

OpsPilot

ALARP Demonstration — User Manual

Defensible Risk-Tolerability Arguments · HSE R2P2 · AI Engineering Co-Pilot

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What this guide covers — what an ALARP demonstration is, how the OpsPilot module structures a defensible argument, what to have ready, and the document you receive.

Legal concept. ALARP is a legal duty under the UK HSWA 1974, Australian WHS Acts and EU Seveso III — the burden of proof is on the duty-holder. OpsPilot structures a defensible argument; the duty-holder remains accountable for the demonstration.

1. What is an ALARP demonstration?

ALARP — As Low As Reasonably Practicable — is the legal test that residual risk has been reduced as far as is reasonable, and that any further reduction would be grossly disproportionate to the benefit it would buy. It is not “as low as possible” and not “as low as convenient”; it sits in between, and the duty-holder must be able to demonstrate they got there. An ALARP demonstration is that documented argument.

OpsPilot builds it to the recognised framework set — *HSE UK R2P2, AS/NZS ISO 31000, IEC 61508/61511 (functional safety / SIL), and the applicable WHS/MHF regime* — and supports qualitative, semi-quantitative and cost-benefit-based arguments, including the gross-disproportion test.

2. What the OpsPilot module does

Role	Responsibility
AI Coach — Senior Process Safety Engineer (OpsPilot)	Structures a defensible ALARP demonstration — framing the risk, identifying credible additional risk-reduction measures, applying the gross-disproportion test, and documenting the argument to the standard a regulator expects.
Process Safety / Duty-Holder (you)	Provide the risk context, the existing controls, the candidate additional measures and their costs — and you carry the legal accountability for the demonstration.

3. The methods it supports

Method	When it's used
Qualitative	Lower-consequence risks where reasoned argument and good practice

Method	When it's used
	suffice.
Semi-quantitative	Risk-matrix-based, with broad cost and benefit reasoning.
Cost-benefit analysis (CBA)	Higher-consequence risks, comparing the cost of a measure against the risk it removes, applying the gross-disproportion factor.

4. What you will be asked — have this ready

- The risk being argued — the hazard, the consequence, and the current level.
- The controls already in place.
- The candidate additional measures that could reduce it further, and their cost.
- The relevant good practice and any applicable SIL / functional-safety context.

5. What you receive — the output

A defensible ALARP demonstration (Word): the risk framing, the existing controls, the candidate additional measures, the gross-disproportion test applied to each, and the documented conclusion that residual risk is — or is not yet — ALARP.

6. Worked example (illustrative)

A residual risk sits at the boundary of the tolerable region. A candidate additional measure — a second independent trip — would reduce it further. The demonstration weighs the cost of that measure against the risk it removes, then applies the gross-disproportion factor (the cost has to be grossly out of proportion to the benefit before it's reasonable to reject the measure). If the trip is cheap relative to the risk reduced, ALARP is not yet met and the measure should be implemented; if the residual risk is already low and the trip is hugely expensive for a tiny further reduction, rejecting it is defensible and that reasoning is what the document records. The point is the argument is explicit and evidenced, not asserted.

7. Getting the best result

- **List the measures you rejected.** ALARP is demonstrated by showing what you considered and why you didn't do it.
- **Apply gross disproportion honestly.** The bar to reject a measure rises with the size of the risk.
- **Match method to consequence.** Qualitative for low-consequence; CBA for the serious ones.
- **Document the reasoning.** The burden of proof is on you — an asserted conclusion isn't a demonstration.

OpsPilot — AI Engineering Co-Pilot. Learn more at opsinnovatech.com