Small mines risk profiling tool

Tier ranking tool for small mines

*March 2024*



Published by the Department of Primary Industries and Regional Development

Title: Small mines risk profiling tool

First published: December 2016

Department reference number: MEG/INT17/265623

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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

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| --- | --- | --- | --- |
| 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

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| --- | --- | --- | --- |
|  | 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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
|  | **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) |
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|  |  |  |
| --- | --- | --- |
| 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 1-22 3-53 6-104 11-245 25+ |

### Examples of scoring for WRAC

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| --- | --- | --- |
| Scenario 1 | Scenario 2 | Scenario 3 |
| Quarry with 15 workers (incl. contractors) where the principal hazard of ground instability is presentLikelihood: B UnlikelyExposure: 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 CertainExposure: 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 LikelyExposure: 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 |