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Multi Criteria Analysis –
RISK ASSESSMENT TO RANK ISSUES ASSOCIATED WITH A DEVELOPMENT:

Significance (Risk) Assessment Matrix Used to Prioritise Issues of Importance

Priority	Neighborhood Accountability	Sensitivity of Receiving Environment	Compliance Assurance	Conservation / Heritage Protection	Sustainability Principles	Liability to rectify	Land Use Conflict
High *Scores 10*	Community would be outraged.	Pristine Environmental Values	Legislative breach possible without best practice control	Wasteful use of resources possible without best practice controls. Heritage disrespect.	Issue has high sustainability importance.	Extreme cost impact if hazardous event was realised.	Sensitive land use within recommended buffer
Moderate *Scores 5*	Community involvement and concern likely.	Moderately altered ecosystems.	Some potential to breach legislation.	Resource management and heritage consideration.	Of prominence and considered	High cost impact.	Sensitive use outside buffer but still at risk
Standard *Scores 1*	Community unlikely to be affected.	Significantly altered environment	Unlikely to result in non-compliance.	Responsible use of resources. Limited Heritage values present	Limited sustainability impact	Moderate/ Low cost.	Sensitive use well outside buffer

DEFINITIONS TO AID INTEPRETATION (See next page):

DEFINITIONS TO AID INTEPRETATION

1. Assessment of risk to be made with reasonable foreseeable event using standard controls only being considered.

2. Significant altered environment equates to a built up urban industrial area.

3. Sustainability Principles include: 1. Climate Change; Water Conservation, Local economy value, etc.

Process:

1. Gather group of specialists (environmental, project, engineering) and gain consensus of the weighting to be applied to the issues within the Matrix. Where not specified, each item holds the same weighting. Scoring is (10) for the High cells; (5) for the Moderate Risk Cells and (1) for the Standard risk cells.(For not applicable issues, Score = 0).

2. Obtain consensus of the most applicable phrase that describes where the risk sits in relation to project being appraised. Where a score is tied, Chair of group has final decision.

3. Use the Matrix to Score the risk associated with the Project against the following items:
   - Land eg soil/ groundwater contamination, visual impact, erosion, building design.
   - Air: Emissions including dust, chemicals, odour (other than greenhouse gases that are to be considered in Resource efficiencies component)
   - Water, eg waste water generation and management, storm-water pollution risks (other than water conservation which is to be considered in Resource Efficiencies component)
   - Waste, eg
   - Noise,
   - Priority Chemicals, eg include use and site emissions to air/ water only – do not score on waste disposal (score that aspect in waste category).
   - Resource Efficiencies, - use only to be considered. Not the supply location.
   - Biodiversity (at and around site in question not locations where raw materials are sourced).

4. Select a cell within each column of the Matrix and add Scores.

5. Compare Scores to enable prioritisation of environmentally relevant Issues associated with the Project.

OUTCOME: The outcome is to be summarised as the top issues warranting evaluation.

RISK ASSESSMENT TO THE RECEIVING ENVIRONMENT METHODOLOGY

Risk assessment is a management tool designed to identify and evaluate the chance and significance, of a reasonably foreseeable undesirable event. Risk assessment is the primary mechanism of the risk management process that aims to control such occurrences.

The majority of risk assessments are qualitative, in that an independent assessment of an operation results in a qualified determination as to whether the risk is acceptable or otherwise.

The most practiced risk assessment technique applied to existing manufacturing operations is based on specialist opinion. Such opinion is derived from experience, industry knowledge, appreciation of the industrial process, an evaluation of the effectiveness of management and engineering controls and comparison with previous incidents similar to the industrial activity being assessed.

The risk assessment discussed in this report centres around a qualified opinion and consensus of a team of people at EnviroRisk who reviewed risk based on the severity and frequency of hypothetical situations associated with operations. Information was then input into a risk matrix to assist the decision making process and Tabulated to enable sorting by a variety of measures. This summary Table is provided in an Excel spreadsheet format and is a separate attachment to this report.

The Environmental Risk Assessment (ERA) process used for this project was based on the evaluation procedure provided in the Australian/New Zealand Standard on Risk Management AS/NZS 4360:2004 and with reference to AS/NZ Standard HB 203:2004 Environmental risk management – Principles and process.

Once a risk area has been identified, the procedure involves an assessment of the potential frequency of such an incident occurring and evaluating its severity if it was realised. By using this approach, it provides for the systematic evaluation of risk based on a Matrix score chart. It therefore evaluates, in a semi-quantitative manner, the significance of a risk situation. Such ‘scoring’ also enables management to apply a systematic approach to support their improvement decision process.

A flow chart of the assessment procedure is provided below followed by the matrix used for analysing the risks identified.

Multi Criteria Analysis- Risk Matrix

Attachment 1:	Potential Consequences			Probability				
	Keyword	Environmental Impairment	Damage*	Frequent	Probable	Occasional	Remote	V Unlikely
HAZARD SEVERITY				5 Several times/ year	4 Once per year	3 Once per 10 years	2 Once every 50 years	1 Once every 100 years
	Minor	1 Minor incident contained on-site or low impact to the immediate area off-site	< $5,000	6 (Intermediate) B	5 (Intermediate) B	4 (Standard) C	3 (Standard) C	2 (Standard) C
	Significant	2 Moderate scale incident predominantly extending beyond site	$5,000 to < $25,000	7 (High/ Intermed) A/B	6 (Intermediate) B	5 (Intermediate) B	4 (Standard) C	3 (Standard) C
	Serious	3 Large scale incident	$25,000 to < $250,000	8 (High) A	7 (High) A	6 (Intermediate) B	5 (Intermediate) B	4 (Standard) C
	Severe	4 Major incident	$250,000 to < $2.5 mil	9 (High) A	8 (High) A	7 (High) A	6 (Intermediate) B	5 (Intermediate) B
	Catastrophic	5 Extreme environmental damage	≥ $2.5 million	10 (High) A	9 (High) A	8 (High) A	7 (High/ Intermed) A/B	6 (Intermediate) B

Key - Result Interpretation * **Damage:** An estimate of the likely financial impact (e.g. fines, remediation, legal, consumer backlash etc) should the event occur.

Rank	Priority	Description
(7), 8, 9, 10	A - High	**Enhanced engineering/ procedural/ systems controls are required to mitigate risk.** Issue potentially breaches legislation and/or represents a high risk of resulting in significant liability OR Prosecution is likely.
5, 6, (7)	B - Intermediate	**Improvements to the engineering/ procedural/ systems controls should be considered to further minimise risk.** Issue could cause environmental impairment OR Prosecution is possible.
2, 3, 4	C - Standard	**Maintain current systems/ controls and regularly audit their effectiveness.** A good level of Risk Control is available.

Note: Risk levels in brackets could fit within either category depending on the situation.

ENVIRONMENTAL RISK ASSESSMENT: Process Flowchart