

FAQ for ALARP Demonstration Guidelines: Single Scenario Risk Tolerability Target and Adequacy of Barriers

General	
Q1.	Is the single scenario risk target applicable to single scenarios where Layer Of Protection Analysis (LOPA) is applicable only?
Ans:	The single scenario risk target could be applied to all possible single scenario arising from major accident hazards where fatality is involved.
Q2.	What is the target level that MHIs need to meet when using the Single Scenario Risk Target to perform LOPA and why was the “Broadly Acceptable” region not specified for Fatality ≥ 100 pax?
Ans:	To determine risk gaps, companies can use the ‘tolerable if ALARP’ region as a minimal risk target. For fatalities ≥100, MHIs should explore all measures that could be reasonably implemented to reduce the risk. Hence, a “broadly acceptable” criteria was not established.
Q3.	Will MHIs be using two sets of risk matrix in their Safety Case (i.e. one for SCE selection and 1 for ALARP demonstration)?
Ans:	The intent of the matrix for selection of SCE is to space out the fatality bands so as to allow companies to identify the higher risk scenarios that best represent the site. There is no requirement for selection matrix to have risk bandings. The SCE selection criteria can still follow the criteria stated in the Safety case technical guidance. For the ALARP demonstration, MHI will need to assess and evaluate the risk level of the SCEs using the proposed single scenario risk target.
Q4.	Is the assessment for adequacy of barriers limited to only SCEs?
Ans:	MHIs are encouraged to incorporate the guidance and risk criteria into the company’s risk assessment approach, especially when there are significant gaps observed when applying it to the SCEs, or when the risk of the scenario is high.
Frequency	
Q5.	Can frequencies extracted from the existing QRA reports be used for LOPA, and what are the conditional modifiers that can be used?
Ans:	The intent of the QRA and LOPA methodologies are different and hence, QRA frequencies should not be used for LOPA. Using generic QRA frequencies is one of the methods for MHIs to select SCE upfront in the absence of frequencies available for each initiating event. The intent of the ALARP demonstration guidelines is to provide a consistent and structured approach which MHIs can apply to demonstrate the adequacy of the safeguards provided.

Upon identification of SCEs, MHIs need to understand the initiating causes related to the SCEs and evaluate if the existing safeguards are sufficient, or whether more needed to be done.

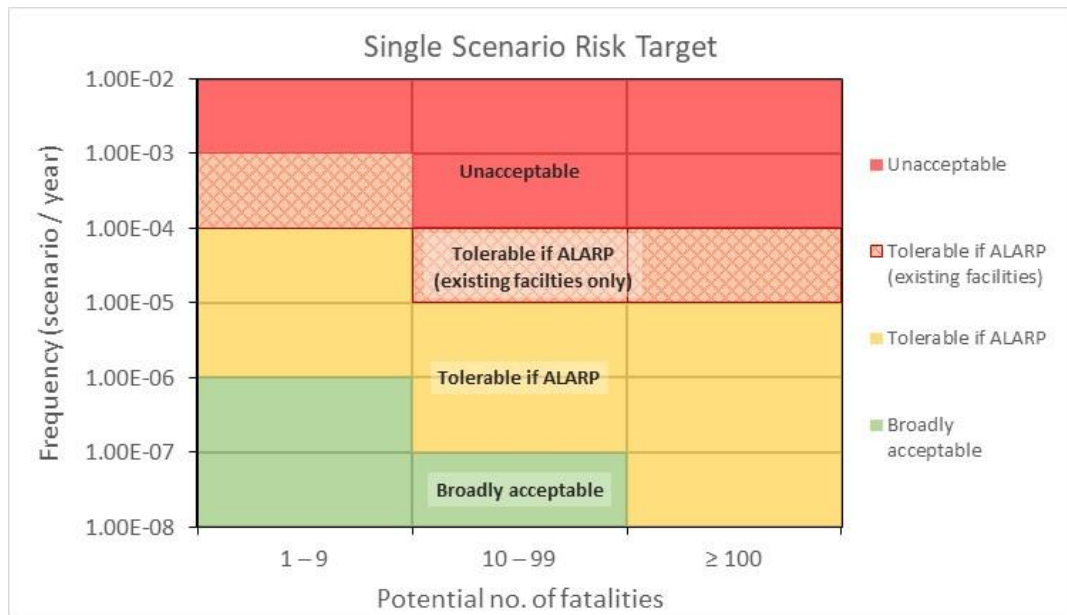
There is no restriction on the use of conditioner modifiers as long as they are relevant to the scenarios and adequately justified. MHIs can refer to the list of references in Section 5 for the frequencies of initiating events, barriers, and conditional modifiers for LOPA.

Consequence

Q6. Is there a standardised approach for fatality estimation?

Ans: MHIs should use the methodology given in the revised QRA guidelines for fatality estimation.

Reference to the single scenario risk target below, while the single scenario risk target comprises three consequence bands, the unacceptable risk region is only divided at the 1-9 and ≥ 10 fatality band. The reduced numbers of differentiation in the risk criteria reduces the need to precisely estimate the fatality numbers.



ALARP Demonstration

Q7. How should ALARP demonstration be carried out and what is the guideline for “gross disproportionate test”?

Ans: The ALARP principle is intended for MHI to take ownership and set goals rather than being prescriptive. Please refer to Chapter 7 of the Safety Case Technical Guide on how ALARP demonstration should be carried out. The extent of rigour for ALARP demonstration should be proportionate to the risk level. It is not the intention of the guideline to address how gross disproportion should be demonstrated.

Q8.	Should ALARP demonstration be carried out using LOPA only as described in the ALARP demonstration guidelines?
Ans:	<p>Refer to Chapter 7 of the Safety Case Technical Guide guidelines for the guidelines for conducting ALARP demonstration. Whilst the ALARP demonstration approach was not prescribed, a comprehensive ALARP demonstration includes other elements such as meeting standards produced by standard-making organisations, good practice adopted by a particular sector of industry, evaluating options, etc.</p> <p>The intent of the guidelines is to help close the gap in assessing whether there are adequate number of independent safeguards to prevent the SCE.</p>
Guidelines Implementation	
Q9.	Reference to the “Implementation Roadmap” in Section 6, can MHIs develop their competency through self-reading of relevant publications and materials?
Ans:	MHIs are free to demonstrate their competency on the risk assessment methodology used in the Safety Case. Competency can be a combination of process knowledge, process experience, academic qualifications, etc.