



water & sanitation

Department  
Water and Sanitation  
REPUBLIC OF SOUTH AFRICA

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

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

I, **Margaret Ann Diedricks** in my capacity as a 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 authorizes the following water uses in respect of this licence.

SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

**LICENCE NO: 04/B11B/ACGIJ/957  
FILE NO: 27/2/2/B310/10/4**

**1. Licensee**

**Postal Address**

**Total Coal South Africa (Pty)  
Ltd – Dorsfontein Coal Mine –  
East Expansion  
P. O. Box 2324  
Kriel  
2271**

**2. Water uses**

- |     |                           |   |
|-----|---------------------------|---|
| 2.1 | Section 21(a) of the Act: | Taking of water from a water resource, subject to the conditions set out in Appendices I and II.  |
| 2.3 | 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.                            |
| 2.4 | 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. |
| 2.5 | Section 21(i) of the Act: | Altering the bed, banks or characteristics of a watercourse, subject to the conditions as set out in Appendices I and III.                      |

- 2.6 Section 21(j) of the Act: Removing, discharging or disposing of water found underground for the efficient continuation of an activity or for the safety of people, subject to the conditions set out in Appendices I and V.

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

Table 1: Properties of water uses

NO	PROPERTY NAME	WATER USES	TITLE DEED NO	OWNER
3.1	Welstand 55 IS portion 2, 11, & 13	Section 21 (a), (i), and (g)	T26262/2004 for portion 11 & 13; and T3713/2010 for portion 2	Dorsfontein Coal Mines Pty Ltd for portion 2, 11 & 13
3.2	Fentonia 54 IS portion 1 and 2 & 3	Section 21 (c), (i), & (j)	T66129/2007 for portion 2 & 3;	Bakenlaagte Trust for portion 2 & 3;
3.3	Welstand 55 IS remaining extent of portion 4 & 5	Section 21 (c), (g), (i), & (j)	T26262/2004 for portion 4 & 5;	Dorsfontein Coal Mines Pty Ltd for portion 4 & 5;
3.4	Vlaklaagte 45 IS, Portion 0 (Re)	Section 21 (c) & (i)	T131595/2002	Islardu Boerdery cc
3.5	Vlaklaagte 45 IS, Portion 4, 16, 34, 39, and 48	Section 21 (c) & (i)	T131595/2002 for portion 34; T575/2011 for portion 16; T1473/2010 for portion 4; T3712/2010 for portion 39;	Islardu Boerdery cc for portion 34; Smith Hendrikus Johannes for portion 16; Exxaro Coal Mpumalanga (Pty) Ltd for portion 4; Dorsfontein Coal Mines Pty Ltd for portion 39;
3.6	Vlaklaagte 45 IS, Portion 13	Section 21 (g)	T575/2011	Smith Hendrikus Johannes
3.7	Vaalkranzi 29 IS Portion 16	Section 21 (g)	T47036/2003	Exxaro Coal Mpumalanga (Pty) Ltd
3.8	Haasfontein 28 IS Portion 16	Section 21 (j)	T1473/2010	Exxaro Coal Mpumalanga (Pty) Ltd

### 4. Registered owner of the Properties

- 4.1 Islardu Boerdery cc for portion 34; Smith Hendrikus Johannes for portion 16; Exxaro Coal Mpumalanga (Pty) Ltd for portion 4; Dorsfontein Coal Mines Pty Ltd for portion 39; Islardu Boerdery cc; and Bakenlaagte Trust for portion 2 & 3.

### 5. Licence and Review Period

- 5.1 This licence is valid for a period of twenty (20) years, the 1<sup>st</sup> review in (1) one year after the date of issuance and thereafter may be reviewed after every (5) five 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" means the Provincial Head: Mpumalanga, Department of Water and Sanitation, Private Bag X11259, Nelspruit, 1200.

"Report" refers to the reports entitled:

- Total Coal South Africa (Pty) Ltd DCM, East Expansion Project, Section 21 (a), (j) and (g) water use licence application, February 2010. Integrated Water Use Licence Application for Dorsfontein Expansion Project (Nr. 4 Seam) June 2008.
- Total Coal South Africa (Pty) Ltd. East Mine Expansion Project Integrated Water and Waste Management Plan (IWWMP). Dorsfontein Coal Mine – Option 1 Conveyor Route and Rail Loop IWWMP, August 2009.
- Total Coal South Africa (Pty) Ltd. Dorsfontein Coal Mines (DCM). Dorsfontein Coal Mine–Expansion–Conveyor Route and Rail Loop Integrated Water Use Licence Application. Section 21 (c), (e), (g), (j) and (i) water uses, August 2009.
- Water extraction agreement between BHP Billiton Energy Coal South Africa Limited (BECSA) and Dorsfontein Coal Mines (Proprietary) Limited (DCM).
- Total Coal South Africa: Dorsfontein Coal Mines Water balance report: December 2009

As well as other related documentation and communication (email, letters and phone calls).

## 7. Description of the application

The applicant, Total Coal South Africa (Pty) Ltd – Dorsfontein Coal Mine – East Expansion Project, applied for an integrated water use licence in terms of Section 21 (a), (c), (g), (i) and (j) of the National Water Act (NWA), 1998 (Act 36 of 1998) to undertake the Dorsfontein Coal Mine expansion project known as the East Mine Expansion Project, which will entail the opencast and underground mining of coal reserves, with the establishment of a processing plant for different grades of coal. Part of the East Expansion Project is also the establishment of a transport railway system to deliver coal to the Richards Bay Coal Terminal on the properties listed in Table 1.

## APPENDIX I

### General conditions for the licence

1. This licence is subject to all 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/ies 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.
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 of 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 Provincial Head within one month of finalization.
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 of this licence and a report on the audit shall be submitted to the Provincial Head within one month of finalization.
12. Flow metering, 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 Provincial Head or his/her representative upon request.
13. Any incident that causes or may cause water pollution must be reported to the Regional Chief Director or his/her designated representative within 24 hours.



## APPENDIX II

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

1. The Licensee is authorised to abstract a maximum quantity in cubic metres per annum ( $\text{m}^3/\text{a}$ ) of water from TNC resources for construction as indicated in Table 2 below:

**Table 2: Volumes of water to be abstracted from groundwater resources**

Abstraction point	Property Name	Coordinates	Volume in ( $\text{m}^3/\text{a}$ )
TNC old Mining area	Welstand 55 IS portion 2	S26° 10' 56.2" E29° 21' 31.8"	1 440 000 $\text{m}^3/\text{a}$ for the first two years & 720 000 $\text{m}^3/\text{a}$ until Dorsfontein Coal Mine closes 20 years later

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 volumes may be reduced when the licence is reviewed.
5. The Licensee must continually investigate new and emerging technologies and put into practice water efficient devices or apply technique for the efficient use of water containing waste, in an endeavour to conserve water at all times.
6. The Licensee must be responsible for any water use charges or levies, which may be imposed from time to time by the Department or responsible authority in terms of the Department's Raw Water Pricing Strategy.
7. The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of:
  - 7.1 Shortage of water;
  - 7.2 Inundations or flood;
  - 7.3 Siltation of the resource; and
  - 7.4 Required reserve releases.
8. The Licensee must establish and implement a continual process of raising awareness amongst itself, its workers and stakeholders with respect to Water Conservation and Water Demand Management initiatives.

A

### APPENDIX III

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

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

#### 1. GENERAL

1.1 This licence authorises Section 21(c) and (i) water use activities as set out in Table 3 below and in the water use licence application reports submitted to the Department in 2008 and 2009.

**Table 3: Section 21 (c) and (i) water uses.**

Name of water resource affected	Parameters	Purpose of the water use	Property	Coordinates
1. Diversion of tributary of Olifants river for opencast mining at Pit 2	1 550 m length (S21 c))	For mining within a regulated area (Wetland)	Fentonia 54 IS portion 1 and 3	26° 12' 51.66"S 29° 20' 09.01"E (Start of diversion)
2. Diversion of tributary of Olifants river for opencast mining at Pit 2	1 550 m length (S21 c))	For mining within a regulated area (Wetland)	Welstand 55 IS remaining extent of portion 5	26° 11' 46.30"S 29° 20' 37.57"E (End of diversion)
3. Altering	25 m of height, 4 000 m Width, and 2 463 m length (S21 i))	For mining within a regulated area (Wetland)	Fentonia 54 IS portion 1 and 3 and Welstand 55 IS remaining extent of portion 5	26° 12' 51.66"S 29° 20' 09.01"E (Start alteration)
4. Altering	25 m of height, 4 000 m Width, and 2 463 m length (S21 i))	For mining within a regulated area (Wetland)	Welstand 55 IS portion 11 and Welstand 55 IS remaining extent of portion 4	26° 12' 51.66"S 29° 20' 09.01"E (End alteration)
5. Diversion and altering on Olifants River Crossing for conveyer structure and rail loop	206 m (S21 (c) & (i))	River crossing for conveyer structure	Vlaklaagte 45 IS, portion 0 (Re)	
6. Hillslope seepage wetland crossing 1 for conveyer structure and rail loop	15 m (S21 (c) & (i))	Hillslope crossing 1 for conveyer structure	Vlaklaagte 45 IS, portion 0 (Re)	
7. Hillslope seepage wetland crossing 2 for conveyer structure and rail loop	15 m (S21 (c) & (i))	Hillslope crossing 2 for conveyer structure	Vlaklaagte 45 IS, portion 48	

*A*



Name of water resource affected	Parameters	Purpose of the water use	Property	Coordinates
8. Hillslope seepage wetland crossing 3 for conveyer structure and rail loop	15 m (S21 (c) & (i))	Hillslope crossing 3 for conveyer structure	Vlaklaagte 45 IS, portion 34 and 39	
9. Hillslope seepage wetland crossing 4 for conveyer structure and rail loop	15 m (S21 (c) & (i))	Hillslope crossing 4 for conveyer structure	Vlaklaagte 45 IS, portion 4	
10. Hillslope seepage wetland crossing 5 for conveyer structure and rail loop	15 m (S21 (c) & (i))	Hillslope crossing 5 for conveyer structure	Vlaklaagte 45 IS, portion 16	

- 1.2 The Licensee must carry out and complete all the activities listed under Appendix III according to the reports.
- 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 copy of the water use licence and reports must be on site at all times.
- 1.5 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 and the conditions of this licence.
- 1.6 Mining through a wetland using opencast methods and rail loop activities are not allowed as they will destroy the wetland and never bring it back to its natural state. Therefore, the Licensee needs to consider an alternative site for both opencast and rail loop including underground mining.

## 2. FURTHER STUDIES AND INFORMATION REQUIREMENTS

- 2.1 For water use activities set out in Table 3, an environmental audit addressing how the characteristics of the watercourses have been affected must be submitted to the Provincial Head for a written approval within one (1) year of the date of issuance of this licence. The audit must be accompanied by a remediation plan and programme for any post construction impacts identified in the audit.
- 2.2 For water use activities outlined in Table 3:
  - 2.2.1. Work method statements, site plan/s and detailed design drawings for the construction of all infrastructure of impeding and/or diverting flow of watercourses as well as alterations to watercourses on the property/ies must be submitted to the Provincial Head for a written approval and implementation as directed before construction. The

A

foregoing must indicate the regulated activities, marking the limits of disturbance in relation to the impacted watercourses; morphology of the watercourses; site specific impacts; and environmental management, particularly erosion and sediment, controls and measures.

- 2.2.2. No fundamental alterations of the work method statements, site plan/s and drawings are allowed, unless a modification is requested and granted by the Provincial Head in writing.
- 2.2.3. No site activities must occur beyond the proposed site location of the erosion and sedimentation controls and marked limits of disturbance.
- 2.3 An EMP for the decommissioning of the water use activities listed in Table 3 must be submitted five (5) years before commencing with closure to the Provincial Head for a written approval.

### **3. PROTECTIVE MEASURES**

#### **Stormwater Management**

- 3.1 Stormwater management practices must be constructed, operated and maintained in a sustainable manner throughout the project and for the water use activities set out in Appendix IV and must include but are not limited to the following:
  - 3.1.1. 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.
  - 3.1.2. Storm water must be diverted from construction works, mining areas, and roads must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow.
  - 3.1.3. The velocity of storm water discharges must be attenuated and the banks of the watercourses protected.
  - 3.1.4. Stormwater 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.
  - 3.1.5. Stormwater drains should be made as ecologically friendly as possible. Where relevant include grass drains and adhere to the specifications of the engineer drawings where the use of Armorfex and gabion structures is specified and vegetate the side slopes of drains to create natural streams.
- 3.2 Side slopes of Stormwater Management trenches, dams, canals, berms, channels, diversions, waste rock dumps, paste (tailings) facilities and other earthworks must be shaped to 1:3, protected with rock or erosion protection measure, topsoiled at least 250 mm within the rock protection and vegetated with indigenous grass for safety, aesthetics, ease of vegetation and less erosion. Clean water channel/berm slopes must be protected against erosion and vegetated with indigenous vegetation and details of Plant Species Plans and implementation thereof submitted to the Provincial Head. Surrounding indigenous grass and tree seeds can be harvested and used. Dirty water slopes must be lined as approved by Civil Design. Design drawings of 1:1.5 and 1:2 slopes must be changed to at least 1:3 slopes.

A



### **Structures, Construction Plant and Materials**

- 3.3 The height, width and length of structures must be limited to the minimum dimension necessary to accomplish the intended function.
- 3.4 1:100 year floodlines must be determined for the crossings and sufficient culverts must be included not to change floodlines. Structures must not be damaged by floods exceeding the magnitude of floods occurring on average once in every 100 years.
- 3.5 Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.
- 3.6 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.
- 3.7 The construction plant and materials must be recovered and removed one month after construction/commencement has been completed.

### **Water Quality**

- 3.8 In-stream water quality must be analysed on a two-weekly basis during construction otherwise monthly at monitoring points both upstream and downstream of the activities for the following variables:
  - 3.8.1. pH.
  - 3.8.2. Electrical conductivity (mS/M).
  - 3.8.3. Suspended solids (mg/l).
  - 3.8.4. Total dissolved solids (mg/l).
- 3.9 Discharge qualities and proof of adherence to WULA licence conditions in terms of water quality must be submitted to the Department within six (6) months of issuance of this licence.
- 3.10 Monitoring must continue for five years after the cessation of the activities listed in Appendix IV.
- 3.11 Activities that lead to elevated levels of turbidity of any watercourse must be minimised. Operation and maintenance 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 Department, the Licensee must submit such to the Provincial Head for written approval before these activities commence. Natural instream hydrology is to be used to determine which months constitute the low flow months.
- 3.12 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 Appendix IV.
- 3.13 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.

- 3.14 Vehicles and other machinery must be serviced well above the 1:100 year flood-line or outer edge of the 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.
- 3.15 Any hazardous substances must be handled according to the relevant legislation relating to transport, storage and use of the substance.
- 3.16 All reagent storage tanks and reaction units must be supplied with a banded area built to the capacity of the facility and provided with sumps and pumps to 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.

#### **Flow**

- 3.17 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.
- 3.18 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.
- 3.19 Base flow that is extracted by the mine must be treated and returned to the river to support its ecological requirements and other water users requirements.

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

- 3.20 Activities 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.
- 3.21 Operation and storage of equipment within the riparian habitat must only take place within the approved limits of disturbance indicated in the site plans and work method statements.
- 3.22 Activities must not occur in sensitive riffle habitats.
- 3.23 Indigenous riparian vegetation, including dead trees, outside the limits of disturbance indicated in the site plans referred, must not be removed from the area.
- 3.24 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.
- 3.25 Existing vegetation composition must be maintained or improved by maintaining the natural variability in flow fluctuations.
- 3.26 Recruitment and maintaining of a range of size classes of dominant riparian species in perennial channels must be stimulated.
- 3.27 Encroachment of additional exotic species and terrestrial species in riparian zones must be discouraged.

R



- 3.28 Accumulation of woody debris on terraces by periodic flooding must be discouraged.
- 3.29 Existing flood terraces and deposition of sediments on these terraces to ensure optimum growth, spread and recruitment of these species must be maintained.
- 3.30 All reasonable steps must be taken to minimise noise and mechanical vibrations in the vicinity of the watercourses.
- 3.31 Necessary erosion prevention mechanisms must be employed to ensure the sustainability of all structures and activities and to prevent instream sedimentation.
- 3.32 Soils that have become compacted through the water use activities must be loosened to an appropriate depth to allow seed germination.
- 3.33 Slope/bank stabilisation measures must be implemented.
- 3.34 Stockpiling of removed soil and sand must be stored outside of the 1:100 flood line or riparian habitat, whichever is the greater, to prevent being washed into the river and must be covered to prevent wind and rain erosion.
- 3.35 Topsoil must be stripped and stockpiled for rehabilitation work after completion of construction in any given area.
- 3.36 Rehabilitation must be concurrent with construction.
- 3.37 Wetlands must be rehabilitated in accordance with the specialist wetland report specifications.
- 3.38 The indiscriminate use of machinery within the instream and riparian habitat must lead to compaction of soils and vegetation and must therefore be strictly controlled.
- 3.39 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. A natural flooding and sedimentation regime must thus be ensured as far as reasonably possible.

#### **Biota**

- 3.40 The Licensee must take all reasonable steps to allow movement of aquatic species, including migratory species.
- 3.41 All reasonable steps must be taken not to disturb the breeding, nesting and/or feeding habitats and natural movement patterns of aquatic biota.
- 3.42 The current level of diversity of biotopes and communities of animals, plants and microorganisms must be maintained.

#### **Other Water Users**

- 3.43 The Licensee must attempt to prevent adverse effect 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.

A

## **Rehabilitation and Management**

- 3.44 A comprehensive and appropriate rehabilitation and management programme to restore the watercourse/s to be environmentally acceptable and sustainable conditions after construction must be developed and submitted to the Provincial Head for written approval within three months from the date of issuance of this licence.
- 3.45 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.
- 3.46 The cone of depression impacts of the aquifer system due to the pits must be addressed holistically with surrounding mines like Sishen within a year and mitigation measures implemented.
- 3.47 Proof of addressing the EIA environmental authorisation condition of determining and implementing offset mitigation measures for the loss of biodiversity must be addressed within six (6) months.
- 3.48 An updated Mine Rehabilitation Plan that includes landscape development, plant species plans, wetland management, eradication of bush encroachment and alien species and the methods employed with proof of a dedicated rehabilitation team and equipment with reference to the past and current rehabilitation standards, statistics, maps, and compliance must be submitted within six (6) month of the date of this licence issuance to the Provincial Head.

## **4. MONITORING AND REPORTING**

- 4.1 The Provincial Head must be notified in writing one week prior to commencement of the licensed activity/ies and again upon completion of the activity/ies;
- 4.2 A comprehensive and appropriate environmental (including bio-monitoring) assessment and monitoring programme to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities listed under Appendix IV as well as compliance to these water use licence conditions must be developed and submitted to the Provincial Head for a written approval before commencement and must subsequently be implemented as directed;
- 4.3 Six (6) monthly monitoring reports must be submitted to the Provincial Head or until otherwise agreed in writing with the Provincial Head.
- 4.4 A qualified environmental management specialist 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 the flow of watercourses as well as alterations to watercourses on the property/ies as set out in Appendix IV.
- 4.5 The Licensee must conduct on a two yearly basis an internal audit on compliance with the conditions of this licence. A report on the audit must be submitted to the Provincial Head within one month of finalisation of the audit. A qualified independent auditor must undertake this audit.



- 4.6 The audit reports must include but are not limited to:
- 4.6.1. Reporting in respect of the monitoring programme referred to in condition 4.2 (Appendix IV).
  - 4.6.2. A record of implementation of all mitigation measures including a record of corrective actions.
  - 4.6.3. 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.
- 4.7 The Licensee must apply in writing to the Provincial Head for alternative reporting arrangements for which written approval must be provided.

## **5. PLANT AREAS AND CONVEYANCES**

- 5.1 Pollution caused by spills from the conveyances must be prevented through proper maintenance and effective protective measures especially near all stream crossings.
- 5.2 All reagent storage tanks and reaction units must be supplied with a banded area built to the capacity of the facility and provided with sumps and pumps to return the spilled material back into the system. The system shall be maintained in a state of good repair and standby pumps must be provided.
- 5.3 Any hazardous substance must be handled according to the relevant legislation relating to the transport, storage and use of the substance.
- 5.4 Any access road or temporary crossing must be:
- 5.4.1 Non-erosive, structurally stable and shall not induce any flooding or safety hazard.
  - 5.4.2 Be repaired immediately to prevent further damage.

## **6. CONTINGENCIES**

- 6.1 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:
- 6.1.1. Operating errors.
  - 6.1.2. Mechanical failures (including design, installation or maintenance).
  - 6.1.3. Environmental factors (e.g. flood).
  - 6.1.4. Loss of supply services (e.g. power failure).
  - 6.1.5. Other causes.
- 6.2 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.
- 6.3 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:

- 6.3.1 Correct the impacts resulting from the incident.
- 6.3.2 Prevent the incident from causing any further impacts.
- 6.3.3 Prevent a recurrence of a similar incident.

## **7. AUDITING**

- 7.1 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.
- 7.2 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 this licence was issued and a report on the audit shall be submitted to the Provincial Head within one month of finalisation of the report.



## 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 facilities listed below in Table 4, according to the Report and according to the final plans submitted with the Integrated Water Use Licence Application as approved by the Provincial Head.

Table 4: Summary of section 21 (g) water uses.

Name of disposal facility	Disposal quantity/capacity	Type of waste to be disposed and source	Property	Coordinates
1. Return Water Dam	156 000 m <sup>3</sup> /a	Disposal of water from underground workings and mining processes.	Welstand 55 IS portion 13	26° 10' 56.2"S 29° 21' 31.9" E
2. Coal Slurry	233.2 m <sup>3</sup> /a	Disposal of coal slurry from the coal mining processes	Welstand 55 IS portion 11	26° 06' 26.6"S 29° 20' 33.3" E
3. Discard Facility	2 650 m <sup>3</sup> /a	Disposal of discarded material from the coal mining processes	Welstand 55 IS remaining extent of portion 4	26° 06' 26.6"S 29° 20' 33.3" E
4. Pollution control dam 1	71 248 m <sup>3</sup> /a	Disposal of water from underground workings and mining processes.	Vaalkranzi 29 IS portion 16	26° 06' 26.6"S 29° 20' 33.3" E
5. Erickson Dam (transfer dam)	1500 m <sup>3</sup> /a	Transfer of waste or water containing waste	Welstand 55 IS portion 13	26° 11' 52"S 29° 21' 12" E
6. Erickson Dam 2 (transfer dam)	1500 m <sup>3</sup> /a	Transfer of waste or water containing waste	Welstand 55 IS portion 13	26° 11' 33"S 29° 21' 15" E
7. Erickson Dam 3 (transfer dam)	1500 m <sup>3</sup> /a	Transfer of waste or water containing waste	Welstand 55 IS portion 13	26° 11' 33"S 29° 21' 16" E
8. Tank No. 4	250 m <sup>3</sup> /a	Disposal of waste or water containing waste	Welstand 55 IS portion 2	26° 10' 28"S 29° 20' 38" E

- 1.2 The Licensee must ensure that the disposal of waste water, operation, and maintenance of the system are done according to the provisions in the Report.
- 1.3 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

- 1.4 The tailings and pollution control dams must be designed in such a manner that any spillage can be contained and reclaimed at an early stage without any impact on the surrounding environment.

## 2. STORAGE OF WATER CONTAINING WASTE

The Licensee is authorised to dispose of the amount of volumes as stipulated on table 7 of waste/waste water emanating from the Iron Ore mining activities.

## 3. QUALITY OF WASTE WATER TO BE DISPOSED

- 3.1 The quality of waste water disposed of into the waste water facilities.

Table 5: Quality of waste water to be disposed into the waste facilities

Variable	Quality of Slurry
pH	6.5-8.4
Aluminium	0.18
Chloride (mg/l)	25
Manganese (mg/l)	0.18
Sodium (mg/l)	21.12
Sulphate (mg/l)	400
Total Dissolved Solids (mg/l)	650

## 4. MONITORING

- 4.1 The Licensee shall monitor on monthly basis the water resources at surface water monitoring points and Ground water monitoring points to determine the impact of the facility and other activities on the water quality by taking samples at the monitoring points as indicated in the hydrogeological study submitted to the Department.
- 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 Provincial Head.
- 4.4 An Aquatic Scientist approved by the Provincial 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 summer season and once during the winter season, annually, to reflect the status of the river upstream and downstream of the mining activities.
- 4.5 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).
- 4.6 The methods of analysis shall not be changed without prior notification to and written approval by the Minister.

R



- 4.7 A total of 95 boreholes were identified in the surrounding area during hydro-census, it is therefore, of utmost importance to ensure the proposed mining activities at Khumani Iron Ore Mine do not impact on the water quality and quantity of the area as all farms surrounding the site rely heavily on groundwater for both domestic and livestock watering purposes. Should the monitoring results indicate an impact on these groundwater users, the applicant must ensure in advance that alternative water supply is provided.
- 4.8 Groundwater monitoring programme must be updated incorporating proposed additional boreholes and forwarded to this Department within six month of issuance of the licence.
- 4.9 Groundwater model must be calibrated as more information becomes available. This will add significant value in terms of groundwater management and better understanding of the aquifer behaviour.

## 5. WATER RESOURCE PROTECTION

- 5.1 The impact of the activities of the mine waste water quality containment facilities shall not exceed the groundwater quality objectives detailed in Table 10 in the water quality reserve for the area.

**Table 6: Water resource limits**

Substance/parameter	Limit
pH	6.5-8.4
Aluminium	0.18
Chloride (mg/l)	25
Manganese (mg/l)	0.18
Sodium (mg/l)	21.12
Sulphate (mg/l)	400
Total Dissolved Solids (mg/l)	650

- 5.3 Diesel tanks must be placed in a bunded area and oil detection system must be installed to prevent the chemicals from reaching groundwater resources resulting in groundwater pollution.
- 5.4 It is evident from the report that the mine is situated in a dolomitic area. Dolomite aquifers are known to be highly vulnerable to pollution and difficult to remediate. There is possibility of sinkholes and cavities development, therefore; dolomite instability must be investigated and a dolomite risk management plan must be established within one year of issuance of this licence.

## 6. REPORTING (REVIEW)

- 6.1 The Licensee shall update the water and salt 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.
- 6.2 The Licensee shall submit the report on results of analysis after monitoring requirements to the Provincial Head on a quarterly basis under Reference number 27/2/2/B311/10/4.

## **7. STORM WATER MANAGEMENT**

- 7.1 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.
- 7.2 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.
- 7.3 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.
- 7.4 Where necessary, works must be constructed to attenuate the velocity of any storm-water discharge and to protect the banks of the affected watercourses.
- 7.5 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.
- 7.8 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 License Application report.
- 7.9 The polluted storm water captured in the storm water control dams shall be pumped to the process water treatment plant for re-use and recycling.

## **8. PLANT AREAS AND CONVEYANCES**

- 8.1 Pollution caused by spills from the conveyances must be prevented through proper maintenance and effective protective measures especially near all stream crossings.
- 8.2 All reagent storage tanks and reaction units must be supplied with a bunded area built to the capacity of the facility and provided with sumps and pumps to return the spilled material back into the system. The system shall be maintained in a state of good repair and standby pumps must be provided.
- 8.3 Any hazardous substances must be handled according to the relevant legislation relating to the transport, storage and use of the substance.
- 8.4 Any access roads or temporary crossings must be:
  - 8.4.1 Non-erosive, structurally stable and shall not induce any flooding or safety hazard and
  - 8.4.2 Be repaired immediately to prevent further damage.



## **9. ACCESS CONTROL**

- 9.1 Strict access procedures must be followed in order to gain access to the property.
- 9.2 Access to the pollution control dams, coal slurry discard dumps, storm water dam and return water dam must be limited to authorised employees of the Licensee and their contractors only.
- 9.3 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.

## **10 CONTINGENCIES**

- 10.1 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:
  - 10.1.1 Operating errors.
  - 10.1.2 Mechanical failures (including design, installation or maintenance).
  - 10.1.3 Environmental factors (e.g. flood).
  - 10.1.4 Loss of supply services (e.g. power failure).
  - 10.1.5 Other causes.
- 10.2 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.
- 10.3 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 Provincial Head of measures taken to:
  - 10.3.1 Correct the impacts resulting from the incident.
  - 10.3.2 Prevent the incident from causing any further impacts.
  - 10.3.3 Prevent a recurrence of a similar incident.

## **11. AUDITING**

- 11.1 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.
- 11.2 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 6 (six) months of the date this licence is issued and a report on the audit shall be submitted to the Provincial Head within one month of finalisation of the report.

**12. INTEGRATED WATER AND WASTE MANAGEMENT**

- 12.1 The Licensee must do an Integrated Water and Waste Management Plan (IWWMP) and submit it to the Provincial Head for approval within one (1) year from the date of issuance of this licence.
- 12.2 The IWWMP and RSIP shall thereafter be updated and submitted to the Provincial Head for approval, annually.
- 12.3 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 of the IWWMP and RSIP as well as a final Closure Plan, for approval.
- 12.4 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.

X



## APPENDIX V

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

### 1. REMOVING WATER FOUND UNDERGROUND

- 1.1 The Licensee is authorised to remove a total volume of one million one hundred and forty five thousand five hundred and three cubic metres per annum (1 145 503.66 m<sup>3</sup>/a) of water found underground from (Pit 1 opencast, 283 094 m<sup>3</sup>/a; Pit 2 opencast, 259 429.66 m<sup>3</sup>/a; Pit E3 (old pit), 730 m<sup>3</sup>/a; Block C underground, 346 750 m<sup>3</sup>/a; and Block A and B underground, 255 500 m<sup>3</sup>/a) for mining purpose.

**Table 7: Summary of section 21 (g) water uses.**

Quantity dewatered	Property	Coordinates
283 094 m <sup>3</sup> /a from pit 1 opencast	Welstand 55 IS remaining extent of portion 5	26° 12' 16.1"S 29° 21' 44.6"E
259 429.66 m <sup>3</sup> /a from pit 2 opencast	Welstand 55 IS remaining extent of portion 5 and Fentonia 54 IS portion 3	26° 12' 01.01"S 29° 19' 58.8"E
730 m <sup>3</sup> /a from pit E3 (old pit)	Haasfontein 28 IS portion 16	26° 06' 27"S 29° 21' 09"E
346 750 m <sup>3</sup> /a from block C underground to commence 6 years after the opencast	Welstand 55 IS remaining extent of portion 5	26° 48' 11.4"S 29° 25' 34"E
255 500 m <sup>3</sup> /a from block A and B underground	Fentonia 54 IS portion 3	26° 48' 11.4"S 29° 25' 34"E

- 1.2 Should the water authorised to be removed in terms of Appendix VI of this licence be required for storage and mining, the Licensee shall also apply and obtain a Section 21 (a) water use as defined in the National Water Act, Act No 36 of 1998 before commencement of the Section 21 (j) water use.
- 1.3 Should the water authorised to be removed in terms of Appendix VI of this licence be required to be treated and discharged into a water resource, the Licensee shall also apply and obtain a Section 21 (f) water use as defined in the National Water Act, Act No 36 of 1998 before commencement of the Section 21 (j) water use.
- 1.4 Water use authorised in terms of Appendix VI of this licence shall only commence when mining intersects groundwater. The Provincial Head must be notified of the date dewatering will commence.
- 1.5 No more water shall be removed for dewatering than the minimum required for effective dewatering.
- 1.6 The quantity of water removed underground must be metered and recorded on a daily basis.

A

- 1.7 The groundwater levels shall be monitored every month.
- 1.8 Self registering flow metres must be installed in the delivery lines at easily accessible positions near the points of abstraction.
- 1.9 The flow metering devices shall be maintained in a sound state of repair and calibrated by a competent person at intervals of not less than once in two years. Calibration certificates shall be available for inspection by the Provincial Head or his/her representative upon request.
- 1.10 Calibration certificates in respect of the pumps must be submitted to the Provincial Head after installation thereof and thereafter at intervals of two years.
- 1.11 The Licensee must routinely check if the pumps are in a working order. A contingency plan should be in place in cases of failure of pumps.

**[END OF LICENCE]**