



## **water & sanitation**

**Department:  
Water and Sanitation  
REPUBLIC OF SOUTH AFRICA**

Private Bag X313, Pretoria, 0001, Sedibeng Building Centre, 185 Francis Baard Street, Pretoria,  
Tel: (012) 336-7500, Fax: (012) 326-4472/ (012) 326-2715

### **LICENCE IN TERMS OF SECTION 40 OF THE NATIONAL WATER ACT, 1998 (ACT NO 36 OF 1998) (THE ACT)**

I, **Margaret-Ann Diedricks**, in my capacity as Director General in the Department of Water and Sanitation and acting under authority of the powers delegated to me by the Minister of Water and Sanitation, hereby authorises the following water uses in respect of this licence.

SIGNED: 

DATE: 18 DECEMBER 2015

**LICENCE NO: 04/B20A/CIJ/4032**

**FILE NO: 16/2/7/B100/C27**

1. **Licensee:** **Exxaro Coal (Pty) Ltd: Leeuwan Coal Mine OI and OL Expansion**

**Postal address:** **P.O Box 2353  
Delmas  
2210**

2. **Water uses**

2.1 Section 21 (a) of the Act: Taking of water from a water resource Appendices I and II

2.2 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 III.

**B 06659**



- 2.3 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 IV.
- 2.4 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 Appendices III.
- 2.5 Section 21(j) of the Act: Removing, discharging or disposing of water found underground if it is necessary for the effective continuation of an activity or for the safety of people, subject to the conditions set out in Appendices I and V.

**3. Table 1: Properties in respect of which this licence is issued**

Farm	Title Deed	Owner
Moabsvelden 248 ptn 2 & 3	T24800002 & T24800003	Exxaro Leeuwpán (Pty) Ltd
Rietkuil 257 portion 2 & 10	T25700002 & T25700001	Hannes Potgieter Trustfonds

**5. Licence and Review Period**

This licence is valid for a period of twenty (20) years from the date of issuance and it may be reviewed at the time interval of not more than every five (5) 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."

"The Provincial Head"Provincial Chief Director: Mpumalanga, Department of Water and Sanitation, Private Bag X11259, MBOMBELA, 1200.

"Department" means Department of Water and Sanitation.

"Report" refers to the reports, Files 1 to 3 of Exxaro Coal (PTY) LTD: Exxaro Leeuwpán Coal Mine; Integrated Water Use License Application (IWULA) dated 26 August 2015 for Leeuwpán Block OI Expansion project which includes the main application, application forms and other supporting documentation and the



subsequent updated documents, designs and water balances, as well as all other related documentations and communications (emails, verbal, etc.).

**7. Description of the activity**

Exxaro Coal (Pty) Ltd is licensed for Section 21 (a), (c), (g), (f), (c) and (j) water uses as in accordance with Section 40 of the National Water Act, 1998 (Act 36 of 1998), to operate a coal mining and associated activities at Leeuwpán Coal in Delmas.

Exxaro Coal (Pty) Ltd: Leeuwpán Coal applied for a water use license in terms of Section 40 of the National Water Act, 1998 (Act 36 of 1998) for the for Pit dewatering, Mining through wetland, new plant and associated infrastructure located within 500m of wetland, raw water dam, return water dam, stockpile, dirty water dam, discard backfilling, silt trap and dust suppression. This infrastructure expansion is to ensure adequate supply for Leeuwpán Coal Mine's customers, including Eskom Holdings Limited (Eskom).

The proposed coal mining and associated activities are located within quaternary catchment, B20A in the Mpumalanga Province.



## 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 Provincial 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 Provincial 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. Rules, regulations and water management stipulation of such association must be adhered to.
6. 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.
7. The licence shall not be construed as exempting the Licensee from compliance with the provisions any other applicable Act, Ordinance, Regulation or By-law.
8. 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.
9. 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 Provincial Head within one month of the finalisation of the audit.
10. The Licensee shall appoint an independent external auditor to conduct an annual audit on compliance with the conditions of this licence.
11. Any incident that causes or may cause water pollution shall be reported to the Provincial Head or his/her designated representative within 24 hours.

12. If the water use described in this licence is not exercised within 3 years of the date of the licence, the authorization will be withdrawn. Upon commencement of the water use, the Licensee must inform the relevant authority in writing.
13. The Licensee shall establish and implement a continual process of raising awareness amongst itself, its workers and stakeholders for the need for Water Conservation/Water Demand Management.
14. Notices prohibiting unauthorized persons from entering water use premises must be displayed.
15. The Department accepts no liability for any damage, loss or inconvenience of whatever nature, suffered as a result of/ amongst other things.
  - 15.1 Any force majeure event;
  - 15.2 Siltation of the river or dam basin; and
  - 15.3 Required Reserve releases.

## APPENDIX II

**Section 21(a) of the Act: Taking water from a water resource**

1. This licence authorises the taking of water in cubic metres per annum (m<sup>3</sup>/a) in properties as indicated in Table 1 below:

Table 1: Taking of water from the pits

Water use(s)	Purpose	Capacity/ Volume (m <sup>3</sup> , tonnes and/or m <sup>3</sup> /annum)	Property Description	Co-ordinates
<b>Section 21(a)</b>				
Pit OI Dewatering	Abstraction of water from the proposed new Block OI to the Raw Water Dam	72 000 m <sup>3</sup> /annum total for OI	Moabsvelden 248IR Portion 2 and 16	26° 10' 41.470" S 28° 45' 10.920" E

2. The quantity of water authorised to be taken in terms of this licence may not be exceeded without prior authorisation by the Minister.
3. This licence does not imply any guarantee that the said quantities and qualities of water will be available at present or at any time in the future.
4. The above-mentioned volume may be reduced when this licence is reviewed.
5. The Licensee shall continually investigate new and emerging technologies and put into practice water efficient devices or apply technique for the re-use of water containing waste, in an endeavour to conserve water at all times.
6. All water taken from the resource shall be measured as follows:



- 6.1 The daily quantity of water taken must be metered or gauged and the total recorded at the last day of each month; and
  - 6.2 The Licensee shall keep record of all water taken and a copy of the records shall be forwarded to the Regional Head on or before 25 January and 25 July of each year.
7. No water taken may be pumped, stored, diverted, or alienated for purposes other than intended in this licence, without written approval by the Minister or his/her delegated nominee.
  8. The Licensee shall install and monitor appropriate water measuring to measure the amount of water abstracted, received and/or consumed, as applicable to the infrastructure.
  9. Notices prohibiting unauthorised persons from entering certain 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.
  10. The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of-
    - 10.1 shortage of water;
    - 10.2 inundations or flood;
    - 10.3 siltation of the resource; and
    - 10.4 required reserve releases.
  11. The Licensee shall ensure that all measuring devices are properly maintained and in good working order and must be easily accessible. This shall include a programme of checking, calibration, and/or renewal of measuring devices.
  12. The Licensee shall establish a programme of formal Information Management System, which maintains a database on water supply, distribution and delivery infrastructure.



**Licence No: 04/B20A/CIJ/4032**

**File No: 16/2/7/B100/C27**

13. The Licensee shall establish and implement a continual process of raising awareness amongst itself, its workers and stakeholders for the need to for Water Conservation and Water Demand Management.



## APPENDIX III

**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. CONSTRUCTION, OPERATION AND MAINTENANCE

1.1 The licence authorises the following section 21 (c) and (i) water use activities as set out in Table 2 below and in the water use application reports submitted to the Department:

**Table 2: Section 21 (c) and (i) water use activities**

Water use(s)	Purpose	Capacity/ Volume (m3, tonnes and/or m3/annum)	Property Description	Co-ordinates
Section 21 c & i				
Activity	Purpose	Affected Watercourse	Property	Co-ordinates
Open Pit OL	Open Pit 1 will be mining through a Wetland	Bronkhorstspuit	MOABVELDEN 248 IR	26° 10' 56.932" S 28° 45' 32.971" E
Open Pit OI	Open Pit 1 will be mining through a Wetland	Bronkhorstspuit	RIEKKUIL 249 IR	26° 10' 56.932" S 28° 45' 7.258" E
New Plant and Infrastructure	Proposed new plant and the associated infrastructure will be located and operated	Bronkhorstspuit	KENBAR 257 IR	26° 11' 3.442" S 28° 44' 22.714" E

Water use(s)	Purpose	Capacity/ Volume (m3, tonnes and/or m3/annum)	Property Description	Co-ordinates
	within 500m from a wetland area.			

- 1.2 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.
- 1.3 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.
- 1.4 A suitably qualified person(s), appointed by the Licensee, and approved in writing by the Provincial 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 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.
- 2.2 For all the activities listed under condition 1.1, Table 2, "as-built" plan(s) and engineering drawing(s) prepared by a registered professional engineer, must be submitted to the Provincial Head within two (2) months of the date of issuance 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 properties.



### **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 Appendix III and must include but are not limited to the following;
- 3.1.2 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 watercourse(s);
- 3.1.3 Storm water must be diverted from mining areas, stockpiles, infrastructure areas and roads and must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow;
- 3.1.4 The velocity of storm water discharges must be attenuated and the banks of the watercourses protected, notably in this environment of dispersive soils;
- 3.1.5 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;
- 3.1.6 Sheet runoff from paved, hardened surfaces and access roads need to be curtailed.

#### **3.2 Structures 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 All areas affected by construction must 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.
- 3.2.7 Any access roads or crossings should be:
- 3.2.7.1 Non-erosive, structurally stable and should not induce any flooding or safety hazard;
  - 3.2.7.2 Any damage is repaired immediately to prevent further damage;
  - 3.2.7.3 Non-polluting with respect to silt and litter that can be deposited into a watercourse;
  - 3.2.7.4 Watercourse crossings to facilitate the movement of aquatic and non-aquatic organisms and fauna;
  - 3.2.7.5 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 minimize impacts on the characteristics of the watercourse;
  - 3.2.7.6 Where any road is within the 100m buffer zone of the watercourse, this portion of the road shall be concreted or tarred; and
  - 3.2.7.7 Not consist of any sulphur containing and/or other polluting material.

### 3.3 Water Quality

- 3.3.1 The Licensee shall sample the water quality monthly at monitoring points both upstream and downstream of the activities and report to the Responsible Authority within six (6) month after the results of each sampling event is received:

**Table 3: Surface Water quality parameters relevant for sampling**

Variable
pH
Electrical conductivity (EC) (mS/m)
Suspended solids (SS) (mg/l)
Turbidity (NTU)
Alkalinity (mg CaCO <sub>3</sub> /l)
Sodium (Na) (mg/l)
Iron (Fe) (mg/l)



Manganese (Mn) (mg/l)
Aluminium (Al) (mg/l)
Ammonia (NH <sub>3</sub> ) (mg/l)
Sulphate (SO <sub>4</sub> ) (mg/l)

- 3.3.2 Monitoring must continue for three (3) years after the cessation of the activities listed in condition 1.1 Appendix III.
- 3.3.3 Monitoring must be undertaken as set out in Section 5 Appendix III.
- 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 Responsible Authority, the Licensee must submit such to the Responsible Authority 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 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 delineated 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 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.

- 3.3.11 The Licensee has to indicate to the Responsible Authority within sixty (60) 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 must 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.
- 3.3.12 Where any coal spills along the stream crossings and roads occur, they have to be cleaned immediately. Daily inspections are recommended and to be recorded formally. Coal spills into watercourses will be communicated to the Provincial Head within two (2) days after it occurred. The Licensee must take precautionary measures to prevent reoccurrence.
- 3.3.13 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 condition 3.3.1 Appendix II.
- 3.3.14 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<sub>4</sub>) (mg/l), Aluminium (Al) (mg/l), Iron (Fe) (mg/l), Manganese (mg/l) and Nitrate (NO<sub>3</sub> 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 Appendix III.

#### 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 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.
  - 3.4.4 Structures must 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.
  - 3.4.5 The development may not impede natural drainage lines.
  - 3.4.6 The diversion structures may not restrict river flows by reducing the overall river width or obstructing river flow.
  - 3.4.7 The characteristics of the streambed are likely to be altered locally. In particular the rock and rubble created during the construction process is likely to have sharp edges, and not smooth surfaces that are typically associated with river rocks and pebbles. All rock and rubble must be removed from the watercourse once construction has been completed. Any rock placed in the watercourse to enhance the dissolved oxygen content of the water must adhere to the same criteria, namely only smooth rock surfaces to be placed within the watercourse.

### **3.5 Riparian and Instream Habitat (Vegetation and Morphology)**

- 3.5.2 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.
- 3.5.3 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 licence.
- 3.5.4 Activities must not occur in sensitive riffle habitats.
- 3.5.5 Indigenous riparian vegetation, including dead trees, outside the limits of disturbance indicated in the site plans must not be removed from the area.
- 3.5.6 Alien and invader vegetation must not be allowed to further colonize the area, and all new alien vegetation recruitment must be sustainably eradicated or controlled.

- 3.5.7 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.
- 3.5.8 Recruitment and maintaining of a range of size classes of dominant riparian species in perennial channels must be stimulated.
- 3.5.9 Encroachment of additional exotic species and terrestrial species in riparian zones must be discouraged.
- 3.5.10 Accumulation of woody debris on terraces by periodic flooding must be discouraged.
- 3.5.11 Existing flood terraces and deposition of sediments on these terraces to ensure optimum growth, spread and recruitment of these species must be maintained.
- 3.5.12 The necessary erosion prevention mechanisms must be employed to ensure the sustainability of all structures and activities and to prevent instream 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.
- 3.5.17 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.
- 3.5.18 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.
- 3.5.19 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.





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

### **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 3.3.13 must be assessed together with condition 5.2 Appendix III.

## **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 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.

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 Provincial Head will sign a release form indicating that rehabilitation was done satisfactory according to specifications as per this licence.
- 4.8 A photographic record must be kept as follows and submitted with reports as set out in section 5 Appendix III:
- 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 The original contours must be established over the stream crossings and roads. After the backfill has subsided, the contour must follow the surrounding contours to stop irregular flows or blockage of biotic movement.
- 4.11 A Wetland Management and Rehabilitation Plan must be compiled by a wetland specialist and submitted to the Regional Head for written approval.

## 5 MONITORING AND REPORTING

- 5.1 A comprehensive and appropriate environmental assessment and monitoring programme (including bio-monitoring, sediment sampling and ecotoxicology) to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities listed under condition 1.1 Appendix III 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) of a C** within the Bronkhorstspruit River.
- 5.2 Six (6) monthly monitoring reports must be submitted to the Responsible Authority until otherwise agreed in writing with the Provincial Head.
- 5.3 A qualified 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 properties as set out in condition 1.1.



- 5.4 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 finalisation of the audit. A qualified independent auditor must undertake this audit.
- 5.5 The audit reports must include but are not limited to:
- 5.5.1 Reporting in respect of the monitoring programme referred to in condition and all other reporting and compliance conditions outlined in this licence;
  - 5.5.2 A record of implementation of all mitigation measures including a record of corrective actions; and
  - 5.5.3 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.
- 5.6 The Licensee must apply in writing to the Provincial Head for alternative reporting arrangements for which written approval must be provided.
- 5.7 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 and provide specialist advice for corrective actions and compile audit reports which must be submitted to the Responsible Authority.

## **6 OTHER WATER USERS**

- 6.1 The Licensee must attempt to prevent adverse affect on other water users. All complaints must be investigated by a suitable qualified 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 must be dealt with in accordance with Section 19 and 20 of the National Water Act.
- 7.2 Any incident that may cause pollution of any water resource must 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 must 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 must 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 licence.
- 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 is fully responsible and accountable for any negative impacts on the watercourse(s) and the modeling, monitoring and mitigation thereof, until such time that no negative impacts are experienced or foreseen.
- 8.4 The Licensee shall submit to the Provincial Head before the 31<sup>st</sup> of March annually or immediately in the case of condition 8.4.2:
- 8.4.1 Proof of annual public participation meetings on the conditions of this licence and (non)compliance to its conditions; and
- 8.4.2 Provide information on any unauthorized activities and the reasons therefore.



## APPENDIX IV

**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 Pollution Control Dam according to the Report and according to the final plans Technical Design Report as approved by the Provincial Head.

**Table 3: Geographical positions of the waste water management facilities**

Water use(s)	Purpose	Capacity/ Volume (m3, tonnes and/or m3/annum)	Property Description	Co-ordinates
Section 21(g)				
Raw Water Dam	Raw water from collection points will be stored in the raw water dam for use at the plant	28 931m3	KENBAR 257 IR	26° 10' 52.992" S  28° 43' 52.048" E
Process Water Dam	A process water dam will be required and be located on the Plant terrace next to the Storm water	10 116 m3	KENBAR 257 IR	26° 10' 56.282" S  28° 44' 26.069" E

Water use(s)	Purpose	Capacity/ Volume (m3, tonnes and/or m3/annum)	Property Description	Co-ordinates
	collection dam.			
Storm Water Dam	A storm water dam will be required to control run-off from the natural environment	9 721m <sup>3</sup>	KENBAR 257 IR	26° 10' 57.732" S 28° 44' 27.287" E
Stockpile	Water control Measures at the stockpile areas.	2 341m <sup>3</sup>	KENBAR 257 IR	26° 11' 2.249" S 28° 44' 24.339" E
Dirty water dam for stockyard	A dirty water dam to contain dirty water from the Stockyard	11 337.5m <sup>3</sup>	KENBAR 257 IR	26° 11' 7.247" S 28° 44' 17.246" E
Discard Backfilling for Pit OI	Pit OI will be backfilled once mining is completed	250 000tons	MOABSVELDEN 248 IR	26° 10' 56.932" S 28° 45' 32.971" E
Discard Backfilling for	Pit OL will be backfilled	250 000tons	RIEKKUIL 249 IR	26° 10' 56.932" S

Water use(s)	Purpose	Capacity/ Volume (m3, tonnes and/or m3/annum)	Property Description	Co-ordinates
Pit OL	once mining is completed			28° 45' 7.258" E
Silt trap	The Storm water Dam will spill into the Silt trap	9 352m <sup>3</sup>	KENBAR 257 IR	26° 10' 56.266" S 28° 44' 28.291" E
Dust suppression	Water for dust suppression of will be collected from the approved Plant PCD's	7650 m <sup>3</sup>	Leeuwpans 246	28° 43' 28.5" S 26° 10' 02.8" E

- 1.2 The construction of the Pollution Control Dam 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 Within 30 days after the completion of the activities referred here in accordance with the relevant provisions of this licence, the Licensee shall in writing, under reference, 16/2/7/B100/C27, inform the Provincial 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 shall as well submit a set of as-built drawings to the Provincial Head after the completion of the Pollution Control Dam.
- 1.5 The Pollution Control Dam 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.

- 1.6 The Licensee shall use acknowledged methods for sampling and the date, time and sampler must be indicated for each sample.
- 1.7 Flow metering devices shall be maintained in a sound state of repair and calibrated by a competent person at intervals of not more than once in two years. Calibration certificates shall be available for inspection by the Provincial Head or his representative upon request.

**2. STORAGE OF WATER CONTAINING WASTE**

- 2.1 The Licensee is authorised to store water constianing waste in waste management facilities facilities listed in table 6

**Table 4: Waste management facility (pollution control dam)**

Facility	Properties	Total Volume (m <sup>3</sup> /a)	Co-ordinates
Pollution Control Dam		729 708 m <sup>3</sup> /a	S 26°17'42 6" E 29° 09' 23.7"

**3. DUST SUPPRESSION**

- 3.1 This Licence authorises the use of seven thousand six hundred and fifty cubic metres (m<sup>3</sup>) of wastewater per annum from the pollution control dam for dust suppression on Moabsvelden 248IR Portion 2.
- 3.2 No excessive dust suppression that leads to saturated conditions and no dust suppression during wet periods.
- 3.3 An annual soil chemistry map must be compiled and submitted, with a report, to the Provincial Head. The soil chemistry map shall cover the areas covered by the dust suppression and map concentrations of pH, Electrical Conductivity and Sodium. This map must be interpreted by a professional soil scientist and recommendations and conclusions must be included in a report.

**4. QUALITY OF WASTE WATER TO BE DISPOSED OF THE WASTE WASTER CONTAINMENT FACILITY**

The quality of wastewater disposed of on the waste water containment facility shall not exceed the following limits as specified in Tables 5 below:





**Table 5: Wastewater qualities to be disposed of the waste water containment facility**

<b>Variables</b>	<b>Measurement</b>	<b>Quality</b>
pH	pH	5.0-9.5
<b>Electrical Conductivity</b>	mS/m	<150
<b>Calcium</b>	mg/L	-
<b>Magnesium</b>	mg/L	50.6
<b>Sodium</b>	mg/L	59.9
<b>Chloride</b>	mg/L	38.6
<b>Sulphate</b>	mg/L	400
<b>Nitrate</b>	mg/L	3
<b>Fluoride</b>	mg/L	0.44

## 5. MONITORING

### 5.1 Monitoring of waste water

5.1.1 The Licensee shall monitor the water quality of the treated water continuously with online water quality monitoring of the key variables as indicated in Table 7

### 5.2 Surface Water Quality

5.2.1 The Licensee shall submit within one month of the date of the issuance of the licence, a surface water quality monitoring programme, with the GPS co-ordinates and the criteria used in the selection of the water monitoring points.

5.2.2 The location of additional monitoring points, which may from time to time be specified by the Provincial Head, shall be communicated in writing to the Licensee and this communication shall be regarded as part of the licence.

5.2.3 Monitoring for quality shall only be carried out at the monitoring points listed below:

5.2.4 The following variables (constituents) shall be included in the surface monitoring programme

pH

Electrical Conductivity (EC)	mS/m
Chlorides (Cl)	mg/l
Sulphates (So <sub>4</sub> )	mg/l
Fluoride (F)	mg/l
Sodium (Na)	mg/l
Potassium (K)	mg/l
Calcium (Ca)	mg/l
Magnesium (Mg)	mg/l
Aluminium (Al)	mg/l
Iron (Fe)	mg/l
Manganese (Mn)	mg/l
Nitrate (NO <sub>2</sub> )	mg/l
Iron (Fe)	mg/l
Total dissolved solids (TDS)	mg/l
Total hardness	mg/l

### 5.3 Groundwater Quality

- 5.3.1 The Licensee shall submit within one month of the date of the issuance of this licence, a ground water quality monitoring programme which must provide the detailed criteria followed in the establishment of the groundwater monitoring point.

## 6. STORM WATER MANAGEMENT

- 6.1 Storm water 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 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.



- 7.6 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.
- 7.7 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.
- 6.7 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 Technical Design Report.

## **7. ACCESS CONTROL**

- 7.1 Strict access procedures must be followed in order to gain access to the property. Access to the Pollution Control Dam must be limited to authorised employees of the Licensee and their Contractors only.
- 7.2 Notices prohibiting unauthorised persons from entering the areas referred to in condition 2.1 of Appendix III, 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.
- 7.3 The Licensee must take all reasonable steps to maintain service roads in a condition which ensures unimpeded access to the mine residue facility for vehicles involved in closure
- 7.4 The Licensee must ensure that all entrance gates are manned during the hours of operation/closure construction and locked outside the hours of operational/closure construction.

## **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 Provincial Head upon request. Such malfunctions shall be tabulated under the following headings with a full explanation of all the contributory circumstances:

8.1.1 operating errors;



- 8.1.2 mechanical failures (including design, installation or maintenance);
  - 8.1.3 environmental factors (e.g. flood);
  - 8.1.4 loss of supply services (e.g. power failure); and
  - 8.1.5 other causes.
- 8.2 The Licensee must, within 24 hours, notify the Provincial 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 Provincial 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 Provincial 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. REPORTING

- 9.1 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.
- 9.2 The Licensee shall submit the results of analysis for the monitoring requirements to the Provincial Head on a quarterly basis under Reference number 16/2/7/B100/C27.
- 9.3 The Licensee shall submit the nature and the quality of the waste disposed into the following dam.
- i. Pollution control dam
  - ii. Dirty Water Dam for Stock Yard
  - iii. Stormwater Dam
  - iv. Pit OL

**10. AUDITING**

10.1 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 Provincial Head within one month of finalisation of the report, and shall be made available to an external auditor should the need arise.

10.2 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 3 (three) months of the date this license was issued and a report on the audit shall be submitted to the Provincial Head within one month of finalisation of the report.

**11. INTEGRATED WATER AND WASTE MANAGEMENT**

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

11.2 The IWWMP shall thereafter be updated and submitted to the Provincial Head for approval, annually.

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

11.4 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.

## APPENDIX V

**Section 21 (j) of the Act: Removing, discharging or disposing of water found underground if it is necessary for the effective continuation of an activity or for the safety of people**

1. The licensee is authorised to remove water found underground as stipulated in table 7.

Table 7:

Water use(s)	Purpose	Capacity/ Volume (m3, tonnes and/or m3/annum)	Property Description
Pit OI Dewatering	Abstraction of water from the proposed new Block OI to the Raw Water Dam	72 000 m <sup>3</sup> month total for OI	Moabsvelden 248IR Portion 2 and 16

2. The Licensee is authorised to dispose the groundwater into a pollution control dam on farm Moabsvelden 248IR Portion 2 and 16
3. The licensee shall provide any water user whose water supply is impacted by the water use with potable water.
4. The quantity of water removed from underground must be metered and recorded on a daily basis.
5. The groundwater levels shall be monitored every six months (once in the beginning of the dry season and once in the beginning of the wet season).
6. Self registering flow meters must be installed in the delivery lines at easily accessible positions near the dewatering points.
7. The flow metering devices shall be maintained in a sound state of repair and calibrated by a competent person at intervals of not more than once in two years. Calibration certificates shall be available for inspection by the Provincial Head or his/her representative upon request.
8. Calibration certificates in respect of the pumps must be submitted to the



Provincial Head after installation thereof and thereafter at intervals of two years.

9. The date and time of monitoring in respect of each sample taken shall be recorded together with the results of the analysis.
10. Analysis shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards, in terms of the Standards Act, 1982 (Act 30 of 1982).
11. The methods of analysis shall not be changed without prior notification to the licensee and written approval by the Minister or his/her delegated nominee.
12. The Regional must be informed of any incident that may lead to undergroundwater being disposed of contrary to the provisions of this license, by submitting a report containing the following information:
  - 12.1 nature of the incident (e.g. operating malfunctions, mechanical failures, environmental factors, loss of supply services, etc);
  - 12.2 actions taken to rectify the situation and to prevent pollution or any other damage to the environment; and
  - 12.3 measures to be taken to prevent re-occurrence of any similar incident.
13. The licensee shall follow acceptable construction, maintenance and operational practices to ensure the consistent, effective and safe performance of the underground water removal system.
14. Reasonable measures must be taken to provide for mechanical, electrical or operational failures and malfunctions of the underground water removal system.

**END OF LICENCE**

