



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 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 authorise the following water uses in respect of this licence.

SIGNED: 

DATE: 15 JANUARY 2016

LICENCE NO: 10/D73A/ACHI/4106

FILE NO: 27/2/2/D173/124/2

1. **Licensee:** ACWA Power SolarReserve Redstone Solar Thermal Power Plant

Postal Address: Office L6 B-1, 6th Floor
SinoSteel Plaza
159 Rivonia Road
Sandton
2191
2. **Water uses**
 - 2.1 Section 21(b) of the Act: Storing of water, subject to the conditions as 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 as set out in Appendices I and III.
 - 2.4 Section 21(h) of the Act: Disposing in a manner of water which contains waste from, or which has been heated in, any industrial or power generation process, subject to the conditions as set out in Appendices I and IV.

B 06768



3. Property on which the use will be exercised

3.1 Portion 0 of Farm 469

4. Registered owner of the property

4.1 J.M.A. Scholtz

5. Licence and Review Period

5.1 This licence is valid for a period of twenty (20) years from the date of issuance and it may be reviewed at an interval not more than 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" means the Head of Provincial Operations: Northern Cape, Department of Water & Sanitation, Private Bag X6101, Kimberley, 8301.

"extent of the water course (regulated area)" means "within the outer edge of the 1 in 100 year flood line or delineated riparian area as measured from the middle of the watercourse measured on both banks, or within a 500 m radius from the boundary of any wetland" (The boundary of a wetland is the outer edge of the seasonal or temporary zone as delineated for the wetland).

"Characteristics of a watercourse/s" mean the flow regime, water quality, habitat (including the physical structure of the watercourse/s and associated vegetation) and biota found within the extent of the watercourse/s.

"Responsible Authority" means the Department of Water and Sanitation or Catchment Management Agency.

"Department" means Department of Water and Sanitation.

"Reports" refers to the reports entitled;

- i. Geo-Hydrological Impact Assessment; compiled by SRK Consulting, dated October 2011;
- ii. Basis of Design Report; compiled by WorleyParsons RSA (Pty) Ltd, dated October 2011;
- iii. Environmental Impact Assessment Report; compiled by WorleyParsons RSA (Pty) Ltd, dated January 2012;
- iv. Environmental Management Programme; compiled by WorleyParsons RSA (Pty) Ltd, dated January 2012;
- v. Technical Memorandum; compiled by Wetland Consulting Services (Pty) Ltd, dated November 2015;
- vi. Stormwater Management Plan; compiled by Acciona Industrial, dated October 2015 and

- vii. Watercourse Method Statement; compiled by Acciona Industrial, dated October 2015 and all other documentations and communication (emails, letters, verbal, etc) related thereto

7. Brief description of the Project

The licence authorises water use activities for storing of water, impeding or diverting stream and disposing heated water ACWA Power SolarReserve Redstone Solar Thermal Power Plant on the Portion 0 of the Farm 469. The water uses activities fall within D73A Quaternary Catchment of Lower Vaal Water Management Area.

ACWA Power SolarReserve Redstone Solar Thermal Power Plant will generate electric power by focusing the suns' energy on a tower-mounted receiver using heliostats. The system uses approximately 10 000 heliostats, which are arranged concentrically around the central receiver tower. During the electricity generation process, the hot molten salt is sent to the heat exchanger and is used to generate steam, which produces electricity in a conventional steam turbine cycle. After leaving the steam generator, the salt is sent to the cold salt storage tank and the cycle repeats itself. The steam turbine will be sized in order for the power generation plant to reach a net electrical output of 100 MW.

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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 or Responsible Authority of any change of name, address, premises and/or legal status.
4. If the properties 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 or Responsible Authority of the Department within sixty (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 must 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 must not be construed as exempting the Licensee from compliance with the provisions any other applicable Act, Ordinance, Regulation or By-law.
9. The licence and amendment of this licence are also subject to all the applicable procedural requirements and other applicable provisions of the Act, as amended from time to time.
10. The Licensee must conduct an annual internal audit on compliance with the conditions of licence. A report on the audit shall be submitted to the Provincial Head or Responsible Authority within one (1) month of the finalisation of the audit.
11. The Licensee must 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 is issued and a report on the audit shall be submitted to the Provincial Head or Responsible Authority within one month of finalization of the report.
12. Flow metering, recording and integrating devices must 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 Responsible Authority or his / her representative upon request.
13. Any incident that causes or may cause water pollution must be reported to the Provincial Head or Responsible Authority or his/her designated representative within 24 hours.

14. If the water use authorised in this licence is not fully exercised within 5 (five) years of issuance of this licence, the licence may be terminated or amended accordingly. Upon commencement of the water use, the Licensee must inform the Provincial Head or Responsible Authority in writing.
15. 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.

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APPENDIX II

Section 21(b) of the Act: Storing of water

1. Storage of Water

1.1 The Licensee is authorised to store a maximum quantity of five thousand cubic metres (5 000 m³) of raw water in a carbon steel tank as indicated in Table 1.

Table 1: Section 21 (b) water uses:

Water use(s)	Purpose	Volume (m ³ /a) / Dimensions	Property Description	Co-ordinates
Storage of water from Vaal Gamagara pipeline in carbon steel tank	For a 100 MW Concentrated Solar Power (CSP) generation plant	5 000 m ³ (capacity)	Portion 0 of Farm 469	28°17'54.72"S 23°22'1.40"E

1.2 The Licensee is not indemnified from any detrimental effect that the dams may have on other properties. The Department does not accept any responsibility or liability for any damages or losses that may be suffered by any other party as a result of the construction and utilisation of the dams.

1.3 No additional water storage facilities can be constructed on the property without prior written consent of the Minister or responsible authority.

2. Monitoring Requirements

2.1 The quantity of water stored must be recorded as at the last day of each month.

3. Construction of Tank

3.1 The as-built plans and specifications of the tank must be submitted to the Provincial Head or Responsible Authority for his/her records.

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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 authorizes ACWA Power SolarReserve Redstone Solar Thermal Power Plant (Pty) Ltd for Section 21(c) and (i) water use activities as shown in Table 2.

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

Water use(s)	Purpose	Volume (m³/a) / Dimensions	Property Description	Co-ordinates
Construction of pipeline crossing to drainage lines	Water supply for solar power generation	Dimensions: D= 4m L= ~100m W= 0.6m	Portion 0 of Farm 469	Start: 28°18'51.5"S 23°21'23.5"E End: 28°18'50.8"S 23°21'24.1"E
Construction of pipeline crossing to drainage lines	Water supply for solar power generation	Dimensions: D= 4m L= ~100m W= 0.6m	Portion 0 of Farm 469	Start point: 28°18'47.97" 23°21'23.62" End point: 28°18'40.01" 23°21'21.81"
Construction of evaporation ponds adjacent to watercourses	Evaporation ponds for solar power generation residue	112m X 200m	Portion 0 of Farm 469	28°18'31.1"S 23° 21' 27.6"E

- 1.2. The Licensee must carry out and complete all the activities listed under condition 1.1 according to the following:
- 1.2.1. Reports submitted to the Department;
 - 1.2.2. Environmental Authorisation dated 06 August 2012;
 - 1.2.3. Conditions of this licence; and
 - 1.2.4. Any other written direction issued by the Provincial Head or Responsible Authority in relation to this licence.
- 1.3. No activity must take place within the extent of the watercourse(s) unless authorised by this licence.
- 1.4. The conditions of the authorisation must be brought to the attention of all persons (employees, sub-consultants, contractors etc.) associated with the undertaking of these activities and the Licensee must take such measures that are necessary to bind such persons to the conditions of this licence.

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- 1.5. A copy of the water use licence and reports set out under condition 1.2. must be on site at all times.
- 1.6. A suitably qualified person(s), appointed by the Licensee, and approved in writing by the Provincial Head or Responsible Authority 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 Provincial Head or Responsible Authority and the conditions of this licence.

2 FURTHER STUDIES AND INFORMATION REQUIREMENTS

2.1 For water use activities set out in Table 2:

- 2.1.1 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 or Responsible Authority in writing; and
- 2.1.2 No site activities must occur beyond the proposed site location of the erosion and sedimentation controls and marked limits of disturbance.

3 PROTECTIVE MEASURES

3.1 Storm Water Management

- 3.1.1. Storm water management practices must be constructed, operated and maintained in a sustainable manner throughout the project and for the water use activities set out in condition 1.1 and must include but are not limited to the following:
 - 3.1.1.1. Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse(s).
 - 3.1.1.2. Storm water must be diverted from construction works and must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow.
 - 3.1.1.3. The velocity of storm water discharges must be attenuated and the banks of the watercourses protected.
 - 3.1.1.4. Storm water leaving the Licensee's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.
 - 3.1.1.5. Drainage next to the construction works must be diverted away from the watercourse(s) to ensure that any contaminated runoff does not flow directly into the watercourse(s) as a stormwater discharge.
 - 3.1.1.6. Sheet runoff from paved surfaces and access roads need to be curtailed.
 - 3.1.1.7. Storm water discharge points with energy dissipaters must be constructed strategically in and around infrastructure to discharge storm water into the surrounding area to avoid concentration of discharges.

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3.1.1.8. Appropriate measures must be implemented to avoid or minimise damming or ponding of water, as well as soil erosion and scouring as a result of increased and concentrated storm water runoff.

3.2. Structures, Construction Plant and Materials

3.2.1 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 The temporary construction area must be located outside the extent of the watercourse(s) and must be removed one (1) month after construction has been completed.

3.2.4 During construction erosion berms should be installed to prevent gully formation, according to the slope.

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

3.2.6 Chemical storage areas and toilet facilities must be located outside the extent of the watercourse(s).

3.2.7 Operation and storage of equipment must not take place within the extent of the watercourse(s) unless authorised in this licence.

3.2.8 Fences within the surrounding areas particularly adjacent to open space areas must be permeable to fauna and flora.

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

3.2.10 Areas of conservation importance and sensitivity must be avoided in the construction of transmission towers.

3.3 Water Quality

3.3.1 The Licensee must sample the water quality weekly (during construction) and monthly (operation) for the mentioned variables indicated in Table 3 at monitoring points both upstream and downstream of the activities and report to the Provincial Head or Responsible Authority within thirty (30) days after the results of each sampling event is received:

Table 3: Water quality parameters relevant for sampling

Variable	Limit
Temperature (°C)	<10% variation
pH	6.0 – 8.5
Electrical conductivity (EC) (mS/m)	<50
Suspended solids (SS) (mg/l)	<25

Variable	Limit
Dissolved oxygen (mg/l)	>6
Turbidity (NTU)	<3

- 3.3.2 The variables may be amended on discretion of the Provincial Head or Responsible Authority. Only an accredited (SANS 17025) laboratory to be used for analysis.
- 3.3.3 Monitoring must continue for three (3) years after the cessation of the activities listed in condition 1.1.
- 3.3.4 Monitoring must be undertaken as set out in section 5.
- 3.3.5 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 Provincial Head or Responsible Authority, the Licensee must submit such to the Provincial Head or Responsible Authority for written approval before these activities commence.
- 3.3.6 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.
- 3.3.7 Under no circumstances is any solid waste to be burned or buried on or in the vicinity of the site.
- 3.3.8 No cement batching must occur on site.
- 3.3.9 During the construction and operation phase erosion and siltation measures must be implemented e.g. the use of temporary silt traps downstream of construction areas must be implemented.
- 3.3.10 Where possible, silt fences/barriers or other relevant measures must be installed along the edge of streams and wetlands to prevent soil erosion and ingress of runoff water carrying silt from the catchment of the wetlands (i.e. the slopes surrounding the wetland) to enter the water body.
- 3.3.11 Vehicles and other machinery must be serviced well above the extent of the watercourse(s). 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.
- 3.3.12 Any hazardous substances must be handled according to the relevant legislation relating to transport, storage and use of the substance.
- 3.3.13 No hazardous materials (such as oil) must be kept within 50m of the edge of a wetland buffer zone.
- 3.3.14 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 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.

- 3.3.15 The Licensee has to indicate to the Provincial Head or 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 watercourses(s).
- 3.3.16 The Licensee must ensure that all waste/wastewater generated from the operations will be handled and disposed using an authorised facility.

3.4 Flow

- 3.4.1 All areas with a high potential for ground water discharge must be excluded from development i.e. pans and 50m buffer and a 32m buffer for rivers unless authorised by this licence.
- 3.4.2 The activities must be conducted in a manner that does not negatively affect catchment yield, hydrology and hydraulics. The Licensee must ensure that the overall magnitude and frequency of flow in the watercourse(s) does not decrease, other than for natural evaporative losses and authorised attenuation volumes.
- 3.4.3 The development may not impede natural drainage lines.
- 3.4.4 Where possible, construction activities must occur during the dry season (winter months) when water levels and seepage in wetlands are lower.
- 3.4.5 No water must be abstracted from any river / wetland, except in the case of hydrotesting, where the abstraction of water has been authorised by the Department of Water and Sanitation and any required EIA studies have been undertaken and the proposed activity has received authorisation from the relevant determining authority.

3.5 Riparian and Instream Habitat (Vegetation and Morphology)

- 3.5.1 Habitat destruction must be limited to what is absolutely necessary for the construction of the powerline.
- 3.5.2 Existing vegetation composition must be maintained or improved by maintaining the natural variability in flow fluctuations. Rehabilitated areas must have vegetation basal cover of at least 15% at all times.
- 3.5.3 All reasonable steps must be taken to minimise noise and mechanical vibrations in the vicinity of the watercourses.
- 3.5.4 Soils that have become compacted through the water use activities must be loosened to an appropriate depth to allow seed germination.
- 3.5.5 Slope/bank stabilisation measures must be implemented with a 1:3 ratio or flatter and vegetated with indigenous vegetation immediately after the shaping.
- 3.5.6 Alien and invader vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be sustainably eradicated or controlled.

- 3.5.7 Stockpiling of removed soil and sand must be stored outside of the extent of the watercourse(s) to prevent being washed into the watercourse(s) and must be covered to prevent wind and rain erosion.
- 3.5.8 The Licensee must use the existing access roads to access the site. No new access roads must be constructed with the extent of the watercourse(s).

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 Species such as tortoises, burrowing reptiles and mammals, that will suffer direct mortality must be removed and relocated.
- 3.6.4 The current level of diversity of biotopes and communities of animals, plants and microorganisms must be maintained.
- 3.6.5 Construction activities must not pose a migratory barrier to the birds, amphibians and insects inhabiting the watercourses.

4 REHABILITATION AND MANAGEMENT

- 4.1 A habitat assessment study must be undertaken annually for three (3) years to ensure that rehabilitation is stable, failing which remedial action must be taken to rectify impacts.
- 4.2 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.
- 4.3 Impacts must be adequately mitigated and rehabilitated in accordance with Environmental Management Plan dated 01/2012 and all specifications addressed in these documents.
- 4.4 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.
- 4.5 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.
- 4.6 Rehabilitation of disturbed regulated areas must occur during and after completion of construction. Any material removed from the extent of the watercourses(s) must be returned and bedded in their original position as far as practicably possible.
- 4.7 Topsoil must be stripped and redistributed.

- 4.8 Stockpiles and overburden must be removed or rehabilitated after construction.
- 4.9 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.
- 4.10 A botanist familiar with the vegetation of the area must monitor the rehabilitation success and alien plant removal on annual basis.
- 4.11 The Provincial Head or Responsible Authority must sign a release form indicating that rehabilitation was done satisfactory according to specifications as per this licence.
- 4.12 A photographic record must be kept as follows and submitted with reports as set out in section 5:
 - 4.12.1 Dated photographs of all the sites to be impacted before construction commences;
 - 4.12.2 Dated photographs of all the sites during construction on a monthly basis; and
 - 4.12.3 Dated photographs of all the sites after completion of construction, seasonally.
- 4.13 A comprehensive and appropriate rehabilitation and management programme to restore the watercourse(s) to environmentally acceptable and sustainable conditions after construction must be developed and submitted to the Provincial Head or Responsible Authority for written approval before construction commences.

5 MONITORING AND REPORTING

- 5.1 The Provincial Head or Responsible Authority must be notified in writing one week prior to commencement of the licenced activity(ies) and again upon completion of the activity(ies).
- 5.2 A comprehensive and appropriate environmental assessment and monitoring programme to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities listed under Table 1 as well as compliance to these water use licence conditions must be developed and submitted to the Provincial Head or Responsible Authority for a written approval before commencement and must subsequently be implemented as directed.
- 5.3 Six (6) monthly monitoring reports must be submitted to the Provincial Head or Responsible Authority until otherwise agreed in writing with the Provincial Head or Responsible Authority.
- 5.4 A monitoring program for alien plants must be devised to detect and quantify any alien plants that may establish.
- 5.5 A qualified and responsible scientist must be appointed by the Licensee who must give effect to the various licence conditions and to ensure compliance thereof pertaining to all activities impeding and/or diverting flow of watercourses as well as alterations to watercourses on the property(ies) as set out in condition 1.1.
- 5.6 Internal and external audit must be done as per condition 10 and 11 of Appendix 1.

- 5.7 The audit reports must include but are not limited to:
- 5.7.1 Reporting in respect of the monitoring programme referred to in condition 5.2;
 - 5.7.2 A record of implementation of all mitigation measures including a record of corrective actions; and
 - 5.7.3 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.

5.8 The Licensee must apply in writing to the Provincial Head or Responsible Authority for alternative reporting arrangements for which written approval must be provided.

5.9 An environmental officer must be appointed for the lifespan of the project and for the period after that until the department is satisfied that the rehabilitation and monitoring program had been implemented successfully and the primary and secondary impacts are managed adequately.

6 OTHER WATER USERS

6.1 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.

7 POLLUTION PREVENTION, INCIDENTS AND MALFUNCTIONS

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

7.2 Any incident that may cause pollution of any water resource must immediately be reported to the Provincial Head or 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 Provincial Head or Responsible Authority.

7.4 The possibility of spillages must be catered for in the design of the infrastructure where for example, attenuation ponds prior to the discharge of storm water could be employed or the storm water systems themselves could be designed in such a way that it can be easily sealed off after the occurrence of a spill. If a spill occurs during the operational phase of the infrastructure, a suitably qualified team of experts will need to be consulted and rehabilitation plan drawn up and implemented.

7.5 The Licensee must 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 Provincial Head or Responsible Authority within 14 (fourteen) days of receipt of a written request by the Department for such records.

7.6 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 Licensee 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.
- 8.1 The Department may at any stage of the process request proof of budgetary provisions for rehabilitation and closure of project.

9 SITE SPECIFIC CONDITIONS

- 9.1 Licensee shall ensure that watercourses to the south must be maintained as class B ecological systems.
- 9.2 The rip-rap rock concrete stormwater channels design drawing shall be changed to be more natural with rock, topsoil and vegetation.
- 9.3 Clear water must be diverted via environmentally friendly natural canal systems and to link with existing drainage lines. Diversions must be designed as natural as possible. Bio-Retention ponds shall be designed as discharge points outside natural drainage lines to enhance biodiversity.
- 9.4 Licensee shall investigate what plant species can be grown under the solar field for ecological connectivity. A report must be submitted within one(1) year of the issuece of the licence.
- 9.5 The pipeline crossing of a watercourse must be such that it will not interfere with the flow characteristics of the watercourse otherwise an analysis of the effect of such crossing on the flow characteristics and the position of the 1:100 year floodlines must be provided before implementation together with the proposed remedial action on the deleterious effects of such interference.
- 9.6 Pipes buried below the river bed must be protected against buoyancy for the full length of the watercourse, i.e. up to just beyond the 1:100 year floodlines of the watercourse.
- 9.7 If excavation for pipe placing is done on the river bed, Gabion mattresses must be placed along the entire disturbed section of the river bed up to the 1:100 year floodlines of the watercourse.
- 9.8 A construction method statement that details how further damage to the watercourse will be minimized during construction must be submitted before implementation. Such method statement must include details of how the increase in silt load in the stream will be minimized, especially if flow diversion will be required to install the pipe across the watercourse.

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APPENDIX III

Section 21 (h) of the Act: Disposing in any manner of water which contains waste from, which has been heated in, any industrial or power generation process.

1. CONSTRUCTION AND OPERATION

1.1 The Licensee shall carry out and complete all the activities, including the construction and operation of the facilities listed in Table 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 or Responsible Authority.

Table 4: Geographical positions of all the waste water management facilities

Water use(s)	Purpose	Volume (m ³ /a)/ Dimensions	Property Description	Co-ordinates
Disposal of power generation residue into Evaporation Pond 1	Disposal of heated waste water, brine and domestic effluent	164m ³ per day 60,000 m ³ /annum 15% safety margin on design volumes (Capacity)	Portion 0 of Farm 469	28° 18' 31.1"S 23° 21' 27.6"E 28° 18' 37.2"S 23° 21' 22.9"E 28° 18' 43.9"S 23° 21' 34.3"E 28° 18' 37.8"S 23° 21' 38.9"E
Disposal of power generation residue into Evaporation Pond 2	Disposal of heated waste water, brine and domestic effluent	164m ³ per day 60,000 m ³ /annum 15% safety margin on design volumes (Capacity)	Portion 0 of Farm 469	28° 18' 31.1"S 23° 21' 27.6"E 28° 18' 37.2"S 23° 21' 22.9"E 28° 18' 43.9"S 23° 21' 34.3"E 28° 18' 37.8"S 23° 21' 38.9"E
Disposal of power generation residue into Evaporation Pond 3	Disposal of heated waste water, brine and domestic effluent	164m ³ per day 60,000 m ³ /annum 15% safety margin on design volumes (Capacity)	Portion 0 of Farm 469	28° 18' 31.1"S 23° 21' 27.6"E 28° 18' 37.2"S 23° 21' 22.9"E 28° 18' 43.9"S 23° 21' 34.3"E 28° 18' 37.8"S 23° 21' 38.9"E

1.2 The construction of the dam listed in Table 4 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 27/2/2/D173/124/2, inform the Provincial Head or Responsible Authority thereof. This shall be accompanied by a signature of approval from the designer referred in Condition 1.2 of

- this appendix that the construction was done according to the design plans referred to in the Report.
- 1.4 The Licensee must ensure that the disposal of the waste water and the operation and maintenance of the system are done according to the provisions in the Report.
 - 1.5 The Licensee shall as well submit a set of as-built drawings to the Provincial Head or Responsible Authority after the completion of the waste facilities listed in Table 4.
 - 1.6 The waste facilities listed in Table 4 shall be operated and maintained to have a minimum freeboard of 0.8 metres above full supply level and all other water systems related thereto shall be operated in such a manner that it is at all times capable of handling the 1:50 year flood-event on top of its mean operating level.
 - 1.7 The classification done on the brine to be disposed of in the evaporation pond must be done according to Regulations 634 and 635 of August 2013. The classification must also take into consideration the reject sewage treatment plant effluent that will also be discharged into this pond.
 - 1.8 Should the outcome of the classification indicate a barrier requirement, (according to Regulation 636), different from the Type C barrier proposed, design drawings indicating the commensurate barrier system must be provided before implementation.
 - 1.9 The HDPE liner along the slopes of the pond must be covered, the use of Hyson cells filled with soilcrete or similar must be considered.

2. QUALITY OF WATER CONTAINING WASTE TO BE DISPOSED

- 2.1 The Licensee shall submit the nature and the quality of the waste or water containing waste disposed off into the facilities listed in Table 4.

3. MONITORING

- 3.1 The Licensee must establish a groundwater monitoring network within one (1) year from the date of the issuance of this licence. This must be submitted to the regional head for approval within one (1) month after completion.
- 3.2 The Licensee shall conduct ground water monitoring on a quarterly basis for the variables shown in Table 5 of Appendix III and the results must be submitted to the Provincial Head or Responsible Authority on an annual basis.
- 3.3 Monitoring network shall be set up as an early warning system to detect any polluted seepage that might occur from the wastewater system.
- 3.4 If ground water pollution has occurred or may possibly occur, the licensee must conduct necessary investigations and implement additional monitoring and rehabilitation measures which must be to the satisfaction of the Provincial Head or Responsible Authority.
- 3.5 Monitoring boreholes shall be clearly marked and numbered, and must be equipped with lockable caps. The Department reserves the right to sample monitoring boreholes at any time and to analyse these samples, or to have samples taken and analysed.

Table 5: Groundwater monitoring variables and frequency

Groundwater Variables	Frequency
Electrical Conductivity (mS/m)	Quarterly
Sodium (mg/l)	Quarterly
Magnesium (mg/l)	Quarterly
Calcium (mg/l)	Quarterly
Chloride (mg/l)	Quarterly
Sulphate (mg/l)	Quarterly
Nitrate (mg/l)	Quarterly
Fluoride (mg/l)	Quarterly
Iron mg/l)	Quarterly
pH	Quarterly

- 3.6 Licensee shall ensure that potential pollution source such as salvage yards, workshop, scrap yard, etc are maintained in such a way that groundwater pollution is minimised as far as possible. Dirty stormwater that has been in contact with these areas needs to be disposed of accordingly. No hazardous material is to be disposed of onsite.
- 3.7 Licensee shall utilise the document titled "A Protocol to Manage the Potential of Groundwater Contamination from Onsite Sanitation, Second Edition" when assessing the area suitable for on-site sanitation. It is important to note that the possible pollution potential of the onsite sanitation methods has not been adequately identified.
- 3.8 Groundwater monitoring points shall be located close to or at source of contamination to evaluate their impacts on the groundwater regime. Monitoring points shall also be place in migration paths of the primary groundwater plume to evaluate extent of pollution and migration rates. Additional boreholes need to be drilled and monitored as well. These monitoring boreholes shall be located in such a way to maximise the likelihood of intercepting groundwater impacted by source materials/areas.
- 3.9 Licensee shall avoids at all cost, establishing waste disposal sites (evaporation ponds, septic tank etc.) on sites that has any lineaments, faults, dyke etc. as these are preferential flow paths and could be possible pathways for contaminants. Scientifically recognised methods needs to be employed to assess site suitability.
- 3.10 Monitoring boreholes shall be drilled and screened to a depth that will enable groundwater at the site to be effectively monitored and provide water quality results which are a true reflection of the prevailing conditions. This shall take into consideration alignment of the screened portions of the casing with the appropriate water strikes or static water levels.
- 3.11 Licensee shall ensure that casing is adequately sealed near ground level and have a secure cover over the top; and be constructed in such a way to prevent surface water ingress and unnecessary material, such as dirt and insects, entering the boreholes. The monitoring point shall be properly secured to prevent unauthorised persons from gaining access and must be adequately labelled.
- 3.12 Licensee shall adhere to the recommendation listed on the geo-hydrological report with regards to construction, operation and maintenance needs to be adhered to.

- 3.13 The date, time and monitoring point in respect of each sample taken shall be recorded together with the results of the analysis.
- 3.14 Monitoring points must not be changed prior to notification to and written approval by the Provincial Head or Responsible Authority.
- 3.15 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).
- 3.16 The methods of analysis shall not be changed without prior notification to and written approval by the Department.

4. WATER RESOURCE PROTECTION

- 4.1 The impact of the activities of the mine on the groundwater shall not exceed Groundwater Quality Reserve as set out in Table 6.

Table 6: Groundwater Quality

Variables	Groundwater quality limits
Calcium (mg/l)	80.22
Magnesium (mg/l)	52.03
Sodium (mg/l)	32.24
Chloride(mg/l)	35.15
Sulphate (mg/l)	24.75
Nitrates (mg/l)	10.23
Fluoride (mg/l)	0.35
pH	8.86
Electrical Conductivity (mS/m)	89.32

5. STORMWATER MANAGEMENT

- 5.1 Stormwater leaving the Licensee's premises shall in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.
- 5.2 Stormwater 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.
- 5.3 Where necessary works must be constructed to attenuate the velocity of any storm-water discharge and to protect the banks of the affected watercourses.
- 5.4 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that stormwater does not lead to bank instability and excessive levels of silt entering the streams.
- 5.5 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. PLANT AREAS AND CONVEYANCES

- 6.1 Pollution caused by spills from the conveyances must be prevented through proper maintenance and effective protective measures especially near all stream crossings.
- 6.2 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.
- 6.3 Any hazardous substances must be handled according to the relevant legislation relating to the transport, storage and use of the substance.
- 6.4 Any access roads or temporary crossings must be:
- 6.4.1 non-erosive, structurally stable and shall not induce any flooding or safety hazard and
 - 6.4.2 be repaired immediately to prevent further damage.

7. ACCESS CONTROL

- 7.1 Strict access procedures must be followed in order to gain access to the property. Access to the waste water containment facilities must be limited to authorised employees of the Licensee and their Contractors only.
- 7.2 Notices prohibiting unauthorised persons from entering the controlled access areas as well as internationally acceptable signs indicating the risks involved in case of an unauthorised entry must be displayed along the boundary fence of these areas.

8. CONTINGENCIES

- 8.1 Accurate and up-to-date records shall be kept of all system malfunctions resulting in non-compliance with the requirements of this licence. The records shall be available for inspection by the Provincial Head or Responsible Authority 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 or Responsible Authority 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 or Responsible Authority, 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 or Responsible Authority 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 prevent a recurrence of a similar incident.

9. INTEGRATED WATER AND WASTE MANAGEMENT

- 9.1 The Licensee must update an Integrated Water and Waste Management Plan (IWWMP), which must together with the updated Rehabilitation Strategy and Implementation Programme (RSIP), be submitted to the Provincial Head or Responsible Authority for approval within one (1) year from the date of issuance of this licence.
- 9.2 The IWWMP and RSIP shall thereafter be updated and submitted to the Provincial Head or Responsible Authority for approval, annually.
- 9.3 The Licensee must, at least 180 days prior to the intended closure of any facility, or any portion thereof, notify the Provincial Head or Responsible Authority of such intention and submit any final amendments to the IWWMP and RSIP as well as a final Closure Plan, for approval.
- 9.4 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.

10. WATER CONSERVATION AND WATER DEMAND MANAGEMENT (WC/WDM)

- 10.1 Licensee shall develop and submit a water conservation and demand management (WC/WDM) plan to the Provincial Head or Responsible Authority, which
 - 10.1.1 quantify the water use efficiency of the activity;
 - 10.1.2 contains the mine water management and water loss strategies and programs;
 - 10.1.3 sets annual targets for improved water use efficiency for the mining activity, beneficiation and waste disposal practices and stipulates which measures will be implemented to achieve the targets on the mine;
- 10.2 Licensee shall update the WC/WDM plan on an annually basis and submit to the Provincial Head or Responsible Authority for approval.
- 10.3 Licensee shall report on annually basis the implementation of water conservation and water demand management measures including retrofitting with water efficient technologies and devices, reduction of total water demand, improvement in water use efficiency benchmarks and targets.

11. GENERAL CONDITIONS

- 11.1 Water samples must be taken from all the monitoring boreholes by using approved sampling techniques and adhering to recognized sampling procedures. Samples should be analyzed for both organic as well as inorganic pollutants, as mining activity often lead

to hydrocarbon spills in the form of diesel and oil. At least the water quality parameters on Table 4 should be analyzed.

- 11.2 These should be recorded on a data sheet. It is proposed that the data should be entered into an appropriate computer database and reported to the Department.
- 11.3 The Licensee must ensure in advance that alternative water supply for external water users is provided to these users should groundwater resources be impacted.

12. REPORTING

- 12.1 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.
- 12.2 The Licensee shall submit the results of analysis for the monitoring requirements to the Provincial Head or Responsible Authority on a quarterly basis under the reference number 27/2/2/D173/124/2.

[END OF LICENCE]