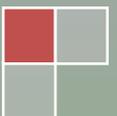


Environmental Guideline on Food Processing by Small and Medium Enterprises



Department of Environment

The purpose of this environmental guideline is to provide guidance to prospective developers to start their food processing operations on the basis of self-adherence and to assist Local Authorities at the Building and Land Use Permit stage.



1.0 Background

Food processing refers to the conversion of various produce (harvested crops, fruits, vegetables, milk, meat, and fish) to marketable products. They may entail minimal transformation (fresh/sliced/boiled/chilled/frozen) to major modification (fried/grilled/fillet/bottled/dried/juiced/pickled/salted) with different forms of packaging.

This activity is associated with several environmental impacts which need to be mitigated to avoid nuisances and inconveniences to the neighbouring environment. Major issues of environmental concern relate to:

- Site selection
- Solid waste
- Wastewater
- Noise
- Poor housekeeping – rodents, flies, odour and sanitary nuisances
- Vehicular movement
- Used cooking oil, as applicable
- Emissions
- 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 to optimize use of resources.

3.0 Applicable Legislation

Food processing by Small and Medium Enterprises (SMEs) does not warrant a Preliminary Environmental Report (PER) Approval or an Environmental Impact Assessment (EIA) Licence. It requires, amongst others, a Building and Land Use Permit under the Local Government Act 2011. Food processing activities have to be carried out in accordance with the provisions under the Planning Policy Guidance and Outline Planning Scheme.

Note:

- 1) *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, the Food Act 1998, as subsequently amended and all applicable guidelines and regulations.*
- 2) *According to Part A of the Fifth Schedule of the Environment Protection Act (EPA), “Food processing industry, excluding small and medium enterprises” (SMEs) warrants a Preliminary Environmental Report (PER) Approval.*

4.0 Location and Siting

- Food processing enterprises should preferably be located in a dedicated SME park or industrial areas.
- The existing development context of the site/land should be compatible with the activity.
- Food processing enterprises should not fall within any Environmentally Sensitive Area (ESA) and its prescribed buffer zone as per ESA Study 2009 such as wetland, steep slope and in areas that are likely to be affected by hazards such as inland flooding, landslide and storm surges, amongst others.
- On site wastewater disposal facility such as septic tanks and absorption pits/leaching fields shall be located not less than 30 m from any water course as per Rivers and Canals Act 1863.
- Existing natural drains and watercourses on or in the vicinity of the site shall not be tampered with.

Note:

The onus to allow small-scale food processing not entailing significant adverse environmental impacts to the surrounding environment rests upon the Local Authority.

5.0 Mitigation of Environmental Impacts

5.1 Solid waste management

Food processing activities may generate significant volumes of solid wastes. These are packaging wastes (plastic bottles, carton boxes), organic wastes and process by-products (rinds, peels, skin and bones) amongst others. These wastes require proper handling and disposal as they may give rise to sanitary nuisances such as odours and proliferation of flies, rodents and other pests.

Mitigating measures include:

- Domestic solid wastes should be collected in bins or waste handling receptacles and disposed of to the satisfaction of the Local Authority.
- Offals should be stored in leak proof and airtight containers under chilled conditions until removal for disposal.
- Green wastes should be collected and stored separately from other solid wastes for eventual composting.
- Promotion of waste reduction (minimization of product loss), re-use (pet food from by-products) and recycling (carton boxes, plastic bottles).
- No waste of any type should be disposed of in any watercourse including drains, canals or in the surrounding environment.

5.2 Wastewater management

Wastewaters from washing and processing of fruits, vegetables and meat usually contain suspended solids. In livestock, poultry and sea food processing, wastewaters contain fats, oils, and greases which need to be disposed properly to avoid any form of sanitary nuisances.

Mitigating measures include:

- Installation of grease traps or oil water separators for removal of floatable solids, as applicable.
Note:- Maintenance of the grease trap or oil water separator is to be carried out by the owner / promoter.
- Provision of appropriate on-site wastewater disposal facility such as septic tanks and associated absorption pits/leaching fields as applicable or disposal into the public sewer system to the satisfaction of the Wastewater Management Authority.

5.3 Noise abatement

Food processing may be associated with noise from electrical appliances, pumps, air extractors and electric motors. As such, necessary precautions shall be taken to ensure noise emitted from the enterprise is within permissible limits as per the Environmental Standards for Noise Regulations under the EPA which stipulates:

Industrial Noise		Neighborhood Noise	
Time	Noise exposure limits	Time	Noise exposure limits
07.00-21.00 hrs.	60 dB (A) L_{eq}	07.00-18.00 hrs.	60 dB (A) L_{eq}
21.00-07.00 hrs.	55 dB (A) L_{eq}	18.00-21.00 hrs.	55 dB (A) L_{eq}
		21.00-07.00 hrs.	50 dB (A) L_{eq}
A tonal character adjustment of +5 dB (A) should be applied to the measured value where the noise has a definite continuous note such as a whine or hiss.			

Mitigating measures include:

- Provision of appropriate noise attenuating materials/structures to abate noise generated from equipment such as electric motors, compressors and pumps.
- Within residential settings, the hours of operations shall be determined by the respective Local Authority depending on scale and nature of the activity.

5.4 Poor housekeeping – rodents, flies, odour and sanitary nuisances

Poor housekeeping of food processing enterprises can result in rodents, flies, odour and sanitary nuisances. Odour may be released from cooking and steaming processes as well as from decomposition of organic materials and solid wastes. As such, necessary precautionary measures shall be taken to avoid any such nuisances.

Mitigating measures include:

- The premises should be kept clean and tidy at all times with good housekeeping and proper ventilation.
- Provision of extractors and hoods to reduce odours from frying and other cooking operations.
- Odour controlling equipment such as scrubber, activated carbon filter to be incorporated in the hood system.
- Installation of bait stations/ traps to control pests and rodents.
- The building and facilities of the enterprise shall satisfy the sanitary requirements as per the provisions of the Food Act 1998.

5.5 Vehicular movement

Loading and unloading of materials (raw materials and finished products) may cause traffic congestion or excessive noise potentially leading to complaints. Therefore, necessary precautionary measures shall be taken to avoid such nuisances.

Mitigating measures include:

- Provision should be made for adequate parking, loading and unloading facilities.
- Loading and unloading of raw materials/ goods should be carried out during off-peak hours.

5.6 Used cooking oil, as applicable

Used cooking oil is generated during cooking processes and need to be stored and disposed of properly. Therefore, necessary measures should be taken to avoid negative environmental impacts in the neighbouring environment.

Mitigating measures include:

- Used oil shall be collected and disposed of as per the provisions of the **Environment Protection (Collection, storage, treatment, use and disposal of waste oil) Regulations 2006**.
- Used oil should not be disposed of through unauthorised dumping and discharge, burial, open air burning or placing in garbage bins.
- Used cooking oil should be properly stored in sealed containers/tins before eventual recycling by registered recyclers.

5.7 Stack emissions

Certain medium scale enterprises in SME parks or industrial zones may have boilers which use fuel such as diesel. Burning of same releases atmospheric pollutants such as particulate matter, carbon dioxide, nitrogen oxide and sulphur dioxide which are associated with various environmental and health impacts. As such, gaseous emissions from boiler stacks shall be as per prescribed standards under the **Environment Protection (Standards for Air) Regulations 1998**.

Mitigation measures include:

- Use of cleaner fuels or technologies with maximum use of renewable energy resource.
- Use of air filters and stack height to be consistent with good engineering practices.

5.8 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.
- Safe storage of materials on site and stored materials not unduly visible or intrusive in the street scene.

5.9 Eco-friendly Measures and Sustainability

SMEs involved in the food processing activity are advised to adopt best environment friendly practices such as energy efficient appliances (fridges, chillers, ovens, Air Conditioners), energy-saving devices (LED lamps), ozone and climate friendly products, waste segregation for recycling and composting, rain water harvesting and use of eco-friendly biodegradable/compostable carry bags at retail point (paper/vacoas/aloes/jute bags, cartons, certified biodegradable or compostable plastics bags).

Note:

- 1) Relevant organisations need to be consulted with regard to food hygiene, traffic implications amongst others prior to embarking on the project to ensure compliance with their respective laws/regulations/standards.
- 2) Non-compliance with standards for air and noise and the banning of plastic bags regulations is an offence under the Environment Protection Act.

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