Figure F1. Bathymetry and location of Sites U1526 and U1520. Black line shows location of Seismic Profile 05CM-04 in Figure F2.

Figure F2. Seismic reflection image from Profile 05CM-04 (Barker et al., 2018) showing locations of Sites U1520 and U1526 (pre-expedition interpretation). VE = vertical exaggeration.

Figure F3. Lithostratigraphic summary, Site U1526. Core recovery: black = recovery, white = no recovery. Ages are defined by foraminifer and nannofossil biostratigraphy and coralline algae (see Biostratigraphy).

Figure F4. Color reflectance, bulk density, magnetic susceptibility (MS), and NGR variations, Hole U1526A. cps = counts per second.

Figure F5. Bulk powder XRD results, Site U1526. Peak intensity values (cps = counts per step) for clinopyroxene provide qualitative indications of the severity of basalt alteration in the volcaniclastic facies.

Figure F6. Representative X-ray diffractograms for sediments and volcanic clasts, Site U1526. Synthetic diffractogram for augite, generated using MacDiff software, is shown for comparison with mildly altered basalt. Cl = total clay minerals, Q = quartz, F = feldspar (plagioclase), Cc = calcite, CPX = clinopyroxene.

Figure F7. Contacts (dashed line) between lithologies in Unit I, Hole U1526B. A. Contact between greenish gray mud and light brown (early Pleistocene?) calcareous mud. B. Contact between (early Pliocene?) calcareous mud and Late Cretaceous nannofossil-rich ooze with foraminifers.

Figure F8. Nannofossil-rich ooze with foraminifers (375-U1526A-3R-2, 63 cm). A. Plane-polarized light (PPL). B. Cross-polarized light (XPL).

Figure F9. Manganese concretions at top of Unit II, Hole U1526B. A. Manganese-rich silt surrounding a manganese concretion growing around a basalt clast. Unit I/II boundary is at 94 cm. B. Manganese concretion on a basalt clast. Note that nannofossil-rich ooze at the top of this section is likely debris from overlying lithostratigraphic unit that fell into the top of the core.

Figure F10. Volcaniclastic sandstone and conglomerate in Unit II, Site U1526. A. Unconsolidated coarse volcaniclastic sand near top of Unit II. Primary sedimentary structures were destroyed during core recovery. B. Coarse sandstone showing planar and low-angle cross-lamination. C. Closely packed granule-sized volcaniclastic conglomerate with shell fragments. D. Rounded pebble conglomerate with shell fragments (8–24 cm) grading into underlying coarse sandstone (24–33 cm).

Figure F11. Volcaniclastic sandstone and conglomerate, Unit II. A. Volcaniclastic sandstone with bivalve shell fragments (375-U1526A-4R-1, 5–7 cm; PPL). Shell fragments are preferentially aligned parallel to bedding. B. Well-rounded clasts of altered basalt (Bs), vesicular basalt, and shell fragments (Sh) (4R-1, 42–44 cm; PPL). Sand grains in matrix are cemented by calcite.

Figure F12. Basalt clasts in Unit II, Hole U1526A. A. Vesicular basalt. B. Basalt clast showing a sharp bottom contact (80–84 cm) and concentration of vesicles (68–73 cm). Fine-grained fossiliferous mud and rounded sand grains of basalt occur just below the basalt clast and show no evidence of baking. C. Basalt breccia cemented by calcite.

Figure F13. Vesicular basalt with plagioclase and pyroxene phenocrysts showing trachytic texture (375-U1526A-5R-1, 41–42 cm). A. PPL. Cpx = clinopyroxene, Cal = calcite. B. XPL.

Figure F14. Summary of lithostratigraphy, planktonic foraminifer abundance, interpreted oceanicity, paleowater depths, and biostratigraphic datums, Site U1526. Core recovery: black = recovery, white = no recovery. See Figure F3 for lithology key. New Zealand (NZ) stages: Wq = Haweran, Wn = Nukumaruan, Wo = Opoitian, Mh = Haumurian.

Figure F15. Magnetic inclination, declination, intensity, and magnetic susceptibility, Hole U1526B. Core recovery: black = recovery, white = no recovery. GAD = geocentric axial dipole.

Figure F16. Magnetic inclination, declination, intensity, and magnetic susceptibility, Hole U1526A. Core recovery: black = recovery, white = no recovery. See Figure F3 for lithology key.

Figure F17. Core photographs, inclination, declination, and intensity for volcaniclastic clasts recovered between 49.8 and 51.8 mbsf, Hole U1526A.

Figure F18. Core photographs and inclination for archive-half basalt sections recovered between 57.2 and 66.1 mbsf, Hole U1526A.

Figure F19. Representative vector components and NRM intensity vs. thermal demagnetization results for (top) basalt clasts and (bottom) reddish material underlying basalts, Hole U1526A.

Figure F20. Depth distribution and dip angles of structures, Site U1526. Structure observations are merged from Holes U1526A and U1526B, assuming the seafloor is at the same level in both holes. See Figure F3 for lithology key.

Figure F21. Examples of bedding, matrix, and clast relationships, Hole U1526A. A. Subhorizontal beds in Domain 1 (3R-1, 48–54 cm). B. Heterogeneous, cemented, volcaniclastic sediments (6R-6, 57–61 cm). C. Brecciated volcanic clast with cement (9R-2, 46–50 cm). D. Poorly cemented, volcaniclastic sediments with shells in Domain 2 (4R-1, 91–98 cm). E. Sedimentary matrix in sharp contact with clast and blocky pore filling (8R-CC, 7–11 cm). F. Brecciated clast retaining jigsaw textures in volcaniclastic matrix (11R-1, 99–102 cm). G. Silt unit with contorted bedding in contact with volcanic clast (8R-2, 29–34 cm). H. Brecciated, altered, and veined volcanic clast with planar color banding (11R-1, 56–62 cm).

Figure F22. Representative veins in Domain 2, Hole U1526A. A. Diffuse vein characterized by an irregular, tabular zone of interconnected cement in volcaniclastic matrix (6R-3, 37–38 cm). B. Network of fracture veins within volcanic clast (14R-2, 61–65 cm). C. Zone of anastomosing filled fracture veins cutting through both matrix and clasts (6R-2, 2–6 cm). D. Circumgranular vein with open pores lined with calcite crystals (7R-1, 27–31 cm). E. Brown vein containing volcanic clasts, crossing from the matrix into vesicular basalt (11R-2, 121–128 cm).

Figure F23. Alkalinity, sulfate, phosphate, and bromide concentration profiles, Site U1526. Arrows = average seawater values.

Figure F24. Chloride, sodium, potassium, calcium, magnesium, and silica concentration profiles, Site U1526. Arrows = average seawater values.

Figure F25. Boron, lithium, iron, strontium, barium, and manganese concentration profiles, Site U1526. Arrows = average seawater values.

Figure F26. TC, $CaCO_3$, organic carbon, and inorganic carbon contents, Site U1526.

Figure F27. Summary of physical properties measured on core samples, Site U1526. Between 0 and 33 mbsf, MAD and thermal conductivity measurements were not made on Hole U1526B samples. cps = counts per second. WRMSL = Whole-Round Multisensor Logger.

Figure F28. GRA bulk density corrected for RCB core diameter, Hole U1526A. A. Core diameter determined from section images. B. Uncorrected GRA bulk density. C. Corrected GRA bulk density. Black dots in B and C = MAD bulk density.

Figure F29. *P*-wave velocity anisotropy, Site U1526.

Figure F30. Estimated K, Th, and U concentrations based on NGR spectra, Site U1526.

Figure F31. A. Comparison of pre-expedition PSDM and FWI *P*-wave velocity profiles near the site with Hole U1526A and U1526B laboratory *P*-wave velocity data (see Physical properties). PSDM-GNS and PSDM-UTIG models from Barker et al. (2018). FWI velocity model provided by R. Bell (unpubl. data; Imperial College London, United Kingdom). B. Comparison of time-depth relationships derived from different seismic *P*-wave velocity profiles and laboratory *P*-wave velocity measurements.

Figure F32. A. Lithostratigraphic and seismic units, Site U1526. We interpret that the high-amplitude, reversed polarity reflection seen in seismic data corresponds to the Unit I–II transition (see Lithostratigraphy). Seismic Unit 1 and 2 velocity values are assigned as 1510 and 3805 m/s, respectively, in Velocity Model 1. Core recovery: black = recovery, white = no recovery. See Figure F3 for lithology key. B. Synthetic seismic trace produced from Velocity Model 1 and MAD density data. Blue reflections are troughs and indicate an increase in acoustic impedance with depth. RC = reflection coefficient.

Figure F33. Interpreted seismic units in upper sequence of Tūranganui Knoll on Seismic Line 05CM-04 and Cross-Line TAN1114-03, Site U1526. A. Seismic Line 05CM-04 prestack time migrated (from Barker et al., 2018) showing two seismic units and a relatively late stage volcanic cone. B. Seismic units visible in Profile TAN1114-03 lying 110 m from Site U1526. Red reflections are troughs and indicate an increase in acoustic impedance with depth. C. Kongsberg EM 302 30 kHz multibeam bathymetry data gridded to 25 m showing bathymetry contours at 20 m interval and Site U1526 location.

Figure F34. Comparison of Hole U1526A and U1526B laboratory physical properties data with Line 05CM-04 seismic reflection data. Core recovery: black = recovery, white = no recovery. See Figure F3 for lithology key. cps = counts per second.

Figure F35. A. Seismic Line 05CM-04 (CDPs 7094–7194), depth converted using Velocity Model 1 and showing the cored interval at Site U1526 (Figure F32). Hole U1526A drilled to the base of a high-amplitude, reversed polarity reflection and did not reach a zone of lower amplitude dipping reflectivity. B. PSDM-GNS model of Line 05CM-04 (CDPs 7094–7194) (Barker et al., 2018), showing the drilled interval at Site U1526. Blue reflections are troughs and indicate an increase in acoustic impedance with depth.