APPENDIX F

Extent of MIKE21 Computational Hydraulic Models for Simulation of Rahui Road Overflow

The MIKE11 model developed to simulate the hydraulic behaviour of the system of flood detention basins in the Rahui Road / County Road / SH1 area traversed by the Expressway incorporated a stage / discharge relationship for Rahui Road overflow out of the primary flood detention basin upstream of the NIMT railway line. This rating relationship was defined by means of separate two-dimensional MIKE21 overland flow model. The extent of this MIKE21 model is illustrated in Figure F-1 below.

Figure F-1   Extent of MIKE21 model for existing situation – model extent shown by red hatching, one-dimensional stream channel network in MIKE11 model indicated by blue lines, culverts indicated by aqua lines

In the case of the proposed situation model developed to simulate the hydraulic behaviour of the modified system of flood detention basins in the Rahui Road / County Road / SH1 area, the MIKE11 model of the detention basins and culverts was coupled to a MIKE21 model simulating the outflow from the primary detention basin over Rahui Road. The extent of the MIKE21 component of the model is shown in Figure F-2 below.

Figure F-2   Extent of MIKE21 model for proposed situation – model extent shown by red hatching, one-dimensional stream channel network in coupled MIKE11 model component indicated by blue lines, culverts indicated by aqua lines, secondary flood containment bund for Ōtaki River stopbank overflows indicated by yellow line