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Management Series

OPERATIONAL GUIDELINE
No. M6.1

GUIDELINE DOCUMENT FOR THE IMPLEMENTATION OF REGULATIONS ON USE OF WATER FOR MINING AND RELATED ACTIVITIES AIMED AT THE PROTECTION OF WATER RESOURCES

SECOND EDITION

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DOCUMENT INDEX

This document is the sixth in a series of documents in the M-subseries dealing specifically with mining related issues. To date the following documents have been published.

M1 Operational guideline for the control over the alteration in the course of a public stream.

M2 Guideline concerning financial provision for the rehabilitation of land disturbed by mining activities.

M3 Policy and strategy for management of water quality regarding the mining industry in the RSA.

M4 Operational guideline for the application by a mine for a permit in terms of Sections 12B and 21 of the Water Act (Act 54 of 1956).

M5 Operational guideline for the DWAF to assist the DME with environmental management programmes in terms of the Minerals Act.

M6 Guideline document for the implementation of regulations on use of water for mining and related activities aimed at the protection of water resources.

- Edition 1 (Operational Guideline M6.0)
- Edition 2 (Operational Guideline M6.1)

APPROVAL

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GUIDELINE DOCUMENT FOR THE IMPLEMENTATION OF REGULATIONS ON USE OF WATER FOR MINING AND RELATED ACTIVITIES AIMED AT THE PROTECTION OF WATER RESOURCES

PURPOSE OF THIS DOCUMENT

Section 26(1) of the National Water Act, 1998 (Act 36 of 1998) provides for the development of regulations to, amongst others:

- require that the use of water from a water resource be monitored, measured and recorded;
- regulate or prohibit any activity in order to protect a water resource or in-stream or riparian habitat; and
- prescribe the outcome or effect which must be achieved through management practices for the treatment of waste, or any class of waste, before it is discharged or deposited into or allowed to enter a water resource.

When making regulations, the need for the following must be taken into account (section 26(4) of the National Water Act):

- promoting economic and sustainable use of water;
- conserving and protecting water resources or, in-stream and riparian habitat;
- preventing wasteful water use;
- facilitating the management of water use; and
- facilitating the monitoring of water use and water resources.

In terms of the above, the Minister of Water Affairs and Forestry has promulgated the regulations in respect of use of water for mining and related activities aimed at the protection of water resources on 4 June 1999 (Government Notice No. 704).

This document details these regulations and gives guidelines as to how they should be implemented. An explanation follows each regulation to explain the rationale behind the regulation, and how the regulation should be interpreted.

The document is aimed at both the mining industry (including industries with related activities, as defined) and the Department of Water Affairs and Forestry (DWAF) who has to enforce the regulations.

GUIDELINE DOCUMENT FOR THE IMPLEMENTATION OF REGULATIONS ON USE OF WATER FOR MINING AND RELATED ACTIVITIES AIMED AT THE PROTECTION OF WATER RESOURCES

Contents

GUIDELINE DOCUMENT FOR THE IMPLEMENTATION OF REGULATIONS ON USE OF WATER FOR MINING AND RELATED ACTIVITIES AIMED AT THE PROTECTION OF WATER RESOURCES

1. BACKGROUND

The first mining regulations were published in Government Notice No. R287 of 20 February 1976 in terms of section 26 of the Water Act, 1956 (Act 54 of 1956). These regulations were commonly known as R287 and related to the prevention of water pollution resulting from mining activities.

Prof Kader Asmal, then Minister of Water Affairs and Forestry, initiated the review of R287, in May 1995 through a press release following the Merriespruit slimes dam disaster in February 1994. In this press release, which concerned the improvement of tailings dam safety, the Minister suggested that the Department of Water Affairs and Forestry (DWAF) review R287 in co-operation with all interested and affected parties. The Merriespruit disaster caused both loss of life and water pollution. However, DWAF decided to only address water pollution aspects as the Department of Minerals and Energy (DME) undertook to develop regulations addressing safety aspects at tailings dams.

The first set of draft regulations was published in the *Government Gazette* of 28 November 1997, allowing a 90-day period for public comment. DWAF reviewed the comments received and after careful consideration thereof amended the regulations accordingly. The decision-making process was recorded in a Review Document. By this time the National Assembly has approved the National Water Bill and it was decided to amend the draft regulations to bring it in line with the National Water Act, 1998 (Act 36 of 1998) and republish it for comment.

The second set of draft regulations on use of water for mining and related activities aimed at the protection of water resources was published in Government Notice No. R1499 on 27 November 1998 (*Government Gazette* No. 19519) for public comment. A number of comments on the said regulations were again received and evaluated by DWAF before the final regulations were approved. A complete record of comments and the evaluation of and decision made with respect to each comment were recorded in a Review Document.

The final regulations were published in Government Notice No. 704 on 4 June 1999 (*Government Gazette* No. 20119) and approved by the National Assembly on 14 October 1999.

2. INTRODUCTION TO THE REGULATIONS

The following Explanatory Note, describing the policy decision made by DWAF with respect to the implementation of the regulations, precedes the regulations:

The Minister of Water Affairs and Forestry is responsible for the protection, use, development, conservation, management and control of the water resources of South Africa on a sustainable basis. The requirements prescribed in terms of the regulations must be seen as minimum requirements to fulfil this goal.

The Department subscribes to the principles of co-operative governance and recognises the role of the Department of Minerals and Energy to co-ordinate environmental management within the mining industry and the role of the Department of Environmental Affairs and Tourism as the lead agent on matters affecting the environment. The roles of Environmental Management Programme Reports and Environmental Management Programme Performance Assessment Reports required in terms of the Minerals Act, 1991 (Act No. 50 of 1991), and Environmental Impact Assessment Reports required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989) are recognised and supported by the Department. Any information, obligations, programmes, permissions and commitments contained in the above reports, procedures, consultation requirements and decision-making processes will be recognised by the Department. To promote co-ordination, copies of relevant exemptions from the requirements of the regulations will be forwarded to the Department of Minerals and Energy and the Department of Environmental Affairs and Tourism.

Implementation of the regulations will be delegated to the appropriate level as soon as the necessary capacity has been created at regional level or catchment level.

Section 39(1) of the Minerals Act, 1991 (Act 50 of 1991) states that no mining shall commence before the holder of a mining authorisation has an approved environmental management programme (EMP), unless a temporary mining authorisation is granted in terms of section 39(4) of the said Act. Section 39(3) of the said Act further stipulates that before an EMP is approved, or a temporary mining authorisation granted, each department charged with the administration of any law which relates to any matter affecting the environment shall be consulted. However, the regulations (Government Notice R.801 of 25 June 1999) regarding the *Performance Assessment and Monitoring of Environmental Management Programme* do not prescribe a similar form of consultation (as with the EMP process) with other departments during the consideration/evaluation of the performance assessment report. Regulation 5.18.7 only stipulates that a report submitted in terms of these regulations be made available to other departments that were involved in the approval of the EMP.

The main overarching concern expressed with regard to the regulations was the possible duplication and overlap with many of the requirements enforced by DME in terms of the Minerals Act. The general opinion was that any regulations pertaining specifically to the mining industry should be promulgated under the Minerals Act, i.e. the *one-window approach* with DME as the lead agent.

Although DME and the mining industry have repeatedly indicated their willingness to address the concerns of all government departments through the EMP process, a

number of flaws have been identified in the process. This is currently being addressed through the revision of the *Aide-Mémoire* in order to fill the identified gaps. However, the responsibility to protect the water resources of the country remains that of DWAF. Thus, although DWAF is actively involved in and committed to this review process, it is necessary to put mechanisms in place and develop the necessary tools to achieve this protection while the EMP process is being revised. It is also not always appropriate or possible to enforce the requirements of the National Water Act through the Minerals Act.

In light of the above, it was considered necessary to develop the said regulations in order to enable DWAF officials to enforce the requirements of the National Water Act, thereby protecting the water resources of South Africa.

DWAF does, however, as stated within the explanatory note, subscribe to the principles of co-operative governance and further agrees that DME should co-ordinate environmental management within the mining industry, and will recognise any decisions made as part of the EMP process. A policy decision was therefore made to recognise all information, obligations, programmes, permissions and commitments contained within the approved EMP. The recommendation for approval of an EMP by DWAF can therefore be considered an approval of the proposals made by the specific mining company, which could ultimately mean that exemption will be granted from the requirements of a specific regulation in terms of regulation 3. However, it must always be kept in mind that the approval for an exemption has been delegated to the Director: Water Quality Management (D:WQM). Therefore, should the approval of an EMP be delegated to the Regional Director (refer to Operational Guideline M5.0 for delegated responsibilities), a short motivation for exemption from the requirements of a specific regulation should be forwarded to the D:WQM for his final approval (refer to section 3.3 – Regulation 3: Exemption from requirements of regulations, for the route to be followed). In this case reference could be made to the EMP document as part of the motivation to the D:WQM, implying that the applicant need not submit a separate application for exemption.

The same principle as discussed above is applicable to the Environmental Impact Assessment (EIA) report required in terms of the Environment Conservation Act, 1989 (Act 73 of 1989).

The above policy is, however, applicable only if DWAF has been consulted before either of the said reports have been approved and agreed fully to such approval.

3. REGULATIONS AND EXPLANATIONS

3.1 Regulation 1: Definitions

The definitions included in GN704 are attached as Appendix A. As most of the definitions are clear and should not pose any problems, only the definitions that could possibly lead to conflicting interpretations are addressed hereunder.

***"activity**", means-*

a) any mining related process on the mine including the operation of washing plants, mineral processing facilities, mineral refineries and extraction plants, and

b) the operation and the use of mineral loading and off-loading zones, transport facilities and mineral storage yards, whether situated at the mine or not,

(i) in which any substance is stockpiled, stored, accumulated or transported for use in such process; or

(ii) out of which process any residue is derived, stored, stockpiled, accumulated, dumped, disposed of or transported.

During the development of the regulations a decision was made that industrial activities will not be included in the definition of "activity". However, the differentiation between a mining and an industrial activity is not always that clear. When any doubt exists whether a specific activity directly or indirectly related to mining should comply with GN704 or not, the issue should be evaluated on a site-specific basis and a decision made on that basis. The decision whether a specific activity needs to comply with the regulations or not has to be approved by the D:WQM based on a motivation by the proponent and/or Regional Office.

Examples of the above differentiation are illustrated below.

- **Eskom: Coal-fired power stations**
  The phrase "..whether situated at the mine or not..." allows for the following sections of the definition to be applicable to power station activities:
  - mineral storage yards, transport facilities and loading zones
  - storing, stockpiling, accumulating, dumping, disposing or transportation of residue.

  However, a decision was made by DWAF that coal-fired power stations are not included in the definition of "activity" as coal-fired power stations are regarded an industrial activity, and not a mining activity. Coal-fired power stations and its directly related activities are therefore excluded from these regulations.
  Note: Should a power station, for instance, make use of the workings of any underground or opencast mine excavation for the disposal of any residue defined in the regulations, this specific activity is considered a *related activity* and is thus not exempted from these regulations (refer to regulation 4(b) discussed under section 3.4 – Restrictions on locality).

- **Samancor: Meyerton Works**
  Samancor: Meyerton Works is a Ferro-Alloy Producer who stockpiles coal, manganese and reductants. The volume that is stockpiled is enough for two week's operation. DWAF made the decision that the Samancor: Meyerton Works is not included in the definition of "activity" as the operation is regarded an industrial activity and therefore does not have to comply with the regulations.

- **Coal sidings or washing plants**
  Coal sidings and washing plants are very often not situated on the same premises as the mining operation, and is in certain instances not regarded as part of the mining activity in terms of the Minerals Act, 1991. The water management related to the coal siding or washing plant is therefore usually not addressed in the EMP. DWAF made the decision that all coal sidings and washing plants have to comply with GN704, whether situated at a mine or not. Therefore, a loading or off-loading zone situated at Richards Bay, for example, will have to comply with these regulations.

However, when making this differentiation between mining and industrial activities, the following must be kept in mind and the industrial activities excluded from the definition of "activity" must be advised accordingly:

- DWAF is currently in the process of developing similar regulations on the use of water for industrial activities. These regulations will address the same concerns as that of GN704, and will most likely have similar requirements. It is therefore proposed that the industrial activities, especially new activities, address and manage their water-related issues according to these regulations.
- Section 19 of the National Water Act stipulates that all reasonable steps must be taken to prevent pollution from occurring, continuing or recurring from any activity or process which causes, has caused or is likely to cause pollution of a water resource. The industrial activities excluded from the definition of "activity" are therefore not exempted from preventing or rectifying any pollution caused by their activities.

***"dam**", includes any settling dam, slurry dam, evaporation dam, catchment or barrier dam and any other form of impoundment used for the storage of unpolluted water or water containing waste.*

A dam includes any structure that is used for the storage of either unpolluted water or water containing waste. Underground storage facilities on mines are thus included in this definition.

3.2 Regulation 2: Information and notification

(1) Any person intending to operate a new mine or conduct any new activity must notify the Department of such intention not less than 14 days before the start of such operation or activity.

DWAF is normally notified of a new mining activity through the EMP process; however, numerous mining operations start without an approved EMP, or is not defined as a mining activity in terms of the Minerals Act, e.g. coal-sidings or washing plants not situated on the mine's premises. This regulation stipulates that DWAF be notified of the commencement of all mining and related activities, allowing DWAF the opportunity and time to inspect a mine or activity to ensure that the necessary water and pollution control measures are in place to protect the water resource. It must, however, be noted that this notification relates to the mining or related activity as a whole, and not to each and every specific activity within the operation of a mining or related activity.

The notification should preferably be made to the Regional Office responsible for the water quality management of the specific water management area and should at least include the name of the mine or activity, name of the owner, surface/mineral right owner(s) (if applicable), contact details, the location of the mine or activity and the type of mine or activity.

(2) Any person in control of an existing mine or activity must-
(a) submit a copy of all amendments of their environmental management programme to the Department;

This regulation allows DWAF to insist on receiving a copy of any amendments to the EMP from the specific mining activity, but only in the event of not receiving the document through the normal procedures from DME. Similarly, this regulation allows DWAF to insist on receiving a copy of the final approved amendment of an EMP.

(b) notify the Department in writing 14 days before the temporary or permanent cessation of the operation of a mine or the conducting of an activity, or the resumption of such operation or activity;

This regulation allows DWAF the opportunity and time to inspect a mine or activity before the temporary or permanent cessation thereof to ensure that the necessary water and pollution control measures are in place to protect the water resource. Note must be taken that, in terms of section 19 of the National Water Act, the person in control of a mine or related activity remains responsible for any pollution of a water resource. Also refer to section 3.9 – Regulation 9: Temporary or permanent cessation of mine or activity.

(c) notify the Department by the fastest possible means of any emergency incident or potential emergency incident involving a water resource at or incidental to the operation of a mine or the conducting of any activity, furnishing information regarding-
- *(i) the date and time of the incident;*
- *(ii) a description of the incident;*
- *(iii) the source of the pollution or potential pollution;*
- *(iv) the impact or potential impact on the water resource and the relevant water users;*

(v) remedial action taken or to be taken by the person in control of the mine or activity to remedy the effects of the incident; and

(d) within 14 days after the date of an incident contemplated in paragraph (c) inform the Department in writing of measures taken to correct and prevent a recurrence of such incident.

Subregulations 2(2)(c) and (d) is clear as to the responsibility of a mining or related activity with regard to an emergency incident involving a water resource, and reflects section 20 of the National Water Act. This notification allows DWAF to identify the source of an impact at an early stage and take the necessary preventative measures, e.g. warn downstream users. The notifications referred to in subregulations 2(2)(c) and (d) should preferably be made to the Regional Office responsible for the water quality management of the specific water management area in which the incident occurred, or is likely to occur.

3.3 Regulation 3: Exemption from requirements of regulations

The Minister may in writing authorise an exemption from the requirements of regulations 4, 5, 6, 7, 8, 10 or 11 on his or her own initiative or on application, subject to such conditions as the Minister may determine.

The regulations allow for the exemption from the requirements of certain of the regulations. This is a relaxation of the previous R287, which did not allow for any exemptions. When considering exemptions from the regulations, site-specific conditions must be taken into account. The exemption should be applied for, or granted, taking the bigger picture into account, i.e. all existing licences (or permits), exemptions, approvals, etc. addressing the same issue should be recognised to prevent contradictory decision-making. A balance between social, economic and environmental must be established to ensure sustainable development, without allowing the water resource in question to deteriorate beyond repair. It must, however, be avoided that exemptions become the rule rather than the exception.

Approval for an exemption has been delegated to the Director: Water Quality Management (D:WQM). To obtain an exemption from any of the said regulations, the applicant and the Department should follow the following route:

- A formal application for exemption should be forwarded to the relevant Regional Director, containing at least the following:
  - Motivation and reason for exemption
  - Alternative proposal to the specific requirements of GN704
  - Impact assessment of alternative proposal
  - Management plan associated with alternative proposal
  - Proposed performance assessment and monitoring techniques

  Note: Should the necessary information to motivate an exemption be readily available in an existing EMP or EIA report, these documents could be used as reference, thereby preventing unnecessary duplication. Also refer to the third last paragraph of section 2: Introduction to the Regulations, which deals with the issue of approving exemptions in terms of the EMP process.
- The Regional Office should evaluate the application and alternative proposed by the applicant.

- If additional information is required, the applicant should be requested in writing to supply the required information.
- If the Regional Office is satisfied with the application, the application (including supporting documentation) should be forwarded to the D:WQM, together with a short motivation for approval and the proposed conditions for approval, signed by the Regional Director.
- If the D:WQM is not satisfied with either the application or the motivation for exemption by the Regional Office, the D:WQM should inform the Regional Director accordingly by letter.
- If the D:WQM is satisfied with the application, the application and proposed conditions under which the exemption is made should be approved (and signed) by the D:WQM and a copy thereof forwarded to the Regional Office.
- The Regional Office should then notify the applicant of the exemption from the specific requirements of GN704 by letter. This letter should refer to the (attached) approval by D:WQM, which should also include the conditions under which the exemption is made.
- To promote co-operative governance, it was decided that any exemption granted in terms of the regulations will be forwarded to both DME and the Department of Environmental Affairs and Tourism (DEAT) – refer to section 2: Introduction to the Regulations. The above letter should thus also be forwarded to DME and DEAT for their information. Through this correspondence DME and DEAT will be able to ensure that their legal requirements are also met.

Also refer to Appendix B: Delegations of powers and duties in terms of GN704.

Linkages with other requirements of the National Water Act

Water use licence: Should an exemption from any requirements of these regulation imply the necessity for a water use licence, the person in control of a mine or activity need only to apply for a water use licence, i.e. a water use licence has higher authority than the regulations. However, the following clause needs to be incorporated into the water use licence: *In terms of the conditions of this licence, the Licence Holder is exempted from the clause (specific regulation) of the regulations on use of water for mining and related activities aimed at the protection of water resources (GN704).*

General authorisations: Should non-compliance with any requirement in terms of the regulations be allowed in terms of the General Authorisations, the person in control of a mine or activity need not apply for an exemption from those specific requirements, i.e. the conditions of the General Authorisations override the requirements of these regulations.

3.4 Regulation 4: Restrictions on locality

No person in control of a mine or activity may-

(a) locate or place any residue deposit, dam, reservoir, together with any associated structure or any other facility within the 1:100 year flood-line or within a horizontal distance of 100 metres from any watercourse or estuary, borehole or well, excluding boreholes or wells drilled specifically to monitor the pollution of groundwater, or on water-logged ground, or on ground likely to become water-logged, undermined, unstable or cracked;

The 1:100 year flood-line restriction is the internationally accepted norm for the placement of anything that may be in danger of failing or have a potential safety hazard. This norm is also reflected in section 144 of the National Water Act in respect of the locality of townships. Although certain of the regulations refer to the 1:50 year flood-line requirement (see subregulations 4(b) and 4(d) below), the aspects referred to in this subregulation is considered to potentially have a big impact on the water resources, therefore the more conservative minimum requirement is set.

This subregulation should be interpreted similarly to subregulation 4(b) below, which stipulates *whichever is the greatest*. This implies that the mine or activity should comply with both requirements stipulated in this subregulation, namely the 1:100 year flood-line and the horizontal distance of 100m.

The 1:100 year flood-line should be determined by a suitably qualified person, e.g. hydrologist, civil engineer, agricultural engineer, etc., who can professionally be held liable for his/her calculations in the case of a disaster (loss of human life, extreme water pollution, etc.).

(b) except in relation to a matter contemplated in regulation 10, carry on any underground or opencast mining, prospecting or any other operation or activity under or within the 1:50 year flood-line or within a horizontal distance of 100 metres from any watercourse or estuary, whichever is the greatest;

This regulation is not applicable to mining or related activities associated with the winning of sand and alluvial minerals (including diamond diggings) from a watercourse or estuary – refer to section 3.10 - Regulation 10: Additional regulations relating to winning sand and alluvial minerals from watercourse or estuary.

In this case the less conservative requirement of 1:50 year flood-line was set. However, from experience it was felt that this sets achievable and realistic requirements, and will still provide the necessary protection.

It must be noted that this is an area where site-specific flexibility will be required in the implementation of GN704 as certain circumstances do warrant an exemption in terms of the regulations (e.g. deep gold mining operations, etc.). Further, existing legitimate operations with valid approved EMP's (recommended by DWAF) should not be subjected to this requirement, except in the cases where a specific operation has a potential to impact on a water resource and the specific aspect was not sufficiently addressed in the EMP. In the case of the latter, the impact can either be addressed through an amendment of the EMP, or a technical investigation as referred to in regulation 12, whichever is the most appropriate.

Should a person in control of a mining or related activity apply for exemption from this requirement, the application should be evaluated according to the Operational Guideline M1.1, which includes the *Guideline for the evaluation of an application for the undermining of a watercourse.*

(c) place or dispose of any residue or substance which causes or is likely to cause pollution of a water resource, in the workings of any underground or opencast mine excavation, prospecting diggings, pit or any other excavation; or

Regulation 5.13.4 (Government Notice R992 of 26 June 1970) of the Minerals Act, 1991 states that residue should preferably be placed in the workings of a mine unless otherwise directed. The reasoning behind this is that there are certain environmental objectives regarding land-use, surface rehabilitation, filling of voids, subsidence, etc. which are appropriately addressed by back-filling.

The intention of this regulation is not to be in conflict with the Minerals Act, but only to allow DWAF the opportunity to evaluate the acceptability of the possible impact from the back-fill material in terms of its potential to pollute a water resource. As not all mining waste necessarily have potential pollution possibilities, this regulation is only applicable to those wastes used as back-fill that causes, or has the potential to cause pollution of a water resource, and should therefore be implemented as such. The responsibility to prove that the material used will have no impact lies with the person in control of a mining or related activity and sufficient scientific evidence to support this should be readily available for evaluation. Again, if this aspect has been sufficiently addressed in the EMP, exemption from the requirements of this subregulation can be granted (refer to the third last paragraph of section 2: Introduction to the Regulations).

Further, in terms of section 40 of the National Water Act the person in control of a mining or related activity need to apply for a water use licence for the disposal of waste or water containing waste.

(d) use any area or locate any sanitary convenience, fuel depots, reservoir or depots for any substance which causes or is likely to cause pollution of a water resource within the 1:50 year flood-line of any watercourse or estuary.

Fuel depots include used oil and grease, normally stored in containers or drums. The aspects referred to in this regulation is easily manageable, and not considered to have a big potential impact on the water resources if managed properly, therefore the less conservative minimum requirement of the 1:50 year flood-line. Also refer to the discussion under subregulation 4(a).

3.5 Regulation 5: Restrictions on use of material

No person in control of a mine or activity may use any residue or substance which causes or is likely to cause pollution of a water resource for the construction of any dam or other impoundment or any embankment, road or railway, or for any other purpose which is likely to cause pollution of a water resource.

The intention of this regulation is to prevent the pollution of a water resource by restricting the use of certain materials for the construction of any feature. Again it must be noted that

this is an area where site-specific flexibility will be required in the implementation of GN704 as certain circumstances do warrant an exemption in terms of the regulations. One should therefore only focus on material that may pose an impact on a water resource. The way or manner in which certain materials are used can also influence the pollution potential thereof and should thus also be considered.

The responsibility to prove that the material used will have no impact lies with the person in control of a mining or related activity and sufficient scientific evidence to support this should be readily available for evaluation. Should a person in control of a mining or related activity apply for exemption from this requirement, the pollution potential, as well as associated impact should be evaluated on a site-specific basis (refer to the process described under section 3.3 – Exemption from requirements of regulations).

3.6 Regulation 6: Capacity requirements of clean and dirty water systems

Every person in control of a mine or activity must-

(a) confine any unpolluted water to a clean water system, away from any dirty area;

One of the most important best management practice principles relating to water management is the separation of unpolluted (clean) and polluted (dirty) water and in order to achieve this effectively, the person in control of a mining or related activity should develop and implement a storm water management plan for their premises. The distinction between clean and dirty water relies on the specific requirements of a water resource, and should therefore be determined on a catchment specific basis. Also refer to the definitions of *pollution* and *waste* in the National Water Act.

(b) design, construct, maintain and operate any clean water system at the mine or activity so that it is not likely to spill into any dirty water system more than once in 50 years;

The containment of unpolluted water should only occur if the volumes pose a risk, the water couldn't be diverted to a watercourse by gravitation, or for attenuation purposes. The unpolluted water should as far as possible be released into natural watercourses under controlled conditions. As the storage of water is defined as a water use in section 21 of the National Water Act, the person in control of a mining or related activity need to apply for a water use licence, unless covered under a General Authorisation.

A clean water system must be designed and operated in such a manner that it is at all times capable of handling the 1:50 year flood-event on top of its mean operating level without spilling. However, all other requirements related to water systems as stipulated in the regulation must also be taken cognisance of during the design of such a system, e.g. requirements of subregulation 6(e).

Mean operating level: no guidelines to determine the mean operating level of a water storage facility is available, as this is regarded a very site-specific issue. When designing a dam, the emphasis should be placed on *at all time capable of handling the 1:50 year flood-event*. How this is calculated and complied with will be determined by the specific circumstances and processes involved. It is proposed that acceptable engineering principles be used during the design of a water system; however, the Department cannot be prescriptive in this matter as the assurance that the design complies with the requirements is ultimately the responsibility of the design engineer. Therefore, a suitably

qualified person must be responsible for the design of a water system and the construction thereof should take place under the supervision of that person.

(c) collect the water arising within any dirty area, including water seeping from mining operations, outcrops or any other activity, into a dirty water system;

Any water arising from an area, which causes, has caused or is likely to cause pollution of a water resource, including polluted stormwater, must be contained within a dirty water system. In order to reduce the volume of polluted water, contaminated areas should be minimised. While clean water should be diverted to natural watercourses, polluted water should be re-used wherever possible, thereby reducing the use of clean water. Also refer to discussion under subregulation 6(a).

(d) design, construct, maintain and operate any dirty water system at the mine or activity so that it is not likely to spill into any clean water system more than once in 50 years; and

See discussion under subregulation 6(b).

(e) design, construct, maintain and operate any dam or tailings dam that forms part of a dirty water system to have a minimum freeboard of 0.8 metres above full supply level, unless otherwise specified in terms of Chapter 12 of the Act.

Definition of freeboard (see Appendix C for illustrations):

- Water storage dam – Freeboard with respect to water storage dams can be defined as the distance between the full supply level (spillway crest level) and the lowest point on the dam wall crest.
- Tailings dam – Freeboard with respect to tailings dams can be defined as the distance between the mean operating level plus the 1:50 year flood-level and the lowest point on the wall crest of the tailings dam.

Although a **minimum requirement** of 0.8 metres of freeboard above full supply level is stipulated in the regulations, this requirement must not be read in isolation, but in conjunction with all the other criteria stipulated within the regulations, such as subregulations 6(d) and (f). Further, the requirements stipulated in the regulations do not necessarily guarantee the safety of a dam, which remains the responsibility of the professional engineer responsible for the design. The necessary freeboard required must be calculated taking into account all the design criteria to guarantee the safety of the dam and taking into account the requirements of Chapter 12 of the National Water Act (Safety of dams). Also refer to discussion under subregulation 6(b).

(f) design, construct and maintain all water systems in such a manner as to guarantee the serviceability of such conveyances for flows up to and including those arising as a result of the maximum flood with an average period of recurrence of once in 50 years.

Any water system must be designed such that it is sufficient and effective for its intended purpose and comply with the requirement of this regulation. The effectiveness should be demonstrated through approved performance assessment and monitoring techniques. Also refer to discussion under subregulation 6(b).

3.7 Regulation 7: Protection of water resources

Every person in control of a mine or activity must take reasonable measures to-

Definition of *reasonable measures*: The measures that a reasonable (ordinary) person would regard necessary for the specific purpose. As these are specialised regulations, the reasonable person in this case would refer to a person with expertise in the specific field. Also refer to section 3.16 – Regulation 16: Commencement.

(a) prevent water containing waste or any substance which causes or is likely to cause pollution of a water resource from entering any water resource, either by natural flow or by seepage, and must retain or collect such substance or water containing waste for use, re-use, evaporation or for purification and disposal in terms of the Act;

Any water containing waste should be diverted to a dirty water system and prevented from entering and polluting a water resource (also refer to discussion under section 3.6: Capacity requirements of clean and dirty water systems). This requirement is in line with section 19 of the National Water Act and subscribes to the principle of *pro-active pollution control.*

However, the intention is not to prohibit the discharge or disposal of water containing waste, only to control such aspects. The person in control of a mining or related activity could apply for a water use licence in terms of section 40 of the National Water Act for the disposal or discharge of any water containing waste. The conditions for the specific disposal or discharge of water containing waste should be based on the site-specific circumstances, and stipulated within the water use licence.

(b) design, modify, locate, construct and maintain all water systems, including residue deposits, in any area so as to prevent the pollution of any water resource through the operation or use thereof and to restrict the possibility of damage to the riparian or in-stream habitat through erosion or sedimentation, or the disturbance of vegetation, or the alteration of flow characteristics;

Also refer to the discussions under regulation 4 with respect to the locality of the water systems, and under regulation 6 with respect to the capacity requirements thereof. The person in control of a mining or related activity should further apply for a water use licence in terms of section 40 of the National Water Act for the specific water use. The conditions for the specific water use should be based on the site-specific circumstances, and stipulated within the water use licence.

(c) cause effective measures to be taken to minimise the flow of any surface water or floodwater into mine workings, opencast workings, other workings or subterranean caverns, through cracked or fissured formations, subsided ground, sinkholes, outcrop excavations, adits, entrances or any other openings;

The intention of this regulation is mainly the following:

- to prevent the flooding of mine workings, both underground and opencast, that could cause the loss of life or the sterilisation of the mineral resource;
- to minimise the quantity of clean water contaminated by either the mixing with dirty water or the contamination thereof by the activity. In this way the volume of clean

water that can be diverted to the natural resource is maximised; and
- to prevent the pollution of the groundwater resource.

This requirement is also in line with best management practices - refer to discussion under subregulation 6(a).

(d) design, modify, construct, maintain and use any dam or any residue deposit or stockpile used for the disposal or storage of mineral tailings, slimes, ash or other hydraulic transported substances, so that the water or waste therein, or falling therein, will not result in the failure thereof or impair the stability thereof;

Even though DWAF decided not to address the safety aspects with regard to dams and residue deposits through these regulations, the failure of such a structure can result in major pollution of a water resource. This regulation requires that such a structure be designed, constructed and maintained in such a way as to prevent the failure thereof.

A suitably qualified person, e.g. civil engineer, who can professionally be held liable in the case of a disaster (loss of human life, extreme water pollution, etc.) or a failure, should design the dam or residue deposit.

(e) prevent the erosion or leaching of materials from any residue deposit or stockpile from any area and contain material or substances so eroded or leached in such area by providing suitable barrier dams, evaporation dams or any other effective measures to prevent this material or substance from entering and polluting any water resources;

Erosion of a residue deposit or stockpile should be prevented through proper management thereof, with inspection and maintenance done on such structures on a regular basis. The dual objectives of this requirement are firstly to prevent the eroded material from entering and polluting a water resource, and secondly to prevent structural failure thereof. Also refer to discussion under subregulation 6(d).

(f) ensure that water used in any process at a mine or activity is recycled as far as practicable, and any facility, sump, pumping installation, catchment dam or other impoundment used for recycling water, is of adequate design and capacity to prevent the spillage, seepage or release of water containing waste at any time;

This requirement is in line with best management practices and water conservation policies of DWAF. Dirty water must be re-used as far as possible on the premises of a mining or related activity, thereby minimising the use of clean water and the disposal or discharge of polluted water. Once again the person in control of a mining or related activity will have to apply for a water use licence in terms of section 40 of the National Water Act. The site-specific conditions need to be stipulated within the water use licence. Also refer to regulation 6 with respect to the design and capacity requirements.

(g) at all times keep any water system free from any matter or obstruction which may affect the efficiency thereof; and

Any water system should be maintained in such a manner that it remains effective for its intended purpose at all times. The systems should be kept free of any obstruction to prevent the possible over-topping of or spillages from such a system, and to prevent possible structural and operational failure.

(h) *cause all domestic waste, including wash-water, which cannot be disposed of in a municipal sewage system, to be disposed of in terms of an authorisation under the Act.*

In terms of section 40 of the National Water Act, a person in control of a mining or related activity needs to apply for a water use licence for the disposal of domestic waste and wash-water if not disposed of in a municipal sewage system. The site-specific conditions need to be stipulated within the water use licence.

However, the disposal of mining domestic waste by means of on-site domestic landfill can either be controlled by means of a water use licence in terms of section 40 of the National Water Act, or a permit in terms of section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989). The same regulatory procedure is applicable for an on-site industrial dump area at a mine and in the case of the industrial waste not originating on the mine. At this point in time the issuing of a permit under section 20(1) of the Environment Conservation Act will be preferred to the issuing of a water use licence under section 40 of the National Water Act, and only in the cases where the water use of disposing waste on land cannot for some reason be regulated under governance of a permit under the Environment Conservation Act will a licence under the National Water Act be issued. If a permit in terms of section 20(1) of the Environment Conservation Act is issued for the above activities, there may be dispensed with the requirements for a licence in terms of section 22(3) of the National Water Act.

3.8 Regulation 8: Security and additional measures

Every person in control of a mine or activity must-

(a) cause any impoundment or dam containing any poisonous, toxic or injurious substance to be effectively fenced-off so as to restrict access thereto, and must erect warning notice boards at prominent locations so as to warn persons of the hazardous contents thereof;

Apart from protection of the public from using this water, the intention of this regulation is to protect the structures from any damage. Also refer to discussion under subregulation 8(b) below.

The notice boards should be manufactured of durable weatherproof material, prohibiting unauthorised entry and containing warnings against the use of the contaminated water for drinking, washing and recreational purposes in all the official languages applicable in the area. These notices should be displayed at prominent places along the fence and at entrance gates.

(b) ensure access control in any area used for the stockpiling or disposal of any residue or substance which causes, has caused or is likely to cause pollution of a water resource so as to protect any measures taken in terms of these regulations;

The intention of this regulation is to protect pollution control measures implemented at a mining or related activity. Should these areas not be protected from damage thereof, the stability of such rehabilitation measures could be affected and increased erosion could take place. This will ultimately impose increased maintenance cost, or cause possible pollution of a water resource.

(c) not allow the area contemplated in paragraph (a) and (b) to be used for any other purpose, if such use causes or is likely to cause pollution of a water resource; and

Refer to discussion under subregulation 8(b).

(d) protect any existing pollution control measures or replace any existing pollution control measures deleteriously affected, damaged or destroyed by the removing or reclaiming of materials from any residue deposit or stockpile, and establish additional measures for the prevention of pollution of a water resource which might occur, is occurring or has occurred as a result of such operations.

The intention of this regulation is once again to protect pollution control measures implemented at a mining or related activity. Should these measures not be protected from damage thereof, the stability of such measures could be affected and increased erosion could take place. Ultimately this could cause pollution of a water resource. Should any measure be destroyed or damaged for whatever reason, the person or company responsible for such damage should establish new pollution control measures in terms of these regulations.

3.9 Regulation 9: Temporary or permanent cessation of mine or activity

Note: In terms of regulation 3, no exemption from the requirements of this regulation is possible.

(1) Any person in control of a mine or activity must at either temporary or permanent cessation of operations ensure that all pollution control measures have been designed, modified, constructed and maintained so as to comply with these regulations.

In terms of section 19 of the National Water Act any activity (whether existing or ceased), which causes, has caused or is likely to cause pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. Thus, before a mining or related activity is closed down, whether temporary or permanently, the necessary pollution control measures should be in place. These are usually addressed within the EMP (or closure plan) for mining activities. DWAF should be notified before the temporary or permanent cessation in terms of subregulation 2(2)(b), which allows DWAF the opportunity to inspect a mine or activity to ensure that the necessary water and pollution control measures are in place to protect the water resource. Again, note must be taken that, in terms of section 19 of the National Water Act, the person in control of a mine or activity remains responsible for any damage to a water resource.

(2) Any person in control of a mine or activity must ensure that the in-stream and riparian habitat of any water resource, which may have been affected or altered by a mine or activity, is remedied so as to comply with these regulations.

In terms of section 40 of the National Water Act, a person in control of a mine or related activity needs to apply for a water use licence for altering the beds, banks, course or characteristics of a watercourse. The site-specific conditions for remedying such altering need to be stipulated within the water use licence.

(3) On either temporary or permanent cessation of a mine or activity the Minister may request a copy of any surface or underground plans as required in terms of the Minerals Act, 1991.

This allows DWAF to obtain a copy of the latest surface and/or underground plans of a mine or related activity. This information is essential to enable DWAF to evaluate the long-term impacts that may arise from the specific activity. Subregulation 9(3) has been delegated to the Regional Director, implying that a DWAF Regional Office can request copies of the specific plans without consultation with the D:WQM (refer to Appendix B: Delegations of powers and duties in terms of GN704).

3.10 Regulation 10: Additional regulations relating to winning sand and alluvial minerals from watercourse or estuary

(1) No person may-

(a) extract sand, alluvial minerals or other materials from the channel of a watercourse or estuary, unless reasonable precautions are taken to-

(i) ensure that the stability of the watercourse or estuary is not affected by such operations;

(ii) prevent scouring and erosion of the watercourse or estuary which may result from such operations or work incidental thereto;

(iii) prevent damage to in-stream or riparian habitat through erosion, sedimentation, alteration of vegetation or structure of the watercourse or estuary, or alteration of the flow characteristics of the watercourse or estuary; or

(b) establish any slimes dam or settling pond within the 1:50 year flood-line or within a horizontal distance of 100 metres of any watercourse or estuary.

(2) Every person winning sand, alluvial minerals or other materials from the bed of a watercourse or estuary must-

(a) construct treatment facilities to treat the water to the standard prescribed in Government Notice No. R.991 dated 26 May 1984 as amended or by any subsequent regulation under the Act before returning the water to the watercourse or estuary;

(b) limit stockpiles or sand dumps established on the bank of any watercourse or estuary to that realised in two days of production, and all other production must be stockpiled or dumped outside of the 1:50 year flood-line or more than a horizontal distance of 100 metres from any watercourse or estuary; and

(c) implement control measures that will prevent the pollution of any water resource by oil, grease, fuel or chemicals.

This regulation is specific to the activities relating to winning sand and alluvial minerals (for example diamond diggings). These activities are normally conducted within a watercourse. These activities therefore need to apply for a water use licence in terms of section 40 of the National Water Act. This regulation specifies certain minimum requirements relating specifically to these activities, but the site-specific conditions need to be stipulated within the water use licence.

Apart from the requirements of subregulation 4(b), these activities also need to comply with all the relevant requirements of the regulations and the discussion under each of the regulations is thus applicable to these activities.

3.11 Regulation 11: Additional regulations for rehabilitation of coal residue deposits

Any person mining or establishing coal residue deposits must rehabilitate such residue deposits so that-

(a) all residue deposits are compacted to prevent spontaneous combustion and minimise the infiltration of water; and
(b) the rehabilitation of the residue deposits is implemented concurrently with the mining operation.

This regulation specifies certain minimum requirements relating specifically to the rehabilitation of coal residue deposits. This was included for the sole purpose of providing DWAF officials with some legal standing on the manner in which these residue deposits are rehabilitated, as coal residue deposits are considered a major source of pollution if not managed properly.

3.12 Regulation 12: Technical investigation and monitoring

(1) The Minister may, after consultation with the Department of Minerals and Energy and the Department of Environmental Affairs and Tourism, in writing require any person in control of a mine or activity to arrange for a technical investigation or inspection, which may include an independent review, to be conducted on any aspect aimed at preventing pollution of a water resource or damage to the in-stream or riparian habitat connected with or incidental to the operation or any part of the operation of a mine or activity.

In respect of the powers of the Minister to order a technical investigation, a policy decision was made that this regulation will only be enforced after consultation with DME and the Department of Environmental Affairs and Tourism (DEAT), in this way avoiding unnecessary duplication and regulatory control, and enhancing co-operative governance. Such requests should thus only be made if the aspects or investigations in question are not addressed through any other process in place. Also refer to the discussion under section 2 (Introduction to the Regulations).

This regulation allows DWAF to request additional information or direct a person in control of a mining or related activity to conduct a detailed study, should this information not be available in any other reports or documents and be necessary to evaluate and manage certain aspects related to the specific activity. It also allows for the independent review (audit) of such investigations. Such requests must, however, always be reasonable, and the reasons thereof clearly stated when making such a request. The authority to request such a technical investigation has been delegated to D:WQM (refer to Appendix B: Delegations of powers and duties in terms of GN704.

Subregulations 12(2) to 12(5) below further elaborate on the details of such investigations, and will not be discussed any further.

(2) Such investigation must be conducted and a report thereon compiled in the manner and within the time period that the Minister may specify.

(3) The person in control of the mine or activity must inform the Minister as to the expertise and qualifications of the persons who are to conduct an investigation or inspection contemplated in subregulation (1) before the commencement thereof.

(4) The Minister may in writing require any person in control of a mine or activity to submit a programme of implementation to prevent or rectify any pollution of a water resource or damage to the in-stream or riparian habitat as recommended by the investigation contemplated in subregulation (1) within the time period that the Minister may specify.

(5) The Minister may in writing direct any person in control of a mine or activity to implement a compliance monitoring network to monitor the programme of implementation contemplated in subregulation (4), through establishing, operating and maintaining monitoring installations of a type, at the locations and in the manner specified by the Minister and to submit the monitoring information and results to the Minister for evaluation.

(6) Subject to Chapter 4 of the Act, any person in control of a mine or activity must submit plans, specifications and design reports approved by a professional engineer to the Minister, not later than 60 days prior to commencement of activities relating to-

(a) the construction of any surface dam for the purpose of impounding waste, water containing waste or slurry, so as to prevent the pollution of a water resource;
(b) the implementation of any pollution control measures at any residue deposit or stockpile, so as to prevent the pollution of a water resource; and
(c) the implementation of any water control measures at any residue deposit or stockpile, so as to prevent the pollution of a water resource.

This regulation stipulates that any plans, specifications and design reports associated with the construction of dams, pollution control works or water control measures be submitted to DWAF for evaluation. The responsibility to ensure that this requirement is met lies with the person in control of a mine or related activity. Usually the specific aspects are addressed through the EMP process, and duplication of effort should be avoided at all times. This requirement should only be enforced if the plans, etc. were not submitted during the EMP process.

3.13 Regulation 13: General

The person in control of a mine or activity must provide the manager with the means and afford him or her every facility required to enable the manager to comply with the provisions of these regulations.

Compliance with the requirements of these regulations ultimately remains the responsibility of the person in control of a mining or related activity (refer to definition of *person in control of a mine or activity*). The means to achieve this should be made available to the manager, and includes making available the necessary financial and human resources, training and education, management structures, contact with expertise for necessary investigations, etc. to comply with these regulations.

3.14 Regulation 14: Offences and penalties

(1) Any person who contravenes or, subject to regulation 3, fails to comply with regulation 2, 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13 is guilty of an offence and liable on conviction to a fine or to imprisonment for a period not exceeding five years.

(2) Whenever an act or omission by a manager or employee of a mine or activity-
(a) constitutes an offence in terms of these regulations, and takes place with the express or implied permission of the person in control of a mine or activity, that person is, in addition to the manager or employee, liable to conviction for that offence; or
(b) would constitute an offence by the person in control of a mine or activity in terms of these regulations that manager or employee is, in addition to that person, liable to conviction for that offence.

This regulation allows DWAF to prosecute any person who does not comply with the regulations. However, prosecution should never be seen as the primary tool to reach specific objectives, as this is a tedious and expensive exercise. The first choice should always be that DWAF and the mining industry co-operate as far as possible to solve a problem, and to avoid prosecution. DWAF should first inform the person in control of a mining or related activity that he/she does not comply or that there is a possibility of pollution of a water resource. Should the offender ignore this, the warning should be repeated in writing. Only if no satisfaction is received through negotiation with the offender should DWAF revert to prosecution.

3.15 Regulation 15: Repeal of regulations

The regulations published under Government Notice No. R.287 of 20 February 1976 are hereby repealed.

These regulations replace the old R287.

3.16 Regulation 16: Commencement

These regulations will take effect on the date of publication.

These regulations came into effect on 4 June 1999. These regulations may not legally be applied retrospectively; however, they lay down certain minimum requirements that should be complied with. Should a mining or related activity (referring only to existing activities) not comply with these requirements, a reasonable time period should be granted for the activity to comply. Thus, for existing activities the emphasis should be placed on progressive improvement (rather than total prevention) within a time frame stipulated by DWAF, which could be demonstrated through approved performance assessment and monitoring techniques.

4. SUPPORTING DOCUMENTATION

The discussion under section 3 is not exhaustive and provides only a guideline as to the interpretation and implementation of each regulation. The following documents can be used for further reference to the design, construction, maintenance and operation of water systems, residue deposits and pollution control works, or best practice guidelines with respect to water management. Certain of the Best Practice Guidelines are still in the process of being developed, but are listed for the sake of completeness.

Chamber of Mines, 1996. Guidelines for Environmental Protection: The Engineering Design, Operation and Closure of Metalliferous, Diamond and Coal Residue Deposits. Volume 1/1979, Revision 3.

DWAF, 1999. Development of Best Practice Guidelines for Water Quality Management in the South African Mining Industry: Integrated Mine Water Management. BPG1.

DWAF, 1999. Development of Best Practice Guidelines for Water Quality Management in the South African Mining Industry: Stormwater Management. BPG2.

DWAF, 1999. Development of Best Practice Guidelines for Water Quality Management in the South African Mining Industry: Water Reclamation and Re-Use. BPG3.

DWAF, 2000. Development of Best Practice Guidelines for Water Quality Management in the South African Mining Industry: Water Treatment Technologies. BPG4.

DWAF, 2000. Development of Best Practice Guidelines for Water Quality Management in the South African Mining Industry: Water and Salt Balances. BPG5.

DWAF, 2000. Development of Best Practice Guidelines for Water Quality Management in the South African Mining Industry: Monitoring Systems. BPG6.

DWAF, 2000. Development of Best Practice Guidelines for Water Quality Management in the South African Mining Industry: Prediction and Management of long-term Impacts. BPG7.

DWAF, 1999. Operational Guideline for Control over the Impeding or Diverting of Flow of Water in a Watercourse and/or the Altering of the Bed, Banks, Course or Characteristics of a Watercourse. Water Quality Management Series: Operational Guideline M1.1.

SABS, 1998. Code of Practice: Mine Residue. SABS 0286 of 1998.

APPENDIX A

DEFINITIONS

In these regulations any expression to which a meaning has been assigned in the Act, shall have the meaning so assigned, and unless the context indicates otherwise-

"activity", means-

a) any mining related process on the mine including the operation of washing plants, mineral processing facilities, mineral refineries and extraction plants, and
b) the operation and the use of mineral loading and off-loading zones, transport facilities and mineral storage yards, whether situated at the mine or not,

(i) in which any substance is stockpiled, stored, accumulated or transported for use in such process; or
(ii) out of which process any residue is derived, stored, stockpiled, accumulated, dumped, disposed of or transported;

"clean water system", includes any dam, other form of impoundment, canal, works, pipeline and any other structure or facility constructed for the retention or conveyance of unpolluted water;

"dam", includes any settling dam, slurry dam, evaporation dam, catchment or barrier dam and any other form of impoundment used for the storage of unpolluted water or water containing waste;

"dirty area", means any area at a mine or activity which causes, has caused or is likely to cause pollution of a water resource;

"dirty water system", includes any dam, other form of impoundment, canal, works, pipeline, residue deposit and any other structure or facility constructed for the retention or conveyance of water containing waste;

"environmental management programme", means an environmental management programme submitted in terms of section 39 of the Minerals Act, 1991 (Act No. 50 of 1991);

"facility", in relation to an activity, includes any installation and appurtenant works for the storage, stockpiling, disposal, handling or processing of any substance;

"manager", "mine" and "mineral", have the meanings assigned to them in the Mine Health and Safety Act, 1996 (Act No. 29 of 1996);

"person in control of a mine or activity", in relation to a particular mine or activity, includes the owner of such mine or activity, the lessee and any other lawful occupier of the mine, activity or any part thereof; a tributer for the working of the mine, activity or any part thereof; the holder of a mining authorisation or prospecting permit and if such authorisation or permit does not exist, the last person who worked the mine or his or her successors-in-title or the owner of such mine or activity; and if such person is not resident in or not a citizen of the

Republic of South Africa, an agent or representative other than the manager of such a mine or activity must be appointed to be responsible on behalf of the person in control of such a mine or activity;

"residue", includes any debris, discard, tailings, slimes, screenings, slurry, waste rock, foundry sand, beneficiation plant waste, ash and any other waste product derived from or incidental to the operation of a mine or activity and which is stockpiled, stored or accumulated for potential re-use or recycling or which is disposed of;

"residue deposit", includes any dump, tailings dam, slimes dam, ash dump, waste rock dump, in-pit deposit and any other heap, pile or accumulation of residue;

"stockpile", includes any heap, pile, slurry pond and accumulation of any substance where such substance is stored as a product or stored for use at any mine or activity;

"the Act", means the National Water Act, 1998 (Act No. 36 of 1998);

"water system", includes any dam, any other form of impoundment, canal, works, pipeline and any other structure or facility constructed for the retention or conveyance of water.

APPENDIX B

DELEGATIONS OF POWERS AND DUTIES IN TERMS OF GN704

APPENDIX C

ILLUSTRATIONS