

COMMENTARY ON PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

- The risk values have been skewed down in favour of consequence (as discussed by de Ambrosis and Mostyn 2004) for the lower value consequences. It is judged that higher consequences are more readily accepted or tolerated at the lower likelihood values.
- Cell A5 (Almost Certain / Insignificant) has been subdivided in recognition of the practicality of hazards that result in very low value consequences and are readily accepted by most owners.
- The recommendation to the regulator that MODERATE risk is tolerable and that LOW (and Very Low) Risk is acceptable for Importance Level 2 and 3 structures (Appendix A, Practice Note) based on the assessment of implied cost impact of damage on most home owners and the fact that most home owners will be risk averse in the light of lack of insurance availability. If insurance was available then an annualised dollar value equivalent to an insurance policy cost would be a reasonable and rational benchmark for acceptability. (Refer to Section C8.2b below).

Alternative qualitative schemas for measures of likelihood and/or consequences may be used but the onus is on the practitioner to fully document the methodology and definitions for the terminology adopted. The documentation should include an explanation as to why the AGS preferred scheme is not appropriate. To avoid confusion, different descriptor terms (words) should be used wherever possible. In addition, the components of any alternative system must be compatible and form a consistent and logical process to allow LRM. It is considered likely that the piecemeal substitution of only one element of the preferred AGS terminology is unlikely to produce a consistent system.

C7.4 ESTIMATION OF RISK OF LOSS OF LIFE

It is widely accepted that Risk to life can only be evaluated quantitatively and this enables direct comparison with tolerable risk criteria. For this reason, AGS (2000, 2002) required life loss risk to be estimated quantitatively as does the Practice Note. Refer also to discussion in Lee and Jones (2004) and Leroi *et al.* (2005).

De Ambrosis and Mostyn (2004) have proposed some qualitative terms for risk to life. This proposal has not been adopted by the Working Group because their table can only be realistically used from right to left. That is, the assessor has to evaluate the conditional probabilities of vulnerability, non-evacuation, temporal probability and spatial probability in order to determine the required value of "Indicative Vulnerability". Since the conditional probabilities are required anyway, it makes more sense to continue to use them for evaluation of the risk to life quantitatively, using the assessed best guess likelihood value applicable to the hazard.

C8 RISK ASSESSMENT

C8.1 RISK EVALUATION

The final step in the Risk Assessment is the Risk Evaluation. The Practitioner has to relate the estimated risks to the risk tolerability criteria and then, if required, determine the appropriate and necessary risk mitigation options to reduce risks to within tolerable limits. The owner and regulator have to decide if risks are tolerable, though pragmatically the ultimate decision resides with the regulator.

If the risk cannot be reliably reduced by mitigation measures to satisfy the tolerable risk criteria, then either the development should not occur or the scope of the development should be modified accordingly.

Individual risk will usually be the governing consideration for most residential developments and should relate to the "individual most at risk". The risk from all landslide hazards which may affect that person should be considered and summed to give the individual risk and this should satisfy the tolerable risk criteria.

In cases where occupancies are likely to include many individuals (such as for schools, hospitals, shopping centres, boarding houses, motels, clubs etc, i.e. Importance Level 3 and Importance Level 4 structures) rather than a family unit in a single residential dwelling, Societal Risk should also be considered. For a family unit in a residential dwelling it is considered to be impractical to consider societal risk for every case and the risk assessment outcome is unlikely to be significantly different.

The example in Appendix CB demonstrates how Societal Risk can be evaluated. More details are given in ANCOLD (2003) and Leroi *et al.* (2005).

Additional considerations by the owner and regulator for determination of whether risks are tolerable may include political issues, social and community considerations, business confidence, environmental impacts and post-disaster uses.