A simple but rational procedure for prediction of extreme wave-induced hull girder bending moment is presented. The procedure takes into account main ship hull characteristics such as: length, breadth, draught, block coefficient, bow flare coefficient, forward speed and hull flexibility. The wave-induced loads are evaluated for specific operational profiles. Non-linearity in the wave bending moment is modeled using results derived from a second-order strip theory and water entry solutions for wedge type sections. Hence, bow flare slamming is accounted for through a momentum type of approach. The stochastic properties of this non-linear response are calculated through a monotonic Hermite transformation. In addition, the impulse loading due to e.g. bottom slamming or a rapid change in bow flare is included using a modal expansion in the two lowest vertical vibration modes. These whipping vibrations are added to the wave-frequency non-linear response taking into account the rise time of the impulse response as well as the phase lag between the occurrence of the maximum non-linear and the maximum impulse load. Previous results for the sagging bending moment are validated by comparison with fully non-linear strip theory calculations and supplemented with new closed form results for the hogging bending moment. Focus is on the extreme hull girder hogging bending moment. Due to the few input parameters this procedure can be used to estimate the wave-induced bending moments at the conceptual design phase. Another application area is for novel single hull ship types not presently covered by the rules of the classification societies. As one application example the container ship M/S Napoli is considered.