No.1

Environmental Guideline on Poultry Rearing up to 15,000 birds (Revised)

Department of Environment

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The purpose of this environmental guideline is to provide guidance to prospective developers to start their poultry rearing activity on the basis of self-adherence and to assist Local Authorities at the Building and Land Use Permit Stage.

1.0 Background

Poultry rearing involves either the rearing of broilers for meat or rearing of layers for egg production. Besides chicken, poultry farming may also involve, amongst others, rearing of ducks (canard), goose (les oies), turkey (dinde), quails (quailles) and guinea fowl (pintade). Rearing of broilers is normally carried out in deep litter system whereas the production of eggs is carried out using the battery system. This activity is associated with several environmental impacts and sanitary nuisances which need to be mitigated through good husbandry practices and a proper farm management to avoid any inconveniences to the surrounding environment.

Major issues of environmental concern relate to:

- Zoning and site selection
- Solid waste and poultry litter
- Odour and sanitary nuisances
- Biosecurity risks
- Wastewater
- Visual Impacts
- Energy and water consumption

2.0 Objectives of the guideline

This guideline is meant to ensure that prospective developers:

- adopt appropriate mitigating measures to safeguard the environment.
- comply with provisions of relevant laws/ regulations/standards.
- adopt eco-friendly practices and optimize use of resources.

3.0 Applicable Legislation

Under Clause 16 of the Covid-19 Act (2020), the rearing of poultry below 15000 birds does not warrant a Preliminary Environmental Report (PER) Approval or an Environment Impact Assessment (EIA) Licence. It requires, amongst others, a Building and Land Use Permit under the Local Government Act 2011. Poultry rearing has to be carried out in accordance with the provisions under the Planning Policy Guidance and Outline Planning Scheme.

Note:

The development must comply with relevant provisions of the Local Government Act 2011, the Town and Country Planning Act 1954, the Building Control Act 2012, the Planning and Development Act 2004, as subsequently amended and all applicable guidelines and regulations.

4.0 Location/ Siting

(i) The site should be at a minimum distance of 200m from the limits of settlement boundary, any nearest residential building outside settlement boundary and other sensitive land uses (including residential, education and health facilities); any domestic borehole and slaughter house.

(ii) The site shall be located on agricultural land and outside irrigation zones.

(iii) Poultry farms should not be located within any Environmentally Sensitive Area (ESA) such as wetland, steep slope and their prescribed buffer zones and in areas that are likely to be affected by hazards such as inland flooding, landslide and storm surges, amongst others.

(iv) Poultry houses, components of the poultry rearing activity (such as burial pits, amongst others) and on-site wastewater disposal facility such as septic tanks and absorption pits/leaching fields, should not be located at less than 30m from any watercourse, rivers and canals as per Rivers and Canals Act 1863.

(v) Existing natural drains and watercourses on or in the vicinity of the site shall not be tampered with.

(vi) The site should not be located within a priority quarry area for Mineral Resources and its 200m buffer zone from its quarry boundary. Rearing of poultry outside the 200m buffer zone and up to 1 km from a priority quarry boundary as well as within a potential mineral resource site and its 1km buffer shall be on a temporary basis, subject to necessary permits and licences being obtained from the relevant authorities.

(vii) The exact location of the project site and its land extent should be indicated on a legible coloured Context Map.

(viii) A comprehensive legible Site Location Plan should be provided. The plan should be duly certified by a Sworn Land Surveyor with appropriate landmarks as reference points, indicating the distances of the site boundary to the limits of settlement boundary, the nearest existing residential building, the site boundaries of nearby poultry farms or other farms, any environmentally sensitive area (ESA), mineral resource area, designated site of interest, water body, natural drain, canal, wetland, borehole, other critical habitat and existing development in the surrounding environment within a radius of 500m. The prevailing wind direction should be indicated on the plan.

Note:

- *The location of priority and potential quarry sites has been indicated in the Outline Planning Schemes and these are available at the Local Authorities.*

- *For land classified as Agricultural Land, as defined in the Sugar Industry Efficiency (S.I.E) Act, a Land Conversion Permit/Land Conversion from the Ministry of AgroIndustry and Food Security, is required.*

5.0 Mitigation of Environmental Impacts

5.1 Solid waste management

The types and quantity of wastes from the litter and battery system differ. The litter system requires the utilization of bedding materials such as sawdust or wood shavings. The droppings of the birds along with spilled feeds get mixed up with the litter.

On the other hand, the battery system produces wastes in the form of droppings.

The other common wastes generated in a farm include waste feed, packaging waste, used ventilation filters, unused/spoilt vaccines and domestic wastes.

5.1.1 Poultry litter/ droppings

Improper management and disposal of poultry litter/droppings contribute to odour and sanitary nuisances. Run-offs from washing may contaminate surface and groundwater resources. Ammonia and other odour causing agents may impact on air and human health.

Mitigating measures include:

For poultry litter (broiler farm)

- Poultry litter to be kept as dry as possible and scraped instead of being flushed with water.
- The litter to be removed at the end of each life cycle at intervals of about 2 to 2½ months and carted away for bio-security reasons.
- Poultry litter should be used as per good practices spelt out by the Food and Agricultural Research and Extension Institute (FAREI) and to the satisfaction of the Ministry of AgroIndustry and Food Security, prior to use by farmers.

For poultry droppings (layer farm)

- Droppings should be kept as dry as possible and scraped prior to wash with water.
- Droppings should be removed 2-3 times per week and carted away for bio-security reasons.
- Poultry droppings should be used as per good practices spelt out by the Food and Agricultural Research and Extension Institute (FAREI) and to the satisfaction of the Ministry of Agro-Industry and Food Security, prior to use by farmers.

5.1.2 Disposal of dead birds

Improper disposal of dead birds contributes to odour and sanitary nuisances attracting flies, rodents, pests and disease vectors. They may contaminate surface and ground water resources. Thus they need to be properly disposed of to minimize impacts on environment and human health.

Some mitigating measures are:

- The flock density shall conform to the recommendations of the Ministry of Agro Industry and Food Security.
- Any unusual deaths and/or disease outbreaks has to be **immediately** reported to the Ministry of Agro-Industry and Food Security (Veterinary Services).
- Flock care, disease prevention and mortality reduction should be ensured through proper vaccination and provision of footbath disinfectant at poultry pens entrances, amongst others.
- All dead birds should be disposed of by deep burial (**in a bird pit**) within the farm premises and disinfected with slaked lime or incinerated as per the recommendations of the Sanitary Authority and the Ministry of Agro-Industry and Food Security (Veterinary Services). In case groundwater table is reached during digging, burial pit is not recommended for disposal of dead birds.

5.1.3 Feed wastes

Feed may be spilled during storage, loading and unloading or poultry feeding. As such, these wastes require proper handling and disposal to avoid any adverse impacts on the surrounding environment.

Mitigating measures include:

- Minimal spillage during loading, unloading, storage and feeding.
- Proper storage and handling of feed. The latter should be kept in a dry and properly aerated store that is free from rodents, flies and other pests to prevent spoilage.
- Proper management and stocktaking to avoid expiry of feed.

5.1.4 Other solid wastes

Other wastes normally include domestic wastes and packaging wastes. These wastes also require proper handling and disposal as they may give rise to sanitary nuisances such as odour, flies, rodents and other pests.

Mitigating measures include:

- Domestic solid wastes should be regularly collected in bins or waste handling receptacles and disposed of to the satisfaction of the Local Authority.
- Plastic bottles/containers used for vaccination should be disinfected and disposed of to the satisfaction of the Local Authority.
- No waste of any type should be disposed in any watercourse including rivers, drains and canals.

5.2 Odour and sanitary nuisances

5.2.1 Odour Management

Excessively wet litter is the most likely source of offensive odour. Excessive odour from decaying litter and manure usually signals a breakdown in management practices. Prompt action should be taken to remedy the situation. The litter should be "friable and moist". Management practices should prevent caking, wetness and stickiness of the litter.

Litter/manure moisture content can be managed by:

- preventing water from rain, irrigation sprinklers and surface water from entering poultry sheds and storage facilities;
- preventing overstocking in sheds (not exceeding recommended bird stocking densities);
- regular turning of litter in sheds;
- covering litter with fresh wood shavings;
- removing wet patches of litter/manure;
- ensuring drinker nipples do not leak;
- adjusting drinkers regularly to suit the height of the birds;

Other methods for attenuating odour include:

- keeping dust levels low, as odour are absorbed and carried by dust particles;

- ventilation that achieves the maximum possible dilution of odour strength during shed cleanout.

In layer farms

- Frequent collection (2-3 times per week) of droppings and reduction of the water content of same through incorporation of sawdust/ wood shavings.
- A conveyor belt removal system could be used to avoid the accumulation of droppings from caged layers.

Other measures for both broiler and layer farms

- The farm premises should be kept clean and tidy at all times with good housekeeping.
- Planting scented ornamental plants around poultry farms to reduce dust and odour nuisances.
- Precautionary measures should be taken during transportation of poultry litter and droppings to avoid odour nuisances.
- Provision of a well-designed ventilation system and extractors to attenuate odour nuisances.
- Regular disinfection of farm.
- Removal of dead birds promptly.

5.2.2 Sanitary nuisance (flies, rodents and pests) management

Flies, rodents and pests are attracted by waste feed and bird droppings/litter, all of which require proper handling and management to minimize nuisances on the surrounding environment.

Mitigating measures include:

- The farm should be kept clean and tidy at all times with good housekeeping and husbandry practices, proper handling and storage of feed, poultry litter and other materials.
- Poultry litter should be used as per good practices spelt out by the Food and Agricultural Research and Extension Institute (FAREI) and to the satisfaction of the Ministry of AgroIndustry and Food Security, prior to use by farmers.
- The farm should be rendered rodent and fly proof through provision of wire nettings, traps, fly-repellents, insecticides as approved by the Ministry of Health and Wellness. Use of ecofriendly alternatives such as citronella plants is also highly encouraged.
- The droppings/litter during the rearing activities should be kept dry at all times to discourage breeding of flies.

5.3 Wastewater management

Wastewater arising from washing and cleaning of poultry pens contain residual amount of droppings and waste feed. They therefore require proper handling and management to minimize any associated adverse impact.

Mitigating measures include:

- Wastewater from washing should normally be disposed of, in an appropriate drainage network, prior to disposal in absorption pits to the satisfaction of the Wastewater Management Authority.
- A flow of $1m^3$/1000 birds should be used when sizing absorption pit for wash water, in line with Technical Advisory Committee on Policy Paper for Poultry Rearing.
- The litter should be scraped prior to flushing the pens with water.

- No wastewater shall be discharged either on the surface of the ground or into any watercourse, river, natural drain and canal.

5.4 Visual impacts

Poultry farms can adversely affect surrounding land use and tend to be visually intrusive impacting on the landscape.

Mitigating measures include:

- The design of the poultry pens should be approved by the Food and Agricultural Research and Extension Institute prior to BLUP application.
- The farm should be properly fenced and should be embellished by scented ornamental plants to enhance its aesthetic value.

5.5 Storm water management

- Necessary measures should be taken for storm water management including, amongst others:
  - the provision of cut-off drains to contain any surface run-off within the site premises; and
  - the provision of soak way or absorption pits to prevent flooding of the site.

5.6 Other mitigating measures

- Necessary precautions should be taken to avoid disturbance to the neighbourhood by way of odour, dust, noise or traffic during construction and operation phase.
- Provision should be made for adequate parking, loading and unloading facilities.
- Safe storage of materials on site and stored materials should not be unduly visible or intrusive in the street scene.
- Necessary measures including the implementation of a proper drainage scheme should be taken for the evacuation of surface run-off so as not to cause flooding/water-logging of the site and adjoining areas to the satisfaction of the Local Authority.

5.7 Eco-friendly measures and sustainability

Prospective farmers are advised to adopt best environment friendly practices such as rain water harvesting for cleaning and washing of premises, eco-friendly packaging of eggs, solar PV for lighting and use of ecofriendly detergents and biodegradable products.

Furthermore, it is advised that the poultry litter be treated in accordance with the specifications set out in the standards formulated in the MS 196: 2018 to treat manure from farm animals. Techniques to be used could include sanitisation such as drying methods and solarisation.

5.8 Animal Health, Production and Welfare

5.8.1 General conditions for ensuring biosecurity:

- The proponent shall adhere to animal health guidelines issued by the Division of Veterinary Services.
- The farm should be surrounded by a security fence to prevent the entry of unwanted animals and people. A sign indicating restricted entry should be posted at the entrance to the farm.
- Presence of foot dips at gate.

- No animal movement between farms without approval of Ministry of Agro-Industry and Food Security.
- All farms to have a pest control programme in place (rodent and fly control) as well as measures to prevent contact with wild birds.
- Farms should be free from unwanted vegetation and debris that could attract or harbour pest.
- Dead birds should be removed from poultry houses as quickly as possible but at least daily. These should be disposed of in a safe and effective manner.
- When a poultry house is depopulated, it is recommended that all faeces and litter be removed from the house and disposed of in a safe manner to minimise the risk of dissemination of infectious agents. (OIE Terrestrial Animal Health Code 2019)

5.8.2 General conditions for ensuring optimum production

- The design of the farm (including layout and infrastructure) should be as per the guidelines of the FARE-I.
- Poultry farms should be designed and constructed (preferably of smooth impervious materials) so that cleaning and disinfection can be carried out effectively. Ideally, the area immediately surrounding the farm should be paved with concrete or other impervious material to facilitate cleaning and disinfection.
- Farms should be designed to house a single species and a single production type. The design should also consider the 'all-in all-out' single age group principle. If this is not feasible, the establishment should be designed so that each flock can be managed as a separate unit.
- Stocking density for broiler chicken reared under commercial conditions

Type of system	Stock density (in kg live	Specific Conditions
Naturally ventilated farms	**weight per m^2)** ≤ 28 kg live weight per m^2	
Tunnel or other extractive systems capable of 1 air exchange per minute as minimum requirement	≤ 40 kg live weight per m^2	The farm should put in place such sensors and systems to automatically detect and record the level of ammonia, carbon dioxide, temperature and humidity. Such records should be made available to the Ministry for the purpose of monitoring and should be conserved for at least three months after the batch of broiler is slaughtered.
Mechanicallyventilated systems (such as with stirring fans)	≤ 36 kg live weight per m^2	The farm should put in place such sensors and systems to automatically detect and record the level of temperature and humidity. Such records should be made available to the Ministry for the purpose of monitoring and should be conserved for at least three months after the batch of broiler is slaughtered.

Note: Please also refer to addendum to this section at Annex 1.

5.8.3 Notification at commencement of activities

The farmers should inform the Animal Production Division of the Ministry of Agro-Industry and Food Security by way of letter of:

(i) farmer name (with copy of ID card)
(ii) farm location (complete address)
(iii)the date at which the farm proposes to start its operations (iv) the proposed number of birds that shall be on site.

5.8.4 Training with the Food and Agricultural Research and Extension Institute (FAREI)

The farmer shall be in the presence of a training certificate on poultry production and rearing from the FAREI in order to ensure that the he is able to grasp the importance of good animal husbandry practices.

Note:

- **All issues pertaining to bio-security risks shall be to the satisfaction of the Veterinary Services of the Ministry of Agro-Industry and Food Security.**
- Any unusual deaths and/or disease outbreaks has to be **immediately** reported to the Ministry of Agro-Industry and Food Security (Veterinary Services).
- **No slaughtering or processing activities should be undertaken on site.**

Copies of this guideline are available at the Department of Environment and on the website of the Ministry at http://environment.govmu.org; at the government's portal at http://www.govmu.org, including the websites of Local Authorities.

ANNEX1:
Addendum to Section 5.8.2 (stocking density)

The following environmental conditions should be maintained within a poultry shed in order to guarantee bird health, welfare and optimum production:

i. Ammonia level: 15 ppm at bird level
ii. Carbon dioxide: 3000 ppm (0.3%)
iii. Shed relative humidity: 80%

The farmer should state the age he intends to send his birds to slaughter (in days). Alternatively, if the birds are transferred to another facility for finishing, the age at which such transfer will be effected should be indicated.

The farmer to state the breed to be used and submit performance objectives as per the guidelines of the supplier from day 1 to the stated age at slaughter.

The Maximum Allowable Stock Density is obtained by the following conversion:

$$\text{Stock Density} = \frac{G}{P}$$

Where
G is the maximum authorised live weight per square meter for the system being used (naturally ventilated, mechanically-ventilated or tunnel ventilation) (in grams)

P is the body weight performance objective of the chicks at the latest age the chicken will be kept on site (in grams)

Stock Density is in number of birds per m^2

Illustration for calculation of stock density

For conversion of kilogram live weight to number of birds, the performance objectives of the breed being reared will be used. For example, for Ross 308, the conversion would be as follows:

Day	**Body weight (g) (Performance objective given by supplier)**	**Stock density**		
		≤ 28 kg live weight per m^2	≤ 36 kg live weight per m^2	≤40 kg live weight per m^2
30	1680	16 birds per m^2	21 birds per m^2	24 birds per m^2
35	2144	13 birds per m^2	17 birds per m^2	19 birds per m^2
40	2620	11 birds per m^2	14 birds per m^2	15 birds per m^2