In this paper we develop a consistent valuation framework for reverse mortgages based on reduced-form intensity models as used in credit risk modelling. Within our modelling framework we explicitly calculate the probability that the total loan amount exceeds the house value at termination of the contract and derive the maximum payment(s) which can be made to the homeowner under certain constraints. We apply our results to data from the German market and discuss implications for the design of reverse mortgages from a lender's perspective.