water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

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LICENCE IN TERMS OF CHAPTER 4 OF THE NATIONAL WATER ACT, 1998 (ACT NO 36 OF 1998) (THE ACT)

I, **Maxwell Sirenya,** in my capacity as Director-General in the Department of Water Affairs and acting under authority of the powers delegated to me by the Minister of Water and Environmental Affairs, hereby authorise the following water uses in respect of this licence.

SIGNED: _____

DATE: 2 Oct 2017

LICENCE NO: 04/B20F/CGI/1836
FILE NO: 16/2/7/B100/B174

1. **Licensee:** **ESKOM HOLDINGS LIMITED: KUSILE POWER STATION**
   Postal Address: Suit 46 Postnet
   Highveld
   1035

2. **Water uses**

2.1	Section 21(c) of the Act:	Impeding or diverting the flow of water in a watercourse, subject to the conditions set out in Appendices I and II.
2.2	Section 21(g) of the Act:	Disposing of waste in a manner which may detrimentally impact on a water resource, subject to the conditions as set out in Appendices I and III.
2.3	Section 21(i) of the Act:	Altering the bed, banks course or characteristics of a watercourse, subject to the conditions set out in Appendices I and II.

3. **Properties in respect of which this licence is issued**

3.1 Portion 26 of the farm Klipfontein 566

4. **Registered owner of the Property**

4.1 Eskom Holdings Limited

B 05133

5. Licence and Review Period

5.1 This licence is valid for a period of thirty (30) years from the date of issuance and it may be reviewed every two (2) years.

6. Definitions

"Any terms, words and expressions as defined in the National Water Act, 1998 (Act 36 of 1998) shall bear the same meaning when used in this licence."

"Act" refers to the National Water Act, 1998 (Act No. 36 of 1998), unless otherwise referenced.

"The Regional Head" means the Regional Chief Director: Mpumalanga, Department of Water Affairs, Private Bag X11259, NELSPRUIT, 1200.

"Report" refers to the report entitled Kusile Power Station Integrated Water Use Licence Application Addendum: Ash Dump dirty dam report, dated 31 May 2011, Kusile Power Station section 21 (c) and (i) licence: Ash Dump footprint report, dated 31 May 2011, as well as all other related documentations and communication (emails, letters, verbal, etc) related thereto.

"Extent of the watercourse" means the outer edge of the 1:100 year floodline or the delineated riparian habitat, whichever is the greatest.

"Regulated area of a wetland" is the use of water for section 21 c and i water uses within 500m radius from the boundary of any wetland.

A wetland means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

The characteristics of a watercourse/s mean the flow regime, water quality, habitat (including the physical structure of the watercourse/s and associated vegetation) and biota found within the extent of the watercourse/s. The Resource Quality characteristics as defined in the National Water Act, 1998 (Act 36 of 1998).

7. Brief description of the activity

This licence authorises the activities related to Section 21 (c), (g) and (i) in terms of the National Water Act No 36 of 1998 at the Kusile Power Station located at Portion 26 Farm of the farm Klipfontein 566

The Licensee will be diverting and altering the flow in a watercourse-(wetland) for disposal of ash/gypsum resulting from power generation activities (coal burning). Dirty water run-off from Ash Dump will be disposed to a lined storage dam.

APPENDIX I
GENERAL CONDITIONS FOR THE LICENCE

1. This licence is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998).

2. The responsibility for complying with the provisions of the licence is vested in the Licensee and not any other person or body.

3. The Licensee must immediately inform the Regional Head of any change of name, address, premises and/or legal status.

4. If the property in respect of which this licence is issued is subdivided or consolidated, the Licensee must provide full details of all changes in respect of the properties to the Regional Head of the Department within 60 days of the said change taking place.

5. If a water user association is established in the area to manage the resource, membership of the Licensee to this association is compulsory.

6. The Licensee shall be responsible for any water use charges or levies imposed by a responsible authority.

7. While effect must be given to the Reserve as determined in terms of the Act, where a desktop determination of the Reserve has been used in issuance of a licence, when a comprehensive determination of the Reserve has finally been made; it shall be given effect to.

8. The licence shall not be construed as exempting the Licensee from compliance with the provisions any other applicable Act, Ordinance, Regulation or By-law.

9. The licence and amendment of this licence are also subject to all the applicable procedural requirements and other applicable provisions of the Act, as amended from time to time.

10. The Licensee shall conduct an annual internal audit on compliance with the conditions of licence. A report on the audit shall be submitted to the Regional Head within one month of the finalisation of the audit.

11. The Licensee shall appoint an independent external auditor to conduct an annual audit on compliance with the conditions of this licence. The first audit must be conducted within 3 (three) months of the date this licence and a report on the audit shall be submitted to the Regional Head within one month of finalisation of the report.

12. Flow metre, recording and integrating devices shall be maintained in a sound state of repair and calibrated by a competent person at intervals of not more than two years. Calibration certificates shall be available for inspection by the Regional Head or his representative upon request.

13. Any incident that causes or may cause water pollution shall be reported to the Regional Head or his/her designated representative within 24 hours.

APPENDIX II

Section 21(c) of the Act: **Impeding or diverting the flow of water in a watercourse**

Section 21(i) of the Act: **Altering the bed, banks, course or characteristic of a watercourse**

1. GENERAL

1.1 This licence authorizes Eskom Holdings Limited: Kusile Power Station the construction and operation of an ash/gypsum co-disposal facility for the Section 21(c) and (i) water use activities as set out in Table 1 and in the water use licence application reports submitted to the Department or the Responsible Authority (refer condition 1.2) for:

Table 1: Water Use Activities

Activity	Property	Description/Name of Watercourse & Dimensions	Coordinates
Ash/gypsum co-disposal facility and dirty water dam with pump house within 500m from the boundary of a wetland and the applicable buffer areas	Klipfontein 566JR Portion 26	Klipfontein Spruit and associated wetlands Width: 23 m Length: 154 m Height: 51 m Size: 250 ha	S25°56'12.8" E28°55'15.6"

1.2 The licensee must carry out and complete all the activities listed under condition 1.1 according to the following:

1.2.1. Reports submitted to the Department or the Responsible Authority, specifically:

1.2.1.1. Eskom Holdings Limited Panel B Consultants Joint Venture, Kusile Power Station S21 C & I Licence – Ash Dump Footprint, Task Order Number: 4500259952 by Arcus GIBB, SSI & Knight Piésold, dated 13 May 2011;

1.2.1.2. Eskom Holdings Limited Panel B Consultants Joint Venture, Kusile Power Station No. 1 Ash Dump proposed amended layout and construction sequence, Report 30200098-16-001: April 2012 with drawings K303-00098-16-SK1, K303-00098-16-SK2 and Kusile Ash Dump-Wetland Extent by Arcus GIBB, SSI & Knight Piésold, dated April 2012;

1.2.1.3. Response to comments pertaining to the section 21 (c) & (i) water use license application re revised layout of the Kusile project's first ash/gypsum dump by Eskom, dated 17 May 2012;

1.2.1.4. Contour map indicating final ash/gypsum co-disposal facility footprint (Kusile Ash Dump-Wetland Extent as indicated in Report 30200098-16-001: April 2012 by Arcus GIBB, SSI & Knight Piésold, dated April 2012); and

1.2.1.5. Environmental Impact Assessment – Kusile Railway Project, DEA Reference No. 12/12/20/1488, Issues and Response Report by Zitholele Consulting with Reference No. 12202, dated August 2009.

1.2.2. Record Of Decision (ROD), dated 17 March 2008
1.2.3. Conditions of this licence; and
1.2.4. Any other written direction issued by the Responsible Authority in relation to this licence.

1.3 No activity must take place within the 1:100 year flood line or the delineated riparian habitat, whichever is the greatest, or within 500 m radius from the boundary of any wetland unless authorised by this licence.

1.4 The conditions of the authorisation must be brought to the attention of all persons (employees, sub-consultants, contractors etc.) associated with the undertaking of these activities and the licensee must take such measures that are necessary to bind such persons to the conditions of this licence.

1.5 A copy of the water use licence and reports set out under condition 1.2. must be on site at all times.

1.6 A suitably qualified person(s), appointed by the licensee, and approved in writing by the Regional Head, must be responsible for ensuring that the activities are undertaken in compliance with the specifications as set out in reports submitted to the Department or the Responsible Authority and the conditions of this licence.

2. FURTHER STUDIES AND INFORMATION REQUIREMENTS

2.1 For water use activities in Table 1:

2.1.1. Work method statements, site plan(s) and detailed design drawings for the construction of all infrastructure impeding and/or diverting flow of watercourses as well as alterations to watercourse(s) on the property must be submitted to the Regional Head for written approval before construction and implemented as directed. The foregoing must indicate the regulated activities, marking the limits of disturbance in relation to the impacted watercourse(s); morphology of the watercourse(s); site specific impacts; and environmental management, particularly erosion and sediment, controls and measures;
2.1.2. No fundamental alterations of the work method statements, site plan(s) and drawings are allowed, unless a modification is requested and granted by the Regional Head in writing; and
2.1.3. No site activities must occur beyond the proposed site location of the erosion and sedimentation controls and marked limits of disturbance.

2.2 If the licensee is not the end user/beneficiary of the water use related infrastructure and will not be responsible for long term maintenance and management of the infrastructure, the licensee must provide a programme for hand over to the successor-in-title including a brief management/maintenance plan and the agreement for infrastructure along with allocation of responsibilities, within three (3) months of the date of issuing of this licence.

2.3 An EMP and rehabilitation plan for the decommissioning of any of the water use activities listed in Table 1 must be submitted five (5) years before commencing with closure to the Regional Head for written approval.

2.4 For all the activities listed under condition 1.1, Table 1, "as-built" plan(s) and engineering drawing(s) prepared by a registered professional engineer, must be submitted to the Regional Head within six (6) months of completion of new activities and for existing water uses within six (6) months of the date of issuing of this licence. These plan(s) and drawing(s) must indicate the watercourse(s) including wetland boundaries and layout and structure location(s) of all infrastructure impeding and/or diverting flow of watercourses as well as alterations to watercourse(s) on the property.

2.5 A Storm Water Management Plan must be compiled and submitted to the Regional Head for written approval before construction may commence.

2.6 The storm water management plan should be designed in a way that aims to ensure that past-development run-off does not exceed pre-development values in:

2.6.1. Peak discharge for any given storm,

2.6.2. Total volume of run-off for any given storm,

2.6.3. Frequency of run-off volumes,

2.6.4. Pollutant and debris concentrations reaching watercourses,

2.6.5. Demonstrate minimal soil and vegetation clearance practices,

2.6.6. Demonstrate an effective re-vegetation campaign for bare areas,

2.6.7. Velocity of outgoing storm water shall not exceed the velocities of incoming water in order to reduce erosion impacts, and

2.6.8. Increase in run-off due to a higher water table resulting from tree clearing practices.

3. PROTECTIVE MEASURES

3.1 Storm Water Management

3.1.1. Storm water management practices must be constructed, operated and maintained in a sustainable manner throughout the project and for the water use activities set out in condition 1.1 and must include but are not limited to the following:

3.1.1.1. Increased runoff due to vegetation clearance (**promoting limiting vegetation clearance at all times**) and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse(s);

3.1.1.2. Storm water must be diverted from construction works, access roads, linear infrastructure, shaft areas and borrow pits and must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow;

3.1.1.3. The velocity of storm water discharges must be attenuated and the banks of the watercourses protected;

3.1.1.4. Storm water leaving the licensee's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises;

3.1.1.5. Drainage next to the activities listed in Table 1 must be diverted away from the water course(s) to ensure that any contaminated runoff does not flow directly into the watercourse(s) as a storm water discharge; and

3.1.1.6. Sheet runoff from paved/hardened surfaces and access roads need to be curtailed.

3.2 Structures, Construction Area and Materials

3.2.1 The necessary erosion prevention measures must be employed to ensure the sustainability of all structures.

3.2.2 The height, width and length of structures must be limited to the minimum dimension necessary to accomplish the intended function.

3.2.3 Structures must not be damaged by floods exceeding the magnitude of floods occurring on average once in every 100 years.

3.2.4 Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.

3.2.5 Structures must be inspected regularly for accumulation of debris, blockage, erosion of abutments and overflow areas - debris must be removed and damages must be repaired and reinforced immediately.

3.2.6 The construction camp, plant and material stockpiles must be located outside the extent of the watercourse(s) and must be recovered and removed one (1) month after construction has been completed.

3.2.7 During construction, erosion berms should be installed for the entire life-of-operation to prevent gully formation, according to the slope (Table 2). The designs and placement of the berms must be done by a registered, professional, independent Civil Engineer and approved in writing by the Regional Head before construction commences.

Table 2: Erosion protection berm placement.

Track slope	Berm placement
<2%	Every 50 m
2% - 10%	Every 25 m
10% - 15%	Every 20 m
>15%	Every 10 m

3.2.8 All areas affected by construction should be rehabilitated upon completion of the construction phase of the development. Areas should be reseeded with indigenous vegetation species as required, and the use of seednets is recommended to prevent erosion.

3.2.9 During the construction phase no vehicles shall be allowed to indiscriminately drive through any wetland areas.

3.2.10 No construction is allowed within the 1:100 year floodline and/or delineated riparian habitat, whichever is the greatest, or within 500 m radius from the boundary of any wetland unless authorised in this license.

3.2.11 Any conveyor belt shall be fully (100%) enclosed within the 1:100 year flood line or delineated riparian habitat, whichever is the greatest, or wetland to prevent spillages into the watercourse. Authorisation for this activity must be applied for.

3.2.12 Any access roads or crossings should be:

3.2.12.1 Non-erosive, structurally stable and should not induce any flooding or safety hazard;
3.2.12.2 Any damage is repaired immediately to prevent further damage;
3.2.12.3 Non-polluting with respect to silt and litter that can be deposited into a watercourse;
3.2.12.4 Watercourse crossings to facilitate the movement of aquatic and non-aquatic organisms and fauna;
3.2.12.5 Crossing surfaces must be tarred or concreted along the extent of the watercourse and extent at least 100m beyond the extent of the watercourse to minimise impacts on the characteristics of the watercourse;
3.2.12.6 Where any road is within the 100m buffer zone of the watercourse, this portion of the road shall be concreted or tarred; and
3.2.12.7 Not consist of any coal, carbonaceous and/or other polluting material.

3.3 Water Quality

3.3.1 The licensee shall sample the water quality weekly (during construction) and monthly (operation) for the mentioned variables (Table 3) at least at the monitoring points both upstream and downstream of the activities (Table 4) and report to the Responsible Authority within thirty (30) days after the results of each sampling event is received:

Table 3: Water quality parameters relevant for sampling.

Variable	Limit
Flow (ℓ/s)	Not applicable
Temperature (°C)	<10% variation
pH	6.5 – 8.4
Electrical conductivity (EC) (mS/m)	<40
Suspended solids (SS) (mg/ℓ)	<25
Dissolved oxygen (mg/ℓ)	≥6.0
Chemical Oxygen Demand (COD) (mg/ℓ)	≤10
Turbidity (NTU)	<3.0
Sechi disk depth (m)	≥0.15 meter
Alkalinity (mg $CaCO_3$/ℓ)	<120
Calcium (Ca)	≤25
Magnesium (Mg)	≤20
Sodium (Na)	≤20
Potassium (K)	≤10
Sulphate (SO_4)	≤60
Fluoride (F)	≤0.5
Iron (Fe)	≤1.0
Manganese (Mn)	≤0.18
Aluminum (Al)	≤0.02
Chromium VI (Cr^{6+})	≤0.05
Boron (B) (mg/ℓ)	<0.5
Arsenic (As) (mg/ℓ)	<0.01
Mercury (Hg) (mg/ℓ)	<0.001
Silica (Si) (mg/ℓ)	≤5.0

Ammonia (NH_3) as N	≤0.007
PO_4 (mg/ℓ)	≤0.05
NO_3/NO_2 (as N) (mg/ℓ)	≤6.0
BTEX, TPH (mg/ℓ) (including naphthalene)	<1.0
Faecal coliforms (counts/100mℓ)	≤130

The variables may be amended on discretion of the Responsible Authority. Only an accredited (SANS 17025) laboratory to be used for analysis.

Table 4: Sampling points.

Point	Latitude	Longitude
Spruit upstream of the ash facility (south)	25°56'55.1"S	28°55'50.6"E
Spruit upstream of the ash facility-tributary (south)	25°57'24.8"S	28°54'30.0"E
Spruit downstream of the ash facility (south)	25°55'41.3"S	28°53'04.9"E
Spruit north of the ash facility	25°55'34.9"S	28°53'39.3"E
Before Wilge River confluence	25°53'04.3"S	28°51'41.7"E
Pan	25°56'12.5"S	28°54'39.1"E
Offset wetland upstream	25°52'36.7"S	28°55'16.0"E
Offset wetland downstream	25°53'17.5"S	28°53'21.9"E
Wilge River A	25°52'17.6"S	28°51'57.7"E
Wilge River B	25°52'40.4"S	28°51'48.7"E

3.3.2 Monitoring must continue for at least fifteen (15) years after the cessation of the activities listed in condition 1.1.

3.3.3 Monitoring must be undertaken as set out in section 5.

3.3.4 Activities that lead to elevated levels of turbidity of any watercourse(s) must be prevented, reduced, or otherwise remediated. Activities must be scheduled to take place during the dry seasons when flows are lowest where reasonably possible. If this is not possible and if management measures have not been provided for in the reports submitted to the Regional Head, the licensee must submit such to the Regional Head for written approval before these activities commence. Natural in stream hydrology is to be used to determine which months constitute the low flow months.

3.3.5 The licensee must ensure that the quality of the water to downstream water users does not decrease because of the of the water use activities listed under condition 1.1.

3.3.6 A qualified person must be appointed to assess the quality of water both upstream and downstream of the activities prior to commencement of construction.

3.3.7 Pollution of and disposal/spillage of any material into the watercourse must be prevented, reduced, or otherwise remediated through proper operation, maintenance and effective protective measures.

3.3.8 Vehicles and other machinery must be serviced well above the 1:100 year flood line or deliniated riparian habitat, whichever is the greatest. Oils and other potential pollutants must be disposed off at an appropriate licensed site, with the necessary agreement from the owner of such a site.

3.3.9 Any hazardous substances must be handled according to the relevant legislation relating to transport, storage and use of the substance and all storage facilities must be equipped with large, clearly readable material safety data sheets (MSDS).

3.3.10 Carbon containing material and other material that has a risk of pollution within the 1:100 year floodline and riparian habitat shall be fully contained on a lined surface (including concrete) and equipped with functional and effective pollution control systems to ensure risk prevention to the watercourse(s).

3.3.11 All reagent storage tanks and reaction units must be supplied with a bunded area built to cater for at least 110% of the capacity of the facility and provided with sumps and pumps return the spilled material back into the system. The system must be maintained in a state of good repair and standby pumps must be provided.

3.3.12 The licensee has to indicate to the Responsible Authority within thirty (30) days after issuance of this licence, the strategic placement of bio-swale, bio-filters, silt, litter and hydrocarbon (oil) traps to minimise the risk of pollutants entering the natural drainage system of the area. The submission shall address also cleaning, maintenance and legal disposal of the contents of these traps. An oil recycling register must be in place to indicate that oils are recovered/recycled above 20% from the monthly inventory for every oil storage unit.

3.3.13 Where any spills along the conveyor system occur, they have to be cleaned immediately. Daily inspections are recommended and to be recorded formally. Spills into watercourses will be communicated to the Regional Head within two (2) days after it occurred. The licensee shall take precautionary measures to prevent reoccurrence.

3.3.14 The Licensee shall actively participate in any Catchment Management Agency's related activity.

3.3.15 The Licensee shall sample and analyse twice a year (dry - July and wet – January season) all surface and groundwater monitoring points for a full spectrum of heavy metals and submit this information with conditions 3.3.1 and 3.3.19.

3.3.16 An annual assessment of dam capacities and the risk to decant/pollution by storing water in the dams must be annually assessed by a professional, independent, qualified civil engineer, Geohydrologist and ecologist. The reporting is part of condition 3.3.1 of this licence.

3.3.17 Where dust suppression is practiced the following shall apply: Dust suppression activities shall not contaminate and/or pollute any watercourse and the Licensee must conduct six (6) monthly soil monitoring events to determine the impact of dust suppression on the receiving environment. Soil samples shall at least be analysed for pH, Electrical Conductivity (mS/m), Calcium (Ca) (mg/l), Magnesium (Mg) (mg/l), Potassium (K) (mg/l), Sodium (Na) (mg/l), Chloride (Cl) (mg/l), Sulphate (SO_4) (mg/l), Aluminium (Al) (mg/l), Iron (Fe) (mg/l), Manganese (mg/l) and Nitrate (NO_3 as N) (mg/l). The soil monitoring program and reporting must be conducted by an independent, professional, qualified soil scientist and hydrologist. Soil samples to be compared with reference sites. The reporting is part of condition 3.3.1.

3.3.18 The Geohydrological model based on the latest disposal and stockpiling plans has to be reviewed by the Licensee on an annual basis and the subsequent management actions resulting from the model shall be implemented. The study must incorporate the presence of geological pathways that might accelerate the migration of pollution plumes. The Regional Head shall be formally consulted regarding the outcome of the modelling exercise. The model might revise item 3.3.19 from time to time.

3.3.19 The Licensee shall conduct every two (2) years a geochemical update about its stockpiling and depositing activities and the impact of these on all watercourses in the vicinity of all authorised activities related to the impacted catchments of this licence and related licence(s). The geochemical update must be submitted to the Regional Head for written approval within one (1) month of the completion of the model. The model might revise item 3.3.18 from time to time.

3.3.20 A specialist decant and seep study for the whole area shall be undertaken within three (3) months after the issuance of this licence and be submitted to the Regional Head for written approval within one (1) month of the completion of the study.

3.4 Flow

3.4.1 The licensee must determine flood lines (1:50 and 1:100 year) prior to construction to ensure risks are adequately managed. Flood lines must be clearly indicated on the site plan(s) and drawings along with all wetland boundaries.

3.4.2 The activities must be conducted in a manner that does not negatively affect catchment yield, hydrology and hydraulics. The licensee must ensure that the overall magnitude and frequency of flow in the watercourse(s) does not decrease, other than for natural evaporative losses and authorised attenuation volumes.

3.4.3 The activities in Table 1 must ensure that hydrological and Geohydrological flows are at all times maintained where the flows are connected to the respective wetlands. The monitoring and reporting of these flows are part of conditions 3.3.1 and 5.11. The flows to the wetlands shall be protected through applying the following wetland buffer (Figure 1), where the **wetland buffer** is **not shaded** (entire south-western pan catchment area):

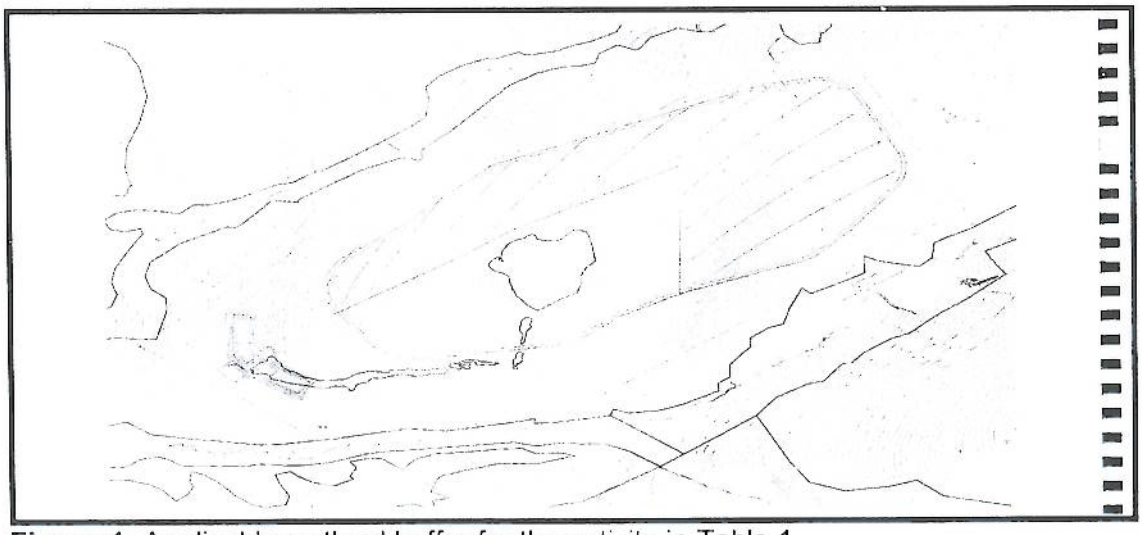

Figure 1: Applicable wetland buffer for the activity in Table 1.

3.4.4 The Licensee shall submit to the Regional Head, in consultation with the Deputy Director: Environment & Recreation, a formal map with a legend that exactly resembles Figure 1 within one (1) month from the issuance of this licence for written approval.

3.4.5 Appropriate design and mitigation measures must be developed to minimise impacts on the natural flow regime of the watercourse i.e. through placement of structures/supports and to minimise turbulent flow in the watercourse.

3.4.6 Structures to be designed in a way to prevent the damming of stream/river water and not impact on the flow of the water, during the construction and operational phases of all developments.

3.4.7 The development may not impede natural drainage lines.

3.4.8 The diversion structures may not restrict river flows by reducing the overall river width or obstructing river flow.

3.4.9 Bank filling must restore the channel shape and bed level to pre-construction condition.

3.4.10 Where flow to wetlands are impacted, any infrastructure constructed in wetland areas (refer to the reports mentioned in condition 1.2 and the buffer area as indicated in condition 3.4.3) must incorporate a Geohydrological barrier between the impacted wetland(s) and the wetlands in the buffer area as well those who's high Recommended Ecological Class (REC) ranging from A to C must be maintained.

3.4.11 The activities in Table 1 shall have all the appropriate pollution prevention mechanisms to avoid at all times pollution and water quality not meeting the requirements of Table 3 entering the watercourses bordering the activities and downstream of the activities. Compliance to Section 19 of the Act shall be met at all times as referenced in the company's policy of zero liquid effluent discharge (ZLED) (condition 1.2.1.5).

3.4.12 A series of cut-off trenches/sub-surface drains and return water dams should be constructed around the co-disposal facility to ensure that all contaminated water seeping out of the facility as well as run-off from the side-slopes will be intercepted and captured in the return water dams as referenced in condition 1.2.

3.5 Riparian and Instream Habitat (Vegetation and Morphology)

3.5.1 Activities (including spill clean-up) must start up-stream and proceed into a down-stream direction, so that the recovery processes can start immediately, without further disturbance from upstream works.

3.5.2 Operation and storage of equipment must not take place within the 1:100 year flood line or delineated riparian habitat, whichever is the greatest unless authorised in this license.

3.5.3 Activities must not occur in sensitive riffle habitats.

3.5.4 Indigenous riparian vegetation, including dead trees, outside the limits of disturbance indicated in the site plans must not be removed from the area.

3.5.5 Alien and invader vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be sustainably eradicated or controlled.

3.5.6 Existing vegetation composition must be maintained or improved by maintaining the natural variability in flow fluctuations. Rehabilitated areas shall have vegetation basal cover of at least 15% at all times.

3.5.7 Recruitment and maintaining of a range of size classes of dominant riparian species in perennial channels must be stimulated.

3.5.8 Encroachment of additional exotic species and terrestrial species in riparian zones must be discouraged.

3.5.9 Accumulation of woody debris on terraces by periodic flooding must be discouraged.

3.5.10 Existing flood terraces and deposition of sediments on these terraces to ensure optimum growth, spread and recruitment of these species must be maintained.

3.5.11 All reasonable steps must be taken to minimise noise and mechanical vibrations in the vicinity of the watercourses. Noise levels (noise resulting from the ash facility and its associated activities) to be below 35dB from 18:00 – 06:00 daily in the wetland areas and its buffer areas.

3.5.12 The necessary erosion prevention mechanisms must be employed to ensure the sustainability of all structures and activities and to prevent in-stream sedimentation.

3.5.13 Soils that have become compacted through the water use activities must be loosened to an appropriate depth to allow seed germination.

3.5.14 Slope/bank stabilisation measures must be implemented with a 1:3 ratio or flatter and vegetated with indigenous vegetation immediately after the shaping.

3.5.15 Stockpiling of removed soil and sand must be stored outside of the 1:100 flood line or delineated riparian habitat, whichever is the greater, to prevent being washed into the river and must be covered to prevent wind and rain erosion.

3.5.16 The indiscriminate use of machinery within the in-stream and riparian habitat will lead to compaction of soils and vegetation and must therefore be strictly controlled.

3.5.17 The overall macro-channel structures and mosaic of cobbles and gravels must be maintained by ensuring a balance (equilibrium) between sediment deposition and sediment conveyance maintained. A natural flooding and sedimentation regime must thus be ensured as far as reasonably possible.

3.5.18 As much indigenous vegetation growth as possible should be promoted within the proposed development area in order to protect soil and to reduce the percentage of the surface area which is paved/hardened.

3.5.19 Run-off from paved/hardened surfaces should be slowed down by the strategic placement of berms.

3.5.20 All wetland areas and at least a 100m buffer zone around the wetland areas must be permanently fenced off for access and demarcated as such, but permit the migration of natural flora and small fauna.

3.5.21 Any medicinal, sensitive and protected plants that are impacted upon must be assessed by the Responsible Authority and a registered, professional specialist and relocated, if necessary, to a suitable site. This activity must take place within thirty (30) days after the issuance of this licence and proof must be submitted to the Regional Head for written approval.

Trenching (pollution control mechanisms):

3.5.22 The direction and alignment of pipelines must be perpendicular to the direction of the slope or flow across a wetland(s). Where this is not feasible, appropriate measures to reduce the risk of preferential flow path development and associated erosion must be put in place.

3.5.23 A buffer zone as indicated in condition 3.4.3 must be developed for each wetland, and for wetlands outside the buffer zone at least a buffer zone of 50m and construction within the buffer zone must be restricted to the trench line and working side of the trench.

3.5.24 Lay pipes and cables across the watercourse on the downstream side of channel bedrock outcrops.

3.5.25 Trench is to be open for minimal length of time.

3.5.26 Adequate bank stabilisation measures must be implemented. Only riparian vegetation in the immediate path of the pipeline shall be removed.

3.5.27 Adequate measures must be implemented to prevent instream siltation during the construction phase.

3.5.28 Unless authorised by this licence, access roads must not encroach into the extent of the watercourse(s).

3.5.29 Trench breakers to be installed along the pipeline trench. A material with low hydrological conductivity in the form of trench breakers shall be packed around the pipe and shall be installed at regular intervals to prevent the pipeline behaving as a conduit and to intercept any concentrated flow down the pipeline route. Spacing between trench breakers shall vary depending on the slope of the landscape – the steeper the slope the smaller the distance between trench breakers. Spacing should be such that flows backing up behind one trench breaker extend back to the base of the previous trench breaker. This method also applies to construction, like the dirty water dams and pump stations, at the base of the ash dump (refer to condition 3.4.9).

3.6 Biota

3.6.1 The licensee must take all reasonable steps to allow movement of aquatic species, including migratory species.

3.6.2 All reasonable steps must be taken not to disturb the breeding, nesting and/or feeding habitats and natural movement patterns of aquatic biota.

3.6.3 The current level of diversity of biotopes and communities of animals, plants and microorganisms must be maintained.

3.6.4 The outcome of condition 3.3.15 must be assessed together with condition 5.2.

4 REHABILITATION AND MANAGEMENT

4.1 The licensee must embark on a systematic long-term rehabilitation programme to restore the watercourse(s) to environmentally acceptable and sustainable conditions after completion of the activities, which must include, but not be limited to the rehabilitation of disturbed and degraded riparian areas to restore and upgrade the riparian habitat integrity to sustain a bio-diverse riparian ecosystem.

4.2 All disturbed areas must be re-vegetated with an indigenous seed mix in consultation with an indigenous plant expert, ensuring that during rehabilitation only indigenous shrubs, trees and grasses are used in restoring the biodiversity.

4.3 An active campaign for controlling invasive species must be implemented within disturbed zones and its bordering areas (seed depots) to ensure that it does not become a conduit for the propagation and spread of invasive exotic plants.

4.4 Rehabilitation must be concurrent with construction.

4.5 Topsoil must be stripped and redistributed. A height restriction on stockpiles of not more than 2.0m must be followed in order to preserve the soil's microbiological and nutrient characteristics. Topsoil must be placed immediately after stripping, if possible, but not stockpiled for longer than three (3) months.

4.6 Compacted and disturbed areas must be shaped to natural forms and to follow the original contour. In general cut and fill slopes and other disturbed areas must not exceed 1:3 (v:h) ratio, it must be protected, vegetated, ripped and scarified parallel with the contour.

4.7 The Regional Head must sign a release form indicating that rehabilitation was done satisfactory according to specifications as per this license.

4.8 A photographic record must be kept as follows and submitted with reports as set out in section 5:

4.8.1 Dated photographs of all the sites to be impacted before construction commences;

4.8.2 Dated photographs of all the sites during construction on a monthly basis; and

4.8.3 Dated photographs of all the sites after completion of construction, seasonally.

4.9 Rehabilitation structures must be inspected regularly for the accumulation of debris, blockages instabilities and erosion with concomitant remedial and maintenance actions.

4.10 A comprehensive and appropriate rehabilitation and management programme to restore the watercourse(s) to environmentally acceptable and sustainable conditions after construction must be developed and submitted to the Regional Head for written approval within one (1) month from the date of issuance of this licence.

4.11 The original contours must be established over any activities within the extent of a watercourse and/or the regulated area of a wetland. After the backfill has subsided, the contour must follow the surrounding contours to stop irregular flows or blockage of biotic movement.

4.12 A Wetland Management and Rehabilitation Plan must be compiled by a wetland specialist when wetlands are affected and submitted to the Regional Head for written approval.

4.13 All wetlands (pan, hillslope seep, contact seep and valley bottom wetland – refer to condition 1.2) around the activity in Table 1 must be visited by a wetland specialist prior to construction to determine baseline conditions. This should be repeated during and after rehabilitation measures have been implemented to assess the success of rehabilitation and erosion control measures. Reporting as per condition 5.11.

4.14 The Licensee shall improve all wetlands around Kusile that are impacted by its activities and include this as part of reporting under conditions 4.12, 4.13 and 5.11.

4.15 The wetland offset as referenced in condition 3.4.3 shall be formally assessed by addressing the equivalent hectares to be offset and obtaining a positive net gain in wetland functionality as provided by the impacted wetlands. This must include financial provisions, thought process followed, stakeholder consultation, the current PES/EIS of those wetlands and an undertaking that no activity in the future will impact on the offset area. The offset to be authorised.

5 MONITORING AND REPORTING

5.1 The Responsible Authority must be notified in writing one week prior to commencement of the licensed activity and again upon completion of the activity.

5.2 A comprehensive and appropriate environmental assessment and monitoring programme (including bio-monitoring, toxicity testing and sediment sampling) to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities listed under condition 1.1 as well as compliance to these water use licence conditions must be developed and submitted to the Regional Head for written approval before commencement and must subsequently be implemented as directed. The monitoring programme shall be compared against the **REC (Recommended Ecological Class) for each watercourse as outlined in Table 5** and to be conducted at least between and beyond the points as indicated in Table 4.

Table 5: REC for various watercourses impacted by the activities.

Activity	Name of Watercourse	REC
Ash/gypsum co-disposal facility and dirty water dam with pump house	Pan	A
Ash/gypsum co-disposal facility and dirty water dam with pump house	Hillslope seep	A/B
Ash/gypsum co-disposal facility and dirty water dam with pump house	Contact seep, southwest of pan	A
Ash/gypsum co-disposal facility and dirty water dam with pump house	Contact seep, south of pan	C
Ash/gypsum co-disposal facility and dirty water dam with pump house	Valley bottom wetland (south of activity	A
Kusile Power Station	Wilge River	C

5.3 Six (6) monthly monitoring reports must be submitted to the Responsible Authority until otherwise agreed in writing with the Regional Head.

5.4 A qualified, independent, registered, professional and responsible scientist must be retained by the licensee who must give effect to the various licence conditions and to ensure compliance thereof pertaining to all activities impeding and/or diverting flow of watercourses as well as alterations to watercourses on the property as set out in condition 1.1.

5.5 The licensee must conduct on an annual basis an internal audit on compliance with the conditions this licence. A report on the audit must be submitted to the Responsible Authority within one month of the finalization of the audit. A qualified independent auditor must undertake this audit.

5.6 The audit reports must include but are not limited to:

5.6.1 Reporting in respect of the monitoring programme referred to in condition 5.2 and all other reporting and compliance conditions outlined in this licence;
5.6.2 A record of implementation of all mitigation measures including a record of corrective actions; and
5.6.3 Compensation measures for damage where mitigation measures have failed to adequately protect the in-stream and riparian habitat or any other characteristic of the watercourses.

5.7 The licensee must apply in writing to the Regional Head for alternative reporting arrangements for which written approval must be provided.

5.8 An Environmental Management/Monitoring Committee (EMC) must be established consisting of, but not limited to, representatives of the licensee, the Responsible Person(s) for ensuring compliance with this licence, the Department of Water Affairs, the relevant Department of Environmental Affairs, the Department of Energy, and other stakeholders (identified through the public consultation processes), including impacted water users.

5.9 The Department's official or representative must be appointed by the Regional Head. In addition to the reports required by the Department in this licence, all reports of the EMC must be submitted to the Regional Head.

5.10 The EMC must in addition to monitoring compliance with the conditions of the Environmental Management Programme, monitor for the duration of its establishment compliance with the conditions of this water use licence.

5.11 A wetland specialist must be appointed to monitor the compliance to the wetland management and rehabilitation plan and conditions in this license pertaining to impacts on wetlands, offsets and provide specialist advise for corrective actions and compile annual audit reports which must be submitted to the Regional Head as part of condition 5.5.

6 OTHER WATER USERS

6.1 The licensee must attempt to prevent adverse affect on other water users. All complaints must be logged (audit purposes) and investigated by a suitable qualified, independent person and if investigations prove that the licensee has impaired the rights of other water users, the licensee must initiate suitable compensative measures.

7. POLLUTION PREVENTION, INCIDENTS AND MALFUNCTIONS

7.1 Pollution incidents shall be dealt with in accordance with Section 19 and 20 of the Act.

7.2 Any incident that may cause pollution of any water resource shall immediately be reported to the Responsible Authority.

7.3 If surface and/or groundwater pollution has occurred or may possibly occur, the Licensee must conduct, and/or appoint specialists to conduct the necessary investigations and implement additional monitoring, pollution prevention and remediation measures to the satisfaction of the Responsible Authority.

7.4 The Licensee shall keep all records relating to the compliance or non-compliance with the conditions of this licence in good order. Such records shall be made available to the Responsible Authority within 14 (fourteen) days of receipt of a written request by the Department for such records.

7.5 The Licensee shall keep an incident report and complaints register, which must be made available to any external auditors and the Department.

8 BUDGETARY PROVISIONS

8.1 The water user must ensure that there is a budget sufficient to complete and maintain the water use and for successful implementation of the rehabilitation programme as set out in this license.

8.2 The Department may at any stage of the process request proof of budgetary provisions for rehabilitation and closure of project.

8.3 The Licensee shall annually update and submit to the Regional Head before the 31st of March annually:

8.3.1 Geohydrological, pollution plume, water make, seep and decant model for the Kusile operations. This includes annual analysis of acid base accounting and leachate information of stockpile and ash dump/co-disposal facilities;

8.3.2 Financial liability for (post-closure) water treatment and potable water supply to affected water users compiled by an independent, professional, qualified environmental economist, indicating the time of liability and accountability. Financial provision for water treatment and potable water supply to affected water users must be included in the applicable fund's financial provision and to be reviewed by the Licensee annually;

8.3.3 Conduct annual public participation meetings on the conditions of this licence and (non)compliance to its conditions; and

8.3.4 Provide information on any unauthorized activities and the reasons therefore.

APPENDIX III

SECTION 21 (g) OF THE ACT: **DISPOSING OF WASTE IN A MANNER WHICH MAY DETRIMENTALLY IMPACT ON A WATER RESOURCE**

1. CONSTRUCTION AND OPERATION

1.1 The Licensee shall carry out and complete all the activities, including the construction and operation of the facilities listed in Table 6 below, according to the Report and according to the final plans submitted with the Integrated Water Use Licence Application as approved by the Regional Head.

Table 6: Geographical positions of all the waste water management facilities

NAME OF THE ACTIVITY	DESCRIPTION	COORDINATES	VOLUME	PROPERTY
SECTION 21 g				
Section 21 (g)	Dirty water run-off from Ash Dump to a lined storage dam	S: 25. 93498° E: 28. 89679°	529 430 m^3/a	Portion 26 Farm of the farm Klipfontein 566

1.2 The construction of the dams listed in Table 6 must be carried out under the supervision of a professional Civil Engineer, registered under the Engineering Profession of South Africa Act, 1990 (Act 114 of 1990), as approved by the designer.

1.3 The Licensee shall in writing within 30 days after the completion of the activities referred here in accordance with the relevant provisions of this licence, under reference 16/2/7/B100/B174, inform the Regional Head thereof. This shall be accompanied by a signature of approval from the designer referred to above that the construction was done according to the design plans referred to in the Report.

1.4 The Licensee must ensure that the disposal of the waste water and the operation and maintenance of the system are done according to the provisions in the Report.

1.5 The Licensee shall as well submit a set of as-built drawings to the Regional Head after the completion of the waste facilities listed in Table 6.

1.6 The waste facilities listed in Table 6 shall be operated and maintained to have a minimum freeboard of 0.8 metres above full supply level and all other water systems related thereto shall be 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.

1.7 The Licensee shall use acknowledged methods for sampling and the date, time and sampler must be indicated for each sample.

2. STORAGE OF WATER CONTAINING WASTE

2.1 The Licensee is authorised to establish and operate a storage dam with a capacity of two hundred and four thousand cubic metres (204 000 m³), referred to as Ash Dump dirty water dam on Portion 26 Farm of the farm Klipfontein 566, a volume of five hundred and twenty, nine thousand four hundred and thirty cubic metres per annum (529 430 m³/a), based on average of one thousand four hundred and fifty cubic metres per day (1 450 m³/d) of waste water will be disposed.

3. QUALITY OF WATER CONTAINING WASTE TO BE DISPOSED

3.1 The quality of water containing waste to be disposed of into the storage dam specified on table 1 shall not exceed the following limits as specified in Table 7.

Table 7: Quality of water containing waste to be disposed into waste water facility

Parameter	Water Quality Limits For Waste Water Facility
pH	10.8
Temperature	ambient
Acidity in mg/l	49.9
Aluminium in mg/l	0.39
Iron in mg/l	<0.001
Sodium in mg/l	<0.02
Total suspended solids in mg/l	Varies
Calcium in mg/l	10.10
Magnesium in mg/l	62
Manganese in mg/l	0.03
Boron mg/l	1.9
Barium mg/l	0.24
Cadmium mg/l	<0.001
Chromium mg/l	0.08
Cobalt mg/l	0.18
Copper mg/l	0.06
Lead mg/l	2.3
Molybdenum mg/l	0.05
Nickel mg/l	0.03
Tin mg/l	<0.02
Vanadium mg/l	0.5
Zinc mg/l	0.1

4. MONITORING

4.1 The Licensee shall monitor on monthly basis the water resources at surface water monitoring point and Ground water monitoring point to determine the impact of the facility and other activities on the water quality by taking samples at the monitoring points described in Tables (8 and 9) below:

Table 8: Surface Water monitoring points

Locality	X co-ordinate	Y co-ordinate
DWBH01	28.91948	-25.90924

Table 9: Ground Water monitoring points

Locality	X co-ordinate	Y co-ordinate
SW 1	29.91644	-25.9476
SW 2	28.88306	-25.9311
SW 3	28. 8647	-25.8533
SW 4	28.88915	-25.8881
SW 5	28. 89269	-25.8909
SW 6	28. 90239	-25.9431

4.2 The date, time and monitoring point in respect of each sample taken shall be recorded together with the results of the analysis.

4.3 Monitoring points shall not be changed prior to notification to and written approval by the Regional Head.

4.4 An Aquatic Scientist approved by the Regional Head must establish a monitoring programme for the following indices: Invertebrate Habitat Assessment System (IHAS) and the latest SASS (South African Scoring System). Sampling must be done once during the summer season and once during the winter season, annually, to reflect the status of the river upstream and downstream of the activities.

4.5 Water quality testing to be performed on the storage dams on a quarterly basis in order to determine the risks to the receiving environment. The data gathered in the investigation must be reported annually to the Regional Head. If any concentrations levels as specified above are exceeded, the Licensee must institute an investigation to determine the cause of poor water quality. Furthermore, the Licensee must undertake geochemical assessment on Ash/gypsum Dump.

4.6 Water quality testing must be conducted quarterly on the wastewater stream from all the pollution control dams and other dams when returned back to the mine for use as process water.

4.7 The Licensee shall participate in any initiative such as Direct Estimation of Ecological Effect Potential (DEEEP) to determine the toxicity of complex tailings waste discharges. Both acute and chronic toxicity must be addressed and at least three taxonomic groups must be present when toxicity tests are performed.

4.8 Analysis shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards (SABS), in terms of the Standards Act, 1982 (Act 30 of 1982).

4.9 The methods of analysis shall not be changed without prior notification to and written approval by the Minister.

4.10 A proper ground and surface water monitoring network should be established to monitor the quality and quantity of groundwater as per the report recommendation and ensuring that water used by other water users are safeguarded in accordance to chapter 14 of the National Water Act, 1998.

5. REPORTING

5.1 The Licensee shall update the water balance annually and calculate the loads of waste emanating from the activities. The Licensee shall determine the contribution of their activities to the mass balance for the water resource and must furthermore co-operate with other water users in the catchment to determine the mass balance for the water resource reserve compliance point.

5.2 The Licensee shall submit the results of analysis for the monitoring requirements to the Regional Head on a quarterly basis under Reference number 16/2/7/B100/B174.

5.3 The Licensee shall submit the nature and the quality of the waste disposed into the following dams:

5.3.1 Ash Dump Storage Dam

6. STORM WATER MANAGEMENT

6.1 Stormwater leaving the Licensee's premises shall in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored. dumped or spilled on the premises.

6.2 Increase runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the stream.

6.3 Storm-water shall be diverted from the mine complex site and roads and shall be managed in such a manner as to disperse runoff and concentrating the storm-water flow.

6.4 Where necessary works must be constructed to attenuate the velocity of any storm-water discharge and to protect the banks of the affected watercourses.

6.5 Storm-water control works must be constructed, operated and maintained in a sustainable manner throughout the impacted area.

6.6 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm-water does not lead to bank instability and excessive levels of silt entering the streams.

6.7 All storm-water that would naturally run across the pollution areas shall be diverted via channels and trapezoidal drains designed to contain the 1:50 year flood.

6.8 The polluted storm water system shall be designed and implemented to provide suitable routing and pumping capacity for contaminated storm water from the individual facilities to the respective storm water dams in accordance with the design specifications as contained in the Integrated Water Use Licence Application report.

6.9 The polluted storm water captured in the storm water control dams shall be pumped to the process water treatment plant for reuse and recycling.

7. ACCESS CONTROL

7.1 Strict access procedures must be followed in order to gain access to the property. Access to the pollution control dams and Ash dumps must be limited to authorised employees of the Licensee and their Contractors only.

7.2 Notices prohibiting unauthorised persons from entering the controlled access areas as well as internationally acceptable signs indicating the risks involved in case of an unauthorised entry must be displayed along the boundary fence of these areas.

8. CONTINGENCIES

8.1 Accurate and up-to-date records shall be kept of all system malfunctions resulting in non-compliance with the requirements of this licence. The records shall be available for inspection by the Regional Head upon request. Such malfunctions shall be tabulated under the following headings with a full explanation of all the contributory circumstances:

8.1.1 Mechanical failures (including design, installation or maintenance);
8.1.2 Environmental factors (e.g. flood);
8.1.3 Operating errors and
8.1.4 Loss of supply services (e.g. power failure) and other causes.

8.2 The Licensee must, within 24 hours, notify the Regional Head of the occurrence or potential occurrence of any incident which has the potential to cause, or has caused water pollution, pollution of the environment, health risks or which is a contravention of the licence conditions.

8.3 The Licensee must, within 14 days, or a shorter period of time, as specified by the Regional Head, from the occurrence or detection of any incident referred above, submit an action plan, which must include a detailed time schedule, to the satisfaction of the Regional Head of measures taken to:

8.3.1 Correct the impacts resulting from the incident;
8.3.2 Prevent the incident from causing any further impacts and
8.3.3 Prevent a recurrence of a similar incident.

9. AUDITING

9.1 The Licensee shall conduct an annual internal audit on compliance with the conditions of this licence. A report on the audit shall be submitted to the Regional Head within one (1) month of finalisation of the report, and shall be made available to an external auditor should the need arise.

9.2 The Licensee shall appoint an independent external auditor to conduct an annual audit on compliance with the conditions of this licence. The first audit must be conducted within six (6) months of the date of this licence and a report on the audit shall be submitted to the Regional Head within one (1) month of finalisation of the report.

10. INTEGRATED WATER AND WASTE MANAGEMENT

10.1 The Licensee must update an *Integrated Water and Waste Management Plan (IWWMP),* which must together with the updated *Rehabilitation Strategy* and *Implementation Programme (RSIP),* be submitted to the Regional Head for approval within one (1) year from the date of issuance of this licence.

10.2 The IWWMP and RSIP shall thereafter be updated and submitted to the Regional Head for approval, annually.

10.3 The Licensee must, at least 180 days prior to the intended closure of any facility, or any portion thereof, notify the Regional Head of such intention and submit any final amendments to the IWWMP and RSIP as well as a final *Closure Plan,* for approval.

10.4 The Licensee shall make full financial provision for all investigations, designs, construction, operation and maintenance for a water treatment plant should it become a requirement as a long-term water management strategy.

11. GENERAL CONDITIONS

11.1 Water samples must be taken from all the monitoring boreholes by using approved sampling techniques and adhering to recognized sampling procedures. Samples should be analyzed for both organic as well as inorganic pollutants, as mining activity often lead to hydrocarbon spills in the form of diesel and oil. The water quality parameters on table 3 should be analyzed.

11.2 These should be recorded on a data sheet. It is proposed that the data should be entered into an appropriate computer database and reported to the Department of Water Affairs.

11.3 The mining areas should be flooded as soon as possible to prevent oxygen from reacting with remaining pyrite.

11.4 The Licensee should remove all coal from the opencast and as little as possible should be left.

11.5 The final backfilled opencast topography should be engineered such that runoff is directed way from the opencast areas.

11.6 The final layer should be as clayey as possible and compacted if feasible, to reduce recharge to the opencasts.

11.7 A safety pillar of at least 30 m should be left between the underground and opencast areas.

11.8 Quarterly groundwater sampling must be done to establish a database of plume movement trends, to aid eventual mine closure.

11.9 The Licensee must ensure in advance that alternative water supply for external water users is provided to these users should groundwater resources be impacted

11.10 The pollution control dam must be designed in such a manner that any spillage can be contained and reclaimed without any impact on the surrounding environment. A plan must be in place to stop overflowing in a dam in case of rainy seasons.

11.11 Geochemical assessment should be done on the discard material during the mining operation.

11.12 The Licensee shall at all times together with the conditions of this licence adhere to the Regulations on use of water for mining and related activities aimed at the protection of water resources (GN 704, 4 June 1999).

12 DAM SAFETY REQUIREMENTS

12.1 The construction, operation, and maintenance of all dam facilities classified as a dam with a safety risk, must be carried out under supervision of a Professional Civil Engineer, registered under the Engineering Profession of South Africa Act, 1990 (Act 114 of 1990).

12.2 All storage facilities (for water not containing waste) with a safety risk will comply to the following control measures:

12.3 The Licensee shall supply any information, drawings, specifications, design assumptions, calculations, documents and test results when requested by the Regional Head.

12.4 An approved professional person must be appointed to carry out a dam safety evaluation annually and must:

12.4.1 Consider whether the safety norms pertaining to the design, construction, monitoring, operation, performance and maintenance of the dam satisfy acceptable dam engineering practices, and

12.4.2 Compile a report on the matters contemplated above according to the prescribed requirements and submit the signed and dated report to the owner of the dam within the prescribed period.

12.5 The Licensee is not exempted from compliance with the provisions of the Regulations published under Government Notice R1560 of 25 July 1986, read with Chapter 12 of the Act.

13 CONSTRUCTION OF DAM(S)

13.1 The as-built plans and specifications of the dam(s) must be submitted to the Regional Head for his/her records within one (1) month of the date of issuance.

13.2 Construction of the dam(s) may not commence before authorisation in terms of the National Environmental Act is issued.

13.3 The Government reserves the right to construct storage works at any time in any stream and to store all surplus water reaching the dam(s) and to control the allocation of such water.

13.4 Construction of the dam(s) may not commence unless the required authorization to build has been issued by the Dam Safety Office of this Department.

[END OF LICENCE]