6. HARMS How To: Numerical risk assessment

As an alternative to the default pick list frequency risk assessments, HARMS provides capability for a numerical risk assessment using a frequency between 0 and 1 ("Formula") or a Percentage. This feature also allows frequencies to be assigned to Link Causes.

The format for the frequency is chosen by entering Edit Project (Figure 1) and then choosing the Project Type Specific tab (Figure 2).

![Figure 1: How to select the Edit Project view.](image1)

![Figure 2: Use the drop down menu to choose percentage, formula or (non-numeric) pick list.](image2)
1. Attributing frequency to Link Causes

When adding a Link Cause, a frequency relative to the other Link Causes can be attributed (see Figures 3 and 4). This can be used to weight causes and aid prioritisation of efforts.

![Figures 3 and 4: How to edit the frequency of a cause.](image)

a) Percentage
If using the percentage format, a number between 0 and 100 should be entered.

b) Formula
If using the formula format, a number between 0 and 1 should be entered as a decimal number (e.g. 0.025) or notation in the form 2.5e-2, 2.5E-2 or 2.5*10^-2.

2. Attributing numerical frequencies in the risk matrix

Figure 5 shows how numerical frequencies are attributed to a risk matrix.

![Figure 5: How to attribute numerical frequencies to a risk matrix.](image)
Hazard and Risk Management System (HARMS)

Notes on entering frequencies into “To” and “From” fields

- The “From” field is the smaller frequency (To > From).
- A given frequency, x, falls within a band if:
  \[ x \geq \text{“From”} \text{ and } x < \text{“To”}. \]
  
  For example, if
  IMP ranges From 0.001 To 0.01 and
  HIMP ranges From 0.0001 To 0.001,
  then a Hazard Risk Assessment Probability of 0.001 would fall in the
  IMP range.

3. Attributing numerical frequencies in the risk assessment

Figures 6 and 7 show how to add the numerical frequencies to the Hazard Risk Assessment.

4. Notes on possible frequencies

- Once a frequency type (Percentage or Formula) is chosen, it should
  not be changed because this may cause problems with re-entering
  values.
- Frequencies assigned to Link Causes and Hazard Risk Assessments
  may be up to 50 characters long.
  - If using the format 1e-1 or 1E-1, the lowest possible exponent
    value is -127.
  - If using the format 1*10^-1, the lower limit is determined by
    the maximum character length.
- Frequencies assigned to the Risk Matrix may be up to 28 characters
  long.
  - If using the format 1e-1 or 1E-1, the lowest possible exponent
    value is -127.
  - If using the format 1*10^-1, the lowest possible exponent
    value is -20.