4.14. Hihi, Doubtless Bay

Maps of maximum inundation for Hihi are presented in Figures 76-81. Inundation from the South American tsunami is predicted to flood right across the settlement of Hihi, from Butler Bay to Hihi Beach. Sea level rise increases the depth of the inundation. Maximum water speeds can be over 2.5 m s^{-1} in the flooded area.

Predicted inundation is similar for the TKSZ M_w8.5 event, although the region affected by water speeds greater than 2.6 m s^{-1} is increased. The TKSZ M_w9.0 event causes significantly more inundation, especially up the Waiaua Stream. The settlement of Hihi is flooded by depths of up to 5 m and the coastal road to the north of Hihi Beach leading to Waitetoki is flooded. Current velocities in Hihi Bay reach 5 m s^{-1} around Butler Bay, and even up to 7.5 m s^{-1} in the sea level rise scenario.

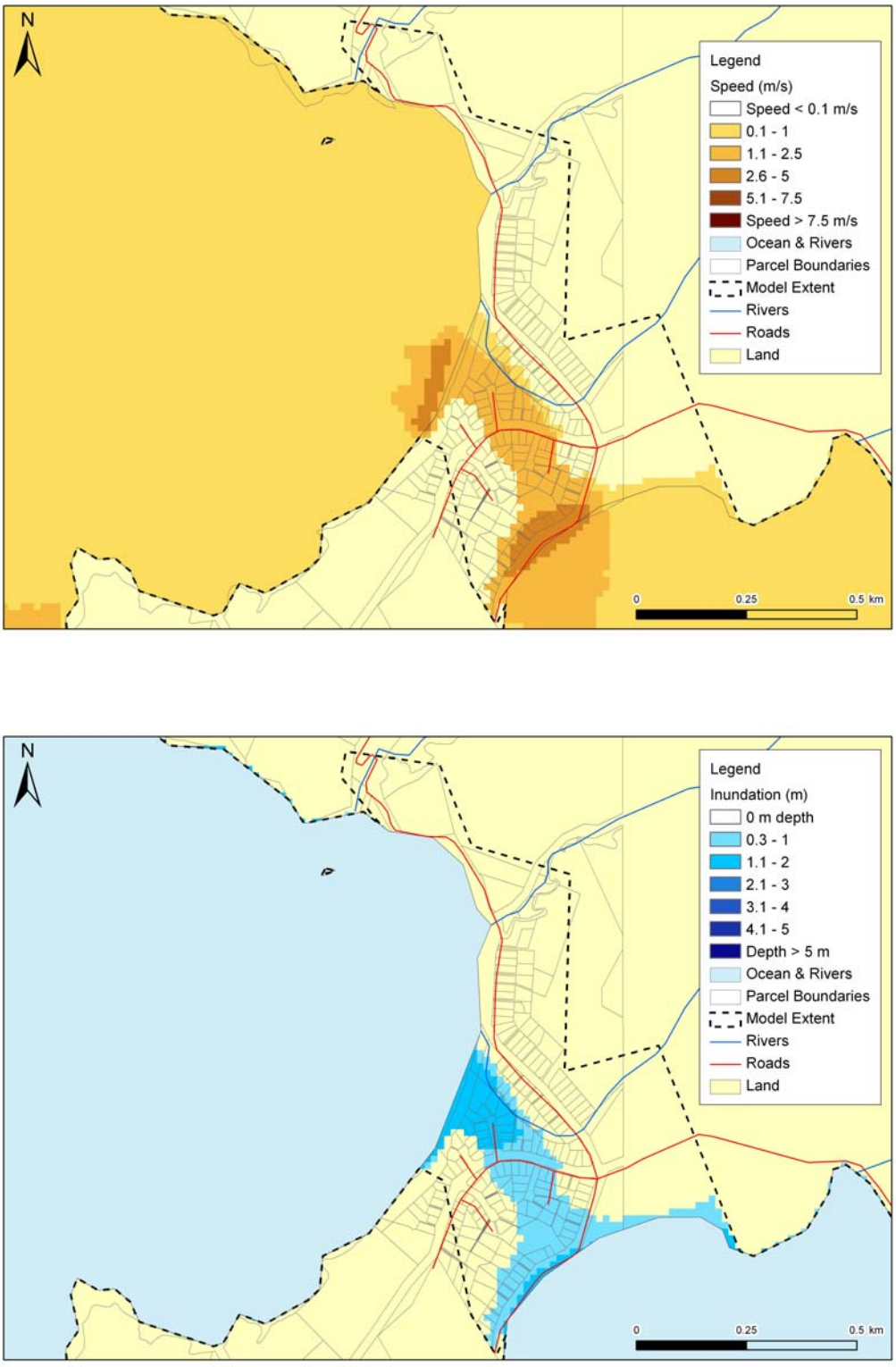

Figure 76: **Hihi, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the South American tsunami scenario at MHWS (to extent of LiDAR).**

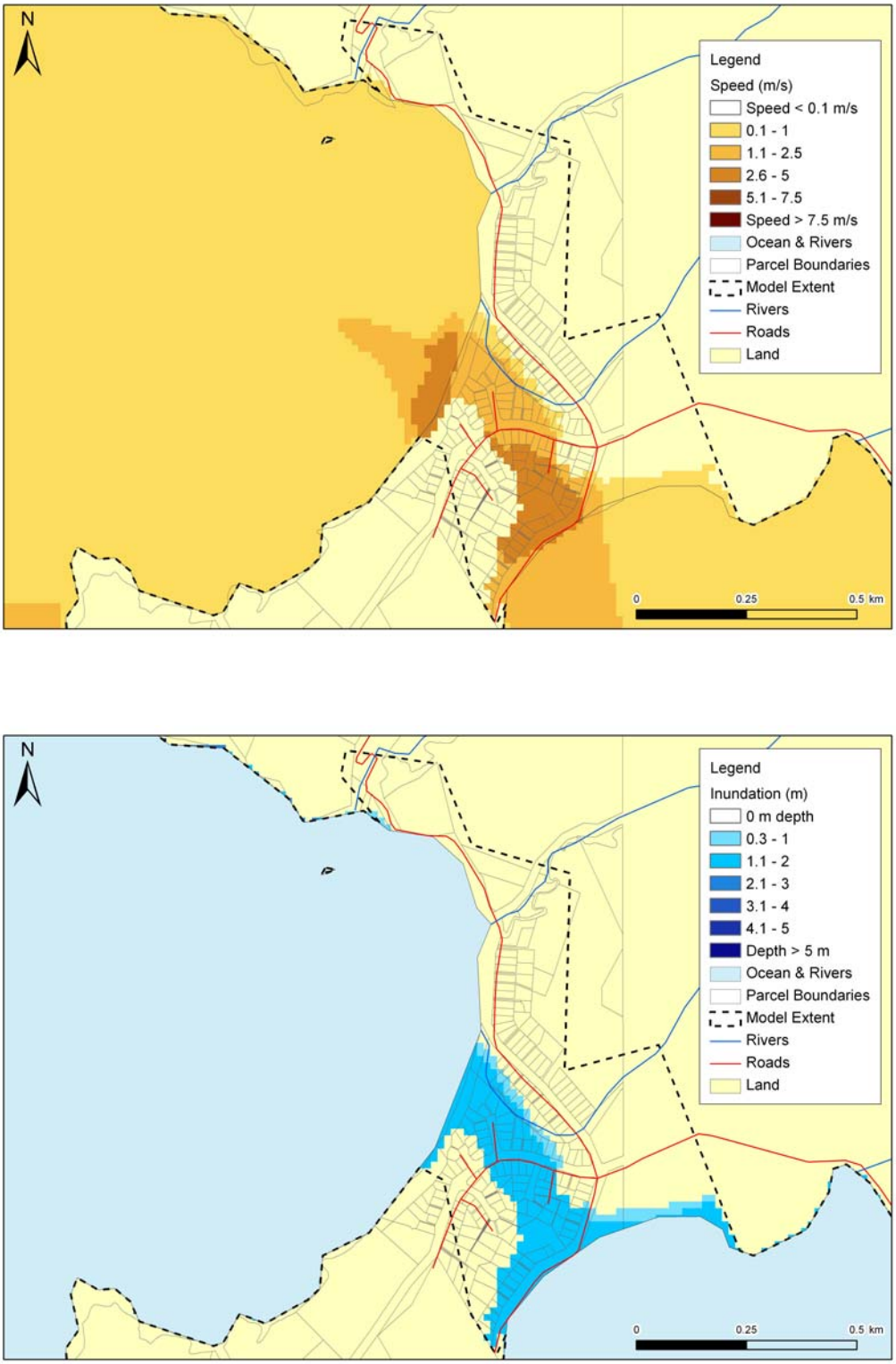

Figure 77: **Hihi, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the South American tsunami scenario at MHWS + 50cm (to extent of LiDAR).**

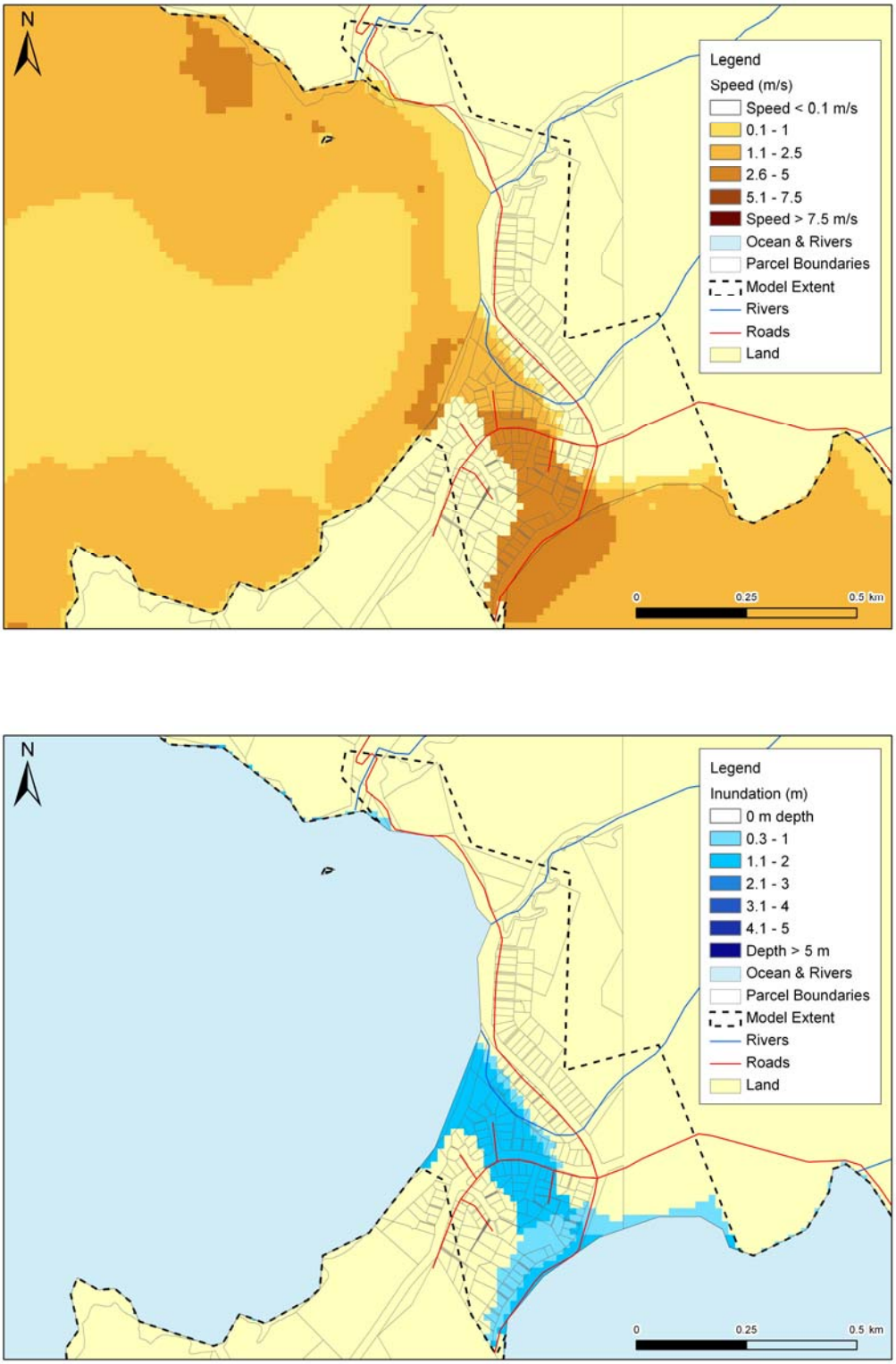

Figure 78: **Hihi, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the Mw8.5 Tonga-Kermadec subduction zone scenario at MHWS (to extent of LiDAR).**

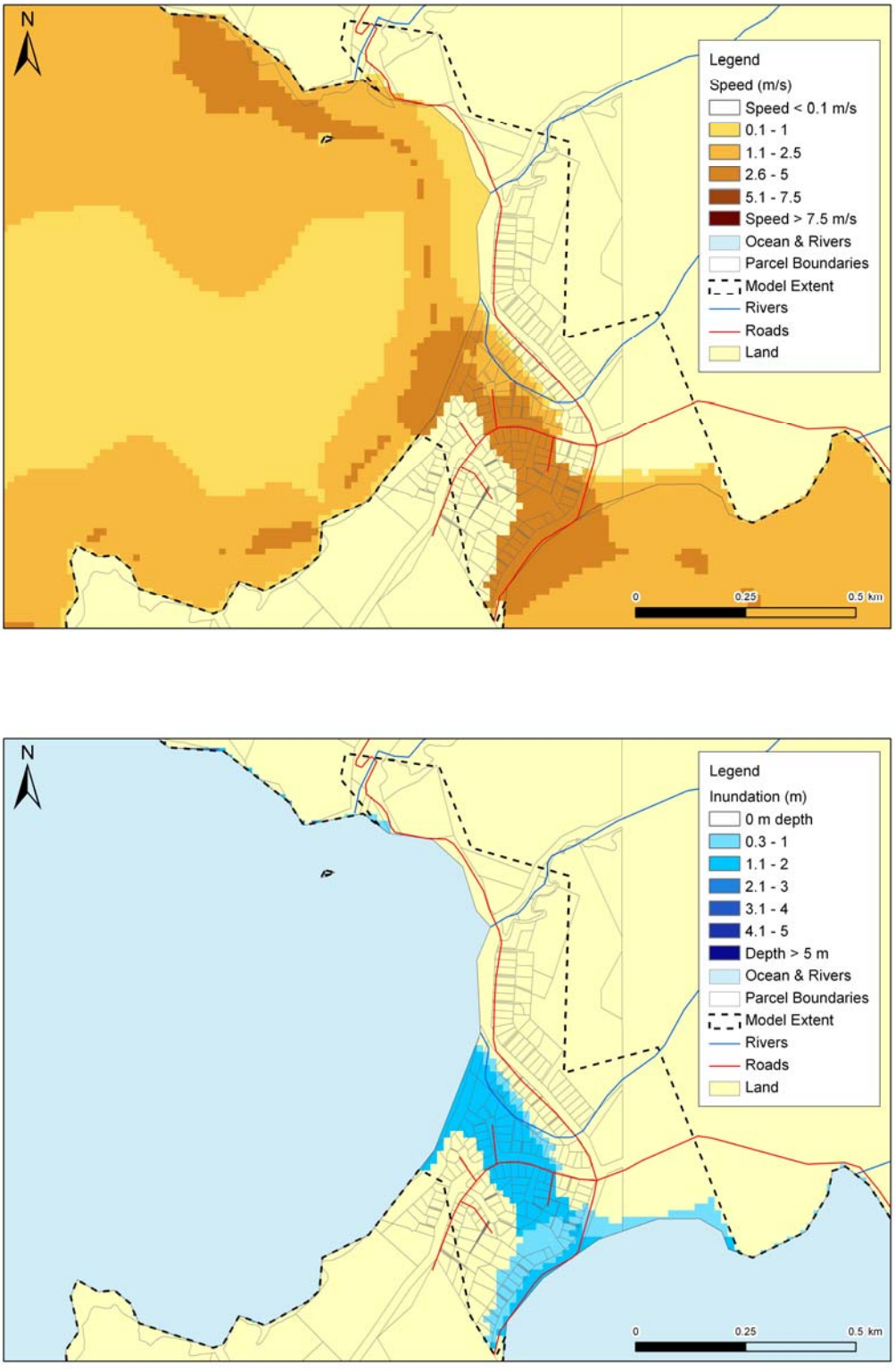

Figure 79: **Hihi, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the Mw8.5 Tonga-Kermadec subduction zone scenario at MHWS + 50cm (to extent of LiDAR).**

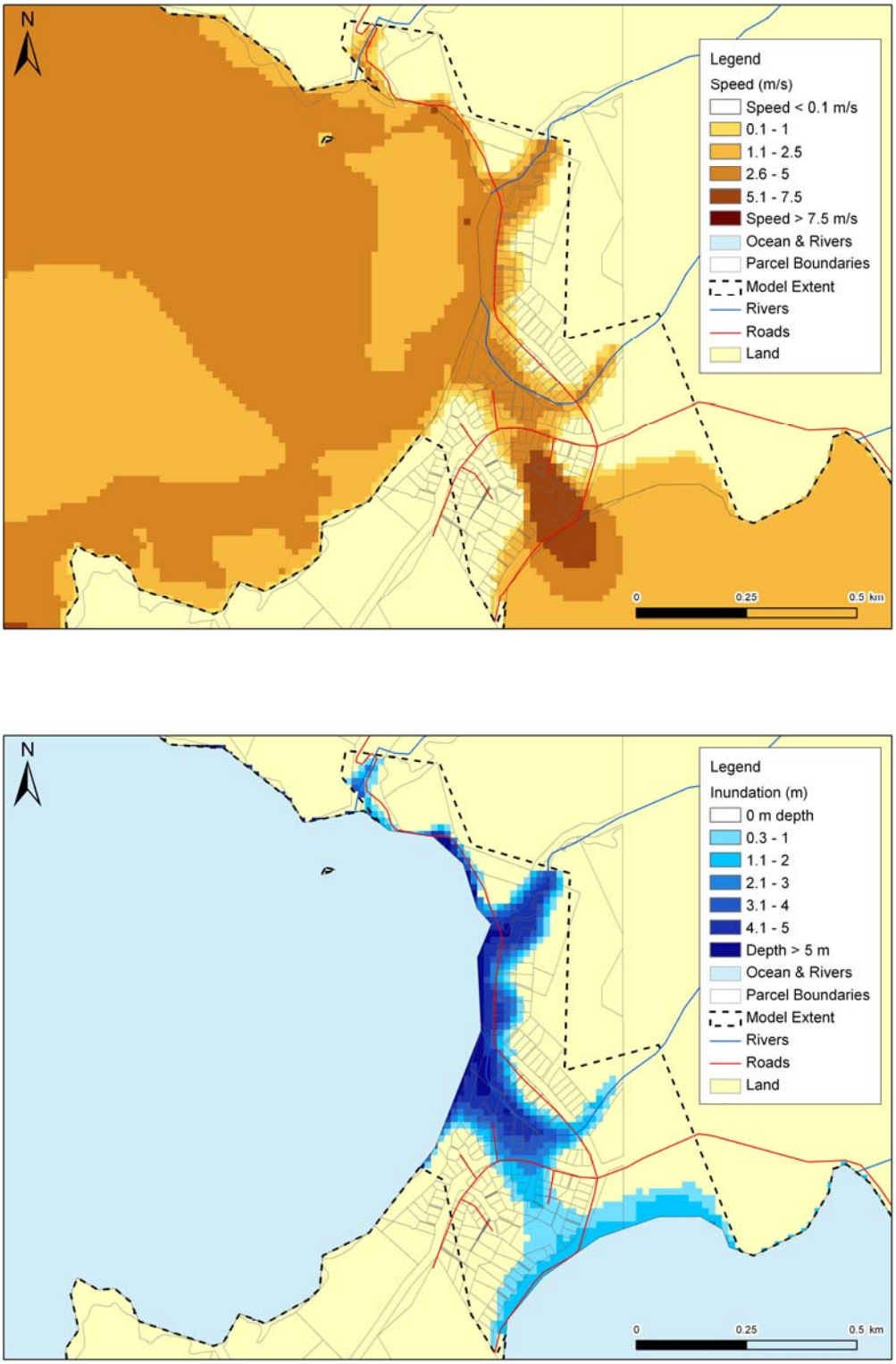

Figure 80: **Hihi, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the Mw9.0 Tonga-Kermadec subduction zone scenario at MHWS (to extent of LiDAR).**

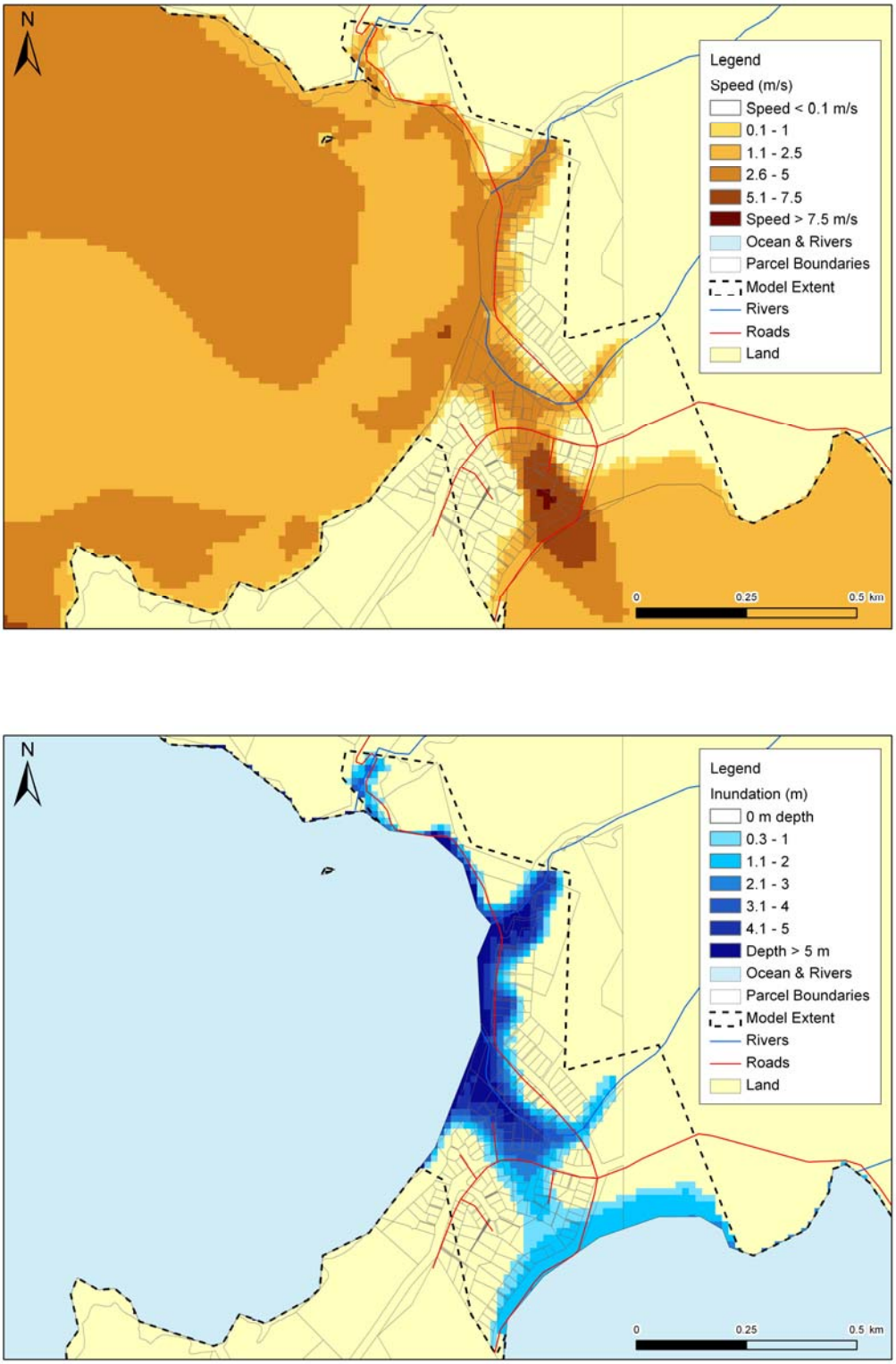

Figure 81: **Hihi, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the Mw9.0 Tonga-Kermadec subduction zone scenario at MHWS + 50cm (to extent of LiDAR).**