Small mines risk profiling tool

Tier ranking tool for small mines

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| Amendment schedule | | |
| Date | Version | Amendment |
| March 2024 | 4.0 | Update to current template. Removed referenced to quarry manager with mine specific practicing certificate |
| May 2022 | 3.0 | Categories and ranking added to question 6 |
| June 2020 | 2.0 | Addition of tier 3 quarry criteria |
| December 2016 | 1.0 | Original document |

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Introduction

|  |  |  |  |
| --- | --- | --- | --- |
| General information |  |  |  |
| Mine name (as listed in ACES)**:** | | Mine operator (as listed in ACES): | |
| Inspector/mine safety officer name: |  | Date of assessment: |  |
| Inspector/mine safety officer signature: |  | Eligible score = |  |

Tier 3 Quarry assessment

|  |  |  |  |
| --- | --- | --- | --- |
|  | Tier 3 Quarry Criteria | Yes/No | Notes (if applicable) |
| 1 | Has 5 or less workers full-time equivalent workers (FTE), including the quarry manager and contractors, and |  |  |
| 2 | Does not carry out any dredging or blasting (explosives) activities on the site, and |  |  |
| 3 | Does not extract more than 30,000 cubic metres of extractive material for sale or reuse per year |  |  |

\*\* If the site meets the above 3 criteria (yes to each), do not complete the rest of the profiling tool. Site is to be marked as a tier 3 quarry and a practising certificate is not required.

Risk profiling assessment

### Nature and complexity of operations

|  |  |  |  |
| --- | --- | --- | --- |
|  | Hazard/variable identified and scoring for possible risk | Score | Comments |
| 1 | Number of full-time equivalent workers engaged in mining operations\* at the mine (contractor, part time or full time)  (Scale - for each 2 workers, scoring of 1 point, 20 workers or more is a maximum scoring of 10)  \*Mining operations are defined in the WHS (Mines and Petroleum Sites) Act section 7 |  |  |
| 2 | Crushing and screening on site (up to a maximum scoring of 10)  - Basic mobile crushing and screening plant – up to 5 items (1 point for each item up to 5 for a maximum 5 points)  - Large (complex) fixed or mobile crush and screen plant (6 – 10 points depending on number, size and complexity e.g, a score of 10 relates to a large, hard rock metalliferous mine etc)  Note: A current process flow diagram of the plant may be requested from the mine operator. |  |  |
| 3 | Number of pieces of operating heavy mobile plant (such as excavators, loaders, trucks and auxiliary plant (includes EWP, crane, skid steer) up to a maximum scoring of 10 (1 point for each, maximum of 10 where there are 10 or more pieces)  Note: sites with extensive and complex on-site maintenance workshops for heavy plant should receive maximum 10 points |  |  |
| 4 | Multi shift sites (maximum scoring of 10 based on maximum scheduled/actual shifts including back shifts e.g. maintenance)   * Intermittent operations (1 Point) * Mon – Fri - Single shift (2 point) * Mon – Fri & Sat sales only (3 points) * Mon – Fri & Regular weekend prod or maintenance (5 points) * Mon – Fri Two shift operation (can include weekend) (e.g. day & afternoon shift) – 7 points * Continuous shift operations - 24/7 shifts (10 points) |  |  |
| 5 | Continuity and output of mining operations (maximum scoring of 10 based on total excavated material, including overburden and imported material, and not just product): (Based on previous year’s figures, unless a known disproportionate increase is going to occur)   * 0 – 100 k tpa (1 point) * > 100 - 200 (2 point) * > 200 - 400 (4 point) * > 400 - 600 (6 point) * > 600 - 800 (8 point) * > 800 (10 point) |  |  |
| 6 | Any processing as part of mining operations where heat or chemicals are used e.g:   * Asphalt plant, kiln, treatment plant (scoring of 10) * Gas fired dryers (scoring of 5) * Pug mill, laboratory, small-scale processing plant (scoring of 3) * Any other plant should be ranked and scored against the list above based on risk. |  |  |

Principal control plan

|  |  |  |  |
| --- | --- | --- | --- |
|  | Principal control plans | Score | Comments |
| 7 | Explosives used on site (scoring of 10) |  |  |
| 8 | Electricity used on site (up to a maximum scoring of 10):   * generator/s - total capacity up to & incl 25 KVA, (240V & 415V) – 2 points * generator/s - total capacity over 25 KVA, up to & incl 50 KVA – 3 points * generator/s - total capacity over 50 KVA, up to & Incl 250 KVA – 6 points * generator/s - total capacity over 250 KVA, up to & incl 500 KVA – 8 points * generator/s - total capacity over 500 KVA – 10 points * mains supply from a supply authority (240V – 3 points) * mains supply from a supply authority (415 V – 9 points) * mains supply from a supply authority (high voltage (11,000V) – 10 points) * total connected load at the mine exceeds 1,000 kW – 10 points |  |  |
|  | Sub total (maximum scoring of 80) |  |  |

Principal hazard

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Principal Hazard (scoring as per WRAC in this document) – to be considered as uncontrolled risk | Score | Likelihood | Exposure | Comments |
| 9 | Ground failure |  |  |  |  |
| 10 | Inundation or inrush |  |  |  |  |
| 11 | Roads and other vehicle operating areas |  |  |  |  |
| 12 | Air quality or dust or other airborne contaminant (if > 5% SiO2 consider ‘moderate or above’) |  |  |  |  |
| 13 | Fire or explosion |  |  |  |  |
| 14 | Any other principal hazard |  |  |  |  |
| 15 | Subtotal (no maximum score – depends on the principal hazards)  Other risk factors to consider where an elevated risk profile for the mine may exist (max score of 10 in total):   * working at height * confined spaces * chemical hazards * hazards from the mining operations that are risks to persons outside of the mine (eg. near to residential area, infrastructure used by people such as road, rail, airports etc) * other:   Subtotal (maximum 10) |  |  |  |  |
|  | **Total (90 or more = Tier 1 quarry)** |  |  |  |  |

Workplace risk and control (WRAC) matrix

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **E** | | **1** | **1** | **2** | **4** | **7** | **11** | | **2** | **3** | **5** | **8** | **12** | **16** | | **3** | **6** | **9** | **13** | **17** | **20** | | **4** | **10** | **14** | **18** | **21** | **23** | | **5** | **15** | **19** | **22** | **24** | **25** | | Likelihood (frequency of occurrences)] | Exposure (number of people exposed to principal hazard) |
| |  |  |  | | --- | --- | --- | | A | Rare | Only occur in exceptional circumstances | | B | Unlikely | Could occur at some time | | C | Moderate | Should occur at some time | | D | Likely | Probably occur in most circumstances | | E | Almost certain | Expected to occur in most circumstances | | 1 1-2  2 3-5  3 6-10  4 11-24  5 25+ |

### Examples of scoring for WRAC

|  |  |  |
| --- | --- | --- |
| Scenario 1 | Scenario 2 | Scenario 3 |
| Quarry with 15 workers (incl. contractors) where the principal hazard of ground instability is present  Likelihood: B Unlikely  Exposure: 1 (1 - 2 i.e. actual number of workers to be exposed at location of hazard event i.e. not all the workers at the mine)  Risk ranking: (B1) = 2 | Quarry with 5 workers (incl. contractors) where the principal hazard of inrush is present (river operation – known flooding)  Likelihood: E Almost Certain  Exposure: 2 (3 - 5 i.e. actual number of workers to be exposed at location of hazard event)  Risk ranking: (E2) = 16 | Quarry with 30 workers (incl. contractors) where the principal hazard of air quality is present (crush & screen and high silica)  Likelihood: D Likely  Exposure: 5 (25+ actual number of workers to be exposed at location of hazard event e.g. everyone on site over a period of time will be exposed to dust)  Risk ranking: (D5) = 24 |