evacuees is greater than the number of actual victims. Therefore, any changes to the standard of protection not only lead to a different probability of becoming a victim of flooding, but also to a different probability of being evacuated as a precaution – which may prove to have been unnecessary in hindsight.

If the optimum probability of flooding resulting from the SCBA is smaller than that resulting from the basic level of protection, the SCBA probability will be used as the basis for the standard. Otherwise, the probability resulting from the basic level of protection serves as the basis.

4.2.4 Societal risk

The third factor underpinning the standard is societal risk (the probability of major loss of life). Assessment of the severity of societal risk is often based on a *risk-averse decision-making criterion*, which attaches increasing weight to greater numbers of casualties. A risk-averse decision-maker regards a risk as greater than would be expected on the basis of expected impact values.

Firstly, an assessment was conducted to ascertain whether the societal risk of flooding is restricted on an adequate scale at national level, because the total loss of life in the event of flooding is what counts, not the number of casualties per levee segment or location. The assessment was performed using an assessment framework developed by the forerunner of the ENW, the Technical Advisory Committee on Flood Defences. This framework gives 'orientation values' based on the potential benefits of different risks (such as climbing, smoking or living next to a factory) and the extent to which exposure is voluntary. Climbing is for example a voluntary risk, which means that a higher level of risk is acceptable than in the case of an involuntary risk. The calculated probabilities that there will be major loss of life can be compared with these values by showing them both in a graph. The societal risk is represented as an FN-curve, with the probability of N or more casualties. Figure 4.11 shows that if the flood defences comply with the new standards the probability of 10,000 casualties is approximately equal to 1/100,000 per year. A similar curve can also be produced for economic damage, in which case it is known as an FS-curve. The FN-curve lies within the bandwidth of the orientation values, leading to the conclusion that the standards for flood defences based on the SCBA and LIR provide a sufficiently low level of national societal risk.

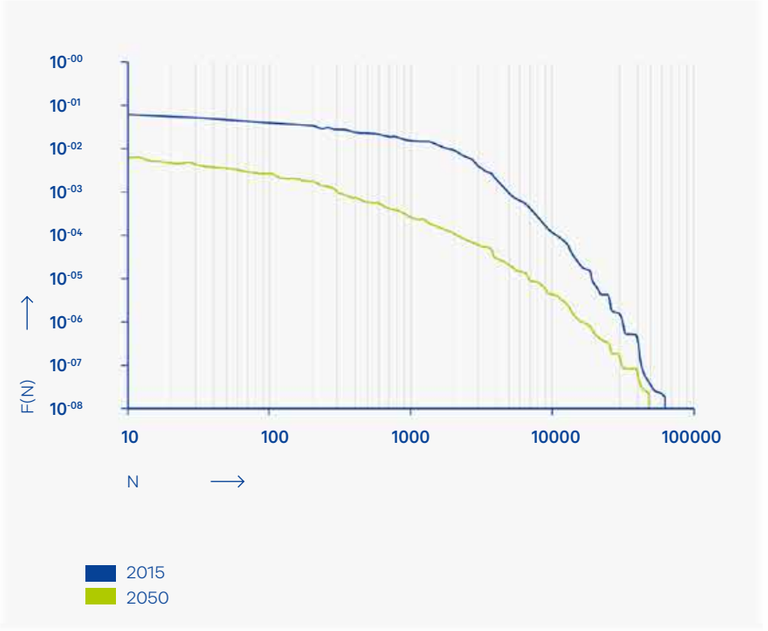

Figure 4.11 Societal risk curve for the Netherlands. The horizontal axis shows the number of casualties and the vertical axis the probability that this number will be exceeded. The probability of at least 1000 casualties is currently 1/5000 per year, for example, according to the FN-curve.

The standards for six levee segments take into account the potential for relatively large numbers of casualties at these locations: segments 16-2 Alblasserwaard West, 14-2 Zuid-Holland Rotterdam Capelle, 16-1 Alblasserwaard Merwede, 19-1 Rozenburg, 20-3 Voorne-Putten Oost and 22-2 Eiland van Dordrecht Noord. These segments are all in the southwest of the country, in the transitional zone between major rivers and sea.

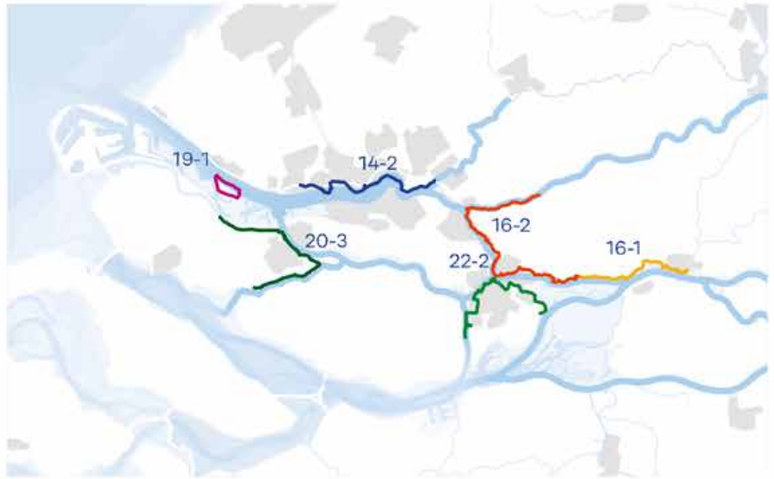

Figure 4.12 The six levee segments in the southwestern Netherlands where the standards reflect the large potential loss of life at these locations.