4.9. Coopers Beach, Doubtless Bay

Predicted inundation depth and maximum current speed for Coopers Beach are presented in Figures 46-51. With and without the addition of sea level rise, the South American tsunami has very little impact in the area, except for small sections of the coast to the south of Otaneui Pa and Te Homamu Pa, the very eastern end of Coopers Beach, and around the headland to Mill Bay. The inundation depth does not exceed 1 m. Current velocities only exceed 1 m s^{-1} around the headland between Mill Bay and Coopers Beach.

Inundation from the TKSZ M_w8.5 is deeper than the South American tsunami event, although the extent is very similar; inundation depths reach up to 3 m and current velocities increase to 2.5 m s^{-1}. The TKSZ M_w9.0 event increases the extent of the inundated area to include the mouth of the Kanekane Stream (up to 5 m depth) and the mouth of the Otanenui Stream, which emerges on both sides of the small headland on which Otanenui Pa and Te Homamu Pa stand. To the west, water depths are in excess of 4 m, whereas to the east depths reach up to 2 m. Current velocities exceed 5 m s^{-1} in the bay. For both events the coastal area of Mill Bay is predicted to be inundated by up to depths of 5 m.

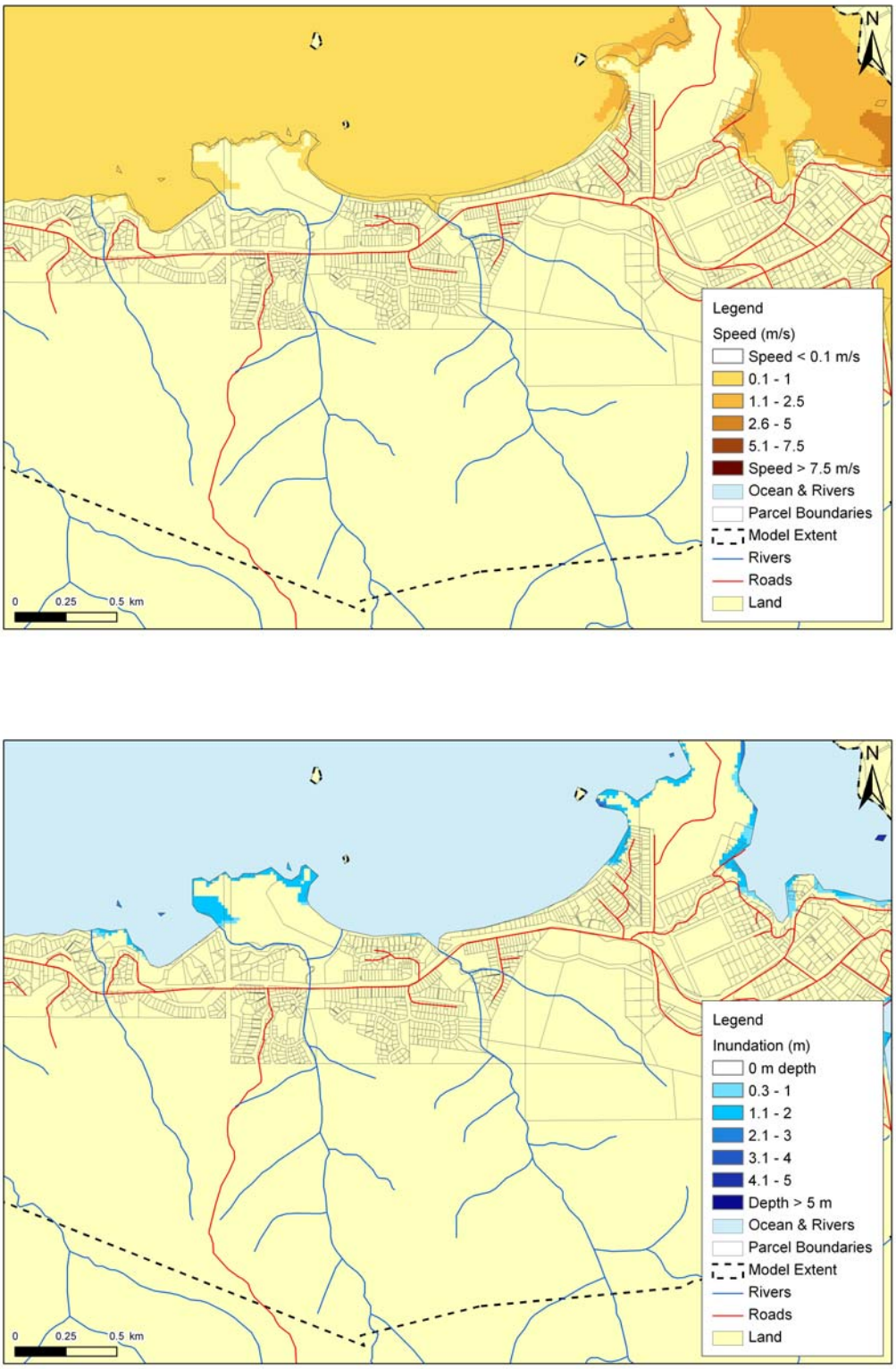

Figure 46: Coopers Beach, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the South American tsunami scenario at MHWS (to extent of LiDAR).

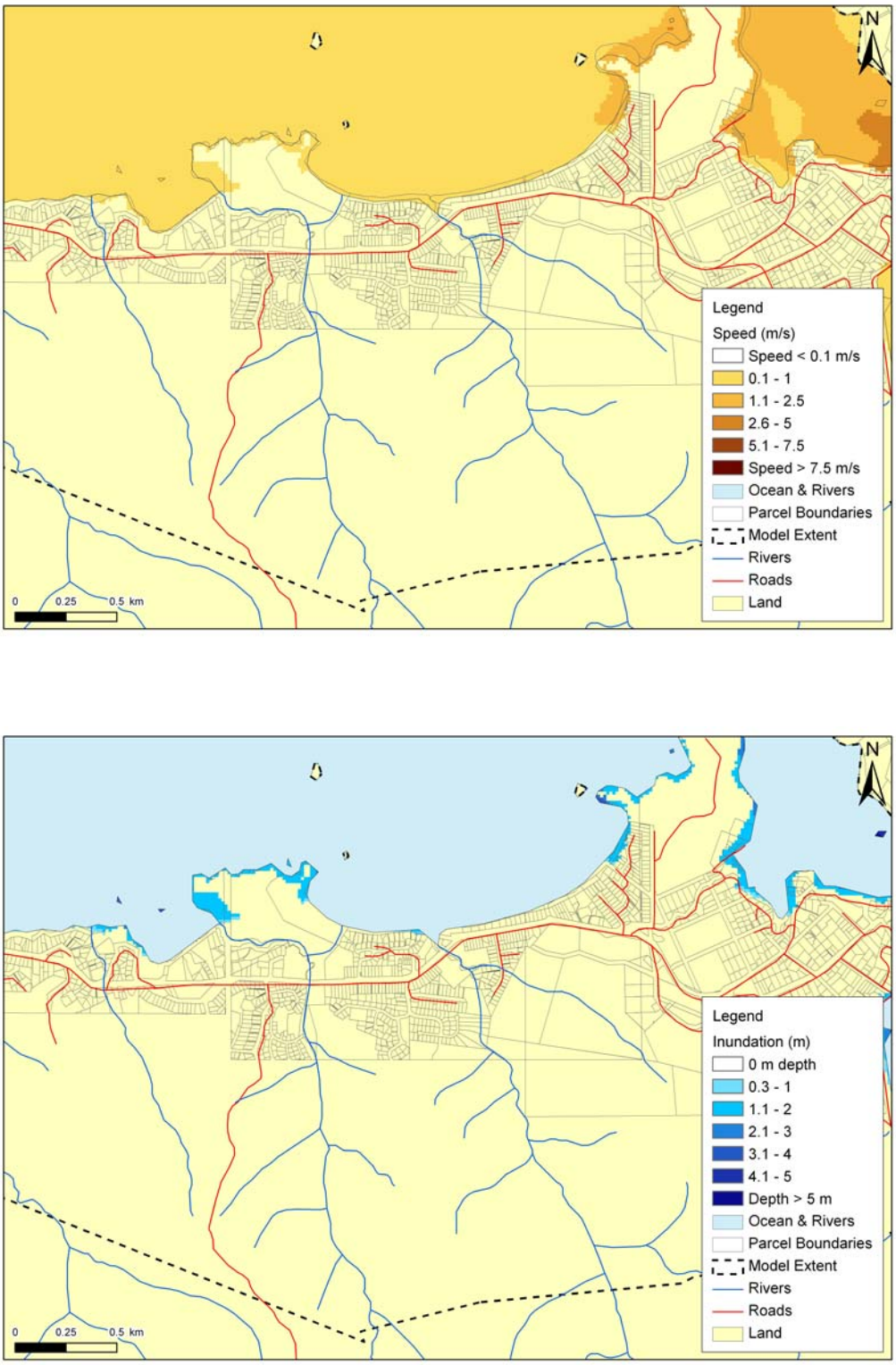

Figure 47: **Coopers Beach, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the South American tsunami scenario at MHWS + 50cm (to extent of LiDAR).**

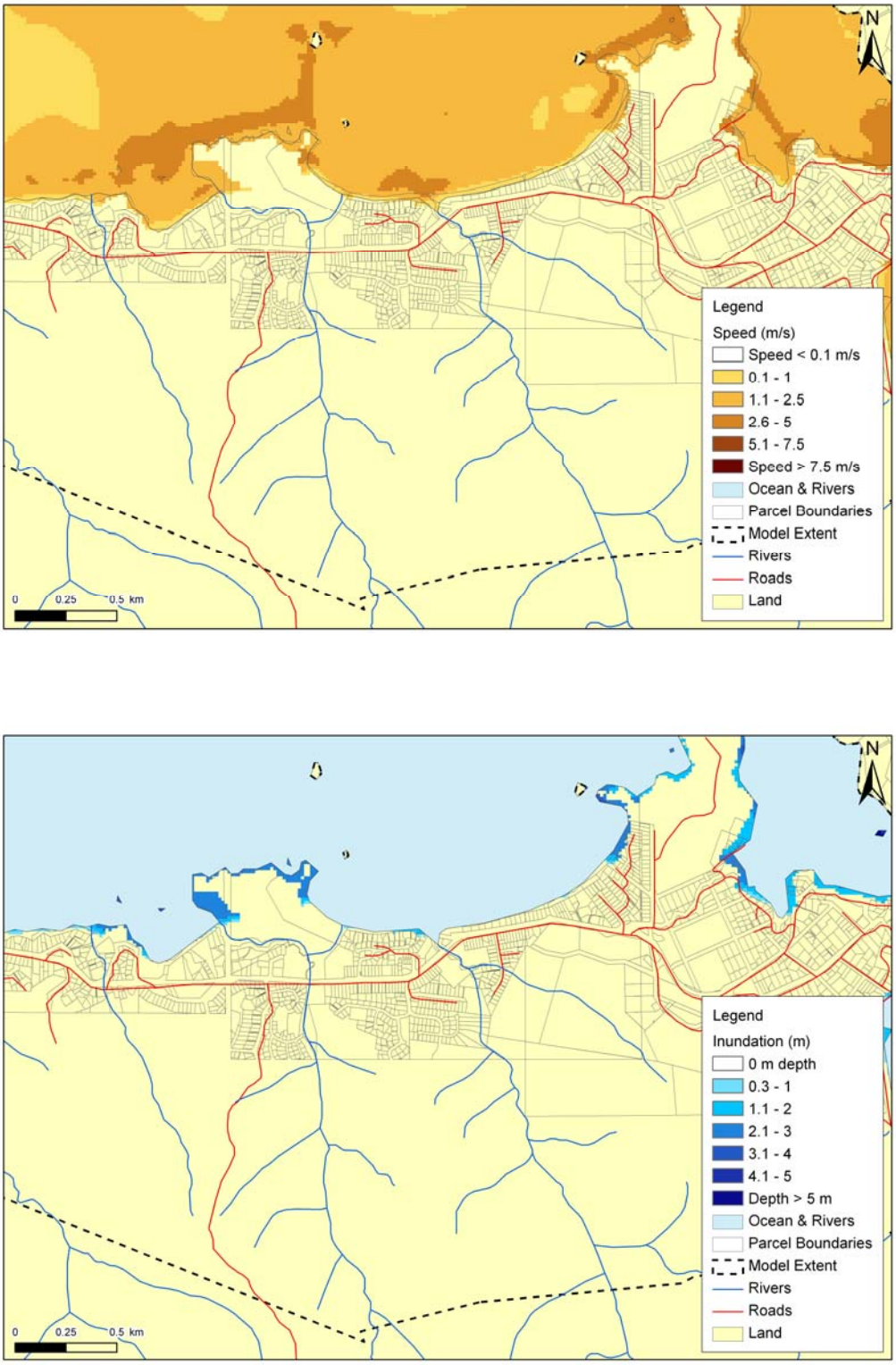

Figure 48: **Coopers Beach, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the Mw8.5 Tonga-Kermadec subduction zone scenario at MHWS (to extent of LiDAR).**

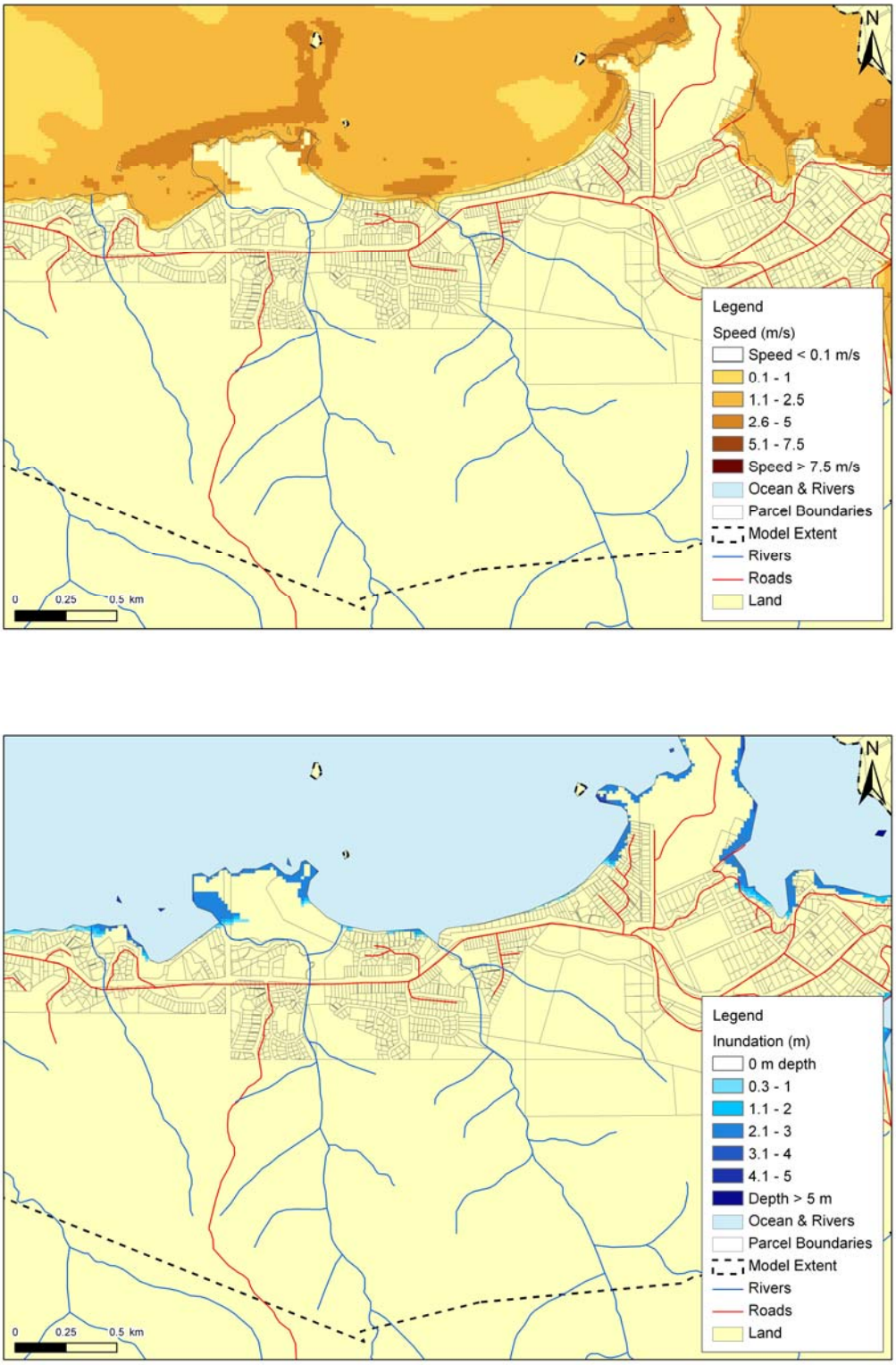

Figure 49: **Coopers Beach, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the Mw8.5 Tonga-Kermadec subduction zone scenario at MHWS + 50cm (to extent of LiDAR).**

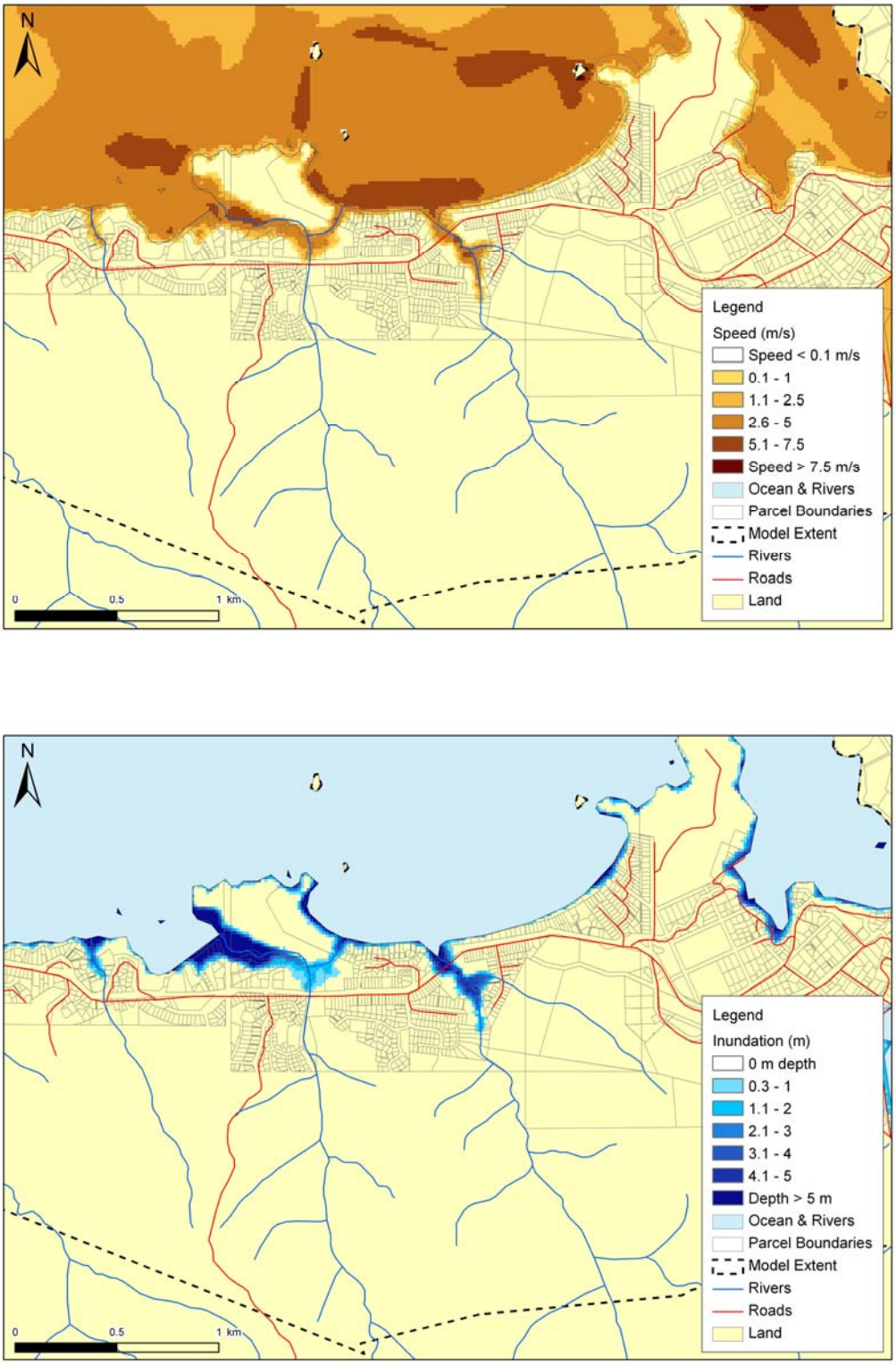

Figure 50: **Coopers Beach, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the Mw9.0 Tonga-Kermadec subduction zone scenario at MHWS (to extent of LiDAR).**

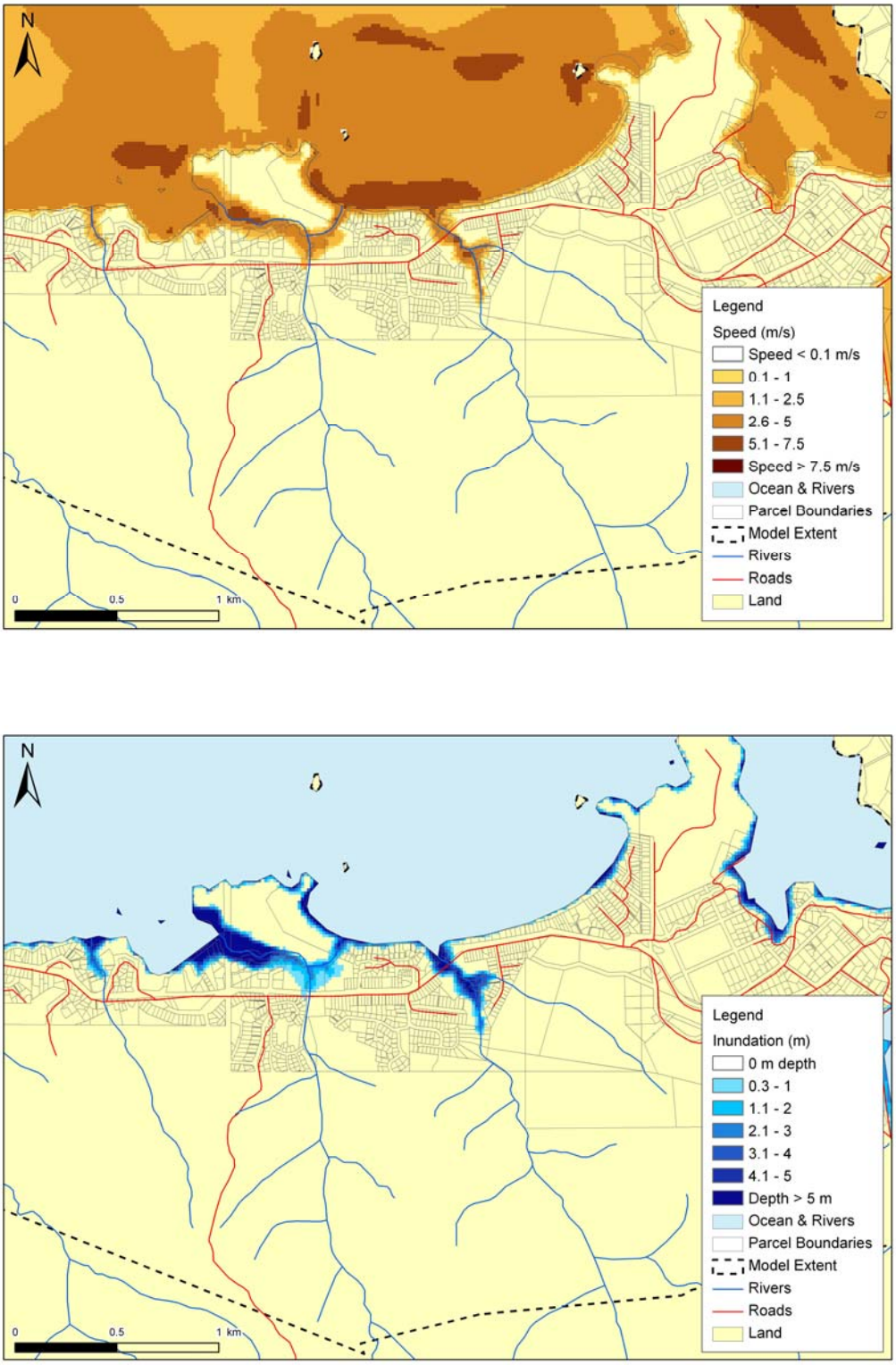

Figure 51: Coopers Beach, Doubtless Bay: Maximum inundation speed (upper) and depth (lower) plots for the M_w9.0 Tonga-Kermadec subduction zone scenario at MHWS + 50cm (to extent of LiDAR).