



Soils Surveys by C.F. Sutherland, N.H. Taylor and A.C.S. Wright 1937-1951, compiled by J.E. Cox et al 1978, all of Soil Bureau, Department of Scientific and Industrial Research.

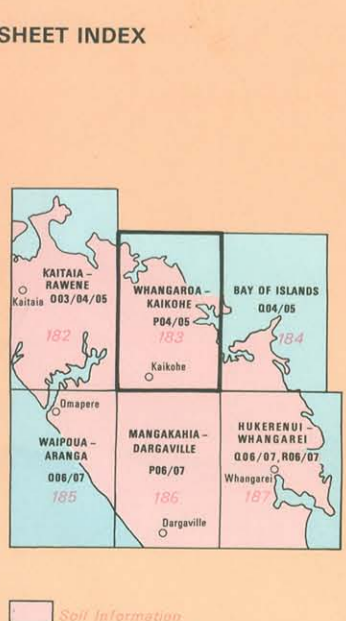
BIBLIOGRAPHIC REFERENCE: Sutherland, C.F.; Cox, J. E.; Taylor, N.H.; Wright, A.C.S. 1980: Soil map of Whangaroa-Kaipara area (Sheets P 04/05), North Island, New Zealand. Scale 1:100 000 N.Z. Soil Bureau Map 183

### LEGEND OF SOIL MAPPING UNITS ARRANGED PHYSIOGRAPHICALLY

<p><b>Soils of the Flood Plains</b></p> <ul style="list-style-type: none"> <li>well to moderately well drained           <ul style="list-style-type: none"> <li>WF Whakapara silt loam and clay loam</li> <li>MF Mangakahia silt loam and clay loam</li> </ul> </li> <li>imperfectly to very poorly drained           <ul style="list-style-type: none"> <li>WY Whakapara mottled clay loam</li> <li>MY Mangakahia mottled clay loam</li> </ul> </li> </ul> <p><b>Soils of the Estuarine Flats and Former Lake Beds</b></p> <ul style="list-style-type: none"> <li>imperfectly to very poorly drained           <ul style="list-style-type: none"> <li>TC Takahiwai clay</li> </ul> </li> </ul> <p><b>Soils of the Coastal Sand Dune Complex</b></p> <ul style="list-style-type: none"> <li>excessively to somewhat excessively drained           <ul style="list-style-type: none"> <li>WD Whananaki sand</li> </ul> </li> <li>imperfectly to very poorly drained           <ul style="list-style-type: none"> <li>TK Te Kopuru sand</li> </ul> </li> </ul> <p><b>Soils of the Undulating Terraces and Lowlands</b></p> <ul style="list-style-type: none"> <li>well to moderately well drained           <ul style="list-style-type: none"> <li>DL Otao silt loam</li> <li>KM Kohumaru clay</li> <li>WO Whareora clay loam</li> <li>CI Otao-Waitemata-Albany-Coatesville-Otanga complex</li> </ul> </li> <li>imperfectly to very poorly drained           <ul style="list-style-type: none"> <li>PC Pakotai clay</li> <li>PKD Pakotai dark grey clay</li> <li>KO Kamo clay loam</li> <li>KOI Kamo silt loam</li> <li>YF Waipapa clay</li> <li>WU Waipuna clay</li> <li>KR Kara sandy loam</li> <li>KRSD Kara sandy loam with pan</li> <li>KRK Kara silt loam</li> <li>KRSD Kara silt loam with pan</li> <li>OT Ononga peaty clay loam</li> <li>YU Waipou clay</li> <li>OR Otakairangi peaty clay loam</li> <li>ORH Otakairangi loamy peat</li> </ul> </li> </ul> <p><b>Soils of the Rolling and Hill Land</b></p> <ul style="list-style-type: none"> <li>excessively to somewhat excessively drained           <ul style="list-style-type: none"> <li>OK Okaihau very gravelly friable clay</li> <li>TA Tairare gravelly friable clay</li> </ul> </li> <li>well to moderately well drained           <ul style="list-style-type: none"> <li>WM Waimate North clay loam</li> <li>PK Papakauri silt loam</li> <li>PKC Papakauri clay loam</li> <li>OW Ohaeawai silt loam</li> <li>OWB Ohaeawai shallow bouldery silt loam</li> <li>KIR Kiripaka bouldery silt loam</li> <li>KIRP Kiripaka bouldery silt loam with compact subsoil</li> <li>MZ Manganese silt loam</li> <li>KE Kerikeri friable clay</li> <li>KEB Kerikeri friable clay with large boulders</li> <li>TIK Tikitohe gravelly silt loam</li> <li>WP Whakapai clay loam</li> <li>WPA Whakapai friable clay</li> <li>OKH Okaihau gravelly friable clay</li> <li>WAI Waioitu friable clay</li> <li>RUA Ruatangata friable clay</li> <li>PUN Pungare gravelly friable clay</li> <li>BRE Bream clay loam</li> <li>TAU Taumata clay loam</li> <li>AT Apotu friable clay</li> <li>MA Matarau friable clay</li> <li>TI Tikipunga friable clay</li> <li>MAN Mangonui clay</li> <li>WAI Waimatenui clay</li> </ul> </li> </ul>	<p><b>Soils of the Rolling and Hill Land (cont.)</b></p> <ul style="list-style-type: none"> <li>well to moderately well drained (cont.)           <ul style="list-style-type: none"> <li>HA Haunga complex (series to finalise)</li> <li>MR Marua brown clay loam</li> <li>MRB Marua clay loam</li> <li>ML Marua light brown clay loam</li> <li>AE Autea clay loam and silty clay loam</li> <li>RI Rangiora clay</li> <li>AW Awapuku clay loam</li> <li>PO Pokapu gravelly silt loam</li> <li>WH Whirinaki clay loam</li> <li>WAI Waioitira gravelly sandy loam</li> <li>YC Ycaia clay loam</li> <li>OM Omahuta clay</li> <li>OMG Omahuta gravelly silt loam</li> </ul> </li> <li>imperfectly to very poorly drained           <ul style="list-style-type: none"> <li>OC Otangaroa clay and sandy clay loam</li> <li>OT Otaha clay</li> <li>OG Otaha gravelly clay loam</li> <li>WAI Waioitira clay</li> <li>AU Autea clay</li> <li>KN Konoti clay loam</li> <li>KNK Konoti clay</li> <li>AP Aponga clay</li> <li>RA Rangiora clay, clay loam, and silty clay loam</li> <li>RIPO Riponui clay and sandy clay</li> <li>RS Riponui sandy clay loam and sandy loam</li> <li>WAI Wairiki clay loam and silt loam</li> <li>PKT Puketitoti sandy loam</li> <li>WHK Whaka clay loam</li> <li>MRX Mount Rex clay</li> <li>OKS Okaka clay and silty clay</li> <li>PI Piroa clay</li> <li>WAI Waikare silt loam</li> <li>HUK Hukerenui gravelly silt loam</li> <li>HUK Hukerenui sandy loam</li> <li>HUK Hukerenui silt loam</li> <li>HUK Hukerenui silt loam with yellow subsoil</li> <li>PU Pukenui silt loam</li> <li>MOT Motatau clay</li> <li>RV Rockvale clay</li> <li>WHK Wharekohe sandy loam</li> <li>WHK Wharekohe sandy loam with pan</li> <li>WHK Wharekohe fine sandy loam, ash variant</li> <li>WHK Wharekohe fine sandy loam with pan</li> <li>WHK Wharekohe silt loam</li> <li>WHK Wharekohe silt loam with pan</li> <li>PR Parahi fine sandy loam and silt loam</li> </ul> </li> </ul> <p><b>Soils of the Steep Land</b></p> <ul style="list-style-type: none"> <li>excessively to somewhat excessively drained           <ul style="list-style-type: none"> <li>HS Huia steepland soils, stony silt loam</li> </ul> </li> <li>well to moderately well drained           <ul style="list-style-type: none"> <li>HS Huia steepland soils, stony clay and stony silt loam</li> <li>TK Te Kie steepland soils, light brown stony clay loam</li> <li>WCS White Cone steepland soils, sandy clay loam</li> <li>TR Te Ranga steepland soils, clay loam and stony clay loam</li> <li>TRB Te Ranga steepland soils, light brown clay loam and stony clay loam</li> </ul> </li> <li>Drifting and/or recently stabilised sands</li> <li>Wet Swamps (not investigated)</li> <li>Hill soils</li> <li>Steepland soils</li> <li>Mottled soils</li> <li>Gravelly soils</li> <li>Bouldery soils</li> <li>Soil boundary</li> </ul>
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### LEGEND OF SOIL TAXONOMIC UNITS ARRANGED PEDOLOGICALLY

<p><b>Yellow-brown earths and related steepland soils.</b></p> <ul style="list-style-type: none"> <li>weakly to moderately leached           <ul style="list-style-type: none"> <li>Whaka series</li> <li>Taumata series</li> <li>Whirinaki series</li> </ul> </li> <li>moderately to strongly leached           <ul style="list-style-type: none"> <li>Whareora series</li> <li>Omahuta series</li> <li>Autea series</li> <li>Waioitira series</li> <li>Omu series</li> <li>Aponga series</li> <li>Marua series</li> <li>Manganese series</li> <li>White Cone series</li> <li>Te Ranga series</li> </ul> </li> <li>strongly leached to weakly podzolised           <ul style="list-style-type: none"> <li>Waipuna series</li> <li>Rockvale series</li> <li>Mount Rex series</li> <li>Wairiki series</li> <li>Riponui series</li> <li>Okaka series</li> <li>Pokapu series</li> <li>Rangiora series</li> <li>Piroa series</li> </ul> </li> </ul> <p><b>Podzolised yellow-brown earths</b></p> <ul style="list-style-type: none"> <li>weakly to moderately podzolised           <ul style="list-style-type: none"> <li>Albany series</li> <li>Puketitoti series</li> <li>Waikare series</li> <li>Otagoroa series</li> </ul> </li> <li>moderately podzolised           <ul style="list-style-type: none"> <li>Coatesville series</li> <li>Hukerenui series</li> <li>Omaiko series</li> <li>Pukenui series</li> </ul> </li> </ul> <p><b>Podzols</b></p> <ul style="list-style-type: none"> <li>Te Kopuru series</li> <li>Kara series</li> <li>Wharekohe series</li> <li>Parahi series</li> </ul> <p><b>Rendzinas and associated soils</b></p> <ul style="list-style-type: none"> <li>Motatau series</li> <li>Konoti series</li> </ul> <p><b>Yellow-brown sands</b></p> <ul style="list-style-type: none"> <li>weakly weathered</li> <li>weakly to moderately leached           <ul style="list-style-type: none"> <li>Whananaki series</li> </ul> </li> </ul> <p><b>Yellow-brown loams and Podzolised yellow-brown loams</b></p> <ul style="list-style-type: none"> <li>strongly leached           <ul style="list-style-type: none"> <li>Otao series</li> </ul> </li> <li>weakly podzolised           <ul style="list-style-type: none"> <li>Waitemata series</li> </ul> </li> </ul>	<p><b>Brown granular loams and clays and related steepland soils</b></p> <ul style="list-style-type: none"> <li>weakly to moderately leached           <ul style="list-style-type: none"> <li>Awapuku series</li> <li>Haunga complex (dominant series only)</li> <li>Bream series</li> <li>Te Kie series</li> <li>Huia series</li> </ul> </li> <li>moderately to strongly leached           <ul style="list-style-type: none"> <li>Kohumaru series</li> <li>Waimatenui series</li> <li>Mangonui series</li> </ul> </li> <li>strongly to very strongly leached           <ul style="list-style-type: none"> <li>Pakotai series</li> <li>Rangiora series</li> </ul> </li> </ul> <p><b>Red loams</b></p> <ul style="list-style-type: none"> <li>weakly to moderately leached           <ul style="list-style-type: none"> <li>Papakauri series</li> </ul> </li> <li>moderately to strongly leached           <ul style="list-style-type: none"> <li>Manganese series</li> <li>Waimate North series</li> <li>Apotu series</li> </ul> </li> </ul> <p><b>Brown loams</b></p> <ul style="list-style-type: none"> <li>weakly to moderately leached           <ul style="list-style-type: none"> <li>Kiripaka series</li> <li>Ohaeawai series</li> <li>Whakapai series</li> </ul> </li> <li>moderately to strongly leached           <ul style="list-style-type: none"> <li>Waioitira series</li> <li>Matarau series</li> <li>Tikipunga series</li> <li>Kerikeri series</li> <li>Ruatangata series</li> <li>Pungare series</li> </ul> </li> <li>strongly to very strongly leached           <ul style="list-style-type: none"> <li>Otaha series</li> <li>Tairare series</li> <li>Okaihau series</li> </ul> </li> </ul> <p><b>Gley soils</b></p> <ul style="list-style-type: none"> <li>Kamo series</li> <li>Waipapa series</li> <li>Waipou series</li> <li>weakly saline           <ul style="list-style-type: none"> <li>Takahiwai series</li> </ul> </li> </ul> <p><b>Organic soils</b></p> <ul style="list-style-type: none"> <li>Otanga series</li> <li>Otakairangi series</li> </ul> <p><b>Recent soils</b></p> <ul style="list-style-type: none"> <li>Whakapara series</li> <li>Mangakahia series</li> </ul>
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NEW ZEALAND LAND INVENTORY

SCALE 1 : 100 000

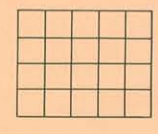


### REFERENCE

<p><b>WHANGAREI Cities</b></p> <ul style="list-style-type: none"> <li>KAIKOHE Towns</li> <li>Houhiera Settlements</li> <li>State highways</li> <li>Other roads</li> <li>Tracks</li> <li>Railways</li> </ul>	<p><b>Rivers and streams</b></p> <ul style="list-style-type: none"> <li>Trig stations</li> <li>Vincula (separate parcels under same ownership)</li> <li>Land holding boundaries</li> <li>Sand and mud</li> </ul>
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This map is drawn on the New Zealand Map Grid Projection, a minimum-error conformal projection. The grid is the New Zealand Map Grid, showing coordinates in metres in terms of the Geodetic Datum 1948, based on the International (Hayford) Spheroid.

The smallest area mapped is generally not less than 10 hectares. Calculation of areas from this map should be within the limitations of scale. For example, individual areas should be rounded to the nearest 5 hectares. Accumulated areas should be rounded to the nearest 50 hectares.



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P.D. Hasselberg, Government Printer, Wellington, New Zealand.

This map is one of a series. Themes mapped in this study are: Land Tenure and Holding, Rock Types and Surface Deposits, Soils, Existing Land Use, Wildlife.