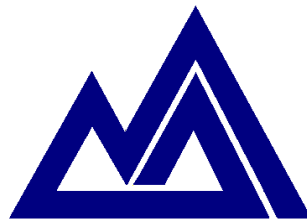


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Author:	VOH Manager	Sanction:	4.1 Appointee
MANDATORY CODE OF PRACTICE FOR OCCUPATIONAL HEALTH PROGRAMME FOR NOISE			



COP : Code of Practice

Black Mountain Mining (PTY) LTD

MANDATORY CODE OF PRACTICE FOR AN OCCUPATIONAL HEALTH PROGRAMME FOR NOISE

This Code of Practice is Drawn Up in Accordance with The DMRE Guideline Reference, Number 16/3/2/4-B7 Issued by the Chief Inspector of Mines

Mine DMR Code : 0195

Reference : VOH-COP-003 Noise

Revision : 9.0

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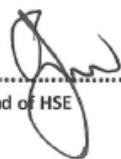
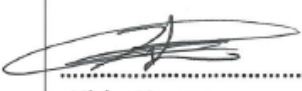
**The Contents of this Document state the minimum requirements.
These requirements may be enhanced in the interest of Safety and Health.**

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Code of Practise Approval

Compiled By:  VOH Manager Date: 2025.05.23	Approved By:  NUM Health & Safety Representative Date:	Approved By:  Head of HSE Date:
Approved By:  Snr. Environmental Supervisor Date: 2025.05.23.	Approved By:  Survey Manager Date: 2025-05-27	Approved By:  Engineering Manager Date: 19/6/2025
Approved By:  HR Manager Date: 11/06/25	Approved By:  Plant Manager Date: 2025/07/03	Approved By:  Mining Manager Date: 26/06/2025
Approved By:  General Manager Date: 08/07/2025		

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1. PURPOSE

To have in place a Code of Practice for an Occupational Hygiene Programme for Noise.

2. SCOPE

This Code of Practice applies to all Black Mountain Mining licenced areas

3. STATUS OF CODE OF PRACTICE

- 3.1 This COP was drawn up in accordance with Guideline Reference Number DME 16/3/2/4-B7 issued by the Chief Inspector of Mines
- 3.2 This is a mandatory COP in terms of section 9(2) and (3) of the MHSA
- 3.3 The COP may be used in an accident investigation/inquiry to ascertain compliance and also to establish whether the COP is effective and fit for purpose
- 3.4 The COP supersedes all previous relevant COP's
- 3.5 All managerial instructions, recommended procedures (voluntary COP's) and standards on the relevant topics must comply with the COP and must be reviewed to ensure compliance

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4. MEMBERS OF THE DRAFTING/REVIEWING COMMITTEE

4.1 In terms of section 9(4) of the MHSA, the Health and Safety Committee was consulted on the preparation, implementation or revision of this COP.

4.2 I, **Luctor Roode (4.1 Appointee)**, hereby appointed the members as listed below on the drafting/reviewing committee for this COP.

4.3 Members of the Drafting/Reviewing Committee

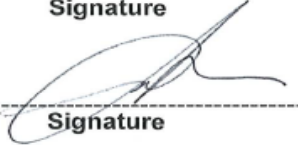
NAME	DESIGNATION	QUALIFICATION	AFFILIATION	EXPERIENCE	SIGNATURE
Leonard Magerman	VOH Manager	Cert in Mine Environmental Control	Mine Ventilation Society (MVS)	25 years	
Dr Andre Stoffels	Occupational Medical Practitioner	Diploma in Occupational Health	SASOM HPCSA	30 years	
Eanthe Hollenbach	Group Occupational Hygienist		SAIOH	10 years	
Marius Magerman	Sectional VOH Officer	Cert in Mine Environmental Control	Mine Ventilation Society (MVS)	20 years	
William Titus	TMM Engineer (Acting)	GCC Engineering, NDip. Mech Eng.		22 years	
Johan Gertze	NUM Health & safety	Operator	NUM	16 years	
Wendell Freeman	Full Time H&S Rep	COMSOC 1 & 2		17 years	
Eric van den Heever	Full Time H&S Rep			9 years	
Lukhanyo Ziphete	Mining Manager (Acting)	MMC	SANIRE	32 years	
Ndwamato Mavhungu	HR Manager	P.G. Dip Management		28 years	
Eben Daniels	Training Manager	MSC HCM		32 years	
Mduduzi Mdluli	Plant Engineer	GCC, B.Eng., MBA	SAAMA	18 years	
Levohna Genis	Women in Mining	CIPS		29 years	
Dennis Fillis	Clinic Manager	GCC	SANC	31 years	
Shane Links	Section Engineering	B-Tech Mechanical Engineering		13 years	

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Signed for on behalf of the Joint Health and Safety Committee:

Eric van den Heever		07/10/2024
Name	Signature	Date
Wendell Freeman		08/10/2024
Name	Signature	Date

Approved: L Roode General Manager (4.1 Appointee)

Signature:  Date: 08/10/2024

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5. GENERAL INFORMATION

5.1 MINE DESCRIPTION & LOCATION

Black Mountain, coordinates -29.252929/18.817737, is an underground Base Metal mine situated near the town of Aggeneys, 70 km west of Pofadder and 110 km east of Springbok, consisting of the following major areas:

- Deeps section (situated 8 km west of Aggeneys)
- Swartberg section (situated 15 km west of Aggeneys)
- Concentrator Plant (situated 10 km west of Aggeneys)

5.2 COMMODITIES PRODUCED

The following main concentrates are produced at Black Mountain:

- Lead; Zinc; Copper

5.3 MINING METHODS

Black Mountain is a mechanized mine utilizing the Cut & Fill and Blast-Hole Mining Methods.

The main potential sources of noise are as follows:

- Drilling equipment
- Loading, Hauling & Conveying equipment
- Crushing equipment
- Compressors

5.4 OTHER RELEVANT COP'S, SOP'S, STANDARDS & PROCEDURES

The following documentation has relevance:

- Black Mountain Mining Occupational Health Baseline Risk Assessment & Health Improvement Plan
- VOH-COP-005: Minimum Standard of Fitness to Perform Work at a Mine
- VOH-SOP-003: Occupational Medical Surveillance
- Occupational Hygiene Exposure Profiles
- VOH-COP-008: Risk Based Fatigue Management
- VOH-SOP-003B Standard Threshold Shift in NIHL
- SS 0003A and B: Job Placement Medical Guide Matrix

5.5 UNIQUE FEATURES TO BLACK MOUNTAIN

The unique features of Black Mountain, in accordance with our Risk Assessment are as follows:

- Black Mountain is a mechanised mine.
- Production and certain engineering personnel are on a rotating 12hour shifts on a four day on – 4 day off (resting) cycle, with the majority of remaining personnel on a 5 day/8-hour shift cycle

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6. TERMS & DEFINITIONS.

<i>As & When Required</i>	This COP will be reviewed and updated after every serious incident relating to the topic covered in the COP or if significant changes are introduced to procedures, mining and ventilation layouts, mining methods, plant or equipment and material.
<i>A-Weighted Sound Pressure Level or Sound Pressure Level (L_{pA})</i>	The sound pressure level in decibels, of A-weighted sound pressure given by the following equation (SANS 10083): $L_{pA} = 10 \log \left(\frac{p_A}{p_0} \right)^2$ Where: a) L_{pA} is the A-weighted sound pressure level b) p_A is the A-weighted pressure in pascal c) p_0 is the reference sound pressure (20µPa)
<i>Baseline Audiogram</i>	An audiogram conducted for the purpose of regulation 11.4(4) to establish a reference against which subsequent audiograms can be compared.
<i>BMM</i>	Black Mountain Mining
<i>CIOM</i>	Chief Inspector of Mines
<i>COIDA</i>	The Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993)
<i>CI</i>	Confidence interval
<i>COP</i>	Code of Practice
<i>DMPR</i>	Department of Mineral and Petroleum Resources
<i>Decibel (dB)</i>	The logarithmic unit for quantifying the level of sound, where the base of the logarithm is the 10 th root of 10 & the quantity concerned is proportional to power, relative to a reference level of 20 micro Pa.
<i>Decibel, A-Weighted (dBA)</i>	The logarithmic unit for the level of sound, as measured using a sound level meter's A-weighting network, which network applies weighting to the values for constituent frequencies of a sound in accordance with the human ear's sensitivity to it.
<i>Employee</i>	Includes both BMM and Contractor Business Partner employees
<i>Employer</i>	Black Mountain
<i>ENT Specialist</i>	Ear, nose and throat specialist
<i>Equivalent Continuous A-weighted Sound Pressure Level ($L_{Aeq, T}$)</i>	The value of the A-weighted sound pressure level in decibels, of a continuous steady sound that, during a specific time interval (T), has the same mean square sound pressure as a sound under consideration, the level of which varies with time, and it is defined by the following equation (SANS 10083): $L_{Aeq, T} = 10 \log \left[\frac{1}{t_2 - t_1} \int_{t_1}^{t_2} \frac{p^2_A(t)}{p_0^2} dt \right]$ Where: a) L_{pA} is the equivalent continuous A-weighted sound pressure level, in decibels, determined over a time interval T that starts at t1 and ends at t2 b) p_0 is the reference sound pressure (20µPa) c) $p_A^{(t)}$ is the instantaneous A-weighted pressure of the sound signal, in pascal
<i>HPD's</i>	Hearing Protection Devices

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<i>Hearing Conservation</i>	The prevention or minimization of noise-induced hearing impairment by the implementation of hearing conservation procedures
<i>Hearing Conservation Programme</i>	The process aimed at the prevention of hearing impairment, involving the implementation of the following measures: a) Assessment and prediction of noise exposure in all working places which may be accessed by any person. b) The reduction of the 8-hour rating level where this is expected to exceed the noise rating limit of hearing conservation. c) The introduction of prohibition to persons entering such a working place unless such a person is adequately protected. d) The introduction of a medical surveillance programme for all employees working in such working places. e) The introduction of a follow-up assessment programme as contemplated in a) and b) above.
<i>Hz (Hertz)</i>	The derived unit of frequency and is defined as one cycle per second
<i>Homogeneous Exposure Group (HEG)</i>	A group of employees whose exposures to noise has been determined to be statistically similar enough that, by monitoring a representative number of individuals in the group, the exposures of the remaining workers can be defined.
<i>ISLM</i>	Integrated sound level meter
<i>kHz (kilohertz)</i>	A measure of the frequency equivalent to 1000 cycles per second.
<i>L_{Aeq, 8h}</i>	The 8-hour equivalent continuous a-weighted sound pressure level in decibels and is the steady sound pressure level which would in the course of an 8-hour period deliver the same A-weighted sound energy as that due to the actual noise on any particular representative working day.
<i>MHSA</i>	Mine Health & Safety Act, (Act No. 29 of 1996), as amended
<i>MHSC</i>	Mine Health & Safety Council
<i>MOHAC</i>	Mining Occupational Health Advisory Committee
<i>Monitoring</i>	The repetitive and continued observation, measurement, and observation of health &/or environmental or technical data, according to prearranged schedules, using nationally or internationally acceptable methodologies.
<i>NIHL</i>	Noise induced hearing loss
<i>Noise</i>	Any unwanted sound that could adversely affect health
<i>Noise Zone</i>	An area within which the noise equals or exceeds the OEL
<i>Occupational Exposure Limit (OEL) for noise</i>	The value of the 8-hour rating level (<i>L_{Aeq, 8h}</i>), at or above 85 dBA which hearing impairment is likely to result.
<i>OMP</i>	Occupational Medical Practitioner
<i>Percentile</i>	The value of a variable below which a certain percent of observations fall. For example, the 20th percentile value is the value (or score) below which 20 percent of the observations may be found. The term percentile and the related term percentile rank are often used in reporting of scores from norm-referenced tests. The 25th percentile is also known as the first quartile (Q1). The 50th percentile as the median or second quartile (Q2), and the 75th percentile as the third quartile (Q3).
<i>PPE</i>	Personal protective equipment
<i>PLH</i>	Percentage loss of hearing
<i>RMS</i>	Root-mean-square
<i>Risk</i>	The likelihood that occupational injury or harm to persons will occur

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<i>Sampling Cycle</i>	The planned sampling programme for the year, which must terminate at the end of each calendar year.
<i>SANS 1451</i>	a) SANS 1451-1 (Ed. 1.02): Hearing protectors part 1: ear-muffs b) SANS 1451-2 (Ed. 1.01): Hearing protectors part 2: ear-plugs c) SANS 1451-3 (Ed. 1.03): Hearing protectors part 3: ear-muffs attached to an industrial safety helmet, or as amended from time to time
<i>SANS 10083</i>	The measurement and assessment of occupational noise for hearing conservation purposes, or as amended from time to time.
<i>SD</i>	Standard deviation
<i>SLM</i>	Sound level meter
<i>Standard Threshold Shift (STS)</i>	An average change in hearing of 10 dB or more at the frequencies of 2000 Hz, 3000 Hz and 4000 Hz in one or both ears, as compared to the employee's STS baseline diagram.
<i>STS Baseline</i>	The initial audiometric value determined at the first STS testing, and it is the better of the employee's two audiograms performed by an audiometrist on the same day that do not differ from each other by more than 10 dB for any of the frequencies in the 2000 Hz, 3000 Hz and 4000 Hz test ranges.
<i>VOH</i>	Ventilation & Occupational Hygiene

7. RISK MANAGEMENT

7.1 RISK ASSESSMENT

Section 11 of the MHS Act requires the employer to identify hazards, assess the health and safety risks to which employees may be exposed while they are at work and to record the significant hazards identified and risk assessed – refer to the Black Mountain Mining Occupational Health Baseline Risk Assessment & Health Improvement Plan. The risk assessment is conducted, systematically identifying the risk of all the processes and contributing factors and these risks are then recorded in order of priority. BMM Occupational Hygiene Baseline Risk Assessment is updated based on the information to have an integrated approach to health and hygiene risks. This COP, together with related documents, will address how the significant risks identified in the risk assessment process will be dealt with, having regard to the requirements of Section 11(2) and (3) that, as far as reasonable practicable, attempts are made to, in order of priority:

- a) Eliminate the risk
- b) Thereafter, control the risk at source
- c) Thereafter, minimize the risk
- d) Thereafter, insofar as the risk remains, provide PPE and institute a programme to monitor the risk

7.2 RELEVANT INFORMATION

In order to assist with the risk assessment process relevant information such as health statistics, ergonomic studies, research reports, manufacturers' specifications, approvals, design criteria and performance figures for all relevant equipment are being considered. These include:

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- a) Personal noise exposure monitoring results
- b) Equipment noise monitoring results
- c) Occupational Environment survey information
- d) Design specifications from original equipment manufacturers
- e) Vibration risk audit and monitoring

7.3 PERIODIC REVIEW

In addition to the periodic review required by Section 11(4) of the MHSA, this COP will be reviewed and updated after significant changes are introduced to procedures, mining and ventilation layouts, mining methods, plant or equipment and material. The periodic review will not exceed a period of three (3) years.

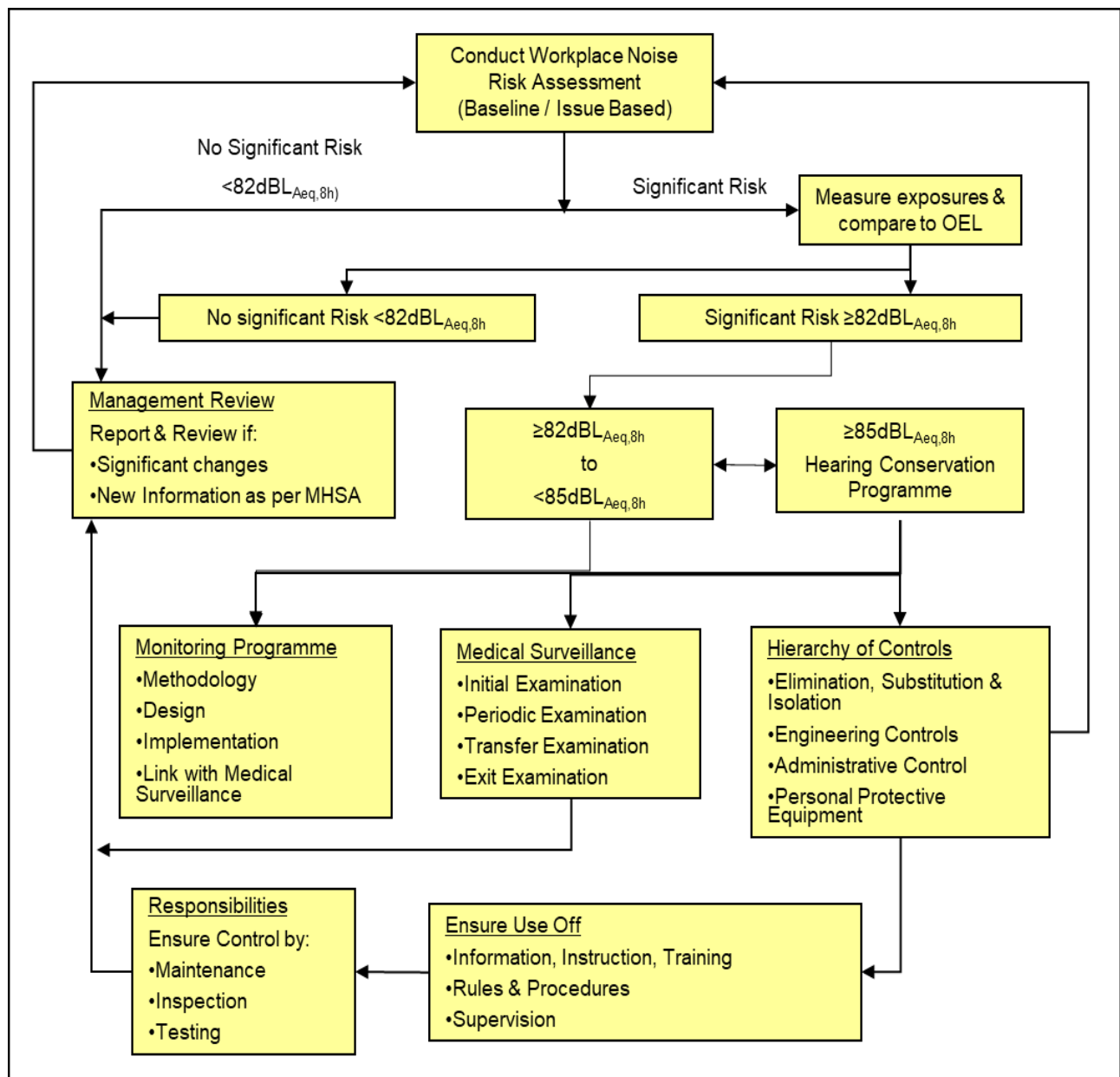
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8. ASPECTS ADDRESSED IN THE COP

8.1 OCCUPATIONAL HYGIENE PROGRAMME

The occupational health programme implemented at Black Mountain is given schematically below:



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The Occupational Hygiene Programme includes the following steps:

- a) Noise assessment and control
- b) Personal exposure monitoring, which includes:
 - Determination/re-evaluation of HEG's
 - Sampling & analysis methodology and quality control
- c) Education & Training
- d) Hierarchy of controls
- e) Medical surveillance
- f) Reporting & Reviewing

The Occupational Health Programme has the following two sections, namely:

- a) Occupational Hygiene
- b) Medical Surveillance

8.1.1 RISK ASSESSMENT

The following applied:

- i) A qualitative and quantitative risk assessment process is followed and considers all factors influencing the health of employees.
- ii) The outcomes of the risk assessment are utilized as inputs into the occupational health programme.
- iii) Risk assessment is carried out by a multi-disciplinary team, but not limited to, the section 12(1) and section 13(3) appointee of the MHSA. In some instances, a 3rd party will be utilized as part of the team for the review of the risk assessment.
- iv) Where the available historic data is not sufficient to enable professional judgement, accepted risk assessment methodologies will be used.

Note: Chapter 3 of the handbook published by the Safety in Mines Research Advisory Committee (SIMRAC), the Handbook on Occupational Health Practices in the South African Mining Industry, may be consulted, and any other methodology, to assist in conducting the risk assessment.

The following is addressed:

8.1.1.1 Baseline Risk Assessment

At the initial commencement of a system of occupational hygiene measurements, as contemplated in section 12(1) of the MHSA, a baseline risk assessment as contemplated in section 11 of the MHSA is to be conducted to assess the exposure to noise.

The noise baseline risk assessment must as a minimum, addresses the following:

- a) Conducting of noise measurements as per the noise monitoring strategy specified.

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- b) The areas on surface or underground where such noise sources may be present e.g. stope, face development end, workshops, crushers, etc.
- c) The nature of the key working place operations and activities that pose the greatest potential for exposure to noise.
- d) Prioritization of the significant noise sources i.e. ≥ 82 dBA, for noise management purposes, based on the workplace noise measurements conducted.
- e) The occupations and number of employees who are being exposed to significant noise levels i.e. ≥ 82 dBA $L_{Aeq, 8h}$.
- f) The pattern, i.e. intermittent, continuous, etc., the duration and frequency of employee exposure to noise sources identified.
- g) The actual exposure levels measured compared to the OEL per working shift e.g. day shift or night shift. Where the available historical noise data is insufficient to enable professional judgment regarding the extent of any risk, acceptable statistical methodologies will be used for this determination process.
- h) The control measures in place, e.g. substitution, engineering administration (including education & training), noise demarcation zones, PPE, etc.
- i) The additional control measures required to be instituted to reduce or maintain to below the OEL and, if applicable, the planned programme of implementation.
- j) The frequency of any ongoing monitoring to assess the effectiveness of the controls.

Note: For the purposes of risk assessment, the commodity codes (and description), activity codes (and description) and occupational codes and description) as set out in the COP guideline, Annexure A: Mandatory Codes will be used.

8.1.1.2 Review of Risk Assessment

The risk assessment will be reviewed whenever circumstances arise or change at the mine that could have an impact on the original assessments and at least the following circumstances:

- a) When outcomes of the medical surveillance programmes indicate the need for it.
- b) When a section 11(5) investigation of the MHSA and/or any other investigation(s) indicate the need.
- c) When new or revised legislation is introduced.
- d) When new mining methods are introduced.
- e) When process changes are introduced (e.g.: in process plants).
- f) When new types of machinery are introduced.
- g) On an annual basis, based on the noise measurements conducted as per the noise monitoring strategy specified under 8.2.1.4 below of the previous cycle.

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8.1.2 MANAGEMENT OF RISK

8.1.2.1 Non-Significant Risk

Measures have been put in place by the employer to ensure that a portfolio of evidence for noise measurements $<82 \text{ dB}_{\text{LAeq, 8h}}$ is established and maintained. This includes:

- Monitoring of noise exposure as part of the noise exposure sampling programme, sub-divided in the activity areas
- Record keeping of the noise exposure results
- Review of the results to ascertain that it remains within the Non-significant risk exposure

8.1.2.2 Significant Risk

Measures have been put in place by the employer to ensure that a system of noise measurements consisting of area, source and personal exposure monitoring, is implemented for all with a noise level of $\geq 82 \text{ dB}_{\text{LAeq, 8h}}$. This includes:

- Monitoring of noise exposure as part of the noise exposure sampling programme, sub-divided in the activity areas
- Record keeping of the noise exposure results

8.2 HEARING CONSERVATION PROGRAMME

The following measures will be implemented to ensure that a Hearing Conservation Programme be established and maintained for all working places with a noise level of $>85 \text{ dB}_{\text{LAeq, 8h}}$.

The Hearing conservation programme will address the following aspects:

8.2.1 OCCUPATIONAL HYGIENE

8.2.1.1 Structure of the Hearing Conservation Programme

Measures are put in place for the development and implementation of a functional structure with clearly defined roles and responsibilities based on the need to coordinate critical activities within the hearing conservation programme.

The employer has established a hearing conservation committee and appoint the following members (additional members will be included as and when required):

- Employer representative (chairperson)
- Section 12(1) appointee of the MHSA
- Engineer for noise control purposes
- Procurement representative
- OMP of the MHSA

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- f) Human Resources Development representative (education & training)
- g) Fulltime health & safety representative(s)

8.2.1.2 Risk Assessment

The outcomes of the risk assessment will be utilized as inputs into the hearing conservation programme.

8.2.1.3 Determination of HEGs

- 8.2.1.3.1 HEGs have been identified for the purpose of personal monitoring. The baseline risk assessment enables the initial identification of HEGs, which is established as follows:

Step 1:

The mine is subdivided into sampling areas (i.e.: process plant / surface = sampling area 1; underground section A = sampling area 2; underground section B = sampling area 3; etc.).

Step 2

The sampling areas are sub-divided into activity areas as per the activity area code list found under COP Guideline, Annexure A: Mandatory codes which must be complied with

Step 3

Ensure adequate measurements of personal noise exposures (also refer to paragraph 8.2.1.4.3 below) are taken in line with the identified activity areas. If sufficient historical personal exposure data is not available regarding the extent of the risk, a personal monitoring survey will be undertaken for each identified activity area. Acceptable methodology on personal monitoring as stipulated by SANS 10083 will be used for this assessment.

Step 4

A statistical analysis (COP Guideline, Annexure B: HEG determination – example of statistical approach) of the noise measurement results obtained from previous sampling cycle, or baseline noise survey for new HEGs, will be conducted as part of the determination and evaluation of HEGs.

The results of the statistical analysis conducted for the determination and evaluation of each HEG will be compared to the classification bands for personal noise, tabled in COP Guideline, Annexure C: Mandatory classification bands.

Note: An activity area e.g. stoping is not a HEG, this activity area i.e. stoping, are further sub-divided into HEGs

- 8.2.1.3.2 At the end of each sampling cycle (annually at the end of each year) sampling results for each HEG is statistically analyzed and re-classified by means of statistical analysis based on the 90th percentile of all measurements for the previous sampling cycle.

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The total number of exposed employees are determined at the beginning of an annual reporting cycle and will only be changed if there is an increase in the employees during the quarterly reporting cycle (exposed individuals are only counted once in an annual reporting cycle to prevent duplicate counting).

Note: In the event where a number of employees changes from quarter to quarter, the employer will indicate such changes in the comments section of the reporting form.

Reduction in employees would not reduce the total number of exposed employees during the reporting cycle.

8.2.1.3.3 HEG's will be re-assessed whenever circumstances arise or change at the mine when the following occurs:

- Exposure levels change due to controls being initiated & likewise, when control deteriorate
- Employee complaints are received
- Processes are changed (e.g.: changes in procedures, mining layouts, mining method, plant, equipment or material)
- Occupational illnesses related to noise
- A change in exposure category based on the results of a trend analysis
- Other events warranting re-evaluation occurs:
 - New relevant technological data
 - New regulatory initiatives

8.2.1.4 Noise Monitoring Strategy

The COP covers the following types of monitoring:

8.2.1.4.1 Area Noise Monitoring - The following measures apply:

- Area noise monitoring are conducted in accordance with SANS 10083
- Area noise monitoring are conducted to determine the boundaries of noise zones for purposes of demarcation. The following is considered:
 - Assessment & prediction of noise exposure in all working places which may be accessed by a person
 - The reduction of the 8-hour rating level where this is expected to exceed the OEL for hearing conservation
 - The introduction of a prohibition to persons entering such a working place unless such a person is adequately protected
 - The introduction of a medical surveillance programme for all employees working in such working places

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- v) The introduction of a follow-up assessment programme as contemplated under i) & ii) above
- vi) All noise zones to be clearly demarcated on a mine plan or sketch

Note: Personal noise exposure measurement results will not be used for the determination of noise zones.

8.2.1.4.2 Noise Source Monitoring - The following measures apply:

- a) Noise source monitoring is conducted in accordance with the noise guidance note as per the COP Guideline – Annexure F: Guidance note for noise measurement of equipment to ensure conformance with MHSC milestones
- b) Noise source monitoring is conducted to identify and record noise source(s) from 82 dBA for maintaining and managing purposes. A template similar to Annexure E: Noise register template as supplied in the COP guideline will be used for this purpose
- c) The noise source emitting noise level $\geq$ OEL are included in the hearing conservation programme and managed by the appointed structure in terms of this COP
- d) The data collection on the noise source will be based on sampling a minimum of 5% (or a minimum of five if there is less than 100 pieces of that particular equipment type) of that equipment type total population over a 12-month period (samples will be representative of the various activities)
- e) Noise source data will be recorded using rolling log averages on a quarterly basis. A template similar to Annexure E: Noise register template as supplied in the COP guideline will be used for this purpose

Note: Personal noise exposure measurement results will not be used for the determination of noise zones

8.2.1.4.3 Personal Noise Exposure Monitoring - The following measures apply:

- a) Personal noise monitoring is conducted in accordance with SANS 10083
- b) Personal noise monitoring is conducted to obtain representative results of employee shift exposures in a workplace. Samples taken according to the established monitoring schedule will be:
 - i) Evenly spread per quarter over a full sampling cycle period for each HEG
 - ii) Randomly spread over each quarter
 - iii) Randomly spread across all occupations within a HEG
- c) A sampling strategy including a monitoring schedule for each HEG is compiled for the cycle period (annually), and records thereof are kept in line with section 12(3) of MHSA
- d) Sampling size and frequency will be based on the HEG classification band and samples will be collected and evenly spread quarterly

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- e) The total number of samples will be evenly spread per HEG (and occupations within the HEG) and will be taken as per the classification bands stipulated in the COP Guideline Annexure C: Mandatory Classification bands:

No	Cat	Classification Bands Personal Exposure Level	Minimum Sampling Frequency
i)	A	Exposures ≥ 105 dB $L_{Aeq, 8h}$	5% with a minimum of five samples per quarter
ii)	B	Exposures $\geq 85 < 105$ dB $L_{Aeq, 8h}$	5% with a minimum of five samples per annum (evenly spread per quarter)
	C	Exposures $\geq 82 < 85$ dB $L_{Aeq, 8h}$	
iii)	D	Exposures < 82 dB $L_{Aeq, 8h}$	Ad Hoc Monitoring will be conducted to have a portfolio of evidence. Measurement results that are below 82 dBA will be reported under this category

- f) The section 12(1) appointee (of MHSA) will use his/her professional judgement to decide whether additional samples need to be taken to confirm that HEGs are appropriately classified.

8.2.1.5 Quality Control

The measures set out below are to ensure quality control of the programme are maintained:

- Instruments used for the noise monitoring strategy will comply with the SANS 10083. Proof of such compliance will be kept as part of the instrument records
- Measuring methods will comply with SANS 10083
- Competency of personnel conducting the measurements will be as a minimum:
 - A person who has passed the Practical Examination in Mine Environmental Control
 - A person with a degree in Occupational Hygiene or related field (as issued by a recognized higher education institution)
 - A SAIOH registered Occupational Hygiene Assistant
 - A person in training, working under the direct supervision of a person with any of the minimum qualifications as stipulated above
- Reporting of Noise Exposure Monitoring will be as follows:
 - DMRE as per prescribed format on a quarterly basis
 - Black Mountain / VZI management during monthly meetings
 - Health & Safety Committee, including feedback from the Occupational Health Committee
- Maintenance & Calibration:

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- i) Maintenance and calibration will be conducted only by accredited service providers. Calibration will be done on an annual basis or otherwise as required by the OEM
- ii) Calibration checks will be conducted prior and after field measurements are taken
- f) Training programme programmes in place for persons conducting the noise measurements includes the following:
 - i) Storage and maintenance of the sampling equipment
 - ii) Issuing of the sampling equipment
 - iii) Wearer of the sampling equipment
 - iv) Handling of the sampling equipment
 - v) Transportation of equipment
 - vi) Pre- and Post-calibration of the measuring instrumentation checks

Note: COP guideline Annexure G: Quality assurance for noise measurement and recording is consulted in this regard

8.2.1.6 Reporting & Recording

The following is addressed:

- 8.2.1.6.1 Mandatory reporting is done on a quarterly basis for all categories, that is A, B and C. The COP guideline Annexure C: Mandatory classification bands and Annexure D: Reporting forms are consulted in this regard

Note:

- For all categories A, B and C, the measurement results on the samples taken at the time are reported within 60 days at the end of each quarter. The logarithmic average results are reported at the end of each quarter.
- For category D, no reporting is required, however monitoring of category D is conducted and a portfolio of evidence is kept at the mine of such

To calculate the logarithmic average exposure for a given HEG or an occupation / a job category, the equation below is used:

$$L_{Aeq} = 10 \log \frac{(\text{anti log } \frac{L_1}{10} + \text{anti log } \frac{L_2}{10} + \text{anti log } \frac{L_3}{10} + \text{anti log } \frac{L_4}{10} + \dots)}{n}$$

Where:

- L = the noise levels measured (L_{Aeq}) in dBA.
- n = number of total samples

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8.2.1.6.2 Record Keeping System

The record keeping system in use at the mine includes a record of the exposure history of each HEG, and any other noise monitoring records, which includes:

- Calibration certificates (for annual calibration)
- Sampling sheets (issuing forms)
- Investigation sheets for that include:
 - Controls not operating effectively
 - Events or factors which have influenced the results, e.g. excessive winds

8.2.1.7 Occupational Hygiene

The hierarchy of controls that are focussed on as part of the hearing conservation programme considers the following:

- Elimination
- Substitution and isolation
- Engineering controls - As part of the overall strategy to engineer out noise the following apply:
 - The Occupational Hygiene Committee will specify standards and specification relating to the noise characteristics of equipment as part of the tender process for new equipment.
 - Continued maintenance of equipment forms an integral part of the strategy.
 - In addition to the above, retrofitting, screening or other practical means to reduce noise exposures will be investigated and assessed, and if found viable, implemented.
- Administrative controls
 - Monthly, quarterly, six monthly and annually depending on the risk associated with the area. Reports of these surveys are circulated to the responsible supervisors/line management with the necessary recommendations, if any.
 - All employees are educated and trained on the potential dangers of working in noisy environments and the measures or precautions to be taken by them as part of the mine's induction programme. This includes the correct use of Hearing Protection Devices (HPD's).
 - To assist with the principle of linking with medical surveillance, the results of Occupational Hygiene monitoring is shown on the Occupational Exposure Risk Profiles that is kept on the Occupational Medical Record of each employee in the Occupational Medical facility in order for the OMP to identify those individuals that require special medical examination based on noise exposure
- Personal Protection equipment (PPE), these include personalized hearing protection, disposable hearing protection devices and earmuffs as appropriate

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8.2.2 MEDICAL SURVEILLANCE

Sections 13(2) (c) and 17 of the MHSa requires a system for a system of medical surveillance to consist of an initial medical examination, other (periodic) medical examinations at appropriate intervals, and an exit medical examination.

In compliance with Regulation 11.4(2) of the MHSa read with sections 11(3) and 11(4) of the MHSa, the system of medical surveillance in respect of noise exposure consists of the following:

- a) A baseline audiogram
 - Black Mountain, upon employment / re-employment of a person, conducts a baseline audiogram for each person. It is also required that previously baselined employees present their exit certificates that contain records of the baseline performed in terms of regulation 11.4(4) as well as the PLH calculated of previous employment.
 - Baseline audiograms are conducted within the period specified in regulation 11.4(4) for all new employees.
 - An employee's baseline audiogram applies for their total working career
- b) Periodic audiograms
 - Periodic audiograms for persons exposed to noise are obtained at least annually for all employees subject to medical surveillance, as required by the MHSa
- c) Exit audiograms
 - An exit audiogram is recorded for any employee leaving employment or who is permanently transferred to a working place in respect of which medical surveillance is not required.
 - As far as reasonably practicable, an exit certificate will consist of the details of the baseline audiogram, most recent audiogram and percentage loss of hearing sustained (if any).
- d) Any additional medical surveillance required in terms of the mine's risk assessment, as specified by the Occupational Medical Practitioner (OMP)

8.2.2.1 Audiometry

The Mandatory Code of Practice for Minimum Standards of Fitness and Procedure for Medical Surveillance have reference, thus the section below will provide a summary of audiometry conducted for the requirements for audiometric testing procedures applied where a hearing conservation programme is required, i.e. where noise control engineering has not been possible or has failed to eliminate the noise hazard.

Audiometric testing in the absence of appropriate control measures cannot reduce the risk of NIHL and is thus not regarded as a solution to the noise hazard, but as a means to identifying and prioritizing the problem areas to enable the formulation of appropriate interventions.

In conducting audiometric testing, the following are complied with as per SANS 10083:

8.2.2.1.1 Testing frequency for pure tone audiometric testing

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8.2.2.1.2 Testing Environment

- Conducted in soundproof audio booths situated inside a soundproof room

8.2.2.1.3 Audiometric Equipment

- Only SANS compliant audio equipment is in use at the clinic

8.2.2.1.4 Maintenance and Calibration of Audiometric Equipment

- Audiometric equipment is serviced and calibrated on an annual basis by an accredited service provider, with calibration records displayed in the audio testing room

8.2.2.1.5 Audiometric Screening Process

- a) Screening audiometric tests include confirmation by the medical staff of non-exposure to noise levels ≥ 85 dB for at least 16 hours, otoscopic evaluation and pure-tone air conduction testing.
- b) Before testing, an otoscopic examination is conducted to ensure that there is no occluding ear wax nor any visible abnormality such as otitis media, perforation or other ear pathology, or any combination of these, that could result in the hearing loss (where applicable). Referral for ear wax removal to a medical practitioner for successful treatment is completed before testing is done.

8.2.2.2 Mandatory Audiometric Testing

Audiometric testing is done at no cost to the employee. Testing is conducted by a registered audiometrist or acoustician, under the supervision of an ENT specialist, OMP or an audiologist.

8.2.2.2.1 Baseline Audiometry

- a) Audiometric testing of employee's hearing sensitivity for the purpose of establishing a valid baseline audiogram is conducted prior to an employee commences employment, or within 30 days of commencement of employment, or commencement of work within a noise zone and enrolment in a hearing conservation programme. A valid baseline result determined at a previous working place, could satisfy this requirement provided that it meets the audiometric test requirement of this COP. Black Mountain, upon re-employment, conducts an initial audiogram to verify the exit certificate's values.

Baseline audiograms will include:

- i) Determine future compensable hearing loss
 - ii) Determine the hearing status of an employee
- b) The baseline tests will include confirmation by the medical staff of non-exposure to noise levels ≥ 85 dB for at least 16 hours prior to the tests being conducted. The use of hearing protection devices during this period that comply with the requirements of SANS 1451 will not satisfy this requirement (and will this not be taken into account). The employee will not be allowed to commence work or enter any noise zones prior to the conclusion of the two audiometric evaluations forming part of the determination of the employee's baseline audiogram.

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c) The baseline audiogram will be conducted using audiometry and where the results show an abnormality, the employee will be referred to an audiologist to establish a baseline as per SANS 10083 diagnostic battery tests given under 8.2.2.4.3 below.

In cases where it is not possible to obtain a valid baseline audiometric test result, the test will be repeated within 30 days of employment, or before transfer to a noise zone.

d) Before repeating tests to establish a baseline, it will be ensured that:

- i) The employee understands the audiometric testing procedure and is capable of responding in the required manner, re-instructing will be done if necessary
- ii) The audiometric testing procedure is conducted correctly with equipment complying with the requirements laid down in this COP
- iii) There is no interference (such as environmental noise) or faulty equipment (such as patient response button working intermittently) that could prevent the successful completion of a valid baseline testing
- iv) The particular test used to determine a valid baseline were conducted on the same day. Results obtained on a previous day will be discarded and not used together with results obtained on another day to obtain a valid result.

When it is not possible for the audiometrist, after repeated testing, to obtain a valid baseline test result, the employee will be referred to an audiologist to establish a valid baseline audiogram.

Note: Instruction 171 (refer to the COP Guideline Annexure H: Instruction 171) that is done on a person entering the mining industry for the first time will be the baseline for the rest of his/her working career.

The STS baseline audiograms were completed by December 2017, as per DMRE guidance note for the implementation of STS in the medical surveillance of NIHL. This baseline is repeated for every new employee employed at BMM, used for the purpose of assisting Black Mountain in preventing NIHL.

For a person entering the mining industry for the first time the instruction 171 baseline audiogram may be used as the STS baseline audiogram, at the first employer only.

8.2.2.2.2 Revised Baseline Audiometry

- a) The instruction 171 baseline is revised when the employee has been compensated for NIHL, in which case the compensation audiogram becomes the new baseline.
- b) The STS baseline is revised when there is an average change in hearing of 25 dB or more, at frequencies of 2000 Hz, 3000 Hz and 4000 Hz in one or both ears, as contemplated to the employee's STS baseline audiogram.

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c) Both revised audiograms must be diagnostic audiograms

8.2.2.2.3 Initial Screening Audiometry

During the initial medical examination of an employee, two screening audiograms will be obtained by the BMM clinic for the STS baseline. In the case of a person entering the mining industry for the first time, this will also serve as the instruction 171 baseline.

8.2.2.2.4 Periodic Screening Audiometry

a) Periodic Audiometry

Annual periodic audiometric evaluations are conducted for all employees having noise exposures that equal or exceed 85 dBA. Where employees are exposed to an 8-hour rating level equal to or in excess of 105 dBA, tests will be conducted at intervals not exceeding six months.

- i) Periodic audiometric evaluations shall be preceded by a period of at least 16 hours during which there is no exposure to noise levels equal to or in excess of 85 dBA. The use of hearing protection devices during this period, even if it complies with the attenuation requirements of SANS 10083, does not satisfy this requirement.
- ii) Before testing, an otoscopic examination is conducted on the inner ear canals of an employee to ensure that there is no visible abnormality such as otitis media, perforation or other ear pathology (or any combination of these) that could result in the hearing loss. Where required, successful treatment will be completed before testing is done.
- iii) Obtain and record the medical history of the employee with relevance to previous traumatic incidents, medical treatment, ototoxic medication or other non-auditory events, which could have an effect on the hearing of an employee.

b) Periodic Audiometry will be used to determine:

- i) The occurrence and extent of any STS i.e. to determine the need for further investigation, and to monitor the efficiency of the hearing conservation programme.
- ii) Whether a PLH shift of 10 has occurred for compensation of hearing loss.
- iii) Whether the PLH shift of five has occurred for new early NIHL.

- c) If a periodic audiometric result shows a new PLH shift of five or more, or a new STS of 25 dB from baseline, the employee will be referred to an audiologist for a diagnostic audiogram by the Black Mountain medical centre. The diagnostic battery of tests is given in 8.2.2.4.3 below.

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8.2.2.3 Investigations

- a) When the periodic screening audiogram indicates the following, the employer will investigate and refer the employee for the following further intervention
 - i) Each NIHL (intervals of a PLH ≥ 5).
 - ii) Investigating the reason for a shift (re-testing including otoscopic examinations).
 - iii) STS ≥ 25 dB; referral of the employee to an OMP.
 - iv) Compensable hearing loss (intervals of PLH ≥ 10 from the baseline audiometry); referral for diagnostic audiology or ENT specialist.
- b) An analysis is required as to the contribution of noise exposure to the hearing loss of the employee by reconciling the contributing factors to an employee's hearing loss.
- c) The diagnostic audiogram(s) must be performed to confirm that the abovementioned PLH or STS is work related, a section 11(5) investigation of the MHSa must be initiated and may include amongst others, the following interventions:
 - i) Retraining of employees regarding the hearing conservation programme and the use of hearing protectors
 - ii) The hearing protection devices used by the employee will be carefully inspected for possible shortcomings or inadequacies, and if necessary be refitted with alternative hearing protectors before allowed to re-enter the noise zone.
 - iii) Any necessary identified steps to be taken to prevent a possible further STS or PLH shift.
 - iv) The employer will report all cases of confirmed compensable NIHL to the relevant authority, as per relevant legislation.

8.2.2.4 Diagnostic Audiometry

- 8.2.2.4.1 Diagnostic audiometry testing will be conducted by an audiologist to determine early NIHL (intervals of a PLH ≥ 5) or STS ≥ 25 dB or compensable hearing loss (intervals of PLH ≥ 10), according to the relevant legislation and the guidance note for implementation of STS in medical surveillance of NIHL – refer to the BMM VOH-SOP-003B Standard Threshold Shift in NIHL for more information.
- 8.2.2.4.2 Diagnostic audiometry will be conducted using the equipment in accordance with the relevant requirements specified in SANS 10083.
- 8.2.2.4.3 The following battery of tests investigations may be done by the audiologist during the diagnostic testing:
 - a) An otoscopic investigation to determine any visible pathology which could have led to loss of hearing
 - b) A diagnostic test in accordance with the relevant legislation to calculate the PLH and STS.

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- c) A pure tone conduction test at least at the frequencies as per SANS 10083.
- d) A bone conduction test at least at the frequencies as per SANS 10083.
- e) A speech reception threshold test.
- f) A speech discrimination test.
- g) A full immittance test battery including tympanometry, psi- and contralateral acoustic reflex testing.
- h) Oto-acoustic testing including transient oto-acoustic emission testing and/or distortion product emission testing (or both), if available.
- i) Any other audiometric test procedures to determine the degree of hearing loss that could be ascribed to noise exposure.

8.2.2.4.4 In the final conclusions from the test results, due to consideration will be given to the complete medical history, including the information obtained from the employer in terms of legislation. An analysis will be conducted as to the contribution of noise exposure to the hearing loss of the employee.

8.2.2.4.5 When an employee is referred for diagnostic audiometry, the audiologist will be requested to consider the following:

- a) All the personal details of the employee, including name, address, work reference, age, identity, etc.
- b) A complete medical record of the employee
- c) A complete work record of the employee, also at previous employers, if any (refer to (e) & (f) below).
- d) All the details of the baseline audiometry, the most recent test result and, where applicable, the exit audiometric results from the previous employer.
- e) Complete details of all the workplace(s) in which the employee was exposed to noise levels $\geq$ the OEL, inclusive of personal noise exposure levels determined by the section 12(1) appointee of the MHSA.
- f) In the case of potential claims for PLH as in the relevant legislation, the details in terms of (e) above should include all previous occupations since the baseline was established. The total duration of exposure to noise during such occupations should be obtained where possible.
- g) Full specification of hearing protectors (including their attenuation values) which were used by the employee. Where applicable, the actual hearing protection equipment used should be presented.

8.2.2.4.6 Records of each person tested will be kept and be retained in accordance with legal requirements (section 15(1) and (2), and 17 of the MHSA).

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8.2.2.5 Exit Audiometry

- a) Exit audiometric evaluations will be conducted for all persons at the conclusion of employment in a noise zone. The record of the audiometric evaluations will form part of the individual's medical records and be retained in accordance with legal requirements (section 15(1) and (2), and 17 of the MHSA).
- b) Audiometric evaluation for exit shall be preceded by a period of at least 16-hours during which there has been no exposure to noise levels greater or equal to 85 dBA (medical staff will enquire prior to audiometry to ensure this is the case). The use of hearing protection devices during this period, even if it complies with the requirements of SANS 1451 (parts 1, 2 & 3), will not satisfy this requirement.
- c) The following action will form part of the exit audiometric evaluations:
 - i) The individual's PLH shall be derived from the audiometric evaluation using the approved frequency-specified tables and compared with the PLH derived from the baseline audiogram.
 - ii) Where the audiometric evaluation indicates an increase in PLH of 10 or greater relative to the baseline audiometric evaluation, and is confirmed by repeat audiometric evaluations, the individual shall be referred for diagnostic audiometry. If no baseline audiogram is available, it will be assumed that the individual's hearing was normal before exposure to noise.
 - iii) Where an individual is referred for a diagnostic audiogram as contemplated in the preceding point, the PLH derived from it, and any increase in PLH relative to the baseline audiogram, shall be entered in the individual's record of medical surveillance (section 17(4)(b) of the MHSA). If the diagnostic audiogram confirms a PLH shift of 10 or more, the employee will be referred to the relevant compensation body.
 - iv) The audiogram and the PLH derived from it shall be recorded on the individual's exit certificate (section 17(1)-(4) of the MHSA), and a copy of the exit certificate shall be entered in the individual's record of medical surveillance (section 17(4)(b) of the MHSA).
 - v) Any employee diagnosed with a PLH shift of 5% or an STS of 25 dB for the first time on exit will have the relevant investigation as stated in 8.2.2.3 above.
- d) The employee will be supplied with a copy of the following on exit:
 - i) The employee's exit certificate
 - ii) A copy of the employee's record of hazardous work (DMRE 276)
 - iii) Baseline audiometric evaluation results
 - iv) The results of the exit audiometric test

8.2.2.6 Confidentiality

Each employee's records of medical surveillance will be kept confidential in line with section 15(1) of the MHSA.

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Ethical standards will be followed by all professionals involved in the hearing conservation programme referred to in this COP.

8.2.3 TRAINING & AWARENESS OF EMPLOYEES

- 8.2.3.1 Training will be provided to employees exposed to noise levels ≥ 82 dBA within 30 days of employment and periodic training will be conducted at intervals of at least 12 months:
- Induction training
 - Annual refresher training.

The training will include the following:

- The effects of noise on hearing.
- The purpose and value of wearing hearing protectors.
- The advantages and disadvantages of the hearing protectors used at the mine.
- The various types of hearing protectors offered at the mine and the care, fitting and use of each type.
- Copies of this COP will be made available to affected employees or their representative, and a copy will be kept at the workplace.
- The employers' and employees' respective responsibilities in maintaining mine noise controls.
- The purpose and value of audiometric testing and a summary of the procedures.

- 8.2.3.2 Records of all formal training will be kept at the BMM training centre for each employee indicating the date and content. The employer will provide, upon request, all materials relating to the employee's training and education programme pertaining to this COP to the DMRE. Informal training regarding noise at the workplace will also be kept on record (as appropriate).

8.3 RECORDING & REPORTING

8.3.1 RECORD KEEPING SYSTEM

The record keeping system in use at the mine will record the exposure history of each HEG, and the employee's medical surveillance records will be kept as per relevant legislative requirements (section 12 & 13 of the MHSA) and these records will be readily available at the mine.

8.3.2 OCCUPATIONAL MEDICAL REPORTING

- 8.3.2.1 Health Incident reporting
Reporting of the NIHL cases will be done on the DMRE 231 reporting for within 30 days of the diagnosis.

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8.3.2.2 Annual Medical Reporting

All cases of compensable NIHL will be reported on an annual basis to the DMRE on the prescribed DMRE 165 form.

8.4 LINKING TO MEDICAL SURVEILLANCE RECORDS

The system in place to address the linkage between occupational hygiene measurements and the medical surveillance records as contemplated in section 12(3) of the MSHA is as follows:

- A paper-based system is in use in which the Occupational Risk Exposure Profiles (OREP's) will be supplied to the Occupational Medical Clinic from the Occupational Hygiene department.
- These OREP's, linked to the activities and HEGs of noise exposure areas, will be updated on an annual basis or if significant changes occur
- The Occupational Medical Clinic will provide each person's medical record with the applicable copy of the OREP's

8.5 COMPENSATION

Compensation for NIHL will be in accordance with Instruction 171: The Determination of Permanent Disablement Resulting from Hearing Loss caused by Exposure to Excessive Noise & Trauma (COP Guideline Annexure H: Instruction 171)

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PART D: IMPLEMENTATION.

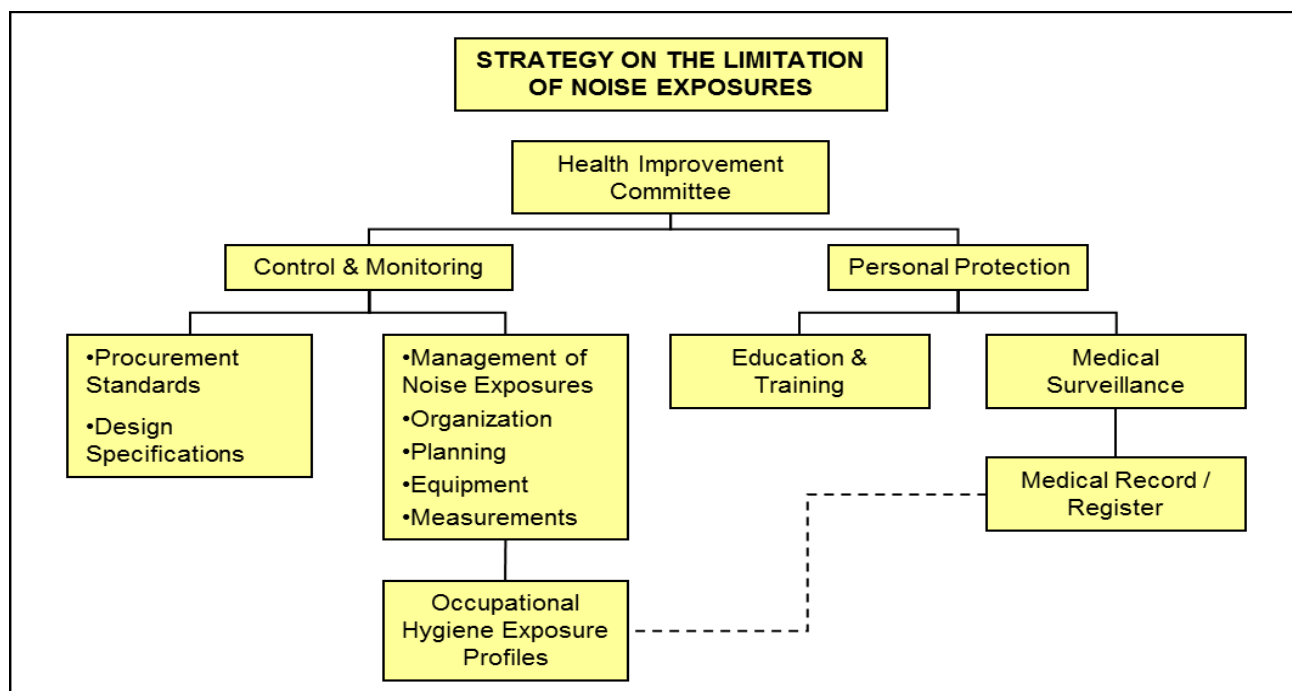
1. IMPLEMENTATION PLAN.

1.1 IMPLEMENTATION

The implementation plan for this COP covers the following: Organizational structures, responsibilities of functionaries, programs and schedules that will enable proper implementation of the COP.

1.1.1 STRATEGY ON THE LIMITATIONS OF NOISE EXPOSURE

The overall programme on limiting noise exposures is depicted schematically below. This is an integrated approach that requires planning, co-ordination and co-operation between various departments:



The main focus of hearing conservation is placed on the control of noise levels in the workplace and on the medical surveillance programme for providing the necessary assurance on the success of that control programme. Emphasis is therefore placed on the maintenance of standards and design specifications on equipment and processes used in the mining and concentrating processes.

Parallel to the above process a noise risk profile is established and updated for all the operational areas by the implementation of a continuous noise risk assessment programme. For legal compliance purposes the noise risk profiles will be used to assign noise exposure levels to individual workers that can be linked to their medical surveillance information.

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All employees exposed to noise levels equal to, or in excess of 82 dBA will be protected against the effects of noise exposure by:

- Induction and refresher training on noise control and the requirements of the HCP
- The use of personal protection devices, and
- Medical surveillance

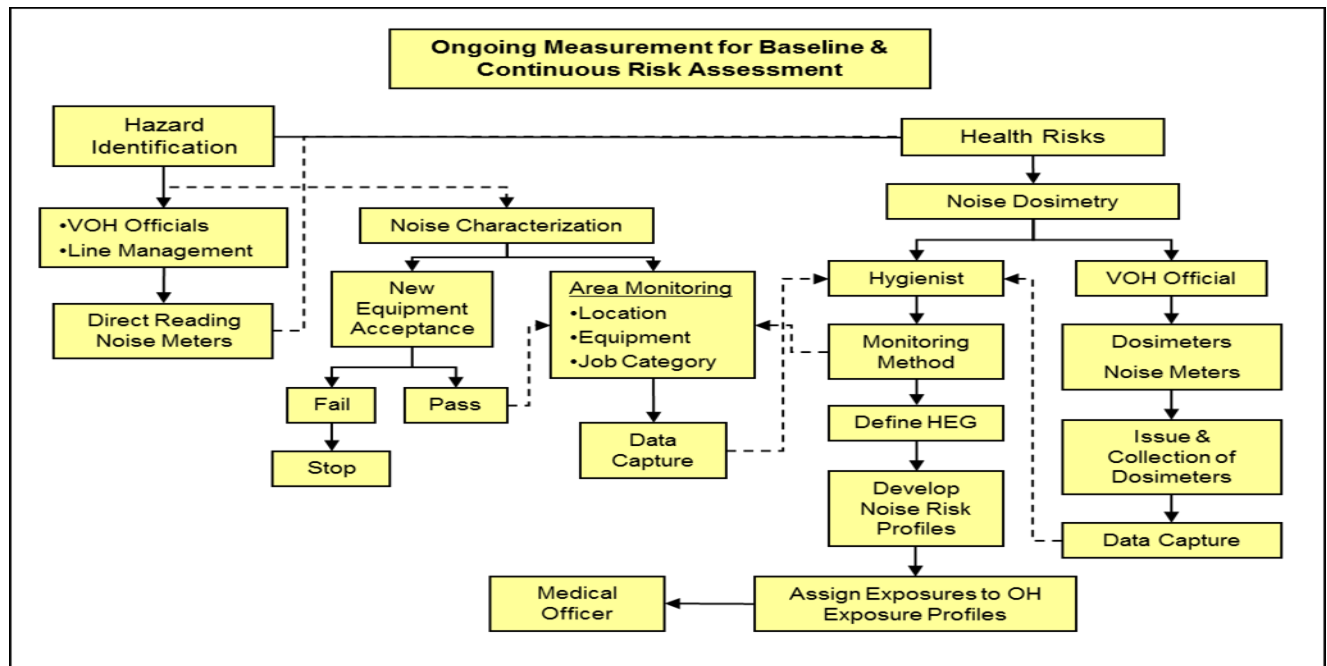
a) Noise Risk Profile

The noise risk profiles of Homogeneous Exposure Groups are established through analysis of relevant noise information available to the mine. Those noise profiles so established are:

- Used to identify and define HEGs
- Used as the basis for the HCP and Black Mountain's standards on the noise generating characteristics of acquired equipment and sources of noise
- Used to define and review, from time to time, the HCP
- Used to assign individual worker noise exposure levels and linking those exposure levels with the system for medical surveillance conducted by the medical department, and
- Reviewed annually

b) Continuous Noise Risk Assessment

The noise risk profiles mentioned above will be reviewed on the basis of information gathered through the programme for continuous risk assessment on noise exposures depicted schematically below:



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c) Noise Measurement Procedures

- All personal noise monitoring is scheduled, co-ordinated and managed by the VOH department.
- Personal noise exposure measurements are conducted by the use of personal noise dosimeters in accordance with applicable standards and procedures. These dosimeters are deployed on the person of individuals, representing the respective HEGs, selected in accordance with a defined programme of stratified sampling. The sampling programme caters for variations in noise levels between different working locations and day-to-day variations and is reviewed annually.
- Workplace monitoring is conducted using the personal noise monitoring instruments and direct reading instruments. This type of monitoring constitutes part of a strategic programme aimed at delineating and understanding the causes of suspected high exposure identified through the personal monitoring programme.
- The results are categorised and analysed.
- All measurements, including the calibration of equipment, are conducted by persons trained and competent in the respective noise monitoring instruments.
- In all cases the validation and acceptability of results used for analysis and interpretation purposes are the responsibility of the VOH Department.

d) Noise Measurement Instrumentation

- All instrumentation used for noise measurements are calibrated in accordance with the manufacturer's instructions to ensure measurement accuracy.
- All instrumentation used for noise measurements are checked before and after each series of measurements.
- Each measurement conducted for the purpose of dose assessment is associated with its calibration checks in quality-controlled format.

e) Demarcation of Noisy Areas

- Areas associated with potential noise exposures are listed in association with the records on HEG's.

f) Control of Noise Levels

- The principle approach to be taken with respect of the control of noise levels is to control the noise at source. Section 21 of the MH&S Act is applicable in this regard. It should be noted that, if a noise hazard is associated with equipment supplied to mines, the supplier can only relinquish its responsibility with regard to risks of noise exposures, if the noise generation characteristics of the equipment are specified, the necessary precautions are stipulated and the mine management has accepted, in writing, the responsibility of implementing those precautionary measures.
- In addition to the above approach, and where necessary, the noise generation characteristics associated with installed plants, processes and equipment in use on the mine must be established and documented in a quality control format for reference and inspection in terms of the Act. It is imperative that a database is established and maintained on the noise characteristics of

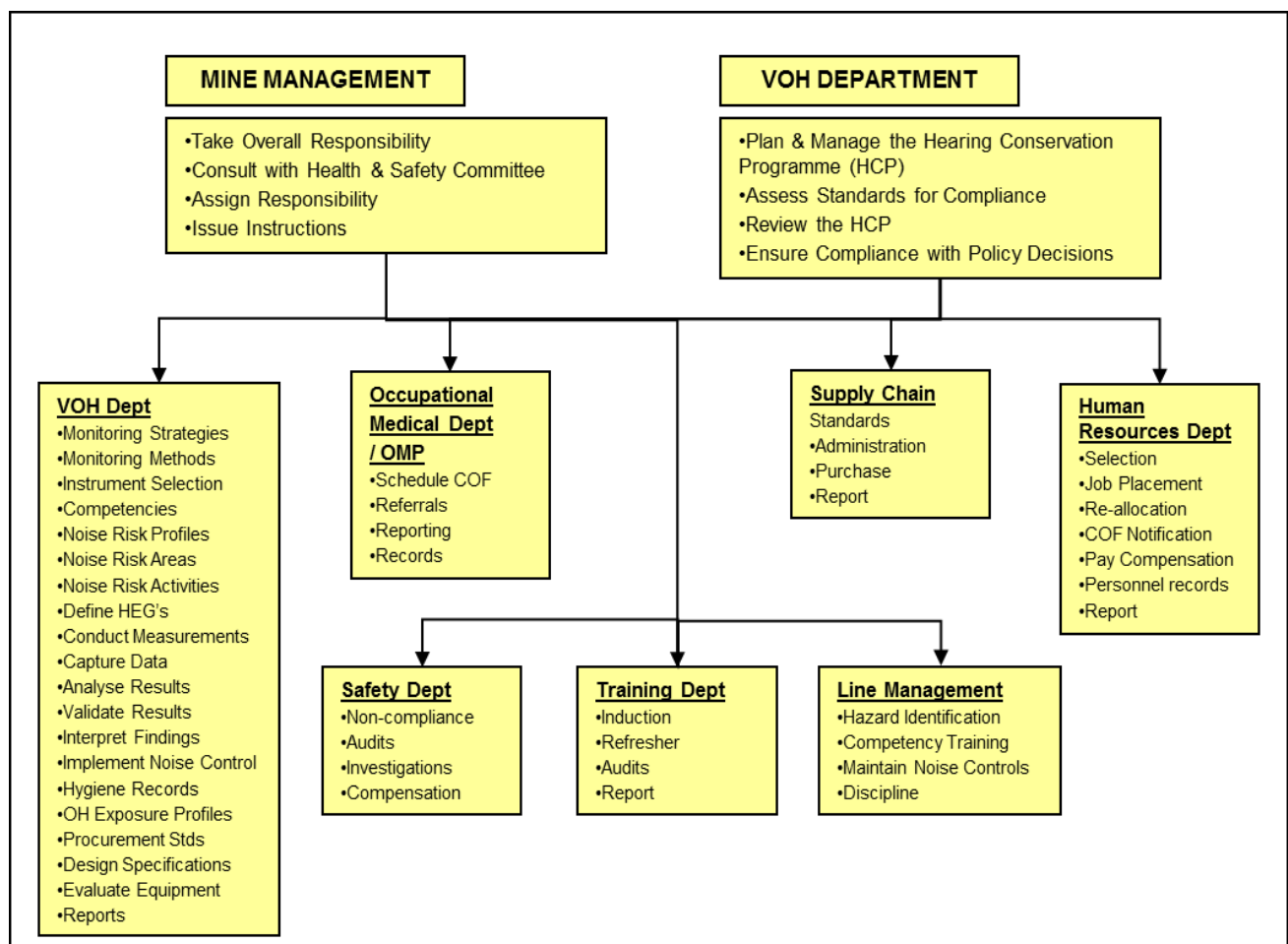
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equipment, activities and processes implemented. This information is vital for establishing and maintaining standards on the supply of equipment.

g) Functions & Responsibilities

The functions and responsibilities of departments, committees and disciplines are depicted schematically below (see text for details):



➤ Mine Management

The owners of the mine must take responsibility for health and safety in terms of the Act. However, the management of that responsibility is delegated to Mine Management. The Act also requires that a health and safety committee, represented by Management and Employees, be established for consultation on health and safety issues, including protection against noise.

Other responsibilities relating to the limitation of noise exposures programme include:

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- The compilation and implementation of the mine's health and safety policy.
- Approval of specific noise limitation procedures and the issuing of instructions relating to the implementation of the HCP.
- The delegation of responsibilities.

➤ VOH Department

The main function of this department with regards to noise exposure is the planning, co-ordination and control of the HCP. In that respect it is important that all departments involved in HCP be represented on the health and safety committee. Specific duties include:

- Assessment of standards for compliance. Those standards include international benchmarks, local regulatory standards or mine standards (procurement, monitoring, etc.).
- Review of the HCP and, on that basis, recommend to management the actions that may be taken.
- Ensuring compliance with policy decisions.

From the hygiene perspective the specific duties include:

- The deployment of personal dosimeters including the selection and parading of individuals and instruction on the wearing of the noise monitoring instruments.
- Conducting of noise measurements associated with various areas and equipment.
- Data capturing into the prescribed format (defined by the Occupational Hygienist).
- The implementation of noise control procedures.

➤ Occupational Hygienist

The main function of the Occupational Hygienist is the anticipation and recognition of noise risks coupled with the assessment of design, control and protection strategies. Specific responsibilities include:

- The design of the monitoring strategies for personal dosimetry, area measurements and for the assessment of equipment.
- The selection of suitable monitoring methods and procedures for measurement.
- The selection of suitable instrumentation for measurement.
- The analysis and validation of results collated by the VOH department.
- The interpretation of findings emanating from the analysis of the results.
- Compilation and maintenance of the noise risk profiles.
- Defining of homogeneous exposure groups for the purpose of representative sampling.
- The description/definition of noisy areas (risk areas).
- Provision of noise exposure levels of HEGs in such a way that it could be ascribed to individuals for recording in the Occupational Hygiene Risk Profiles.
- Defining the required competencies and training needs in respect of the hygiene and monitoring functions.
- Compilation of procurement standards in respect of acceptable noise exposure levels.
- Evaluation of equipment and design specifications of various operations.
- Noise control engineering (NCE).

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- Define the requirements for personal protection (PPE), in collaboration with worker representative bodies, on the basis of the noise risk profiles and the noise levels emitted from equipment and processes.
- Prepare records and reports on the HCP for the purpose of routine reporting, review and formal reporting (legal) on health and safety.

➤ **Safety Department**

From a safety perspective the responsibilities include:

- Audits and reporting of non-conformances.
- The administration of compensation for noise related diseases.

➤ **Line Management**

The main function of Line Management is to create a culture of limiting noise exposures by:

- Inclusion of noise control and protection in their normal competency training programme.
- Implementing the process of continuous noise risk identification and reporting potential noise risks to the VOH Department for assessment.
- The implementation and maintenance of noise control engineering procedures and systems.
- The deployment of personal protective equipment/procedures.
- Competencies on the implementation of the training in the workplace must be audited/verified by the Training Department.
- Taking disciplinary action through the normal disciplinary routes against employees who are guilty of non-compliance.

➤ **Occupational Medical Practitioner (OMP)**

The main function of OMP is protection, cure, rehabilitation and compensation for occupational injury and diseases. In respect of noise related illnesses, the OMP is responsible for:

- Occupational Medical Surveillance
- Referring employees with noise related impairment for treatment and compensation.
- Prepare records and reports on noise related illnesses for the purpose of routine reporting (quarterly), review and formal reporting (legal) on health and safety.
- Ensure that Occupational Hygiene Risk Profile sheets are displayed in each employee Occupational medical Record

➤ **Training**

The Training Department is responsible for:

- The induction and refresher training of employees in the first instance and also to report, for review purposes, on training statistics.

➤ **Supply Chain**

The contribution of the Supply Chain to the HCP is to:

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- Implement the mine specifications on noise control (developed in consultation with the hygiene discipline) in the tendering and purchasing process.
- Ensure the necessary documentation with regards to the risk assessments, noise emissions and estimated levels of exposure to people are obtained from the OEM, Supplier or Importer of equipment.
- Administer the noise specifications and standards information and the purchasing of equipment and protection.
- Report, for review purposes, on procurement statistics.

➤ **Original Equipment Manufacturers (OEM's), Suppliers & Importers**

Local legislation imposes “duty of care” responsibilities on the manufacturers of machinery and equipment. Accordingly, it is incumbent upon manufacturers to assess the potential risks imposed on users of their products, in the present instance, to quantify the noise emissions and estimate likely levels of emissions for exposed persons:

- The principle approach to be taken with respect to control of noise levels is to control the noise emitted by equipment supplied to the mine. Section 21 of the MH&S Act is applicable in this regard.
- It should be noted that, if a noise hazard is associated with equipment supplied to mines, the supplier can only relinquish his responsibility with regard to risks of noise exposures if the noise characteristics of the equipment are specified, the necessary precautions are stipulated and the mine management has accepted, in writing, the responsibility of implementing those precautionary measures.
- Therefore, equipment can only be accepted after the relevant documentation of acceptance has been duly completed.

➤ **Human Resources (HR)**

The main functions of the HR department in respect of the HCP are:

- The notification of individuals on the schedule for medical testing (established by the Medical Department) in respect of job placement and the re-allocation of employees to different jobs.
- The maintenance of personnel records such as job category, work area, occupational career and job restrictions placed on employees as a result of their medical status.
- Reporting on demographic information for the purpose of routine reporting (quarterly), review and formal reporting (legal) on health and safety

h) Occupational Hygiene Exposure Profiles

The VOH department defines, log and maintains the noise exposure levels associated with the different HEGs. From this exposure information, the Occupational Hygiene Exposure Profile sheets are then updated, of which a copy is kept on the Occupational Medical Record of each employee in the Occupational Medical facility, serving as the link between Occupational Hygiene & medical information. This also then enables the OMP to identify those individuals that require special medical examination based on noise exposure.

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Author:	VOH Manager	Sanction:	4.1 Appointee
MANDATORY CODE OF PRACTICE FOR OCCUPATIONAL HEALTH PROGRAMME FOR NOISE			

1.1.2 GRAPHICAL REPRESENTATION

Graphical representations are being utilized to facilitate easy interpretation of data and to highlight trends. This is reported on at the Health & Safety Meeting.

2. COMPLIANCE WITH THE COP.

Measures to ensure compliance is instituted through auditing from first, second- and third-party auditors.

3. ACCESS TO THE COP & RELATED DOCUMENTS.

- 3.1 A complete electronic COP, with related documents, is kept readily available at the mine for examination by any affected person. Hard copies, when printed, are treated as uncontrolled copies. Line supervisors and management have direct access to these electronic copies and can distribute it to affected employees when required. On written request to the Manager, any other affected person will be supplied with copies. A register will be kept of such persons or institutions to facilitate updating
- 3.2 The registered Trade Unions and Full Time Health and Safety Representative will be supplied with copies of this COP on written request to the Manager. A register will be kept of such persons or institutions to facilitate updating.
- 3.3 The employer will ensure that all employees are fully conversant with those sections of this COP relevant to their respective areas of responsibility.

4. Distribution and Access

- The latest revision of this document is available as a read only on the document on the Intranet. The Compliance Officer shall maintain an authorised hard copy of this policy/procedure in the relevant location.
- Line Managers, who have staff reporting to them that do not have access to the Intranet, shall ensure that these personnel are adequately guided and informed.

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Black Mountain Mining (Pty) Ltd

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MANDATORY CODE OF PRACTICE FOR OCCUPATIONAL HEALTH PROGRAMME FOR NOISE			

Annexure A: Drafting/Revision History

Revision History	Date	Brief Description or Comment
Revision 7	2022/04/07	Updated to newly updated & promulgated guideline (11 February 2022)