

GOVERNMENT OF ZAMBIA

STATUTORY INSTRUMENT NO. 73 of 2024

The Water Resources Management Act
(No. 21 of 2011)

**The Water Resources Management (Water Harvesting
and Storage) Regulations, 2024**

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IN EXERCISE of the powers contained in sections 68 and 179 of the Water Resources Management Act, 2011, the following Regulations are made:

PART I

PRELIMINARY PROVISIONS

- | | |
|---|--------------------|
| 1. These Regulations may be cited as the Water Resources Management (Water Harvesting and Storage) Regulations, 2024. | Title |
| 2. In these Regulations, unless the context otherwise requires | Interpretation |
| “Authority” has the meaning assigned to the word in the Act; | |
| “dam with safety risk” has the meaning assigned to words in the Act; | |
| “dam operator” means a person, organisation, or entity responsible for the regular operation, maintenance, safety and control of a dam and related works; | |
| “de-commissioning” has the meaning assigned to the word in the Act; | |
| “Disaster Management and Mitigation Unit” means the Disaster Management and Mitigation Unit established under the Disaster Management Act, 2010; | Act No. 13 of 2010 |
| “floods” means a general or temporary condition of partial or complete inundation of normally dry land from the overflow of inland or tidal waters, or the unusual and rapid accumulation or runoff of surface waters from any sources, and mudslides or the condition resulting from flood created erosion; | |
| “flood control works” means infrastructure and engineering works or measures designed and undertaken to mitigate the impact of floods on society, property or assets; | |
| “flood return period” means the estimated average time interval between floods of a certain magnitude; | |
| “impoundment” means a man made structure or facility designed to store or collect water for various purposes; | |
| “inspection” means a thorough examination of works, materials, systems and surrounding environment to ascertain the dam or flood control works’ condition and identify potential safety issues, and verify compliance with design standards and operational procedures and includes monitoring of activities to assess and analyse the behaviour of the dam, flood control works and associated structures; | |

Act No. 3 of
2015

“levee” means a man made structure, usually an earthen embankment, designed and constructed in accordance with standard engineering practices to contain, control or divert the flow of water in order to prevent temporary flooding;

“maintenance operational plan” means a detailed plan that outlines the procedures and activities designed and implemented by a permit holder in relation to water works or dam operator to ensure the effective and efficient maintenance of equipment, infrastructure or system;

“minimum net freeboard” means the vertical distance between the maximum water surface, and the top, of the dam and “flood freeboard” shall be construed accordingly;

“other facilities” means a hydraulic infrastructure that may be used to impound water in a river or stream but cannot be classified as a dam;

“owner” has the meaning assigned to the word in the Act;

“planning authority” has the meaning assigned to the words in the Urban and Regional Planning Act, 2015;

“reservoir” means the body of water impounded by a dam or a dam with a safety risk;

“risk” means the measure of the probability and severity of an adverse effect to life, health, property or the environment;

“spillway” means a structure used to provide the controlled release of flows from a dam or levee into a downstream area typically the riverbed of the dammed river;

“spillway design flood” means the flood that a spillway shall be capable of conveying with a minimum net freeboard without damage to the dam;

“standard engineering practice” means a set of established and widely accepted guidelines, procedures, methods and principles that engineers follow when designing, constructing, and maintaining various types of infrastructure, systems or products;

“task” means a function relating to designing, constructing, altering, repairing, impounding water in, operating, evaluating the safety of, maintaining, monitoring or abandoning, a dam with a safety risk;

“water” has the meaning assigned to the word in the Act;

“water harvesting” means a process of collecting and storing rainwater, groundwater or surface water runoff from various surfaces;

“water storage” means a location or structure where water is stored for future use; and

“water works” has the meaning assigned to the words in the Act.

PART II

CONSTRUCTION OF WATER WORKS

3. (1) A person who intends to construct water works for purposes of a dam shall apply to the Authority for a permit in Form I set out in the First Schedule.

Application
to construct
water works

(2) The Authority shall, on receipt of the application under subregulation (1) and where the application complies with Part IX of the Act, issue a permit in Form II set out in the First Schedule.

4. A permit holder for the construction of a dam shall, during the construction of the dam at the point of diverting the river and filling of the reservoir, submit to the Authority a signed dam construction progress report containing information set out in table 2 of the Second Schedule.

Dam
construction
progress
report

5. An owner shall, within one hundred and twenty days from the completion of any dam works, submit—

Dam
completion
certificate

(a) a technical report containing details set out in table 1 of the Second Schedule;

(b) plans containing as-built technical details and drawings; and

(c) completion certificate in Form III set out in the First Schedule.

6. The Authority shall, within thirty days of receipt of the information under regulation 5, register a dam in accordance with the classifications set out in table 1, 2 and 3 of the Third Schedule and issue the owner with a registration certificate in Form IV set out in the First Schedule.

Registration
of dams and
other water
works

7. The minimum net freeboard categories of a dam are as set out in table 1 of the Third Schedule.

Minimum net
freeboard

8. The minimum acceptable flood return period for the design of a dam spillway are as set out in table 4 of the Third Schedule.

Minimum
spillway
design flood

PART III

OPERATION OF DAMS AND OTHER WATER RESOURCES STORAGE
FACILITIES

- Storage and efficient use of water 9. The Authority may require a holder of a permit in relation to water works to—
- (a) develop adequate storage for water; and
 - (b) apply water use efficient methods and technologies.
- Release and use of stored water 10. (1) A holder of a permit to store or impound water in any body of water or a dam operator may, with the approval of the Authority, release the water stored into a natural watercourse, or divert or obstruct a proportion of the flow of the released water and utilise the water, subject to the terms and conditions of a permit.
- (2) A holder of a permit referred to under subregulation (1) shall provide a discharge measurement, in writing to the Authority, of the amount of water released in accordance with that subregulation.
- Outlet for impoundment 11. (1) A holder of a permit to impound water shall ensure that an impoundment contains an outlet with a valve sluice gate where normal flow of water does not bypass a reservoir.
- (2) An outlet referred to under subregulation (1) shall be capable of being operated at all stages of the flow of water to allow water to pass downstream of the watercourse or water body.
- Notice downstream 12. (1) A dam operator shall, where a release from an impoundment under regulation 10, is likely to cause damage downstream—
- (a) notify the Authority and the person downstream likely to be affected by the water release; and
 - (b) take adequate mitigation measures at the operator's own cost.
- (2) The mitigation measures referred to under subregulation (1) shall be in accordance with the dam technical report submitted under regulation 5.
- (3) An operator who contravenes subregulation (1) and (2) commits an offence.

PART IV

MAINTENANCE AND MANAGEMENT OF WATER WORKS

13. A permit holder in relation to water works or dam operator shall manage and maintain the water works in accordance with the requirements on safety guidelines for water works issued by the Authority.

Maintenance and management of water works by permit holder and dam operator

14. A permit holder in relation to water works or dam operator shall prepare and implement a maintenance operational plan for water works which shall contain the following:

Maintenance operational plan

- (a) maintenance activities and, where the operator is not the permit holder, the distribution of maintenance responsibilities;
- (b) a maintenance budget;
- (c) maintenance performance norms and standards;
- (d) maintenance schedule including the frequency and timing of maintenance;
- (e) emergency maintenance and repairs;
- (f) procedures for addressing emergencies including protocols for all reporting emergencies and mitigation measures;
- (g) spare parts and inventory management and strategies for managing spare parts, tools and equipment required for maintenance;
- (h) training requirements for maintenance personnel;
- (i) reporting processes and procedures; and
- (j) inspection and monitoring protocols.

15. (1) A permit holder in relation to water works or dam operator shall, at all times—

Flood control works, maintenance and operation of structures and facilities

- (a) continuously maintain the structures and facilities for flood control in a manner as may be necessary for effective flood control; and
- (b) keep a supply of flood control materials required during a flood emergency.

(2) A permit holder in relation to water works or dam operator who intends to carry out an activity relating to an improvement or alteration of water works shall apply to the Authority, in writing, for approval.

(3) The application under subregulation (2) shall be accompanied by the results of an assessment conducted under subregulation (7).

(4) The Authority shall, within thirty days of receipt of the application under subregulation (2), approve or reject the application.

(5) The Authority shall, where the Authority rejects an application under subregulation (2), inform the permit holder in relation to water works or dam operator, in writing, stating the reasons for the rejection.

(6) The Authority shall, where the Authority approves an application under subregulation (2) inform the permit holder in relation to water works or dam operator, in writing, of the approval.

(7) A permit holder in relation to water works or dam operator shall, prior to making an application under subregulation (2), assess whether an activity referred to under that subregulation—

(a) is necessary; and

(b) does not adversely affect the functioning of the flood control facility.

(8) A permit holder in relation to water works or dam operator shall keep a record of the assessment referred to under subregulation (7).

(9) A permit holder in relation to water works or dam operator who is granted approval under subregulation (6) shall, when carrying out an activity relating to an improvement or alteration of water works ensure that the activity—

(a) does not pass over, under, or through, a wall levee, channel or flood way; or

(b) is not carried out within the limits of the flood control works as specified in the plans submitted under regulation 5(b).

(10) A permit holder in relation to water works or dam operator granted approval under subregulation (6) shall carry out an improvement or alteration relating to water works in accordance with standard engineering practice.

(11) A person who contravenes this regulation commits an offence.

Maintenance
of levee

16. (1) A permit holder in relation to water works or dam operator shall—

(a) periodically maintain a levee to ensure that it is in good operable condition; and

(b) ensure that periodic inspections are undertaken.

(2) A permit holder in relation to water works or dam operator shall—

- (a) take appropriate advance measures to ensure the availability of adequate labour and materials to meet all contingencies relating to the maintenance of the levee;
- (b) take immediate steps to control any condition which endangers the levee; and
- (c) where applicable, repair the damaged levee.

17. A permit holder in relation to water works or dam operator shall—

Inspections
of flood
control
works

- (a) conduct and keep a record of periodic inspections of flood control works;
- (b) inspect flood control works—
 - (i) immediately before the commencement of the flood season;
 - (ii) immediately after each major high-water period; and
 - (iii) at intervals not exceeding ninety days from the date of the last inspection; and
- (c) take measures to eliminate encroachments and effect repairs in case of damage found by inspections conducted under this regulation.

18. (1) A permit holder in relation to water works or dam operator shall, prior to commencing the use of a dam, develop and submit to the Authority—

Emergency
management
plans for
dams
affected
by floods

- (a) a dam safety plan to which that permit holder or dam operator shall comply with; and
- (b) an emergency preparedness plan which shall—
 - (i) set out the actions that the permit holder or dam operator shall take to address safety issues; and
 - (ii) keep a record of identified critical areas that are likely to be affected by floods resulting from flood control failure.

(2) A permit holder in relation to water works or dam operator who contravenes subregulation (1) commits an offence.

19. (1) A permit holder in relation to waterworks or dam operator shall, in an event of serious damage or failure to the dam—

Dam
damage
report or
failure
report

- (a) notify the Authority within forty eight hours of the occurrence of the serious damage or failure to the dam; and

(b) submit a detailed dam damage report or failure report within thirty days of the occurrence of a serious damage or failure to the dam.

(2) A permit holder in relation to water works or dam operator who contravenes subregulation (1) commits an offence.

PART V

DAM WITH SAFETY RISK

Measures to
protect dam
against
potential
risk

20. (1) A permit holder in relation to water works or dam operator shall set up and implement measures to ensure that a dam does not pose significant risk to the public, property or environment.

(2) A permit holder in relation to water works or dam operator shall, at the permit holder or dam operator's own cost, implement the following measures to mitigate dam safety risks:

- (a) perform and keep a record of a vulnerability assessment to identify communities, property, other assets and environment at risk;
- (b) prepare and implement a hazard mitigation plan;
- (c) implement regular scheduled inspections to identify potential risks;
- (d) plan and implement routine repairs; and
- (e) plan and perform necessary rehabilitation works.

(3) Where the dam operator is not the permit holder, clear distinction of roles and responsibilities shall be outlined to include routine measures by the dam operator and rehabilitation by the permit holder.

De-
commissio-
ning

21. (1) The Authority may de-commission a dam with a safety risk on the following grounds:

- (a) where it is no longer economically feasible to repair or maintain the dam;
- (b) where the dam infrastructure poses a significant risk to surrounding communities due to structural deficiencies or integrity or the potential for catastrophic;
- (c) where the dam poses significant environmental threats, losses to biodiversity or degradation to ecosystems; or
- (d) any other ground as the Authority may determine.

(2) The Authority shall, where the Authority makes a decision to de-commission a dam with a safety risk, constitute an ad hoc team of experts consisting of engineers, environmental scientists, safety specialists and regulatory experts on terms and conditions that the Authority may determine.

(3) The team of experts constituted under subregulation (2) shall—

- (a) carry out a thorough safety and risk assessment to identify potential hazards associated with the dam and its surroundings;
- (b) carry out stakeholder engagement;
- (c) determine the most appropriate method for de-commissioning, taking into account the size of the dam, location, and potential environmental impacts;
- (d) develop a detailed de-commissioning plan, including structural modifications, sediment removal, and habitat restoration; and
- (e) obtain the necessary permits and approvals for de-commissioning from relevant authorities.

(4) The team of experts constituted under subregulation (2) shall regulate its own procedure.

(5) The cost of de-commissioning shall be borne by a permit holder in relation to water works or dam operator and in the event that the dam has no owner, the cost shall be borne by the ministry responsible for water development and sanitation.

PART VI

WATER HARVESTING

22. (1) The Ministry responsible for water development and sanitation shall, in consultation with other relevant institutions, develop a water harvesting strategy.

Water
harvesting
strategy

(2) Despite the generality of subsection (1), the Ministry responsible for water development and sanitation may develop a strategy for water harvesting specific to rainwater, groundwater or surface water.

(3) The water harvesting strategy referred to under subregulation (1) shall—

- (a) set out the objectives, plans, guidelines and procedures for water harvesting;
- (b) take into account any relevant national or regional plans relating to water harvesting;
- (c) outline mechanisms and procedures for collaborating with other institutions at national and district level to achieve the objectives of the strategy; and

- (d) put in place measures and incentives to enhance the adoption and implementation of water harvesting by the members of the public, and private and public institutions;

(4) The ministry responsible for water development and sanitation shall, in collaboration with a planning authority, designate officers at national and district levels for the purpose of implementing the water harvesting strategy.

Water
harvesting

23. (1) A person may directly capture and store water on land owned or leased by that person, for use on land where that water is captured and stored.

(2) Despite subregulation (1), the water collected under that subregulation may be—

- (a) stored in an underground storage container; or
(b) conveyed to recharge groundwater without making any storage provision.

Capacity
building on
water
harvesting

24. The ministry responsible for water development and sanitation shall, in collaboration with a planning authority and other relevant institutions, provide technical support and capacity building on water harvesting.

Uses of
harvested
water

25. The use of harvested water shall include the following:

- (a) agriculture and livestock;
(b) gardening;
(c) horticulture;
(d) aquaculture;
(e) domestic;
(f) recreation;
(g) industrial;
(h) groundwater recharge;
(i) environmental purposes; or
(j) drinking, where that water is properly treated.

PART VII

STRATEGIC WATER EMERGENCY INTERVENTIONS

Drought
response
plan

26. The Authority shall, in collaboration with the Disaster Management and Mitigation Unit, develop a drought response plan, for purposes of responding to a national disaster declared by the President or an emergency relating to a drought in a specific area declared by the Minister in accordance with the provisions of the Act.

27. The Authority shall adopt and implement—
- (a) strategic interventions to mitigate the effects of drought in collaboration with the Disaster Management and Mitigation Unit; and
 - (b) measures to improve efficient use of water in order to conserve water within its water resources and storage facilities.
- Water supply and demand management

PART VIII

GENERAL PROVISIONS

28. (1) The Authority shall keep and maintain—
- Registers
- (a) a register of water works as set out in the Fourth Schedule; and
 - (b) a register of dams with safety risks which shall contain the following:
 - (i) the permit holder in relation to water works or dam operator's, name and geographical location of the dam;
 - (ii) capacity of the dam;
 - (iii) purpose of the dam;
 - (iv) date of construction of the dam; and
 - (v) reason the dam is declared as a dam with a safety risk.
29. A person commits an offence if that person—
- Offences relating to water works
- (a) without authority intentionally or negligently tempts or interferes with any works, seal or measuring device attached to water works; or
 - (b) without authority intentionally commits any act or omission which affects or is likely to affect water works.
30. A person who contravenes any provision of these Regulations is liable, on conviction, to a fine not exceeding one hundred thousand penalty units or to imprisonment for a term not exceeding one year, or to both.
- General penalty

FIRST SCHEDULE
(Regulation 3, 5 and 6)

Form I
(Regulation 3)



Water Resources Management Authority

The Water Resources Management Act
(Act No. 21 of 2011)

The Water Resources Management (Water Harvesting and Storage) Regulations, 2024
Available at: www.warma.org.zm

<i>Application to Construct Water</i>			
PART A APPLICANT'S DETAILS			
Type of Application (Select type by marking with "X")		New	Renewal
			Permit No.
Type of Permit (Select type by marking with "X")		Substantive	Temporary
1.	First Name		
2.	Surname		
3.	Gender		
4.	Nationality		
5.	Identity Type (For Zambians: NRC For non-Zambians: NRC Passport Driver's License Resident Permit)		
6.	Identity Number		
7.	Name of Body Corporate Where applicant is a Body Corporate (attach certificate of incorporation and PACRA printout)		
8.	Phone Number (Include the international code (e.g., +260 for Zambia)	Mobile	
		Landline	
9.	Email Address		
10.	Physical Address		
11.	Postal Address		
12.	Location of water Use (Attach proof of ownership; title deed or lease agreement or consent from traditional authorities)	Plot House Village	
		Street	
		Area	
		GPS Coordinates	
		District Town	
	Province		

PART B APPLICATION DETAILS				
13.	Type of Water Use <i>Select type by marking with "X"</i>	Hydro-Power	Dewatering	
		Agriculture	Storage	
		Mining	Dilution	
		Industrial	Others (Specify)...	
		Aquaculture		
		Recreation		
14.	Water Source <i>Select category by marking with "X"</i>	Surface	Groundwater	
15.	Surface water	River/Stream		
		Tributary		
		Lake		
		Dam		
		Other sources (<i>Specify</i>)		
		Quantity	Abstraction (m ³ /day)	
		Storage (m ³)		
16.	Groundwater	Abstraction	Number of boreholes	
			Quantity (m ³ /day)	
		Dewatering	Quantity (m ³ /day)	
			Quantity Reused (m ³ /day)	
			Number of Monitoring Boreholes	
PART C ADDITIONAL INFORMATION <i>(fill in the relevant section)</i>				
17.	Hydropower	Type of Power Plant:		
		Power Plant Capacity		
		Reservoir Capacity		
18.	Agriculture	Types of Crops:		
		Total Hectareage:		
		Type of Livestock		
		Number of Livestock		
19.	Mining/Industrial	Purpose		
20.	Aquaculture	Method		
		Number of Cages/Ponds		
		Total Size of Ponds/Cages		
21.	Recreation/Navigation	Nature of Activity		
22.	Dewatering	Receiving Environment		
23.	Storage (Embarkment/Diversion/ Weir/Coffer dam)	Type of Impoundment		
24.	Dilution	Amount Abstracted (m ³ /day):		
		Amount Discharged (m ³ /day):		
25.	Signature:	Date:		

PART D OFFICIAL USE	
26.	Received by: Signature Name of Officer Application Fee Paid..... Receipt Number..... OFFICAL STAMP
27.	ATTACHMENTS
	(a) Copy of Receipt; (b) Copy of Identity or Certificate of Incorporation and PACRA printout; (c) Copy of proof of land ownership (Title deed/Lease/Traditional Authority Consent Letter); (d) Copy of ZEMA Decision Letter (where applicable); and (e) Copy of Hydraulic Infrastructure design drawings and report (where applicable).

Form II
(Regulation 3)



Water Resources Management Authority

The Water Resources Management Act
(Act No. 21 of 2011)

The Water Resources Management (Water Harvesting and Storage) Regulations, 2024

Water Resources Management Authority

Water Permit For Water Works Construction, Storage and Use

for

WARMA No.: WP.....

Catchment Name:..... Catchment ID:

Sub-Catchment/Water Resource:

Validity:.....to.....

The seal of the Water Resources Management Authority was hereunto affixed this.....day
of.....

In the presence of

(Signature):.....

Authority Secretary

(Signature):.....

Director General

WRM: WP.....

WATER RESOURCES MANAGEMENT AUTHORITY

WATER PERMIT FOR WATER WORKS CONSTRUCTION, STORAGE AND USE

(Issued in accordance with Regulation xx of the Water Resources Management (Water Harvest and Storage) Regulations, 2024)

WHEREAS:

- I. of applied to the Water Resources Management Authority (WARMA) of Zambia, hereinafter referred to as 'the Authority', for a Water Permit to impound m³ and abstract *not exceeding* m³/day, the waters of River, a tributary of River for the purposes of for days at its in the Catchment, in District of the Province of Zambia;
- II. The application was duly investigated by a qualified hydrologist/Water Officer and considered by the Water Resources Management Authority Board on 20.... at a Board Meeting whereat regard was had to the domestic and environmental uses of water, and existing Water Permits lawfully granted on the same water course, pursuant to *Sections 74 and 76* of the Water Resources Management Act, No. 21 of 2011 and the Water Resources Management (Water Harvest and Storage) Regulations 2024;
- III. THIS PERMIT shall be subject to the provisions of the Water Resources Management Act, Number 21 of 2011, hereinafter referred to as 'The Act', and the Water Resources Management (Water Harvest and Storage) Regulations 2024 and to the attached special terms and conditions.

NOW THEREFORE IT IS HEREBY ORDERED that:

- I. hereinafter called the Permit holder, be and is hereby authorized, in terms of the Act, to impound and abstract *not exceeding* m³/day, the waters of River, a tributary of River for the purposes of for days at its in the Catchment, in District of the Province of Zambia;
- II. THIS PERMIT shall operate as authority for the above-mentioned use of public water for a period of years from to or until the expiry of the holder's lease to the land, whichever expires earlier, unless varied, terminated or otherwise surrendered, subject to the Act.

SPECIAL TERMS AND CONDITIONS OF THE WATER PERMIT

*permit terms and conditions to be specified by WARMA

Dated at Lusaka this: Day of 20....

Authority Secretary
Water Resources Management Authority

Director General
Water Resources Management Authority

Form III
(Regulation 5)



Water Resources Management Authority

The Water Resources Management Act
(Act No. 21 of 2011)

The Water Resources Management (Water Harvesting and Storage) Regulations, 2024
Available at: www.warma.org.zm

Completion Certificate

DECLARATION OF DAM CONSTRUCTION COMPLETION

Instruction: Tick applicable

I, _____, hereby certify that I am a professional engineer licensed under the provision of the Engineering Institution of Zambia (EIZ) and qualified in _____ (academic qualifications), undertook supervision and was present during construction to observe construction activities, and reviewed the results of the field testing of materials, and to the best of my knowledge, _____ dam (Dam Name), was/was not constructed in accordance with the Water Resources Management Authority approved plans, drawings, specifications, construction change orders, and construction inspection plan. Based on my assessment, the dam has met/not met the safety requirements and is/is not in satisfactory condition for acceptance and can/cannot be put into service.

(Name)

(Date)

(Signature)

(License number)

Form IV
(Regulation 6)



Water Resources Management Authority

The Water Resources Management Act
(Act No. 21 of 2011)

The Water Resources Management (Water Harvesting and Storage) Regulations, 2024

Available at: www.warma.org.zm

DAM REGISTRATION CERTIFICATE

This is to certify that the dam known as [Dam Name] located in [District] of [Province] has been registered with the Water Resources Management Authority (WARMA) on (date) in accordance with the Water Harvesting and Storage Regulations, 2024

Dam Details

Dam Name:	Location [GPS Coordinates]:
Name of Impounded River/Stream:	Name of Catchment Area:
Type of Dam:	Dam Capacity: [m ³];
Name of Dam Owner's and Address:	Name and Address of operator:
Date of Construction:	

Conditions of Registration

The owner and operator of the dam shall comply with all applicable laws, regulations, and standards related to dam safety, environmental protection, and water resource management. Regular inspections, maintenance, and monitoring of the dam are required to ensure its safety and sustainability.

Water Resources Management Authority Official (signature)

Date

SECOND SCHEDULE

(Regulations 4 and 5)

I. Content and Format of Dam Technical Report

<i>No.</i>	<i>Content</i>
1.	Details of dam owner
2.	Details of location
3.	Details of hydrological assessment
4.	Details of design flood and return period
5.	Details of embankment
6.	Details of reservoir
7.	Details of draw-off and compensation works
8.	Details of spillway(s)
9.	Details of ancillary structures
10.	Details of construction materials
11.	Details of construction schedule
12.	Details of operation and maintenance, including regular inspection and monitoring, operational rules, inspection and maintenance schedule
13.	Pollution control measures
14.	Emergency procedures including procedures to notify and protect downstream inhabitants, infrastructure and environments;
15.	Summary of construction plan containing as-built drawings including explanation of the changes for differences between as constructed and design details and specifications
16.	Assessment of impacts and risks
17.	Description of construction activities including challenges encountered and solutions applied
18.	Captioned and dated construction photographs

2. Contents of Dam Progress Report

The dam progress report shall be signed and contain the following:

<i>No</i>	<i>Content</i>
1.	Summary of construction activities
2.	Summary of test results
3.	Captioned and dated construction photographs
4.	Challenges encountered and solutions provided

3. Information to be contained in the Dam Designs

<i>No</i>	<i>Content</i>
1	Name of the dam (same as shown on the application);
2	Type of dam (material);
3	Risk classification;
4	Maximum height above the downstream toe in meters;
5	Maximum length in meters;
6	Crest width in meters;
7	Slope of the upstream face (horizontal to 1 vertical);
8	Slope of the downstream face (horizontal to 1 vertical);
9	Elevation of the dam crest in meters;
10	Elevation of spillway crest in meters;
11	Length of the conduit in meters;
12	Invert elevation of the upstream end of the conduit in meters;
13	Invert elevation of the downstream end of the conduit in meters;
14	Minimum Net Freeboard in meters;
15	Normal freeboard in meters;
16	Maximum spillway discharge capacity in cubic meters per second;
17	Type of outlet conduit (give size and material);
18	Maximum outlet conduit discharge capacity in cubic meters per second; and

19	Location of the outlet works intake structure (using latitude and longitude in decimal degrees at least to the fifth place after the decimal).
20	Seismic load
21	Reservoir sedimentation rate
22	Total and dead reservoir capacity
23	Normal operation level
24	Maximum water level
25	Categorisation of the dam (A, B, or C) and Hazard Classification

THIRD SCHEDULE

(Regulation 6, 7 and 8)

CATEGORISATION OF DAMS AND OTHER WATERWORKS

Table 1: Categorisation of impoundments based on Capacity

Category	Description	Minimum Net Freeboard (m)
A	Other facility for the impoundment of water refers to impoundment with a height of less than 5 meters and capable of storing the volume of water of less than Five Hundred Thousand cubic meters.	≥ 0.6
B	A small dam is a dam with a height of 8 meters but no more than 15 meters and is capable of impounding water of more than Five Hundred Thousand cubic meters but not exceeding one million cubic meters.	≥ 1
C	A large dam with a dam height of 15 meters and above and capable of impounding water of more than one million cubic meters.	≥ 1

Categorisation of dams based on Hazard

Table 2: Hazard classification of Dams

Hazard Potential Rating	Potential Loss of Life	Potential Economic Loss	Potential Adverse Impact on resource Quality
Low	None	Minimal	Low
Significant	≤ 10	Significant	Significant
High	> 10	Great	Severe

- ✦ **Minimal:** Less than 25 million fee unit;
- ✦ **Significant:** Equal to or larger than 25 million fee units but less than 250 million fee units; and
- ✦ **Great:** Equal to or greater than 250 million fee units.

NOTE: When the potential adverse impact on resource quality due to failure of a dam with a safety risk is assessed, the quality of water stored in the reservoir as well as the estimated volume of sediment and water that can be released from the reservoir must be taken into account. If the water stored in the reservoir contains polluted water or hazardous substances the potential adverse impact on resource quality must be regarded as significant or severe, respectively.

Table 3: Dam Risk Classification

<i>Dam Hazard Classification</i>	<i>Category A</i>	<i>Category B</i>	<i>Category C</i>
Low	Class III	Class III	Class II
Significant	Class II	Class II	Class I
High	Class II	Class I	Class I

Table 4: Minimum Return Period for Spillway Design

<i>Class of Dam</i>	<i>Minimum Return Period for Design of Spillway</i>
III (Low Risk)	1 in 50 years
II (Medium Risk)	1 in 100 years
I (High Risk)	1 in 500 years

FOURTH SCHEDULE*(Regulation 28)***Register of Water Works**

<i>No.</i>	<i>Particulars</i>
1	Dam Name
2	GPS Coordinates (Lat-Long)
3	District
4	Ward
5	Constituency
6	Chieftdom
7	Province
8	Catchment Name
9	River/Stream Name
10	Catchment Area (km ²)
11	Type of Dam
12	Water Permit No.
13	Volume at Maximum Capacity
14	Name of Dam Owner
15	Name of Dam Operator
16	Date of Construction
17	Dam Lifespan (in years)
18	Reservoir Surface Area
19	Maximum Depth
20	Length of Throwback (in m/km)
21	Embankment height (m)
22	Embankment length (m)
23	Minimum Freeboard (m)
24	Purpose
25	State of Infrastructure
26	Safety Risks
27	Any other relevant information

LUSAKA

14th November, 2024

[MWDS.64/9/1]

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