

4.9. Tokerau Beach

Maps of inundation depth and maximum current speed for Tokerau Beach are presented in Figures 46 – 51. Inundation from the South American tsunami is confined to narrow strips of land along the coast. A small number of settlements may be impacted. Inundation depth and extent increases slightly with sea level rise. Maximum current speeds are relatively weak, less than 1 m s^{-1} .

The TKSZ $M_w 8.5$ event results in more inundation than the South American event, but flooding does not extend more than about 100m inshore from the coast. With sea level rise, more inundation is predicted, particularly threatening Tokerau Beach settlements. Maximum current velocities are greater than for the South American event, increasing the erosion risk. For the $M_w 9.0$ event, inundation is much more severe, reaching several hundred metres inshore behind Tokerau Beach. Increased inundation in the Whatuwhiwhi area is also evident. With sea level rise included, inundation extends almost a kilometre inshore, and maximum current velocities exceed 2.5 m s^{-1} over substantial areas.

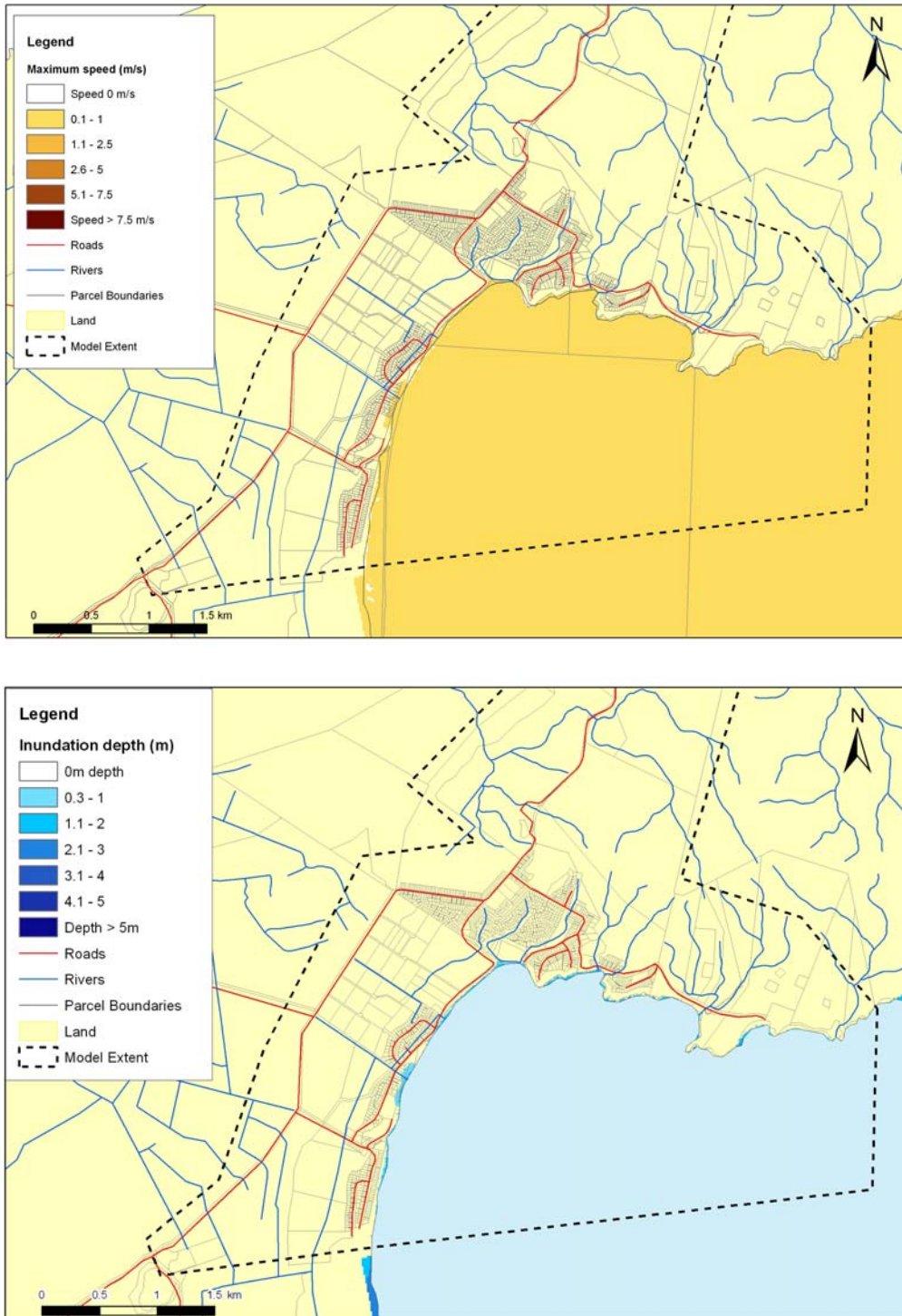


Figure 46: Tokerau Beach: Maximum inundation speed (upper) and depth (lower) plots for the South American tsunami scenario at MHWS (to extent of LIDAR).

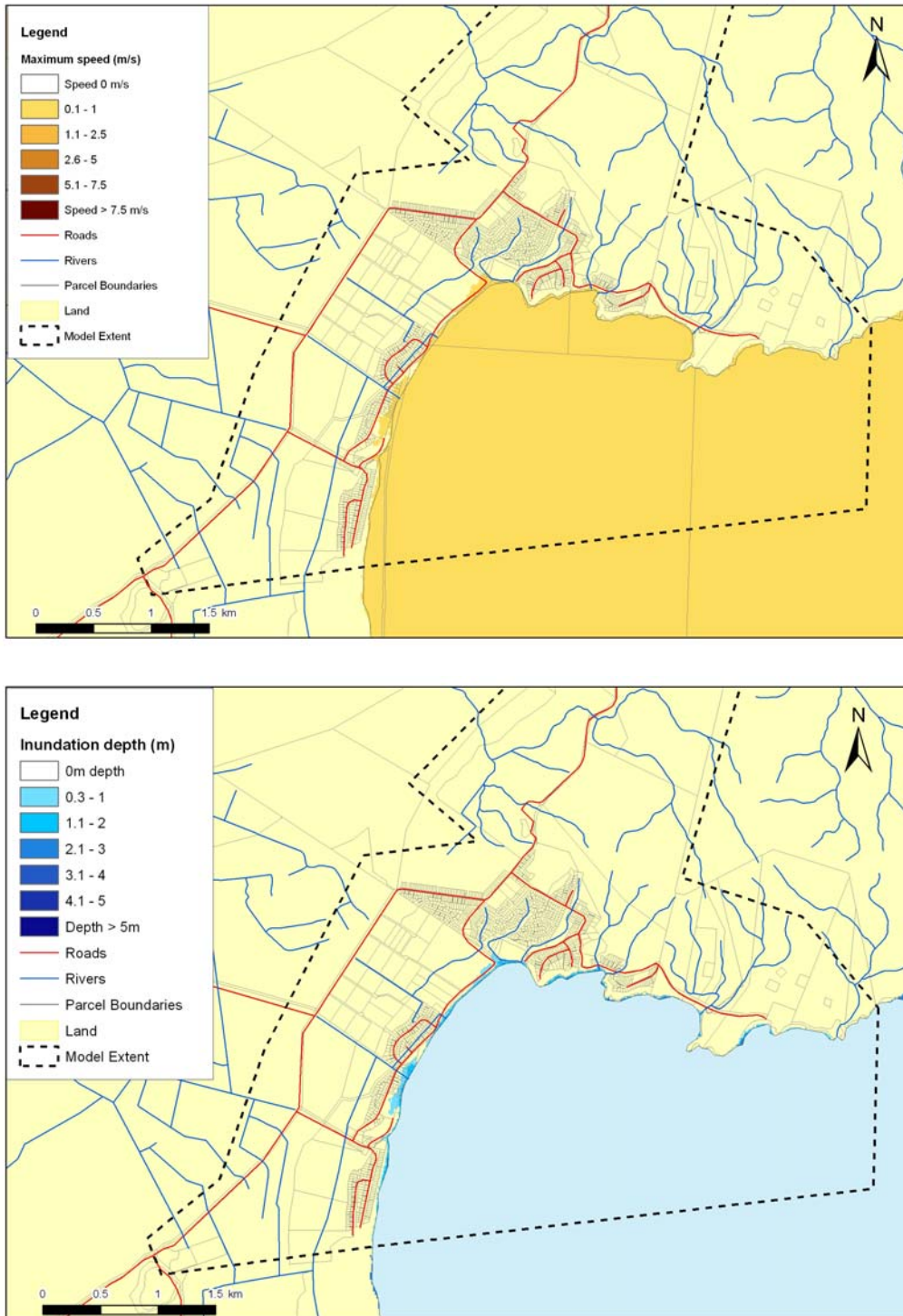


Figure 47: Tokerau Beach: Maximum inundation speed (upper) and depth (lower) plots for the South American tsunami scenario at MHWS + 50cm (to extent of LIDAR).

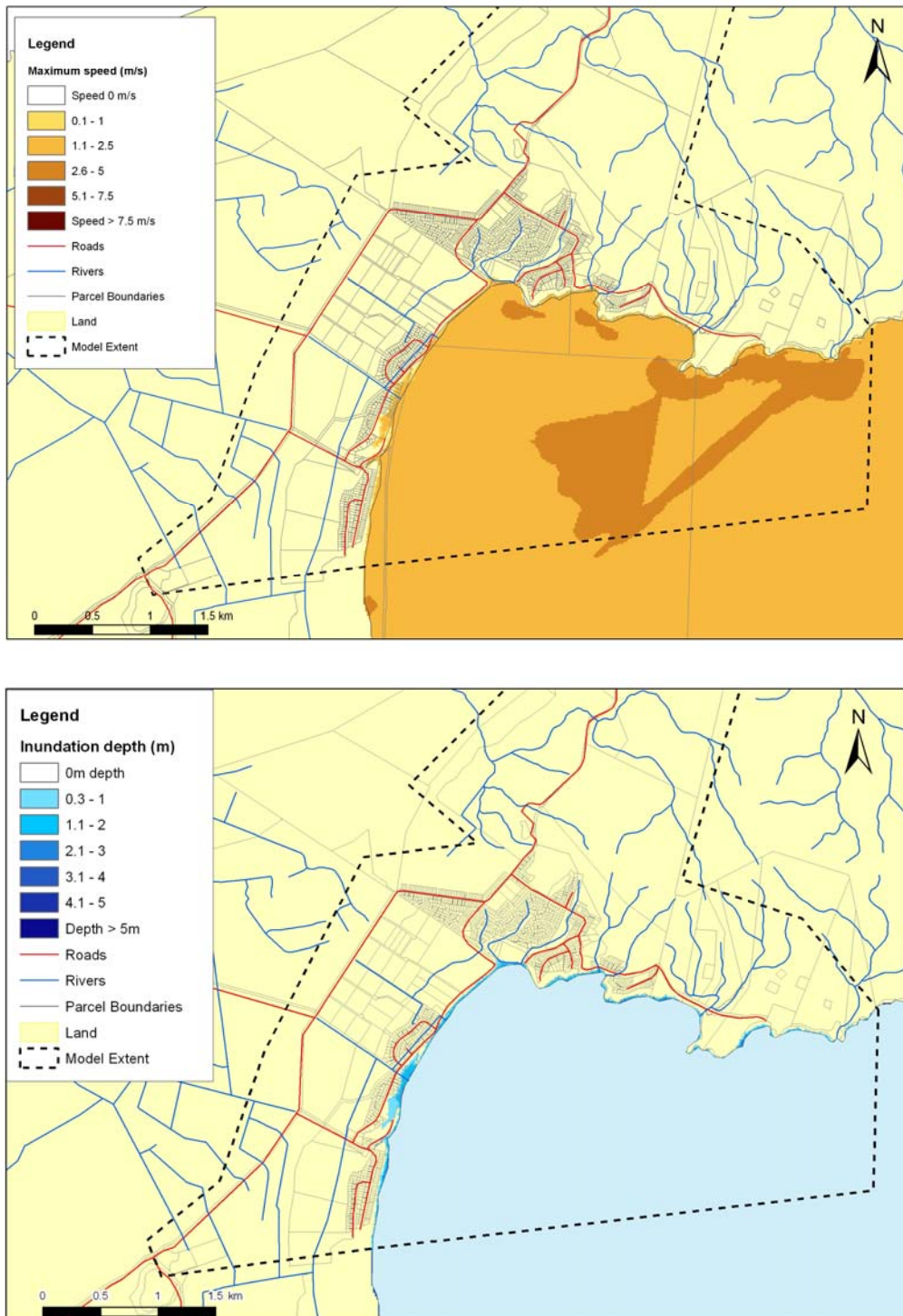


Figure 48: Tokerau Beach: Maximum inundation speed (upper) and depth (lower) plots for the $M_w8.5$ Tonga-Kermadec subduction zone scenario at MHWS (to extent of LIDAR).

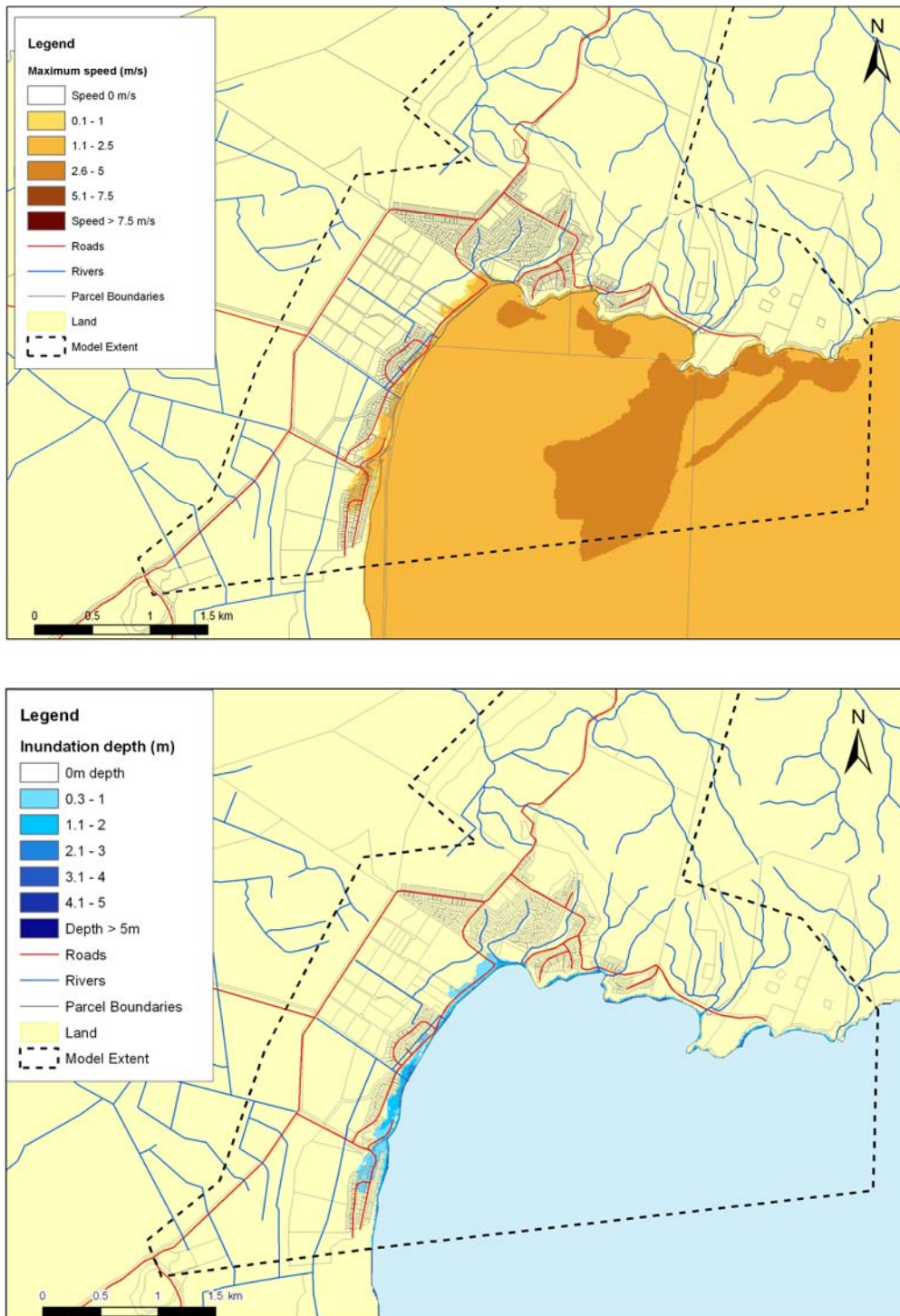


Figure 49: Tokerau Beach: Maximum inundation speed (upper) and depth (lower) plots for the $M_w 8.5$ Tonga-Kermadec subduction zone scenario at MHWS + 50cm (to extent of LIDAR).

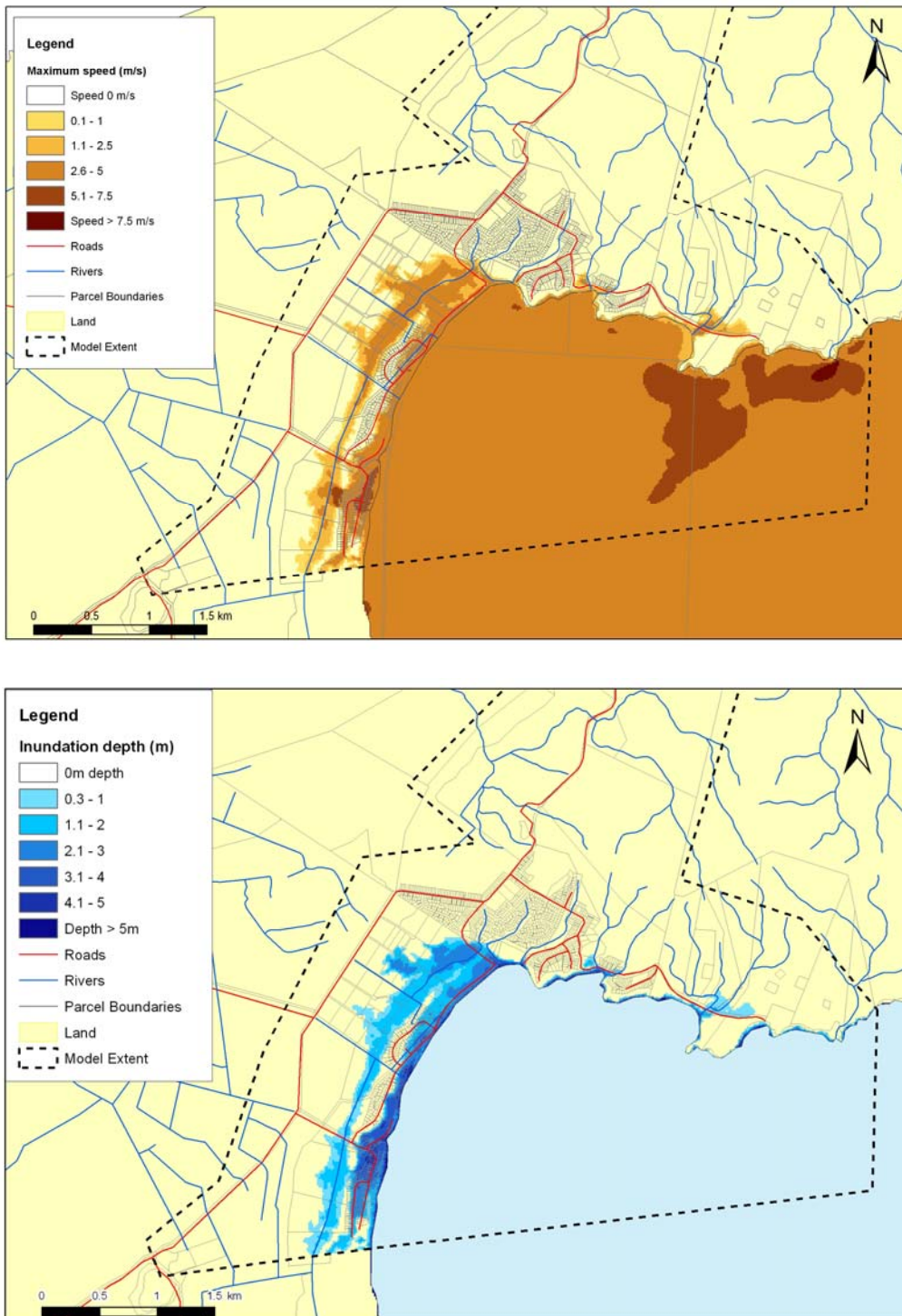


Figure 50: Tokerau Beach: Maximum inundation speed (upper) and depth (lower) plots for the M_w 9.0 Tonga-Kermadec subduction zone scenario at MHWS (to extent of LIDAR).

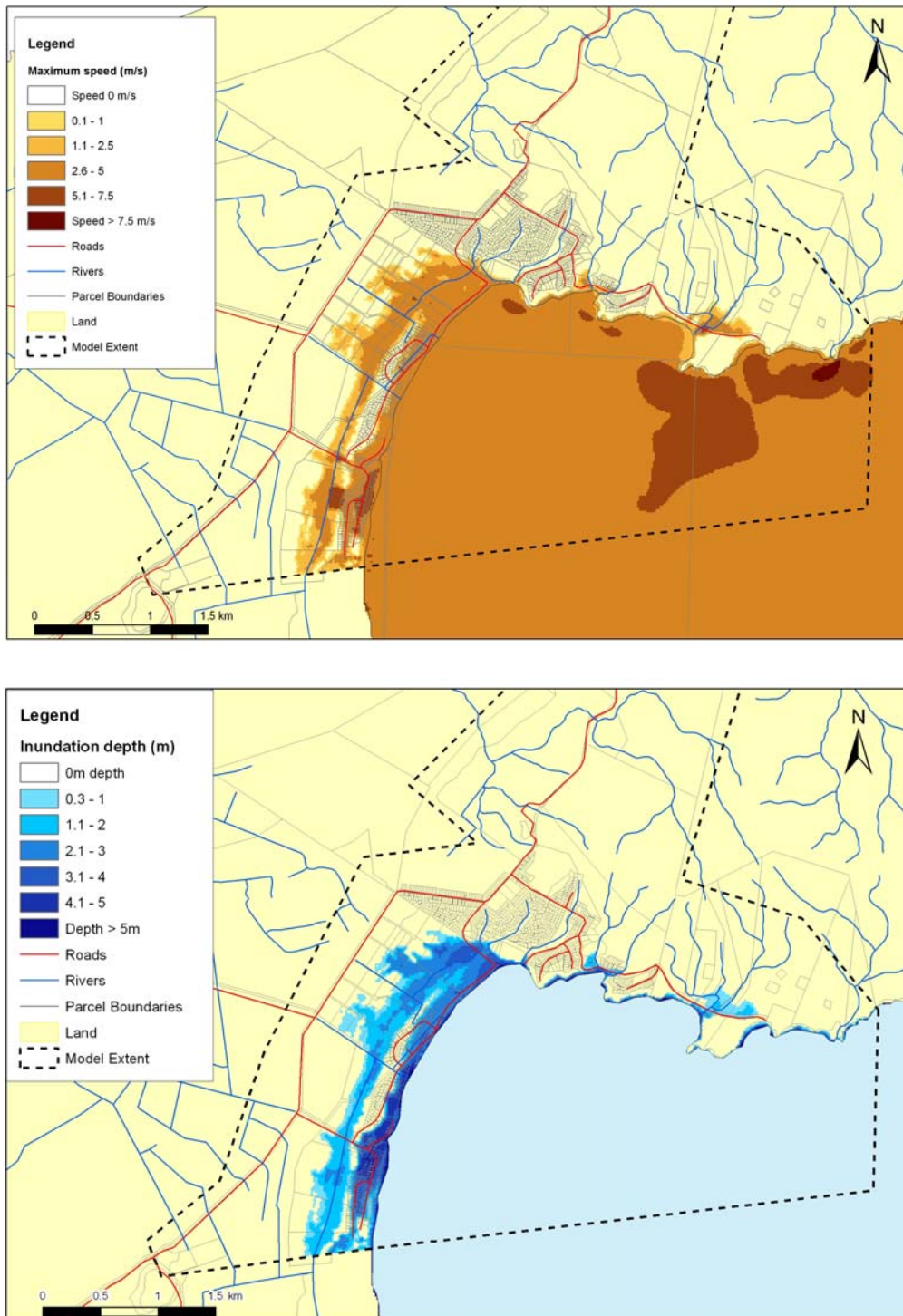


Figure 51: Tokerau Beach: Maximum inundation speed (upper) and depth (lower) plots for the Mw9.0 Tonga-Kermadec subduction zone scenario at MHWS + 50cm (to extent of LIDAR).