

GUIDELINES FOR PREPARATION OF APPLICATION FOR WASTEWATER
TREATMENT PLANTS

WASTEWATER MANAGEMENT AUTHORITY

DECEMBER 2006



GUIDELINES FOR PREPARATION OF APPLICATION FOR WASTEWATER TREATMENT PLANTS

For any Project which shall generate domestic or industrial wastewater requiring appropriate treatment by means of a wastewater treatment plant, the Promoter shall submit a Design Report to the Wastewater Management Authority for the purpose of obtaining the required approval.

The Design Report shall be prepared and endorsed by either a Registered Professional Civil Engineer, a Process Engineer or a wastewater expert specialized and experienced in the design and construction of wastewater treatment plants. The Design Report shall include the information listed below. However the Wastewater Management Authority reserves the right to request any other additional information necessary for processing of the application and granting of the approval.

1.0 Project Brief

The Project Brief shall contain a true and fair statement and description of the undertaking as proposed to be carried out by the proponent requiring a clearance from the WMA, and shall include:

1.1 Name and Address of Enterprise

The Registered Name of the Enterprise and its postal address.

1.2 Contact Person

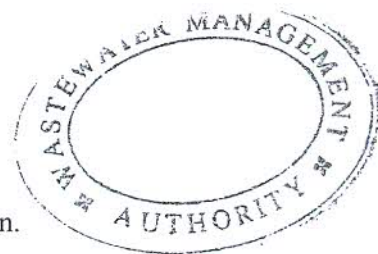
A Contact Person responsible to provide further details on the application.

1.3 Design Consultant

The name, address, telephone no. and qualifications of the Design Consultant who prepared the Design Report.

1.4 Location of site

A comprehensive location and site plan, with known landmarks as reference points and showing any environmentally sensitive area (e.g. surface water bodies, wetlands, and boreholes), should be submitted. The distance of the proposed development from such sensitive area, as well as from nearest residential areas and other existing industries, should also be indicated.



1.5 General description of activity

The activities to be carried out within the development shall be clearly defined as well as the principle, concept and purpose of the undertaking.

1.6 Permanent and Transient Population

The maximum permanent and transient population (employees, staff, guests, members of public) expected on a daily basis shall be submitted. In case of restaurants, hotels and undertakings having kitchens, the total number of dishes to be prepared on a daily basis shall be given.

1.7 Days and hours of production

The days and hours of production should be stated.

1.8 Total extent of land occupied by undertaking

Total area of land to be occupied by the undertaking should be stated.

1.9 Total area occupied by buildings

Total area to be occupied by buildings should be stated.

1.10 Available non-occupied space

The total area that will remain unoccupied after implementation of the project should be stated.

2.0 Raw materials, chemicals and water consumption

2.1 Nature of raw materials

The description and monthly quantities of raw materials expected to be used in the production process should be submitted. If environmentally objectionable materials will be used in the production, these shall be accounted for.

2.2 Description of the different stages of industrial process

The different stages of the production process should be clearly defined and illustrated by means of a flow diagram.

2.3 Finished Products

The names and expected monthly quantity of the finished products should be stated.

2.4 Source of water used

The source of water that will be used should be stated.

2.5 Water Consumption



The expected daily water consumption data should be provided.

The design flows for premises other than residential developments shall be as follows:

INSTITUTION / PREMISES	WATER CONSUMPTION (per day)
Schools	65 litres per pupil and staff
Pensionat, Homes	200 litres per occupant
Cinema, Theatre	10 litres per seat
Hospitals and the like	600 litres per patient and staff
Factories and the like	100 litres per person
Restaurants and the like	30 litres per maximum number of meals served
Hotels	400 litres per room

The Designer may use other design flows derived from existing similar facilities but should substantiate the flows with relevant data.

2.7 List of different chemicals used and monthly consumption

The names and monthly quantities of chemicals to be used in the production process should be submitted. If environmentally objectionable chemicals will be used in the production, these shall be accounted for.

2.8 Expected future short term or medium terms increase in production

In case the Enterprise has plans for short or medium term expansion, this should be clearly described.

3.0 Wastewater production, treatment and disposal

3.1 Domestic Wastewater

The expected volume and proposed mode of disposal of domestic wastewater should be stated.

3.2 Industrial Wastewater

- Anticipated daily industrial wastewater quantities shall be provided. Any diurnal or seasonal variation in the water consumed and industrial wastewater generated shall be indicated in the form of well labelled graphical representations.



- All sources of wastewater, domestic, industrial or wash water, should be clearly identified and quantified

The physical, chemical and biological characteristics of the raw wastewater generated from each source should be clearly defined. Any expected variations in the quality of the raw industrial wastewater should be indicated. The parameters to be included shall be as per the Fourth Schedule of the Wastewater (Standards for the discharge of industrial effluent into a wastewater system) Regulations 2004.

3.3 Treatment Technology and Mode of Disposal

The Designer shall indicate the wastewater treatment technology adopted, the relevant environmental standard to which the effluent shall be treated and the final mode of disposal of the treated effluent.

3.4 Primary treatment

The Designer shall investigate, provide for and/or substantiate:

- (i) an equalization tank is required before the inlet works.
- (ii) screening, sedimentation tank, grease trap and any other form of primary treatment is required.

3.5 Treatment process

(a) Preferred technology

The Designer shall indicate the existing treatment technologies available for achieving the required effluent standard and shall substantiate his choice for the preferred treatment process in terms of land requirements, Capital and Operation & Maintenance costs, and any other considerations. Treatment technologies investigated shall include, activated sludge systems, RBC systems, anaerobic technologies, DAF systems, physico-chemical treatment, pond systems and wetlands.

(b) Process Design

The Designer shall submit an in-depth design report, giving all the details and description of the secondary and tertiary treatment processes, including a process flow diagram and sizing of the individual treatment units. All technical information required to allow a proper assessment of the process design shall be submitted. The Design Report shall contain detailed drawings of plant layout plan, with relevant sections, flow process diagram and hydraulic profile.

A site layout plan showing positions and labelling of all buildings, other structures and relative position of the wastewater treatment plant shall be included.

A sewer network layout, showing position of all wastewater outlets, sewer pipes and manholes up to connection to the treatment plant and longitudinal profiles for all sewer stretches shall be submitted. The longitudinal profile should include cumulative chainage



between manholes, invert level and ground level at each manhole, pipe diameter, pipe material and slope between manholes.

3.6 Sludge production, treatment and disposal

The Designer shall indicate the daily volumes of sludge produced, its quality and full details of the proposed treatment and disposal of the sludge. Specifications and details of sludge dewatering equipment, sludge processing plant, area layout and details of sludge drying beds, handling, transportation and final destination of the sludge should be submitted.

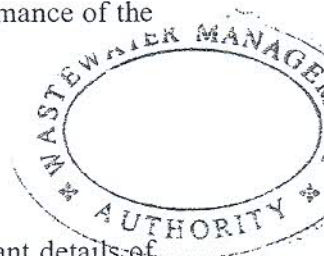
4.0 Contingency Plan

The Designer shall submit contingency plan for the breakdown or low performance of the treatment plant and sludge treatment facilities.

5.0 Final mode of disposal of treated effluent

5.1 Discharge to sewer network

The Designer should liaise with the WMA at inception stage to obtain relevant details of the recommended connection point or point of discharge to the sewer network. All information, required by the WMA for this purpose shall be submitted by the Designer.



5.2 Discharge to water bodies

Approval for discharge of treated effluent into water bodies shall be sought by the Proponent from all relevant Authorities

5.3 Use of treated effluent for irrigation

The Designer shall obtain the views and subsequent approval of the Ministry of Environment & NDU, Irrigation Authority, Water Resources Unit and the Ministry of Health and Quality of Life. The nature of the crops to be irrigated shall be indicated. The area to be irrigated shall be specified and shall be clearly indicated on a well detailed plan

5.4 Discharge into land (sub-surface systems)

In case of discharge of treated effluent into leaching fields and absorption pits, the following geotechnical information shall be submitted by the Designer:

- Maximum height of water table on site as ascertained by trial pits to a minimum depth of 3 m and the views of the Water Resources Unit.
- Visual description of soil stratum up to depth of 3m
- Results of percolations tests carried out at a depth of 3m in a reasonable number of trial pits so as to give a fair assessment of the general permeability of the site.

The geotechnical information should be certified by either Design Consultant or by a Soil Specialist.

The design and construction of leaching fields and absorption pits shall be as per the Design Guidance of the Ministry of Housing July 2004–“ *Technical Sheet – On-Plot Sewage Disposal*”



6.0 Other considerations

6.1 Siting and buffer zones

As far as possible, wastewater treatment plants shall be located downwind of all residential premises. The relevant wind directions prevailing throughout the year shall therefore be provided. Treatment plants shall not be located less than 50 metres from residential premises. If these conditions cannot be met, or if the WMA has reason to believe it fit, proper odour scrubbing or covering of units shall be proposed by the Design Consultant.

In case of pond systems and wetlands, the distance from any residential premises shall not be less than 100 metres. A thick green belt shall be provided between the treatment system and the residential premises.

6.2 Safety aspects and services

6.2.1 All wastewater treatment plants shall be properly fenced and provided with lighting and water supply.

6.2.2 Adequate land shall be provided for the treatment facilities including additional land area for future plant expansion.

6.2.3 The treatment facilities shall be made accessible to vehicular traffic. Paved roadways, including on-site vehicular parking and paved walkways between treatment units and buildings must be provided.

6.2.4 All treatment units shall be provided with service access-steps/ladders, cat-walks and hand rails. All works shall be painted. The compound shall be properly landscape. Adequate surface drainage must be provided. All works shall be adequately fenced and protected against unauthorised interference.

6.2.5 Generators and control panels shall be sited in a properly locked concrete building

6.2.6 Adequate accommodation by means of a room equipped with storage cupboards, lavatory facilities and running water shall be provided.

6.2.7 Wastewater treatment plants shall be provided with relevant facilities for proper operation. Such facilities shall be described.

7.0 Operation and Maintenance

The Design Consultant shall indicate what measures and arrangements shall be made for the proper operation and maintenance of the plant base on the treatment technology and manufacturers specifications. He shall substantiate either in-house operation and maintenance is feasible or same should be contracted out. An Operation and Maintenance programme including daily, weekly and monthly routine maintenance and check-list shall be submitted.

7.0 Submission of Design Report

The Design Report shall be submitted in two originals according to the attached format at
APPENDIX 1

Drawings and labelling should be clearly visible and comprehensive. Drawing shall be submitted as follows:

Location plan: Minimum format of plan: A3

Site plan: Minimum format of plan: A1

Site plans shall indicate lot layout, principle drains or roads, walkways and reserves, and layout of the different wastewater treatment units. The site plan shall indicate the finished general topography by means of contour lines or adequate spot levels.

Process flow diagram: Minimum format: A3

Detailed Design Drawings: Minimum format of drawing: A3

The detailed design drawings of the wastewater treatment plant shall include plans and sections of all processes units, air supply piping, sludge/wastewater piping, electrical and mechanical details. The different piping shall be labelled such as to allow proper differentiation between them.

Layout plan: Minimum format: A1

The layout plan shall indicated layout of plant on site showing location of pumping facilities/lift stations, sludge drying beds, control room, chlorine contact chamber, fence, road reserves, drains, distance of plant from nearest residential plot, point of discharge of final effluent and other pertinent details.

Manufacturers Specifications

Detailed manufacturers specifications for all equipment such as mechanical screens, pumps, aerating equipment, filters, chlorinators, generators and other equipment.

Wastewater reticulation system

Sewer layout plan: Minimum format: A1

The sewer layout plan shall indicate the following:

All buildings and facilities where wastewater is being discharged, labeled discharge points, sewer reticulation system within the facilities and up to the treatment plant, including proper manhole referencing, distance and slope between manholes, pipe material and diameter, flow direction. Position and referencing of any pump stations/lift station and rising mains within the reticulation network. All kitchen outlets shall be provided with a properly sized grease trap whose details shall be submitted.

Sewer longitudinal Profiles: Minimum format: A3

The sewer longitudinal profiles shall be submitted for all sewer stretches and shall include:

- Manhole referencing (using same labeling as on the sewer layout plan)
- Cumulative chainage between manholes
- Ground level and invert level at each manhole, manhole depth
- Ground profile and critical ground levels between manholes
- Pipe slope, diameter and pipe material between manholes



APPENDIX 1

FORMAT FOR PREPARATION OF DESIGN REPORT FOR WASTEWATER
TREATMENT PLANT



1.0 Project Brief

1.1 Registered name of company:

Address:

Telephone:

E-Mail:

Fax:

1.2 Name of contact person responsible for the application:

Address:

Telephone:

E-Mail:

Fax:

1.3 Name and Qualifications of Design Consultant

Telephone:

E-Mail:

Fax:

1.4 Location of site (Map of the area to be appended):

1.5 General description of activity:



1.6 Permanent and Transient Population on a daily basis:

Permanent:

Transient:

1.7 Days and hours of production:

1.8 Total extent of land occupied by undertaking: m^2 .

1.9 Total area occupied by buildings: m^2 .

1.10 Available non occupied space: m^2 .



2.0 Raw materials, chemicals and water consumption

2.1 Nature of raw materials used (cotton, steel, polyester...) :

Name of product	Use	Quantity/ day (To indicate units)

2.2 Description of different stages of industrial process:

2.3 Finished products:

Name of product	Average production/day (units)	Maximum production/day (units)

2.4 Source of water used:

CWA main :
Borehole :
River :
(Tick as appropriate)

Any other source:



2.5 Water consumption:

Expected average monthly water consumption:
Expected average water consumption:
Expected Maximum peak consumption per hour:

m^3
 m^3
 m^3

2.6 List of different chemical products used (salts, acids, bases, dyes, metals, detergents, oxidizing agents...) and monthly consumption.

Nature of product	Monthly consumption

In case of dyeing activity, the liquor ratio:

2.7 To describe any expected future short term or medium term increase in production:

3.0 Wastewater production, treatment and disposal

3.1 Domestic wastewater (WC) / kitchen

- ☐ In canals/ rivers
- ☐ In absorption pit
- ☐ Watertight tank
- ☐ Septic tank and Absorption pit
- ☐ Septic tank and Leaching field
- ☐ Connected to public sewer
- ☐ Any other treatment (to precise)
(Tick as appropriate)



3.2 Industrial wastewater

Estimated volume discharged per day.....m.³

Whether treated with domestic wastewater? ☐ Yes ☐ No

Will the effluent be carted away to any pumping station or treatment plant Yes ☐ No ☐

If yes, please indicate where:

Sources of wastewater from production process (To indicate on flow diagram)

Description of physico-chemical characteristics of the wastewater to be discharged.

3.3 Treatment technology and Mode of Disposal:

3.4 Primary treatment:

Will equalization tank be provided Yes No

If yes, indicate volume of tank:.....m³

Will screening be done?

If yes, indicate the size of screen (space between bars): Yes ☐ No ☐

Will neutralisation be done (adjustment of pH by addition of acid or base):

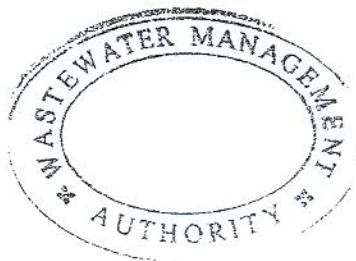
Yes ☐ No ☐

Will sedimentation be done?: Yes ☐ No ☐

If yes, indicate volume of tank:.....m³

Will physico-chemical treatment be done? : Yes ☐ No ☐

(If yes, describe the treatment process):



Will biological treatment be done?: Yes ☐ No ☐

(if yes, describe the treatment system (aeration tank, sedimentation))

Is there any storage tank for effluent?

Yes ☐

No ☐

(if yes, description of system):

.....

.....

3.5 Treatment Process

(a) Existing treatment technologies to achieve required treatment:

Treatment Technology adopted and reasons why:

(b) Process calculations for the Proposed Treatment System.

(To be appended)

Please send any plan or layout of the proposed treatment system

3.6 Sludge production, treatment and disposal;

Sources and points of discharge of sludge:

Daily quantity of sludge produced:

kg

Characteristics of sludge produced:

Specifications and details of sludge dewatering equipment (to be appended)

Details of sludge treatment and processing:

Area, layout and details of sludge drying beds:

Handling and transportation arrangements:

Final destination of sludge:



4.0 Contingency Plan

5.0 Final Mode of Disposal of treated effluent:

- To sewer network
- To water bodies
- Use for irrigation
- Discharge into land

Provide information as required

6.0 Declaration by Applicant

I,(Name of applicant's representative)

on behalf of(Name of Applicant)

hereby applies for clearance/authorisation for discharge of wastewater as per the particulars given in the application form and certify that all information provided are true and reliable to the best of my knowledge.

Date:.....

Signature:.....

7.0 Relying on your kind cooperation, please fill in this form and submit to :

The General Manager
Wastewater Management Authority
The Celicourt
Celicourt Anthelme Street
PORT LOUIS

