratigraphic columns by S.Dyer (page 1).

STRATIGRAPHIC COLUMNS LEGEND

for S. Dyer

Page 2 of 2

Fossil Symbols



Dominant Fossil Genus

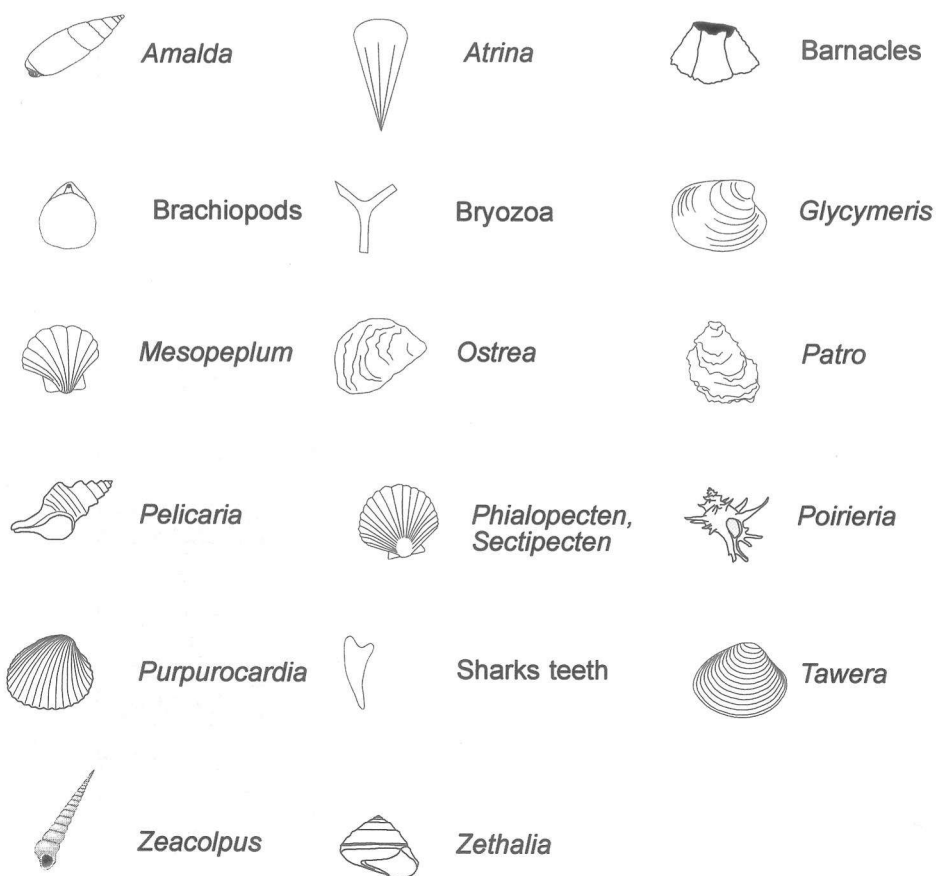
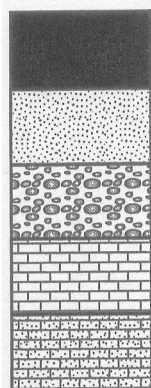


Fig. 16. (continued, page 2).

STRATIGRAPHIC COLUMNS LEGEND

for R. Graafhuis

Lithology



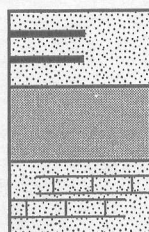
Siltstone

Sandstone

Conglomerate

Limestone

Sandy Limestone (coquina)



Sandstone with mud drapes

Silty sandstone

Calcareous sandstone

Physical Structures



Horizontally bedded



Tabular cross-bedded



Bi-directionally cross-bedded



Trough cross-bedded



Internal truncation



Truncation of trough cross-bed



Ripple bedded



Convolute bedded



Wavy laminated

Miscellaneous



Plant material



Bioturbation



Bioturbation
down into bed



Escape structure



Scattered fossils



Shellbed



Concretion



Conformable
sequence boundary



Erosional
sequence
boundary inferred



Erosional
sequence boundary



Sequence number



Grainsize sample



Sample locality

Fig. 17. Legend for stratigraphic columns by R. Graafhuis.

Table 1. Lithofacies descriptions for R. Baggs columns

Facies Descriptions	Description	Environmental Interpretation
Carbonate		
C1 Pebbly coquina	<i>Tawera subsulcata</i> dominated, basement pebbles, sand dominating in upper section, low angle cross-bedding.	Shallow water, high energy, proximal to greywacke gavel source.
C2 Pebbly bioclastic grainstone	Barnacle dominated with common bivalves and bryozoan, trough cross-bedding, basement pebbles.	High energy current seaway, shallow water, proximal to gravel source.
C3 Barnacle-dominated bioclastic grain stone	Barnacle dominated with common bivalves ad bryozoan, variety of cross-bedding types, liquefaction structures.	High energy current seaway, shallow water.
Mixed		
M1 Skeletal sandstone	Broken and abraded shell material, cross-bedded, <i>tawera subsulcata</i> and <i>Sigapetalla</i> sp., sometimes basement pebbles.	High energy inner shelf, tidal movement, storm waves.
M2 Densely fossiliferous siltstone	<i>Tawera subsulcata</i> dominated shell bed, sandy siltstone matrix	Inner to mid shelf, moderate energy, reworked shoreface fauna.
Siliclastic		
S1 Non-fossiliferous conglomerate	Non-fossiliferous basement pebbles – cobbles, horizontal bedding related to clast size.	Braided river system, variation in transport energy.
S2 Fossiliferous conglomerate	Alternating horizontal poorly – moderately fossiliferous beds, <i>in situ</i> <i>Tawera subsulcata</i> and <i>Zethalia zelandica</i> .	Semi-enclosed bays, near shore, high energy, flooding original sandy substrate.
S3 Moderately fossiliferous siltstone	Massive sandy siltstone to silty sandstone, scattered fossils dominated by <i>Pellicaria convex</i> form <i>fossa</i>	Middle shelf, moderate – low energy, open ocean conditions.
S4 Siliciclastic sandstone	Non-calcareous, very well sorted, fine grained sand, massive-horizontal bedding, sometimes cross-bedded. Siltstone clasts and stringers.	Moderate energy, near shore, reworked.
S5 Non-fossiliferous siltstone	Massive – laminated, non – weakly calcareous siltstone.	Storm emplacement. Reworked in inner shelf after flooding.

Table 2. Lithofacies descriptions for K. Bland columns (page 1)

Lithofacies in the Neogene succession cropping out in the forearc basin in western and central parts of Hawke's Bay (continued on next page). R, rare; UC, uncommon; S, some; C, common; A, abundant.

Lithofacies		Description	Inferred environment of deposition	Typical faunal associations
Sandstone		Siliciclastic-dominated		
S ₁	Massive sandstone (C)	Massive, non cemented non fossiliferous slightly micaceous very well-sorted fine to medium sandstone.	Shoreface to nearshore	None
S ₂	Massive to cross-stratified sandstone (C)	Massive to cross-stratified non cemented very well-sorted fine to medium sandstone.	Shoreface to inner shelf	None
S ₃	Massive to cross-stratified fossiliferous sandstone (C)	Massive to cross-stratified non cemented very well-sorted moderately to highly fossiliferous fine to medium sandstone. Macrofossils commonly concentrated into densely-fossiliferous lenses.	Shoreface to inner shelf	<i>Dosinia</i> , <i>Zethalia</i> , <i>Fellaster</i>
S ₄	Silty sandstone (C)	Non cemented non to sparsely fossiliferous massive to laminated well-sorted fine sandstone to silty sandstone.	Lower-inner to middle shelf	<i>Atrina</i> , <i>Maorimactra</i> , <i>Dosinia</i> (<i>Kereia</i>), <i>Patro</i>
S ₅	Calcareous sandstone (S)	Non to well cemented non to sparsely fossiliferous slightly to moderately calcareous fine sandstone with prominent concretions and cemented horizons. May contain a noticeable bioclastic content.	Lower-inner to middle shelf	<i>Atrina</i>
S ₆	Interbedded sandstone-siltstone (S)	Non to well cemented non to sparsely fossiliferous fine sandstone to sandy siltstone with common concretionary horizons and prominent sandstone and siltstone interbeds.	Inner shelf	<i>Dosinia</i> (<i>Kereia</i>), <i>Atrina</i>
S ₇	Sandstone with siltstone stringers (UC)	Non to well cemented fine sandstone to sandy siltstone with common mudstone stringers. Beds are faintly to strongly laminated.	Marginal-marine to sheltered nearshore	<i>Austrovenus</i> , <i>Patro</i>
S ₈	Ripple and flaser-bedded sandstone (R)	Non to slightly fossiliferous ripple, flaser- and cross-bedded fine to medium sandstone with common interbeds and detached lenses of siltstone.	Estuarine	<i>Austrovenus</i>
S ₉	Pebbly sandstone (S)	Non cemented, non to moderately fossiliferous massive to cross-stratified to laminated sandstone with common to abundant greywacke pebbles and conglomerate lenses.	Shoreface to nearshore	<i>Dosinia</i> , <i>Zethalia</i>
S ₁₀	Concretionary sandstone (S)	Non to slightly cemented non- to sparsely-fossiliferous moderately to strongly laminated and cross-stratified fine to medium sandstone with common to abundant concretionary horizons.	Nearshore to inner shelf	<i>Atrina</i>
S ₁₁	Sandstone with fossiliferous concretions (S)	Slightly to well cemented fine to medium sandstone with moderately to highly fossiliferous, moderately to well cemented concretionary bodies up to 1 m thick.	Nearshore to inner shelf	<i>Struthiolaria</i> (<i>Callusaria</i>), <i>Zeacolpus</i>
S ₁₂	Laminated to convolutedly-bedded sandstone (R)	Strongly laminated to cross-stratified to convolutedly-bedded fine to medium sandstone bodies in a series of stacked packages up to 0.5 m thick. Contains common to abundant tephric sediments.	Inner shelf	Null
Siltstone				
Z ₁	Massive siltstone (A)	Non fossiliferous, massive to weakly laminated non to slightly cemented siltstone. May contain concretions up to 1 m across.	Outer shelf to bathyal	None
Z ₂	Fossiliferous siltstone (A)	Slightly to moderately fossiliferous, massive to laminated non cemented firm bioturbated siltstone.	Middle to outer shelf	<i>Pratulium</i> , <i>Neilo</i> , <i>Ostrea</i> , <i>Tawera</i> - <i>Patro</i> , <i>Talochlamys</i> , <i>Tegulorhynchia</i> - <i>Talochlamys</i>
Z ₃	Fossiliferous sandy siltstone	Slightly to moderately fossiliferous massive to laminated bioturbated siltstone.	Lower-inner to middle shelf	<i>Atrina</i> , <i>Patro</i> , <i>Dosinia</i> (<i>Kereia</i>), <i>Stiracolpus</i> - <i>Talochlamys</i> , <i>Tawera</i> - <i>Patro</i>
Z ₄	Siltstone with sandstone interbeds (UC)	Non to moderately fossiliferous, fine-grained siltstone with sandstone interbeds and stringers. Ripple and flaser-bedded units are common.	Estuarine	<i>Austrovenus</i>
Z ₅	Pebbly siltstone (C)	Non cemented, slightly to moderately fossiliferous, slightly to moderately pebbly siltstone to sandy siltstone.	Inner to middle shelf	<i>Stiracolpus</i> - <i>Talochlamys</i> , <i>Ostrea</i> , <i>Neilo</i>
Z ₆	Siltstone-sandstone couplets	Slightly to strongly laminated planar-bedded non cemented, fine to large-scale alternating fine siltstone/sandstone couplets.	Upper bathyal	None
Z ₇	Channelised siltstone-sandstone couplets (S)	Strongly-laminated non cemented alternating fine-grained siltstone-sandstone couplets in large packages with sharp, highly erosional and channelised bases.	Upper bathyal	None
Z ₈	Siltstone with tephra beds (S)	Non to slightly fossiliferous non cemented sandy siltstone to siltstone with prominent discrete tephra beds.	Middle to outer shelf	<i>Pratulium</i> , <i>Atrina</i> , <i>Talochlamys</i>
Z ₉	Alternating siltstone-sandstone (C)	Alternating beds of non to slightly fossiliferous non cemented sandy siltstone interbedded with fine-grained well sorted non fossiliferous sandstone.	Inner to upper-middle shelf	<i>Dosinia</i> (<i>Kereia</i>), <i>Atrina</i>
Z ₁₀	Siltstone with plant remains (R)	Non cemented fine grained grey brown laminated siltstone with some to abundant plant remains	Non- to marginal-marine	None
Z ₁₁	Muddy shellbed (C)	Non to weakly cemented, massive siltstone to silty sandstone, matrix-dominated bed containing a concentration of molluscan macrofauna. May be noticeably pebbly in places. Inferred to occur above downlap surfaces.	Middle to outershelf	<i>Ostrea</i> , <i>Ostrea</i> -glycymerid

Table 2. (continued page 2)

Lithofacies		Description	Inferred environment of deposition	Typical faunal associations
Conglomerate				
Cg ₁	Massive conglomerate (C)	Non-to moderately cemented, poorly to moderately sorted non fossiliferous massive to weakly laminated greywacke conglomerate. Clasts are of granule to boulder-size.	Fluvial braid-plain, river channels	None
Cg ₂	Conglomerate with sand and silt lenses (C)	Non to slightly cemented massive to laminated and cross-stratified greywacke conglomerate with interbeds of sandstone and siltstone to 0.5 m thick.	Fluvial braid-plain, major and adjacent channels	None
Cg ₃	Cross-stratified conglomerate (S)	Non to slightly cemented, poorly to well-sorted tabular to trough cross-stratified greywacke conglomerate.	Fluvial braid-plain, river channel bars	None
Cg ₄	Laminated conglomerate (C)	Strongly-laminated very well-sorted alternating coarse sand/fine-pebble - medium/coarse pebble greywacke beds.	Shoreface, shingle beach	None
Cg ₅	Slightly-fossiliferous conglomerate (UC)	Non to moderately cemented clast-supported, slightly fossiliferous greywacke conglomerate.	Marginal marine to estuarine	<i>Austrovenus</i>
Cg ₆	Fossiliferous conglomerate (S)	Non to moderately cemented, moderately to well sorted, moderately to highly fossiliferous greywacke conglomerate.	Nearshore, harbour and tidal channels, inner shelf	<i>Paphies</i> , <i>Zethalia</i> , <i>Tawera</i> , <i>Ostrea-glycymerid</i> , <i>Tucetona</i> , <i>Ostrea-Purpurocardia</i> , <i>Struthiolaria (Callusaria)</i> , <i>Zeacolpus</i>
Cg ₇	Fossiliferous breccia (R)	Non to moderately cemented, poorly to slightly cemented, moderately to highly fossiliferous coarse-grained breccia. Clasts are dominated by greywacke with a sandy and gravelly matrix.	Nearshore to shoreface with a rocky coastline.	<i>Crassostrea</i>
Volcaniclastic				
V ₁	Airfall tephra (R)	Non-welded, massive to laminated fine-ash with occasional fine to medium lapilli-sized clasts in beds up to 0.6 m thick. Commonly strongly burrowed.	Volcanic airfall into middle- to outer-shelf water depths	None
V ₂	Ignimbrite (R)	Non- to slightly-welded, massive to laminated to cross-stratified fine ash with occasional medium lapilli-sized clasts.	Non-marine to marginal-marine pyroclastic flow	None
V ₃	Laminated to cross-stratified volcaniclastics (R)	Non-welded massive to strongly-laminated and cross-stratified fine ash to medium lapilli-sized volcaniclastic sediments that display evidence of current re-working. Convolute bedding and water-escape structures are common.	Non-marine to estuarine	None
Bioclastic-dominated				
BC ₁	Stacked medium to coarse skeletal beds (C)	Moderately to well cemented, sparsely fossiliferous medium to coarse-grained stacked skeletal sheets 0.1-0.3 m thick.	Inner to middle shelf	<i>Neothyris</i>
BC ₂	Fossiliferous stacked medium to coarse skeletal beds (C)	Moderately to well cemented moderately to highly fossiliferous stacked skeletal beds 0.1-0.3 m thick. Fauna are almost exclusively epifaunal and semi-infaunal taxa.	Inner to middle shelf	<i>Crassostrea-Phialopecten</i> , <i>Neothyris</i>
BC ₃	Shelly limestone (C)	Slightly to well cemented moderately to highly fossiliferous shelly medium to coarse-grained limestone with common to very abundant biomoulds.	Nearshore to inner shelf	<i>Tucetona</i> , <i>Tawera</i> , <i>Eumarcia</i>
BC ₄	Fossiliferous shell-gravel (S)	Slightly to moderately cemented highly fossiliferous cross-stratified shell-gravel-dominated coarse-grained sandstone with abundant intact macrofossils.	Nearshore to inner shelf	<i>Tawera-Crepidula</i> , <i>Crepidula-Sigapatella</i>
BC ₅	Giant cross-stratified limestone (UC)	Slightly to moderately cemented non to sparsely fossiliferous limestone with stacked beds as part of giant, metre-scale trough and sigmoidal cross-beds.	Inner to middle shelf with strong sea-floor currents	<i>Crassostrea-Phialopecten</i> , <i>Neothyris</i>
BC ₆	Pebbly limestone (S)	Slightly to well cemented, sparsely to moderately fossiliferous alternating skeletal grainstone and mixed bioclastic-siliciclastic packstone as sheets up to 0.3 m thick with common to abundant greywacke pebbles.	Inner shelf, strong bottom currents	<i>Crassostrea-Phialopecten</i>
BC ₇	Cross-stratified sandy limestone (S)	Moderately to well cemented tabular to sigmoidal cross-stratified sandy limestone. Contains sparse to common macrofauna, which are usually present as biomoulds.	Inner shelf, moderate to strong bottom currents	<i>Tawera</i>
Mixed bioclastic-siliciclastic-dominated				
MX ₁	Bioclastic-siliciclastic sandstone (C)	Non to slightly cemented, medium-grained siliciclastic-bioclastic sandstone. Commonly cross-stratified with mudstone lenses and stringers to 0.3 m thick.	Innermost shelf	<i>Tawera</i> , <i>Tawera-Crepidula</i> , <i>Crepidula-Sigapatella</i>
MX ₂	Coarse-grained mixed conglomerate (R)	Pebble to cobble-dominated conglomerate with rare clasts up to boulder-size and common valves of robust epifaunal and infaunal bivalves in a coarse-grained bioturbated matrix of mixed bioclastic-siliciclastic sediments. Contains Mesozoic and Cenozoic clasts.	Nearshore, tidal channels	<i>Crassostrea-Phialopecten</i>
MX ₃	Conglomeratic limestone (S)	Moderately to well cemented, massive to cross-stratified medium to coarse-grained bioclastic-dominated beds with common to abundant pebble to cobble-sized clasts of greywacke, sandstone and mudstone lithologies.	Nearshore, harbour and tidal channels, inner shelf	<i>Tawera</i> , <i>Paphies</i> , <i>Maoricolpus</i> , <i>Tucetona</i> , <i>Ostrea-glycymerid</i> , <i>Struthiolaria (Callusaria)</i> , <i>Zeacolpus</i> , <i>Ostrea-Purpurocardia</i>
MX ₄	Alternating bioclastic-siliciclastic bodies (C)	Slightly to well cemented, sparsely fossiliferous alternating skeletal grainstone and mixed bioclastic-siliciclastic packstone as sheets up to 0.3 m thick.	Inner to middle shelf with strong tidal currents	<i>Neothyris</i>

Table 3. Lithofacies descriptions for V. Caron columns (page 1).

Summary of facies attributes and their interpretation for the Pliocene sedimentary deposits in southern Hawke's Bay

	Facies and constituents	Physical structures and geometrics	Ichnology	Interpretation
Bioclastic Facies				
B1a	<u>Fossiliferous rudstone</u> : terrigenous/skeletal matrix (<40% quartz; bivalves (especially oysters, pectinids, brachiopods, bryozoans (encrusting and robust branching), barnacles, rare echinoids, rare gastropods; mud pebbles and occasional bored pebbles.	Massive bedding, local trough cross-bedding medium to thick bedded (<0.5 m up to 4 m); continuous or lensoid	Bioturbation	Shallow water, high energy, intertidal to subtidal <i>in situ</i> oyster shell bank and traction emplaced shell beds
B1b	<u>Fossiliferous rudstone</u> : silty/muddy matrix (<15% quartz); bivalves (especially oysters), brachiopods, turritellid gastropods, bryozoans (rigid ad delicate branching)	Massive bedding, planar cross-bedding; sharp contact with underlying beds; thick bedded (up to 3 m), continuous	Bioturbation	Shallow water, low-energy, sheltered subtidal environment oyster shell bank
B1c	<u>Pebbly rudstone (fossiliferous)</u> : terrigenous/skeletal matrix 50% quartz) bivalves (especially oysters), pectinids, rare bryozoans (encrusting and robust branching); locally Torlesse pebbles, bored pebbles up to 15 cm in size, locally abundant mud and sand clasts	Massive bedding, flaggy bedding; erosional contact with underlying beds; thick bedded (up to 3 m), continuous or lensoid		Shallow water, high-energy, intertidal, possibly channel-fill deposits
B1d	<u>Conglomerate</u> : terrigenous/skeletal matrix, Torlesse boulders and pebbles (average size 2 cm but up to 20 cm), fossiliferous in places	Massive bedding; thick bedded (up to 2 m), tangential and trough cross-bedding in the finer-grained beds	Bioturbation	Fan-delta channel-fill deposits fan delta front
B2a	<u>Barnacle-rich grainstone</u> : (<20% quartz); coarse-grained debris; mostly barnacles, oysters, bryozoans and echinoids; locally whole specimens of pectinids and other bivalves; mud clasts in places	Planar cross-stratification, trough cross-bedding, sharp to erosional contact with underlying beds; medium to thick-bedded local mega and so-called giant foresets; continuous, up to 3 m thick sheet-like units	<i>Thalassinoides</i> <i>Skolithos</i>	Shallow, high energy setting, tidal currents swept sea floor, sand waves
B2b	<u>Bioclastic grainstone</u> : <25% quartz); medium to coarse-grained; barnacles, oysters, various bivalves, bryozoans (encrusting and rigid branching), brachiopods; sand and mud clasts	Planar and tangential cross-stratification, trough cross-bedding; often sharp base; medium-bedded (<1 m); continuous, though laterally discontinuous sheets in places	<i>Thalassinoides</i> <i>Skolithos</i>	Shallow, high energy setting, tidal or storm-driven currents swept sea floor; sand waves
B3a	<u>Bioclastic packstone</u> : (<40% quartz); fine to medium-grained; barnacles, oysters, pectinids, brachiopods (common in places), bryozoans (rigid and delicate branching), rare echinoids; mud clasts	Trough and sigmoidal cross-bedding; ripple structures locally, planar and tangential cross-laminations; local coarse skeletal lenses and common interlayered mudstone sheet-like units (<0.5 m)	Bioturbation <i>Ophimorpha</i> <i>Planolites</i>	Moderate energy setting, below fair-weather and above storm wave base (equivalent to mid-shelf deposits)

Table 3. (continued, page 2).

B3b	<u>Bioclastic packstone and wackestone</u> : (<20% quartz); medium to coarse-grained; barnacles, oysters, pectinids, brachiopods, encrusting bryozoans, serpulids, echinoids, red algae, common benthic foraminifers; micritization	Planar and tangential cross-stratification, local small-scale trough and sigmoidal structures; common tabular bedding	Bioturbation <i>Skolithos</i>	Moderate energy, shallow water environment, close to fair-weather wave base; embayment
Mixed Facies				
M1	<u>Alternating grainstone and packstone</u> : (<30% quartz); fine to coarse-grained, especially barnacles and oysters, brachiopods, bryozoans (robust and delicate branching), rare echinoids, rare serpulids, pectinids; mud clasts	Trough cross-bedding, sigmoidal and convolute cross-laminations, minor HCS; skeletal lag lenses; sharp-based grainstone; mud layers; laterally discontinuous sheets; thin to medium-bedded (up to 0.25 m)	<i>Ophiomorpha</i> <i>Planolites</i> rare <i>Solicia</i>	Contrasting conditions; between fair-weather and storm wave base sand dunes
M2	<u>Interbedded grainstone and terrigenous packstone</u> :<40% quartz); fine to medium-grained; whole barnacles, oysters, brachiopods (abundant in places) bryozoans (delicate and rigid branching, local foliaceous), oysters, echinoids, pectinids, brachiopods; mud clasts	Planar and sigmoidal cross-laminations, HCS; laterally discontinuous, lensoid, sharp-based grainstone; tempestites, thin skeletal lag concentrates; interbedded mudstone lenses; horizontally-bedded sheet units	Dense bioturbation <i>Ophiomorpha</i> <i>Planolites</i> <i>Scolicia</i>	Between fair-weather and storm wave base sand dunes locally, possibly storm-induced (i.e. tempestites) or tectonic induced (e.g. turbidites)
M3	<u>Interbedded terrigenous packstone and calcareous sandstone</u> : (<50% quartz); lutite-sized debris; barnacles, bryozoans delicate branching, foliaceous and fenestrate), oysters, echinoids, pectinids, brachiopods; mud clasts	Planar laminations, minor sigmoidal and convolute cross-laminations, ripple structures thin horizontally-bedded discontinuous sheets (5-15 cm); interbedded mudstone lenses	Dense bioturbation <i>Planolites</i> <i>Chondrites</i>	Moderate to low energy; close to lower storm wave base
Siliclastic Facies				
S1	<u>Calcareous sandstone</u> : (<50% quartz); lutite-sized debris; bryozoans; oysters, other bivalves including pectinids	Ripple and convolute structures, horizontal laminations, interbedded mudstone layers, massive to relict horizontally-bedded	Dense bioturbation <i>Chondrites</i> <i>Ophiomorpha</i>	Moderate to low energy; well-oxygenated; above storm wave base
S2	<u>Siltstone</u> : skeletal hash; rare bryozoans, oysters, pectinids, local Turritellid gastropods	Associated with thin mudstone lenses; medium-bedded (up to 1 m)	<i>Planolites</i> <i>Chondrites</i>	Quiet waters, more distal setting (equivalent outer shelf)
S3	<u>Mudstone</u> : yellow-grey to blue-grey; uncommon macrofauna (gastropods pectinids)	Lensoid to massive	<i>Chondrites</i>	Quiet waters (equivalent outer shelf)

Table 4. Lithofacies descriptions for S. Dyer columns

LITHOFACIES CODE	DESCRIPTION	INFERRED DEPOSITIONAL ENVIRONMENT	
Mudstone Lithotypes	M ₁	Massive – weakly bedded, fossiliferous mudstone	Inner to mid-shelf
	M ₂	Concretionary mudstone	Inner to mid-shelf
	M ₃	Massive, sparsely fossiliferous mudstone	Mid-shelf
	M ₄	Massive non-calcareous mudstone	Fluvial
	Ms ₁	Interbedded blue-grey mudstone and sandstone	Inner shelf/near shore
Sandstone Lithotypes	S ₁	Differentially-cemented, calcareous sandstone	Inner shelf / near shore
	S ₂	Non-calcareous, quartzose sandstone	Fluvial
	S ₃	Glauconitic sandstone	Mid-inner shelf
	S ₄	Pumiceous, non-calcareous, sandstone	Fluvial
Carbonate and Shell bed Lithotypes	C ₁	Massive skeletal grainstone	Topographic highs
	C ₂	Differentially-cemented skeletal grainstone	Topographic highs
	C ₃	Trough cross—bedded skeletal grainstone	Tidal influenced highs
	C ₄	Tabular cross-bedded, mouldic packstone	Tidal influenced highs
	Cs ₁	Silty sandstone shell bed of <i>Ostrea</i> sp. and <i>Patro</i> sp.	Inner to mid-shelf
	S ₆	Friable, fossiliferous sandstone	Near shore / inner-shelf
Gravel Lithotypes	Cg ₁	Massive, poorly-moderately sorted greywacke gravel	Fluvia l/ foreshore
	Cg ₂	Imbricated, horizontally bedded, greywacke gravel	Fluvial
	Cg ₃	Massive to cross-bedded pumice and greywacke gravel	Fluvial

Table 5. Lithofacies descriptions for R. Graafhuis columns

Code	Description	Interpretation
Z1	Massive Siltstone	Mid to outer shelf, with reworking of inner shelf sediments.
Z2	Silty sandstone or sandy siltstone	Mid to inner shelf, with high energy currents resulting in sediment by-passing.
Z3	Interbedded siltstone and sandstone	Offshore inner shelf between fair-weather wave base and storm wave base.
C1	Greywacke conglomerate	Braided river system in a broad alluvial fan.
C2	Locally sourced/tidal channel/intraformational conglomerate	Tidal channels, forming during a sea-level rise.
S1	Planar cross-bedded to massive sandstone	Beach to shoreface sandstone
S2	Massive Sandstone	Shoreface to innermost shelf sandstone
S3	Sandstone with mud drapes trough-hummocky-swaley cross-bedding, mud off-shoots, and limestone lenses	Inner shelf to lower shoreface sandstone, storm and tidal current emplaced sandstone.
S4	Sandstone with thin mud drapes, current ripples, rare cross-beds, bioturbation and concretions.	Inner-mid shelf sandstone with strong tidal currents.
S5	Massive to poorly bedded with silty sandstone beds with mud drapes	Inner shelf sandstone, with reworking of shoreface taxa or some sediment by-passing.
S6	Massive to poorly bedded with silty sandstone beds without mud drapes	Inner-mid shelf sandstone, with small amount of interdigitation of siltstone and sandstone.
L1	Cross-bedded limestone conquina to calcareous sandstone, with common basal scouring	Inner-shelf, with current swept sea-floor.
L2	Trough cross-bedded limestone.	Inner-mid shelf, rapidly emplaced limestone beds, eroded off limestone mounds.

Table 6. Spreadsheet of Stratigraphic Column Location and Originators.

Col No	Sheet	Eastings	Northings	Elevation	Column Location Description	Region	Originator	Original Col No	Photos	Pages
1	V19	2840049	6235605	185	Mohaka River above Te Hoe River, Waitara Station	Waitara	Kyle Bland	Wi-3	Yes	2
2	V19	2841600	6230100		Te Rangi Station	Central Hawkes Bay	Rhys Graafhuis	Wi17_Bottom		1
3	V19	2842300	6229900		Rangiora Stud	Central Hawkes Bay	Rhys Graafhuis	Wi15_Bottom		1
4	V19	2843000	6229700		Te Rangi Station	Central Hawkes Bay	Rhys Graafhuis	Wi13(1/2)_Top		2
5	V19	2840700	6228700		Naumai Station	Central Hawkes Bay	Rhys Graafhuis	Wi16_Top		1
6	V19	2840800	6228400		Naumai Station	Central Hawkes Bay	Rhys Graafhuis	Wi14_Top		1
7	V19	2837583	6227623	681	Pohokura Road near Woodstock Rd intersection	Naumai	Kyle Bland	Na-1	Yes	3
8	V19	2819661	6226539	712	Napier-Taupo Rd approx 1 km north of Te Haroto	Te Haroto	Kyle Bland	Th-1	Yes	1
9	V19	2838600	6226200		Naumai Station	Central Hawkes Bay	Rhys Graafhuis	Wu5(1/4)_Bottom		4
10	V19	2842300	6227000		Rangiora Stud	Central Hawkes Bay	Rhys Graafhuis	Wi12(1/2)_Bottom		2
11	V19	2843500	6227100		Boundary Stream walkway	Central Hawkes Bay	Rhys Graafhuis	Wi9(1/3)_Bottom		3
12	V19	2840500	6224600		Maori Gully Track	Central Hawkes Bay	Rhys Graafhuis	Wi8_Top		1
13	V19	2841800	6224300		Rangiora Stud	Central Hawkes Bay	Rhys Graafhuis	Wi6(1/2)_Bottom		2
14	V19	2844500	6225500		Rangiora Stud	Central Hawkes Bay	Rhys Graafhuis	Wi7_Top		1
15a	V19	2846600	6225300		Heays Access Road	Central Hawkes Bay	Rhys Graafhuis	Wi5_Top		1
15b	V19	2849500	6224600		Flat Hill Road	Central Hawkes Bay	Rhys Graafhuis	Wi3		1
16	V19	2844900	6223500		Sharky Hill on Rangiora Stud	Central Hawkes Bay	Rhys Graafhuis	Wi4(1/3)_Bottom		3
17a	V19	2840300	6222700		Quarry Road	Central Hawkes Bay	Rhys Graafhuis	Wu4(1/2)_Bottom		2
17b	V19	2840200	6222800		From Quarry Rd, along Pohokara Rd and tributary of Waikoau R.	Central Hawkes Bay	Rhys Graafhuis	Wu3		1
18	V19	2833200	6223500		Maungaharuru Range, Taraponui Trig	Central Hawkes Bay	Rhys Graafhuis	Ek5_Bottom		1
19	V19	2832200	6223100		Taraponui Trig	Central Hawkes Bay	Rhys Graafhuis	Ek4/3_Bottom		3
20	V19	2827073	6222491	301	Waitara Road near Glenfalls Reserve	Waitara	Kyle Bland	Wi-1		1
21	V19	2824624	6222154	390	Track off main farm road, Tarawera Station	Waitara	Kyle Bland	Wi-2	Yes	3
22	V19	2812863	6220750	696	Simmonds farm above Ripia River	Ripia	Kyle Bland	Ri-2		1
23	V19	2813013	6220634	695	Simmonds farm above Ripia River	Ripia	Kyle Bland	Ri-1		1
24	V19	2832600	6221000		Ahuateatua Trig	Central Hawkes Bay	Rhys Graafhuis	Ek6_Bottom		1
25	V19	2834200	6220400		Toronui Station	Central Hawkes Bay	Rhys Graafhuis	Ek3_Bottom		1
26	V19	2836800	6220800		Toronui Station	Central Hawkes Bay	Rhys Graafhuis	Wu6_Top		1
27a	W19	2856300	6222800		Waikari River Section	Central Hawkes Bay	Rhys Graafhuis	Wi1(1-5) Bottom		5
27b	W19	2850800	6220100		Matahorua Road	Central Hawkes Bay	Rhys Graafhuis	Wi2		1
28	U20	2809407	6216474	626	Mangatutu Hot Springs access road	Makahu	Kyle Bland	Mk-1		1
29	U20	2809645	6215409	646	Hillside on Jack Nicholas' farm	Makahu	Kyle Bland	Mk-2		1
30	U20	2799440	6198184	641	Quarry off Kuripapango Road, Kaweka Forest	Kuripapango	Kyle Bland	Ku-1	Yes	1
31	U20	2805519	6198220	363	Tutaekuri River above Lawrence Road swingbridge	Kuripapango	Kyle Bland	Ku-3	Yes	3
32	U20	2804786	6192787	819	Western side of Sandy Ridge, Kaweka Forest	Glenross	Kyle Bland	Gr-2		1
33	U20	2803566	6191203	834	The Lizard, north end Glenross Range	Kuripapango	Kyle Bland	Ku-2	Yes	5
34	U20	2804013	6190395	796	Lizard Road, nth end Glenross Range, Kaweka Forest	Glenross	Kyle Bland	Gr-1	Yes	2
35	V20	2812311	6219522	644	Limestone bluffs above Ripia R. near Pakaututu Rd	Ripia	Kyle Bland	Ri-3		1
36	V20	2812300	6216500	420	Mohaka River below Makahu River confluence	Pakaututu	Kyle Bland	Ri-4	Yes	1
37	V20	2823296	6217459	301	Inganatahi Stream below Church Bush Road	Crohane	Kyle Bland	Cr-4	Yes	2

Table 6. Spreadsheet of Stratigraphic Column Location and Originators.

Col No	Sheet	Eastings	Northings	Elevation	Column Location Description	Region	Originator	Original Col No	Photos	Pages
38	V20	2826720	6216336	535	Cuttings on SH5, Napier side of Titiokura Saddle	Titiokura	Kyle Bland	Ti-1		3
39	V20	2829193	6219148	825	Maungahruru Ridge Track, Waitara Station	Maungahruru	Kyle Bland	Mg-1	Yes	2
40	V20	2834500	6218300		Toronui Station	Central Hawkes Bay	Rhys Graafhuis	Ek2		3
41	V20	2837900	6218100		Makomako Road	Central Hawkes Bay	Rhys Graafhuis	Ek1		1
42	V20	2840800	6214800		Waikoau River Section	Central Hawkes Bay	Rhys Graafhuis	Wu2		2
43	V20	2849891	6214526	347	Ridgemount Road at first road cuttings	Tutira	Kyle Bland	Tu-1	Yes	1
44	V20	2843000	6212200		Waikoau River Section	Central Hawkes Bay	Rhys Graafhuis	Wu1		7
45	V20	2844776	6208068	150	Devils Elbow road section, Tangoio Block	Tangoio	Kyle Bland	Tg-4	Yes	6
46	V20	2839726	6210752	356	Darkys Spur Road section, Tangoio Block	Tangoio	Kyle Bland	Tg-3	Yes	4
47	V20	2837100	6208400		Esk River upstream of Deep Stream	Te Pohue	Kyle Bland	Tp-4		1
48	V20	2836100	6207300		Deep Stream above Alexandra Road ford	Te Pohue	Kyle Bland	Tp-5		1
49	V20	2833682	6207160	343	Old Coach Road gravel pit	Te Pohue	Kyle Bland	Tp-6		1
50	V20	2827100	6210600		Limestone bluffs beside Translator Road	Te Pohue	Kyle Bland	Tp-1	Yes	1
51	V20	2827500	6211500		Te Pohue	Central Hawkes Bay	Vincent Caron	W4_C38		2
52	V20	2828727	6214418	681	Cuttings on SH5, Napier side of Titiokura Saddle	Titiokura	Kyle Bland	Ti-2		1
53	V20	2825600	6213100	1021	Section below repeater towers, Te Waka Trig	Te Pohue	Kyle Bland	Tp-3	Yes	3
54	V20	2825217	6212916	955	Te Waka Range west of transmitter	Te Waka	Kyle Bland	Tw-1		1
55	V20	2824874	6213393	991	North face of Te Waka Range overlooking Mohaka R.	Te Waka	Kyle Bland	Tw-2	Yes	1
56	V20	2823966	6212811	937	Te Waka Range southwest of transmitter	Te Waka	Kyle Bland	Tw-3	Yes	1
57	V20	2820543	6212478	517	Church Bush Rd in Crohane Forest south of Inganatahi Stream	Crohane	Kyle Bland	Cr-1	Yes	1
58	V20	2820039	6210545	547	Cherry Block Stn up small stream from Potter Rd	Crohane	Kyle Bland	Cr-2		1
59	V20	2819271	6210191	525	Cherry Block Stn up small stream from Potter Rd	Crohane	Kyle Bland	Cr-3		1
60	V20	2815869	6212915	785	Hukanui Station at northern boundary fences	Pakaututu	Kyle Bland	Pa-3		2
61	V20	2815665	6211514	965	Hukanui Station below Hukanui Trig	Puketitiri	Kyle Bland	Pu-3		1
62	V20	2815569	6211418	977	Hukanui Station below Hukanui Trig	Puketitiri	Kyle Bland	Pu-2		1
63	V20	2813663	6212952	715	North face of Hukanui Hill, Hukanui Station	Puketitiri	Kyle Bland	Pu-7		3
64	V20	2813055	6212369	748	Bluffs above Pakaututu Road overlooking switchback	Pakaututu	Kyle Bland	Pa-2		1
65	V20	2812713	6212372	741	Bluffs above Pakaututu Road overlooking switchback	Pakaututu	Kyle Bland	Pa-1	Yes	1
66	V20	2809961	6205368	852	Summit of Hill 930 m, Anawhenua Station	Puketitiri	Kyle Bland	Pu-8		2
67	V20	2813950	6206000		Rocky Hill Station bluffs	Puketitiri	Kyle Bland	Pu-4	Yes	1
68	V20	2817075	6206795	567	Puketitiri Road near Misty Valley	Puketitiri	Kyle Bland	Pu-9	Yes	1
69	V20	2817361	6206811	570	Farm paddock 20 m north of Puketitiri Rd	Puketitiri	Kyle Bland	Pu-5		1
70	V20	2817463	6206812	564	Farm paddock 20 m north of Puketitiri Rd	Puketitiri	Kyle Bland	Pu-6		1
71	V20	2817898	6207027	515	Potter Rd near Puketitiri Rd intersection	Puketitiri	Kyle Bland	Pu-1		1
72	V20	2816900	6204300		Hawkeston	Central Hawkes Bay	Vincent Caron	W3_C39		2
73a	V20	2820651	6204204	537	The Bend, Opau Station	Patoka	Kyle Bland	Pt-1		2
73b	V20	2820709	6204975		Opau Stream section near metal pit off Puketitiri Rd	Patoka	Kyle Bland	Pt-2		3
74	V20	2824798	6203236	321	Farm Track above Maingarangiroa Stream	Patoka	Kyle Bland	Pt-3		1
75	V20	2826799	6202918	66	Mangaone River upstream of Patoka Stream	Patoka	Kyle Bland	Pt-10	Yes	1
76	V20	2826952	6202255	260	Mangaone River upstream of Patoka Stream	Patoka	Kyle Bland	Pt-9	Yes	1
77	V20	2831200	6203722	355	Glengarry Hill section	Glengarry	Kyle Bland	Gg-1		2
78	V20	2837588	6200001	42	Rautoitoi Stream near Ellis Wallace Road	Eskdale	Kyle Bland	Ek-4		1
79	V20	2846961	6198520	390	North end of Whirinaki Beach	Tangoio	Kyle Bland	Tg-5	Yes	1

Table 6. Spreadsheet of Stratigraphic Column Location and Originators.

Col No	Sheet	Eastings	Northings	Elevation	Column Location Description	Region	Originator	Original Col No	Photos	Pages
80	V20	2837487	6198391	173	Belmont Station overlooking Ellis Wallace Road	Eskdale	Kyle Bland	Ek-1		1
81	V20	2837265	6198589	171	Belmont Station below trig overlooking SH5	Eskdale	Kyle Bland	Ek-2		1
82	V20	2836223	6196746	91	Hillside below farm track at end of Beattie Road	Eskdale	Kyle Bland	Ek-3	Yes	1
83	V20	2830050	6196373	98	Mangaone River upstream of Olsen's farm	Glengarry	Kyle Bland	Gg-5	Yes	3
84	V20	2825961	6200233	369	Huiarangi Road gravel pit	Patoka	Kyle Bland	Pt-4	Yes	1
85	V20	2825602	6200556	358	The Spiral, Huiarangi Road	Patoka	Kyle Bland	Pt-5	Yes	1
86	V20	2818800	6200700		The Gorges	Central Hawkes Bay	Vincent Caron	W1_C40&41		2
87	V20	2818656	6201140	363	The Gorges, Wai-iti Stream	Patoka	Kyle Bland	Pt-8	Yes	2
88	V20	2816822	6202740	602	Top of Mount Hassal	Hawkston	Kyle Bland	Hw-2	Yes	1
89	V20	2813073	6200358	428	Seaview Station east of Hawkston Road	Hawkston	Kyle Bland	Hw-3		1
90	V20	2810803	6200034	628	Cuttings on M6 Road, Te Kowhai Forest	Te Kowhai	Kyle Bland	Tk-1		1
91	V20	2812814	6199510	333	Hawkston Lake, Hawkston Station	Hawkston	Kyle Bland	Hw-4	Yes	1
92	V20	2815135	6197454	385	The Incline, Price-Cockburn Road	Waihau	Kyle Bland	Hw-1		2
93	V20	2821431	6198020	278	Gravel pit off Waihau Road	Patoka	Kyle Bland	Pt-6		1
94	V20	2820468	6196666	311	Track to trig on Cascade Farm	Patoka	Kyle Bland	Pt-7	Yes	1
95	V20	2820686	6190605		Cutting on Waihau Road near Te Puna Farm	Waihau	Kyle Bland	Wa-1		1
96	V20	2833813	6192389	308	Matches Farm above road and towards The Gums	Glengarry	Kyle Bland	Gg-4	Yes	3
97	V20	2833980	6192389	278	Awanui Farm	Glengarry	Kyle Bland	Gg-3		1
98	V20	2836660	6191555	243	Quarry in forset above Hedgely Station	Eskdale	Kyle Bland	Ek-5	Yes	2
99	W20	2850741	6214895	438	Road cutting near top of Ridgemount Road	Tangoio	Kyle Bland	Tg-2		1
100	W20	2852955	6213316	360	Ridgemount Road, Tangoio Block	Tutira	Kyle Bland	Tu-2	Yes	1
101	W20	2853625	6206830		Aropaoanui Road above Aropaoanui River	Tangoio	Kyle Bland	Tg-1		2
102	W20	2855556	6206726		Composite column at Aropaoanui River mouth	Aropaoanui	Kyle Bland	Ap-1	Yes	2
103	U21	2809276	6188366	75	Ngaruroro River downstream of Whana Valley	Matapiro	Kyle Bland	Mt-1		1
104	U21	2803500	6187800		Omahaki	Central Hawkes Bay	Vincent Caron	W2_C42_Bottom		2
105	U21	2803475	6187674	575	Southern end Glenross Range	Glenross	Kyle Bland	Gr-3		1
106	U21	2801131	6186642	391	Omahaki Station composite	Omahaki	Kyle Bland	Om-1		2
107	U21	2803002	6185832	675	Southern end of Glenross Range, Kohurau airstrip	Omahaki	Kyle Bland	Om-2		2
108	U21	2803300	6183500		Airstrip	Central Hawkes Bay	Vincent Caron	W5_C43_Top		2
109	U21	2801599	6180930	351	Awapai Station	Whanawhana	Kyle Bland	Wh-4	Yes	2
110	U21	2804042	6180637	446	Awapai Station above entrance gate	Whanawhana	Kyle Bland	Wh-3	Yes	1
111	U21	2804100	6180200		Awapai Gate	Central Hawkes Bay	Vincent Caron	Wh1_C44_Top		2
112	U21	2809409	6177484	262	Matapiro Road, lower Whana Valley composite	Whanawhana	Kyle Bland	Wh-1	Yes	2
113	U21	2809406	6177489	262	Matapiro Road, lower Whana Valley composite	Whanawhana	Kyle Bland	Mt-3		3
114	U21	2805591	6173792	180	Poporangi-Ohara Stream confluence	Kereru	Kyle Bland	Ke-5	Yes	2
115	U21	2804656	6172771	184	Ohara Stream below Big Hill Road bridge	Kereru	Kyle Bland	Ke-4	Yes	3
116	U21	2802643	6172062	205	Ohara-Big Hill Stream confluence	Kereru	Kyle Bland	Ke-7	Yes	3
117	U21	2797172	6171783	401	Rocky Outcrop, Gull Flat Road	Kereru	Kyle Bland	Ke-6		1
118	U21	2796600	6168500		Glendale Farm	Central Hawkes Bay	Vincent Caron	Ke1_C46_Bottom		2
119	U21	2796869	6168447	484	Glendale Farm below Mount Mary	Kereru	Kyle Bland	Ke-8	Yes	3
120	U21	2809423	6168965	174	Kereru Road, Whanakino Stream brdige	Kereru	Kyle Bland	Ke-1	Yes	1

Table 6. Spreadsheet of Stratigraphic Column Location and Originators.

Col No	Sheet	Eastings	Northings	Elevation	Column Location Description	Region	Originator	Original Col No	Photos	Pages
121	U21	2793509	6166513	455	Jumped Up Stream below Mangleton Road bridge	Kereru	Kyle Bland	Ke-3		3
122	U21	2792572	6166364	585	Sentry Box Scenic Reserve off Mangleton Road	Kereru	Kyle Bland	Ke-2	Yes	3
123	V21	2810532	6188531	297	Taihape Road at Waikonini Stream bridge	Otamauri	Kyle Bland	Ot-1		1
124	V21	2817412	6189043	129	Tutaekuri River below Waldon Road ford	Waihau	Kyle Bland	Wa-2		1
125	V21	2820362	6187725	102	Tutaekuri River near Waikonini Stream confluence	Sherenden	Kyle Bland	Sh-4		2
126	V21	2820598	6186291	233	Cuttings on driveway, Bilby's Block, Flag Range	Sherenden	Kyle Bland	Sh-3		1
127	V21	2821392	6188373	82	Waikonini Stream below Flag Range	Sherenden	Kyle Bland	Sh-5		2
128	V21	2825159	6188088	338	Farm track up Mount Cameron on Waihau Road side	Dartmoor	Kyle Bland	Da-1	Yes	2
129	V21	2830120	6185737	205	Ruawai Station	Dartmoor	Kyle Bland	Da-2		1
130	V21	2830523	6189643	68	Mangaone River upstream of Rissington road bridge	Rissington	Kyle Bland	Rs-2		1
131	V21	2832289	6187548	164	Farm track to forest on Pukenoa Farm	Rissington	Kyle Bland	Rs-1		2
132	V21	2833307	6188260	200	Puketitiri Rd immediately south of Glengarry Rd	Glengarry	Kyle Bland	Gg-2	Yes	3
133	V21	2841846	6189837	-4	Rorookiwa Hill off Onehunga Road	Bayview	Kyle Bland	Bv-1	Yes	1
134	V21	2836357	6187021	126	Track above Bayliss Bros drilling depot above Puketitiri Rd	Puketapu	Kyle Bland	PK-1		1
135	V21	2837029	6183535	37	Springvale Station at Puketapu Road end	Puketapu	Kyle Bland	PK-3		1
136	V21	2832205	6181470	49	Ebetts farm, on hills beside Tutaekuri River	Central Hawkes Bay	Rachel Baggs	21		1
137	V21	2827444	6183451	152	Ngamahanga Station, overlooking the Tutaekuri River	Central Hawkes Bay	Rachel Baggs	30		1
138	V21	2827357	6181193	69	Kawera Road section, Ngamahanga Station	Okawa	Kyle Bland	Ok-1		2
139	V21	2825819	6181113	91	Oreka Station, beside track at back of farm, near stock yards	Central Hawkes Bay	Rachel Baggs	17		1
140	V21	2823933	6183137	239	Castlehill forest track cutting at cross roads in forest	Central Hawkes Bay	Rachel Baggs	19		1
141	V21	2823655	6181987	193	Forest on Puketautahi Hill, on track leading to Oreka	Central Hawkes Bay	Rachel Baggs	18a		1
142	V21	2823621	6181960	185	Forest on Puketautahi Hill, track leading to Oreka	Central Hawkes Bay	Rachel Baggs	18b		1
143	V21	2823365	6181839	220	Castlehill Forest	Central Hawkes Bay	Rachel Baggs	28		1
144	V21	2819387	6184658	269	Tunanui Station on southeastern face near Poplars	Sherenden	Kyle Bland	Sh-2	Yes	2
145	V21	2818400	6184500		Flag Range	Central Hawkes Bay	Vincent Caron	F1_C45_Top		2
146	V21	2818700	6182700		Taihape Road near Flag Range Road intersection	Sherenden	Kyle Bland	Sh-1		1
147	V21	2812410	6177310	180	Kikowhero Stream, Whakamarumaru Station	Whanawhana	Kyle Bland	Wh-2	Yes	4
148	V21	2811605	6173996	123	Ngaruroro River below Matapiro Road	Matapiro	Kyle Bland	Mt-2		1
149	V21	2822316	6176471	180	Hindmarshes	Central Hawkes Bay	Rachel Baggs	24		1
150	V21	2824241	6179999	115	Morris's farm below Puketautahi Forest	Central Hawkes Bay	Rachel Baggs	29		1
151	V21	2825080	6178126	68	Ohiwia Farm, Okawa Stream	Okawa	Kyle Bland	Ok-2	Yes	1
152	V21	2825502	6178162	51	Okawa Stream, in stream valley east of shearing shed	Central Hawkes Bay	Rachel Baggs	13		1
153	V21	2828645	6176915	111	Alness farm Taihape Road	Central Hawkes Bay	Rachel Baggs	22		1
154	V21	2832896	6178850	42	Prices Farm	Central Hawkes Bay	Rachel Baggs	20		1
155	V21	2834295	6177940	0	Swamp Road road cut	Central Hawkes Bay	Rachel Baggs	1		1
156	V21	2835638	6179801	24	Fenton Kelly/Es property on Omaranui Rd., bluffs above dam pond	Central Hawkes Bay	Rachel Baggs	4		1
157	V21	2835858	6180265	37	Fenton Kellys - possum cliff	Central Hawkes Bay	Rachel Baggs	3		1
158	V21	2835877	6180409	29	Omaranui Rd., property on Tutaekuri River side with 'carbonate' hill	Central Hawkes Bay	Rachel Baggs	6		1
159	V21	2838141	6181999	36	Farm track off Penrith Road	Puketapu	Kyle Bland	PK-2		1
160	V21	2841844	6181832	-7	Northern end of Park Island	Taradale	Kyle Bland	Td-1		1
161	V21	2844300	6183400		Battery Point	Central Hawkes Bay	Susan Boyle	Locality 1		3
162	V21	2844400	6183100		Burke Road	Central Hawkes Bay	Susan Boyle	Locality 4		1

Table 6. Spreadsheet of Stratigraphic Column Location and Originators.

Col No	Sheet	Eastings	Northings	Elevation	Column Location Description	Region	Originator	Original Col No	Photos	Pages
163	V21	2844700	6183200		Pandora Point	Central Hawkes Bay	Susan Boyle	Locality 2		3
164	V21	2844800	6182700		Scandinavian Point	Central Hawkes Bay	Susan Boyle	Locality 3		1
165	V21	2845100	6182600		Master Hire Centre (Hyderabad Road)	Central Hawkes Bay	Susan Boyle	Locality 14		1
166	V21	2845300	6182600		Hyderabad Road (next to the Caltex Service Station)	Central Hawkes Bay	Susan Boyle	Locality 15		1
167	V21	2845400	6183700		Intersection of Coronation St. & Battery Rd.	Central Hawkes Bay	Susan Boyle	Locality 13		1
168	V21	2845500	6183800		Chaucer Steps (off Battery Road)	Central Hawkes Bay	Susan Boyle	Locality 12		1
169	V21	2845700	6184000		Battery Road, Opposite B.P. Tanks	Central Hawkes Bay	Susan Boyle	Locality 11		1
170	V21	2845900	6184200		Old Gun Emplacement, Battery Road	Central Hawkes Bay	Susan Boyle	Locality 10		1
171	V21	2846600	6184500		Opposite Gate 3, Napier Port	Central Hawkes Bay	Susan Boyle	Locality 9		1
172	V21	2847200	6184300		Car Sale	Central Hawkes Bay	Vincent Caron	Sc1_C36_Top		2
173	V21	2847000	6183900		Centennial Gardens (west)	Central Hawkes Bay	Susan Boyle	Locality 5		1
174	V21	2847200	6183900		Centennial Gardens (east)	Central Hawkes Bay	Susan Boyle	Locality 6		2
175	V21	2847200	6183800		Marine Parade	Central Hawkes Bay	Susan Boyle	Locality 7		2
176	V21	2847200	6183400		Bluff Hill	Central Hawkes Bay	Susan Boyle	Locality 8		1
177	V21	2834860	6176770	41	Quarry attempt, Swamp Road	Central Hawkes Bay	Rachel Baggs	32		1
178	V21	2834530	6175121	34	Track above Taihape Road near Omahu	Omahu	Kyle Bland	Ou-1		1
179	V21	2833859	6175589	11	Property opposite Pirau Rd, small bluffs on drive way	Central Hawkes Bay	Rachel Baggs	2		1
180	V21	2832878	6172184	32	Composite column of the Fernhill outcrops overlooking Fernhill Tavern	Central Hawkes Bay	Sarah Dyer	14_Bottom		1
181	V21	2831809	6174637	54	Fernhill Stud, bluffs just before steep track for highest vantage point	Central Hawkes Bay	Rachel Baggs	36		2
182	V21	2829400	6175100		Ohiwia	Central Hawkes Bay	Vincent Caron	Ma2_C34_Top		2
183	V21	2829382	6174909	31	Road cut, on windy part of Taihape Rd. (10 Jan. 2003)	Central Hawkes Bay	Rachel Baggs	5		1
184	V21	2829893	6174031	25	Cornes property, on Napier - Taihape Rd. side	Central Hawkes Bay	Rachel Baggs	25		1
185	V21	2828994	6173631	48	Track cut on Alan Gunns Property	Central Hawkes Bay	Rachel Baggs	27		1
186	V21	2830000	6173400		Ohiti Road	Central Hawkes Bay	Vincent Carron	Ma1_C35_Bottom		2
187	V21	2829007	6172756	57	Harpers - top out crop of limestone in valley near flat paddocks	Central Hawkes Bay	Rachel Baggs	31		1
188	V21	2829047	6172706	16	Lower section on Harper property, at base of foot track up through hill	Central Hawkes Bay	Rachel Baggs	31b		1
189	V21	2829575	6170195	76	Composite column of Roys Hill outcrops (1/2 southern side)	Central Hawkes Bay	Sarah Dyer	12_Bottom		1
190	V21	2827660	6168495	54	Composite column of Roys Hill outcrops (2/2 northern side)	Central Hawkes Bay	Sarah Dyer	13_Bottom		1
191	V21	2824600	6168660	132	Tirohia - top of slip scarp, overlooking Ngaruroro River	Central Hawkes Bay	Rachel Baggs	11		1
192	V21	2825069	6169559	96	Matapiro Hill	Central Hawkes Bay	Rachel Baggs	8		1
193	V21	2824953	6169572	117	Matapiro Station	Central Hawkes Bay	Rachel Baggs	9		1
194	V21	2824812	6169848	75	Matapiro Hill	Central Hawkes Bay	Rachel Baggs	7		1
195	V21	2823429	6170071	89	Northern boundary of Matapiro Station, beside stream	Central Hawkes Bay	Rachel Baggs	10		1
196	V21	2823237	6175086		Property on edge of Waitio Stream, northern boundary Matapiro Station	Central Hawkes Bay	Rachel Baggs	39		1
197	V21	2822914	6173560	82	Alan Gunns property	Central Hawkes Bay	Rachel Baggs	26		1
198	V21	2821981	6171891	211	Below trig point on Matapiro Hill, side looking down on stock yards	Central Hawkes Bay	Rachel Baggs	38		1
199	V21	2821287	6170268	88	Cliffs at Calstock, 400m from bridge on Omapere Rd.	Central Hawkes Bay	Rachel Baggs	35		1
200	V21	2822025	6167770	133	Rick Alexanders, limestone in slumped area overlooking Ngaruroro Riv.	Central Hawkes Bay	Rachel Baggs	12		1
201	V21	2815956	6171364	180	Outcrops along cliffs above tributary of Ngaruroro River	Central Hawkes Bay	Sarah Dyer	18		1
202	V21	2813506	6170912	170	Outcrops along banks of Mangatahi Stream, and farm tracks	Central Hawkes Bay	Sarah Dyer	17		1
203	V21	2812878	6164285	190	Along main farm track towards Yarrow Stream	Central Hawkes Bay	Sarah Dyer	19		1
204	V21	2812966	6164344	158	Heading eastwards along Yarrow stream bed, past water pump shed	Central Hawkes Bay	Sarah Dyer	20		1
205	V21	2816093	6165068	120	First road cutting - Salisbury Rd, before bridge	Central Hawkes Bay	Sarah Dyer	3		1

Table 6. Spreadsheet of Stratigraphic Column Location and Originators.

Col No	Sheet	Eastings	Northings	Elevation	Column Location Description	Region	Originator	Original Col No	Photos	Pages
206	V21	2818043	6164465	223	Composite Column of outcrops along Top Rocky Farm track	Central Hawkes Bay	Sarah Dyer	27		1
207	V21	2822061	6165860	152	Limestone bluffs running parallel with SH 50	Central Hawkes Bay	Sarah Dyer	29		1
208	V21	2823987	6163216	46	Farm entrance coming off Valley Rd	Central Hawkes Bay	Sarah Dyer	28		1
209	V21	2826351	6162160	179	Farm track leading up to Washpool and No. 2E Trig stations	Central Hawkes Bay	Sarah Dyer	23		1
210	V21	2821423	6162716	147	Along farm track crossing a wide stream valley ~ 200m east of quarry	Central Hawkes Bay	Sarah Dyer	30		1
211	V21	2820184	6162248	190	Marae Downs Station, Whakapirau Rd., in farm quarry (1/2)	Central Hawkes Bay	Sarah Dyer	9_Bottom		1
212	V21	2818309	6163580	228	Property next to Top Rocky Farm, northern Whakapirau Road	Central Hawkes Bay	Sarah Dyer	33		1
213	V21	2817200	6162800		Glencoe Station	Central Hawkes Bay	Vincent Caron	M4_C33_Bottom		2
214	V21	2817131	6162742	219	Outcrops above Glencoe Station vineyard, northwards	Central Hawkes Bay	Sarah Dyer	32		1
215	V21	2815672	6162455	258	Where SH starts winding downhill into a gully	Central Hawkes Bay	Sarah Dyer	24		1
216	V21	2815524	6162203	182	Where SH50 starts winding uphill from gully	Central Hawkes Bay	Sarah Dyer	22		1
217	V21	2813373	6161953	278	At end of main farm track at base of Ben Lomond (prominent hill)	Central Hawkes Bay	Sarah Dyer	36		1
218	V21	2814316	6160113	210	Lester Property - Churston Station on SH50	Central Hawkes Bay	Sarah Dyer	34		1
219	V21	2845500	6160700		Waimarama	Central Hawkes Bay	Vincent Caron	K7_C10_Top		2
220	V21	2845100	6160200		Te Mata Peak	Central Hawkes Bay	Vincent Caron	A2a_C9_Top		4(A3)
221	V22	2814076	6159919	221	Lester Property - Churston Station on SH50; on top of column 218	Central Hawkes Bay	Sarah Dyer	35		1
222	V22	2814082	6159795	206	Lester property - Churston Station on SH50	Central Hawkes Bay	Sarah Dyer	16_Bottom		1
223	V22	2815469	6159578	195	Southern end of Glencoe Station, main farm track opp. pine plantation	Central Hawkes Bay	Sarah Dyer	31		1
224	V22	2819645	6159712	175	Back of Whakapirau Station, following stream from Raukawa Rd.	Central Hawkes Bay	Sarah Dyer	8_Bottom		1
225	V22	2820438	6158610	159	Road cutting starting at stock yards	Central Hawkes Bay	Sarah Dyer	7_Bottom		1
226	V22	2821300	6159300		Torran	Central Hawkes Bay	Vincent Caron	M2_C29_Bottom		2(A3)
227	V22	2821408	6159780	201	Limestone bluffs wrapping around the hillside behind the farmhouse	Central Hawkes Bay	Sarah Dyer	26		1
228	V22	2834500	6158600		Horse Shoe	Central Hawkes Bay	Vincent Caron	R1_C17_Top		2
229	V22	2845200	6159700		Te Mata	Central Hawkes Bay	Vincent Caron	K8_C9_Top		2
230	V22	2842600	6155800		North Mount Kahuranaki/Mangangara	Central Hawkes Bay	Vincent Caron	K6_C8_Bottom		2
231	V22	2828300	6156200		Horanui	Central Hawkes Bay	Vincent Caron	Te6_C21_Top		2
232	V22	2825900	6154900		Burma Road	Central Hawkes Bay	Vincent Caron	Te5_C22_Top		2
233	V22	2824871	6155095	217	Summit of Burma Road, road cutting near entrance to Kerunga Station	Central Hawkes Bay	Sarah Dyer	1		1
234	V22	2819126	6155125	289	Cliffs cropping out above Pakihirua Stream	Glen Aros Station	Sarah Dyer	11		1
235	V22	2818800	6154800		Pakihirua	Central Hawkes Bay	Vincent Caron	M3_C30_Bottom		2(A3)
236	V22	2818730	6153172	296	Composite column from exposures along farm track on Mahana Station	Central Hawkes Bay	Sarah Dyer	5_Bottom		1
237	V22	2818372	6154093	264	Cliffs above Pakihirua Stream, south of Ibstone Station, Ruakawa Rd	Central Hawkes Bay	Sarah Dyer	25		1
238	V22	2816700	6155400	215	Exposed along tributary of the Maraekakaho River	Central Hawkes Bay	Sarah Dyer	15		1
239	V22	2816700	6155400		Taheke	Central Hawkes Bay	Vincent Caron	M5_C32_Top		2
240	V22	2813818	6157096	280	Outcrops on Aomaram Station, from SH50 east to Taheke Road	Central Hawkes Bay	Sarah Dyer	21		1
241	V22	2814313	6154540	326	Road cutting opposite entrance to Farm quarry	Central Hawkes Bay	Sarah Dyer	21b		1
242	V22	2816300	6149400		Mangatai	Central Hawkes Bay	Vincent Caron	M1_C31_Top		2
243	V22	2819300	6148400		Bee Swarm	Central Hawkes Bay	Vincent Caron	Te2_C24_Top		2
244	V22	2819800	6149100		Te Onepu Quarry	Central Hawkes Bay	Vincent Caron	Te1_C23_Top		2
245	V22	2820869	6152243	329	Composite Column of outcrops on Ruakawa Range	Rotoma Station	Sarah Dyer	2		1
246	V22	2822800	6149500		Lonely Man	Central Hawkes Bay	Vincent Caron	R3_C20_Top		2
247	V22	2829200	6147500		Pukekura	Central Hawkes Bay	Vincent Caron	K11/A1_C15_Top		2(A3)

Table 6. Spreadsheet of Stratigraphic Column Location and Originators.

Col No	Sheet	Eastings	Northings	Elevation	Column Location Description	Region	Originator	Original Col No	Photos	Pages
248	V22	2831000	6152400		Poukawa	Central Hawkes Bay	Vincent Caron	R2_C18_Bottom		2
249	V22	2832300	6148200		Tuki Bell	Central Hawkes Bay	Vincent Caron	K9_C11_Top		2
250	V22	2833400	6148800		Rowe Road	Central Hawkes Bay	Vincent Caron	A6_C14_Top		2
251	V22	2833200	6148200		River Bank	Central Hawkes Bay	Vincent Caron	A5_C13_Top		2(A3)
252	V22	2834400	6146900		Hawea	Central Hawkes Bay	Vincent Caron	A4_C12_Top		2
253	V22	2842300	6151500		Mount Kahuranaki/North Mount Kahuranaki	Central Hawkes Bay	Vincent Caron	K5_C7_Top		2
254	V22	2846000	6150400		Koanui	Central Hawkes Bay	Vincent Caron	K4_C5_Top		2
255	V22	2849200	6146700		Cabbage Tree Flat	Central Hawkes Bay	Vincent Caron	K3_C4_Top		2
256	V22	2848400	6136600		Taupata	Central Hawkes Bay	Vincent Caron	K2_C3_Top		2
257	V22	2845700	6133300		Kairakau Beach	Central Hawkes Bay	Vincent Caron	K1_C1&2_Top		2
258	V22	2831800	6140500		Makara	Central Hawkes Bay	Vincent Caron	A3_C16_Top		2
259	V22	2814900	6142700		Kiwi Bush	Central Hawkes Bay	Vincent Caron	Te4_C25_Top		2
260	V22	2814800	6142200		Robottom Grave	Central Hawkes Bay	Vincent Caron	Te3_C26_Top		2
261	V22	2811800	6134400		Gulch Quarry	Central Hawkes Bay	Vincent Caron	Te7_C27_Bottom		2