



Licensee: Perilya Broken Hill Limited
Environmental Protection Licenses: 2688 and 2683
Locations: Southern, Northern and Potosi Operations

Blast Monitoring

Perilya Broken Hill Limited (PBHL) has six (6) blast monitors which have been located at a number of what are considered to be noise sensitive locations surrounding their operations. These locations include; residential dwellings, schools and nursing homes that are within close proximity to PBHL operations (Southern and Potosi).

The monitors are also compliant with and are managed in keeping with the Australian Standard AS 2187.2:2006. In addition the blast monitors are routinely calibrated to ensure this equipment remains in calibration and that the information that is collected is representative.

Two (2) blast monitors set up to record peak particle velocity (PVS) and overpressure, have been located at Potosi operations. Blast monitors elsewhere record PVS only as PBHL EPL's for these operations only require this parameter.

PHBL's EPL's stipulate that PVS must not be greater than 10 mm/s for any blasts and that >95% of blasting conducted at both operations and for each reporting period must have a PVS of less than 5 mm/sec. Overpressure is not recorded at PBHL's Southern Operation's as it will have no significant impact on surrounding neighbour's due to being conducted deep underground. However, overpressure is recorded for blasting conducted on the Potosi Operation. This is a relatively new operation and blasting may still be conducted close to the surface. As development moves further underground, overpressure will become less relevant. According to the Potosi EPL, overpressure must not exceed 130dB for the period 7:00am to 7:00pm (day). For the period 7:00pm to 7:00am (night), the level must not exceed 110dB.

Results

Southern Operation (EPL 2688)

A total of 23 production blasts were conducted at the Southern Operation. All blasts conducted at the Southern Operation were within license conditions for November 2012 (Table 1).

Table 1. Southern Operation production blast results (EPL 2688).

Perilya Broken Hill Ltd (PBHL)

EPL No. 2688

Southern Operations

Monitoring frequency required by licence:

All blasts carried out in or on the premises

Date results received:

All results are received immediately following each blast.

Published on website:

22/01/2013

| Date | Time (24hr) | Blast Duration (ms) | Peak Particle Velocity Limit (mm/s) | Peak Particle Velocity (mm/s) | | | |
|------------|-------------|---------------------|-------------------------------------|-------------------------------|-------------|----------------|------------|
| | | | | Nursing Home | Rainbow Ave | Westside Drive | Gaffney St |
| 4/11/2012 | 0647h | 4850 | 10 | <0.200 | <0.200 | 0.685 | 0.605 |
| 6/11/2012 | 0654h | 9450 | 10 | 0.356 | <0.200 | 0.881 | 1.790 |
| 6/11/2012 | 0654h | 8050 | 10 | 0.259 | 0.339 | 0.422 | 0.966 |
| 8/11/2012 | 1847h | 14800 | 10 | 0.258 | <0.200 | 0.319 | 0.434 |
| 9/11/2012 | 0647h | 4350 | 10 | 0.247 | 0.334 | <0.200 | 0.458 |
| 11/11/2012 | 0648h | 9150 | 10 | 1.160 | 0.487 | 1.740 | 1.500 |
| 11/11/2012 | 0648h | 13450 | 10 | 1.160 | 0.487 | 1.740 | 1.500 |
| 11/11/2012 | 1850h | 4750 | 10 | 0.416 | 0.556 | 0.362 | 0.623 |
| 14/11/2012 | 0647h | 7300 | 10 | 0.302 | 0.323 | 0.302 | 0.801 |
| 15/11/2012 | 0650h | 7450 | 10 | 0.840 | 3.310 | 1.020 | 0.319 |
| 16/11/2012 | 0645h | 5900 | 10 | 1.300 | 0.661 | <0.200 | <0.200 |
| 17/11/2012 | 0646h | 8150 | 10 | 0.293 | <0.200 | 0.386 | 0.493 |
| 18/11/2012 | 1849h | 3100 | 10 | 0.461 | 0.355 | 1.300 | 1.050 |
| 18/11/2012 | 1849h | 900 | 10 | 0.461 | 0.355 | 1.300 | 1.050 |
| 19/11/2012 | 0647h | 9300 | 10 | 0.439 | 1.320 | 2.200 | 2.610 |
| 20/11/2012 | 0647h | 7850 | 10 | 0.268 | <0.200 | 0.356 | 0.387 |
| 22/11/2012 | 0649h | 5350 | 10 | 0.364 | 0.579 | <0.200 | <0.200 |
| 22/11/2012 | 1846h | 8050 | 10 | <0.200 | 0.378 | 0.429 | 0.434 |
| 24/11/2012 | 0647h | 8050 | 10 | 0.252 | 0.317 | 0.227 | 0.383 |
| 24/11/2012 | 0647h | 8050 | 10 | <0.200 | <0.200 | <0.200 | <0.200 |
| 25/11/2012 | 0650h | 15000 | 10 | <0.200 | <0.200 | 0.277 | 0.357 |
| 26/11/2012 | 0646h | 10800 | 10 | <0.200 | <0.200 | <0.200 | 0.540 |
| 28/11/2012 | 1852h | 6650 | 10 | <0.200 | <0.200 | 0.264 | 0.445 |

*The blast monitors are set to trigger at 0.2 mm/s. If the blast does not trigger the unit it indicates the PVS was <0.200.

Potosi Operation (EPL 2683)

A total of 89 blasts were conducted at the Potosi Operation. All blasts were within license conditions (Table 2).

Table 2. Potosi blast results.

Perilya Broken Hill Ltd (PBHL)

EPL No. 2683

Northern and Potosi Operations

Monitoring frequency required by licence:

All blasts carried out in or on the premises

Date results received:

All results are received immediately following each blast.

Published on website:

22/01/2013

| Date | Time (24hr) | Peak Particle Velocity Limit (mm/s) | Peak Particle Velocity (mm/s) | | Overpressure Limit (dB) | Overpressure Recorded (dB) | |
|------------|-------------|-------------------------------------|-------------------------------|---------|-------------------------|----------------------------|---------|
| | | | Potosi | Hall St | | Potosi | Hall St |
| 1/11/2012 | 0450h | 10 | 0.223 | NR | 110 | 96 | NR |
| 1/11/2012 | 1420h | 10 | 0.194 | NR | 130 | 114 | NR |
| 2/11/2012 | 0147h | 10 | 0.226 | <0.200 | 110 | 94 | <110 |
| 2/11/2012 | 1344h | 10 | 1.190 | <0.200 | 130 | 106 | <110 |
| 2/11/2012 | 1736h | 10 | 0.363 | <0.200 | 130 | <88 | <110 |
| 3/11/2012 | 0059h | 10 | 0.655 | <0.200 | 110 | <88 | <110 |
| 3/11/2012 | 0148h | 10 | 1.310 | <0.200 | 110 | <88 | <110 |
| 3/11/2012 | 1128h | 10 | 1.620 | <0.200 | 130 | <88 | <110 |
| 4/11/2012 | 0049h | 10 | 0.230 | <0.200 | 110 | <88 | <110 |
| 4/11/2012 | 1050h | 10 | 0.108 | <0.200 | 130 | 96 | <110 |
| 4/11/2012 | 1801h | 10 | 0.784 | <0.200 | 130 | 100 | <110 |
| 4/11/2012 | 2256h | 10 | 0.098 | <0.200 | 110 | 96 | <110 |
| 5/11/2012 | 0610h | 10 | 0.270 | NR | 110 | 103 | NR |
| 5/11/2012 | 0905h | 10 | 0.079 | NR | 130 | 94 | NR |
| 5/11/2012 | 1610h | 10 | 0.233 | 0.059 | 130 | 111 | 112 |
| 6/11/2012 | 0442h | 10 | 0.154 | NR | 110 | <88 | NR |
| 6/11/2012 | 1744h | 10 | 0.214 | NR | 130 | 92 | NR |
| 7/11/2012 | 1002h | 10 | 0.164 | NR | 130 | <88 | NR |
| 8/11/2012 | 0615h | 10 | 0.132 | <0.200 | 110 | 101 | <110 |
| 8/11/2012 | 0833h | 10 | 7.780 | <0.200 | 130 | 100 | <110 |
| 8/11/2012 | 1543h | 10 | 0.149 | <0.200 | 130 | <88 | <110 |
| 9/11/2012 | 0221h | 10 | 0.093 | <0.200 | 110 | 100 | <110 |
| 9/11/2012 | 1525h | 10 | 0.128 | NR | 130 | 92 | NR |
| 9/11/2012 | 1829h | 10 | 0.129 | NR | 130 | <88 | NR |
| 10/11/2012 | 1145h | 10 | 0.137 | NR | 130 | 92 | NR |
| 10/11/2012 | 1337h | 10 | 0.184 | NR | 130 | 92 | NR |
| 10/11/2012 | 1415h | 10 | 0.191 | NR | 130 | 103 | NR |
| 11/11/2012 | 0556h | 10 | 0.081 | NR | 110 | <88 | NR |
| 11/11/2012 | 0611h | 10 | 0.102 | NR | 110 | <88 | NR |

| | | | | | | | |
|------------|-------|----|-------|--------|-----|-----|------|
| 11/11/2012 | 0946h | 10 | 0.083 | NR | 130 | 98 | NR |
| 11/11/2012 | 1738h | 10 | 0.103 | NR | 130 | 96 | NR |
| 12/11/2012 | 0235h | 10 | 0.091 | NR | 110 | <88 | NR |
| 12/11/2012 | 0452h | 10 | 0.079 | NR | 110 | <88 | NR |
| 12/01/2012 | 1614h | 10 | 0.517 | NR | 130 | 92 | NR |
| 13/11/2012 | 0054h | 10 | 0.081 | NR | 110 | <88 | NR |
| 13/11/2012 | 0304h | 10 | 0.081 | NR | 110 | 94 | NR |
| 13/11/2012 | 0313h | 10 | 0.078 | NR | 110 | 92 | NR |
| 13/11/2012 | 1324h | 10 | 0.075 | <0.200 | 130 | <88 | <110 |
| 13/11/2012 | 1706h | 10 | 0.073 | <0.200 | 130 | <88 | <110 |
| 14/11/2012 | 0701h | 10 | 0.741 | <0.200 | 130 | <88 | <110 |
| 14/11/2012 | 1835h | 10 | 0.318 | <0.200 | 130 | <88 | <110 |
| 15/11/2012 | 0649h | 10 | 0.232 | <0.200 | 110 | <88 | <110 |
| 15/11/2012 | 0654h | 10 | 0.248 | <0.200 | 110 | <88 | <110 |
| 15/11/2012 | 0838h | 10 | 0.086 | <0.200 | 130 | 92 | <110 |
| 15/11/2012 | 1824h | 10 | 0.540 | NR | 130 | 108 | NR |
| 15/11/2012 | 1830h | 10 | 0.248 | NR | 130 | 105 | NR |
| 15/11/2012 | 1832h | 10 | 0.122 | NR | 130 | 111 | NR |
| 16/11/2012 | 0639h | 10 | 0.262 | NR | 110 | 92 | NR |
| 16/11/2012 | 0644h | 10 | 0.200 | NR | 110 | 98 | NR |
| 16/11/2012 | 1910h | 10 | 0.256 | NR | 110 | 92 | NR |
| 17/11/2012 | 0614h | 10 | 0.137 | NR | 110 | <88 | NR |
| 17/11/2012 | 0931h | 10 | 0.072 | NR | 130 | 101 | NR |
| 17/11/2012 | 1020h | 10 | 0.618 | NR | 130 | 92 | NR |
| 18/11/2012 | 0032h | 10 | 0.151 | NR | 110 | 100 | NR |
| 18/11/2012 | 1356h | 10 | 0.145 | NR | 130 | 94 | NR |
| 18/11/2012 | 1911h | 10 | 0.067 | NR | 110 | <88 | NR |
| 18/11/2012 | 1925h | 10 | 0.243 | NR | 110 | <88 | NR |
| 19/11/2012 | 0656h | 10 | 0.146 | NR | 110 | 92 | NR |
| 19/11/2012 | 1344h | 10 | 0.079 | <0.200 | 130 | 92 | <110 |
| 19/11/2012 | 1728h | 10 | 0.275 | <0.200 | 130 | 92 | <110 |
| 19/11/2012 | 1742h | 10 | 1.240 | <0.200 | 130 | 96 | <110 |
| 19/11/2012 | 1902h | 10 | 0.160 | <0.200 | 110 | 92 | <110 |
| 20/11/2012 | 0519h | 10 | 0.305 | <0.200 | 110 | 94 | <110 |
| 20/11/2012 | 1826h | 10 | 0.100 | <0.200 | 130 | <88 | <110 |
| 20/11/2012 | 1832h | 10 | 0.081 | <0.200 | 130 | <88 | <110 |
| 21/11/2012 | 0159h | 10 | 0.073 | <0.200 | 110 | <88 | <110 |
| 21/11/2012 | 0640h | 10 | 0.178 | <0.200 | 110 | <88 | <110 |
| 21/11/2012 | 1340h | 10 | 0.104 | <0.200 | 130 | <88 | <110 |
| 22/11/2012 | 0051h | 10 | 0.205 | NR | 110 | 96 | NR |
| 22/11/2012 | 0643h | 10 | 0.139 | NR | 110 | 92 | NR |
| 22/11/2012 | 0644h | 10 | 0.449 | NR | 110 | 96 | NR |
| 22/11/2012 | 2258h | 10 | 0.505 | <0.200 | 110 | <88 | <110 |
| 23/11/2012 | 0621h | 10 | 0.305 | <0.200 | 110 | <88 | <110 |
| 23/11/2012 | 1230h | 10 | 0.916 | <0.200 | 130 | <88 | <110 |
| 23/11/2012 | 2342h | 10 | 0.371 | <0.200 | 110 | <88 | <110 |

| | | | | | | | |
|------------|-------|----|-------|--------|-----|-----|------|
| 24/11/2012 | 0940h | 10 | 0.116 | <0.200 | 130 | <88 | <110 |
| 24/11/2012 | 1833h | 10 | 0.103 | <0.200 | 130 | 92 | <110 |
| 25/11/2012 | 0059h | 10 | 0.260 | <0.200 | 110 | <88 | <110 |
| 25/11/2012 | 0635h | 10 | 0.102 | <0.200 | 110 | <88 | <110 |
| 26/11/2012 | 0220h | 10 | 0.257 | <0.200 | 110 | <88 | <110 |
| 27/11/2012 | 0149h | 10 | 0.242 | <0.200 | 110 | 92 | <110 |
| 27/11/2012 | 1427h | 10 | 0.129 | <0.200 | 130 | <88 | <110 |
| 28/11/2012 | 0028h | 10 | 0.196 | NR | 110 | <88 | NR |
| 28/11/2012 | 1830h | 10 | 0.119 | NR | 130 | 104 | NR |
| 29/11/2012 | 0030h | 10 | 0.196 | NR | 110 | <88 | NR |
| 29/11/2012 | 1850h | 10 | 0.316 | <0.200 | 130 | <88 | <110 |
| 29/11/2012 | 1856h | 10 | 1.060 | <0.200 | 130 | 94 | <110 |
| 30/11/2012 | 0624h | 10 | 0.156 | NR | 110 | 94 | NR |
| 30/11/2012 | 1837h | 10 | 0.212 | <0.200 | 130 | <88 | <110 |

*NR for Hall St Indicates the blast monitor was not recording at the time of the blast.

*The blast monitors are set to trigger at 0.2 mm/s. If the blast does not trigger the unit it indicates the PVS was <0.2

* The blast monitor at Hall St is set to trigger at 110 dB. If the blast does not trigger the unit it indicates the overpressure was <110.

* The blast monitors do not recorded overpressures less than 88 dB. This is the reason for the <88 result.