



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

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

I, **Mr Moses Sipho Skosana** in my capacity as Chief Director: Water Use Authorisation Management in the Department of Water and Sanitation and acting under the powers delegated to me by the Minister of Water and Sanitation, hereby authorises the following water use in respect of this licence.

Serial Number : 5619003100218470946
Chief Director: Water Use Authorisation Management
Date: Apr 3 2024 3:56PM

LICENCE NO: 27/2/1/C211/1/1
FILE NO: 27/2/2/B711/26/1
WUA NO: WU22894

Licensee: Eskom SOC Ltd: Duvha Power Station

Postal Address: PO Box 1091
Johannesburg
2000

Physical Address: Megawatt Park
2 Maxwell Drive
Sunninghill
Johannesburg
2157

B15312

CD: WUAM

1. Water Uses authorised by this licence

Table 1: Summary of Authorised water use activities

1.1	Section 21(b) of the Act	Storing water, subject to the conditions set out in Appendices I and III.
1.2	Section 21(c) and (i) of the Act	Impeding or diverting the flow of water in a water course; subject to the conditions set out in Appendices I and IV.
1.3	Section 21(g) of the Act:	Disposing of waste in a manner which may detrimentally impact on a water resource, subject to the conditions as set out in Appendices I and V.

2. Property (ies) in respect of which the water use licence is issued

Table 2: Property details where the water use(s) will take place

Activity	Farm Name	Farm Portion	Owner's Name	Title Deed Number
Section 21(b) Water Use				
Storage of water in two Water Reservoirs	Duvha Kragstasie 337 JS	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Section 21(c) and (i) Water Uses				
Ash Dam Facility and the associated infrastructure (solution trenches around the ADF and the penstocks, Driefontein water pipeline, Ash lines and distribution box) within the regulated area.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978

Activity	Farm Name	Farm Portion	Owner's Name	Title Deed Number
Section 21(c) Water Uses				
High level dams and the associated infrastructure (ash water pipelines and pump house) within the regulated area.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Station drains and the associated infrastructure within the regulated area.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Low level Ash Water Return Dam including silt traps and the associated infrastructure (Ash Water Return pipelines to the Station and pump house) within the regulated area.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Sewage treatment plant and the associated infrastructure (Maturation ponds and aeration pond) within the regulated area.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Upgrade of the effluent (Wastewater is generated during the production of potable and demineralised water) pipe	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978

system.				
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Activity	Farm Name	Farm Portion	Owner's Name	Title Deed Number
Section 21(c) Water Uses				
Driefontein Pipeline crossing the wetland area.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Section 21(g) Water Uses				
Disposal of water containing waste into the Ash Disposal Facility (ADF)	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Disposal of water containing waste into the Low-level Ash Water Return Dam.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Disposal of water containing waste into the High-level dams.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978
Disposal of water containing waste into the Station drains Complex.	Duvha Kragstasie 337	Remaining extent of portion 0	Eskom SOC Ltd	T10033/1978

3. Licence and Review Period

- 3.1 This licence is valid for a period of twenty (20) years from the date of issuance and it may be reviewed at intervals of not more than five (5) years.
- 3.2 On review of the licence, a Responsible Authority may amend any condition of the licence, other than the period of validity thereof.

4. 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.

4.1 The following definitions are of relevance, but not exclusive, to this licence

Act	National Water Act, 1998 (Act 36 of 1998)
Buffer Zone	A scientifically determined area where water use activities are excluded.
Delegated Authority	The person that has been delegated certain functions of the Act
Department	The Department of Water and Sanitation
Commencement date	The date on which water use starts.
Days	Calendar days.
Minister	Minister of the Department of Water and Sanitation.
Provincial Head	Head of Provincial Operations: Mpumalanga, Private Bag x11259, MBOMBELA, 1200.
Responsible Authority	<p>“Responsible authority” in relation to a specific power or duty in respect of water uses, means</p> <p>(a) if that power or duty has been assigned by the Minister to a catchment management agency, that catchment management agency; or</p> <p>(b) if that power or duty has not been so assigned, the Minister</p>
Riparian habitat	“Riparian habitat” includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.
Watercourse	<p>“Watercourse” means</p> <p>(a) a river or spring;</p> <p>(b) a natural channel in which water flows regularly or intermittently;</p> <p>(c) a wetland, lake or dam into which, or from which, water flows; and</p> <p>(d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.</p>
Extent of the watercourse	<p>(a) the outer edge of the 1:100 year floodline or the delineated riparian habitat, whichever is the greatest, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; and</p> <p>(b) Wetlands and pans: the delineated boundary (outer temporary zone) of any wetland or pan.</p>

Regulated area of a watercourse	<p>(a) The outer edge of the 1 in 100 year flood line and /or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;</p> <p>(b) In the absence of a determined 1 in 100 year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or</p> <p>(c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.</p>
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5. Description of activity and affected water resource(s)

This licence authorises **Eskom SOC Ltd: Duvha Power Station** for the water uses in terms of section 21 (b), (c), (g) and (i) of the National Water Act, 1998 (Act 36 of 1998). The water uses activities include storing 884 000 m³ of raw water in two Water Reservoirs; Ash Dam Facility and the associated infrastructure, High level dams and the associated infrastructure, Station drains and the associated infrastructure and the associated infrastructure, Low level Ash Water Return Dam and the associated infrastructure, sewage treatment plant and the associated infrastructure, upgrade of the effluent pipe system within the regulated area, and Driefontein Dam pipeline crossing the wetland area; disposal of 36 000 000 m³/annum water containing waste into Ash Disposal Facility, disposal of 85 000 m³/annum water containing waste into Low-level Ash Water Return Dam, disposal of 122 700 m³/annum water containing waste into High-level dams and disposal of water containing waste into 0.300 Ha Station drains Complex. The activity is in quaternary catchment B11G which falls within Olifants Water Management Area.

APPENDIX I

GENERAL PROVISIONS AND CONDITIONS OF THE LICENCE

1. GENERAL PROVISIONS

Legal Framework

- 1.1 This licence is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998) as amended from time to time.
- 1.2 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.

Administrative duties/obligations/responsibilities of the Licensee

- 1.3 The responsibility for complying with the provisions of the licence is vested in the licensee and not any other person or body.
- 1.4 The licensee will be responsible for any water use charges or levies imposed by a Responsible Authority according to the pricing strategy. The levies/charges will be charged from the date of the issuance of this licence.
- 1.5 No water taken may be pumped, stored, diverted, or alienated for any other purpose other than as intended in this licence without the written approval of the Delegated Authority.
- 1.6 It is the responsibility of the licensee to request an amendment of this licence to reflect the registered volume should the requirements change. All requests must be made to the Provincial Head.

Change of property details

- 1.7 Amendment of the licence to reflect the name of the new owner will not be approved if there are any outstanding charges or levies imposed by the Responsible Authority to the previous owner.

Issue of licence no guarantee of supply

- 1.8 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.

Monitoring

- 1.9 The quantity of water authorised to be taken in this licence may not be exceeded.
- 1.10 The quality of water authorised to be disposed in this licence may not be exceeded.
- 1.11 Any changes to the monitoring programmes should be approved by the Provincial Head.

Reviewal of licences

- 1.12 The volume authorised in this licence may be reduced when the licence is reviewed.
- 1.13 No water taken may be pumped, stored, diverted, or alienated for any other purpose other than as intended in this licence without the written approval of the Delegated Authority.

Effecting of the Reserve

- 1.14 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.

Liabilities and Rights

- 1.15 The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of, shortage of water; inundations or flood; siltation of the resource; and required Reserve releases.
- 1.16 The Minister reserves the right to construct water storage works at any time in any watercourse and to store all surplus water reaching the storage works, as well as to control the allocation of such water.

Restrictions

- 1.17 The licensee must adhere to any restrictions that are gazetted and imposed on the respective water resource.

Water measurement and reporting

- 1.18 The Provincial Head may at any time direct a licensee, at the licensee's expense, to have the accuracy of the licensee's water measuring device/s verified, in addition to the requirements of their inspection and calibration schedule by a person or an institution accredited to verify the accuracy.

Stormwater Management

- 1.19 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, spilled on the premises.

Amendments

- 1.20 The licensee may apply for amendment of this licence in terms of the Act at any time during the period of validity of this licence. Applications must be submitted to the Provincial Head.

Appeals

- 1.21 If this licence is appealed, it is automatically suspended and the water use activities must cease upon receipt of a notification of the appeal from the Department, alternatively the

licensee may request the Minister to lift the suspension pending conclusion of the appeal via the Chief Director Legal Services at the address below:

Private Bag X313,
Pretoria,
0001

2. GENERAL CONDITIONS

Administrative duties/obligations/responsibilities of the Licensee

- 2.1 The licensee must avail an original copy of the water use licence and the supporting reports upon request by the Department.
- 2.2 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.

Commencement of water use licence.

- 2.3 The licensee must inform the Provincial Head in writing within seven (07) days after the licensee commences with water use licence and again within thirty (30) days upon completion of the activity/ies.
- 2.4 The water uses authorised in this licence must be fully exercised within five (5) years from the date of issuance of this licence.
- 2.5 If the licensee cannot exercise or not fully exercise the water use licence within 5 (five) years, the licensee may request from the Provincial Head, with reasons, an extension of time to fully utilise the said water use licence, at least three months, before the expiry of the 5 (five) years. Only one request for extension of time, with maximum of 2 (two) years for commencement or of fully exercising of water use licence will be considered.

Change of details of licensee or property

- 2.6 The licensee must inform the Provincial Head of any change of ownership, name, address, premises and/or legal status within sixty (60) days of such change taking place.
- 2.7 If the properties in respect of this licence is/are subdivided or consolidated, the licensee must provide full details of any change(s) in respect of the properties to the Provincial Head within sixty (60) days after the registration of title deed(s).
- 2.8 If the licensee is not the end user/beneficiary of the water user related infrastructure and will not be responsible for long term maintenance and management of the infrastructure, the licensee must provide a hand over report to the successor in title including a brief management/maintenance plan and the agreement for infrastructure along with allocation of responsibilities, within sixty (60) days after the date of change of end user or beneficiary.

Early renewal for the Licence

- 2.9 The licensee must, if needed, apply for early renewal of this licence in terms of the Act within one (1) year before the expiry date of a licence. The application must be submitted to the Provincial Head.

Malfunctions, incidences, contingencies and pollution prevention

- 2.10 The licensee must service all vehicles and other machinery outside the extent of the watercourse/s.
- 2.11 Oils and other potential pollutants must be disposed of at a licensed site, with the necessary agreement from the owner of such a site.
- 2.12 The licensee must handle, transport, store and use any hazardous substances according to the relevant legislation or South African National Standards (SANS).
- 2.13 Accurate and up-to-date records must be kept of all system malfunctions resulting in non-compliance with the requirements of this licence. The records must be available for inspection by the Provincial Head upon request. Such malfunctions must be tabulated under the following headings with a full explanation of all the contributory circumstances:
 - 2.13.1 operating errors;
 - 2.13.2 mechanical failures (including design, installation or maintenance);
 - 2.13.3 environmental factors (e.g. flood);
 - 2.13.4 loss of supply services (e.g. power failure); and
 - 2.13.5 other causes.
- 2.14 Any incident that causes or may cause water pollution shall be reported to the Provincial Head or the designated representative within 24 hours. Should the incident occur during a weekend or public holiday, the licensee must report the incident on the next official working day.
- 2.15 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 to be taken to:
 - 2.15.1 correct the impacts resulting from the incident;
 - 2.15.2 prevent the incident from causing any further impacts; and
 - 2.15.3 prevent a recurrence of a similar incident.
- 2.16 All incidents must be recorded in an incident register.

Water Conservation and Water Demand Management (WC/WDM)

- 2.17 The licensee must establish and implement a continual process of raising awareness among itself, its workers and stakeholders with respect to water conservation and water Demand Management initiatives.
- 2.18 The licensee shall use water efficiently to minimise total water intake, avoid usage of water where possible, implement best management and operating practices, and maximise the reuse /recycle of contaminated water.
- 2.19 The licensee must continually investigate new and emerging technologies and put into practice water efficient devices and /or apply technique for the efficient use of water, in an endeavour to conserve water at all times.

- 2.20 The licensee must develop and submit water conservation and water demand management (WC/WDM) plan to the Provincial Head within one (1) year from the date of issuance of this licence. The WC/WDM Plan should:
- 2.20.1 quantify the water use efficiency of the activity;
 - 2.20.2 contain the industry water management and water loss strategies and programmes;
 - 2.20.3 sets annual targets for improved water use efficiency for the industrial activity, beneficiation and waste disposal practices and stipulates which measures will be implemented to achieve the targets on the mine;
- 2.21 The licensee must report annually on the implementation of WC/WDM plan including retrofitting with water efficient technologies and devices, reduction of total water demand, improvement in water use efficiency benchmarks and target.
- 2.22 The licensee must update the WC/WDM plan every five (5) years and submit to the Provincial Head for approval.
- 2.23 The licensee must, where water is stored off-channel in a dam or reservoir ensure that all distribution and reticulation systems or pipelines are properly constructed, operated and maintained in good working order to prevent water losses through physical leakages, burst and reservoir overflows.

Storm water management

- 2.24 Storm water management facilities must be constructed, operated and maintained in a sustainable manner throughout the project as detailed in the Storm Water Management Plan.
- 2.25 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 stream.
- 2.26 All storm water that would naturally run across the dirty areas shall be diverted via lined channels and drains designed to contain the 1:50 year flood.
- 2.27 The dirty 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.
- 2.28 Clean storm water must be diverted from Duvha Power Station areas and must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow.

Monitoring, Methods of analysis

- 2.29 Sample analysis must be conducted by a recognized analytical laboratory, accredited by the South African National Accreditation System (SANAS), or that participates in a recognised Proficiency Testing Scheme to analyze the relevant constituents in the wastewater.
- 2.30 The date and time of monitoring in respect of each sample taken shall be recorded together with the results of the analysis.

2.31 The licensee must adhere to the monitoring programmes submitted with the application.

Water measurement and Reporting

- 2.32 The licensee shall install appropriate water measuring devices to measure the amount of water abstracted prior use of water.
- 2.33 The licensee must install the flow metering devices to all water uses and readings must be taken on each flow meter on a monthly basis.
- 2.34 Flow measuring, recording and monitoring devices shall be maintained in a sound state of repair and calibrated/ verified by a suitable competent person as per device specification. This must include a programme of checking, calibration, and/ or replacement of measuring devices.
- 2.35 Calibration /verification certificates of the flow measuring, recording and integrating devices must be available for inspection by the Provincial Head or the representative upon request.

Membership to a Water Users Association

- 2.36 If a water user association exists or is established in the area to manage the resource, it is compulsory for the licensee to be a member of the water user association. The licensee must adhere to the rules, regulations and water management stipulations of the water user association.

Restrictions on access to certain areas

- 2.37 Strict access procedures must be developed and followed in order to control access to the property. Access to the facility/ies must be limited to authorised persons and animals.
- 2.38 Notices prohibiting unauthorised persons from entering the 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.

Auditing and Reporting

- 2.39 The licensee must conduct annual internal audits on compliance with the conditions of this licence. The first audit must be conducted within ninety (90) calendar days from the date of commencement of water use entitlement. A report on internal audits must be submitted to the Provincial Head within sixty (60) calendar days of the finalisation of the audits.
- 2.40 The licensee must appoint an independent external auditor to conduct biennial (every two (2) years) external audits on compliance with the conditions this licence. The first audit must be conducted and finalised within one (1) year after commencement of a water use. A report on the audit must be submitted to the Provincial Head within sixty (60) calendar days of the finalisation of each audit.

Security by applicant

- 2.41 The Licensee must ensure sufficient financial provision according to applicable legislation.

Compensative measures

- 2.42 The licensee must prevent adverse effects on other water users. All complaints must be recorded in complaints register and be investigated by a suitable qualified person, accredited by an institution/ registration body, appointed by the licensee, and if investigations prove that the licensee has impaired the rights of other water users, the licensee must implement appropriate compensative measures as determined by the Minister.

APPENDIX II

Section 21(b) of the Act: Storing water

1. Taking water from a resource

- 1.1 The licensee is authorised to store a maximum quantity of eight hundred and eighty-four thousand (884 000) m³ of water in the facilities in Table 3.

Table 3: Water Uses authorised

Water description	use	Purpose	Properties	Capacity (m³/annum)	Co-ordinates
Storage of water in two Water Reservoirs		Storage of raw water.	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	884 000 m ³	25°59'14.65"S 29°19'49.73"E 25°58'6.85"S 29°20'28.96"E

- 1.2 The quantity of water stored must be recorded at the last day of each month and the records must be submitted to the Provincial Head annually.

2. Monitoring requirements

- 2.1 The licensee must install appropriate measuring devices to measure the levels of the dam. Should the dam level reach a critical level then protective measures should be implemented.

3. Dam safety requirements

- 3.1 The enlargement, alteration or repair of a dam with a safety risk, must be carried out under a licence issued in terms of the above Regulations.
- 3.2 The licensee must supply any information, drawings, specifications, design assumptions, calculations, documents and test results when requested by the Provincial Head.

APPENDIX III

Section 21(c) water use: Impeding or diverting the flow of water in a watercourse/s

Section 21(i) water use: Altering the bed, banks, course or characteristics of a watercourse/s

1. Section 21(c and i) water use activities

1.1 This licence authorises the Section 21(c) or (i) water use activities as set out in Table 4 and in the water use licence application reports submitted to the Department or the Regional Head (refer condition 1.2):

Table 4: Water uses authorised

Water Use description	Purpose	Property	Area (Ha) /Extent or Dimensions (m)	Coordinates	
				(Start Point)	(End Point)
Ash Dam Facility and the associated infrastructure (solution trenches around the ADF and the penstocks, Driefontein water pipeline, Ash lines and distribution box) within the regulated area.	Disposal of slurry i.e., mix of approximate ratio 1:10 (ash to water).	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	485 Ha	25°56'19.87" S 29°20'8.96" E	25°57'14.79" S 29°20'50.28" E
High level dams and the associated infrastructure (ash water pipelines and pump house) within the regulated area	To store water from the Low Level Ash Water Return Dam (AWRD), Sewage Treatment Plant effluent	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	4 Ha	25°56'59.67" S 29°20'8.25" E	25°55'57.14" S 29°20'41.82" E

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Water Use description	Purpose	Property	Area (Ha) /Extent or Dimensions (m)	Coordinates	
				(Start Point)	(End Point)
	Water Treatment Plant effluent.				
Station drains and the associated infrastructure within the regulated area.	To collect water from cooling water systems, storm water within the station and terrace, drainage of boilers and condensers	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	0.300 Ha	25°56'34.95" S 29°19'17.40" E	25°57'38.21" S 29°19'24.53" E
Low level Ash Water Return Dam including silt traps and the associated infrastructure (Ash Water Return pipelines to the Station and pump house) within the regulated area.	Disposal of water containing waste from Ash Disposal facility and Station drains complex.	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	25 Ha	25°57'13.99" S 29°20'34.86" E	25°55'31.99" S 29°20'33.97" E
Sewage treatment plant and the associated infrastructure (Maturation ponds and aeration pond) within	Treatment of sewer.	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS			

the regulated area.					
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Water Use description	Purpose	Property	Area (Ha) /Extent or Dimensions (m)	Coordinates	
				(Start Point)	(End Point)
Upgrade of the effluent (Wastewater is generated during the production of potable and demineralised water) pipe system within the regulated area.	Effluent is sent to the effluent sump from where it is pumped to the High-Level Ash Water Return Dam for disposal.	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	1 381 m	25°55'30.43" S 29°20'31.15" E	25°57'38.21" S 29°19'24.53" E
Driefontein Dam pipeline crossing the wetland area.	Transfer of mine water to supplement water for ashing purposes only when there is a shortage of water from the ashing system.	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	4 500 m	25°59'13.69"S 29°19'48.89"E	25°56'46.01"S 29°19'49.81"E

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

Table 5: Reports

Number	Report Title	Compiled by	Date of report
1	Eskom Duvha Power Station Wetland Delineation Draft Report	Kimopax (Pty) Ltd	April 2020
2	Eskom Holdings SOC Limited: Licence Application Summary Report	Kimopax (Pty) Ltd	6 June 2023

3	Duvha Power Station Stormwater Management Plan	SAWE-GP Consulting Engineers	23 September 2023
4	Geohydrological Report	Kimopax (Pty) Ltd	January 2022
5	Groundwater Numerical Model Update Report	Kimopax (Pty) Ltd	May 2021
6	Hydropedology Assessment submitted as part of the Water Use License Renewal and Amendment Application for the Effluent Pipeline, within Duvha Power Station, Emalahleni Municipality, Province of Mpumalanga	Umongo Environmental Services	February 2022
7	Memo for V-Ditch Project	Eskom SOC Ltd: Duvha Power Station	27 September 2022
8	Wetland Rehabilitation and Management Plan	Mawenje Consulting Africa (MCA) Pty (Ltd)	5 May 2023
9	Duvha Power Station Deep Dirty Water Drains Modification Concept Design Report	Eskom SOC Ltd: Duvha Power Station	7 December 2022
10	Duvha Seepage Interception Drains – Concept Design Report	Eskom SOC Ltd: Duvha Power Station	18 April 2019
11	Duvha Maturation Pond Concept Design Report	Eskom SOC Ltd: Duvha Power Station	1 March 2019

- 1.3 No activity must take place within the extent of a watercourses, unless authorised by this licence.
- 1.4 No fundamental alterations of the work method statement, site plan/s and drawings are allowed, unless a modification is requested and granted by the responsible authority in writing; and

2. FURTHER REQUIREMENTS

- 2.1 For all the activities listed under condition 1.1, Table 5, “as-built” plans and engineering drawings prepared by a registered professional engineer, must be submitted to the responsible authority within six (6) months of completion of new activities and for existing water uses within six (6) months of the date of issuing of this licence. These plans and drawings must indicate the watercourse/s including wetland boundaries and layout and structure location/s of all infrastructure impeding and/or diverting flow of water in the watercourse/s as well as alternations to watercourse/s on the property/ies.

3. Structures, Construction Plant and Materials

- 3.1 Structures must withstand a 1:100 year flood.

- 3.2 Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.
- 3.3 Structures must be inspected for a minimum of once a quarter for accumulation of debris, blockage, erosion of abutments and overflow areas - debris must be removed and damages must be repaired and reinforced within a reasonable time.
- 3.4 Limitations: This recommendation does not exempt the designer from complying with any other legislation. This review refers only to the activity as specified and described in the signed design report and drawings listed under documentation submitted for consideration.
- 3.5 Notices of commencement: One month's written notice must be given to the DWS before commencement of construction activities. Such notice shall make clear reference to the site location details and the reference number of the project as indicated on the license and include a high-level project programme to facilitate optional attendance of the preconstruction meeting by the Regulator and inspection of the site during construction. One month's written notice must also be given to the DWS before commencement of the operational activities.
- 3.6 Design Report: A final design report should be submitted to DWS for final approval one month before commencement of construction.
- 3.7 Water from air valves and scour valves must not be allowed to spill into the environment.
- 3.8 Deviation from accepted design: The designs are approved as currently indicated for those facilities that are already compliant and for those which have been earmarked for upgrades as indicated in the design report. The license holder must notify the DWS in writing, within twenty-four (24) hours if any condition of this design and its acceptance cannot be or is not, adhered to during operation. The notification must be supplemented with reasons for non-compliance, and proposed rectification measures.
- 3.9 Design and construction records: including topographical surveys and methodical materials test results (on all materials used), shall be maintained and archived and accessible for the life of the facilities (including decommissioning).
- 3.10 Standard specifications or prescribed management standards: The SANS standard specifications and generally accepted engineering practices specified shall be the most recent amendment thereof as at commencement of construction.
- 3.11 Repairs to damages: The licence holder should ensure that the facilities are kept in a safe operating condition and should ensure timeous repair to the facilities should they suffer any damages.
- 3.12 Once construction is complete, should any seepage be observed, a measuring device should be installed to measure and monitor seepage.
- 3.13 The authorities shall not be held responsible for any damages or losses suffered by the license holder or its successor in title in any instance where construction or operation after construction is temporarily or permanently stopped for reasons of non-compliance by the licence holder with the conditions of approval as set out in this document or any other subsequent document emanating from these conditions of acceptance.

- 3.14 On completion of construction activities, a close out report must be given to DWS detailing but not limited to the following:
- 3.14.1 Construction methods followed,
 - 3.14.2 Tests for quality assurance undertaken,
 - 3.14.3 As built drawings including map showing as built footprint of the infrastructure,
 - 3.14.4 Compliance with SANS standards.
- 3.15 The supporting evidence shall include the number of tests, minimum, maximum, mean value, and standard deviation for each test method undertaken on all materials used in the barrier system design and construction which may include concrete.

4. Flow

- 4.1 Where flow in watercourse/s is permanent, the trench must be staged across part of the channel to maintain flows. Flows must not be stopped unless essential, if necessary to stop flows it must be for a minimal time only.

5. Trenching

- 5.1 A buffer zone of 32 m must be implemented for each wetland and construction within the buffer zone must be restricted to the trench line and working side of the trench.

6. Biota

- 6.1 The licensee must allow movement of aquatic species, including migratory species where applicable.
- 6.2 Ensure implementation of all mitigation measures not to disturb the breeding, nesting and/or feeding habitats and natural movement patterns of aquatic biota.

7. Rehabilitation and Management

- 7.1 The licensee must implement the rehabilitation programme to restore the watercourse/s to environmentally acceptable and sustainable conditions after completion of the activities as outlined in the rehabilitation plan.
- 7.2 The rehabilitation must be implemented according to the approved Rehabilitation Plan by Mawenje Consulting Africa (MCA) (Pty) Ltd dated 5 May 2023.
- 7.3 A photographic record must be kept as follows and submitted with reports as set out in condition 8:
- 7.4 Dated photographs of all the sites to be impacted before construction commences;
- 7.5 Dated photographs of all the sites during construction on a monthly basis; and
- 7.6 Dated photographs of all the sites after completion of construction, seasonally.
- 7.7 All disturbed areas must be re-vegetated with indigenous plants in consultation with an

indigenous plant expert, ensuring that during rehabilitation only indigenous shrubs, trees and grasses are used in restoring the biodiversity.

8. MONITORING AND REPORTING

8.1 The monitoring plan must be implemented, and reporting done to the Provincial Head as stipulated under condition

8.2 Six (6) monthly monitoring reports must be submitted to the Provincial Head for the duration of the construction phase and yearly thereafter or until otherwise agreed in writing with the Provincial Head.

9. Site specific conditions

9.1 The licensee shall update the master plan indicating all the infrastructure, watercourses, scientific determined buffers; and all water uses for approval within one (1) year of issuance of this licence.

9.2 The Rehabilitation plan must be updated with Plant Species plans, programmes and timeframes and submitted for approval within six (6) months of the issuance of this licence.

9.3 The proposed 32m wetland buffers must be informed by hydro-pedology study to determine scientific wetland buffers and submitted for approval within six (6) months of the issuance of this licence.

9.4 The pan catchments must be protected.

9.5 The licensee shall provide clarity on discharge area of treated sewage effluent to Low Level Dam and re-use in relation to mitigation measures to address spillage incidences.

9.6 The licensee shall not discharge treated sewage effluent to the wetlands.

9.7 A Maintenance plan must be submitted for approval within six (6) months of the issuance of this licence.

9.8 The Monitoring and auditing plan must be updated to include wetlands, Wastewater Treatment Works and stormwater; and submitted for approval within six (6) months of the issuance of this licence.

9.9 The Recommended Ecological Category must be set as C for all watercourses and not lower than the current Present Ecological State.

9.10 The licensee shall update the water balance annually and calculate the loads of waste emanating from the activities.

9.11 The Environmental Compliance Officer or appointed landscaper should monitor the wetland areas every month for the first 12 months in order to ensure that excessive erosion and sedimentation of the wetland habitat is not occurring as a result of the ongoing operations:

- 9.11.1 Should erosion and sedimentation be noted, eroded areas must be rehabilitated; and management measures must be put in place immediately in order to prevent further damage to the wetlands.
- 9.11.2 Thereafter, the wetlands must be monitored bi-annually/after heavy flood events by the body that preside over the administration of the proposed estate in order to ensure that erosion and sedimentation are not taking place.

APPENDIX IV

Section 21(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource

1. DISPOSAL OF WASTE /WATER CONTAINING WASTE

1.1 The licensee is authorised to dispose water containing waste into the waste management facilities as described in Table 6.

Table 6: Water Uses Authorised

Water use(s) activities	Purpose	Capacity/ Volume (m ³ , tonnes and/or m ³ /annum)/ dimension (Area (ha) Length/depth, (m)),	Property Description	Co-ordinates
Section 21(g)				
Disposal of water containing waste into the Ash Disposal Facility (ADF)	To dispose Ash slurry and Driefontein Dam water.	36 000 000 m ³ / annum	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	25°56'4.96"S 29°20'21.67"E
Disposal of water containing waste into the Low-level Ash Water Return Dam.	The Low-level dam receives water from the Ash Disposal facility and from the Station drains complex.	850 000 m ³	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	25°55'46.32"S 29°20'42.70"E
Disposal of water containing waste into the High-level dams.	Disposal of water containing waste from the Low Level AWRD, effluent from the Sewage Treatment Plant and effluent from the Water Treatment Plant.	122 700 m ³	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	25°57'11.56"S 29°20'39.22"E

Water activities	use(s)	Purpose	Capacity/ Volume (m ³ , tonnes and/or m ³ /annum)/ dimension (Area (ha) Length/depth, (m)),	Property Description	Co-ordinates
Section 21(g)					
Disposal of water containing waste into the Station drains Complex.		Disposal of water containing waste from run-off generated from the dirty water area in the generating facility.	0.300 Ha 157 300 m ³ /annum	Remaining extent of portion 0 of the farm Duvha Kragstasie 337 JS	25°57'10.47"S 29°20'49.96"E

2. CONSTRUCTION, OPERATION AND MAINTANANCE

- 2.1 The licensee must ensure that the disposal of water and water containing waste; and the operation and maintenance of the system are done according to the provisions in the Reports memo for V-ditch project, Duvha Power Station Deep Dirty Water Drains, Modification Concept Design, Duvha Seepage Interception Drains – Concept Design and Duvha Maturation Pond Concept Design Report.
- 2.2 The licensee shall submit a set of as-built drawings within three (3) months to the Provincial Head after the completion of the V-ditch project.
- 2.3 The Low-level Ash Water Return Dam and High-level dams 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.

3. QUALITY OF WASTEWATER TO BE DISPOSED

- 3.1 The licensee shall monitor the quality of wastewater disposed of into a dirty water containment facility as indicated in Table 7.

Table 7: Quality of water to be disposed into dirty water containment Facilities

Parameters	Quality of water to be disposed
Total Dissolved Solids (mg/l)	690
Aluminium (mg/l)	0.28
Calcium (mg/l)	61.08
Chloride (mg/l)	79.5
Magnesium (mg/l)	38.06

Parameters	Quality of water to be disposed
Iron (mg/l)	0.59
pH	6.93
Potassium (mg/l)	3.45
Sodium (mg/l)	89.52
Sulphate (mg/l)	278.3

3.2 The quality of effluent from the Sewage Treatment Plant Disposed into the Ash Return Dam shall not exceed the following limits:

Table 8: Quality of Sewage Treatment Plant effluent to be disposed into Ash Return Dam:

Parameters	Quality of water to be disposed
Faecal Coliforms (per 100 ml)	1000
Chemical Oxygen Demand (mg/l)	75
pH	5.5 – 9.5
Ammonia (ionised and un-ionised) as Nitrogen (mg/l)	3
Nitrate/Nitrite as Nitrogen (mg/l)	15
Chlorine as free chlorine (mg/l)	0.25
Suspended solids (mg/l)	25
Electrical Conductivity (mS/m)	70 mS/m above intake to a maximum of 150
Ortho-Phosphate as Phosphorus (mg/l)	10
Fluoride (mg/l)	1

4. SURFACE WATER MONITORING

4.1 The licensee shall monitor surface water at the monitoring points indicated in Table 9.

Table 9: Surface water monitoring points

Sampling point name	Locality	X Co-ordinate	Y Co-ordinate
PP04	Ash Water Return Water Dam	29.34423	25.9545
PE01	Water Sewage Area	29.32326	25.9585
PP04	High Level Dam	29.34423	25.9545

4.2 Each sample shall be analysed for the variables and at frequencies, as shown in Table 10 in Appendix V and/ or any other variable as may be required from time to time by the Provincial Head.

Table 10: Surface water monitoring variables and frequency

Variables	Frequency
pH	Monthly
Electrical Conductivity (mS/m)	Monthly
Total Dissolved Solids (mg/l)	Monthly
Total Alkalinity as CaCO ₃ (mg/l)	Monthly
Total Hardness as CaCO ₃ (mg/l)	Monthly
Calcium as Ca (mg/l)	Monthly
Magnesium as Mg (mg/l)	Monthly

Variables	Frequency
Sodium as Na (mg/l)	Monthly
Potassium as K (mg/l)	Monthly
Chloride as Cl (mg/l)	Monthly
Fluoride as F (mg/l)	Monthly
Nitrate as NO ₃ (mg/l)	Monthly
Iron as Fe (mg/l)	Monthly
Manganese as Mn (mg/l)	Monthly
Sulphate as SO ₄ (mg/l)	Monthly
Manganese as Mn (mg/l)	Monthly
Aluminium as Al (mg/l)	Monthly
Ammonia as NH ₄ (mg/l)	Monthly
Chrome Hexavalent as Cr6 (mg/l)	Monthly
Chrome total as Cr (mg/l)	Monthly
Copper as Cu (mg/l)	Monthly
Cadmium as Cd (mg/l)	Monthly
Vanadium as V (mg/l)	Monthly

- 4.3 The Licensee shall submit to the Department within a month after issuing of this licence the sampling point name and coordinates for the High-Level Dam.
- 4.4 The biomonitoring must be undertaken using latest Invertebrate Habitat Assessment System (IHAS) and the South African Scoring System (SASS). Sampling must be conducted seasonally (once in summer and once in winter) and the results must be compared against the selected reference condition or reference condition within the same ecoregion in a case where upstream of selected discharge point is not accessible or representative of discharge point.
- 4.5 The Licensee shall conduct biomonitoring at the monitoring points as indicated in Table 11.

Table 11: Biomonitoring points:

Locality	Description	Co-ordinate
DV-TRIB-US	Unnamed tributary, downstream site to the north of the power station.	-25.9247' (S) 29.3460' (E)
DV-TRIB-DS	Unnamed tributary, downstream site to the north of the power station.	-25.9233 (S) 29.3446 (E)

- 4.6 The biomonitoring report highlighting the impacts, changes, deterioration or improvement of the aquatic ecosystem (trends) as the result of this water containing waste must be submitted to the Provincial Head.
- 4.7 The Biomonitoring report shall be submitted to the Provincial Head within one (1) month of finalisation of the report.

5. GROUNDWATER MONITORING

- 5.1 The licensee shall monitor groundwater resources to determine the impact of the activity on

the water resource by taking samples at the monitoring points indicated in Table 12.

Table 12: Groundwater monitoring points

Sampling point name	Locality	X Co-ordinate	Y Co-ordinate
PB09	High level Ash Water Return Dam	29.34395	-25.9556
PB10	High level Ash Water Return Dam	29.34246	-25.9537
PB11	Supply borehole on Mr. Gouws farm	29.34879	25.9583
PB14	Ash Water Return Dam	29.32899	-25.9535
PB15	Ash Water Return Dam	29.32685	-25.9504
PB16	Ash Water Return Dam	29.32678	-25.9524
PB19	High level Ash Water Return Dam	29.32278	-25.9607
PB20	High level Ash Water Return Dam	29.34514	-25.9527
PB21	High level Ash Water Return Dam	29.34499	-25.9527
PB22	High level Ash Water Return Dam	29.34627	-25.9545
PB23	North of Emergency Pan	29.34889	-25.9588
PB24	Northeast of Emergency Pan	29.34945	-25.95885
AB01	Ash Dam	29.32T599	-25.9342
AB02	Ash Dam	29.32606	-25.9318
AB03	Ash Dam	29.32738	-25.9319
AB44	Ash Dam	29.32157	-25.9401
AB32	Ash Dam	29.33478	-25.9313
AB05	Ash Dam	29.34893	-25.9311
AB04	Low level Ash Water Return Dam	29.34515	-25.92497
AB30	Low level Ash Water Return Dam	29.34435	-25.9232
AB31	Low level Ash Water Return Dam	29.34412	-25.9231
PB12	Sewage Plant	29.32237	-25.9605
PB13	Sewage Plant	29.32235	-25.9596
PB18	Sewage Plant	29.32299	-25.9584
PB46	Station Drains North	29.32757	-25.9866
CB06	Coal Stockyard	29.34707	-25.9581
CB07	Coal Stockyard	29.34594	-25.9607

5.2 Monitoring boreholes in the Table 13 in condition 4.1 in Appendix V must be clearly marked, 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.

- 5.3 The licensee shall monitor groundwater resources to determine the impact of the facility and other activities on the water quality by taking samples at the monitoring points indicated in Table 13.

Table 13: Groundwater monitoring variables and frequency

Variables	Frequency
pH	Quarterly
Electrical Conductivity (mS/m)	Quarterly
Total Dissolved Solids (mg/l)	Quarterly
Calcium as Ca (mg/l)	Quarterly
Magnesium as Mg (mg/l)	Quarterly
Sodium as Na (mg/l)	Quarterly
Potassium as K (mg/l)	Quarterly
Chloride as Cl (mg/l)	Quarterly
Fluoride as F (mg/l)	Quarterly
Nitrate as NO ₃ (mg/l)	Quarterly

- 5.4 The quality of the groundwater resource must be monitored by taking samples quarterly at groundwater monitoring points as described in condition 5.3 in Appendix V. Each sample shall be analysed for the variables and at frequencies, as shown in table 14: in Appendix V and/ or any other variable as may be required from time to time by the Provincial Head.
- 5.5 The groundwater level monitoring must be conducted on a quarterly basis.
- 5.6 Should pollution occur or possible pollution occur, the licensee must conduct the necessary investigations to determine the impact on groundwater associated with the Water Containing Waste Facilities and any mitigating actions that could be required. This must be done in consultation with the Provincial Head and at time frames set by the Provincial Head.

6. REPORTING

- 6.1 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.
- 6.2 The licensee shall submit the results of analysis for the monitoring requirements to the Provincial Head on a quarterly basis under 27/2/1/C211/1/1.

7. INTEGRATED WATER AND WASTE MANAGEMENT

- 7.1 The Integrated Water and Waste Management Plan (IWWMP) and Rehabilitation Strategy and Implementation Plan (RSIP) must be updated annually and submitted to the Provincial Head for approval.
- 7.1 The licensee must, at least 180 days prior to the intended closure of any facility, or any portion thereof, notify the Provincial Head of such intention and submit any final amendments to the IWWMP and RSIP for approval.

8. Site specific conditions

- 8.1 Seepage containment measures such as interception trench to capture and contain seepage should be implemented downgradient of these facilities: ash disposal facility, coal stockyard area, low-level ash return water dam, high level dam; and Water Treatment Plant effluent sump and its sludge sump during the operational phase. Seepage water can be reused or treated and discharged to an authorized facility.
- 8.2 Groundwater monitoring boreholes that are blocked and those that cannot be located must be sited using scientific approaches including geophysical methods, and drilled to a depth that penetrates the whole aquifer system.
- 8.3 The licensee shall drill one (1) groundwater monitoring borehole downgradient of the Water Treatment Plant effluent sump area.
- 8.4 The boreholes must be constructed such that they do not unnecessarily penetrate impermeable layers that could possibly create conduits for the migration of leachate pollution to groundwater.
- 8.5 Groundwater monitoring boreholes must be properly sealed at the surface to prevent surface pollution into groundwater system.
- 8.6 The licensee shall conduct a pump test for all the proposed additional groundwater monitoring boreholes after drilling is completed to determine the aquifer parameters as well as to further characterise the hydrogeology in the area.
- 8.7 The area to be used for storage of any hazardous waste and items which contain hazardous substance must be lined with bounded walls to prevent pollution of surface water or groundwater should a leakage/spillage occur. All the hydrochemical parameters should be analysed and the results must not exceed the Resource Quality Objectives in the area.
- 8.8 A numerical flow and transport model should be updated, calibrated every two (2) years as groundwater levels and quantity data generated becomes available to enhance model predictions and used to adequately assess the monitoring results and possible impacts upon detection.
- 8.9 The licensee shall implement the recommendations outlined in the Duvha Power Station Stormwater Management Plan by SAWE-GP Consulting Engineers dated 23 September 2023 to improve stormwater management at Duvha Power Station.

[END OF LICENCE]