STATUTORY INSTRUMENT

Supplement to the Sierra Leone Gazette Vol. CXLIV, No. 32

dated 11th July, 2013

THE MINES AND MINERALS OPERATIONAL REGULATIONS, 2013

ARRANGEMENT OF SECTIONS

STATUTORY INSTRUMENT NO. 12 OF 2013

Published 11th July, 2013

THE MINES AND MINERALS ACT, 2009
(ACT NO. 11 OF 2009)

THE MINES AND MINERALS OPERATIONAL REGULATIONS, 2013

Short title.

In exercise of the powers conferred upon him by section 176 of the Mines and Minerals Act, 2009, the Minister hereby makes the following Regulations–

PART I–PRELIMINARY

1. In these Regulations unless the context otherwise requires– Interpretation.

"Act" means the Mines and Minerals Act, 2009;

"alter" or "alteration" in relation to plant means to change the design of, add to or take away from the plant where the change may affect safety or health but does not include routine maintenance, repairs or replacement;

"angle of repose" or "angle of rest" means the maximum slope at which a heap of loose material will stand without sliding;

"applicant" means the individual or organization that has submitted, or is in the process of submitting a mineral right or related licence application;

"authorised person" means an employee of the mineral right holder or mining right holder duly authorised by its board of directors for a specified purpose;

"bedded mineral deposit" means any reef, coal seam, lode, mineral bed or fissure, which occurs conformably within rock and is not of a ***substantial nature;***

"bench" means a ledge that forms a single level of operation above which mineral or waste material are mined back to a bench face;

"bench height" means the vertical distance between the highest point of –

(i) the bench or

(ii) the bench crest and the toe of the bench;

"bench slope" means the angle, measured in degrees between the horizontal and an imaginary line joining the bench toe and crest;

"berms" means a horizontal shelf or ledge within the pit wall slope which is established to enhance the stability of the slope within the pit;

"blaster" means a person who conducts a blasting operation;

"blaster's certificate" means a blaster's certificate issued under these Regulations;

"blasting machine" means a device that provides electrical energy or shock energy for the purpose of energizing a detonator;

"Board" means the Minerals Advisory Board as established under section 11 of the Mines and Minerals Act, 2009;

"box front" means a structure installed at an opening of a rock pass to control the flow of rocks, and includes bulkheads, chutes, platforms, control mechanisms, cylinders and similar accessories;

"breathing apparatus" means an apparatus which renders the user independent from breathing from the atmosphere for a minimum of two hours;

"British Standards" means the standards of quality for goods and services produced by the British Standards Institution;

"certificate of seaworthiness" means the certificate issued by the Sierra Leone Maritime Administration which verifies compliance of the applicable vessel with these Regulations and includes the record of equipment and vessel information ;

"Chief Inspector of Mines" means the chief inspector of mines appointed under Regulation 3;

"closure plan" means the programme that describes the rehabilitation measures proposed by a mining right holder during the life cycle of the mine which is designed to leave the mining area in a safe and stable condition;

"commissioning" means performing the necessary adjustments, tests and inspections to ensure the plant is in full working order in accordance with specified requirements (if any) before the plant is used and includes re-commissioning;

"competent person" means a person who is–

(a) qualified by virtue of his knowledge of, and training, skills and experience in any matter in respect of which he is required to be a competent person,

(b) familiar with these Regulations or other law which apply to the work to be performed, or

(c) trained to recognise any potential or actual danger to health and safety in performance of the work;

"designer" means a person who is responsible for the design of plant for use in a mine;

"development end" means a tunnel, drive, cross-cut, raise, box-hole, winze or shaft and every working related thereto;

"Director" means the Director of Mines referred to in section 4 of the Mines and Minerals Act, 2009;

"draw point" means a point where rock is loaded out or allowed to flow out from an excavation;

"dredge" means any floating vessel used for –

(a) mining operations consisting of digging, cutting, excavating or raising (whether by mechanical, hydraulic or pneumatic means) any rock, metal, mineral or mineral substance from below the surface of a body of water (whether natural or artificial) or

(b) the purpose of treating or otherwise dealing with any rock, metal, mineral or mineral substance that has been dug, cut, excavated or raised as described in paragraph (a), but does not include –

(i) any floating vessel used for marine or aquatic engineering works, harbour works or land reclamation works, or

(ii) any barge, workboat, tender, anchor punt or other vessel ancillary to a floating vessel used for a purpose referred to in paragraph (a) or (b).

"dump" means a pile or heap of ore, coal or waste at a mine that–

(a) exceeds three metres in height, and

(b) is not intended for reclamation;

"dump block" means a safeguard positioned to prevent a vehicle from backing over the edge of a dump when dumping a load;

"earth moving equipment" includes any unit of earth moving equipment that has been modified to perform other service functions (including operation as a road watering tanker truck) and shall include, amongst others, bulldozers, dumper trucks, excavators, scrapers, track loaders and wheel loaders, but does not include earth moving equipment that is only used underground;

"electrical installation" means all the electrical wiring, accessories, fittings, consuming devices, control and protective gear and other equipment associated with the installation situated in the mining area;

"electrical plant" means a plant which consumes converts or generates electricity;

"elevating work platform" means a telescoping device, scissor device or articulating device or any combination of those devices used to position personnel, equipment and materials to and from workplaces located above the support surface;

"employer" means the mineral right holder or the mining right holder;

"enclosed system" means any system of pipes, or storage or processing vessels, that is enclosed so that persons cannot readily see what substances are contained in the pipes or vessels;

"environment" means land, air, water and all plants, animals and human beings living therein and the inter-relationship which exists among these or any of them;

"environmental impact" means any change in the environment that occurs in a certain place and period of time which is caused by mining operations;

"environmental management plan" means an environmental management plan produced as a result of an environmental impact assessment which shall describe how the applicant will implement all recommendations, commitments and obligations designed to avoid, minimise, ameliorate or compensate for adverse environmental impacts identified in the relevant environmental impact assessment;

"Environment Protection Agency" means the Environment Protection Agency established by section 2 of the Environment Protection Agency Act, 2008 (Act No. 11 of 2008);

"emergency" means a situation, event or set of circumstances at a mine that could threaten the health or safety of persons at or off the mine, and which requires immediate remedial action, such as the evacuation, rescue or recovery of persons to prevent serious injury or harm or further serious injury or harm to persons;

"Mines and Minerals (Environmental) Regulations" means the environmental regulation for the minerals sector;

"excavator" means an excavator which must be able to elevate its bucket high enough to dump cleanly into the any reception bin, including washing plant's hopper and dig deeply enough below ground level to reach the bottom of ore over a reasonably wide radius;

"explore" means intentionally to search for minerals and mineral deposits and includes operations to test the mineral bearing qualities of the land and determine the potential economic value of mineral deposits;

"exploration results" means data and information generated by exploration programmes that may be of use to a right holder;

"explosives manufacturing site" means any site licensed under these Regulations for the manufacture of explosives;

"extraction" means any trench, pit, shaft or other open working;

"fault" means a break or defect which may cause plant to present an increased risk to safety and health and, in the case of a fault in design, means an aspect of the plant design which may cause the plant to be a risk to safety and health if manufactured in accordance with that plant's design specifications;

"fixed position" means any point other than a survey station which is fixed within the relevant accuracy requirements for the class of survey concerned and which is used for the purpose of locating details to be shown on plans;

"floating plant" means–

(a) barges on which are mounted draglines and backhoe excavators similar to the plants mounted on bucket line dredges but typically of a lower capacity, and

(b) plants which are designed to coordin excavator, and

(c) plants which, if not operated in a large body of water or a flowing stream, require ancillary water supplies and finely suspended solids-removal capability;

"fluid material" means any substance other than gas, which has the potential to flow, such as water, slime and mud;

"geological structure" the arrangement of rock formations as well as the folds, joints, faults, foliation, schistosity, bedding planes and other planes of weakness in rock;

"geotechnical engineering" means the application of engineering geology and structural geology;

"Government" means the Government of Sierra Leone;

"guard" means a device that prevents or reduces access to a danger point;

"hazard rating system" means a system that categorizes dams and tailing storage facilities according to the degree of adverse incremental consequences of a failure or wrong operation of a dam, which includes factors such as loss of human life and economic and environmental losses, provided that the hazard

potential classification does not reflect in any way the current condition of the dam, for example its safety, structural integrity or flood routing capacity;

"Health and Safety Committee" means the committee formed by the mineral right holder in accordance with Regulation 27;

"high hazard potential" means dams assigned the highest hazard potential in the hazard rating system and includes those dams where failure or improper operation will probably cause the loss of human life;

"hoist" means an appliance intended for raising or lowering a load or persons and includes an elevating work platform, a mast climbing work platform, a people and materials hoist, a scaffold hoist and a serial hoist, but shall not include a lift or building maintenance equipment;

"hydraulic mining operations" means the process of excavating soils by using a stream of high pressure water through a nozzle directed at the material;

"interlocked" describes a connection between a guard or a machine element with the control system or the power system of the plant that has been made to –

(i) allow access to the moving parts of plant at times when those parts are not moving, and

(ii) prevent moving parts from starting up or operating when access is available to those moving parts;

"joint" means a naturally occurring plane of weakness or break in the rock (generally aligned sub vertical or transverse to bedding), along which there has been no visible movement parallel to the plane;

"licensed magazine" means a magazine of explosives licensed under these Regulations;

"life cycle of the mine" means all the phases of mining activity and shall comprise reconnaissance, exploration, development, exploitation, beneficiation and closure;

"lift" means any permanent plant which is in, or attached to, a building or structure and by means of which persons, goods or materials may be raised or lowered within or on a car cage or platform and the movement of which is restricted by a guide or guides and includes an apparatus in the nature of a chair lift, escalator, moving walk way or stairway lift and any supporting structure, machinery, equipment, gear, lift well- shaft, enclosures and entrances;

"lifting equipment" means any equipment or machine or arrangement of equipment or machines intended or used for the lifting, lowering, suspension or movement of load and lifting equipment and includes hoists, lifts, cranes and lifting tackles;

"localised survey" means measurements taken from a survey network to locate surface or underground workings, structures and features and includes normal tape triangulation for month-end measurements, plugging, offsetting and tachometric work;

"low hazard potential" means dams assigned the lowest hazard potential classification in the hazard rating system and include those failure or wrong operations which would result in low probable loss of human life, economic losses, environmental damage, disruption of lifeline facilities, and other adverse environmental and social consequences furthermore any such losses would be solely limited to the mineral right holder's property;

"mines manager" means the person appointed by the mineral right holder to be responsible for the control, management and direction of a mine;

"manufacturer" means a person who manufactures plant for use in a mine or intended for use in a mine;

"Material Safety Data Sheet" or "MSDS" means in relation to any chemical substance, a document that, in accordance with the National Code of Practice for the Preparation of Material Safety Data Sheets –

(a) describes the identity, chemical and physical properties of the substance,

(b) provides information on the health hazards associated with the use and handling of the substance, and

(c) provides information on precautions for the safe use and handling of the substance;

"mine" means any place, excavation or working by which any operation connected with mining is carried on together with all buildings, premised, erections and appliances belonging or appertaining to it, above and below the ground, for the purpose of winning, treating or preparing minerals, obtaining or extracting any mineral or metal by any mode for the purpose of dressing mineral ores, and includes a quarry where minerals are mined and any operations directly or indirectly necessary for or incidental to mining operations;

"mine waste" means waste that includes overburden, waste rock, refuse, mill tailings, slag, process sludge and residues, acid mine drainage and seepage water;

"mineral reserve" means the economically mineable part of a measured and or indicated mineral resource and includes diluting materials and allowances for losses which may occur when the material is mined.

"mineral resource" means a concentration or occurrence of material of economic interest or inferred economic interest, in or on the earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction and covers mineralisation, including dumps and tailings, which has been identified and estimated through exploration and sampling and within which mineral reserves may be defined by the consideration and application of modifying factors, including mining, metallurgical, economic marketing, legal, environmental, social and government consideration;

"misfired hole" means a blast hole in which a charge or part of a charge failed to detonate on initiation;

"Nuclear Safety and Radiation Protection Authority" means the Nuclear Safety and Radiation Protection Authority established by section 3 of the Nuclear Safety and Radiation Protection Authority Act, 2012 (Act No.7 of 2012);

"open cast mining" means surface mining in which reclamation is carried out contemporaneously with extraction and may be classified as either area mining or contour mining;

"operating manual" means a manual produced by the mineral right holder or applicant describing the mineral right holder's procedures and processes for tailing storage facilities, collection of waste and waste disposal and which shall include a description of

the operating plan, monitoring and auditing requirements, rehabilitation measures, emergency action plan and incident reporting procedures;

"operator protective devices" includes roll-over protective structures, falling object protective structures, operator restraining devices and seat belts;

"ore" means a natural aggregate of one or more minerals which may be mined and sold at a profit or from which some part may be profitably extracted;

"ore reserve" means the volume of known ore zones that a mine has identified as being suitable for mining at some time in the future;

"PERC" means the Professional Engineers Registration Council of Sierra Leone which acts as the regulatory body for the engineering profession established by section 3 of the Professional Engineers Act, 1990 (Act No. 3 of 1990);

"pit limits" means the vertical and lateral extent to which open pit mining may be viably conducted;

"placer mining" means an aqueous extraction method intended for the recovery of heavy minerals from placer or alluvial deposits using water to excavate, transport, and/or concentrate the mineral;

"placer mining methods" means hand mining or dry mining using standard earth moving equipment, dragline and backhoe washing plants, bucket wheel hydraulic dredges, suction cutter dredges, bucket line dredges, hydraulic mining, sluicing and educing;

"placer waste" means the waste originating during the process of placer mining when the washing of sand and gravel to recover minerals produces tailings with particle sizes ranging from coarse to fine and waste water streams loaded with fine sand, silts or clays;

"primary survey" means any survey carried out for the purpose of fixing shaft positions, shaft stations, underground connections, upgrading of secondary surveys to primary surveys and establishing primary surface survey control;

"programme of mining operations" means a programme approved on the grant of a small-scale or large-scale mining license and includes any amendments made to it under the Act;

"quarry" means an open excavation or pit from which stone or other materials are obtained by digging, cutting or blasting;

"radioactive substance" means a mineral which contains by weight at least one twentieth of one per cent (0.05 per cent) of uranium or thorium or any combination of the same, and includes but is not limited to –

(a) monazite sand and other ore containing thorium, and

(b) carnotite, pitchblende and other ores containing uranium;

"road" means any thoroughfare used by the public and includes a path;

"rock pass" means any inclined excavation in which any rock is transported by the force of gravity;

"restricted area" means any area where mining is restricted due to significant risk;

"restricted visibility vehicle" means a vehicle that restricts the view of the operator because of its design or size;

"safe working load" means –

(a) the maximum load or capacity specified by the manufacturer of the plant, or

(b) in relation to any plant for which a different load or capacity has been approved by a Competent Person;

"safety pillar" means every portion of a reef, mineral deposit or ground left in situ for the support and protection of the surface objects thereon or underground workings;

"scaffold" means a temporary structure specifically erected to support access or working platforms;

"scaffolding equipment" means any component, assembly or machine used or intended to be used in the construction of a scaffold;

"secondary survey" means any survey carried out for the purpose of fixing main or access development, mine boundaries and establishing secondary surface survey control;

"serious injury" includes fracture of skull, spine, pelvis, arm, forearm, thigh or leg, dislocation of shoulder, elbow, hip, knee or spine, amputation of hand or

foot, or substantial part of a hand or foot, loss of sight of an eye, internal haemorrhage, burns, asphyxia or other injury likely to endanger life, cause permanent incapacity for work or substantially impair efficiency;

"significant hazard potential" means dams, in any geographical location which in the hazard rating system are assigned the significant hazard potential classification and include those dams where failure or wrong operation results in loss of human life, economic loss, environmental damage, disruption of lifeline facilities, or can have other adverse environmental and social consequences;

"sluicing" means the process of moving slurry;

"stockpiles" means a heap of ore, coal or waste which exceeds three metres in height and is intended for future reclamation and in relation to which special efforts must be taken to keep water from infiltrating the ore and becoming a contamination concern;

"storage box" means a storage box which conforms to the requirements for storing explosives;

"surface impoundments" means structures designed to contain solid waste and effluents generated during the processing of metal and non-metal ores.

"survey point" means any easily identifiable point located by localized surveying, other than a survey station;

"survey station" means any point that has been surveyed within the prescribed standards of accuracy;

"tailings" means all gravel, sand, slime, or other substance which is the residue of bona fide mining operations;

"tertiary survey" means survey stations established from secondary survey stations for localised survey purposes;

'tipping point" means the upper inlet into a rock pass;

"TSF" means tailing storage facility;

"UL Standards" means the independent product safety organisation Underwriters Laboratories Inc.;

"vehicle" means any description of conveyance for the transport of human beings or property by land, in whatever manner it may be propelled.

"waste disposal" means the handling, transporting and placing of mine waste to meet stability and environmental standards;

"waste rock" means rock which is usually coarse and is classified as cobbles, rocks or boulders with associated fines; and

"workings" means any excavation made or being made for the purpose of searching for or winning minerals or for any purpose connected therewith.

Application.

2. These Regulations shall apply to body corporates and individuals applying for or issued minerals rights under the Act.

PART II – ADMINISTRATION

Chief Inspector of Mines.

3. (1) There shall be a Chief Inspector of Mines appointed by the Director who shall be a professional engineer and holder of a valid practising certificate issued by PERC.

(2) Suitably qualified professionals from other government ministries, departments and agencies may, on the request of the Director, be seconded or otherwise render assistance in the implementation of these Regulations.

Appointment of Chief Executive Officer.

4. (1) Every mineral right holder shall appoint a Chief Executive Officer who shall take reasonable steps to ensure compliance with these Regulations.

(2) If a mining right holder is a body corporate, the fuctions of the Chief Executive Officer appointed under sub-regulation (1) may be performed by a member of the Board of the body corporate, appointed by the Board for that purpose.

(3) The Chief Executive Officer shall –

(a) appoint one or more mine managers with the prescribed qualifications to be responsible for the day to day management and operation of the mine;

(b) ensure that if more than one mine manager is appointed their functions do not overlap or conflict;

(c) supply the mine managers with the means to perform their functions; and

(d) take reasonable steps to ensure that the mine managers perform their functions.

(4) Within seven days of the appointment of the Chief Executive Officer, the mineral right holder shall submit to the Director a written notice of the appointment and such notice shall include –

(a) the name of the Chief Executive Officer;

(b) the nature of such person's function; and

(c) the names of the mine managers under the supervision of the Chief Executive Officer.

Mines manager certificate.

5. (1) A mineral right holder or the Chief Executive Officer of–

(a) an underground mine; or

(b) a quarry or surface mine,

shall ensure that the person responsible for underground operations, quarry or surface operations, as the case may be, has a valid mine manager's certificate relating to underground operations or surface operations issued by PERC or a similar international regulatory body.

(2) A mine manager's certificate from any international regulatory body other than PERC referred to under sub-regulation (1) may, if required by the Director, be validated by the PERC.

(3) The mineral right holder shall pay all costs and fees required by PERC in relation to the validation of a mine manager's certificate under sub-regulation (3).

PART III–RIGHTS OF MINERAL RIGHTS HOLDERS AND OTHER RELATED PROVISIONS

General obligations of mineral right holder.

6. (1) A mining right holder shall,as far as reasonalby practicable, ensure that the mine is–

(a) designed, constructed and equipped-

(i) to provide conditions for safe operation and a healthy working environment; and

(ii) with adequate communication system, electrical, mechanical and other equipment as necessary to achieve a safe working environment;

(b) commissioned, operated, maintained and decommissioned in a way that employees can perfom their work without endangering the health and safety of themselves or any other person.

(2) A mineral right holder shall compile monthly health and safety statistics at the mine and such statistics shall be kept in accordance with these Regulations and if the employer is a body corporate with more than fifty employees, the mineral right holder shall publish and make available annual reports in an approprate form to share holders or members;

(3) A mineral right holder of a mine that is not being worked for a period in excess of one month but in respect of which a closure certificate has not been issued shall be responsible to prevent injuries, ill-health, loss of life or damage of any kind from occurring at the mine.

Liability of mineral right holder.

7. A mineral right holder shall be liable for the acts and omissions of any duly appointed mine manager, authorised person, contractor, health and safety officer provided that the mineral right holder shall not be liable for any negligent acts or omissions of such persons.

Mine plan.

8. A notification of the commencement of mining operations shall include a mine plan that sets out –

(a) a summary of the proposed mining operations including a description of the type of mine, the treatment of minerals that is to take place at the mine, the number of persons to be employed at the mine and the expected duration of mining operations;

(b) a broad assessment of the major risks associated with the mine and a summary of the strategies proposed to manage those risks; and

(c) a general plan of the mine on a scale not more than 1:1000 that shows the proposed mine layout and facilities in relation to the tenement boundaries, any proposed open pit and any underground layouts, including access to underground workings.

Equipment and service providers.

9. (1) A person who–

(a) designs, manufactures, imports or supplies any article for use at a mine shall ensure, as far as reasonably practicable, that the article, when used properly, is safe and without risk to health and safety and that it complies with these Regulations;

(b) erects or installs any article for use at a mine shall ensure, as far as reasonably practicable, that nothing about the manner in which it is erected or installed makes it unsafe or creates a risk to health and safety when used properly;

(c) designs, manufactures, erects or installs any article for use at a mine must ensure, as far as reasonably practicable, that ergonomic principles are considered and implemented during design, manufacture, erection and installation in accordance with British Standards or such standards as may be approved by the Director;

(d) designs or constructs a building or structure including a temporary structure for use at a mine shall ensure, as far as reasonably practicable, that the design or construction is safe and without risk to health and safety when used properly;

(e) manufactures, imports or supplies any hazardous substance for use at a mine shall ensure, as far as reasonably practicable, that the substance is safe and without risk to health and safety when used, handled, processed, stored or transported at a mine in accordance with the information required to be provided by the supplier, which shall include–

(i) the use of the substance;

(ii) the risks to health and safety associated with the substance;

(iii) any restriction or control on the use, transport and storage of the substance, including but not limited to exposure limits;

(iv) the safety precautions to ensure that the substance is without risk to health or safety;

(v) the procedure to be followed in the case of an accident involving excessive exposure to the substance or any other emergency involving the substance; and

(vi) the procedure for safe disposal of used containers in which the substance has been stored and any waste resulting from the substance.

(2) A person who falls under paragraphs (a) (b) and (c) of sub-regulation (1) shall be relieved of the duties imposed thereunder, to the extent that is reasonable in the circumstances, if that person

designs, manufactures, repairs, imports or supplies an article for or to another person, or that other person provides a written undertaking to take specified steps sufficient to ensure, as far as reasonably practicable, that the article will be safe and without risk to health and safety when used properly and that it complies with all prescribed requirements.

(3) This Regulation shall not absolve a mineral right holder from its responsibility to use any equipment, article or services provided by a third party in a manner which is safe and without risk to health and safety and the mineral right holder shall remain liable for all harm or damage arising from the improper use of any equipment, article or service except if such harm or damage is caused by the failure of the designer, manufacturer, supplier or installer to discharge its relevant duties as described in this Regulation.

PART IV – REPORTING RESOURCES AND RESERVES

Minerals reporting standards.

10. The reporting of exploration results, mineral resources and mineral reserves shall be based on the following standards–

(a) Pan European Reserves and Resources Reporting Committee;

(b) Australasian Code for Reporting of Exploration Results , Mineral Resources and Ore Reserves

(c) South African Minerals Resources Evaluation Committee ; or

(d) any other internationally acceptable professional body as the Director may determine

Documentation.

11. (1) Documentation detailing exploration results, mineral resources and mineral reserves estimates from which a public report is produced shall be prepared by or under the direction of and signed by a competent person.

(2) A public report issued by a mineral right holder shall be issued with the consent of a competent person and the mineral right holder shall disclose the name, qualifications, relevant experience of the competent person, name of employer and number of years employed.

(3) For the purposes of this Regulation, a competent person shall–

(a) be a member or fellow of the Sierra Leone Institution of Engineers or a member of another internationally recognised professional organisation that holds a valid practising certificate issued by PERC or a similar international regulatory body; and

(b) have a minimum of five years' experience at an appropriate level of seniority which is relevant to the style of mineralisation, type of deposit under consideration and to the activity which that person is undertaking.

(4) If a competent person is a member of an international regulatory body other than the PERC, the validity and acceptability of that regulatory body or the related practising certificate may, if required by the Director, be validated by the PERC.

(5) A mineral right holder shall pay all costs and fees required by PERC in relation to the professional advice provided in sub-regulation (4).

Reporting guidelines.

12. (1) A public report relating to a mineral right holder's exploration results, mineral resources or mineral reserves shall include a description of the style and nature of mineralization.

(2) A mineral right holder shall–

(a) publically disclose any relevant information relating to a mineral deposit that can materially influence the economic value of that deposit to the mineral right holder;

(b) promptly report any material changes in its mineral resources or mineral reserves to the Director; and

(c) review and publicly report on mineral resources on an annual basis.

Reporting exploration results.

13. (1) A mineral right holder shall –

(a) submit a report of all exploration results and ensure that the report states that it is inappropriate to use such information to derive estimates of tonnage and grade;

(b) ensure that all descriptions of exploration targets or exploration potential provided in public reports are expressed so as not to misrepresent them as an estimate of mineral resources or mineral reserves; and

(c) ensure that all isolated assays, isolated drill holes, assays of panned concentrates or supergene enriched soils or surface samples are reported in a contextualised manner.

(2) Where a mineral right holder submits an exploration result in relation to any mineral which is not classified as a mineral resource or mineral reserve he shall not be required to submit report of estimates of tonnage and associated average grade.

Reporting mineral resources.

14. (1) A mineral resources report shall include the location, quantity, grade, continuity and other geological characteristics of a mineral resource.

(2) Mineral resources shall be subdivided in order of increasing geological confidence into inferred, indicated and measured categories.

(3) Sampling shall be conducted of a type and at spacing appropriate to the geological, chemical, physical, and mineralogical complexity of the mineral occurrence.

Reporting mineral reserves.

15. (1) Mineral reserves shall be defined through appropriate assessments which may include feasibility studies and consideration and modification by realistically assumed mining, metallurgical, economic, marketing, legal , environmental, social and governmental factors.

(2) Mineral reserves shall be subdivided in order of increasing confidence into probable mineral reserves and proved mineral reserves.

PART V—MINE DESIGN FOR OPEN PIT MINES

Application.

16. This Part applies to the mine design and layout for open pit mines.

Mine design plan.

17. (1) A mineral right holder or applicant for a mineral right shall submit to the Director a mine design plan before the start of operations and the plan shall consist of –

(a) topographic profile;

(b) geological interpretation;

(c) layout of the mine;

(d) pit design or benched slope model; and

(e) scheduling details.

(2) A mineral right holder shall ensure that the mine design conforms to the approved programme of mining operations.

(3) Drawings attached to a mine design plan shall be done at a scale of at least 1:25000.

Topographic profile.

18. (1) The topographic profile refered to in paragraph (a) of sub-regulation (1) of Regulation 17 shall depict the slope, gradient, drainage and general land use of the site using contour maps and toporaghic cross sections.

(2) The mine design plan shall also include a three dimensional drawing of the topography or a digital terrain model of the area.

Geological interpretation.

19. The geographical interpretation referred to in clause (b) of sub-regulation (1) of Regulation 17 shall contain–

(a) a geological map of the mine in plain view;

(b) geological cross-sections in the north-south and east-west directions;

(c) a geological block-model displayed in three dimensions;

(d) isopach maps of the thickness of the overburden and available mineral resource.

Layout of mine.

20. The layout of mine referred to in clause (c) of sub-regulation (1) of Regulation 17 shall include detailed drawings of the entire mine in accordance with the geological interpretation of the site showing the exact location of –

(a) mine boundaries with entrance, position of berms and set back distances from public roads and watercourses;

(b) areas under forest cover which shall remain unaffected by the proposed mining;

(c) areas under forest cover which shall be affected by the proposed mining;

(d) pit limits;

(e) all benches with bench height, bench width and slope angles clearly identified;

(f) processing plants;

(g) water well or intake ponds and settling ponds;

(h) stock piles of topsoil, overburden, pit-run, processed material, spoil and fill; and

(i) offices, canteens, roads and related infrastructure.

Pit design or benched slope model.

21. The pit design or benched slope model referred to in clause (c) of sub-regulation (1) of Regulation 17 shall include detailed drawings of each pit or bench slop model in accordance with the geological interpretation and contour map of the site in plain view and cross sections in the north-south and east-west directions, presented in three dimensions and shall include–

(a) all ramps with their widths and gradients clearly indicated; and

(b) all berms with their heights, widths and taper distances clearly indicated.

Scheduling details.

22. The scheduling details referred to in clause (e) of sub-regulation (1) of Regulation 17 shall contain detailed descriptions on–

(a) the production schedule by year for the life cycle of the mine up to twenty-five years;

(b) the semi-annual production schedule for three years;

(c) the procedure and schedule for the felling, storage and disposal of timber in areas to be mined;

(d) the type, size and capacity of all plant and equipment to be used in the mining, transportation and processing of minerals;

(e) the method and rate of removal, storage and disposal of topsoil and overburden;

(f) the method and rate of mine de-watering;

(g) the method of construction of benches, ramps, berms and haulage roads;

(h) the method and rate of extraction, storage, processing and disposal of aggregate;

(i) the source and rate of extraction of water for processing operations;

(j) the method and rate of operation of the processing plant;

(k) the method of treatment of water for use in processing operations; and

(l) the method and schedule for the clearing, storage and disposal of fill from settling ponds.

Peer review of mine design plans.

23. (1) The Director or the Board has the right to request a peer review of any mine design and the cost of such review shall be borne by the mineral right holder.

(2) The peer reviewer shall be –

(a) a member or fellow of the Sierra Leone Institution of Engineers and hold a current annual practising certificate issued by PERC; or

(b) a member of an overseas professional organisation approved by the Director.

PART VI —OCCUPATIONAL HEALTH AND SAFETY

Health and safety officer.

24. (1) The Chief Executive Officer shall appoint a Health and Safety Officer who shall be qualified to manage and supervise the health and safety operations in the mine.

(2) If no Health and Safety Officer is appointed the mineral right holder shall perform the functions of a Health and Safety Officer according to the terms of these Regulation.

Health and safety administrative requirements.

25. (1) A mineral right holder shall submit to the Director a policy statement and a health and safety manual outlining the approach and strategy to occupational health and safety.

(2) The health and safety manual referred to in sub-regulation (1), shall indicate how health and safety practices will be integrated into the daily activities of the mining operations.

(3) A mineral right holder shall submit monthly reports on occupational health and safety to the Director or Chief Inspector of Mines which shall include statistics of accidents, number of employees, shifts and other pertinent issues as directed by the Director.

(4) A mineral right holder shall update the health and safety manual annually and shall make it accessible to workers, the Director and any authorised officers conducting health and safety related inspections.

Health and safety officers.

26. A mineral right holder shall appoint health and safety officers with at least three years practical experience in mine or plant operations and a qualification in health and safety from an internationally recognised body, to provide leadership on routine and emergency safe operating procedures and environments.

Health and Safety Committee.

27. (1) A mineral right holder shall establish a Health and Safety Committee.

(2) The Health and Safety Committee shall consist of equal number of management personnel and trade union bodies.

(3) The Health and Safety Committee shall be responsible for the following activities–

(a) identifying aspects at the workplace that may be unhealthy or unsafe;

(b) conducting inspections;

(c) receiving complaints and concerns from workers about health and safety; and

(d) making recommendations to management on the health and safety of workers.

Health and safety training.

28. (1) A mineral right holder shall ensure that employees –

(a) undertake a health and safety induction prior to the commencement of any work;

(b) are routinely trained and updated on all significant health and safety hazards and risks in their workplace; and

(c) are advised on avoidance and response measures.

(2) A mineral right holder shall–

(a) provide appropriate induction training courses for all affected workers when substantive changes are made in the work place or a worker moves to a new location;

(b) train workers on a mine site on emergency response, including the location and proper use of emergency equipment, use of personal protective equipment, procedures for raising an alarm and notifying emergency response teams, and on the proper response actions for every foreseeable emergency situation.

Accident at mine.

29. (1) Where an accident occurs at a mine or works resulting in serious injury, illness or death the mineral right holder shall–

(a) immediately notify the Chief Inspector of Mines of the accident ;

(b) conduct an investigation within 24 hours of the date of such accident in accordance with these Regulations;

(c) upon completion of the investigation referred to in clause (b) and within 30 days of the accident, prepare a report identifying the underlying causes of the accident, any unsafe conditions, acts or procedures that contributed to the accident and make recommendations to prevent the re-occurrence of a similar accident; and

(d) deliver a copy of the report referred to in clause (c) to the Chief Inspector of Mines and the mineral right holder's Health and Safety Committee, provided that, if there is no Health and Safety Committee to the mineral rights holder.

(2) Where an accident occurs resulting in death or serious injury a mineral right holder –

(a) may enter the mining area in order to rescue any endangered person, remove the injured or deceased person or remove an article or substance if necessary to prevent the occurrence of any further incident;

(b) shall pay the costs of all clinical examinations and medical tests.

(3) Subject to clause (a) of sub-regulation 2, where an accident occurs resulting in death or serious injury no person may, without the consent of the Director or Chief Inspector of Mines, disturb the site at which the incident occurred or remove any article or substance involved in the incident.

(4) Where an accident occurs resulting in death or serious injury, the Director or Chief Inspector of Mines shall inspect the site and investigate the incident within three days of being notified by the mineral right holder.

Communicating hazards.

30. (1) A mine manager shall obtain accurate and sufficient information about all potential hazards and risks on site and shall communicate the hazards and risks to the workers in their area in accordance with sub-regulation (2)

(2) Permissible methods of communicating hazards to workers include the following–

(a) general health and safety meetings;

(b) safety sign posts;

(c) safety regulations;

(d) Material Safety Data Sheets (MSDSs);

(e) safety posters; and

(f) site based induction programmes.

Safe work procedures.

31. (1) A mineral right holder shall ensure that mine managers and authorised persons are provided with training and instruction on safe working practices and correct methods of hazard identification and risk assessment procedures.

(2) A mine manager shall take cognisance of the following in developing work safety procedures–

(a) work shall be carried out according to appropriate safe work practices and procedures;

(b) hazard identification and risk assessment procedures shall be undertaken;

(c) employees shall wear proper Personal Protective Equipment (PPE);

(d) all accidents, incidents, and injuries as well as unsafe acts and conditions shall be reported promptly to the appropriate authority;

(e) first aid skills shall be applied promptly to any injury and the incident must be recorded in a First Aid Logbook;

(f) only tools that are in good repair shall be used and shall be used only for the purpose for which they were intended;

(g) good housekeeping practices shall be maintained daily in all work areas;

(h) employees shall be prohibited from remaining at work when their ability to perform the job safely is impaired, for example, abuse of alcohol and drugs;

(i) compliance to a mandatory "NO SMOKING" policy in all buildings except in dedicated smoking areas;

(j) the attendance of employees in safety programmes and training sessions; and

(k) horseplay, fighting, harassment (especially sexual harassment) of any kind shall be strictly prohibited.

(3) A mineral right holder shall ensure that –

(a) exposure to ionising and UV radiation shall be reduced as far as possible;

(b) all hazardous (reactive, flammable, radioactive, corrosive and toxic) substances shall stored in clearly labelled containers or vessels;

(c) the storage and handling of hazardous materials is appropriate to their hazard characteristics;

(d) fire prevention systems and secondary containment are provided for storage facilities to prevent fires or the release of hazardous materials to the environment;

(e) sanitary facilities are well equipped with supplies (e.g., protective creams) and employees shall beencouraged to wash frequently, particularly those employees exposed to dust, chemicals or pathogens;

(f) ventilation systems are provided to control workarea air quantity, quality, temperature and humidity;

(g) personnel required to work in areas of temperatures above 31 degrees Celsius or high humidity are allowed to take frequent breaks away from these areas;

(h) pre-employment and periodic medical examinations are conducted for all personnel, and specific surveillance programs instituted for all personnel potentially exposed to toxic or radioactive substances;

(i) all equipment used at a mine is designed, constructed, installed, maintained and operated to safely perform any task for which the equipment is used;

(j) unusually hazardous work is supervised closely and frequently, and only workers who have been thoroughly instructed with respect to the unusual hazard and proper work procedures are assigned to do such work;

(k) workers including drivers are not required or permitted to work alone at any worksite if the absence of personal communication with another person may place the worker's health or safety at risk and if a worker is working alone at a worksite, the mine manager or authorised person must ensure that contact is made with the worker personally, or by radio, telephone or other suitable means, at least once every two hours.

(4) A mineral right holder shall ensure that sufficient potable and palatable water which complies with World Health Organisation standards on the quality of water intended for human consumption is readily available to all employees throughout the mine or work site and is clearly identified as drinkable.

Personal protective equipment.

32. (1) A mineral right holder shall provide employees with adequate personal clothing and equipment to protect them against all work place hazards and such clothing and equipment shall include but not limited to footwear, respirators, handgloves, eye protectors, clothing, headgear, weather protection and hearing protection.

(2) A mine manager shall ensure that–

(a) all signs or notices directing that persons wear or use any personal protective clothing or equipment in designated areas of the mine are conspicuously displayed;

(b) workers who are required to wear personal protective equipment at a mine are instructed in its proper use, and where appropriate, in its service and maintenance;

(c) all personal protective equipment are routinely inspected to ensure that they remain in good working condition and in accordance with the manufacturer's instructions;

(d) damaged personal protective equipment are removed from use and immediately replaced;

(e) no person shall work or be present at or near or cause or permit any other person to work or be present at or near any place where there may be danger of falling minerals unless that person wears a hard hat in good condition and of a type meets British Standards or such other standard approved by the Director.

Employee's duties for health and safety.

33. Every employee shall–

(a) take reasonable care to protect his own health and safety;

(b) take reasonable care to protect the health and safety of other persons who may be affected by his act or omission;

(c) use and take proper care of protective clothing, and other health and safety facilities and equipment provided for the protection, health or safety of himself and other employees;

(d) report promptly to his immediate supervisor any situation which the employee believes presents a risk to his health and safety or any other person, and with which the employee cannot properly deal;

(e) co-operate with any person to permit compliance with the duties and responsibilities placed on that person in these Regulations; and

(f) comply with prescribed health and safety measures.

Rights of workers.

34. (1) A worker who is concerned about the health and safety of a mine shall notify the health and safety officer or the mine manger and the worker shall remain in a safe place until the problem is eliminated or controlled to the satisfaction of the health and safety officer and the mine manager.

(2) A worker referred to under sub-regulation (1), may be assigned alternate duties whilst the investigation and any remedial action into a potential hazard are being carried out.

Medical and workplace compensation insurance.

35. (1) A mineral right holder shall–

(a) provide medical care for workers at the company clinic or through agreements with outsourced clinics or doctors desginated by the company;

(b) provide guidelines for the medical scheme which shall include sicknesses that are not work place injuries and whether dependents are included on the scheme (wife and unmarried or unemployed children under the age of 18 years);

(c) obtain group personal accident insurance for all employees from a registered insurance company registered in Sierra Leone, or an international insurance policy approved by the Director.

(2) Workplace accident insurance shall cover but is not limited to death, permanent disablement and partial disablement.

Contractors and site visitors.

36. (1) A mineral right holder may sub-contract any of its functions to a third party contractor subject to these Regulations.

(2) A mineral right holder shall –

(a) as far as reasonably practicable, ensure that all contractors operating on a mining site or any other mining related work station are competent to do the job safely;

(b) ensure that the terms of all contracts between himself and a contractor require the contractor or further sub-contractor to comply with the terms of these Regulations and the operating manual;

(3) A mineral right holder who undertakes substantial work shall develop a safety plan for the proposed work and submit it to the mine manager for approval.

(4) The health and safety office shall conduct a safety induction for non-employee or visitors to a mine site or plant and the non employees or visitors shall undergo such induction.

Fire safety.

37. The Health and Safety Committee shall prepare general fire safety rules that covers the steps to be taken to avoid fires in the workplace and the precautions required to protect persons if there is a fire including any of the following or a combination of the following methods–

(a) fire risk assessments of flammable and explosive substances;

(b) identifying ignition sources and sources of fuel;

(c) placing fire and smoke detectors in areas that are not frequently used;

(d) installing fire alarms and checking them regularly;

(e) making available appropriate fire-fighting equipment; and

(f) train key employees in fire fighting.

Emergency preparedness and response.

38. (1) The mine manager shall establish a Planning Committee to prepare a list of emergencies which may occur at the workplace, including but not limited to serious injuries, explosions, floods, poisoning, electrocution, fire , release of radioactivity and chemical spills.

(2) The Chief Executive Officer and a representative of the Health and Safety Committee shall confirm the list of emergencies by surveying the workplace.

(3) The Mine Manager shall develop emergency preparedness and responses for each of the potential emergencies identified by the Planning Committee.

(4) The emergency preparedness procedures shall be developed to reduce and eliminate risk of injury or death or loss to property during a foreseeable emergency and shall be –

(a) in plain language and give clear instructions;

(b) as concise or brief as possible;

(c) reviewed annually and revised to reflect any changes in the workplace;

(d) posted prominently in various areas of the mine; and

(e) tested at least twice annually by way of emergency drills.

(5) The mine manager shall–

(a) keep records of each emergency drill test;

(b) ensure that employees are trained in the emergency preparedeness procedures;

(c) ensure that every change house and accident emergency station contains legibly printed directions describing approved procedures for the immediate treatment of the following types of medical trauma–

(i) heat stroke;

(ii) heat exhaustion;

(iii) drowning; and

(iv) electric shock,

and that each set of instructions shall be displayed conspicuously in high visibility areas.

Notices.

39. (1) The mine manager shall ensure that notices detailing–

(a) the prohibition of any unauthorised person from handling or interfering with electrical apparatus;

(b) directions on the procedure in the case of a fire;

(c) directions for the treatment of persons suffering from electric shock;

shall be exhibited at suitable places within every electricity generating station and sub-station.

Medical practitioner or paramedic.

40. The mine manager shall engage the services of a certified medical practitioner or an advanced life support paramedic who shall be present during working hours.

First aid.

41. (1) A mineral right holder shall hire a competent person to train workers on emergency first aid.

(2) The mine manager shall appoint a number of workers who shall be trained on emergency first aid and certified by the Red Cross Society

(3) The mine manager shall ensure that at least one certified worker referred to in sub-regulation (2) is on duty during working hours.

Workers not to pay for safety measures.

42. No person shall make any deduction from worker's wages or permit to make any payment to any person, in respect of anything which the mine manager or mineral right holder is obliged to provide relating to the health and safety of workers

Prohibition by Chief Inspector of Mines.

43. (1) Where the Chief Inspector of Mines, after consultation with independent technical experts, is of the opinion that a mine or any part of a mine or any matter, thing or practice at mine or connected with the control or management of a mine or is liable to become dangerous to the safety or health of any person employed at the mine, serve a notice on the mineral right holder–

(a) stating that the Chief Inspector of Mines is of that opinion; and

(b) giving particulars of the Chief Inspector of Mines' reasons for the opinion.

(2) The Chief Inspector of Mines may by notice under sub-regulation (1)–

(a) impose upon the mineral right holder, prohibitions and restrictions and require the mineral right holder to carry out such works or do such things as appear to the Chief Inspector of Mines to be necessary for safeguarding the safety or health of workers;

(b) direct the mineral right holder to cause the mine or any part of the mine –

(i) to be evacuated immediately; or

(ii) to be closed, either indefinitely or for such period as specified by the Chief Inspector of Mines;

(3) A prohibition, restriction or requirement imposed, or a direction given by the Chief Inspector of Mines may –

(a) be subject to such exemptions as are set out in the notice, and

(b) operate either indefinitely or for such period as is set out in the notice.

(4) The Chief Inspector of Mines may, in any notice served under this Regulation, require the notice to be complied with immediately or within a period specified in the notice.

(5) If a notice under this Regulation cannot be readily served on the mineral right holder and the circumstances necessitate that the action required by the notice be taken immediately, it may be served on the next most senior official at the mine.

(6) If a notice is served by the Chief Inspector of Mines on the next most senior official at a mine pursuant to sub-regulation (5), the Chief Inspector of Mines shall, as soon as practicable, serve a signed copy of the notice on the mineral right holder.

(7) The Chief Inspector of Mines may vary or revoke any notice issued under this Regulation.

PART VI-–WORK PLACE STANDARDS

Incompetent person.

44. The mine manager shall not employ an incompetent, unskilled or inexperience person to work in a mine or any mine related worksite.

Underage employment.

45. (1) Subject to sub-regulation (2) no person shall employ a person under the age of 18 years to work in a mine.

(2) A person between the ages of 16 and 18 years may work in a mine solely as part of a course of certified vocational education or training provided that that person is under the constant and direct supervision of a person over the age of 18 years.

Disobedience.

46. A person who fails to obey a lawful order given to him by a person lawfully authorised to issue such order commits an offence.

Air quality.

47. (1) A mineral right holder shall –

(a) conduct periodic monitoring of work place air quality for air containments which are releant to the employee's tasks and the plant's operations;

(b) maintain ventilation, air contaminant control equipment, protective respiratory equipment and air quality monitoring equipment.

(2) The mine manager shall ensure that protective respiratory equipment is used by workers when the exposure levels for welding fumes, solvents and other materials present in the workplace exceed local or internationally accepted standards or the following threshold limit values (TLVs) –

(a) arsenic 0.5 mg/m;

(b) carbon Monoxide 29 mg/m3;

(c) copper 1 mg/m3;

(d) free silica 5.0 mg/m3;

(e) hydrogen cyanide 11 mg/m3;

(f) hydrogen sulfide 14 mg/m3;

(g) lead, dusts and fumes, as Pb 0.15 mg/m3;

(h) nitrogen dioxide 6 mg/m3;

(i) particulate (Inert or Nuisance Dusts) 10 mg/m3; and

(j) sulfur dioxide 5 mg/m3

Sampling of dust.

48. A mineral right holder shall ensure that–

(a) a competent person or a person under the direct supervision of a competent person takes samples of the dust present in the air throughout the mine at places determined by the competent person;

(b) sampling shall take place at regular intervals of not less than every three months; and

(c) the competent person shall keep a detailed record and log of the time, place and results of sampling.

Ventilation.

49. (1) This regulation shall apply to surface mines and underground mines respectively.

(2) A mineral right holder shall ensure that each part of the mine is properly ventilated in order to maintain a safe and healthy working environment and that the level and quality of ventilation will render harmless any flammable or noxious gases and dust in the air.

(3) The mine manager shall ensure that development end are ventilated by means which will ensure that all harmful dust, smoke and fumes deriving from any blast or process which may produce noxious fumes or gases are effectively expelled before the expiry of each interval period prescribed by the mine manager.

(4) The mine manager after consultation with a competent person shall determine and promptly inform the Director of a minimum interval time period between blasts or any other process which may produce noxious fumes or gases, during which ventilation processes must be implemented in order to keep the area free of noxious fumes and gases.

(5) The mine manager or supervisor shall ensure that no person shall enter an area in which blasting has taken place until the expiry of a period of time fixed in writing by the mine manager in consultation with a competent person.

(6) The mine manager shall ensure that every development end, except for those for which an exemption has been provided in writing from the Director, is tested by a competent person for flammable gas at the beginning of each shift.

(7) Where there is a stoppage of a main fan, the mine manager shall ensure that–

(a) immediate steps are taken to withdraw all persons from such an area to a place of safety;

(b) upon arrival of such persons at the safe area all electrical power supplied to the work areas which are supplied by the faulty fan are turned off;

(c) no persons other than a competent person responsible for making all necessary examinations and tests to determine the reason for which the fan has ceased to work shall be permitted entry into the area whilst the fan is incapacitated, provided that the Mine Manager shall provide the competent person with protective clothing and safety equipment, as applicable; and

(d) no other electrical power to the area covered by the fan shall be switched on until after the main fan has been re-started.

Noise.

50. A mineral right holder shall, where feasible–

(a) employ administrative and engineering controls, including sound-insulated equipment and control rooms to reduce the average noise level in normal work area;

(b) ensure that workers are not exposed to a TWA (Time Weighted Average) of more than 85dBA for a period of 8 hours; and

(c) ensure that personal hearing protection is used when workers are exposed to noise levels above 85dBA.

Vibration.

51. (1) A mineral right holder shall ensure that–

(a) hand-arm vibration is reduced as best as possible; and

(b) every worker shall identify and report to the mine manager, all hazardous machines, tools and processes which cause tingling or numbness in the hands after a few minutes of use.

(2) The Mine Manager shall ensure that –

(a) suitable tools and machines are used in order to cut down vibration; and

(b) such tools and machines are maintained in accordance with the manufacturer's specification.

Noxious or inflammable flames or gases.

52. (1) Subject to sub-regulation (2) no person shall enter any pit , tank vessel or chamber which is likely to contain noxious or inflammable flames or gases or contains an atmosphere which is deficient in oxygen until it has been declared safe to do so by a competent person.

(2) A competent person may enter a pit, tank, vessel or chamber referred to in sub-regulation (1) for conducting tests or examinations and making the area safe, provided that the mine manager ensures that that person is using adequate protective clothing and safety equipment.

Cyanide.

53. No person except a competent person or a person under the immediate supervision of a competent person shall handle or move any compound of cyanide which is likely to produce harmful dust or noxious or inflammable gases unless such compound is in a closed and airtight container and the Mine Manager or authorised person ensures that that person is using adequate protective clothing and safety equipment.

Illumination.

54. A mineral right holder shall ensure that the illumination at a worksite is sufficient to enable workers to perform their work safely.

Confined spaces.

55. A mineral right holder shall establish standard operating procedures that ensure that –

(a) prior to entry and occupancy, all confined spaces (e.g., tanks, sumps, vessels, sewers, excavations) are tested for the presence of toxic, flammable and explosive gases or vapours and for the lack of oxygen;

(b) adequate ventilation is provided before entry and during occupancy of these spaces;

(c) personnel use air-supplied respirators are used when working in confined spaces that are likely to be contaminated or deficient in oxygen during the period of occupancy; and

(d) observers or assistants are stationed outside confined spaces to provide emergency assistance, if necessary, to personnel working inside these areas.

Dangerous mine.

56. (1) If a part of a mine is dangerous due to the presence of flammable or noxious gases, every worker shall immediately withdraw from the dangerous area and notify the mine manger who, subject to sub-regulation (2), shall not permit any worker to resume work in the area until he or the supervisor is satisfied after consultation with a competent person that the area is safe to work.

(2) The Mine Manager or supervisor shall permit a competent person or a person under the direct supervision of a competent person to enter a potentially dangerous area if such person is responsible for the erection of brattice to aid ventilation or to conduct any other procedures to aid the clearing of the dangerous gases and ensures that that person is using adequate protective clothing and safety equipment.

Liquid.

57. (1) Mineral right holders shall ensure that all liquid effluent effluent discharge to receiving waters from tailings impoundments, surface impoundments, mine drainage, sedimentation basins, sewage systems and storm water drainage and do not exceed the levels set out in the following guidelines for safe effluent discharge–

(a) pH 6 to 9;

(b) BOD5 50 mg/l;

(c) oil and grease 20 mg/l;

(d) total suspended solids 50 mg/l;

(e) temperature - at the edge of Max 5° C above ambient temperature; and

(f) a designated mixing zone of receiving waters - max 3° C if receiving waters >28°C.

(2) The parameters in sub-regulation (1) shall not apply to direct discharge of tailings into the marine environment.

Solid waste disposal.

58. A mineral right holder shall ensure that–

(a) solid waste are recycled or reclaimed where possible and if recycling or reclamation is not practical, solid waste shall be disposed of in a way that minimises environmental damage;

(b) sewage sludge are disposed of in a way that minimises environmental damage;

(c) solvents and similar hazardous materials are not disposed of in a manner likely to result in soil or groundwater contamination;

(d) waste rock dumps are designed and engineered so that materials with high potential to generate acid leachate are isolated from oxidation or percolating water.

Radiation.

59. A mineral right holder shall –

(a) apply to the Nuclear Safety and Radiation Protection Authority for permission to store and dispose of radioactive substances;

(b) ensure that exposure to ionising radiation and UV radiation shall be reduced as far as possible.

Change house.

60. (1) A mineral right holder of an open pit mine or underground mine shall–

(a) provide and maintain suitable change houses and washing facilities to enable employees who perform work involving hazardous substances to change clothes at the start and end of a shift and to wash themselves at any time;

(b) provide readily available latrine facilities for men and women within a reasonable distance from each working place.

(2) The mine manager shall determine the number of change houses and latrine facilities provided that they shall not be less than one facility for every 50 workers.

Housing accommodation.

61. Where a mineral right holder provides accommodation for workers, such accommodation shall–

(a) have sufficient supply of wholesome water to the reasonable satisfaction of the District Medical Officer;

(b) be a reasonable distance from facilities for the workers to obtain food and fuel;

(c) include sufficient and proper sanitary arrangements to the reasonable satisfaction of the District Medical Officer;

(d) have drainage facilities to the reasonable satisfaction of the District Medical Officer;

(e) have arrangements for the removal and disposal of refuse and waste products to the reasonable satisfaction of the District Medical Officer;

(f) sufficient latrines, incinerators and dust-bins to the reasonable satisfaction of the District Medical Officer and of a structure, design and arrangement as the District Medical Officer shall approve; and

(g) precautions against the spread of infectious diseases.

Intoxication.

62. (1) No intoxicated person or a person in any condition which may render the person incapable of taking care of himself shall enter a mine or any other worksite or be close to any machinery on the surface of a mine.

(2) A person who contravenes sub-regulation (1), commits an offence and shall be removed immediately by the mine manager and the necessary disciplinary action shall be taken against the person concerned.

(3) No person shall take intoxicating liquid into a mine or any place of work unless that person has the special permission of the mine manager .

(4) No workman shall have intoxicating liquid in his possession during working hours.

Pollution.

63. (1) No person shall pollute the working area with faeces or urine.

(2) The Mine Manager shall take appropriate measures to ensure that no effluent from any sewerage system shall contain injurious matter in suspension or solution.

Jurisdiction.

64. (1) Notwithstanding the Factories Act, all issues relating to the operation of machinery within a licensed mining area that does not directly affect the general public shall be within the purview of the Director.

(2) All issues relating to mine operating machinery within or outside its licence area which affects the general public shall be subject to general applicable laws and regulations and in such circumstances, the Director shall consult with and seek concurrence from all relevant authorities in providing appropriate directions.

Safety of machinery.

65. (1) A mineral right holder shall ensure that mining operations contain measures that prevent injury to due to machinery failure caused by–

(i) incorrect design;

(ii) incorrect installation;

(iii) poor maintenance; or

(iv) incorrect use or non-compliance with proper operating or safety procedures.

(2) A person who detects any defect which could make the operation of any operating machinery unsafe shall immediately report the defect to the Mine Manager or authorised person.

(3) A mineral right holder shall ensure that all machinery employed at the mine is of a reputable safety standard and conforms to these Regulations and to British Standards or such other standards as may be approved by the Director.

Training on use of machinery.

66. (1) The mine manager shall ensure that a worker is–

(a) given adequate instruction and training in safety procedures and systems of work in the task required of the worker;

(b) assessed before commencing work to ensure that the he is competent to perform the tasks he will be assigned and to operate any plant and equipment the employee will be required to operate; and

(c) retrained and reassessed whenever systems of work or plant and equipment are changed, or new systems of work or plant and equipment are introduced.

(2) The mine manager shall ensure that –

(a) a record is made of any instruction, training, retraining, assessment or reassessment given as required under this Regulation; and

(b) the record is kept for the full duration of the worker's employment.

Machinery safety measures.

67. (1) The mine manager shall ensure that–

(a) only authorised persons operate and maintain a machine where such operation and maintenance may pose a significant risk to any person;

(b) where the moving of machinery poses a significant risk to any person, such machinery is only moved under the constant supervision of a competent person who is fully aware of the risks attached to such moving of the machinery;

(c) only authorised persons shall enter any area where machinery is operated, where such operation may pose a significant risk to any person;

(d) machinery is only operated if all installed safety devices are operational and functional;

(e) persons in close proximity to moving parts of machinery do not wear or are not permitted to wear clothing or anything else that can be caught in such moving parts;

(f) where the unexpected moving of any machinery or any part of any machinery could pose a significant risk to any person, appropriate prestart warning devices, such as audible warning devices are fitted to such machinery and used to warn persons that such machinery is about to be set in motion;

(g) machinery is fitted with a delay time mechanisms which must be determined by risk assessment and have an appropriate time delay;

(h) where there could be a significant risk to any person working on any machinery due to the release from such machine of any mechanical, electrical, hydraulic, chemical or other source of energy, a written lockout procedure is prepared and implemented to ensure that such source of energy is effectively locked out and de-energised before any person works on such machinery;

(i) access scaffolding is erected, used, maintained and dismantled safely;

(j) means are provided, on or in close proximity to any machine, to immediately remove the source of power to that machine in case of an Emergency;

(k) where the starting of machines are interlocked, no unintended starting of any of those machines can take place;

(l) starting devices are so arranged that no accidental starting of machinery can take place;

(m) all electrical, pneumatic and hydraulic portable equipment are operated and maintained in a safe working order; and

(n) the external moving parts of all machinery which is situated within the proximity of workers shall be illuminated whilst in operation such that they are clearly visible to workers working around them.

(2) The Mine Manager shall ensure that when a compression ignition engine system is detected to have any defect which may cause a significant risk to the safety or health of persons, the use of such engine system is discontinued immediately.

Light and heavy equipment.

68. (1) The mine manager shall not allow light or heavy equipment to be driven unless the brakes, steering, warning signal and lights are in good working condition and the equipment contains adequate seatbelts.

(2) The Mine Manager shall ensure that –

(a) all earth moving equipment used at the mine are fitted with roll over protective structure or a cab that has been approved by the manufacturer to be a roll over protected structure;

(b) every agricultural tractor used at the mine is fitted with a roll over protective structure; and

(c) if any roll over protective structure fitted to a vehicle referred to in paragraph (a) or (b) is structurally damaged, the vehicle is withdrawn from service until the structure is repaired, replaced or restored to a fully functional condition.

(3) The Mine Manager shall ensure that–

(a) every vehicle contains operator protective devices;

(b) each vehicle used at the mine is fitted with seat belts and seat belt anchorage points that conform with Sierra Leone Road Transport Authority Standards or similar, and if any seat position is added to a vehicle, the seat is fitted with a seat belt and seat belt anchorage point that conforms with the same standard;

(c) a seat referred to in clause (b) which is a suspension seat, the seat belt anchorage must be attached to the seat assembly and the seat belt fitted with the appropriate retractor;

(d) that a vehicle is not used at the mine unless it is equipped and maintained with suitable brakes capable of effectively stopping and holding that vehicle fully loaded under any conditions of operation when being driven;

(e) that the following types of equipment which are required to travel on any incline greater than 5% are equipped with independent braking systems for use in an emergency in the event of failure of the primary braking system–

(i) wheeled earth moving equipment; and

(ii) any other vehicle to which it is practicable to fit such a system.

(f) each vehicle is maintained in good order and condition, and a competent person tests and if necessary, adjusts the brakes of each vehicle to ensure that they operate effectively;

(g) all vehicles used at a mine are equipped with–

(i) effective headlights, tail lights and turn indicators;

(ii) an effective audible warning signal, which can be sounded when the vehicle is about to be moved if clear vision immediately in front of and behind the vehicle is not available to the driver;

(iii) adequate seating for the driver and any passengers;

(iv) a flashing light on the cab of all light servicing vehicles and vehicles used to transport personnel;

(v) any passengers seated in the load body of a vehicle are seated correctly; and

(vi) that the area between the loading unit and the material being loaded, and the area traversed by the loading bucket during loading operations is kept clear at all times.

(4) These Regulations shall not apply to any vehicle that, immediately before the commencement date was being used at a mine and was not fitted with the roll over protective structure required under this Regulation, until the expiration of 24 months from the commencement date.

(5) A person shall not–

(a) while occupying a seat position in a vehicle in which a seat belt has been fitted for that seat position, drive or travel in that vehicle at a mine unless the person is wearing that seat belt and the seat belt is properly adjusted and securely fastened;

(b) leave a vehicle unattended unless it is parked in a safe manner with the controls in the correct position for parking and the parking brakes fully applied;

(6) A driver of a vehicle used at a mine shall–

(a) sound the warning signal when the vehicle is about to be moved if clear vision immediately in front of and behind the vehicle is not available to the driver;

(b) ensure that a flashing light on the vehicle is operated when the vehicle is being used in an area designated by the Mine Manager.

(7) The requirements in these Regulations relating to the operations and safety of trackless transport machinery shall also apply to all heavy vehicles and earth moving equipment.

Air compressors and compressed air.

69. (1) A mine mangager shall ensure that–

(a) air compressors with a free delivery in excess of 0.15 meteres per second are fitted with atomatic means of limiting the operating temperature and pressure of the compressor to a safe level where compression takes place in lubricating oil;

(b) compressed air, gas receivers, intercoolers, and their connections to air or gas cylinders are kept clean and free from carbonized oil or other materials liable to ignite and shall be examined by a qualified engineer or other duly authorised and competent person on a regular basis and at intervals not exceeding twelve months;

(c) the supply of air for compressed air receivers are drawn from the purest and coolest source available;

(d) before using a hose to transfer any compressed air, the person using that hose must ensure that all connections in the hose length are coupled and secured so as to prevent accidental disconnection and a person must not use compressed air for cleaning purposes in a workplace if the use of the compressed air is likely to generate dust.

(2) No person shall use or permit any person to use, compressed air in such a manner that might endanger the health or safety of any person.

High pressure compressors.

70. (1) The mine manager shall ensure that cylinders , receivers or other vessels that are subject to a higher pressure except the working cylinders or chambers of heat- engines, air engines or portable gas cylinders are fitted with–

(a) satisfactory apparatus for showing the internal pressure; and

(b) a lock-up relief, safety valve or other apparatus capable of automatically preventing any undue accumulation of pressure above the safe working limit of the vessel.

(2) The Mine Manager shall test or procure a competent person to test such apparatus at intervals not exceeding three years and such testing shall take place by hydraulic pressure to the extent of one and one-third times the working gauge pressure.

(3) The mine manager shall ensure that a written record of such test, signed by the competent person conducting the test is held by the relevant mineral right holder.

Lifting equipment.

71. (1) The mine manager shall ensure that–

(a) lifting equipment is of good mechanical construction, sound material and adequate strength, free from any visible defects and properly maintained;

(b) lifting equipment and lifting tackles are only operated by a competent person and no person is injured due to the failure of any lifting equipment or lifting tackle as a result of–

(i) incorrect installation;

(ii) insufficient maintenance ; or

(iii) incorrect design for the intended application.

(c) lifting operations conform to the following –

(i) only lifting equipment and lifting tackle with defined safety parameters shall be used;

(ii) lifting equipment and lifting tackle are not used beyond their design capacity and

(iii) the safe working load of any lifting equipment and lifting tackle is conspicuously and clearly marked or indicated thereon.

(d) the installation, use (including the transport of persons), maintenance, inspection, testing and keeping of records of lifting equipment and lifting tackle are done in accordance with a written operating procedure by a Competent Person prepared and implemented for that purpose.

(2) All inspections of lifting gear shall be undertaken bi-annually by a competent person.

Design and manufacture of plant.

72. A mineral right holder shall ensure that the manufacturer of a plant is provided with sufficient information by the designer to allow the plant to be manufactured in accordance with the design specification and as far as practicable provide information relating to–

(a) the purpose for which the plant is designed;

(b) testing or inspections to be carried out on the plant;

(c) installation, commissioning, operation, maintenance, cleaning, transport, storage and (where plant is capable of being dismantled) dismantling of the plant;

(d) systems of work necessary for the safe use of the plant;

(e) knowledge, training or skill necessary for persons undertaking inspection and testing of the plant; and

(f) emergency procedures relating to the plant.

Maintenance and operation of plant.

73. (1) The mine mangaer shall ensure that–

(a) risk reduction and mitigation are methods implemented to identify any hazards associated with the plant and asses the risks of an employee being exposed to those hazards and take practical measures to reduce those risks; and

(b) the plant is not operated in such a way as to exceed the safe working load of the plant.

(2) The Chief Executive Officer shall ensure the implementation of the following methods and practices of risk reduction and mitigation are employed–

(a) the plant is manufactured, inspected and where required, tested according to British Standards or such other standared as may be approved by the Director, having regard to the Designer's specifications;

(b) if after supply to a mine, any plant is found to have a fault that may affect the health or safety, the person to whom the plant was supplied is advised of the fault and what is required to rectify it;

(c) sufficient access and egress to the parts of the plant that require cleaning or maintenance;

(d) sufficient access to the relevant operator's workstation for normal and emergency conditions;

(e) emergency lighting, breathing apparatus, safety doors and alarm systems, if access to the plant is required as part of its normal operation and Emergency conditions where persons may become entrapped and at risk of being exposed to hazards due to heat, cold or lack of oxygen;

(f) attempting to reduce, as far as is practicable, any risk of exposure to a hazard created by dangerous parts during operation, lubrication, adjustment or maintenance and ensuring that any guarding provided for plant and its operation comprises–

(i) a permanently fixed physical barrier in the case where no person requires complete or partial access to the dangerous area during normal operation, maintenance or cleaning;

(ii) an interlocked physical barrier in the case where a person may require complete or partial access to the dangerous area during normal operation, maintenance or cleaning; or

(iii) a physical barrier securely fixed in position by means of fasteners or other suitable devices sufficient to ensure that the guard cannot be altered or removed without the aid of a tool or key and if none of the guards described in sub-clauses (i), (ii), or (iii) are practicable, by providing a presence sensing safeguard system.

(g) operational controls are–

(i) suitably identified on plant so as to indicate their nature and function;

(ii) located so as to be readily and conveniently operated by each person using the plant;

(iii) located or guarded to prevent unintentional activation; and

(iv) able to be locked into the "off " position to enable the disconnection of all motive power and forces;

(h) ensuring that–

(i) if practicable, the plant does not need to be operating while maintenance and cleaning is taking place;

(ii) if it is not practical to eliminate the need for plant to be operating while maintenance and cleaning is taking place, operational controls which permit controlled operation of the plant are provided;

(iii) plant that is designed to be operated or attended by more than one person and which has more than one control fitted, has multiple controls of the "stop and lock off" type, so that the plant cannot be restarted after a stop control has been used unless each stop control has been reset; and

(i) ensuring that emergency stop devices–

(i) are prominent, clearly and durably marked and immediately accessible to each operator of the plant;

(ii) have handles, bars or push buttons that are coloured red; and

(iii) will not be affected by electrical or electronic circuit malfunction,

Hazards identification.

74. (1) A mineral right holder shall –

(a) identify all reasonably foreseeable hazards associated with plant before and during the introduction of plant at the work site before and during–

(i) any alteration to the plant;

(ii) any change in the way the plant is used;

(iii) any change in a system of work associated with the plant, including, where appropriate, a change in the location of the plant which is likely to involve a risk of a person being exposed to a hazard;

(b) ensure that steps are taken to mitigate against and reduce any risk of exposure to a hazard identified as arising from the plant.

(2) A mineral right holder shall identify all reasonably foreseeable hazards that may become apparent as a result of becoming aware of new safety or health information relating to the plant or its associated systems of work and shall promptly assess the risk of exposure of a person to each identified hazard, if any.

(3) An assessment–

(a) must adequately address any hazard identified, and include one, or a combination of a visual inspection of the plant and its associated environment, auditing, testing, a technical or scientific evaluation, an analysis of injury or near- miss data, discussions with designers, manufacturers, suppliers, importers, employers, employees or any other relevant party and a quantitative hazard analysis;

(b) may be carried out either on individual items of plant or, where multiple items of plant of the same design are installed and are intended for use under conditions that are the same for all practical purposes, the assessment may be carried out on a representative sample, but if the risk associated with the plant may vary from operator to operator, a separate assessment of the risk to each operator of the particular plant shall be carried out on each item of plant.

Electrical machinery systems.

75. (1) A mineral right holder shall–

(a) ensure that before any electricity supply exceeding 2500 kilowatts is introduced at a mine, notice of intention shall be given to the power authority and the mineral right holder shall ensure that electrical installations and equipment are approved by a PERC registered competent person;

(b) maintain plans clearly showing the positions and size of all electrical apparatus whether above or below ground and showing the isolating arrangements of the various circuits of the system, and such plans shall be kept current and be open to inspection by any Authorised Person;

(c) ensure that where any electrical apparatus is installed the following information shall be clearly and legibly displayed on durable material and in appropriate places–

(i) a notice warning persons of the proximity or presence of dangerous electrical apparatus; and

(ii) a notice prohibiting unauthorized persons from handling or interfering with electrical apparatus of any description.

(2) The Mine Manager shall ensure–

(a) that in every mine where the designated power rating of machinery used in the generation of power together with power supplied from an external source does not exceed 2500 kilowatts, all receiving machinery shall be under the charge of a competent person who shall be appointed in writing by the Mine Manager;

(b) that a notice providing instructions for the resuscitation of persons suffering from electric shock is displayed near the entrance to each room, enclosure or other place at the mine that is used principally for the installation or maintenance of electrical equipment;

(3) Any premises with electricity generating plants, transforming, switching or linking apparatus shall be adequately fenced off or enclosed and at the entrance to each such place or premises the mine manager shall cause to be displayed a legible notice, constructed of durable material prohibiting entry of unauthorized persons.

(4) Where such notice has been displayed no unauthorized person shall enter therein.

(5) Where any such places or premises are for any reason unattended the person in charge thereof shall keep the same closed and locked.

Electrical safety requirements.

76. (1) The mine manger shall ensure that–

(a) all accessible metallic portions of every electrical apparatus which though normally not forming part of an electrical circuit may accidentally become live at a pressure exceeding low pressure to earth, shall either be protected by an insulating covering or shall be connected to earth by a conductor of adequate cross-sectional area;

(b) all flexible wire for electrical apparatus, alternating currents or for apparatus above 150 volts direct current shall be connected to the system either by permanent joints or connections or by a properly constructed connector;

(c) a lamp-holder shall not be in metallic connection with the guard or other metal work of an electrical lamp;

(d) no examination, repairs, or alterations necessitating the approach to or the handling of electrical apparatus shall be carried out while such apparatus is live unless such work is done by or under the constant personal supervision of a competent person;

(e) in all works and in any place where the voltage exceeds low voltage, the electrical apparatus and its flexible wire shall be

controlled by means suitably located and capable of cutting off the voltage and the metal work shall be earthed independently of any flexible metallic conductor cover;

(f) whenever any work is to be carried out on any electrical apparatus it shall be disconnected from all sources of supply and all adequate precautions shall be taken by earthing or other means;

(g) that electrical apparatus or conductor are prevented from becoming accidentally or inadvertently charged whilst persons are working on them.

(2) Where a worker is employed in any site area which contains–

(a) electrical apparatus or pendant lamps with switches for alternating currents;

(b) voltages in excess of 150 volts; or

(b) any electrical apparatus which is reasonably likely to produce an electrical shock should the metal work of such apparatus become charged,

the Mine Manager shall ensure that all metal work is efficiently earthed and that any flexible metallic covering shall itself be efficiently and independently earthed.

(3) No person other than a competent person or any person acting under the competent person's immediate personal supervision, may enter any transformer house or switch-house unless all live conductors therein which are not adequately insulated against the possibility of inadvertent human contact are effectively bratticed off.

(4) A mineral right holder shall ensure that in any premises in which electrical operations are installed and there is a risk of igniting gas, coal-dust or other explosive material, flame-proof or explosion-proof apparatus shall be installed by a competent person.

Electrical maintenance.

77. (1) A mine manager shall ensure that–

(a) all electrical maintenance are undertaken by a competent person who shall keep detailed records of each maintenance inspection in a log book;

(b) electrical equipment having a voltage of 440 volts or more such as stations, substations or control panels motorised equipment are maintained under a preventive\maintenance program specific to the applicable establishment and shall include periodic inspections in accordance with the manufacturer's instructions;

(c) control devices for electrical equipment are locked in the open position to prevent such equipment from being energized while work is being done on it.

(d) locks are placed and removed only by the persons carrying out the work on the electrical equipment and each person working on the electrical equipment shall install their own personal lock which may only be removed by that person;

(e) electrical machinery and conductors are sufficient in size for the work they do and are selected, arranged, installed, protected, worked and maintained so as to prevent danger as is reasonably practicable;

(f) where electrical energy is transformed suitable provision is made to guard against danger of lower voltage apparatus becoming accidentally charged above its normal voltage by leakage from or contact with higher voltage apparatus.

(2) Electrical maintenance referred to in sub-regulation (1) shall include–

(a) monthly examination and testing of all equipment and cables;

(b) quarterly examination, testing and tagging of any portable apparatus that is normally used in heavy operating environments such as workshops, mining areas, processing areas, construction sites and similar places;

(c) routine testing of the effectiveness of the earthing system, the continuity of earthing conductors and the adequacy of electrical insulation; and

(d) the monthly testing of earth leakage protection devices and earth continuity protection devices required to be installed in a quarry operation, on a part of a dredge other than a floating treatment plant or in an underground mine.

Switchboards and switch-gears.

78. The mine manager shall ensure that–

(a) all switchboards are adjusted to have a clear space at the back of at least one metre.

(b) the clear space referred to in clause (a) is not obstructed and is kept closed and locked except during periods of inspection, alteration or repair;

(c) switchboards which can only be accessible from the back through an opening in the wall or partition against which they are placed are operated such that the opening is kept closed and locked;

(d) switch-gear, terminals, cable ends, cable joints and other connection of every electrical apparatus are taped and well insulated to prevent accidental contact by persons and danger from electrical faults, fire and water.

Overhead

79. (1) Where high voltage equipment is installed the mine manager shall appoint one or more competent persons to be responsible for the high voltage installations at the mine.

(2) When designing the overhead power lines the minimum factors of safety shall apply to each support and shall refer to the breaking load of the structure.

(3) The minimum factors of safety shall be approved in writing by the Chief Inspector of Mines

(4) Overhead lines may be erected along or across thoroughfares, roads, railways, tramways or buildings subject to the prior written approval of the Chief Inspector of Mines subject to such conditions as he may consider necessary.

(5) Overhead line conductor shall cross over or under anyother line conductor without efficient precautions being taken to prevent the contact of such conductors.

(6) The minimum vertical height of electrical conductors and other wires from the ground, except in the case of electric trolley wires and service lines for lighting domestic use and telephone lines, shall be five metres.

(7) No overhead lines shall be erected closer than 100 metres to any explosive magazines except with the prior written approval of the Chief Inspector of Mines who may consult with a competent person to ascertain whether this is appropriate.

(8) All supports shall be of substantial construction and shall be placed at intervals of not more than 70 metres apart when the direction of the line is straight, and of not more than 50 metres apart when the line is not straight, provided that such intervals may be varied with written approval of the Chief Inspector of Mines who may consult with a competent person to ascertain whether this is appropriate.

(9) Service lines shall be connected to line conductors at a point of support only and shall be efficiently insulated.

(10) All systems of overhead lines shall be suitably protected against the effects of atmospheric electricity.

(11) No telephone lines shall be placed on the same support as other overhead lines except for the purpose of direct communication between power houses and sub-stations and only with the prior approval of the Chief Inspector of Mines.

(12) All conductors on overhead lines must be efficiently insulated and secured, and every precaution shall be taken to prevent such conductors from falling away from their supports.

(13) Adequate means shall be provided to render any such live conductor dead in the event of its falling, due to breakage or otherwise.

(14) Every overhead line, including its supports and all structural parts and all electrical appliances and devices belonging to or connected with the line, shall be regularly inspected and efficiently supervised and maintained in accordance Regulation 77.

Underground cables.

80. (1) Underground cables, other than signalling wires and flexible cables for portable apparatus shall–

(a) have connections to their conductors made at properly constructed joints only;

(b) be protected by a suitable metallic covering electrically continuous throughout; and

(c) be earthed and adequately supported.

(2) The Mine Manager shall ensure that–

(a) excavation work is not commenced within the vicinity of buried cables unless a permit to do so has been issued by the Director;

(b) all underground cable positions must be clearly demarcated on the site survey plan.

(3) The Director shall not issue a permit referred to in clause (a) unless he is able to clearly identify the location of the planned excavation work and may include in the permit any precautionary measures that need to be taken by the applicant.

Trailing cables and reeling cables.

81. A competent person shall ensure that a trailing cable and reeling cable at a mine–

(a) conforms to UL standards or such other standards approved by the Director;

(b) incorporates a pilot core arranged to cut off the supply of electricity in the event of a break in the earthing circuit;

(c) is installed, located and used in a way that minimizes the risk of damage to the cable and to any connecting or coupling device; and

(d) is repaired and tested in accordance with UL standards or such other standards approved by the Director

Isolation of electrical equipment.

82. A competent person shall ensure that–

(a) electrical equipment at the mine is provided with full current isolating devices capable of being secured in the isolating position;

(b) the means referred to in clause (a) are used whenever it is necessary to isolate any electrical equipment;

(c) switches provided for earthing have facilities that allow the switch to be locked in either the on or off positions; and

(d) if it is not practicable to avoid work in close proximity to exposed live parts of electrical equipment, effective measures are taken to safeguard persons against that hazard.

Electrical plant exposed to electrical hazards.

83. (1) Where a plant constitutes electrical plant or the plant is exposed to electrical hazards, the mine manager shall ensure that–

(a) the plant is not used under conditions likely to give rise to risk of exposure of a person to an electrical hazard;

(b) appropriate permit to work systems are provided to avoid inadvertent energizing of plant that has been isolated, but not physically disconnected, from the electricity supply;

(c) only competent persons carry out electrical work on plant and machinery;

(d) if excavations are to be carried out, all relevant available information relating to the position of any underground cables is obtained and work is carried out in accordance with these Regulations; and

(e) control options for plant operating near overhead electrical power lines comply with the requirements of these Regulations.

(2) Where an electrical hazard causes damage to the plant, the mine manager shall ensure that;–

(a) the plant is disconnected from the electricity supply and is not used until the damaged part is repaired or replaced; and

(b) an 'out of service' tag is affixed to the plant and all the common isolation points for that plant and only removes the tags when there is no longer a risk of exposure to that hazard.

PART VII –WASTE DISPOSAL AND CONTAINMENT CONTROL

Tailing storage facilities.

84. A mineral right holder shall ensure that the long-term storage of tailings and the design of a tailing storage facility reflect the site conditions and are contructed and operated in a manner which minimises environmental impacts.

Above ground tailing storage facilities.

85. (1) A mineral right holder shall ensure that for above ground ground tailing storage facilities –

(a) tailings are stored behind a purpose built embankment and the design life of the facility is effectively in perpetuity;

(b) special consideration is given to any co-storage of waste rock and tailings material in the same facility due to potential complicating consequences of co-storage such as void volume in the rock material, the relative proportions of waste rock, tailings solids and tailings fluids, the strength of the waste rock material and its resistance to compaction and consolidation with a consequent reduction in void volume;

(c) there is no possibility of a potentially viable mineral resource being sterilised by the deposition; and

(d) rehabilitation measures are undertaken to ensure that there is no long-term environmental impact or public safety hazard.

(2) A mineral right holder shall ensure that the design and construction of a tailing storage facility is undertaken in accordance with its operating manual.

(3) A mineral right holder shall ensure that rehabilitation is carefully planned to ensure the tailing storage facility cannot be breached at the end of its service period and that rehabilitation must allow the containment area to return to its original condition.

(4) A mineral right holder shall design and operate the TSF to account for the presence of sulphide materials and their propensity to generate acid waste.

(5) A mineral right holder shall ensure–

(a) full compliance with all tailing storage facility regulations and self-certify that the facility is built and maintained in accordance with the operating manual;

(b) tailing storage facilities are categorised into three risk levels determined by increasingly adverse environmental and social consequences with a Category 3 TSF being a Low Hazard Potential, a Category 2 TSF a Significant Hazard Potential and a Category 1 TSF a High Hazard Potential;

(c) the hazard rating system is used–

(i) to categorise dams on the basis of probable loss of human life and the impacts on economic, environmental, and lifetime interests;

(ii) to select appropriate design criteria;

(d) design criteria is more conservative as the potential for loss of life and property damage increases.

(6) The categorisation of TSFs and dams shall be undertaken by an engineer approved under PERC.

(7) The mine manager or competent person may undertake risk assessments on the TSFs and dams.

Below ground tailing storage facilities.

86. (1) A mineral right holder shall seek specific approval from the Directror before developing a below ground TSF.

(2) A mineral right holder shall demonstrate to the Director–

(a) that extensive geotechnical, hydro-geological and environmental studies have been undertaken to establish the viability and long-term safety of below ground TSFs;

(b) that there is no possibility of a potentially viable mineral resource being sterilised by the deposition;

(c) that rehabilitation measures have been provided to ensure that there is no long-term environmental impact or public safety hazard;

(d) proof that there is no possibility that the safety in the operating underground mines

in the vicinity will be jeopardised by the proposed underground tailing storage facility; and

(e) that future underground mining beneath the stored tailings is not contemplated or likely.

Design and construction of tailing storage facilities.

87. (1) The design and operating requirement for category 1 and 2 TFSs shall be in accordance with Regulation 86.

(2) Category 1 TSFs shall require a considerably higher level of design and construction detail which is commensurate to the higher level of risk posed by these facilities.

(3) Categories 1 and 2 TSFs shall require design documentation and construction input from suitably qualified and experienced geotechnical or engineering specialists approved by PERC or similar and the construction of such TSFs shall be performed under the permanent supervision of such suitably qualified geotechnical or engineering specialists.

(4) A competent person shall complete, sign and submit the certificate of compliance of the TSF design to the Director.

(5) The person who supervised the construction category 1 and 2 TSF shall produce a construction report in the form prescribed by the geotechnical or engineering specialist confirming that the construction satisfies the design and all aspects which were to be covered and deliver the report along with a Certificate of Compliance of the Tailings Storage Facility Construction, to the Director.

(6) Category 3 TSFs shall be exempt from the detailed design requirements required for Category 1 and 2 TSFs, provided that Category 3 TSFs follows the guidelines for the design of a Category 3 TSF determined by a competent person.

(7) Category 3 TSFs shall be constructed with input from a suitably experienced contractor approved by PERC or similar with specialist supervision if required.

(8) The competent person who supervised the construction of Category 3TSF under clause 7 shall produce a construction report to confirm that the construction satisfies the design and all aspects which were to be covered as provided in the guidelines for the design of that Category 3 TSF and shall deliver a certificate of compliance of the TSF Construction to the Director.

(9) Applications for construction and operation of Categories 1 or 2 TSF shall include the following–

(a) a completed tailings storage data sheet;

(b) a design report prepared by a geotechnical or engineering specialist who is the holder of an annual practising certificate issued by PERC or by a professional body approved by PERC;

(c) a construction report with as built drawings prepared by a geotechnical or engineering specialist who is the holder of an annual practising certificate issued by PERC or by a professional body approved by PERC;

(d) a certificate of compliance of TSF Design signed by a geotechnical or engineering specialist who is the holder of an annual practising certificate issued by PERC or by a professional body approved by PERC;

(e) a certificate of compliance of TSF construction signed by a geotechnical or engineering specialist who is the holder of an annual practising certificate issued by PERC or by a professional body approved by PERC;

(10) Applications for the construction and operation of a Category 3 TSF shall include the following–

(a) a completed tailings storage data sheet;

(b) design guidelines;

(c) a construction report prepared by a competent person approved by PERC;

(d) a certificate of compliance of TSF design signed by the Competent Person approved by PERC or similar; and

(e) a certificate of compliance of TSF construction signed by a competent person approved by PERC .

Managing TSF.

88. (1) The mine manager shall produce an operating manual for all TSF.

(2) The Chief Executive Officer shall ensure that independent inspections and audit are conducted on all TSF by a geotechnical or engineering specialist who is the holder of an annual practising certificate issued by PERC or by a professional body approved by PERC as follows–

(a) for a category 1 TSF, annually;

(b) for a category 2 TSF, every two years; and

(c) for a category 3 TSF, every 3 years.

(3) Notwithstanding sub-regulation (2), the Chief Executive Officer shall ensure that an independent inspection on all TSF is conducted prior to and following the construction of a new lift or for a continuous process that any additional lifting will be done at an approved rate and within design parameters.

(4) The TSF inspection costs shall be borne by the mineral right holder.

(5) Prior to decommissioning a TSF the Chief Executive Officer shall ensure that an inspection and pre-decommissioning report is prepared by a geotechnical or engineering specialist who is the holder of an annual practising certificate issued by PERC or by a professional body approved by PERC.

Management of mineral processing reagents.

89. (1) The mine manger shall ensure, as far as practicable, that a material safety data sheet is available for each mineral processing reagent used or produced in a workplace at the mine and the information is readily accessible to all employees potentially at risk from the mineral processing reagent.

(2) A mineral right holder shall provide worker training on–

(a) hazards, precautions and procedures for the safe storage, handling and use of all potentially harmful materials relevant to each employee's task and work area;

(b) material safety data sheets for potentially harmful materials; and

(c) environmental, health and safety matters including accident prevention, safe lifting practices, safe chemical handling practices and proper control and maintenance of equipment and facilities;

(3) The mine manager shall ensure that as far as is practicable–

(a) any container at the mine used to hold a mineral processing reagent is manufactured from a suitable material and has a suitable design having regard to the physical and chemical properties of the substance;

(b) a safe means of disposal is provided for mineral processing reagent containers that are no longer needed or are empty;

(c) each mineral processing reagent container at the mine has an appropriate label on it and a person does not, without reasonable excuse, remove, deface, modify or alter such label;

(d) reduce the risk of a person being exposed to a mineral processing reagent at the mine by preventing exposure to the substance or hazard or by a means of a combination of the following methods–

(i) limiting the opportunity for potential exposure of the person to a mineral processing reagent;

(ii) using appropriate engineering and ventilation controls; and

(iii) adopting safe work practices.

(4) A person at a mine who disposes of a container (or empty container) of mineral processing reagents shall ensure that the container is disposed of using the safest means of disposal provided.

(5) The Mine Manager shall ensure that–

(a) any mineral processing reagent contained in an enclosed system at the mine, is identified to persons who are potentially at risk of being exposed to that substance;

(b) a suitable assessment is made of the consequences to the health of any person if exposed to mineral processing reagent and

if the assessment indicates a significant risk of exposure to a mineral processing reagent, a written report is prepared outlining means by which that risk may be reduced.

Containment control.

90. (1) A mineral right holder shall ensure that–

(a) waste disposal facilites are designed to prevent or limit the release of designated contaminants associated with waste disposal and that environmental measures such as the use of liners, hydrologic barriers, pH control materials, chemical treatment, wetland and bactericides drainage collection and treatment as well as underwater disposal are practiced;

(b) carefully designed systems such as liners, clay, grout curtains and slurry trenches are used to ensure containment of the waste such that the environmental goals set out in the Environmental and Social Regulations are met;

(c) adequate testing is done of the properties of waste materials at a given site as a means of managing waste;

(d) the effects on local surface water and groundwater systems are predicted before the start of operations and verified during mining operations in accordance with the mineral right holder's obligations under the Mines and Minerals (Environmental) Regulations or environmental management plan, as the case may be;

(e) the monitoring of surface and groundwater for possible contamination is carried out on a quarterly basis and that the sampling procedure, sampling devices, and preservatives do not contaminate the sample, react with the sample, or interfere with the analytical method;

(f) the operating manual contains procedures contained in sub-regulation (6) for collecting solid waste and testing it in order to predict contamination potential.

(2) Procedures for collection and testing of solid waste shall be site specific and shall take account of grain size, mineralogy, sulphate and metal content, water flow characteristics within and surrounding a waste site, availability of oxygen and water to initiate geochemical reactions, pH, temperature, presence and degree of activity of sulphide-oxidizing bacteria, the presence or absence of neutralizing material such as carbonates and furthermore, procedures for the control potential for the formation of acid forming material through the measurement of acid generating potential and acid neutralising capacity.

(3) The collection and disposal of solid waste shall be conducted in a manner which minimises environmental damage.

(4) A mineral right holder shall –

(a) ensure that water control systems are engineered to handle pooling and runoff from waste facilities;

(b) provide up-gradient drainage basins; and

(c) develop barriers designed to prevent infiltration and recharge of groundwater and cap waste piles and ponds, where necessary to prevent the infiltration of rainwater with cement slurries or chemical grouts or use interceptor wells in order to draw off recharge water before it reaches a waste dump.

PART VIII—STORAGE AND TRANSPORTATION OF MINERALS

Transport and storage.

91. (1) A mineral right holder shall ensure that transportation and storage of minerals are conducted in a safe manner and have the least possible impact on the environment and local communities.

(2) Where the transport and storage of minerals extends outside of a licensed mining area the mineral right holder shall comply with the general laws and regulations relating to transport and where none exists these Regulations shall apply.

(3) Where the transport and storage of minerals are within a licensed mining area the mineral right holder shall comply with these Regulations and the instructions of the Director.

(4) If any storage facility or transport infrastructure used by the mineral rights holder belongs to the Government, the mineral right holder shall obtain permission from the Government for the use of such storage or transport facilities, provided that such permission shall not be unreasonably withheld.

(5) The terms of any usage agreement between the Government and the relevant mineral right holder may include the following obligations on mineral right holders to–

(a) pay user fees;

(b) repair facilities; and

(c) take protective measures to safeguard the public against spillage.

(6) The Director may require that a particular facility or piece of infrastructure such as haulage roads or other facilities, owned and operated by a mineral right holder be used by the general public.

(7) The Director shall ensure that requests made by the mineral rights holder under sub-regulation (4) are made reasonably and all decisions are made taking into account the rights of the mineral right holder and the local community.

(8) All requests for shared usage of facility or infrastructure shall be subject to a separate agreement between the Government and the relevant mineral right holder.

Mine waste dump.

92. (1) A mineral right holder shall develop a mine waste dump plan at least 14 days before constructing the dump, roads and ramps that are part of the mine waste dump.

(2) A mine waste dump plan referred to in sub-regulation (1) shall include –

(a) the proposed location of the mine waste dump, roads and ramps;

(b) the grades of each road and ramp;

(c) the initial location of mine waste dump berms and blocks and projected movement patterns;

(d) the location of restricted areas; and

(e) all safety procedures to be implemented, including signalling procedures.

(3) The mine waste dump plan referred to in sub-regulation (1) shall be designed by a professional engineer approved by PERC if at least one of the following circumstances exists–

(a) the mine dump plan contemplates a total dump volume in excess of one million cubic metres;

(b) the mine dump plan contemplates a dump height in excess of fifty metres;

(c) the mine dump plan contemplates a dump area in excess of five hectares;

(d) the mine dump is to be located on a natural or trimmed slope that is steeper than twenty degrees from the horizontal plane; or

(e) the proposed dump location poses a hazard to a building, road, power transmission line, pipeline or major watercourse.

(4) A mineral right holder shall ensure that the mine dump plan referred to in this regulation is made readily available to workers at the mine.

(5) A mineral right holder shall ensure that a dump located at a mine is–

(a) constructed in accordance with the mine dump plan;

(b) maintained in a stable and safe condition;

(c) capable of supporting any vehicle intended for use on the mine dump; and

(d) not placed in an area in which mineral resources exist.

(4) Where a bank is more than three metres high, the mine manager shall ensure that no material is dumped over the edge of the bank or within three metres of the crest of the mine dump berm unless–

(a) in the case of a truck, there is a dump block sufficient to prevent the truck from going over the dump edge;

(b) there is a dump berm or a competent dump signaller to direct the truck operator;

(c) there is a dump berm that is continually maintained; and

(d) in the case of a rubber-tired front-end loader, there is a dump berm or a dump block.

(5) Where a dump berm or dump block is installed at a mine dump, the mine manager shall ensure that the height of the berm or block is the lesser of–

(a) half of the height of the largest tire found on any vehicle used for dumping; or

(b) the maximum height over which a truck is capable of dumping.

(6) The dump berm or dump block referred to in sub-regulation (5) shall be a structure fixed to the ground designed by a professional engineer approved by PERC.

Stock-pile.

93. (1) Where material is to be stored in a stockpile the mine manager shall–

(a) develop a work plan for the operation of the stockpile to ensure the health and safety of workers who work on or near the stockpile;

(b) make a copy of the work plan readily available to workers at the stockpile; and

(c) ensure that all workers and contractors comply with the work plan.

(2) A work plan for the operation of a stockpile shall be in writing and shall include–

(a) supervision of the operation;

(b) training of workers;

(c) any necessary limits on the use of equipment on or near the stockpile;

(d) control of the formation of dangerous slopes and the undermining of the stockpile; and

(e) control of draw-points and dumping operations.

Minerals on belt conveyors.

94. (1) A mineral right holder shall design and the mine manager shall enforce a code of safety practice for the installation, operation, maintenance and patrol of a belt conveyor system at a mine where a belt converyor is used.

(2) The mine manager shall ensure that –

(a) subject to sub-regulation (3) no worker rides on a conveyor belt or crosses a belt conveyor that has not been locked out;

(b) every accessible section of the belt conveyor is equipped with a pull cord or other device approved by the Director that is capable of immediately stopping the conveyor in the case of an emergency;

(c) the belt conveyor is equipped with controls that can be reset manually after an emergency stop;

(d) the head pulley to the tail pulley is located to maximize its effective use;

(e) an attendant is stationed at the driving head of the conveyor and effective means are provided to allow for a worker to signal such attendant from any point along the length of the conveyor;

(f) all belt conveyors which are in excess of fifteen metres long contain a belt-slip detection device which is designed to stop the drive motor in the case of a belt blockage or belt slippage;

(g) all belt conveyors are equipped with an effective start-up warning device if a conveyor is started by remote control or if any portion of the conveyor is not visible to the worker starting the conveyor.

(h) all belt conveyors installed underground meet the required standards of fire-performance and antistatic requirements for conveyor belting as approved by the Director;

(i) suitable and adequate automatic fire suppression system is installed at the conveyor drive pulley;

(j) suitable and adequate means for extinguishing fires are available for immediate use at the driving head of every belt conveyor and at acceptable distances along the length of every belt conveyor; and

(k) where two or more belt conveyors are used, a sequence interlocking programme shall be provided which will automatically stop all other conveyors from feeding a conveyor which has stopped and prevent a conveyor from starting until the conveyor onto which it feed is moving.

(3) A worker may cross a belt conveyor on a walkway that has guardrails and is at least 750 millimetres wide.

(4) The start-up warning device referred to in clause (g) of sub-regulation (2) shall be located at suitable intervals along a conveyor and shall have a mechanism that provides a ten second delay between the sounding of the warning and the start-up of the conveyor.

(5) If a worker is at risk from being caught in a pinch point at the head, tail, drive or tension pulleys of a belt conveyor, the pinch point shall be protected by an effective safeguard and the safeguard extends at least one metre beyond the pinch point.

(6) Where an elevated conveyor crosses over a place where a worker may pass or work, the mine manager shall ensure it is safe to do so and where appropriate, establish additional safety measures.

(7) Where a temporary extensible belt conveyor is used underground, the mine manager shall ensure that–

(a) the conveyor is equipped with pull cords, a start-up warning device and or emergency stop controls that are located at the drive unit, the delivery end and if reasonably practicable, the return end;

(b) the pull cord or emergency stop controls referred to in clause (a) are located in areas that maximize their effective use;

(c) no worker is in an area of a conveyor belt that is not protected by pull cords or emergency stop controls; and

(d) at each entrance to a room where the conveyor is located, notices are posted that are conspicuous and legible and inform workers of the requirements in clause (c).

(8) Where aligning the belt of a temporary extensible belt converyor requires the belt to be in motion, the mine manger shall–

(a) develop a procedure designed to keep workers out of direct contact with any moving part of the belt conveyor while the workers are aligning the belt, and ensure that workers are trained in the procedure; or

(b) ensure that the belt conveyor is equipped with an alternative approved device that is capable of stopping the belt conveyor in the case of an emergency.

Haulage truck transportation.

95. (1) Notwithstanding the general law relating to road traffic, the mine manager shall ensure that–

(a) only competent persons are permitted to operate a vehicle;

(b) earthmoving equipment operators pass a medical test to have their hearing, vision and general fitness examined and such test shall take place at intervals of not more than two years or at such other times as may be required by a medical practitioner or the mine manager; and

(c) every vehicle is operated in a safe manner and the drive does not exceed speed that is reasonable and safe.

(2) The mine manager shall ensure that–

(a) a vehicle record is provided for each vehicle;

(b) a vehicle maintenance record is provided for each vehicle;

(c) the details of each pre-operation inspection conducted in accordance with these Regulations are recorded in the vehicle record by the person who performed the inspection;

(d) each vehicle record and maintenance record is kept readily available to the operator of the vehicle or, if reasonably practicable, with the vehicle;

(e) vehicles are maintained and repaired by a competent person; and

(f) the details of maintenance and repairs of a vehicle are recorded by a competent person.

(3) A mineral right holder shall ensure that –

(a) haul roads and site roads are designed in a manner to ensure safety and environmental acceptability and that effective precautions are taken to prevent vehicles or plant from accidentally leaving haul roads and site roads;

(b) haul roads are suitable for the type and size of machinery and loads used on them;

(c) haul roads are designed to avoid dangerous sharp bends and where necessary, erect safety barriers;

(d) haul roads are maintained so as to limit and minimise the development of bumps, ruts or potholes which may make control of vehicles difficult or cause health problems due to whole-body vibration;

(e) the gradient of the haul roads are appropriate for the number, size, type and load of vehicles using the roads and for rigid bodied vehicles, except that steep roads over short distances of not more than 10 metres, may be designed no steeper than 1 vertical in 10 horizontal;

(d) speed limits are suitable for the vehicle braking capabilities, loads, road gradient and site conditions;

(f) sight lines are maintained on all roads to assist drivers with safe stopping distances;

(g) where tight bends are unavoidable, the design is adequate to mitigate the risks of a vehicle leaving the carriageway on the bend; and

(h) the width of the carriageway is at least, two times the width of the largest vehicle to use the road and for a two-way road, the running width is three and a half times the largest vehicle width.

(4) The driver of a haul truck shall not enter or leave the cab while the truck is being loaded.

(5) The driver of a shovel or loader shall not cause the bucket of the shovel or loader to be traversed over the driver's cab of a truck or other motor vehicle during load operations.

(6) For the safe dumping of rock or minerals the mine manger shall ensure that–

(a) rock or other material are not dumped from a truck over a bank or into a bin at the mine unless there is an effective back stop provided or a person suitably stationed to guide and direct the driver of the motor vehicle to a safe dumping position;

(b) marker guides or other effective signs are placed to indicate to the driver of the truck the limit of safe approach to the tipping area;

(c) the dumping area is illuminated by stationary lights designed to provide effective illumination to the working area and to the edge of the dump area;

(d) a system is established to ensure the stability of a dumping area if rock or other material is to be dumped from a truck over any bank or bench; and

(e) no dumping is carried out over the edge of a stockpile when loading out from the base of the stockpile is taking place unless the load-out area is at a sufficient distance that it will not undermine the dumping location.

(7) If a restricted visibility vehicle is used in an open pit mine, the mine manager or contractor shall ensure that no other vehicle approaches the vehicle unless that other vehicle is equipped with an effective means to indicate its presence to the operator of the restricted visibility vehicle.

(8) The mine manager shall ensure that all vehicles used in an open pit mine operate within a safe operating distance from other vehicles.

(9) If a remote-controlled vehicle is used, the mine manager shall develop and implement a written plan for the operation of remote-controlled vehicles and the plan shall address the safe installation, operation and maintenance of remote-controlled vehicles and in addition, shall include the following -

(a) the location of the operator;

(b) the training of workers to be operators;

(c) the location and arrangement of controls and safeguards;

(d) the design and arrangement of transmitters and receivers to prevent inadvertent activation;

(e) the procedure to change an identification code and radio frequency for transmitters and receivers;

(f) the testing, inspection and maintenance procedures, including the frequency of the testing, inspection and maintenance; and

(g) the procedure for extrication of a remote-controlled vehicle from a hazardous location.

(10) To promote the safe operation of remote controlled vehicles, the mine manager shall ensure that–

(a) the operator of a remote-controlled vehicle is in a safe location at all times while the control unit of the vehicle is energized;

(b) the control unit for a remote-controlled vehicle is de-energized when the control unit is not in use;

(c) a control unit operates only one vehicle;

(d) the remote-controlled vehicle is designed so that it will not be activated by any radio signal other than the signal from that vehicle's control unit;

(e) no remote-controlled vehicle can accidentally start by remote control;

(f) a remote-controlled vehicle only moves by remote control when direct pressure is applied to the controls on the control unit for that remote-controlled vehicle;

(g) the remote-controlled vehicle is equipped with a selector switch that enables the operator to operate the vehicle either manually or by remote control;

(h) the control unit is equipped with a device that warns the operator when the control unit is energized;

(i) the control unit for each remote-controlled vehicle is equipped with controls that are the same as, or similar to, the manual controls on the remote- controlled vehicle; and

(j) the control unit contains an emergency stop button and a tilt switch that, when the control unit is tilted more than forty five degrees from vertical, deactivates the controls on the remote-controlled vehicle and applies the brakes.

(13) Notwithstanding the general law relating to road traffic, the speed limit for mine related vehicles shall be–

(a) 60 kilometres per hour for vehicles travelling on a public road or section thereof situated within an urban area;

(b) 80 kilometres per hour for vehicles travelling on a public road or section thereof situated outside an urban area; and

(c) 60 kilometres per hour for goods vehicles or vehicles with trailer with a gross vehicle mass exceeding 9 000 kilograms.

(14) No person shall operate a vehicle fitted with pneumatic tyres, on a public road, at a speed in excess of the speed specified by the tyre manufacturer.

(15) A mineral right holder shall ensure that large professionally produced signs with durable surfaces shall be installed throughout a mine haul road system indicating amongst other things, speed limits, height of electrical installations, type of vehicle permitted on the road, and the mine manager shall ensure the routine maintenance and cleaning of such signs to ensure visibility.

(16) Where vehicles are operating in an open pit environment, the mine manager shall ensure that all vehicles are equipped with suitable high-pole flags and flashing beacons to improve their visibility.

Rail transportation.

96. (1) A mine manager or a competent person appointed by the Chief Executive officer shall ensure that no train operates at the mine unless operating rules including signals and signal codes are developed for the railway and aproved by the Director.

(2) The operating rules referred to in sub-regulation (1) shall clearly specify standards, procedures, duties and methods of working on railway transportation and shall be designed in a manner to ensure that persons operating the railway in accordance with those Regulations are not exposed to hazards.

(3) A mineral right holder shall ensure that the operating rules referred to in sub-regulation (1) are not amended, suspended or cancelled unless the amendment, suspension or cancellation is–

(a) approved in writing by the Director;

(b) an unforeseen occurrence which makes the application of any operating rule temporarily impracticable or exposes a dangerous defect or deficiency in the rules;

(4) A mineral right holder or a competent person shall ensure that–

(a) each person employed in a railway operation at the mine, who has duties set out in the operating rules, has access to a copy of the operating rules and all signal codes for the railway;

(b) a person is not employed as a controller, locomotive driver, member of a train crew or as the driver of any railway vehicle at the mine unless the person has satisfied the mine manager, or a person appointed by the mine manager for that purpose, that he is fully conversant with the relevant operating rules, including signals and signal codes and is competent to discharge such duties;

(c) a person is not employed in any capacity on a main line on which a railway vehicle is running unless the person is under the supervision of a person who is fully conversant with the relevant operating rules, including signals and signal codes;

(d) the code of signals and signalling practice used in relation to railway operations at the mine are consistent with good railway operating practice and is included in the railway operating rules.

(5) Subject to this Regulation no person shall drive a railway vehicle on a railway track unless that person –

(a) has been issued with a certificate certifying that he is competent to drive and operate that railway vehicle;

(b) is undergoing instruction or training and is supervised by a qualified instructor; or

(c) is driving the railway vehicle for maintenance purposes and is properly trained to perform maintenance work on the railway vehicle.

(6) Each controller, member of a train crew or other person employed in any capacity in relation to a railway must pass a medical test before a medical practitioner to have the person's hearing, vision and general fitness examined and such test shall take place at intervals of not more than two years or at such other times as may be required by a medical practitioner, or the Mine Manager, or competent Person.

(7) A mineral right holder shall ensure that–

(a) each railway track, track formation, cutting, culvert, bridge, tunnel or other structure containing or supporting the railway track are designed, constructed, inspected, tested and maintained so that persons using such structures are not exposed to hazards provided that they are using the structures in accordance with the operating rules;

(b) each locomotive, item of rolling stock machinery and plant used in operating railway systems is designed, constructed, inspected, tested and maintained so that persons using it are not exposed to hazards.

Marine transportation.

97. (1) Notwithstanding the Sierra Leone Maritime Administration Act, 2000 (Act No.11 of 2000), the Merchant Shipping Act, 2003(Act No. 3 of 2003) or other laws governing marine transportation or the transportation of workers by sea, the Director may apply such international maritime standards as he may deem appropriate.

(2) Vessels not propelled by mechanical means shall not carry any passengers unless specifically authorized by the relevant authority.

(3) The maximum number of passengers carried on board a passenger vessel or a cargo-passenger vessel shall not exceed the number specified on the certificate of seaworthiness.

(4) A notice showing the maximum number of passengers permitted to be carried on specific decks and in specific spaces, calculated in accordance with good engineering practice shall be clearly displayed at the access to each deck and space.

(5) All vessels propelled by mechanical means shall carry adequate information including drawings, plans and instruction manuals necessary for the safe carriage, operation and safety of life.

(6) Vessels designed, constructed and maintained in compliance with the structural, mechanical and electrical requirements of a reputable international classification society may be accepted as complying with the relevant requirements of these Regulations.

(7) A mineral right holder and the master of the vessel shall be responsible for–

(a) compliance with these Regulations; and

(b) ensuring the vessel is managed in a manner which minimises environmental damage.

(8) The master of a vessel 10m and above in length shall keep an official log book in the form required by the Sierra Leone Marine Administration and shall update the log book as required by other relevant authority.

(9) Every vessel when in a Sierra Leone port shall be subject to control by officers duly authorized by the Sierra Leone Marine Administration or other relevant authority.

(10) All vessels shall carry a certificate of seaworthiness which verifies compliance of the vessel with the technical requirements in these Regulations.

(11) The minimum freeboard shall be that freeboard at which vessels in the maximum condition of loading meet the stability requirements as determined by a stability proof test, or other requirements stipulated by the Sierra Leone Marine Administration in relation to the type of vessel in question, its service and its area of operation.

(12) All vessels with dry weight (DWT) of 500 Mt or greater shall require confirmation of the vessel stability by a naval architect with professional accreditation acceptable to PERC or similar.

(13) A vessel master shall ensure that the loading marks of a vessel are not submerged at any time during the departure, carriage or arrival of a vessel.

(14) A vessel master shall ensure that stability information is provided for all vessels that are 20m and above in length, provided that the Sierra Leone Marine Administration may require stability information to be provided on vessels less than 20m in length.

(15) All vessels shall be fitted with a fire extinguishing systems and in addition, all vessels which are 25m and above in length shall be fitted with a fixed fire extinguishing system in the engine room.

(16) A vessel master shall ensure that all details of the fire extinguishing systems are entered into a record of equipment and vessel information located on the ship.

(17) All life-saving appliances and arrangements must be approved by the Sierra Leone Marine Administration.

(18) All vessels shall be fitted with radio communications equipment and in addition, vessels which are 10m and above in length and all passenger vessels and cargo-passenger vessels, regardless

of length shall carry radio apparatus capable under normal conditions of transmitting and receiving messages over a distance of 50 nautical miles on frequencies designated by the Sierra Leone Marine Administration.

Carriage of radioactive substances.

98. A mineral right holder shall ensure that the carriage of a radioactive substance by any mode of transportation shall be in accordance with International Maritime Solid Bulk Cargoes Code.

PART IX—EXPLOSIVES AND BLASTING

Blasting and explosive

99. Notwistanding the law relating to explosives the Director, with the concurrence of other appropriate authorities and subject to the relevant licensing requirements, shall authorise mineral right holders to purchase, transport, import, supply or use explosives.

Import licence.

100. (1) The importation of explosives into Sierra Leone shall not be allowed by the Director under these Regulations unless it is proven that the explosives are required for a particular mining operation.

(2) Permission to import explosives shall be made to the Director who, following consultation with the relevant licensing authority, shall issue a licence to a mineral right holder in the prescribed form.

(3) A licence to import explosives pursuant to this Regulation, shall be issued for a period of one year and subject to the permission of the Director, may be renewable annually.

Supply licence.

101. (1) A licence to supply explosives authorises the licensee to carry out the following activities–

(a) supply and export explosives or explosive precursors specified in the licence;

(b) possess explosives or explosive precursors for the purpose of supplying them under the licence; and

(c) store explosives or explosives precursors at a premises if premises is specified in the licence.

(2) Permission to supply, including to export, explosives must be made to the Director who will issue a licence with the concurrence of the Sierra Leone Police or other relevant authority in the prescribed form.

(3) A licence to supply explosives shall be issued for a period of one year and subject to the permission of the Director, may be renewed annually.

Transport-tation licence.

102. (1) A mineral right holder who wishes to transport explosives by vehicle or sea vessel into Sierra Leone and within various areas in Sierra Leone outside the mining area of the mineral right holder shall apply for a licence.

(2) Application for the transportation of explosives shall be made to the Director who shall issue a licence, with the concurrence of the Sierra Leone Police or such authority responsible for the issuing of explosives licence, for the transportation of explosives.

(3) The Director shall issue an explosives transport licence in the prescribed form based on the applicant being able to demonstrate the safe transport of explosives.

(4) The holder of a licence to transport explosives shall also ensure compliance with these Regulations relating to the road transportation or conveyance by sea as the case may be.

(5) A licence to transport explosives issued under this Regulation shall be issued for a period of one year and subject to the permission of the Director be renewed annually.

Storage licence.

103. (1) A mineral right holder shall be allowed to store explosives in various areas under certain prescribed conditions.

(2) Permission to store explosives shall be made to the Director who shall issue a licence with the concurrence of the Sierra Leone Police or other such authority responsible for the issuing of licence for the storage of explosives.

(3) The Director shall issue an explosives storage licence in the prescribed form based on the applicant being able to demonstrate the safe storage of explosives.

(4) The holder of a licence to store explosives issued under this Regulation shall ensure compliance with these Regulations relating to the storage of explosives in magazine, day boxes or vehicles and the safety measures relating to storage contained herein.

(5) A licence to store explosives shall be issued for a period of one year and subject to the permission of the Director be renewed annually.

Blasting licence.

104. (1) A mineral right holder who wishes to use explosives shall apply for for a blasting licence.

(2) Application for a blasting licence shall be made to the Director who shall issue a licence with the concurrence of the Sierra Leone Police or other such authority responsible for the issuing of blasting licences.

(3) A blasting licence shall be issued in the prescribed form for a period of one year and subject to the permission of the Director, shall be renewed annually.

(4) All explosives and blasting licences issued under this Regulation may be suspended or revoked by order of the Director for good and sufficient reasons.

(5) A mineral right holder may appeal to the Board, against the decision of the Director to revoke or suspend the blaster's licence and the Board shall review the decision of the Director in not less than 14 days from the date that the appeal was lodged.

(6) The opinion of the Board in sub-regulation (5), shall be final and binding.

Blaster's Certificate.

105. (1) A blasting certificate shall enable the holder to oversee a number of blasting operations at any place where such operations are in progress and shall not be limited to a single batch of explosives which would be subjected to an individual licence.

(2) An application for a temporary blasting licence shall be obtained from following a comprehensive learning programme of not less than nine months, which must have included at least three months of experimental training obtained at a working mine face.

(3) A temporary blasting certificate may be made permanent when a temporary licence holder, in addition to the requirement in sub-regulation (2), completes at least six months of training in blasting under the direct supervision of a certified and competent permanent blaster.

(4) Following the training referred to in sub-regulation (3), a temporary blasting certificate holder shall request permission from the Director to obtain a blaster's certificate.

(5) The Director shall verify that the applicant has completed the training mentioned in sub-regulations (2) and (3) with the concurrence of the Sierra Leone Police or other such authority responsible for the issuing of a blaster's certificate.

(6) A blaster's certificate shall be issued for a period of five years and subject to the approval of the Director, who may require the certificate holder to undertake refresher training, every five years.

(7) At every place where blasting operations are in progress the Mine Manager shall be responsible for enforcing these Regulations and that persons conducting blasting operations are made aware of the relevant Regulations.

(8) Every team of blasters shall be of such a size as can be properly and efficiently supervised.

(9) No person shall conduct a blasting operation or require or permit any other person to conduct a blasting operation unless that person–

(a) is trained and competent to act as a blaster; and

(b) holds a valid blaster's certificate.

(10) The Director may conduct tests for blasters prior to the issuance of a blaster's certificate.

(11) In special circumstances, the Director may issue certificates based on the qualifications and experience of blasters obtained out of Sierra Leone.

(12) If the Director suspends or revokes a blaster's certificate, the blaster shall immediately inform the mineral right holder of the suspension or revocation and the reasons for it.

(13) The Director in consultation with the Board may, at any time, revoke or suspend a blaster's certificate if the blaster fails to comply with any term or condition of the blaster's certificate subject to prior written notice delivered to the mineral right holder clearly stating the reason for the revocation or suspension of the blaster's certificate.

(14) A person whose blaster's certificate is revoked under this Regulation may appeal to the Board, against the decision of the Director to revoke or suspend the blaster's certificate and the Board shall review the decision of the Director in not less than 14 days from the date that the appeal was lodged.

(15) The opinion of the Board shall be final and binding.

(16) Any person who obtains a blasting certificate shall maintain a pilot log which shall record the details of every blast undertaken.

Application for licecnce to construct mining magazine.

106. (1) An application for permission to erect a magazine and the licensing for the storage of explosives shall be made to the Director and such application shall be accompanied by–

(a) plans of the proposed magazine;

(b) the surrounding works;

(c) a plan of the proposed site in relation to other magazines, human dwellings, buildings, roads, railways, engines, furnaces, boilers and other places to which the public has access.

(2) No mining magazine shall be constructed within 400 metre radius of any human dwelling.

(3) Every application shall include full information as to the rights of the applicant over the site upon which the magazine is to be built.

(4) Every magazine shall be inspected by a competent person before being passed as fit for the storage of explosives.

(5) Following inspection and verification pursuant to sub-regulations (1), (3) and (4) the Director shall issue a magazine licence in the name of the applicant.

(6) A copy of the plan and specifications approved shall be attached to and shall form part of the licence.

(7) Pending the issue of a licence, explosives may be stored in a magazine with the permission, in writing, by the Director.

(8) Every licence shall state the maximum quantity and the nature of the explosives which may be stored in the magazine and the manner in which they are to be stored.

(9) The following general rules shall apply to the design of the magazine–

(a) the magazine shall be surrounded by an adequate fence;

(b) access through such fence shall be obtained by means of a gate which shall, when not in use, be kept securely locked;

(c) the magazine shall be proofed against sun, rain and fire, be properly drained and ventilated and have a substantial door and lock; and

(d) the magazine shall contain adequate protection against lightening.

(10) The surface magazine shall be protected on all sides by an earth bank which shall be–

(a) as high as the roof eaves and at least three metres in thickness at the top; and

(b) at the bottom of the inner slope of the bank, not less than two metres, nor more than three metres from the walls of the magazine, except at the entrance; and

(c) protected by an outer earth wall at the entrance.

(11) Every underground magazine shall be made according to the specifications and plans approved by the Chief Inspector of Mines.

(12) Every plan submitted to the Director for the construction of an underground magazine shall provide for the ventilation of such magazine.

(13) The Director may revoke any magazine licence issued in accordance with this Regulation if he is satisfied that the holder is no longer a suitable person to hold a magazine licence and until an appeal has been decided in accordance with sub-regulation (14), the licence shall be deemed to have been suspended.

(14) A person whose licence is revoked under this Regulation may appeal to the Board, against the decision of the Director to revoke or suspend his licence and the Board shall review the decision of the Director in not less than 14 days from the date that the appeal was lodged.

(15) The opinion of the Board shall be final and binding.

(16) Every magazine licence shall be valid until revoked, expired or surrendered.

(17) Any licence issued under this Regulation becomes invalid if the magazine is used for any purpose not provided for in the licence.

(18) In the case of an applicant for a mining lease, mining right or exclusive prospecting licence, the magazine licence shall be deemed to be void in the event of the application for mining lease, mining right or exclusive prospecting licence being refused as from the date of such refusal.

Manufacture of explosives.

107. (1) Subject to the Explosives Act, no person shall manufacture either wholly or in part any authorised explosives in or on any premises except in an explosives manufacturing site.

(2) Subject to the Explosives Act, no person shall manufacture any unauthorised explosives unless they are manufactured for the purposes of research or development and in such quantities and under such conditions as the Chief Inspector of Mines may determine.

(3) No unauthorised explosives manufactured in accordance with sub-regulaiton (2) may be sold.

(4) No person shall–

(a) divide any explosives into their components, otherwise break down any explosives or remove any identification mark from any explosives;

(b) make any unserviceable explosives fit for use; or

(c) remake or rework any explosives, unless it is done on a licensed explosives manufacturing site.

(5) Subject to the Explosives Act, the Chief Inspector of Mines may grant an applicant a manufacturing licence, subject to any written conditions for–

(a) a premises where explosives are manufactured for testing;

(b) a premises where such explosives are prepared for immediate use;

(c) any tertiary educational institution for the purposes of training or instruction; or

(d) any laboratory or testing facility registered with the Chief Inspector of Mines, provided that the relevant building is adequately secured.

(6) The Director shall revoke any explosives manufacturing licence issued under this Regulaton if he is satisfied that the holder is no longer a suitable person to hold such licence and until an appeal has been decided, the licence shall be deemed to have been suspended.

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(7) A person whose licence is revoked under this Regulation may appeal to the Board, against the decision of the Director to revoke or suspend his and the Board shall review the decision of the Director in not less than 14 days from the date that the appeal was lodged.

(8) The opinion of the Board shall be final and binding.

(9) Any licence issued under this Regulation becomes invalid if the explosives manufacturing site is used for any purpose not provided for in the licence.

Road transport-ation of explosives.

108. (1) A mineral right holder who holds an explosive transport licence shall ensure that–

(a) any vehicle used for transporting explosives, explosive precursors, detonators or detonating cord is maintained in good mechanical condition;

(b) any metal parts on a vehicle used for transporting explosives that may come in contact with a container of explosives is covered with suitable non-sparking material;

(c) any vehicle used for transporting explosives is equipped with–

(i) two multi-purpose dry chemical fire extinguishers that are readily available to the driver of the vehicle;

(ii) a battery disconnect; and

(iii) a flashing red light attached to the vehicle in a visible location if there is the possibility that the vehicle will be used in conditions of reduced visibility;

(d) any vehicle used for transporting explosives is equipped with placards that are clearly visible and legible and are placed on each side and each end of the vehicle so that the placards are visible from any direction and are displayed on a contrasting background which is different from any other marking with which the placards might be confused;

(e) any vehicle used to transport explosives is under the charge of a worker who holds a valid blaster's certificate and shall not be left unattended unless–

(i) the mine manager designates a vehicle that may only be used for transporting and holding explosives;

(ii) the vehicle is parked in an area that is designated by the mine manager as an area in which a vehicle transporting explosives may be parked; and

(iii) the supervisor records the details of the vehicle's load and location in the shift record;

(f) the driver of a vehicle used to transport explosives drives in a careful manner and at a speed that is reasonable for the prevailing conditions;

(g) other than those workers who are necessary for the handling of the explosives, no worker travels in or on a vehicle that is used to transport explosives;

(h) if a vehicle is used to transport explosives no other materials are carried in or on the vehicle;

(i) the explosives are safely secured and the vehicle is not loaded to more than 80% of its rated carrying capacity;

(j) the engine of the vehicle is not left running during loading or unloading of the explosives unless a device powered by the vehicle's engine is used for the loading or unloading;

(k) any explosives not required for immediate use are returned to a magazine and not left in the vehicle;

(l) no vehicle is re-fuelled while it is being used to transport explosives, except in the event of an emergency;

(m) no detonators are carried with explosives unless they are effectively separated;

(n) all expired explosives are removed from any vehicle used for the transportation of explosives; and

(o) no contraband is contained in the cab of the vehicle transporting the explosives.

Conveyance by sea.

109. (1) A person engaged in shipping, unshipping, explosives landing or conveying of explosives shall–

(a) take all precautions to prevent accidents caused by fire, explosives or concussion;

(b) shall abstain from performing any act which is not related to the shipping, unshipping, landing and conveying of explosives;

(c) use every reasonable effort to prevent–

(i) unauthorized persons from gaining access to the explosives, and

(ii) any person from breaching this Regulation.

(2) No vessel upon which explosives in bulk are being conveyed shall be anchored or berthed at any place less than one hundred metres from any building, public road or railway.

(3) Every carriage used for the transport of explosives in bulk shall carry a red flag clearly visible from in front and behind the vessel.

Storage of explosives.

110. (1) A holder of an explosives storage licence may designate any of the following as places, that meet the requirements in these Reguations, in which explosives may be stored–

(a) a magazine or day box;

(b) a storage area; and

(c) a vehicle.

(2) A holder of an explosives storage licence shall ensure that–

(a) all explosives, detonators and detonating cords that are not required for immediate use are stored in a magazine;

(b) the quantity of explosives, detonators and detonating cords stored in a magazine does not exceed the maximum quantity specified in the permit for that magazine, and the quantity shall not exceed in the case of a magazine located–

(i) on the surface, the amount necessary to operate the mine for one year; and

(ii) underground, the amount necessary to operate the mine at peak production for eight days.

(3) Explosives, detonators and detonating cords may be stored temporarily underground in a day box or in a designated vehicle.

(4) If explosives, detonators or detonating cords are stored temporarily underground in a day box the mine manager shall ensure that the quantity stored does not exceed 150 kilograms.

(5) An explosives storage licence holder shall ensure that–

(a) explosives or detonating cords are not stored in the same magazine or day box in which detonators are stored and explosives or detonating cords are not stored in the same area of a vehicle in which detonators are stored;

(b) a copy of all regulations and workplace procedures relating to the safe storage and handling of explosives, detonators and detonating cords in a magazine are clearly posted in each magazine;

(c) all old or expired explosives are not stored and if found are immediately removed from storage; and

(d) if explosives, detonators or detonating cords are removed from storage for use, the mine manager shall ensure that any unused explosives, detonators or detonating cords are returned to a magazine, day box or designated vehicle.

(6) A holder of an explosives storage licence shall ensure that if detonators are stored underground–

(a) they are stored in separate closed containers or magazines; and

(b) except if they are stored in a designated vehicle, are not located within fifteen metres of a magazine or day box containing explosives.

Safety measures.

111. (1) Every place where explosives are stored shall have a sign in a conspicuous area containing the word "DANGER" and underneath it the word "EXPLOSIVES" or "DETONATORS", as the case may be, and the words "NO SMOKING" displayed in such manner as to be clearly visible to any person approaching such place and with respect to a magazine, such warnings shall be displayed at the outer gate of the magazine and on each door.

(2) No structural alterations shall be made to a magazine unless the licence has been endorsed by the Director and the specifications and plans varied accordingly.

(3) No repairs shall, except in case of urgency, be made to any magazine except with the written permission of a competent person who may direct the removal of the explosives before the repair is carried out.

(4) No electric power cable shall be carried above ground within thirty metres of a magazine.

(5) No artificial light other than a self-contained battery electric hand lamp or a safety lamp of a type approved by the Chief Inspector of Mines shall be used in any magazine.

(6) The ground for a distance of forty metres from the magazine building on all sides shall be kept clean and free form long grass and vegetation.

(7) All reasonable precautions shall be taken to guard against unlawful entry at the magazine or damage by fire or moisture.

(8) Where a sentry or watchman is employed his shelter shall be outside the fence surrounding the magazine.

(9) Except in respect of a safety fuse, no materials other than the explosives specified in the licence shall be kept in any magazine.

(10) An efficient fire extinguisher of a design pattern approved by the Director shall be kept in every magazine.

(11) Explosives shall not be stored more than two metre high, and shall be stored in regular layers, and in such manner to facilitate the inspection and extraction of the explosives in rotation.

(12) The door of every place where explosives are stored and every storage box shall be securely fastened under lock and key at all times when not in use and the key shall be in the possession of the person in charge of the explosives.

(13) If any place where explosives are stored is damaged whether by fire or otherwise, or if any explosives are lost or stolen, a report shall forthwith be made by the person in charge of the explosives to the mine manager and to a police officer.

(14) A copy of these Regulations shall be posted or hung up in such magazine or explosive store where they can be conveniently seen and read.

(15) No person shall enter any licensed magazine or store wearing boots or shoes having iron nails or studs, or having in his possession any fire, matches, steel, iron grit or similar article which is likely to cause explosion.

(16) All contraband receptacle boxes must be placed outside the magazine premises in order to enable contraband to be placed therein prior to entering the magazine premises.

(17) All expired explosives and detonators shall be removed and disposed of immediately.

Control of magazines.

112. (1) A holder of an explosive storage licence shall ensure that–

(a) each magazine is kept securely looked at all times except during deliveries, withdrawals and inspections;

(b) the following information is recorded for each magazine–

(i) the quantity of explosives, detonators and detonating cord kept in the magazine;

(ii) the date of delivery of any explosives, detonators or detonating cord to the magazine and the quantity and type delivered;

(iii) the date of issuance of any explosives, detonators or detonating cord from the magazine and the quantity and type issued.

(c) at each magazine the oldest stock of each type and size of explosive is used first;

(d) any magazine or day box used underground in a mine is located in a safe and secure area;

(e) no explosive or detonator is stored underground in a mine within 60 metres of any–

(i) shaft station;

(ii) hoist room;

(iii) refuge station;

(iv) electrical substation;

(v) fuel storage area;

(vi) workshop; or

(vii) lunchroom

(2) A holder of an explosives storage licence shall appoint a person who holds a valid blaster's certificate to conduct a thorough weekly inspection of all magazines and day boxes, record the information required pursuant to these Regulations and submit a written report to the mine manager summarising the results of each inspection.

(3) A holder of an explosives storage licence shall at the end of each month render a return to the mine manager showing the quantity of each type of explosive that has come into the magazine during such month, the quantity used during that month and the amount of explosives remaining at the end of such month.

Safety precautions during blasting.

113. (1) A holder of an explosives blasting licence shall develop a written procedure to ensure the safety of workers during blasting operations and shall ensure that the developed procedures are followed during blasting operations.

(2) Blasting operations shall only take place during daylight hours and a time specified by the mine manager after consultation with the affected community.

(3) The written procedure for blasting referred to in sub-regulaiton (1) shall include provisions dealing with the following matters–

(i) removing persons from the blast area who may be endangered by the blast to an area which is at a minimum outside a 500 metre radius from the blast area;

(ii) in the case of an open pit mine, controlling traffic on roads at the mine site;

(iii) effective guarding of entrances to the blasting site to prevent entry of unauthorized persons, which must include the posting of a person at each entrance to the blast area and the requirement that such persons remain in the area until relieved by the blaster;

(iv) the type of effective warning devices to be used, procedures for operating them and the timing of their use before and during a blast; and

(v) an orderly return to work when the worksite is safe after a blast.

(4) If persons on a public road may be at risk during an open pit mine blasting operation, a mineral right holder must develop and implement a written traffic warning plan that deals with the following matters –

(a) obtaining from the appropriate authority any necessary permission to warn traffic;

(b) the type of warning devices to be used;

(c) the number of workers needed to provide adequate warning; and

(d) the procedures to be used by workers to control and warn traffic approaching the danger area.

(5) The Mine Manager shall ensure that every person that is not engaged in a blasting operation is, prior to the commencement of blasting operations either hoisted to the surface, removed to the intake side of all places in which blasting is to take place or remains in a waiting place free from fumes and dust, as practicable.

Blasting under -ground.

114. (1) A holder of an explosives blasting licence shall ensure that–

(a) blasting operations are scheduled so that the exposure of workers to dust, fumes and smoke is kept as low as possible; and

(b) adequate ventilation is provided to remove any harmful gas or fumes before a worker returns to a worksite after a blasting operation.

(2) Subject to sub-regulation (3), the decision to re-enter worksite following blasting shall be taken following–

(i) the examination by a competent person of the worksite with an approved testing device in orderr to determine whether the worksite is adequately ventilated and safe; and

(ii) the approval of the mine manager who shall have obtained data from the competent person in charge of ventilation further to his testing of the site to ensure that the blast area is clear from any harmful dust or fumes.

(3) Workers may re-enter the worksite if the conditions after a blasting operation can be predicted with reasonable accuracy by the mine manager.

Safety.

115. The mine manager shall ensure that–

(a) explosives are used in accordance with their specified thermal conditions;

(b) no blasting would be contemplated during a lightning storm and that all electrical blasting connections are immediately disconnected; and

(c) adequate protection is taken against radio frequency hazards when firing explosives by electrical means.

Specific safety issues.

116. (1) Proper notice shall be given to the winding engine underground driver by the banks man or the setter immediately before explosives are conveyed in a shaft.

(2) No tools, rock, or other materials shall be conveyed in a shaft in the same conveyance as explosives, and no person other than the person in charge of such explosives, and one assistant if necessary, shall accompany explosive in any such conveyance.

(3) When explosives are contained in unopened cases, persons carrying explosive shall not carry any light other than an electrical hand lamp or a safety lamp of a type approved by the Director.

(4) A person carrying explosives underground shall be preceded by a person carrying a light and such person shall give proper warning of the approach of the explosives.

(5) No person shall return to any working place until such place is free from the dust, smoke, and fumes caused by blasting, and every team leader in charge of workmen shall be responsible for ensuring that the workmen in his charge comply with these Regulations and shall report without delay any case of gassing, however slight to the competent person.

Disposal of explosives.

117. (1) A competent person or an authorised officer shall order the destruction of any explosives in a magazine which, in his opinion have become unfit for use and such person shall immediately destroy the explosives in question, provided that no compensation shall accrue to the competent person or an authorised officer for such disposal.

(2) A holder of an explosives blasting licence shall ensure that any explosive or detonator that is defective as a result of the passage of time or the method of storage is not used and is removed and disposed of in a safe manner in accordance with the manufacturer's recommendations.

(3) If a mineral right holder wishes to dispose of a significant amount of explosives other than by detonation or returning the explosives to the supplier, the mineral right holder shall first obtain the written approval for the proposed disposal procedure from the Chief Inspector of Mines.

(4) Explosives that are considered unsafe for normal transport, storage or use shall be destroyed.

(5) Disposal shall be carried out under the control of a competent person and in accordance with the approved disposal procedure.

(6) The mine manager shall appoint a specific holder of a blasting licence to destroy old or damaged explosives in accordance with these Regulations.

(7) Explosives shall not be abandoned, thrown away, buried or discarded with rubbish.

(8) Before destroying explosives a specially made exclusion zone shall be established and made secure.

(9) Records shall be kept of the quantities and types of explosives destroyed and the destruction method used.

(10) Recognising that the residue created by the burning of explosives may have an adverse impact on animals, a mineral right holder shall ensure that such residue is buried or otherwise disposed of in accordance with applicable environmental regulations or with the approval of the Environment Protection Agency.

PART X–SURFACE AND OPEN PIT MINING

Safe surface or pit mine.

118. (1) A mineral right holder has a duty to design and operate a surface or open mine in such a mannere that is safe to workers and has the least negative impact on the environment.

(2) A mineral right holder shall prepare and implement a mine design that–

(a) is based on sound geotechnical engineering practices;

(b) considers the health and safety of workers;

(c) is prepared under the direction of a qualified person;

(d) consists of drawings, plans, specifications and procedures to be used in the construction and operation of the mine;

(e) takes into account the geology of the mine;

(f) assesses the ground stability of the active and proposed workings of the mine;

(g) takes into account previous occurrences of ground instability;

(h) outlines the geometry of existing and proposed excavations;

(i) includes a blasting design;

(j) outlines the methods to be used to control water from the strata or from any surrounding bodies of water; and

(k) includes a slope stability monitoring program.

(3) The mine manager shall ensure that–

(a) adequate consideration is given to–

(i) a local geological structure and its influence on wall stability; and

(ii) rock quality of the rock mass and its geological structure;

(b) a proper analysis is carried out of rain water inflow, surface drainage pattern, groundwater regime, mine de-watering procedures and their influence on wall stability over time;

(c) analysis is carried out of open pit wall stability for the projected geometry of a pit; and

(d) an adequate slope angle is maintained on surface workings.

(4) The Director, after consultation with a competent person may require the alteration of an angle, including any angle of repose in order to ensure a safe working manner on any work surface and in such case, give notice in writing to the mineral right holder of the angles required.

(5) It shall be the duty of every mineral right holder to take all measures necessary to implement and maintain the angles specified in the notice referred to in this Regulation.

Mine erosion and sediment control plan.

119. (1) The mine manager shall prepare and implement drainage, erosion and sediment control plan.

(2) The plan referred to in sub-regulation (1) shall–

(a) include measures appropriate to the situation intercept, divert or reduce the storm-water run off from exposed soil surfaces, tailings, dams and waste rock dumps;

(b) stipulate that–

(i) the surface drainage from disturbed areas must pass through a sediment pond;

(ii) tall effluent from the ponds must meet limitations of, inter alia, pH, heavy metals, total suspended solids;

(iii) sedimentation ponds must be constructed to standards on, inter alia, capacity, detention time, dewatering location and slopes;

(iv) discharging compliance must meet 10-year, 24-hour precipitation events; and

(v) the use of treatment shall meet effluent standards.

(3) The plan shall contain a comprehensive multifaceted approach to storm-water, nuisance water, erosion, and sediment control, thoroughly integrated throughout the entire planned life cycle of the mine which can reduce potential environmental impacts, increase mine productivity and be achieved in a cost- effective manner.

(4) Sediment control structures, for example detention and retention basins, shall be installed to treat surface runoff prior to discharge to surface water bodies.

(5) The types of sediment control that may be utilized include water conveyance structures, retention facilities, energy dissipaters and pumps.

(6) All erosion control and sediment containment facilities shall receive proper maintenance during their design life.

(7) Where feasible, surface water shall be diverted from active pit areas to eliminate in-pit water problems and a diversion ditch systems may be used to deflect the water and direct it into natural drainages.

Haulage roads.

120. (1) The mine manager shall ensue that all haulage roads at an open pit mine are designed, contructed and maintained to provide–

(a) a width at least three and a half times the width of the widest haulage vehicle used on the road where dual lane traffic exists;

(b) a width at least two times the width of the widest haulage vehicle used on the road where single lane traffic exists; and

(c) a surface and slope that reduce, as far as is reasonably practicable, the danger of vehicles slipping or skidding.

(2) If there is a drop-off greater than three metres from a haulage road at an open pit mine, the mineral right holder shall ensure that–

(a) a berm at least 75% of the height of the largest tire on any vehicle used on the road is constructed and maintained along the edge of the road; and

(b) to allow for drainage, consider the establishment of toe drains, and no opening in a berm is greater in width than the width of the blade of any equipment used to construct or maintain the opening.

(3) If reasonably practicable, runaway lanes or retardation barriers which are capable of bringing a runaway vehicle to a controlled stop, must be placed at suitable locations and the Mine Manager shall ensure that such lanes and barriers are clearly marked and maintained.

(4) Where the embankment of an open pit mine has a height of more than 5 metres and a slope greater than 65º from the horizontal, a guard rail shall be installed on its upper edge.

Open pit mining operations.

121. (1) The mine manager shall ensure that–

(a) benches are developed at suitable levels as determined by a geotechnical engineer approved by the PERC to protect workers from falling materials;

(b) the height of a working face does not exceed the maximum height of the loading equipment used plus two metres, unless permitted by the Director.

(c) that no hole is drilled–

(i) within 300 millimetres of any blast-hole socket;

(ii) if any part of the hole would be within eight metres of a hole charged with explosive, unless the hole is drilled under the direct supervision of a competent person;

(iii) to clear a blocked hole that is not a misfired hole; or

(iv) to make another hole necessary for blasting a misfired hole.

(2) If operations are conducted at an open pit mine during darkness, the mine manager shall provide suitable and adequate lights that are located–

(a) at every place at the mine where vehicles regularly dump material over the edge of an embankment that is more than three metres high; and

(b) at any other place at the mine where lighting is necessary because of the nature of the work being done or the equipment being used.

(3) At an open pit mine, the mineral right holder shall ensure that–

(a) all loose material is scaled or trimmed from the side of the open pit mine where a worker is required or permitted to be present;

(b) except for berms, all equipment, unconsolidated material, rocks and construction materials are kept at least two metres from the edge of the open pit mine; and

(c) the slope of any pile of unconsolidated material adjacent to the open pit mine is at an angle not steeper than the least of one horizontal to one vertical and the natural angle of repose

(4) If the Chief Inspector of Mines or an authorised person considers that the face of any working should be stepped in benches in order to ensure safety, he shall notify the mine manager to develop such stepped benches and the mine manager shall take all measures necessary to comply with such directions.

(5) If drilling is to be carried out in an open pit mine where blasting has taken place, the mineral right holder should ensure that, if mining is by benches, the drilling pattern in alternate benches is staggered at a distance equal to half the interval between adjacent holes in the pattern.

(6) If in the opinion of the Chief Inspector of Mines any disused working is dangerous to life or endangers public traffic he may by notice in writing, require the mine manager to cause the same to be filled into the level of the surface or securely fenced in and the mine manager to whom such notice is given shall forthwith take all such measures to comply with the requirement thereof.

(7) Every disused working within fifty metres of any public road or footpath shall be filled in or made safe through the use of fences or clearly marked signs, as appropriate.

(8) Where ground movement, as a result of mining operations, poses significant risk, an effective ground movement monitoring system must be in place.

(9) The mine manager and Health and Safety Officer shall ensure that if applicable, appropriate methods of open pit wall monitoring are used over a period of time to determine wall stability conditions.

Environmental protection performance.

122. (1) A mineral right holder shall ensure that mining operations comply with its environmental licence obligations.

(2) Notwithstanding sub-regulation (1), minimum environmental protection performance standards applicable to all surface mining and reclamation operations include the requirement to–

(a) maximise the utilization and conservation of the ore resource so as to minimize future land disturbance;

(b) restore the land to a condition capable of supporting other land uses;

(c) restore the original contour of the land where practicable;

(d) stabilize surface area and spoil piles to control erosion and air and water pollution;

(e) remove, segregate, protect and replace topsoil or other strata shown to be more suitable for supporting vegetation;

(f) refrain from mining within 150 metres of active or abandoned underground mine to prevent breakthroughs;

(g) design, operate, maintain and abandon waste disposal areas in accordance with the Operating Manual;

(h) treat, bury, or dispose of acid-forming, toxic, or combustible waste materials to prevent water contamination or spontaneous combustion and develop contingency plans to prevent sustained combustion;

(i) proceed with reclamation efforts in an environmentally sound manner and as contemporaneously and practicable with mining operations;

(j) construct and maintain access roads so that erosion, siltation, water pollution, damage to fish and wildlife or their habitat, or damage to public or private property is prevented; and

(k) place excess spoil materials in such a manner to ensure stability, proper drainage and prevent erosion.

PART XI—DREDGING AND PLACER MINING

Dredging permit application.

123. (1) Notwithstanding section 128 of the Act an application for a dredging permit shall include–

(a) justification for use of dredging as a mining method;

(b) plans showing the location of the dredging operation together with the general layout of the dredging proposal;

(c) the design and construction details of the dredge including–

(i) structural details;

(ii) the means to be used to manoeuvre the dredge and move the dredge from place to place in the dredging operation;

(iii) the means to be used to break out and raise the product of the dredging operations; and

(iv) the maximum depth below the surface of the water at which dredging operations are to be carried out;

(d) design details of any mooring or anchoring apparatus to be used in carrying out the dredging operation;

(e) details of the loads used in any design, stability and buoyancy calculations;

(f) details of any ballast requirements or limitations including any restrictions on the storage of free liquid;

(g) the maximum and minimum draught of the dredge;

(h) details of the means of access from the bank to the dredge;

(i) the report of a qualified naval architect confirming the buoyancy and stability of the dredge under all operation conditions;

(j) the results of buoyancy and stability tests; and

(k) details of any approvals obtained under any other law.

(2) A mineral right holder who intends to use a floating plant alongside a dredge shall include information on the floating plant in its application for a dredging permit.

(3) The information on the floating plant referred to in sub-regulation (2) shall include–

(a) justification for use of a floating plant as part of its operations if operated in a large body of water;

(b) plans showing the location of the floating plant operation together with the general layout of the floating plant proposal;

(c) the design and construction details of the barge on which the excavating equipment is located including–

(i) structural details;

(ii) the means to be used to manoeuvre the plant and move it from place to place in the dredging operation;

and

(iii) the means to be used to transfer the product of the dredging operation to the barge;

(d) details of the means of access from the bank to the barge; and

(e) the report of a qualified naval architect confirming the buoyancy and stability of the barge under all operation conditions;

Floating plant.

124. (1) The mine manager shall ensure that before any repairs, plant modifications or alterations are carried out on a dredge or floating plant that may affect its strength, buoyancy or stability, all plans, specifications, drawings and design calculations are submitted to the Director for approval.

(2) The Director shall grant an approval under sub-regulation (1), after consulation with an engineer approved by PERC.

(3) The mine manager shall ensure that–

(a) the hull of a dredge or floating plant is maintained in a sound and watertight condition;

(b) the buoyancy compartments and ballast compartments are maintained so as to ensure the stability of the dredge or floating plant;

(c) the freeboard is maintained to suit the prevailing operating conditions;

(d) suitable means are provided to prevent persons from falling overboard;

(e) warning systems or devices are provided to warn that machinery is about to be started;

(f) automatic electrical or mechanical devices are provided that immediately stop any apparatus from breaking out or raising material from

the working face in the event of an overload which might affect the stability of the dredge or floating plant;

(g) devices are provided that indicate variations in the list and the fore and aft trim of the dredge;

(h) the stability and structure of the dredge or floating plant are maintained when materials, plant, equipment or other loads are transferred onto it or removed from it;

(i) any dredge or floating plant used in a mining operation is equipped with such life saving equipment as is necessary to preserve the lives and effect the rescue of persons who may fall overboard and that such equipment must be maintained and kept in a conspicuous place that is easily accessible and shall be immediately repaired or replaced when damaged or lost;

(j) if necessary, warning notices are posted in conspicuous places to warn persons of danger from headlines, side lines and other drive lines or mooring lines and that each anchor for a head line, side line or other drive line or mooring line is of adequate strength;

(k) each workplace used in a dredging or floating plant operations is adequately illuminated at night and that no person must enter an un-illuminated part of a dredging or floating plant operation at night unless the person or another person accompanying that person carries a light adequate to ensure safety.

(4) Notwithstanding clause (k) of sub-regulation (3), all un-illuminated areas shall be barricaded to prevent entry by personnel.

(5) A person shall not interfere with any lifesaving equipment provided on a dredge or floating plant except for the purpose of saving lives in the course of the conduct of a training exercise approved by the mine manager or pursuant to any direction from the .

Waste quality.

125. (1) The mine manager shall ensure that every placer and dredge mining operation under his control shall maintain water quality standards as prescribed by the Environmental Protection Agency and shall implement best management practice to protect existing beneficial uses from nonpoint sources of pollution.

(2) The spillage of oil and other materials into rivers and existing water bodies is prohibited.

(3) Mining operations shall utilise settling ponds to recycle wash water in a closed system and the discharge of process waters to any surface water will require a Pollution Discharge Elimination System Permit issued by the Environment Protection Agency.

River diversion.

126. (1) A mineral right holder shall ensure that any river diversion as made as part of the mining operation is designed to internationally accepted standards with suitable precautions made to prevent the river diversion from bursting its banks and causing flooding and damage to life or property downstream.

(2) The Director shall request a mineral right holder to produce a peer review confirming that the design is safe and the cost of the review shall be borne by the mineral right holder.

(3) The Chief Executive Officer shall ensure that all surface impoundments and dams required for mining are designed to internationally accepted geotechnical standards taking into account the Hazard Rating System described as follows:

Hazard Potential Classification	*Loss of Human Life*	*Economic, Environmental, Environmental, Lifeline Losses*
Low	None expected	Low and generally linked to the owner
Significant	None expected	Yes
High	Probably one or more	Yes (but not necessary for this classification)

(4) Dams are categorised into three categories as described below for which varying levels of detailed study and justification of design and rehabilitation measures are required as further described in sub-regulation (5).

Dam Categories				
Hazard Rating		High	Significant	Low
Maximum Embankment Height	>15m	Category 1	Category 1	Category 1
	5-15m	Category 1	Category 2	Category 2
	<5m	Category 1	Category 2	Category 3

(5) The design and operating requirements for each category of mine tailing storage facilities are detailed in the table below.

	CATEGORY 1	**CATEGORY 2**	**CATEGORY 3**
Completion of Tailings Storage Data Sheet	Yes	Yes	Yes
Design	Report prepared in detail by geotechnical or engineering specialist.	Report prepared by geotechnical or engineering specialist.	Notice of Intent prepared.
Construction	Supervised by geotechnical or engineering specialist. Detailed construction report with as-built drawings.	Brief construction report as with as-built drawings.	Constructed by a suitably experienced contractor.
During Operations	Annual inspection and audit by Geotechnical or Engineering specialist. During operation as recommended by the Geotechnical or Engineering specialist.	Inspection and audit every 2 years by Geotechnical or Engineering specialist. During operation as recommended by the the Geotechnical or Engineering specialist	Inspection and audit every 3 years by Geotechnical or Engineering specialist. During operation as recommended by the Geotechnical or Engineering specialist

	CATEGORY 1	CATEGORY 2	CATEGORY 3
Rehabilitation Phase	Inspection and de-commissioning report by Geotechnical or Engineering specialist.	Inspection and decommissioning report by Geo-technical or Engineering specialist.	Inspection and decommission-ing report by Geotechnical or Engineering specialist.
Provision of Emergency Action Plan	Yes	Yes	Yes
Routine daily inspection by site personnel	Yes	Yes	Yes

(6) A mineral right holder shall ensure that the impact on water tables, flow of water, catchment areas, erosion of pond walls and dams are carefully managed and are in accordance with the requirements of the environmental management plan.

Hydraulic mining.

127. (1) A mineral right holder who intends to use a hydraulic mining system within his operations shall apply to the Director for approval.

(2) The application referred to in sub-regulation (1), shall include–

(a) justification for use of hydraulic mining as a mining method;

(b) identification of water sources to be used for supplying the system and an analysis of the effect of the operation on the water systems of the area;

(c) plans showing the location of the hydraulic mining operation together with the general layout of the mining proposal;
and

(d) any other information requested by the Director.

(3) The Director after consultation with the Board and any other competent person may approve the application referred to in sub-regulation (1), based on the merits of the application and an analysis of the benefits and potential impacts.

(4) Where the Director rejects an application referred to in sub regulation (1), the mineral right holder may appeal to the Board who shall deliver its determination within 14 days of receipt of the appeal.

(5) The decision of the Board shall be final and binding.

PART XII–UNDERGROUND MINING

Underground mining application.

128. A mineral rights holder who wishes to develop underground mining operation shall notify the Director in writing and the notification letter should include the following -

(a) the name and location of the mine;

(b) the number of the lease, tenement or other interest;

(c) the name and address of the principal employer at the mine;

(d) the mining operations to be affected and whether they are to be commenced, recommenced, abandoned or suspended;

(e) the date on which the mining operations are to be commenced, recommenced, abandoned or suspended, as the case may be;

(f) a statement of the proposed methods of operating which must include a description of the proposed underground mining methods;

(g) all proposed roads or vehicular trails;

(h) the size and location for all structures and facilities to be built;

(i) an estimate of the quantity of water to be used; and

(j) details of all pollutants that are expected to enter any receiving water must be identified.

Underground mine plans.

129. (1) A mineral right holder shall take reasonable measures to ensure that a competent person constructs accurate plans that cover all restricted areas and areas where the surface infrastructure of workings shall be situated.

(2) An underground mine plan shall consist of a legible index key plan showing–

(a) the areas covered by the relevant plan sheets, the mine boundaries and the farm names and boundaries within and adjacent to the mine or this detail on every plan sheet as an inset key plan drawn to a legible scale;

(b) a plan of the surface showing the boundaries of the mining area and farm boundaries, heights representative of workings, areas in which mining has been restricted or prohibited; lines indicating the planes of sections, original surface contours, boreholes, dams, watercourses, faults, dykes, water plugs names of adjacent mining areas, survey stations and relevant survey point, explosive magazines, outcrops and dips of the mineral deposits, perimeters of all surface mining, shafts, openings, rescue boreholes, subsidence or cavities, areas of restricted mining affecting the surface, any hazardous services whether on surface or buried and a plan of every other surface object, structure or reserve which requires protection against mining;

(c) where a bedded mineral deposit has an average inclination to the horizontal of more than 60" (sixty degrees), a plan showing the projection of the workings onto a vertical plane parallel to the average strikes;

(d) where multiple bedded mineral deposits overlie each other, the workings thereof on separate plans; and

(e) where a massive or irregular ore body is worked, level plans and vertical sections through the workings must be kept.

(3) A mineral right holder shall–

(a) ensure that a rehabilitation plan is produced illustrating the final surface contours and established water courses;

(b) provide the Chief Inspector of Mines annually with updated copies of the plans;

(c) take reasonable measures to ensure that, before a mine is abandoned, closed or rendered inaccessible, the plans and departmental copies are brought up to date by a competent person and the Director is notified to inspect the plans for approval;

(d) ensure that updated and approved hard copies of the plans and inventories, on durable drafting material, together with the survey station register are submitted into the Mining Cadastre Office following the inspection and approval of the plans.

(4) The design must provide for the necessary surface impoundment, treatment or control of all runoff water and drainage workings so as to reduce soil erosion and to prevent the pollution of receiving waters.

(5) In the case of computer aided drafting, legible plans in book form (approximately A3 size) or a copy of the index key plan, indicating additionally the outlines of the workings as well as the surface infrastructure and a copy of the back-up must be provided.

(6) Where plans are deficient, the Director may have the mine surveyed and new plans prepared at the expense of the mineral right holder .

(7) The Chief Inspector of Mines and the Director shall keep information contained in any plan confidential and may only release such information in accordance with any relevant legislation and for the purposes of consultation with the local community affected by the mining operations.

Ventilation.

130. (1) A mineral right holder shall ensure that a ventilation and rescue plan is produced and drawn to a legible scale depicting–

(a) the ventilation districts;

(b) the direction of air currents;

(c) the quantity of air circulating in the ventilation district;

(d) the position of each fan, door, regulator, crossing, stopping and telephone;

(e) the position of each refuge bay, rope-aided or normal escape route, safe place, first aid room, main water valve, fire fighting equipment site; and

(f) any area sealed off for fire or spontaneous combustion.

(2) The ventilation and rescue plan shall contain a square grid and shall be lettered horizontally and numbered vertically in order to facilitate rescue.

(3) An updated hard copy of the rescue plan must be immediately available at the mine for rescue operation purposes, and in the case of a coal mine, an updated hard copy must be submitted to the Chief Inspector of Mines at intervals not exceeding three months.

Underground mine safety.

131. (1) The mine manager shall ensure that–

(a) any battery operated electric lamp for use underground in the mine must be fitted with two independent globes or with one globe containg two independent lighting filaments;

(b) every person travelling or working underground in the mine is provided with battery operated cap lamps that are of an appropriate standard and have a sufficient capacity and adequate reserve for the duration of the relevant shift;

(c) adequate procedures and facilities are established at the mine for the maintenance of cap lamps and an adequate system is in place at the mine for the issuance of cap lamps to employees.

(2) No person shall travel or work underground unless the person –

(a) wears a cap lamp that is in good working condition;

(b) is working in a fully illuminated workshop, control room or similar installation;

(c) is in an underground crib room;

(d) is operating a vehicle or any other mobile equipment; or

(e) is doing any other work which the mine manager has directed in writing does not require the wearing of a cap lamp.

(3) The mine manager shall ensure that–

(a) provision is made at all working levels for the safe entry and exit of persons entering or leaving a cage, skip, and kibble or ladder way in the mine;

(b) the top and each level entrance to a shaft or decline in the mine is kept securely fenced or protected by a gate, unless the temporary removal of a fence or gate for the purposes of repairs or other operations, provided that other proper precautions are taken to protect the entrance to the shaft or decline;

(c) the designs, and any modification that can change the design criteria of structures for draw points, tipping points, rock passes and box fronts are recorded and approved in writing by a competent person;

(d) the approved designs and records of approval are kept readily available at the mine for the life of such installation;

(e) written procedures are prepared and implemented for–

(i) the removal of structures for draw points, tipping points and box fronts;

(ii) persons entering a rock pass while it contains water, mud, rock or a combination thereof;

(iii) clearing blocked rock passes; and

(iv) the lock-out, maintenance and re-habilitation of draw points, tipping points, rock passes and box fronts.

(f) unless exempted in writing by the Chief Inspector of Mines, a direct form of electronic communication is provided in the mine between the surface at convenient places underground;

(g) if any hazard to any employee in a workplace in the mine has not been remedied or removed before the end of a shift–

(i) a record is made in writing and signed by the supervisor of the shift for the workplace concerned setting out the nature of the hazard and its location and the state of corrective measures taken to remedy the hazard;

(ii) the record is read and ountersigned by the supervisor of the next shift for the workplace concerned before any employee does any work in the new shift in the workplace; and

(iii) before any employee does any work in the new shift in the workplace, the supervisor for that shift has advised the employee of the nature of the hazard and its location, the state of corrective measures taken to remedy the hazard and the work and precautions required to be taken to remove or remedy the situation.

(h) a procedure is established at the mine for checking all persons in and out of the mine so that all persons are accounted for at the end of each working shift;

(i) that in the event of any mains' firing or large scale mass blasting in the mine all persons are accounted for at a place determined to be safe prior to the commencement of the firing or blasting;

(4) A mineral rights holder shall ensure that–

(a) prior to use, a competent person certifies in writing that the construction, installation and modification of draw points, tipping points, rock passes and box front structures have been done in accordance with their design criteria; and

(b) the written certifications in (a) are kept readily available at the mine for the life of the particular structure.

(5) The Chief Inspector of Mines may direct that a telephone or other form of electronic communication should be installed in a particular place in an underground mine, and the mine manager of an underground mine shall ensure that a direction given by the Chief Inspector of Mines is complied with as soon as is practicable.

(6) The mine manager of a mine in which tackless mining equipment is used shall ensure that workers–

(a) wear an outer vest or webbing harness fitted with reflective material so as to be visible from all directions; or

(b) have panels or strips of reflective material securely attached to their clothing so as to be visible from all directions.

(7) A mineral right holder shall ensure that–

(a) no person is injured as a result of the failure of any dam wall, plug or barricade which is designed to prevent the leakage of water underground as a result of the inappropriate design, sub-standard construction or inadequate inspection and maintenance of such dam wall, plug or barricade;

(b) any dam wall, plug or other barricade keeping back water underground is designed and constructed under the supervision of a competent person where the product of the capacity in cubic meters and the hydraulic head in meters of the dam storing water underground and of which they form part exceeds 50 000;

(c) any dam wall, plug or other barricade keeping back water underground, where the product of the capacity in cubic meters and the hydraulic head in meters of the dam storing water underground and of which they form part, does not exceed 50 000, is be designed, constructed, inspected and maintained under the supervision of a competent person; and

(d) all design calculations and drawings of dam walls, plugs and barricades and mine plans indicating the exact position of such dam walls, plugs and barricades are stored safely for the life of such dam walls, plugs and barricades and are readily available.

(8) A mineral right holder shall formulate reasonably practicable measures to prevent persons from being injured by the unintentional release of water and hydraulic pressure from any dam storing water underground and shall procure that the mine manager implements the same on site; and

(9) A mineral right holder shall prepare and require the mine manager to implement a procedure to prevent injury to persons involved with the installation, construction, inspection, testing and maintenance of the following hydraulic pressure systems–

(a) high pressure water jetting systems;

(b) shaft high pressure cement columns;

(c) shaft water and sludge columns;

(d) dam water and sludge systems;

(e) mine residue discharge pumps;

(f) hydraulic water accumulator systems;

(g) high pressure pumping installations; and/or

(h) backfill columns and associated equipment.

(10) Where operations at two or more horizons are interlinked by vertical or sub vertical openings in an underground mine the mine manager shall ensure that systems of work and precautions are devised and implemented which will minimize any risk of injury or harm to health if persons are required to work on those horizons at locations near the vertical or sub vertical openings.

(11) When an accident causes the immediate death of any employee, the place where the accident occurred must not, without the consent of the Chief Inspector of Mines, be disturbed or altered before such place has been inspected by a competent person or any other person authorised by the Director unless such disturbance or alteration is unavoidable to prevent further accidents, to remove fatalities and injured employees or to rescue employees from danger.

(12) The mine manager shall promptly inform the Director of the occurrence of any accident under sub-regulation (9) and the Director or authorised person shall inspect the accident site within 3 days of receipt of the notice of accident.

(13) Work may be resumed at the place where the accident occurred if the Director or authorised person fails to inspect the place within 2 days after notice of the accident has been given.

(14) Any employee having a material interest in an accident as well as the employee's representative may attend any inspection in loco conducted by a competent person but such attendance is at their own risk.

(15) In case such employee is, by reason of death or the severity of his injuries, unable to appoint any representative to attend the inspection in loco, the relatives, or in their absence the fellow employees of such employee may appoint such representative.

(16) All persons working in or on haulage ways or railway lines shall wear reflective clothing.

Lighting in underground mines.

132. The mine manager shall ensure that–

(a) suitable permanent or fixed installation lighting is provided at each of the following locations in the mine–

(i) main entries or landings of shaft, adit, decline platforms and loading stations;

(ii) workshops and service areas where moving machinery or equipment could be a hazard;

(iii) fixed machinery installations such as pump stations, crushing stations, primary or circuit fans, electrical switch rooms and sub-stations;

(iv) access ways to main magazines;

(v) crib rooms and first aid stations;

(vi) major tips and loading points for rail and trackless haulage;

(vii) conveyor galleries and transfer stations;

(viii) any installation, travel way or workplace where a cap lamp does not provide sufficient illumination; and

(ix) any other facility where lack of illumination could create a hazard.

(b) any haulage area under repair and any temporary obstruction in the mine are delineated with flicker lights or with reflective barriers or signs placed at a safe stopping distance for any equipment being used;

(c) effective auxiliary lighting is provided in any place where persons are required to assess ground conditions in the mine and that such lighting has an effective distance range greater than that of a cap lamp;

(d) adequate standard of lighting is provided for overhead drilling into high backs and walls in the mine.

Permit for winding plant.

133. (1) A mine manager who wishes to use a winding plant within a mine shall apply to the Director for a permit.

(2) The Director may grant a permit in the prescribed form to the mine manager upon receipt of the application referred to in sub-regulation (1).

Conveyance operated by winding plant.

134. Unless permitted under these Regulations, no person shall ride in or permit any person to use a conveyance operated by a winding plant.

Winding capacity.

135. The average weight used for calculating winding capacity shall be 70kg.

Brakes and holding power.

136. The mine manager shall ensure that each winding drum or winding sheave shall have adequate brake which shall be kept in proper working order.

Rope on drum.

137. (1) Except for winding engines which are of a friction drive or sheave type variety, there shall not be less than three turns of the rope upon the drum when the cage, skip or other means of conveyance is at its lowest point in the shaft or winze from which hoisting is being carried out.

(2) In relation to all types of winding engines, the mine manager shall ensure that the end of the rope is fastened securely around the arm or shaft of the drum.

Locking Devices.

138. (1) The mine manager shall ensure that the operating mechanism of the clutch of every winding drum is provided with a locking arrangement which shall be used to prevent the inadvertent withdrawal of the clutch.

(2) If the clutch is not clearly visible from the driver's operating position the mine manager shall ensure that means are provided to indicate to the driver at all times, the extent to which the clutch is engaged or disengaged.

Depth indicator.

139. The mine manager shall ensure that–

(a) in addition to any marks on the rope, every winding engine shall have reliable and conveniently situated depth indicators which show the operating position of the cage, skip or other means of conveyance clearly and accurately to the winding engine driver at his operating station;

(b) every winding engine shall clearly and accurately alert the winding engine driver where a reduction in winding speed is necessary;

(c) the pointer of the dial indicator on the drivers' right hand side shall move in a clock wise direction when lowering, and the pointer and spiral indicator shall move up or down as the conveyor moves up or down; and

(d) only one indicator is required on every winding engine where the rope is driven by friction on every single drum winding engine and every winding engine having 2 drums permanently fixed on one shaft.

Suitability.

140. The mine manager shall ensure that winding rope is made of steel wire and the gauge of the wires used in the construction of the rope is suited to the diameter of the sheaves and drums.

Defective.

141. The mine manager shall ensure that no rope which has been reinforced due to weak or defective portion or from which a defective portion has cut and the ends joined is used in a winding plant.

Ratio of load.

142. The total mass attached to the winding rope when persons or materials are being conveyed shall not exceed nine-tenths of the mass attached to the winding rope when minerals are conveyed.

Vertical sinking shafts.

143. The mine manager shall ensure that–

(a) in the course of being sunk, every vertical shaft is provided with two separate means whereby persons employed in the sinking process can signal effectively from the button of the shaft and from any depth in the shaft to the winding engine;

(b) each winding plant is provided with an effective signalling arrangement for interchanging distinct and definite signals between the winding engine driver and the bank and between the winding engine driver and every established intermediate landing station below the bank.

Locked bell system.

144. (1) The mine manager shall ensure the implementation of a locked bell system for use during the operation of a winding engine.

(2) The locked bell system referred to in sub-regulation (1), shall enable the interchange of signals between the winding–engine driver and every established point below the rank from which the winding engine is normally carried on, provided that the system shall not enable the banks man to signal on this system to anyone but the winding-engine driver.

(3) The locked bell system shall be arranged so that the winding engine driver can easily distinguish between signals received from the bank and signals received below the bank.

Call bell system.

145. (1) The mine manager shall ensure the implementation of a call bell system for use during operation of a winding engine.

(2) The call bell system referred to in sub-regulation (1), shall enable the interchange of signals between–

(a) the winding-engine driver and the bank; and

(b) the winding-engine driver and every established point below the bank from which the winding engine is normally carried on.

Winding of minerals.

146. No person shall travel in a conveyance operated by men and a winding engine if the conveyance is loaded fully or partially with minerals unless expressly permitted in writing by the mine manager or any skilled engineer and provided that the material is not likely to endanger persons travelling in the conveyance.

Permitted materials.

147. The mine manager shall ensure that–

(a) a list is kept of all materials that are regularly conveyed in the shaft or winze and that such list is regularly updated and left readily available for inspection by all persons concerned; and

(b) all persons authorised to issue signals for the raising and lowering of persons pursuant to these Regulations are aware of the material documented in the list.

Winding equipment.

148. A mineral right holder shall appoint, in writing, an engineer registered under PERC to examine the winding equipment in accordance with these Regulations.

Examination. by engineer.

149. (1). The mine manager shall ensure that the engineer refered to in Regulation 148–

(a) inspects the following parts at least once daily–

(i) the winding ropes;

(ii) the balance ropes or tail ropes;

(iii) the connection of the winding ropes to the drums;

(iv) the conveyance and the main members by which they are suspended;

(v) all safety catches and devices;

(vi) the pulley wheels and sheaves;

(vii) the brakes; and

(viii) the depth indicators;

provided that these examinations may not be necessary on any day in which the winding plant makes less than 50 trips.

(b) inspects the following parts at least once in each week and at intervals not exceeding ten days–

(i) the over speed and overwind prevention devices; and

(ii) all external parts of the winding engine;

(c) inspects the structure of the winding rope, all wires and the balance rope or tail rope at least once in each calendar month and at intervals not exceeding 45 days with a view to ascertaining the amount of deterioration thereof.

(2) For the purpose of an examination under clause (c) of sub-regulation (1), the applicable rope or wire shall be cleaned at places selected by the engineer who shall, following inspection, note any reduction in the circumference of the rope or wire, variation in the length of lay of the rope or wire and any superficial condition of the wires or rope which signal wear, corrosion, fractures and brittleness and all other data required to ascertaining the amount, extent and distribution of the deterioration of the rope or wire.

(3) If the examination discloses any undue or rapid wear of the rope or wire which although not constituting sufficient reason for condemning the rope indicates a need for more than usual attention, the mine manager shall ensure that examinations of the rope or wire are made more frequently.

(4) The mine manager shall ensure that the appointed engineer shall inspect the connections between the winding rope and the drum, the sheave wheel or any other wheels and all other connections at least once in each calendar month and at interval not exceeding 45 days.

Drivers' log book.

150. (1) The mine manager shall provide a book to be termed 'drivers log book' for each winding engine other than an automic winding egine in which the winding engineer shall document a true report of the conditions of the winding engine which shall include the winding engine's brakes, ropes wires, clutches, reversing gear, depth indicators and all other fittings.

(2) The driver's log book shall be signed by the winding engineer after each inspection, the winding engineer shall ensure that the drivers' log book is annotated with the time and duration of each inspection.

(3) The driver's log book shall be kept in the winding engine room and shall be recorded in duplicate.

Winding certificate.

151. (1) No person shall drive a winding plant unless that person is the holder of a winding engine certificate.

(2) Notwithstanding sub-regulation (1), a learner winding engine driver may drive a winding engine plant under the direct supervision of a certificated winding engine driver provided that no persons are in conveyance at that time.

Bank man or on-setter.

152. (1) No person shall carry out the duties of a bank man or on-setter unless the person is the holder of an on-setter's certificate issued in accordance with these Regulations.

(2) Every appointment of a bank man or on-setter shall be made in writing by the Mine Manager.

Speed.

153. The winding engine driver shall control the shock speed of a winding engine to ensure that when any bucket or other means of conveyance is approaching or passing through, it is travelling at a slow and safe speed and the crosshead is picked up or released without

Shaft bottom.

154. The bucket or other means of conveyance shall not be lowered directly to the bottom of the shaft if workers are preset but shall be stopped by the winding engine driver at least five metres above the bottom and shall not be lowered further until a signal has been given by one of the workers at the base.

Protective cover.

155. (1) No person shall work or be caused or permitted to work at the bottom of a shaft unless protected by an adequate covering extending over the whole area of the shaft with sufficient space left for the passage of any bucket, skip or other means of conveyance.

(2) In a vertical shaft the covering shall be situated not more than 25 meters from the bottom and in an inclined shaft such covering shall be situated not more than 30 meters from the bottom.

Survey practice.

156. (1) A mineral right holder shall employ a competent person to be in charge of surveying, mapping and mine plans and if more than one person is employed the mineral right holder shall ensure that their functions do not overlap.

(2) The mine manager shall ensure that a sufficient number of survey stations are established so that all surface objects can be accurately surveyed and each survey station shall be clearly marked with a unique number and recorded in a register.

(3) The minimum standard of accuracy and class of survey for the fixing of survey stations on both horizontal and vertical planes shall be designed in accordance with the following formula:

$$A = 0{,}015 + \frac{S}{30000}$$

where S is the distance in metres between the known and the unknown survey station:

provided that in the case of a traverse, after a check survey has been completed, the error in direction of a line between any two consecutive survey stations shall not exceed 2 (two) minutes of arc, provided that the horizontal and vertical displacement between the measured position and final position of a survey station does not exceed 0.1 (zero point one) metres–

(a) the allowable error for a Primary Survey (Class A) shall not be greater than A metres;

(b) the allowable error for a Secondary Survey (Class B) shall not be greater than 1.5A metres;

(c) the allowable error for a Tertiary Survey (Class C) shall not be greater than 3A metres;

(d) the allowable error for a Localised Survey shall not be greater than 0.2 (zero point two) metres in addition to the allowable error at the nearest survey station.

(e) errors in representation on plan shall not exceed 0.1% (zero comma one per cent) of the denominator of the scale of the plan in addition to the allowable survey error at the nearest survey station or Fixed Position.

(4) Where surveying cannot be accurately done due to significant risks, the estimated position of affected workings or objects must be indicated by broken lines and an explanatory note must be written giving reasons why accurate measurements could not be made.

(5) The following detail shall be depicted on all plans, where applicable–

(a) date of measurement of workings;

(b) surface contours;

(c) planes of sections or planes of plans;

(d) a subject heading indicating the name of the mine and the name of the plan;

(e) name and signature of the competent person;

(f) date of updating;

(g) identification number allotted by authorities;

(h) the survey system and co-ordinates of origin used;

(i) a north point;

(j) the scale of the plan;

(k) a legend illustrating colours and conventional signs not provided for by the Director;

(l) co-ordinate lines sufficient in number for the scale of the plan to be verified; and

(m) in the case of mining at sea, the centre position of the sheet must be indicated in geographic co-ordinates (longitude and latitude).

(6) A mineral right holder shall ensure that–

(a) all plans are drawn on durable transparent drafting material on sheets of a size not greater than A0 as defined by the International Organisation for Standardisation and in the event that plans are produced by means of computer aided drafting the Director may request that such plans be produced on suitable drafting material;

(b) all plans are drawn to a scale of 1 : 1 000;

(c) all plans are at all times correct to within 12 (twelve) months, except for the plans showing the workings which must at all times be correct to within 3 (three) months.

(d) in the case of offshore prospecting and mining, plans must at all times be correct to within 6 (six) months;

(e) an inventory of all plans and all copies are kept showing the name of the mine, name and number of the plan, date of the last updating of the plan, all relevant details where a plan has been superseded and the name of the competent person responsible for drafting the plan;

(f) when a plan or sheet is superseded by another plan or sheet, the old and the new plan shall be clearly referenced accordingly.

Surveying, mapping and mine plans.

157. A mineral right holder shall take reasonable steps to ensure that, in all surverying and mapping done and all plans prepared for the purposes of these Regulations–

(a) all units of measure conform to the metric system, except angular measurements which must conform to the sexagesimal system;

(b) all mine surveys conform to the WGS 84 Survey System as determined by the Director of Survey and Lands provided that the projection origin may be changed to reduce the numerical values of the co-ordinates and survey systems established on a mine prior to 1 January 2011 may be retained provided that a tabulation of the co-ordinates of at least 3 (three) Survey Stations in both the existing and the national control survey system, are shown on every sheet comprising a plan;

(c) elevations determined above and below ground on a mine refer to mean sea level as determined by the Director of Surveys and Lands;

(d) all plans conform to the conventional signs and colours provided by the Director of Survey and Lands; and

(e) all survey records required pursuant to these Regulations shall be kept electronically and shall be routinely backed up.

Mine safety and precautions.

158. (1) A mineral right holder shall ensure that–

(a) a competent person is aware of–

(i) workings which are being advanced;

(ii) surface structures or objects which may be affected by mining operations;

(iii) workings being abandoned or closed down in order to allow for the final surveying thereof;

(iv) faces of workings being advanced within 50 (fifty) metres or any lesser distance permitted following risk assessment, from any excavation, mining restricted area or any place where there is, or is likely to be, a dangerous accumulation of fluid material, noxious or flammable gas; and

(v) safety pillars that are being or have been, removed.

(b) that no boundary pillars are worked or cut through unless written permission has been obtained from all relevant adjacent employers and the Chief Inspector of Mines.

(2) A mineral right holder shall ensure that–

(a) no mining operations are carried out under or within a horizontal distance of 100 (one hundred) metres from buildings, roads, railways, reserves, mine boundaries or any structure or surface whatsoever which it may be necessary to protect, unless a shorter distance has been determined safe by risk assessment and all restrictions and conditions determined in terms of the risk assessment are complied with;

(b) on the inside of every mine boundary, continuous pillars are left standing (in situ) the width of which, measured horizontally and at right angles to the boundary line, must not be less than 9 (nine) metres.

(3) Where risk assessment identifies that as a result of mining operations, ground movement poses significant risk, the mineral right holder shall ensure that an effective ground movement monitoring system is in place.

(4) The competent person responsible for surveying activities shall submit to the Chief Inspector of Mines the distance and accompanying restrictions and conditions for comment prior to commencement of such activity.

(5) In the absence of any adjacent employer, permission to work or cut through boundary pillars shall only be required from the Chief Inspector of Mines.

(6) Where the Director determines that there may be errors in any survey or plans submitted by a mineral right holder or that they do not conform to the standards of accuracy required by these Regulations, the Director may require a check survey to be carried out and the cost of which must be borne by the mineral right holder if the check survey proves that there are errors in any survey or plans or that they do not conform to the standards of accuracy required by these Regulations.

Under-Ground outlet.

159. (1) A mineral right holder shall prevent employees from being trapped in any underground excavation by providing, where practicable from every underground working place, two exists,each of which is connected to separate means of egree to the surface.

(2) Where it is not practicable to provide two exits as provided for under sub-regulation (1), the employer shall implement other reasonably practicable measures determined by mine risk assessment, to prevent employees from being trapped in any underground excavation.

(3) Except in the case of emergency no person may enter or leave the underground workings of a mine except by means of ingress or egress especially provided or set apart for that purpose by the employer unless such person is authorised to do so by the mine manager.

Under-ground Emergency.

160. (1) The mine manager shall provide and maintain, readily available at the mine, mine rescue teams made up of competent persons.

(2) A mineral right holder may enter into a contract with a prepared-rescue service provider to coordinate and facilitate mine rescue teams and other ness and services relating to emergency or may form a mine rescue team from its own response competent persons.

(3) A mineral right holder shall ensure that–

(a) where there could be between 100 and 1100 persons underground, at least 1 team or outsourced team is available;

(b) where there could be between 1101 and 3600 persons underground at least 2 teams or outsourced teams are available;

(c) where there could be more than 3,600 persons underground at least 2 teams or outsourced teams are available and at least 1 additional team or outsourced team for every additional 3,600 persons who could be underground;

(4) A mineral right hodler shall have readily available at the mine for use by the team or outsourced team, sufficient breathing apparatus that may be required in any emergency which must continually comply with internationally accepted standards for respiratory protective devices as well as self-contained closed-circuit breathing apparatus and related equipment.

(5) Where an emergency occurs at the mine that may require the use of the team or outsourced team the mineral right holder shall immediately notify the team or outsourced team.

(6) The team or outsourced team shall–

(a) be an organization or institution which has personnel with specialist knowledge and experience in mine rescue and emergencies

and which has access to rescue equipment, training facilities (including simulated training), facilities for heat tolerance testing and workload testing;

(b) render an emergency rescue service on a co-operative basis;

(c) provide mines rescue services with emphasis on mobilisation of mine rescue teams, quantity or access to rescue teams, emergency communication, additional emergency resources, back up facilities and transport;

(d) ensure that any breathing apparatus, self-contained closed-circuit breathing apparatus and other related equipment used by the team or outsourced team continually comply with internationally accepted standards for respiratory protective devices;

(e) test and maintain the functional performance of any other rescue equipment used by it in accordance with the original equipment manufacturer's specifications; and

(f) ensure that all personnel is competent to check and maintain any rescue equipment used by it in accordance with the original equipment manufacturer's specifications;

(7) Every team or outsourced team shall keep a register of all persons who have been found competent to practice as a rescue team member under the supervision of the team or outsourced team;

(8) Every team or outsourced team shall issue licences to persons who satisfy the criteria set forth in sub-regulation (6).

(9) Every team or outsourced team shall implement and maintain a system to issue licences to practice to persons who meet the criteria to practice as a competent mine rescue person, provided that each team or outsourced team shall ensure that the criteria shall include the following stipulations–

(a) the person has been declared medically fit to perform work at the mine;

(b) the person has passed a heat tolerance test;

(c) the person has undergone refresher-training sessions as determined by a competent person at intervals of not more than three months and at least two of these trainings per annum must be in a mine or a simulated mine in an atmosphere filled with smoke whilst using a breathing apparatus; and

(d) the person has passed the work load test, and such persons shall upon satisfaction of the above and any other criteria determined by the team or outsourced team, be found competent to practice as a rescue team member as part of a team or outsourced team.

(10) Every team or outsourced team shall monitor the compliance by persons issued with a licence to practice under and may suspend or revoke any such licence if the person no longer meets such requirements, provided that the licence shall be promptly re-issued upon the satisfaction of such requirements.

(11) Where an emergency occurs at a mine that requires the deployment of a team or outsourced team, the mineral right holder shall ensure that the required number of mine rescue teams is deployed as soon as possible.

(12) No mineral right holder , team or outsourced team shall allow any rescue team member to be deployed as a member of a team or outsourced team during an emergency unless such rescue team member is in possession of a valid licence to practice and has passed a pre-operational medical examination, as determined by the team or outsourced team to ensure that the rescue team member is medically fit at the time of deployment.

Reporting of accidents.

161. (1) The mine manager shall promptly report any accident to the Inspector of Mines that results in–

(a) the death of any employee;

(b) injury to any employee which is likely to be fatal;

(c) injury which causes an employee to suffer the loss of a limb or a part of a limb or sustain a permanent disability;

(d) unconsciousness, incapacitation from heatstroke or heat exhaustion, oxygen deficiency, the inhalation of fumes or poisonous gas, electric shock or electric burn accidents which are not reportable under clause (b);

(e) injury which incapacitates the injured employee from performing that employee‘s normal or a similar occupation for a period totalling 14 days or more; or

(f) injury which incapacitates the injured employee from performing thate employee’s normal or a similar occupation on the next working day.

(2) Accidents referred to in clauses (a), (b), (c) or (d) of sub-regulaiton (1) shall be reported to the Chief Inspector of Mines immediately and by the quickest means available and must be confirmed without delay.

(3) Accidents referred to in clause (e) of sub-regulation (1) shall be reported to the Chief Inspector of Mines within three days after the accident is reported.

(4) Accidents referred to in clause (f) of sub-regulation (1) shall be reported to the Chief Inspector of Mines in a prescribed form within 3 days at the end of each month.

(5) Where the death of an employee referred to in clause (a) of sub-regulation (1) is related to a rock-burst or fall of ground, the mineral right holder shall ensure that a competent person writes a report on such incident and the Chief Executive Officer shall forward the report to the Chief Inspector of Mines within 14 days of the fatality.

(6) When an injury results in the death of an employee following the reporting of the accident or, if a minor injury which is not reportable pursuant to this regulation results in the death of an employee or when general sepsis or tetanus develops as a result of any injury, the employer must immediately report it to the Chief Inspector of Mines.

(7) Where the injury of a person referred to in subregulation (1) occurs or a dangerous occurrence is related to fire or the use of explosives the mineral right holder shall procure the writing of a detailed report on the incident by a competent person and such report shall be forwarded by the Chief Executive Officer to the Director within 14 days of the accident.

(8) The mine manager shall report to the Chief Inspector of Mines any of the following dangerous occurrences at the mine–

(a) an uncontrolled extensive rock-burst or fall of ground which has caused the following damage underground–

(i) at least 10 linear metres of working face to be severely damaged and choked requiring reestablishment and resupporting or be abandoned;

(ii) at least 25m^2 of working area to be severely damaged and choked rendering support units ineffectual and needing to be reestablished, resupported or be abandoned;

(iii) at least 10 linear metres of gully to be restricted with rock clearly recently displaced from the hanging wall and gully sidewalls;

(iv) at least 10 linear metres continuously or 30 linear metres cumulatively, of access ways of tunnel or travelling way to be severely damaged and requiring rehabilitation or abandonment;

(v) at least 10 m^2 of roof or 5m^3 of rock to be displaced from the roof of the mining cavity or excavation; or

(vi) at least 10m^3 of rock to be freshly displaced from pillars or tunnel idewalls.

(b) any unplanned or uncontrolled caving, side wall or slope failure or subsidence in the ground or workings, causing damage to the surface, which may pose a significant risk to the safety of persons at a mine;

(c) any unplanned or uncontrolled flow of water, broken rock, mud or slimes at the mine which may pose a significant risk to the safety of persons;

(d) the breakdown of any main ventilation fan;

(e) any power failure occurring in the underground workings of a mine which poses a significant risk to the health, or safety of persons at a mine;

(f) any ignition or explosion of gas or dust or any fire related to mining operations or any indication or recrudescence of fire or spontaneous combustion at or in a mine;

(g) the presence of flammable gas exceeding one comma four parts per hundred by volume in the general atmosphere at a mine, or any portion of a mine, if such flammable gas is detected for the first time, or the first time such flammable gas is again detected after not having been detected therein for a continuous period of three months;

(h) any of the following events in relation to any winding-engine, winding drum or conveyance–

(i) fracture or failure of any essential part of the winding-engine, fracture or failure of any safety device used in connection with the winding equipment;

(ii) fracture, failure or serious distortion of winding rope, fracture, failure or serious distortion of any connection between

the winding rope and the drum or between the winding rope and the conveyance and any other load suspended from or attached to such rope;

(iii) fracture, failure or serious distortion of any connection between conveyances or between a conveyance and any suspended or attached load, fracture of guide rope or its connections, fracture of balance of tail rope or its connections, fracture or failure of any winding or balance sheave;

(iv) fracture or failure of any essential part of the headgear or other sheaves support;

(v) jamming or accidental overturning of a conveyance or its load, fouling of shaft equipment or the jamming of crosshead;

(vi) any occurrence of a conveyance, bridle, frame or crosshead accidentally leaving guides or derailing;

(vii) fracture or failure of the braking system or of any critical parts thereof;

(viii) failure to activate when required of any safety catches, arresting devices or activation of any safety catches or arresting devices when not required;

(ix) failure to activate when required of any over winding prevention device or activation of such device when not required;

(x) any overwind or over-run of the conveyance to an extent which may have endangered persons or may have caused damage to the winding equipment;

(xi) failure of depth indicator; or

(xii) loss of control of any winding engine.

(i) any serious problems with lifts or elevators, including but not limited to the following–

(i) fracture or failure of any essential part of the driving or operating machinery of a lift or elevator or safety device used in connection with the same;

(ii) fracture or distortion of the lift or elevator rope, fracture or failure of attachments of such rope;

(iii) fracture or failure of any sheave, shaft or shaft bearing of such sheave;

(iv) jamming of car or counterpoise;

(v) fracture or failure of braking system or of any critical parts thereof; or

(vi) failure to activate when required of any safety catches or arresting devices or activation of any safety catches and/or arresting devices when not required;

(vii) any object falling down the shaft or any other incident which necessitates the inspection of the shaft;

(viii) any failure of breathing apparatus whilst deployed, or the use of emergency escape apparatus, procedures or rescue mechanisms, or any rescue from entrapment of any employee;

(ix) propelled mobile machine running out of control which may pose significant risk to the safety of workers;

(x) fracture or failure of any part of a boiler or safety device of a boiler or pressure vessel which may have endangered persons;

(xi) any fracture or failure of any part, driving machinery, rope or chain forming part of a chairlift installation which may have endangered persons or may have caused damage to such chairlift installation; and/or

(xii) any unauthorised or accidental ignition or detonation of explosives, any exposure of persons to blasting fumes or any detonation of explosives which may pose a significant risk to the safety of persons.

(9) A mineral right holder shall ensure that a system is in place whereby the mine manager is informed, as soon as is practicable after its occurrence of any accident or dangerous occurrence which is reportable under this Section.

(10) A mineral right holder shall keep and maintain a record in which the particulars of all accidents and dangerous occurrences which are required to be reported in terms of this Regulation, must be recorded without delay and all records of accidents or dangerous occurrences must be kept and maintained for six years from the time that the accident or dangerous occurrence becomes reportable.

Tackless machinery etc.

162. (1) The mine manager shall ensure that each trackless unit transport used in the mine, including earth moving equipment–

(a) are designed, constructed and equipped to conform with the Factories Act, 1974 (Act No. 3 of 1974)

(b) is fitted with the equipment required under sub-regulations (2).

(2) The trackless unit referred to in sub-regulation (1) shall be fitted with–

(a) service brakes to be used as the primary braking system;

(b) secondary or emergency brakes to be used in the event of the failure of the primary service brakes;

(c) parking brakes; and

(d) rear stop lights which light up as red when the service brakes are applied or when the retarder is actuated.

(3) The brakes referred to in sub-regulation (2) may use common components but the failure of any one component must not prevent the application of the secondary brakes to stop the unit safely.

(4) At least one of the brakes referred to in sub-regulation (2) shall be designed to permit operation by the operator of the unit.

(5) If a power assisted brake is provided as part of any of the braking system of a trackless unit–

(a) the power assisted brake must be capable of being applied in the event of an engine failure and must be able to bring the vehicle to a stop in all operating conditions; and

(b) the brake must have a pressure gauge fitted that is clearly marked to indicate the minimum safe braking operating pressure and the gauge must be clearly visible from the vehicle operator's seat.

(6) A clear visual indicator or an effective interlocking system shall be provided to protect against the trackless unit being driven with the brakes applied.

(7) The mine manager and the mineral right holder shall ensure that the brakes on each trackless unit are tested in accordance with the manufacturer's or supplier's specifications and maintained in good working order.

(8) To facilitate the safe haulage the mine manager shall ensure that–

(a) if special precautions are necessary for the safe running of trackless units in a haulage way in the mine an adequate number of warning notices are posted in the haulage way advising persons of those special precautions;

(b) the road surface of each haulage way in the mine is regularly graded and maintained in a good and safe condition; and

(c) the dimensions in each haulage way are sufficient to provide the clearances required under sub-regulation (9).

(9) A haulage way shall have–

(a) a total horizontal clearance of not less than 1.8 metres based on the widest vehicle used in the mine; and

(b) a total vertical clearance of not less than 600 millimetres based on the highest vehicle used in the mine, which shall include any overhead protection canopy.

(10) If two or more trackless units are required to operate in a haulage way, the mine manager must ensure that an appropriate traffic control system is implemented to minimize the risk of collision between units.

(11) The Chief Inspector of Mines may require warning lights, signal lights or a block light system to be installed in a haulage way.

(12) A person who operates a trackless unit shall ensure that the transmission is engaged at all times while the unit is in motion.

(13) The operator of a trackless unit in an underground mine shall ensure that the unit is not parked or left unattended unless–

(a) the engine or power supply has been switched off;

(b) the parking brake has been applied;

(c) any bucket or other implement is lowered to the ground or chocked; and

(d) if a flashing light is fitted to the vehicle, the light is activated during any period when there is other traffic in the locality.

(14) If a trackless unit is left unattended on a slope in an underground mine, the operator of the unit must ensure that the wheels of the vehicle are either turned towards the adjacent side wall or securely chocked.

(15) The mine manager and the mineral right holder shall ensure that each trackless unit used in the mine is cleaned, inspected, tested and maintained by a competent person at intervals, and in accordance with procedures, recommended by the manufacturer.

(16) The mine manager and the mineral right holder shall ensure that–

(a) all windows and windshields that are fitted to trackless units used in the mine are made of laminated glass or other shatter proof material; and

(b) if any window or windshield is cracked from one edge to another, the window or windshield is replaced as soon as is practicable.

(17) If the size or design of a trackless unit used at an underground mine restricts the field of view of the operator in the intended direction of travel–

(a) the mine manager and the mineral right holder shall ensure that the unit is fitted with an audible warning signal; and

(b) the operator of the unit must ensure that the warning signal is sounded before the unit is moved from a stationary position.

(18) The warning signal required this regulation shall be in addition to any reversing alarm which may be fitted to the unit.

Safety standards for machine.

163. (1) The mine manager shall ensure that–

(a) all areas where diesel fuel is stored underground and where fuelling is carried out are clearly marked and measures are in place to prevent spillage, contamination and fire;

(b) all services, maintenance and repairs to diesel-powered equipment are performed by a competent person ;

(c) diesel engine fuel is delivered underground in such a way that no spillage takes place during delivery;

(d) when fuel is piped underground fuel delivery pipes are drained each time after use;

(e) fuel is stored underground in non-flammable robust containers which do not leak; and

(f) the quantity of fuel stored underground is limited to 3 (three) day's estimated consumption.

(g) that every mobile diesel engine powered unit when not in use, is kept at a location that is sufficiently ventilated to prevent a build-up of diesel fumes in the air at that location.

(2) Every diesel engine used underground shall be provided with means whereby–

(a) the air entering the engine is cleaned;

(b) all exhaust gas shall, prior to expulsion, be cooled and diluted; and

(c) the emission of all flames and sparks is prevented.

(3) The mine manager shall ensure that all equipment designed to implement the results described in sub-regulation (2) kept clean and maintained in an effective manner.

(4) Every underground filling station where diesel powered units are refuelled shall be adequately ventilated, constructed of non-flammable material and have a smooth imperious floor which must be kept clean at all times.

Self-propelled machines.

164. (1) The mine manager or any competent person mobile appointed under these Regulations may in writing, authorise any person to drive a self-propelled mobile machine if the mine manager or competent is satisfied that such person–

(a) has attained the age of 18 years;

(b) does not suffer from defective sight or hearing or any other mental or physical infirmity which is likely to interfere with the efficient performance of duties;

(c) has completed a satisfactory course of training; and

(d) has been found competent to do so upon completion of a test set by the competent person or by some other competent person to whom this duty has been delegated by the engineer.

(2) All persons authorised to drive a self-propelled mobile machine who have for any reason whatsoever not driven such a

machine for a period in excess of 180 days is required to undergo refresher testing in order to ensure that person continues to satisfy condition specified under clauses (a) to (c) of sub-regulation (1).

(3) No person operating a self-propelled mobile machine shall leave such machine unattended unless that person has taken reasonable precautions to prevent it from being set in motion by an unauthorised person.

Underground rail transport machinery.

165. (1) If rail mounted locomotive haulages are used or are to be used in an underground mine, the mine manager shall ensure that a plan is repared in accordance with sub- regulation (2) to ensure that the operation and maintenance of the haulage system is made as safe as is reasonably practicable.

(2) The plan referred to in sub-regulation (1) shall be prepared before the haulage system is used at the mine and shall include details of operating and maintenance procedures, haulage specifications and layout and required safety precautions.

(3) The mine manager shall ensure that as soon as is practicable after a plan is prepared under sub-regulation (2) a copy of the plan is submitted to the Chief Inspector of Mines for approval.

(4) If in the Chief Inspector of Mines' opinion a plan is inadequate in any respect, the Chief Inspector of Mines may direct that the plan be amended in a specified way and re submitted to the Chief Inspector of Mines.

(5) A direction may be given under sub-regulation (4) as often as the Chief Inspector of Mines deems necessary until the plan is satisfactory.

(6) The mine manager must ensure that a direction given under sub-regulation (4) is complied with as soon as is practicable.

(7) The mine manager shall ensure that–

(a) no internal combustion engine, other than a diesel engine, is used underground in the mine;

(b) only automotive diesel fuel is used in diesel engines used underground in the mine.

(c) if any liquid that is a flammable liquid or combustible liquid is taken underground in the mine, the liquid is taken underground in a container that does not leak, and is transported in a secure manner.

(d) at any time the quantity of automotive diesel fuel stored underground at the mine does not exceed the quantity required to do 3 days' work at the mine.

Underground ventilation.

166. (1) Before commencement of operations, the mineral mine right holder shall submit an accurate and up-to-date mine ventilation plan to the Director which shall include the following information–

(a) the limits of the mine property including all known underground workings bordering the mine, regardless if these workings are above, adjacent to or below the level of the mine;

(b) the location of all oil and gas wells;

(c) the location of all surfaced installed fans, the type of fan, the manufacturer's name, the size of the fan and complete operating specifications;

(d) the location of all surface mine openings;

(e) any abnormal conditions such as faults which affect mine ventilation;

(f) the anticipated mine development for at least one year; and

(g) the direction and volume of air at each surface opening of the mine,

(2) The mine manager shall ensure that a person is appointed to be a ventilation officer for the mine and may appoint different persons to be ventilation officers for different parts of the mine.

(3) The mine manager shall inform the Chief Inspector of Mines writing of the appointment of each ventilation officer, who may by written directive exempt any mine from the requirements of these Regulations if, in the Chief Inspector of Mines' opinion, the scale, scope and nature of mining operations at the mine do not warrant the appointment of a ventilation officer.

(4) To be eligible for appointment as a ventilation officer for an underground mining operation, a competent person whose training or qualifications included mine ventilation as a substantial component of the curriculum or a qualification considered by the Director to be adequate for the mine.

(5) A ventilation officer for an underground mining operation shall be responsible for–

(a) regularly inspecting and testing workplaces, travel ways and locations where persons may travel in the mine to determine whether–

(i) atmospheric contaminants in the mine are maintained at levels as low as can reasonably be achieved; and

(ii) the mine ventilation system is providing adequate ventilation flows through those areas;

(b) determining and recording the quantity and quality of ventilating air in the mine using correct procedures and instruments and equipment suited to that purpose at three monthly intervals and after substantial change to the primanry ventilation circuits and volume flows;

(c) operating, calibrating and maintaining any metering or monitoring device used to determine the levels of emissions of toxic or other atomospheric contaminants from any plant or equipment at the mine;

(d) ensuring that all atmospheric contaminant sampling requested by the Chief Inspector of Mines or Director is carried out and is recorded and reported accurately and within the time required;

(e) reading and recording the wet and dry bulb tempretures of all workplaces in the mine where it is suspected that temperatures or humid conditions may have potential for adverse effects on the safety and health of persons in thise workplaces;

(f) correctly selecting and positioning auxiliary fans, regulators and other controls, if required to ensure that the required volumes of air are provided in workplaces at the mine to satisfy statutory requirements;

(g) having the pressure and volume readings of primary fans used in ventilating the mine taken and recorded at intervals not exceeding three months;

(h) having ventilation plans of the mine updated at intervals not exceeding three months, and ensuring that the current ventilation and survey information is immediately available on special plans maintained for the use of rescue teams in the event of an underground emergency;

(i) reporting promptly to the mine manager or the mine manager's representative any defect or deficiency of which the ventilation officer is aware in the ventilation at the mine and any atmospheric contamininant level in a workplace at the mine that exceeds the exposure standard;

(j) maintaining and entering in the ventilation log book all records required under this part and ensuring that each complete entry is dated and signed; and

(k) providing technical advice and guidance to any technician employed to assist the ventilation officer.

(6) The mine manager shall cause to be kept at the mine a ventilation log book in which the information required by law must be recorded.

(7) The mine manager shall ensure that any defect or deficiency in the ventilation system in the mine reported by a ventilation officer to the mine manager or the mine manager's representative is rectified as soon as is practicable and must record the rectification in the ventilation log book.

(8) If any fan or other ventilation device at a mine breaks down, the mine manager of an underground mine shall ensure that such action is immediately taken as is necessary to ensure the safety and health of all persons affected by the breakdown.

(9) The mine manager shall ensure that ventilating air provided for in the mine is of sufficient volume, velocity and quality–

(a) to remove atmospheric contaminants resulting from blasting and other mining operations in the time allowed for that purpose; and

(b) to maintain a healthy atmosphere in workplaces during working hours by reducing the level of atmospheric contaminants in the workplace to levels as low as are practicable.

(10) A mineral right holder shall cause all necessary measures and precautions to be taken to ensure that employees at the mine do not suffer harm to their health from the adverse effects of extremes of heat or cold.

(11) If conditions in any workplace are, or are likely to be, hot and humid, the mineral right holder shall ensure that–

(a) all employees are provided with training on measures to be taken to avoid any harmful effects from those conditions;

(b) appropriate workplace environmental controls (including ventilation) and monitoring are implemented; and

(c) if appropriate, a program for monitoring the health of employees in the workplace is implemented.

(12) The mine manager shall ensure that–

(a) if diesel units are used at the mine, each fan and other ventilation device at the mine is selected, installed, operated and maintained so that–

(i) the air volume circulating in the mine is sufficient to maintain the good health and safety of the workforce; and

(ii) the fan or other ventilation device is sufficient to maintain workplace

atmospheric conditions conducive to safe and healthy conditions for the workforce.

(b) any installations provided for the regulation and control of air flows in the mine are kept free from obstruction and are maintained in good order.

Flooding.

167. (1) Storm-water trenches and embankments shall be established and kept in a good order at every mine to protect workers from flooding on surface and in all underground workings where persons are employed.

(2) The collar of every shaft or other similar opening surface, situated in low lying ground which connects with underground workings where persons are employed shall be raised so as to afford efficient protection against flooding.

(3) No person shall work or cause or permit any other person to work, in any position from which the falling or slipping of such person may result in injury unless such person is secured by a life-line or otherwise suitably safeguard.

(4) No person shall enter or cause or permit any other person to enter any accumulation of water or mud unless such person is secured by a life-line or otherwise suitably safeguarded.

Bore holes.

168. The mine manager shall ensure that a sufficient number of boreholes are holes drilled to a suitable length in order to provide ample warning of the existence of water bearing fissures and such drilling shall be carried out in advance of all development ends except those for which exemption in writing has has been obtained from the Director.

Flammable gas.

169. (1) No person shall commence work or continue to work in a mine where the atmosphere contains more than 1.4 per hundred by volume of flammable gas or in the same ventilating district within a radius of 30 metres of such part.

(2) No person shall use or cause or permit any other person to use any electrical machine or any electrical apparatus in any underground working place in a mine where the atmosphere contains more than 1.4 (one point four parts) per 100 by volume of flammable gas other than–

(a) an electric lamp approved pursuant to these Regulations;

(b) a flammable gas measuring instrument approved pursuant to these Regulations; or

(c) a flammable gas warning device or other monitoring or communication system approved pursuant to these Regulations.

Testing of flammable gas.

170. In the course of every inspection made pursuant to these Regulations, the ganger or miner in charge shall test for flammable gas with gas measuring device and if flammable gas is detected in an amount exceeding 1.4 (one point four parts) per hundred by volume, the ganger or miner in charge shall ensure the immediate withdrawal of persons from the area and shall promptly inform the Mine Manager or supervisor in writing of the presence of gas.

Misfired holes, and sockets.

171. In order to discover any misfired holes and sockets from the face and immediate vicinity, the ganger or miner in charge shall, before drawing any hole with wax, paint or other indelible material or indicating to any driller worker under him the position of any hole to be drilled, remove or cause to be removed all loose or loosened rock, mineral or ground and shall carefully examine the face and immediate vicinity.

Dissipitation fumes.

172. The mine manager shall not, after any firing has taken place whether by electricity or in any other manner, enter or allow any person to enter the place in which firing has occurred until the harmful smoke, gas, fumes or dust caused by the explosion have dissipated unless the mine manger or other person is wearing effective safety apparatus approved by the Director which is specifically designated to prevent the inhalation of smoke, gas, fumes or dust.

Water blast.

173. (1) In a development end of a mine the mine manager shall–

(a) test the apparatus immediately before a hole is charged with explosives;

(b) test all ventilation required in relation to such blasting; and

(c) take the necessary steps to bring the said apparatus into action immediately before or after a charge has exploded, provided that, if after testing the apparatus or any required ventilation system is not operating the mine manager shall not authorise the charging of holes with explosives or firing.

(2) The mine manager or supervisor shall not enter or allow a person to enter a development end after a charge has exploded therein, unless:

(a) all blasting apparatus has been in action for at least 30 minutes or such lesser time as the Director may permit, in writing; and

(b) the air is free from smoke, gas, fumes and dust.

Blasting times.

174. (1) The mine manager shall fix all blasting times.

(2) The mine manager shall not permit blasting to occur unless reasonable precautions are taken to prevent any person from being exposed to smoke, fumes and dust emanating from the firing.

(3) Prior to blasting the ganger or miner in charge shall–

(a) wet the ground thoroughly within a distance of at least 10 meters of the anticipated blast; and

(b) observe the precautions herein in relation to misfired holes.

PART XIII–RECLAMATION AND MINE CLOSURE CONSIDERATION

Rehabilitating mining area.

175. (1) Notwithstanding any obligations imposed under the Enviroment Protection Agency Act 2008 (Act No. 11 of 2008) the mineral right holder shall, as far as reasonably practicable, rehabilitate the mining area and close the mine in a manner that ensures the long–term safety of the area.

(2) A mineral right holder shall rehabilitate and restore the site to a satisfactory condition by undertaking the following practices and procedures–

(a) eliminating unacceptable health hazards and ensuring public safety;

(b) limiting the production and circulation of substances that could damage the environment;

(c) taking measures to eliminate the need for long term maintenance and monitoring;

(d) restoring the site to a condition in which it is visually acceptable to the local community; and

(e) reclaiming land for future use in areas which contain infrastructure.

(3) All areas affected by mining operations including building sites, tailings ponds, sedimentation ponds and waste rock piles shall be re-vegetated in accordance with sub-regulation (4) in order to control erosion and restore the site's natural condition, provided that, if all or part of the mining site, especially mine rock piles, cannot be re-vegetated, the mineral right holder shall prove that the site is nevertheless in a "satisfactory condition" as determined by a competent person .

(4) Re-vegetation considerations include planting grass and bushes in areas prone to erosion, applying fertilizers to promote natural encroachment and the vegetation must resemble that of the natural environment except for early growth which may be a protective cover crop of non-seeding annuals.

(5) Prior to re-vegetation, the mineral right holder shall ensure that the land is properly prepared and where possible organic soil that has been saved during original site development shall be utilised on the land.

(6) A mineral right holder shall ensure that re-vegetation processes are self-sufficient for a period of six years after planting and shall not require fertilization or on-going maintenance.

(7) A mineral right holder shall ensure that any contaminated land shall be rehabilitated and all contaminated soil shall be removed from such land for placement into a designated and properly managed contaminated area and shall otherwise ensure that the contaminated soil will not cause harm to public health or the environment.

(8) A mineral right holder shall provide a quality assessment of the soils and sub-soils near electrical stations with facilities which contain oil or petroleum products and shall decontaminate them if required following the assessment.

(9) A mineral right holder shall provide documentation indicating whether or not the equipment in use contains Polychlorinated Biphenyl (PCBs) and, if so, all soil assessment must include PCB determinations.

Removal of vegetation.

176. (1) Where designated buildings are to be removed, walls shall be raised to the ground and foundations shall be removed equip but if they remain, they must be covered with a sufficiently thick layer ment etc. of growth media to permit the establishment of self-suffient.

(2) All waste caused by the dismantling of buildings and infrastructure including innocuous waste such as concrete, shall be documented, removed from the site and stored in an authorized waste disposal site created on the mine site, the location is approved by the Environment Protection Agency .

(3) All buried support infrastructures such as tanks, pipes and underground services, shall be removed but may, depending on the future use of the mining site, remain on site.

(4) The primary mining site and secondary access roads and railways shall be kept in a condition sufficient to allow access to monitor and to maintain mining structures and before closing down access roads, the mineral right holder shall check to see whether any other authorities wish to maintain and legally accept responsibility for the access roads or railways, as applicable.

(5) Where roads or railways are no longer necessary the site shall be restored as follows–

(a) road surfaces, shoulders, escarpments, steep slopes, regular and irregular benches must be rehabilitated to prevent erosion; and

(b) road surfaces and shoulders must be scarified, blended into natural contours and re-vegetated.

(6) Equipment and onsite and offsite electrical infrastructures such as pylons, electrical cables and transformers belonging to the mineral right holder shall be dismantled, provided that such installations may remain in place if there is a future potential use for it and there isagreement on who should monitor and maintain those installations.

(7) Mining equipment such as hoists, pumps, conveyors, jackleg drills, ore processing equipment grinding mills, flotation cells, cyanidation tanks, thickeners and heavy machinery such as motor vehicles, drills and shovels shall be de-contaminated and removed from the site by the mineral right holder.

(8) Where it is technically and economically feasible to do so, the mineral right holder shall ensure that all underground infrastructures such as crushers, rails, metal structures, water and air pipes, fans and pumps must be removed from the site and de-contaminated.

Rehabilitation.

177. (1) All surface openings to the underground work sites shall be backfilled and levelled to blend in with the surrounding topography or may be concretcapped but if the options are not techinically or economically feasible, a suitable fence shall be built,when backfilling surface openings and the mineral right holder shall seek the approval of the Director to determine whether the material to be used is acceptable.

(2) A mineral right holder shall ensure that any surface pillars retain long-term structural stability after mining operation cease and sustain their own weight and, if applicable, the weight of unconsolidated deposits, watersheds and all other surface loads and furthermore the mineral right holder shall ensure that engineering studies of pillar stability are prepared and submitted to the Director prior to mine closure.

(3) Mine dewatering ponds shall be restored unless the mineral right holder proves that they serve a future purpose.

(4) Pond dikes must be levelled, the site re-vegetated and natural drainage shall be re-established.

(5) Treatment of sludge shall be stored in the tailings ponds or in the absence thereof, disposed in accordance with these Regulations.

(6) Mine rock piles shall be stable in the long term to prevent erosion, subsidence or collapse and the generation of acid water andother contaminants and shall meet such environmental standards as may be prescribed by the Environment Protection Agency.

(7) Tailings and sedimentation pond containment structures shall–

(a) be maintenance-free;

(b) meet engineering criteria for physical stability; and

(c) not deteriorate, erode or collapse under natural elements such as wind, water or earthquakes, due to root damage, beaver dams and animal burrows.

(8) A mineral right holder shall use effluent-treatment facilities as a temporary measure or a long term measure whilst striving to develop technically and economically viable rehabilitation methods, provided that the mineral right holder acknowledges that effluent-treatment facilities do not constitute final rehabilitation.

(9) Systems shall be implemented to collect contaminated waters, including ground water and divert uncontaminated run-off water andsuch systems must require minimal maintenance and all mining effluents shall meet such environmental standards as may be prescribed by the Environment Protection Agency.

(10) A mineral right holder shall ensure that–

(a) all tailings pond overflow drainage is either of a maintenance free variety or is regularly maintained; and

(b) all water collection system dams meet international engineering criteria for physical stability.

Treatment of hazardous waste.

178. A mineral right holder shall ensure that the following actions are undertaken for the treatment of hazardous waste–

(a) septic tanks are emptied, decommissioned and removed or completely filled with gravel, sand, earth or inert material, provided that purification field treatment ponds shall not be removed;

(b) wastewater treatment ponds for domestic waste are emptied and backfilled or efficiently drained so as not to create stagnant water ponds;

(c) sewage sludge from treatment ponds may be used as fertilizer with the approval of the Environment Protection Agency;

(d) wastewater treatment equipment are removed, kept for reuse, or disposed in keeping with solid waste management requirements established by the Environment Protection Agency;

(e) the rehabilitation of all petroleum products sites used for the storage of fuels and lubricant shall be included in the closure plan and the measures taken to rehabilitate these sites shall comply with environmental standards as may be prescribed by the Environment Protection Agency;

(f) storage facilities and parts thereof including buried or surface tanks that have not been used must be dismantled and decontaminated and shall comply with environmental standards as may be prescribed by the Environment Protection Agency;

(g) mining area shall be decommissioned and decontaminated and shall comply with environmental standards as may be prescribed by the Environment Protection Agency; and

(h) hazardous waste shall be removed from the mining site after mining operations are permanently shut down, provided that interim on-site storage may be prescribed by the Environment Protection Agency if no disposal or treatment technology exists.

PART XIV – INFRINGEMENTS AND PENALTIES

Categorisation of infringements

179. (1) Infringements by a holder of a Large Scale Mining Licence shall be categorised as follows–

(a) **Category P1A** – administrative infringements with no immediate environmental or safety consequences involving the submission of reports or maintenance of records;

(b) **Category P2A** – operational infringements resulting in the potential for harm to the environment or the safety of workers or local communities;

(c) **category P3A** – operational infringements resulting in actual harm to the environment or the safety of workers or local communities; and

(d) **category P4A** – operational infringements resulting in substantial harm to the environment or the safety of workers or local communities , loss of life or Serious Injury or illness.

(2) Infringements by a holder of a holder of an Exploration Licence or Small Scale Mining Licence shall be categorised as follows–

(a) **Category P1B** - administrative infringements with no immediate environmental or safety consequences involving the submission of reports or maintenance of records;

(b) **Category P2B** - operational infringements resulting in the potential for harm to the environment or the safety of workers or local communities shall be termed;

(c) **Category P3B** - operational infringements resulting in substantial harm to the environment or the safety of workers or local communities; and

(d) **Category P4B** - operational infringements resulting in substantial harm on the environment or the safety of workers or local communities, loss of life or Serious Injury or illness.

Determination of infringement categories.

180. (1) The Director shall, acting reasonably, determine whether an infringement is categorized P1A, P1B, P2A or P2B and shall promptly notify the Board of the relevant categorization decision and reasons for the categorization.

(2) The Director in consultation with the Board shall determine whether an infringement is categorized as P3A, P3B, P4A or P4B.

(3) The Director may consult a competent person in order to determine the most appropriate categorization threshold for an infringement and the mineral right holder shall be required to pay the fees of such competent person.

Penalties.

181. Any holder of a Large-scale, Small-scale or Exploration Licensc who commits an infringement shall subject to Regulation 182 be liable to penalty prescribed in the First Schedule or a higher amount determined by the Director in consultation with the Board.

Suspension and cancellation of mining licence.

182. (1) If a mineral right holder is fined in accordance with Regulation 180 and subsequently repeats the same infringement for which it has been fined, the Director in consultation with the Board and with the approval of the Minister may–

(a) upon a second infringement, suspend the Mineral Right; and

(b) upon a third infringement, cancel the Mineral Right.

(2) Regulation 182 shall apply to a category P3A, P3B, P4A and P4B infringement only.

(3) In relation to a category P1A, P1B, P2A and P2B infringement only, the Director shall, prior to imposing a penalty in accordance with this Part XIV, issue a written warning to the mineral right holder informing it of the relevant infringement and providing it with a period of 14 days in which to remedy the relevant infringement.

(4) If the mineral right holder fails to remedy the infringement in accordance with sub-regulation (1) the Director shall impose the prescribed penalty for the relevant infringement category.

Notification and payment of fines.

84. (1) The Director shall notify the mineral right holder in writing of the infringement and the related penalty.

(2) The mineral right holder shall pay the penalty within 30 days of the notification referred to in sub-regulation (1) above and if the mineral right holder fails to pay the penalty within 30 days the Director may apply to the High Court of for the penalty to be made by an order of the court.

(3) The mineral right holder may dispute any penalty imposed by the Director and any such dispute shall be resolved in the first instance, by arbitration.

(4) An arbitrator shall be jointly appointed by the mineral right holder and the Director and the arbitrator must be an internationally accredited negotiator or mediator with experience in mining related grievances.

(5) The costs of the arbitration shall be paid by the mineral right holder.

(6) The mineral right holder or the Director has the right to appeal the decision of the arbitrator to the High Court and such appeal must be lodged by the aggrieved party within 10 days of receipt of the arbitral decision.

(7) The losing party shall pay all costs and fees associated with the appeal.

(8) The decision of the High Court shall be final and binding.

Review of penalties.

185. The Director in consultation with the Board shall annually review the penalty contained in these Regulations and following such review the Director may amend the penalty provisions contained herein.

No exclusion of liability.

186. (1) A mineral right holder remains liable under all civil or criminal laws to which it may be subject at any time and the penalty provisions contained herein shall not be interpreted as excluding liability or providing compensation in relation to any criminal or civil liability to which it may be subject.

(2) The penalty provisions contained herein are in addition to and in no way limit or exclude the obligation of a mineral right holder to spend funds and take any other remedial or restorative actions required to clean up and rehabilitate all damages resulting from the infringement and where practicable, restore damaged land or goods to their condition prior to the occurrence of the offence.

(3) Any compensation or fines indicated in the Act does not reduce, preclude, compromise or replace any payment of penalties, damages, indemnities or other economic consequences attributable to the mineral right holder under these Regulations.

FIRST SCHEDULE – PENALTY AMOUNTS

As established in Section 181 of these Regulations the following penalties shall apply.

P1A	Large-scale Mining License Holder	$10,000
P2A	Large-scale Mining License Holder	$50,000
P3A	Large-scale Mining License Holder	$250,000
P4A	Large-scale Mining License Holder	$750,000
P1B	Small-scale Mining License or Exploration License Holder	$5,000
P2B	Small-scale Mining License or Exploration License Holder	$25,000
P3B	Small-scale Mining License or Exploration License Holder	$125,000
P4B	Small-scale Mining License or Exploration License Holder	$375,000

MADE this *15th day of June, 2012.*

MINKALU MANSARAY,
Minister of Mines and Mineral Resources

PRINTED AND PUBLISHED BY THE GOVERNMENT PRINTING DEPARTMENT, SIERRA LEONE.
GAZETTE NO. 32 OF 11TH JULY, 2013.