**Supplementary Table 2** Tephra depth, thickness, bulk grain size, stratification, main characteristics, and modelled tephra age, from all composite tephra records analysed in this study.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Comp. tephra-nba | Comp. short. depth (cm)b | | Thick-ness (cm)c | | | Bulk grain sized | | Stratifi-catione | | Main tephra characteristicf | | Tm-group and gl chemistryg | | Modeled tephra age (cal yr BP)h | |
| Lake Richmond | | |  | |  |  | |  | |  | |  | |  | |
| Ri-1 | 28.5 | | cryp | | | fa | |  | |  | |  | | 424±11 | |
| Ri-2 | 36 | | 0.5 | | | fa | |  | | gr ash, bleached upper contact | | 11/12 | | 517±10 | |
| Ri-3 | 38 | | cryp | | | fa | |  | |  | |  | | 539±10 | |
| Ri-4 | 42 | | 0.1 | | | fa | |  | |  | | 12 | | 581±12 | |
| Ri-5 | 51 | | 0.05 | | | fa | |  | |  | |  | | 680±23 | |
| Ri-6 | 61 | | 0.5 | | | fa | |  | | gr ash | | 12 | | 794±32 | |
| Ri-7 | 113.5 | | 0.05 | | | fa | |  | |  | |  | | 1534±47 | |
| Ri-8 | 118 | | 0.1 | | | fa | |  | |  | |  | | 1602±47 | |
| Ri-9 | 126 | | 0.1 | | | fa | |  | |  | |  | | 1730±43 | |
| Ri-10 | 127 | | 0.5 | | | ca | |  | | lithic rich | | 6, TD | | 1739±43 | |
| Ri-11 | 129 | | 0.1 | | | fa | |  | |  | |  | | 1771±41 | |
| Ri-12 | 129.5 | | 0.1 | | | fa | |  | |  | |  | | 1778±41 | |
| Ri-13 | 130 | | 0.1 | | | fa | |  | |  | |  | | 1785±41 | |
| Ri-14 | 134 | | 0.1 | | | fa | |  | |  | |  | | 1853±38 | |
| Ri-15 | 135 | | 0.1 | | | fa | |  | |  | |  | | 1870±37 | |
| Ri-16 | 136 | | 0.1 | | | fa | |  | |  | |  | | 1886±37 | |
| Ri-17 | 139 | | 0.1 | | | fa | |  | |  | |  | | 1938±35 | |
| Ri-18 | 141.5 | | 0.1 | | | fa | |  | |  | |  | | 1983±35 | |
| Ri-19 | 142.5 | | 0.1 | | | fa | |  | |  | |  | | 1999±35 | |
| Ri-20 | 150 | | 1 | | | ca | | ig | | gr ves pumice, sp lithics, bl frag | | 12, TD | | 2122±37 | |
| Ri-21 | 152 | | cryp | | | fa | |  | |  | |  | | 2161±38 | |
| Ri-22 | 155 | | 0.5 | | | ca-fl | |  | |  | | 12, TD | | 2209±39 | |
| Ri-23 | 156.5 | | 0.5 | | | fa | |  | | gr ash | | 12 | | 2228±40 | |
| Ri-24 | 158.5 | | 0.5 | | | ma | |  | | bl ash | | 11, TA | | 2258±41 | |
| Ri-25 | 164 | | 0.5 | | | ca | |  | |  | | 11 | | 2355±42 | |
| Ri-26 | 167 | | 2.5 | | | ca | | ig-ng | | br-bl micves py pumice, lithic poor | | 11, TA | | 2365±42 | |
| Ri-27 | 171 | | cryp | | | fa | |  | |  | | 11 | | 2445±41 | |
| Ri-28 | 171.5 | | 0.5 | | | ca | |  | | bl micves pumice | |  | | 2445±41 | |
| Ri-29 | 173 | | 0.05 | | | fa | |  | |  | | 11 | | 2476±41 | |
| Ri-30 | 176 | | 2 | | | ca | |  | | dgr-bl micves pumice, red scoria | | 11, bA-bTA-TA | | 2497±40 | |
| Ri-31 | 181 | | 0.05 | | | fa | |  | |  | |  | | 2604±39 | |
| Ri-32 | 183.5 | | cryp | | | fa | |  | |  | |  | | 2659±39 | |
| Ri-33 | 200 | | 0.05 | | | fa | |  | |  | |  | | 2960±52 | |
| Ri-34 | 209.5 | | 1 | | | fa | |  | | gr ash, bleached upper contact | | 10, R | | 3201±61 | |
| Ri-35 | 220 | | cryp | | | fa | |  | |  | |  | | 3398±52 | |
| Ri-36 | 220.5 | | 0.1 | | | fa | |  | |  | |  | | 3405±51 | |
| Ri-37 | 221.5 | | 0.1 | | | fa | |  | |  | |  | | 3422±50 | |
| Ri-38 | 222.5 | | 0.1 | | | fa | |  | |  | |  | | 3438±49 | |
| Ri-39 | 225 | | 0.1 | | | fa | |  | |  | |  | | 3483±46 | |
| Ri-40 | 227.5 | | 1 | | | fl-ml | | m | | wh f-ves pumice, lithic rich | | 10, R | | 3510±45 | |
| Ri-41 | 228.5 | | 0.3 | | | fa | |  | |  | |  | | 3523±44 | |
| Ri-42 | 229.5 | | 0.1 | | | fa | |  | |  | |  | | 3539±44 | |
| Ri-43 | 243 | | 0.05 | | | fa | |  | |  | |  | | 3770±45 | |
| Ri-44 | 243.5 | | 0.05 | | | fa | |  | |  | |  | | 3778±45 | |
| Ri-45 | 245.5 | | cryp | | | fa | |  | |  | |  | | 3810±46 | |
| Ri-46 | 248 | | 0.05 | | | fa | |  | |  | |  | | 3848±46 | |
| Ri-47 | 259 | | 8 | | | ca-fl | | ig-ng | | pgr ves pumice, banded, lithic rich | | 10, R | | 3893±46 | |
| Ri-48 | 259.5 | | 0.03 | | | fa | |  | |  | |  | | 3900±46 | |
| Ri-49 | 273 | | cryp | | | fa | |  | |  | |  | | 4070±37 | |
| Stent | 287 | | 1.5 | | | fa | |  | | pwh ash | | R | | 4279±47 | |
| Ri-50 | 294 | | 0.3 | | | fa | |  | |  | | 8 | | 4315±50 | |
| Ri-51 | 302.5 | | 8 | | | ma-ca | | m, ws | | crys rich pgr pumiceous ash | | 9, TD | | 4328±51 | |
| Ri-52 | 304.5 | | cryp | | | fa | |  | |  | |  | | 4371±53 | |
| Ri-53 | 307 | | cryp | | | fa | |  | |  | |  | | 4424±56 | |
| Ri-54 | 309.5 | | cryp | | | fa | |  | |  | |  | | 4476±57 | |
| Ri-55 | 313.5 | | 1 | | | fa | |  | |  | |  | | 4538±57 | |
| Ri-56 | 323 | | 0.1 | | | fa | |  | |  | |  | | 4732±52 | |
| Ri-57 | 324.5 | | 0.3 | | | fa | |  | |  | |  | | 4757±51 | |
| Ri-58 | 329.5 | | 3 | | | ma | | m, ws | | crys rich pgr pumiceous ash | | 8, TD | | 4801±49 | |
| Ri-59 | 332.5 | | 0.1 | | | fa-ma | |  | |  | |  | | 4866±46 | |
| Ri-60 | 337.5 | | 4.5 | | | ml | | m | | pgr ves pumice, banded, lithic poor | | 8, TD | | 4878±46 | |
| Ri-61 | 338.5 | | 0.1 | | | fa | |  | |  | |  | | 4899±45 | |
| Ri-62 | 339.5 | | cryp | | | fa | |  | |  | |  | | 4921±44 | |
| Ri-63 | 344.5 | | 0.05 | | | fa | |  | |  | |  | | 5049±42 | |
| Ri-64 | 345 | | 0.1 | | | fa | |  | |  | |  | | 5060±42 | |
| Ri-65 | 349 | | 1 | | | fa | |  | | gr ash, dispersed on top | | tm spread | | 5145±42 | |
| Ri-66 | 353.5 | | 0.05 | | | fa-ma | |  | |  | |  | | 5285±43 | |
| Ri-67 | 357.5 | | 0.1 | | | fa | |  | |  | |  | | 5423±46 | |
| Ri-68 | 358.5 | | 0.1 | | | fa | |  | |  | |  | | 5457±47 | |
| Ri-69 | 359.5 | | cryp | | | fa | |  | |  | |  | | 5494±48 | |
| Ri-70 | 369.5 | | 9 | | | ml | | m | | pgr ves pumice, banded, lithic poor | | 9, TD-R | | 5534±48 | |
| Ri-71 | 370.5 | | 0.1 | | | fa | |  | |  | |  | | 5568±47 | |
| Ri-72 | 371.5 | | 0.1 | | | fa | |  | |  | |  | | 5601±48 | |
| Ri-73 | 372.5 | | cryp | | | fa | |  | |  | |  | | 5641±48 | |
| Ri-74 | 373.5 | | 0.5 | | | fa-ma | | ig | | gr ash | | 8 | | 5662±48 | |
| Ri-75 | 375 | | 0.1 | | | fa | |  | |  | |  | | 5723±47 | |
| Ri-76 | 378.5 | | 0.05 | | | fa | |  | |  | |  | | 5894±45 | |
| Ri-77 | 380 | | 0.05 | | | fa | |  | |  | |  | | 5974±45 | |
| Ri-78 | 387 | | 0.3 | | | fa | |  | |  | |  | | 6350±50 | |
| Ri-79 | 389 | | 0.1 | | | fa | |  | |  | |  | | 6457±54 | |
| Ri-80 | 392 | | 0.3 | | | fa | | ls | |  | |  | | 6605±60 | |
| Ri-81 | 393.5 | | 0.3 | | | fa | | ls | |  | |  | | 6668±62 | |
| Ri-82 | 394.5 | | 0.3 | | | fa | | ls | |  | |  | | 6704±64 | |
| Ri-83 | 398.5 | | 0.3 | | | fa | | ls | |  | |  | | 6879±69 | |
| Ri-84 | 402.5 | | 2 | | | ma-ca | | ng | | gr ves pumice, lithic rich | | 3, TD | | 6960±70 | |
| Ri-85 | 403.5 | | 0.3 | | | fa | | ls | |  | |  | | 6986±70 | |
| Ri-86 | 413 | | 0.1 | | | fa | | ls | |  | |  | | 7277±64 | |
| Ri-87 | 416 | | 0.1 | | | fa | | ls | |  | |  | | 7354±61 | |
| Ri-88 | 424.5 | | 1 | | | ml | | ls | | gr ves pumice, lithic rich | | 3 | | 7535±53 | |
| Ri-89 | 426 | | 0.5 | | | fa | | ls | |  | |  | | 7558±52 | |
| Ri-90 | 438.5 | | 0.5 | | | fa | | ls | |  | |  | | 7813±39 | |
| Ri-91 | 441 | | 0.5 | | | fa | | ls | |  | |  | | 7856±37 | |
| Ri-92 | 450 | | 0.1 | | | fa | | ls | |  | |  | | 8054±32 | |
| Ri-93 | 451 | | 0.1 | | | fa | | ls | |  | |  | | 8075±32 | |
| Ri-94 | 454.5 | | 0.1 | | | fa | |  | |  | |  | | 8160±31 | |
| Ri-95 | 464 | | 1 | | | ca | | m, ws | | crys rich pgr pumiceous ash | | 8, TD | | 8401±33 | |
| Ri-96 | 464.5 | | 0.1 | | | fa-ma | |  | |  | |  | | 8414±33 | |
| Ri-97 | 472 | | 0.05 | | | fa | |  | |  | |  | | 8669±34 | |
| Ri-98 | 477.5 | | 0.5 | | | fa | |  | |  | |  | | 8857±34 | |
| Ri-99 | 503 | | 1 | | | ca | |  | | gr-pgr ves-micves pumice, crys rich | | 2 | | 9947±33 | |
| Ri-100 | 504.5 | | 0.1 | | | fa | |  | |  | |  | | 10,017±33 | |
| Ri-101 | 505.5 | | 0.1 | | | fa | |  | |  | |  | | 10,062±34 | |
| Ri-102 | 506.5 | | 0.1 | | | fa | |  | |  | |  | | 10,107±35 | |
| Ri-103 | 507 | | 0.1 | | | fa | |  | |  | |  | | 10,127±35 | |
| Ri-104 | 508 | | 0.1 | | | fa | |  | |  | |  | | 10,173±36 | |
| Ri-105 | 509.5 | | 0.5 | | | ca | |  | | pgr ves pumice, crys & lithic rich | | 2 | | 10,224±36 | |
| Ri-106 | 511 | | 0.3 | | | ca | |  | | lithic rich | |  | | 10,285±38 | |
| Ri-107 | 512.5 | | 0.5 | | | ca | |  | |  | |  | | 10,337±39 | |
| Ri-108 | 513.5 | | 0.5 | | | fa | |  | |  | |  | | 10,362±39 | |
| Ri-109 | 516 | | 1 | | | ca | | m, ws | | gr ves pumice, crys rich | | 2, TD | | 10,440±41 | |
| Ri-110 | 518 | | 0.5 | | | ca | |  | |  | |  | | 10,519±43 | |
| Ri-111 | 518.5 | | 0.05 | | | ca | |  | |  | |  | | 10,543±43 | |
| Ri-112 | 520 | | 0.5 | | | fa | |  | |  | |  | | 10,595±44 | |
| Ri-113 | 521.5 | | 1.5 | | | ml | |  | | pgr c-ves pumice, crys rich | | 5 | | 10,595±44 | |
| Ri-114 | 525.5 | | 3 | | | ml | |  | |  | |  | | 10,660±46 | |
| Ri-115 | 529.5 | | 3 | | | ml | |  | | pgr c-ves pumice, crys rich | |  | | 10,741±45 | |
| Ri-116 | 530.5 | | 0.5 | | | fa-ca | |  | |  | |  | | 10,782±45 | |
| Ri-117 | 538 | | 5.5 | | | ca-ml | |  | | pgr-gr c-ves pumice, crys&lithic rich | | 4 | | 10,955±43 | |
| Ri-118 | 539.5 | | 1 | | | ca | |  | | pgr-gr c-ves pumice, lithic poor | | 7 | | 11,000±44 | |
| Ri-119 | 542.5 | | 1 | | | fa | |  | |  | |  | | 11,182±40 | |
| Ri-120 | 544.5 | | 0.1 | | | fa | |  | |  | |  | | 11,359±36 | |
| Ri-121 | 556 | | 4 | | | ca | |  | | pgr ves pumice, crys rich | | 2, TD | | 12,042±24 | |
| Ri-122 | 559.5 | | 0.5 | | | ca | |  | |  | |  | | 12,283±21 | |
| Ri-123 | 567.5 | | 1 | | | fa-ca | | m | | dgr ash, bl frag | | 2, TD | | 12,696±18 | |
| Ri-124 | 574.5 | | 0.05 | | | fa | |  | |  | |  | | 12,944±24 | |
| Ri-125 | 584.5 | | 4 | | | ca | |  | | pgr-wh ves pumice | |  | | 13,146±37 | |
| Ri-126 | 588.5 | | 3 | | | ca | |  | | pgr-wh ves pumice | |  | | 13,178±40 | |
| Ri-127 | 608.5 | | 0.05 | | | fa | | m, ws | |  | |  | | 13,766±91 | |
| Ri-128 | 641.5 | | 1 | | | ca | |  | | pgr-gr ves pumice, lithic poor | |  | | 14,404±161 | |
| Ri-129 | 665.5 | | 1 | | | fa-ca | |  | | br ash | |  | | 14,588±184 | |
| Ri-130 | 726.5 | | ? | | | ml | |  | | dp in paleosol | | 8 | | unknown | |
| Ri-131 | 727 | | 0.1 | | | fa | |  | |  | |  | | unknown | |
| Ri-132 | 735 | | 8 | | | ca-ml | | ig | | pgr ves pumice, sp lithics | | 2, R | | unknown | |
| Tariki Swamp | |  |  | | |  | |  | |  | |  | |  | |
| T-1 | 24 | | 0.5 | | | fl in fa | | dp | | wh ves pumice, sp pgr lithics | |  | | 1736±42 | |
| T-2 | 33 | | 1 | | | ca | |  | | pgr ves pumice, sp lithics, bl frag | | 12, TD | | 1830±37 | |
| T-3 | 34.5 | | 0.5 | | | ca | |  | | gr lithics, bl frag, pumice poor | | 12 | | 1841±36 | |
| T-4 | 51.5 | | 7.5 | | | ca-fl | | ig-ng | | pgr-gr micves pumice, red scoria | | 11, bTA-TA | | 1952±31 | |
| T-5 | 56.5 | | 1 | | | ca-fl | |  | | pgr ves pumice, sp lithics, bl frag | | 12 | | 2005±29 | |
| T-6 | 61 | | 1 | | | ca | | dpb, st | | wh ves pumice, sp pgr lithics | | 12 | | 2052±28 | |
| T-7 | 68 | | 2 | | | fl in ca | | dp | | pgr lithics | | 12 | | 2118±28 | |
| T-8 | 74 | | 2 | | | ca | | m | | pgr ves pumice, sp lithics | | 12, TD | | 2170±29 | |
| T-9 | 82 | | 2 | | | ca | | ig | | br-bl micves py pumice, lithic poor | | 11, TA | | 2247±32 | |
| T-10 | 97 | | 6.5 | | | ca | | ig | | br-gr-bl micves py pumice | | 11, TA | | 2353±38 | |
| T-11 | 115 | | 2 | | | ma | | dp | | bl ash | | 11 | | 2536±48 | |
| T-12 | 192.5 | | 0.3 | | | fa | |  | |  | |  | | 3056±39 | |
| T-13 | 219 | | 1 | | | fl in fa | | rew | | lithics, wh pumice poor | |  | | 3181±34 | |
| T-14 | 247.5 | | 1 | | | ml | | rew | | wh f-ves pumice, lithic rich | | 10, R | | 3433±41 | |
| T-15 | 268 | | ? | | | ca-fl | | dp/rew | | pgr ves pumice, lithic poor, dp peat | | 10, R | | 3935±41 | |
| T-16 | 298 | | ? | | | ca-ml | | dp/rew | | pgr ves pumice, lithic poor, dp paleosol | | 9, TD | | 5271±51 | |
| T-17 | 315 | | ? | | | ca-cl | | dp/rew | | pgr ves pumice, lithic rich, dp paleosol | | 9, TD | | 6083±65 | |
| T-18 | 392 | | ? | | | ca | | dp/rew | | lithic & crys rich, dp peat | | 2 | | 10,522±194 | |
| T-19 | 436 | | 5 | | | ma | | dp/rew | | pgr ves pumice, lithic poor, dp peat | | 2 | | 11,862±100 | |
| T-20 | 452 | | 0.5 | | | fa | |  | |  | | 2 | | 12,022±100 | |
| T-21 | 464 | | 7 | | | ca | |  | | pgr-gr ves pumice, lithic rich, bl frag | | 2, TD | | 12,076±115 | |
| T-22 | 468 | | 0.5 | | | fa | | m | |  | | 2 | | 12,121±128 | |
| T-23 | 479 | | 10 | | | ca-fl | | mg | | pgr-dgr ves pumice, banded, bl frag | | 1/2, TA-TD | | 12,135±132 | |
| T-24 | 487 | | 4 | | | ml | | dpb, st | | dgr ves pumice, sp lithics | | 1, TD spread | | 12,198±150 | |
| T-25 | 494 | | 2.5 | | | ma | | dpb, st | | crys rich ash | | 1 | | 12,281±166 | |
| T-26 | 498 | | 1 | | | ca | | dpb, st | | lithic rich, dgr ves pumice poor | | 2, TD | | 12,343±176 | |
| T-27 | 510 | | 1 | | | ml | | m | | wh-pgr ves-micves pumice, lithic rich | | 3, TD-R | | 12,481±190 | |
| T-28 | 512 | | 1 | | | ml | | m | | wh-pgr ves-micves pumice, lithic rich | | 3, TD-R | | 12,506±191 | |
| T-29 | 519 | | 0.5 | | | fa | |  | | pgr pumiceous ash | | 3 | | 12,679±199 | |
| T-30 | 550.5 | | 0.3 | | | fa | |  | |  | | 2 | | 13,704±171 | |
| T-31 | 575.5 | | cryp | | | fa | |  | |  | |  | | 14,508±110 | |
| T-32 | 582.5 | | cryp | | | fa | | dp | |  | |  | | 14,725±115 | |
| T-33 | 588 | | cryp | | | fa | | dp | |  | |  | | 14,887±119 | |
| T-34 | 596.5 | | cryp | | | fa | | dp | |  | |  | | 15,119±124 | |
| T-35 | 603.5 | | 0.5 | | | fa | |  | |  | | 1 | | 15,281±127 | |
| T-36 | 606 | | 0.1 | | | fa | |  | |  | | 1 | | 15,336±127 | |
| T-37 | 608.5 | | 0.5 | | | fa | |  | |  | | 1 | | 15,381±128 | |
| T-38 | 611 | | 1 | | | ca | |  | | br-dgr scoriaceous py pumice | | 1, TA | | 15,414±128 | |
| T-39 | 615 | | 1 | | | fa | |  | |  | | 1 | | 15,476±127 | |
| T-40 | 617.5 | | 0.3 | | | fa | |  | |  | | 1 | | 15,519±127 | |
| T-41 | 621.5 | | 3 | | | fa | |  | |  | | 1 | | 15,538±126 | |
| T-42 | 626.5 | | 4 | | | fa | |  | |  | | 1 | | 15,556±126 | |
| T-43 | 629.5 | | 0.5 | | | fa | |  | |  | | 1 | | 15,600±125 | |
| T-44 | 631.5 | | 0.5 | | | ma | |  | | pbr-br ves pumice, lithic rich | | 1 | | 15,626±124 | |
| T-45 | 634.5 | | 2 | | | ca | | ng | | lithic rich, br ves pumice poor | | 1, TA-TD | | 15,642±123 | |
| T-46 | 637.5 | | cryp | | | fa | |  | |  | | 1 | | 15,689±120 | |
| T-47 | 648 | | 0.3 | | | ma | |  | |  | | 1 | | 15,843±112 | |
| T-48 | 652.5 | | 0.1 | | | fa | |  | |  | | 1 | | 15,907±109 | |
| T-49 | 654 | | 0.3 | | | fa | |  | |  | |  | | 15,925±108 | |
| T-50 | 656 | | 1 | | | fa | |  | |  | | 1 | | 15,939±107 | |
| T-51 | 658.5 | | 1 | | | ca | |  | | br scoriaceous pumice, bl frag | | 1, TA | | 15,960±106 | |
| T-52 | 659.5 | | 0.5 | | | ma | |  | | bl crys rich ash | | 1 | | 15,968±106 | |
| T-53 | 676.5 | | 1 | | | ma-ca | |  | | br scoriaceous pumice, bl frag | | 1 | | 16,185±98 | |
| T-54 | 703 | | 1 | | | ca | |  | |  | | 1, TA | | 16,493±102 | |
| T-55 | 749 | | 1 | | | ma-ca | |  | | dgr-br ves pumice, bl frag | | 1 | | 16,800±99 | |
| T-56 | 754.5 | | 2 | | | ca-fl | |  | | pbr-br ves pumice, lithic rich | | 1 | | 16,863±102 | |
| T-57 | 759 | | 1.5 | | | fa-ca | |  | | dbr scoriaceous pumice, ion-stained | | 1 | | 16,890±104 | |
| T-58 | 772 | | 3 | | | ca | |  | | lithic & crys rich | | 1 | | 16,976±111 | |
| T-59 | 777 | | 2 | | | ca | |  | | lithic & crys rich | | 1, TA-TD | | 17,027±116 | |
| T-60 | 783.5 | | 0.5 | | | fa | |  | |  | | 1, TA-TD | | 17,119±110 | |
| T-61 | 797.5 | | 0.5 | | | ma | |  | | br scoriaceous pumice | | 1 | | 17,180±96 | |
| T-62 | 806.5 | | 0.5 | | | fa | |  | |  | | 1 | | 17,218±89 | |
| T-63 | 814.5 | | 1.5 | | | ca | |  | | br-dbr scoriaceous pumice, bl frag | | 1 | | 17,244±85 | |
| T-64 | 870.5 | | 4 | | | ca-ml | | m | | bl-dbr scoriaceous pumice, banded | | 1, TD | | 17,397±96 | |
| Ngaere Swamp | | |  |  | | |  | |  | |  | |  | |  | |
| N-1 | 8 | | 0.5 | | | ca | |  | |  | |  | | 1847±111 | |
| N-2 | 15 | | 1 | | | ma | | ws | | wh-pgr ves pumice | | 12 | | 1953±108 | |
| N-3 | 23.5 | | 0.5 | | | ca | |  | | wh ves pumice, bl frag | |  | | 2094±103 | |
| N-4 | 30 | | 0.5 | | | ca | |  | |  | |  | | 2201±100 | |
| N-5 | 40 | | 1 | | | ca | |  | |  | |  | | 2360±95 | |
| N-6 | 54 | | 8 | | | ca | | ig | | pgr-gr micves pumice, red scoria | | 11, bA-bTA-TA | | 2448±92 | |
| N-7 | 69 | | 3 | | | ca-fl | | ig | | pgr-gr-bl micves py pumice, lithic rich | | 11 | | 2603±83 | |
| N-8 | 113 | | 2.5 | | | ca-ml | |  | | wh f-ves pumice, lithic rich | | 10, R | | 3216±67 | |
| N-9 | 127 | | 5 | | | ca-ml | |  | | wh f-ves pumice, lithic poor | | 10, R | | 3365±65 | |
| N-10 | 157 | | cryp | | | fa | | dp | |  | |  | | 4204±56 | |
| N-11 | 173 | | cryp | | | ca | | dp | |  | |  | | 4680±55 | |
| N-12 | 177 | | cryp | | | ma | | dp | |  | |  | | 4792±55 | |
| N-13 | 182 | | 0.5 | | | fa | |  | | pgr-gr lithics | |  | | 4927±54 | |
| N-14 | 199 | | 1 | | | ca | |  | |  | |  | | 5383±51 | |
| N-15 | 204 | | cryp | | | ca | | dp | |  | |  | | 5492±49 | |
| N-16 | 207 | | cryp | | | ca | | dp | |  | |  | | 5548±48 | |
| N-17 | 228 | | cryp | | | ca | | dp | |  | |  | | 6107±45 | |
| N-18 | 271 | | 4 | | | ma | | ws | |  | |  | | 6844±55 | |
| N-19 | 282.5 | | 10 | | | ca-fl | | mg, sb | | pgr ves pumice, lithic rich | | 9, TD-R | | 6862±53 | |
| N-20 | 307.5 | | 1 | | | ca | |  | |  | |  | | 7049±34 | |
| N-21 | 321.5 | | 2.5 | | | ml | | m | | pgr ves pumice, lithic rich | | 3, TD | | 7124±38 | |
| N-22 | 327 | | 2 | | | ca-ml | | m | | pgr ves pumice, lithic rich | | 8, TD | | 7151±40 | |
| N-23 | 335 | | 2.5 | | | ca | | sb-t, ws | | pgr-gr ves-micves pumice, lithic rich | | 3, TD-R spread | | 7200±45 | |
| N-24 | 341 | | 3.5 | | | ca | | dpb, st | | pgr-gr ves-micves pumice, lithic rich | | 3 | | 7226±47 | |
| N-25 | 347 | | 1 | | | ml | | dp | | pgr ves pumice | | TD-R spread | | 7285±49 | |
| N-26 | 352 | | 2 | | | ca-ml | | m | |  | | 8, TD-R spread | | 7326±49 | |
| N-27 | 400 | | 3 | | | ca-fl | | m | | pgr-dgr lithics, banded, pumice poor | |  | | 8090±46 | |
| N-28 | 417 | | 0.5 | | | ca | |  | |  | |  | | 8336±46 | |
| N-29 | 428 | | 1.5 | | | ca-fl | |  | | gr-dgr lithics | |  | | 8479±43 | |
| N-30 | 430 | | 1 | | | ml | |  | | pgr ves pumice | | TD-R spread | | 8494±43 | |
| N-31 | 449.5 | | cryp | | | fa | |  | |  | |  | | 8781±37 | |
| N-32 | 503 | | 4 | | | ca | | ng, sb-t | | pgr ves pumice with micves core | | tm spread, TD | | 9519±36 | |
| N-33 | 514 | | 0.5 | | | ca in fa | |  | |  | | 2 | | 9677±35 | |
| N-34 | 523 | | 1 | | | ca | | dp | |  | |  | | 9796±34 | |
| N-35 | 532 | | 1 | | | ca | |  | |  | | 2 | | 9914±35 | |
| N-36 | 542 | | 4 | | | ca | | ig, sb | | pgr ves pumice, crys rich | | 2 | | 10,003±37 | |
| N-37 | 548 | | 3 | | | ca | | ig | |  | | 2 | | 10,048±38 | |
| N-38 | 555 | | 2 | | | ca | |  | |  | | 2 | | 10,124±41 | |
| N-39 | 559 | | 3 | | | ma | | dp | |  | | 2 | | 10,139±42 | |
| N-40 | 562 | | 0.5 | | | ma | |  | |  | | 2 | | 10,177±44 | |
| N-41 | 564 | | 0.5 | | | fa | |  | |  | |  | | 10,200±45 | |
| N-42 | 566 | | 2 | | | ca-ml | |  | | gr c-ves pumice, crys rich, lithic poor | | 4 | | 10,200±45 | |
| N-43 | 574 | | 1.5 | | | ma-ca | |  | |  | |  | | 10,301±50 | |
| N-44 | 586 | | 1.5 | | | ca | |  | | pgr-gr ves pumice, crys rich, bl frag | | 2 | | 10,471±56 | |
| N-45 | 594 | | 1.5 | | | ca | |  | | wh ves pumice | | 5, TD | | 10,580±59 | |
| N-46 | 597.5 | | 1.5 | | | ca | |  | | crys rich, wh pumice poor | | 5 | | 10,614±59 | |
| N-47 | 611 | | 1 | | | ca | |  | | pgr c-ves pumice, crys rich | | 4 | | 10,838±60 | |
| N-48 | 614 | | 1.5 | | | ma-ca | |  | | pgr c-ves pumice, crys rich | | 4 | | 10,866±60 | |
| N-49 | 618.5 | | 2 | | | ca | | ng | | pgr c-ves pumice, crys rich | | 4 | | 10,912±60 | |
| N-50 | 622 | | 3 | | | ca | |  | | pgr c-ves pumice, crys rich | | 4, TD | | 10,922±60 | |
| N-51 | 623 | | 0.5 | | | ca | |  | |  | | 4 | | 10,931±60 | |
| N-52 | 634 | | 4 | | | ca-ml | | m | | wh ves pumice, lithic poor | | 7 | | 11,065±63 | |
| N-53 | 636 | | 1 | | | ma-ca | |  | | wh ves pumice | | 7 | | 11,084±64 | |
| N-54 | 642 | | 4 | | | ma | | dpb, st | | wh ves pumice | | 7, TD | | 11,123±65 | |
| N-55 | 683 | | 0.5 | | | ca | |  | |  | | 5 | | 11,958±119 | |
| N-56 | 684 | | 0.5 | | | ca | |  | |  | | 5 | | 11,969±119 | |
| N-57 | 699.5 | | 3 | | | ca | | ig, sb-t | | gr ves pumice, crys rich (augite) | | 2, TD | | 12,238±114 | |
| N-58 | 712.5 | | 7 | | | ca-ml | | ig-ng | | dgr-gr ves pumice, banded, bl frag | | 1, TA-TD | | 12,370±104 | |
| N-59 | 715 | | 2 | | | ca | | dp | | dgr-gr ves pumice, lithic rich, bl frag | | 1 | | 12,382±102 | |
| N-60 | 721 | | 1.5 | | | ca | |  | | dgr-gr ves pumice, lithic rich, bl frag | | 1, TA-TD | | 12,486±90 | |
| N-61 | 724 | | 2 | | | ma-ca | |  | | dgr-gr ves pumice, lithic rich, bl frag | | 1 | | 12,509±87 | |
| N-62 | 733 | | 3 | | | ma-ca | |  | | gr ves pumice, lithic poor, crys rich | | 1, TD | | 12,653±69 | |
| N-63 | 736 | | 1 | | | fa | |  | | lithic rich, pumice poor | | 1 | | 12,701±65 | |
| N-64 | 741 | | 1 | | | ca-ml | | m | | pgr c-ves pumice, crys rich | | 2 | | 12,799±60 | |
| N-65 | 749 | | 2.5 | | | ca-fl | | m | | pgr-gr ves pumice, lithic poor | | 2, TD | | 12,934±69 | |
| N-66 | 754 | | 2 | | | ca-fl | |  | | pgr-gr ves-micves pumice, lithic rich | |  | | 13,005±77 | |
| N-67 | 768 | | cryp | | | ca | |  | | pgr ves pumice | | 3, TD | | 13,266±114 | |
| N-68 | 776 | | 1 | | | ma | |  | | crys rich pgr pumiceous ash | | 3, TD | | 13,400±136 | |
| Eltham Swamp | | |  |  | | |  | |  | |  | |  | |  | |
| E-1 | 47.5 | | 4 | | | ma | | ws | | wh-pgr ves pumice | | 2, TD | | 1532±76 | |
| E-2 | 58 | | 0.5 | | | ma-ca | |  | | wh ves pumice, lithic rich, bl frag | |  | | 1829±64 | |
| E-3 | 68 | | 2 | | | ma-ca | |  | |  | | 12 | | 2066±54 | |
| E-4 | 70.5 | | 1 | | | ma-ca | |  | |  | | 12, TD | | 2110±53 | |
| E-5 | 81 | | 7 | | | ca | | ig | | pgr-gr micves pumice, red scoria | | 11, bTA-TA | | 2214±49 | |
| E-6 | 97.5 | | 7 | | | ca | | ig | | gr-br-bl micves py pumice, lithic poor | | 11, TA | | 2501±39 | |
| E-7 | 117 | | 1.5 | | | ma-ca | |  | | pgr-gr micves pumice, red&bl scoria | | 11, bTA-TA | | 3042±33 | |
| E-8 | 140 | | 3.5 | | | ca-fl | |  | | wh f-ves pumice, lithic rich | | 10, R | | 3593±43 | |
| E-9 | 149 | | 1 | | | fl | | dp | |  | |  | | 4120±35 | |
| E-10 | 154 | | 1.5 | | | ca | |  | | pgr ves pumice | | 8 | | 4354±34 | |
| E-11 | 176 | | 2 | | | fl | | dp | |  | |  | | 5567±42 | |
| E-12 | 191 | | 2 | | | ma | | ws | |  | |  | | 6202±45 | |
| E-13 | 200 | | 5 | | | ca-ml | | mg | | pgr ves pumice, sp lithics | | R | | 6366±44 | |
| E-14 | 217 | | 4 | | | ca-fl | | dp | |  | |  | | 6721±40 | |
| E-15 | 230 | | 6 | | | ma-ca | | sb, dpt | | pgr-gr ves-micves pumice, lithic rich | | 3, TD | | 6936±39 | |
| E-16 | 234 | | 1 | | | ca | |  | | lithic rich, pumice poor | |  | | 7022±40 | |
| E-17 | 237 | | 0.5 | | | ma | |  | | crys rich ash | |  | | 7091±41 | |
| E-18 | 265 | | 0.5 | | | fa-ma | | dp | |  | |  | | 7788±66 | |
| E-19 | 302 | | 1 | | | fa | |  | |  | | 3, TD | | 8244±71 | |
| E-20 | 344 | | 2 | | | ca | |  | | pgr ves pumice, crys & lithic rich | | 2, TD | | 9617±52 | |
| E-21 | 369 | | 4.5 | | | ca-fl | |  | | pgr c-ves pumice, crys rich, lithic poor | | 2 | | 10,022±39 | |
| E-22 | 390 | | 3 | | | ma-ca | |  | | pgr c-ves pumice, crys rich (augite) | | 2, TD | | 10,307±38 | |
| E-23 | 393 | | 1 | | | ma-ml | |  | | lithic rich, pgr pumice poor | | 2/4 | | 10,337±38 | |
| E-24 | 398 | | 2 | | | fa-ma | |  | |  | | 2 | | 10,383±40 | |
| E-25 | 420 | | 8 | | | ca-fl | | sb, dpt | | pgr-gr ves pumice, crys rich, bl frag | | 2, TD | | 10,612±45 | |
| E-26 | 424 | | 2 | | | ma-ca | |  | |  | | 4 | | 10,647±46 | |
| E-27 | 428 | | 1 | | | fl-ml | |  | | reworked E-28? | |  | | 10,701±46 | |
| E-28 | 433.5 | | 3 | | | ca-ml | | m | | pgr c-ves pumice, crys rich | | 7, TD | | 10,746±46 | |
| E-29 | 436 | | 1 | | | fa | |  | |  | |  | | 10,772±47 | |
| E-30 | 438 | | 1 | | | fa | |  | |  | |  | | 10,790±47 | |
| E-31 | 493 | | 3 | | | fa | |  | |  | |  | | 11,748±103 | |
| E-32 | 525 | | 6 | | | ca-ml | | m | | lithic rich, dgr pumice poor, bl frag | | 1, TD | | 12,230±119 | |
| E-33 | 529 | | 2 | | | ca-fl | |  | | gr-dgr ves pumice, lithic rich, bl frag | | 1 | | 12,358±113 | |
| E-34 | 533 | | 3 | | | ma-ca | |  | | gr-dgr ves pumice, lithic rich, bl frag | | 1, TD | | 12,377±112 | |
| E-35 | 539.5 | | 1 | | | fa | | dp | |  | |  | | 12,478±104 | |
| E-36 | 561 | | 4 | | | ma | | dp | | pgr-gr ves pumice, crys rich | | 2, TD | | 12,800±70 | |
| E-37 | 571 | | 0.5 | | | fa | | dp | |  | |  | | 12,977±55 | |
| E-38 | 581 | | 0.5 | | | ca | |  | | wh-pgr ves pumice | | 3, TD | | 13,159±48 | |
| E-39 | 582.5 | | 0.5 | | | ma | |  | |  | |  | | 13,178±48 | |
| E-40 | 593.5 | | 1 | | | fa-ma | | dp | |  | | 3 | | 13,375±50 | |
| E-41 | 597.5 | | 3.5 | | | ma-ca | | sb, dpt | | pgr ves pumice, crys rich | | 3, TD | | 13,385±50 | |
| E-42 | 806.5 | | 5 | | | ma | |  | | crys rich pgr pumiceous ash | | 1, TD | | 23,472±141 | |
| E-43 | 811 | | 1 | | | ca | |  | |  | |  | | 23,700±142 | |
| E-44 | 817 | | cryp | | | ca | |  | |  | |  | | 24,071±143 | |
| E-45 | 819 | | 0.1 | | | ca | |  | |  | |  | | 24,171±143 | |
| E-46 | 820 | | 0.1 | | | ma | |  | |  | | 2 | | 24,211±143 | |
| E-47 | 830 | | 0.3 | | | ma | |  | |  | | 1 | | 24,729±141 | |
| E-48 | 833.5 | | 0.1 | | | fa | |  | |  | | 1 | | 24,890±139 | |
| E-49 | 842.5 | | 2.5 | | | ma | | sb-t, m | | crys rich pgr pumiceous ash | | 1, TA-TD | | 25,144±135 | |
| E-50 | 846 | | 0.1 | | | fa | |  | |  | |  | | 25,271±132 | |
| Kawakawa | 854 | | 3 | | | fa | |  | | pyell ash | | R | | 25,447±125 | |
| E-51 | 856 | | 1 | | | fa | |  | | bl lithic rich ash | | 1 | | 25,475±124 | |
| E-52 | 860 | | 2.5 | | | ma | | sb-t, m | | gr-dgr ves pumice, lithic rich, red frag | | 1, TA-TD | | 25,517±122 | |
| E-53 | 866 | | 0.1 | | | fa-ma | |  | | bl lithic rich ash | |  | | 25,670±114 | |
| E-54 | 868 | | 1.5 | | | ca | |  | | gr-dgr ves pumice, lithic rich, red frag | | 1 | | 25,682±114 | |
| E-55 | 869 | | cryp | | | fa | |  | |  | |  | | 25,706±112 | |
| E-56 | 884 | | 2 | | | fa-ma | | ig | | dgr lithic rich ash | | 1, TA-TD | | 25,991±99 | |
| E-57 | 888.5 | | 1 | | | fa | |  | | bl ash | |  | | 26,059±96 | |
| E-58 | 897 | | cryp | | | fa | |  | |  | | 1 | | 26,212±91 | |
| E-59 | 899 | | cryp | | | fa-ma | | dp | |  | |  | | 26,246±90 | |
| E-60 | 905 | | cryp | | | ma | |  | |  | |  | | 26,344±88 | |
| E-61 | 919.5 | | 2 | | | fa | |  | | bl ash | |  | | 26,537±89 | |
| E-62 | 923 | | cryp | | | ma-ca | |  | | gr-br c-vesicular pumice, lithic poor | |  | | 26,589±90 | |
| E-63 | 924 | | 0.1 | | | ca | |  | | gr-br c-vesicular pumice, lithic poor | |  | | 26,603±90 | |
| E-64 | 935 | | 6 | | | ca-fl | | ig | | iron-stained ves pumice, sp lithics | | 1, TD | | 26,679±92 | |
| E-65 | 941 | | 1.5 | | | ca | |  | | iron-stained (strongly altered) | |  | | 26,748±94 | |
| E-66 | 974 | | 0.1 | | | ma | |  | | gr pumiceous ash | |  | | 27,352±111 | |
| E-67 | 980.5 | | 0.5 | | | ca-fl | | sb-t, m | | gr-dgr ves pumice, lithic rich | | 1 | | 27,495±114 | |
| E-68 | 982.5 | | 2 | | | ma | | sb-t, ws | | gr pumiceous ash | | 1, TA-TD | | 27,495±114 | |
| E-69 | 996 | | 0.5 | | | fa | |  | | iron-stained ash | | 1 | | 27,855±115 | |
| E-70 | 1000 | | 0.5 | | | fa-ma | |  | | iron-stained ash with gr pumice frag | |  | | 27,964±114 | |
| E-71 | 1011 | | 2 | | | ma-ca | | sb-t, m | | gr pumiceous ash | | 6, TA-TD | | 28,262±118 | |
| Okaia | 1027 | | 3 | | | fa-ml | |  | | yell pumiceous ash | | R | | 28,735±143 | |
| E-72 | 1032 | | 2 | | | ca-ml | | m | | iron-stained c-ves pumice | |  | | 28,850±153 | |
| E-73 | 1043 | | 2 | | | ca-ml | | m | | iron-stained c-ves pumice, lithic rich | |  | | 29,205±191 | |
| E-74 | 1054 | | 3 | | | ca-ml | | m | | dgr-gr ves pumice, banded, lithic poor | | 1 | | 29,531±231 | |
| E-75 | 1062.5 | | 7 | | | ca-fl | | m | | pgr-gr ves pumice, banded, lithic poor | | 2, TD | | 29,593±240 | |
| E-76 | 1064 | | 1 | | | ma-ca | |  | | crys rich pgr pumiceous ash | | 2 | | 29,614±242 | |
| E-77 | 1068 | | 3 | | | ma | | ws | | crys rich wh pumiceous ash | | 8 | | 29,655±248 | |
| E-78 | 1073 | | 2 | | | ma | |  | | crys rich wh pumiceous ash | | 8 | | 29,780±265 | |
| E-79 | 1083.5 | | 8.5 | | | ca-fl | | mg | | pgr-gr ves pumice, lithic poor | | 8, TD-R | | 29,855±274 | |
| E-80 | 1089 | | 5 | | | ca-fl | |  | | iron-stained ves pumice, lithic rich | |  | | 29,872±276 | |

*Note: Gray-highlighted rows represent the most prominent tephra layers within each composite core. The Taupo volcano-derived tephra layers (i.e., Stent, Kawakawa, Okaia) are marked in red.*

*\*The age of the Stent Tephra (4279±47 cal yr BP) is a mean age calculated from all three Lake Richmond cores (Fig. 2).*

*a Tephra numbers are based on each composite record (refer to Fig. 3-6).*

*b Depth is given as composite shortened depth (refer to text)*

*c Abbr. as followed: cryp=crypto (tephra is not visible by naked eye, only identified in radiographic images), ?=unknown thickness, since tephra occurs dispersed in soil*

*d Abbr. as followed: fa=fine ash (63-250µm), ma=medium ash (250-500µm), ca=coarse ash (500µm-2mm), fl=fine lapilli (2-4mm), ml=medium lapilli (4-16mm), cl=coarse lapilli (16-64mm)*

*e Abbr. as followed: ng=normal graded, ig=inverse graded, mg=multiple graded, m=massive, ws=well sorted, ls=lensing, dp=dispersed, s=sharp, b=bottom, t=top, (i.e., sb-t=sharp bottom and top)*

*f Abbr. as followed: gr=gray, wh=white, bl=black, br=brown, yell=yellow, p=pale, d=dark (i.e., dgr=dark gray), ves=vesicular, micves=microvesicular, f-ves=finely vesicular, c-ves= coarsely vesicular, sp=similar portion, dp=dispersed, rew=reworked, crys=crystal, py=porphyritic*

*g Titanomagnetite groups and glass shard chemistry (refer to Fig. 7, 8)*

*h Calibrated ages based on model shown in Fig. 2*