

The following Table provides the Risk Score and the Probability of failure used in the different Assigned Rankings

	Ranking levels				
Weighted Risk Score	0.00000	0.003422159	0.010266477	0.020532953	0.034221589
Probability	0.02580	0.03354	0.0516	0.0774	0.11352
MTBF	38.75969	29.81514609	19.37984496	12.91989664	8.809020437
Assigned Ranking	Low	Med/Low	Medium	High	Very High
Normalised Age	1	25	35	45	55

Low	Expected performance from a new circuit breaker in average condition
Med/Low	Expected performance from a 25 to 35 year old circuit breaker in average condition
Medium	Expected performance from a 35 to 45 year old circuit breaker in average condition
High	Expected performance from a 45 to 55 year old circuit breaker in average condition
Very High	Expected performance above 55 year old circuit breaker in average condition

NOTES:

The circuit breakers in the following sheet are colour coded with their risk ranking

The normalised age takes into account the differences in reliability for new equipment by voltage. For example a new 500kV circuit breaker is less reliable than a new 22kV circuit breaker due to complexity and number of parts. This is supported by Cigre

The definition of a major failure is that the equipment must be removed from service within 24 hours for repairs or replacement

Wear out curve is consistent with PB Power Report Eildon Substation "Replacement Modelling and Evaluation" 15 November 2001

Model Calibration

The output of the model in 2008 gives 47 major failures (sum of the probabilities for all circuit breakers)

The number of major failures in 2006 was 66.

Model is reasonably calibrated to system outcomes

Model Output

The output of the model in 2008 gives 47 major failures (sum of the probabilities for all circuit breakers)

The output of the model in 2013 without any CB replacements gives 73 major failures (sum of the probabilities for all circuit breakers)

The output of the model in 2013 with CB replacements gives 35 major failures (sum of the probabilities for all circuit breakers)

