The Magnum Ice Cream Company Pakistan Ltd.

(Moulded Stick Line Expansion Project)

46-Km Multan Road, Near Phool NagarDistrict Kasur

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ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

Sustainable Environmental Solutions

Office S-9, 2nd Floor, Fazal Apartments, 5-Faiz Road
Muslim Town, Lahore
Phone: +92 42 35862622
E-mail: sesolutions.env@gmail.com

EXECUTIVE SUMMARY

1. INTRODUCTION

1.1 Title and Location of Project

M/s The Magnum Ice Cream Company Pakistan Limited (Head office; Avari Plaza, Fatima Jinnah Rd., Saddar, Karachi) are in the process to initiate an extension project (production capacity enhancement of Moulded Stick Line facility/plant) at its existing ice cream factory **located at 46-Km, Multan Road, Near Phool Nagar, District Kasur**.

1.2 Name of the Proponent

The proponent of the proposed extension project (production capacity enhancement in Moulded Stick Line Facility) is Mr. Usman Tahir who is Factory Manager.

1.3 Name of the Organization Preparing the Report

M/s Sustainable Environmental Solutions (SES) has performed this EIA Study. The name, qualifications & other details of persons / team members performing or carrying out the said environmental study has been discussed in the next section. However, contact details of company & representatives are as under:

Consultant Company / Firm Details:

Contact: Sustainable Environmental Solutions (SES)
Address: Office S-9, 2nd Floor, Fazal Apartments, 5-Faiz Road, Muslim Town, Lahore - Pakistan
Phone: +92 42 35862622
E-mail: sesolutions.env@gmail.com

Representatives Details:

Waheed Ahmad (Environmental Consultant)
Contact: +92 321 4111718

2. SCREENING

The standardized approach i.e. defined in applicable regulations was applied. The proposed project was assessed based upon a set of criteria determined by Environmental Protection Agency (EPA) i.e. Review of IEE & EIA Regulations, 2000 provided by Government of Pakistan, Ministry of Environment were considered for the purpose of screening mainly.

"As per Punjab Environmental Protection (Review of Initial Environmental Examination & Environmental Impact Assessment) Regulations, 2022 the nature of the proposed extension project is food stuffs manufacturing and processing project and the proposed expansion project falls in Schedule II; category-B Manufacturing & Processing (4. Food Processing Industries including beverages,

milk and dairy products with total cost more than Rs. 200 Million) of above-mentioned regulations made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environmental Impact Assessment (EIA) study is mandatory for getting Environmental Approval. The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project."

3. SCOPING

Scoping is the process of identifying the key environmental issues and is perhaps the most important step in an EIA. It occurred early in the project cycle at the same time as outline planning and pre-feasibility studies. Several groups, particularly decision makers, the local population and the scientific community contributed in helping deliberate the issues, which should be considered, and scoping is designed to canvass their views. At this stage the option exists for cancelling or drastically revising the project; equally it may be the end of the EIA process if the impacts be found to be insignificant. Once this stage has passed, the opportunity for major changes to the project is restricted.

Before the scoping exercise can be fully started, the remit of the study was defined and agreed by the relevant parties depending on the institutional structure. At a minimum, those who contributed to determining the remit included those who decide whether a policy or project is implemented, those carrying out the EIA (Sustainable Environmental Solutions) and those carrying out parallel engineering studies relating to the proposal.

4. CONSIDERATION OF ALTERNATIVES

This section covers the project alternatives considered including site alternatives, design / technology alternatives, environmental alternatives & economic alternatives for establishment of the proposed project sustainable. An analysis of the available alternatives is necessary to establish that the most suitable management and technology options are adopted for the project, while minimizing environmental impacts. This evaluation explains the selection of the most feasible alternative in terms of economics, environment and health & safety.

5. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This EIA Study has been carried out in the light of the policy guidelines of the Government of Punjab/Pakistan, under the procedures and practices formulated by the Provincial/Federal Environmental Protection Agency (EPA). The applicable laws for the environmental study of the proposed project are briefly given below:

- National Conservation Strategy, 1992
- PEPO,1983 & PEPA,1997
- Punjab Environmental Protection Act-1997 (Amended 2012)
- National Environmental Policy, 2005
- (Draft) Punjab Environmental Policy, 2015
- Review of IEE and EIA Regulations, 2000
- Guidelines for Preparation and Review of Environmental Reports, 1997

- National Environmental Quality Standards
- Punjab Environmental Quality Standards
- Guidelines for Critical and Sensitive Area
- Policy and procedures for the Filling, Review and Approval of Environmental Assessments, 1997
- Guidelines for Public Consultation, 1997
- Factories Act, 1934
- Punjab Wildlife Protection Act, 1974
- Forest Act, 1927
- Explosive Act, 1884
- Pakistan Penal Code, 1860

6. DESCRIPTION OF THE PROJECT

The proposed project is basically an extension project including production capacity enhancement in Moulded stick line facility/Plant & allied utilities at Unilever Wall's Ice Cream Factory, located at 46-KM, Multan Road, District Kasur.

6.1 Brief outline of the Proposal

The subject proposed extension project includes production capacity enhancement in Ice Cream Plant (Moulded Stick Line Expansion) through allied machinery / equipment, Installation of ice cream manufacturing equipment, rotary moulding machine, packing equipment/plant & freezers. The installed / production capacity of the proposed extension project will be 24,000 liters / day whereas the production capacity of the overall existing Ice Cream Plant is 250,000 liters / day. Therefore, after completion of said extension project the total production capacity of the Ice Cream Plant / facility will be 274,000 liters / day. The capital cost of the extension project will be approximately 919 Million PKR (2.4 Million Euro).

The existing unit is spread over an impressive area of 1,479,292 SFT whereas no new area will be constructed for the proposed extension project however only internal relocations in the current production hall will be undertaken as per requirements. The covered area of the existing factory is 231,625 SFT and the covered area will be the remain same because no new construction in terms of covered area will be involved for the proposed extension project.

7. DESCRIPTION OF ENVIRONMENT

The environmental studies have been carried out in and around the project area to get baseline environmental data and to know physical, ecological and socio-economic conditions. The information has also been obtained through site visits, interaction/consultation with people living/working in and around the project area. The people have been interviewed and interaction has been made with other stakeholders. Information has also been obtained from laboratory analysis, Govt. Departments and review of previous studies. During this study physical (topography, geology/seismology, stratigraphy, land use, climate, surface and ground water resources, air quality, noise level, traffic volume), ecological (flora and fauna) and socio-economic components (demographic studies, infrastructure

of the area, social amenities, health, education, economic condition, employment in the area, women status, cultural, archeological sites and religious status) have been studied.

8. IMPACT ASSESSMENT

The primary function of an environmental impact assessment study is to predict and quantify the magnitude of potential impacts, assess and evaluate the magnitude. The impact assessment forms the basis for development of Environmental Management Plan. Environmental impacts could be positive or negative, direct or indirect, local or regional and also reversible or irreversible.
All the potential environmental impacts had been identified during literature review, visits of project site and nature / manufacturing process of the proposed extension project. Various types of environmental issues likely to crop up during life cycle of project are grouped in different phases; project location related impacts, project design related impacts, construction phase impacts and operational phase impacts.

9. SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The impacts during all of three stage design, construction and operation of the proposed extension project such as impacts on physical environments including changes in land use/appearance, seismic hazard, soils/geology, impacts on topography, impacts on air quality, noise pollution, impacts on ground water, water consumption, wastewater generation, solid wastes, emergency conditions; ecological environment including impacts on flora & fauna and socio-economic environment including health and safety of workers, etc. have been considered and estimated/assessed in the light of public comments, public interviews and in meetings with stakeholders.

The impacts of proposed project activities during all the phases (design, construction and operation) have been considered and their remedies have been suggested. These impacts may be on soil, topography, climate, water consumption, the health and safety of workers, surface and ground water, air quality, flora and fauna, existing utilities and impacts due to noise, wastewater, solid waste generation.

Mitigation measures will be adopted while construction & operational phases of the proposed project such as treatment of sewage, development of solid waste management plan, implement environmental monitoring plan (ambient air / stack emissions monitoring, ground water quality, sewage/wastewater quality check & noise level monitoring) during construction & operational phases, overhauling / maintenance schedule & inspection plan, EMMP implementation, fire fighting arrangements, to ensure the health & safety of workers, emergency procedures / emergency preparedness plan, etc.

9.1 The Major Impacts

The major Impacts arising from the proposed extension project are as under in the following table:

IMPACTS	DETAILS / RISKS
Impacts on Air Quality	During regular operation of the proposed extension project, no process air emissions will be generated. However, some negligible stack emissions will be generated from operation of standby power generators and boilers.
Noise	During the operational stage, the noise will be produced from operation of plant machinery, standby power generators and boilers. Noise levels will be increased at some negligible level but it will be mitigated if not, may have moderate negative impact.
Water Consumption	Approximately 2.5 m^3/day of water will be consumed during operational phase of the proposed extension project for production of Moulded sticks.
Wastewater Generation	Approximately only 2 m^3/day of wastewater will be generated from the proposed extension project such as process, washings, toilets / washrooms, etc. which needs to be proper treatment to comply with PEQS before proper disposal.
Solid Waste Generation	During operational phase of the proposed extension project, non-hazardous nature wastes / recyclable nature wastes will be produced including packaging materials, paper & board, plastic bags, wood, engineering waste, production waste etc.
Emergency Response	The operation of the proposed extension project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.
Impacts on Flora	Operation of the proposed extension project will not exert significant negative impact overall on flora of the site and also flora of local / surrounding area because no any type of process air emissions will be generated.
Impacts on Fauna	Extension project will not impose any negative impact on fauna (wild birds). Because industrial activity is already going on in the existing unit, however safety measures will be undertaken to safeguard the ecological environment.
Health & Safety of Workers	The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If they do not properly trained and provided with Personal Protective Equipments (PPEs) this will be major negative impact if not mitigated properly.

9.2 Recommendations for Mitigation Measures:

Following mitigation measures are recommended for the protection & safety of environment:

IMPACTS	MITIGATION MEASURES
Impacts on Air	In order to minimize air pollution, following mitigation measures are

Quality	recommended: ▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of PEQS. ▪ Latest sate of the art technology standby power generators and boilers have been placed at concrete foundation equipped with sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will also be developed. ▪ Standby power generators and boilers will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke. ▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,
Noise	▪ Proper foundation of the plant machinery has been designed to cope with the problem of tremor / vibration that will consequently abate the noise problem. ▪ Noise level monitoring and improvement plan has been developed and implemented with letter & spirit. The same plan will be implemented on extension project during its operational phase. ▪ The standby power generators and boilers will be over hauled and well-tuned according to the schedule to avoid excessive noise. ▪ Proper set back will be provided from the boundary wall which will also help to minimize / eliminate the noise pollution. ▪ Extensive tree plantation along the boundary wall and at open places will also be done to act as sound barrier / sound absorber.
Water Consumption	▪ At open places the grassy lawns have been developed to recharge the water table which is help to control the surface runoff during rainy season. More landscaping will also be done at available open place after completions of extension project ▪ The overall nature of the area is agricultural it is also help to recharge the water table. ▪ The workers have been given training to avoid wastage of water and workers of extension project will also be trained. ▪ Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken. ▪ This is positive step ahead for conservation of water ultimately for the betterment of environment.
Wastewater Generation	▪ An activated Sludge Treatment Plant with capacity of 44 m^3/hour (1056 m^3/day) has already been installed for the treatment of existing unit's wastewater, it is properly working and treating the wastewater within the permissible limits of PEQS. ▪ Above mentioned treatment plant has enough capacity to treat the wastewaters to be produced from the proposed extension project. ▪ The treated wastewater of existing unit is being utilized for watering of landscaping, cooling tower(s) and washing of solar panels. Hence, the same policy / plan will be sustained for the extension project. ▪ The surplus treated wastewater will be drained out into wastewater channel, if needed/required. This is positive step ahead for conservation of water ultimately for the betterment of environment.
Solid Waste Generation	▪ All the non-hazardous nature wastes / recyclable nature wastes will be handed over / sold to interested EPA Approved contractor

	for proper disposal / recycling of wastes in an environment friendly manner. ▪ A track record of solid wastes will be maintained.
Emergency Response	▪ ??A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations have already been developed and implemented and the same will be implemented on extension project while its operational phase. ERP is appended with this study for ready reference. ▪ Following mitigation / safety measures or firefighting arrangements have already been undertaken: • Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit. The detail of firefighting arrangements are as under: • Central fire hydrant system backed by adequate pressure, connected to water reservoir specified for emergency/fire • Fire Extinguishers (DCP, AFFF, CO_2). • Fire Blankets • Water Trolleys • Smoke Detectors • Heat Detectors • Break Glasses • Eye Showers • Spill Kits • Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. • Emergency signs • Emergency exits • Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. ▪ All firefighting, emergency and safety equipment shall be frequently checked and properly maintained.
Impacts on Flora	▪ Beautiful landscaping including grown trees, ornamental / flowering plants, mango orchard & grassy lawns has been developed at available open places in the existing unit and will be tried to develop more landscaping if possible and open place available after completion of construction. ▪ To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within NEQS limits.
Impacts on Fauna	▪ Best and latest technology will be selected which have low operational noise and emissions. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.
Health & Safety of Workers	▪ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances. ▪ The workers will be given information, instruction, training and

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	supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes shall be available for all workers who may be exposed to any hazardous substance, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken to avoid from any bad smell/odor. ▪ There will be proper arrangement to handle accidental / disastrous situation. ▪ The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at suitable / prominent places. ▪ Adequate supply of water shall be made available t the workers for personal washing as well as for washing their protective equipments. ▪ Protective clothing and equipment of the workers shall be washed and cleaned as often as required to ensure their efficiency. ▪ No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work. ▪ First aid medical facility equipped with required antidotes shall be available in the premises, supervised by trained staff. ▪ Medical checkup of all workers shall be carried out at the time of employment and at least once a year thereafter.

10. ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

A complete Environmental Monitoring and Environment Management Plan are recommended to regulate the requirements of Pakistan?? Environmental Protection Act (PEPA) 1997.

A summary of mitigation measures suggested in this EIA Study will be implemented through Environmental Monitoring and Management Plan which will ensure the identification of adverse environmental impacts and help to minimize / eliminate the adverse environmental impacts. The implementation of Environment Management Plan covers the possible impacts at design related, construction and operational phases. For effective implementation of Environment Management plan an Environmental Management Committee (EMC) headed by an environmentalist already exists for operational and during construction phase the contractor will be responsible for environment protection measures and apply good construction techniques to prevent negative environmental impacts.

The proponent / contractor will hire trained staff to ensure the enforcement of Environmental Management Plan. The equipments will be kept in proper condition to save the environment from damage.

During construction phase air quality, ground water quality & noise level will be monitored on monthly basis whereas, in operational phase air quality, ground water quality, wastewater quality & noise level will be monitored on quarterly basis.

The wastewater produced from the said project will be treated through ETP. The treated wastewater will be used for gardening/watering of ornamental plans, grassy lawns etc., as per current practice.

Horticulture Team will be formed to attend the issues relating to cleanliness, up-keeping, aesthetic beauty of the project site, general environmental enhancement, tree plantation, vegetation promotion, planting of flowers and ornamental plants on site.

10.1 Proposed Monitoring

To check the environmental performance of the project through its lifecycle and compliance of PEQS/NEQS environmental monitoring is essential part and tool which should be conducted to ensure effective surveillance of the environmental parameters at various stages of the project as development/construction and operational. The following environmental monitoring would be implemented:

a. Ambient Air Quality / Stacks Emissions Monitoring

While construction and operational phases of the proposed extension project ambient air quality will be monitored as per PEQS and report should be submitted to EPA.

b. Stacks Emissions Monitoring

While construction and operational phases of the proposed extension project ambient air quality will be monitored as per PEQS and report should be submitted to EPA.

c. Noise Level Monitoring

Noise levels will be monitored at different points and keep the noise levels will be within PEQS limits and report should be submitted to EPA.

d. Groundwater Quality

Groundwater quality will also be monitored and check the compliance the parameters of PEQS and report should be submitted to EPA.

e. Wastewater Quality

Wastewater quality parameters will also be monitored as per PEQS limits and report should be submitted to EPA.

11. STAKEHOLDERS CONSULTATION

Consultations and discussions with stakeholders have been carried out on formal and special issues. Consultation is the tool of communication between project holder and public living / working around the project area. Its goal is to improve decision-making and build understanding with individuals, groups and organizations. Such involvement increases long-term viability of the project and helps to resolve constrains if any at the initial stage. During the social impact assessment study, stakeholders were consulted in groups and individuals were interviewed. Group discussions were held to obtain feedback from the stakeholders. The proximity of the project area is a self-developed industrial setup; however, the area around the factory is commercial/industrial in nature. Discussions were held with Government and private offices and shops as well as EPA Punjab, Lahore.

12. CONCLUSION & RECOMMENDATIONS

The mitigation measures recommended in the EIA Report are sufficient to commence, complete and operate the extension project in environment-friendly manner. The proposed extension project is suitable from environmental point of view. Recommendations have also been suggested for the safe operation of unit and for the protection of environment.

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Section 1: INTRODUCTION

1.1 General

This section of the report provides an overview of the project including purpose of the extension project & report, approaches and methodology, extent of EIA study, objective of the project, scope of study, consultant details, structure of the report etc. In addition, it depicts need for Environmental Impact Assessment (EIA) Report for the proposed extension project.

1.2 Magnum Ice Cream Introduction

The Ice Cream Division of Unilever Pakistan Limited is divested into a stand-alone entity, namely The Magnum Ice Cream Company Pakistan Limited. The Scheme of Arrangement for the transfer and vesting of Unilever Pakistan's Ice Cream Business in the Magnum Ice Cream Company Pakistan Limited has been approved by the Hon'ble High Court of Sindh.

1.3 Unilever Pakistan

Unilever is one of the largest FMCG companies of the world, represented in 150 countries with over 168,000 employees. In Pakistan, the first Unilever Company was incorporated in 1948, and today it is one of the most prominent multinationals in the country. The public listed limited company owns 03 wholly and 04 third party manufacturing sites across Pakistan with around 800 people on its payroll and employs many thousands indirectly.

Committed to meeting the growing aspirations of consumers, Unilever Pakistan has consistently provided high quality, branded products and enjoys leadership position in Home and Personal Care, Beverages and Ice Cream. Unilever's flagship brands Lux, Lifebuoy, Brook Bond, Surf, Lipton, Sunsilk, Dove, Ponds and Walls, to name a few remain household names.

Unilever Pakistan has a widest reach of any FMCG. Its distribution network reaches remote regions within the country. With a wide range of offerings, including low unit priced packs, Unilever Pakistan addresses all segments of the socio-economic pyramid.

Unilever is proud to be a part of Pakistan's history, contributing to the economic growth of the nation and catering to the daily needs of 170 million people. It contributes significantly to the national exchequer through tax revenue and is committed to developing downstream capability through technology transfer to 3P manufacturers, suppliers and distributors. Widely recognized as leaders in developing talent, it is regularly referred as the most preferred employer in the country. Globally Unilever is increasingly drawing talent from its operatives in Pakistan, opening new vistas for career development.

1.4 Future Plans

Now, the demand for ice cream (especially moulded sticks) in Pakistan is increasing day by day because of population increase and tradition or trends. Therefore, M/s The Magnum Ice Cream Company Pakistan Ltd. has decided to enhance the capacity of its moulded stick making facility at its existing Ice Cream Factory.

1.5 Proposed Extension Project

M/s The Magnum Ice Cream Company Pakistan Ltd. in the process to enhance the production capacity of Moulded Stick Line facility/Plant & allied utilities at existing Ice Cream Factory, located at 46-KM, Multan Road, Near Phool Nagar, District Kasur.

1.6 Purpose of Report

The main objectives of this Environmental Impact Assessment (EIA) Report are to identify the baseline environmental profile including physical environment, ecological environment & socio-economic conditions, to examine project alternatives including alternate sites, and to study the potential impacts along with formulation of suitable mitigation measures for an environment friendly implementation of the proposed extension project site and around the project area.

The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing the Environmental Approval.

1.7 Identification of Project and Proponent

a. Identification of the Project

The proposed project is an extension project (production capacity enhancement in Moulded Stick Line Facility). New freezers, rotary moulding machines and stick packing/wrapping machines will be installed to enhance the production capacity of Moulded Stick Line Facility/ Plant)

“As per Punjab Environmental Protection (Review of Initial Environmental Examination & Environmental Impact Assessment) Regulations, 2022 the proposed project falls in Schedule II; category-B, Manufacturing & Processing in (4. Food Processing Industries including beverages, milk and dairy products with total cost more than Rs. 200 Million)”.

b. Proponent

The proponent of the proposed extension project (production capacity enhancement in Moulded Stick Line Facility/ Plant) is Mr. Usman Tahir who is Factory Manager.

1.8 Need for Environmental Impact Assessment (EIA) Report

It is mandatory provision to carry out Environmental Reports (IEE / EIA) to obtain Environmental Approval from provincial agency for different projects before commencement of construction or operation.

- **Section 12 of PEPA-1997 (as amended 2012):**

Initial Environmental Examination and Environmental Impact Assessment –
(1) According to the Section 12 of Punjab Environmental Protection Act, 1997 (As Amended 2012) *"(1) No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof*".
(2) The [Provincial Agency] shall:-
(a) review the Initial Environmental Examination and accord its approval, or require submission of an Environmental Impact Assessment by the proponent; or
(b) review the Environmental Impact Assessment and accord its approval subject to such conditions as it may deem fit to impose, require that the Environmental Impact Assessment be re-submitted after such modifications as may be stipulated, or reject as being contrary to environmental objectives.

- **Punjab Environmental Protection (Review of IEE & EIA) Regulations, 2022**

As per Punjab Environmental Protection (Review of Initial Environmental Examination & Environmental Impact Assessment) Regulations, 2022 the proposed extension project falls in "schedule II; category B-Manufacturing and Processing; 4. Food Processing Industries including beverages, milk and dairy products with total cost more than Rs. 200 Million" for which EIA of the project is a mandatory requirement.

- **Environmental Approval / NOC Under Section 12**

So, in the light of above mentioned laws and regulations Environmental Approval under section 12 of Punjab Environmental Protection Act, 1997 (as amended 2012) for the construction of the said extension project is mandatory. To obtain the above mentioned Environmental Approval/NOC this EIA Study has been carried out.

This Environmental Impact Assessment (EIA) Study will cover the Section 12 of PEPA, 1997 (amended 2012) for obtaining the Environmental Approval for construction or operation of the extension project.

1.9 Approaches and Methodology

The existing information to establish a database for the EIA of the proposed extension project was collected from different government departments; review of previous studies and through site visits of the proposed extension project.

The SIA of the proposed extension project site was conducted through consultation with the community. The locals / stakeholders were interviewed to get their comments and views regarding the development of the proposed extension project. The proximity of the proposed site is commercial cum industrial (though the area is of agricultural nature in the broad spectrum); the persons working in different industries and locals have been interviewed.

1.10 Extent of EIA Study

Following factors during design, construction and operational phases have been considered to assess the Environmental Impacts of the proposed extension project:

- Environmental Impacts due to land use, location, wastes generation including solid waste, wastewater & air emissions, utility services consumption, noise, oil/fat generation etc.
- Environmental Impacts on physical resources i.e. soil, topography, geology, climate, air quality, etc. ecological resources i.e. flora & fauna and socio-economic environment like health and safety of workers.

1.11 Magnitude of Efforts

Visits to the project site and surrounding area have been done. All the potential/possible stakeholders such as EPA (local officials), Govt. of Punjab and private community have been contacted to get the relevant data, for preparation of EIA Study. Primary & Secondary Data has been analyzed and previous studies have been reviewed.

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1.12 Details of Consultants

M/s Sustainable Environmental Solutions (SES) has performed this EIA Study. The name, qualifications & contact details of persons / team members performing or carrying out the said environmental study is attached as annexure. The contact detail of representatives is as follows:

Consultant Company / Firm Details:

Contact: Sustainable Environmental Solutions (SES)
Address: Office S-9, 2nd Floor, Fazal Apartments, 5-Faiz Road, Muslim Town, Lahore - Pakistan
Phone: +92 42 35862622
E-mail: sesolutions.env@gmail.com

Team Members:

The details about team members including qualification & experience is as under:

Waheed Ahmad Team Leader / Coordinator Contact #: 0321-4111718	**A. Qualification** • M. Phil Environmental Sciences (PU) • M.Sc. Applied Environmental Sciences (PU)

- Post Graduate Diploma in Environmental Laws (PU)
- NEBOSH IGC *"Occupational Safety & Health"*
- IOSH *"Managing Safely"*
- One Year Diploma in Environmental Management (MIIM)
- HABC Level 2 in Fire Safety (QCF)
- International Workplace Health & Safety (British Safety Council)
- Occupational Health & Safety Management Training (OHSAS 18001)
- Environmental Audit Training; ISO 14001 – Lead Auditor Course

B. Experience

17 years of experience as Environmentalist for carrying out EIA Studies, IEE Studies, EMPs, Environmental Compliance Status Reports for various projects.

Yahya Aslam Bambal
Team Member / Environmental Consultant

A. Qualification

- M. Phil Environmental Sciences (PU)
- M.Sc. Applied Environmental Sciences (PU)
- Post Graduate Diploma in Environmental Laws (PU)
- NEBOSH IGC *"Occupational Safety & Health"*
- IOSH *"Managing Safely"*
- HABC Level 2 in Fire Safety (QCF)
- International Workplace Health & Safety (British Safety Council)
- Occupational Health & Safety Management Training (OHSAS 18001)
- Environmental Audit Training; ISO 14001 – Lead Auditor Course
- Training in *"Skills in Administration"* (Pakistan Institute of Management)
- *"Value Based Management"* (Pakistan Institute of Human Development)

B. Experience

16 years of experience as Environmentalist for carrying out EIA Studies, IEE Studies, EMPs, Environmental Compliance Status Reports for various projects.

Zia-Ud-Din Kasuri
Advocate Supreme Court
(Member Legal)

- M.A
- LLM/ M. Phil
- LLB (Shariah & Law)
- Post Graduate Diploma in Environmental Laws (PU)

1.13 Brief Description of Nature, Size and Location of Project

a. Nature & Size

The subject proposed extension project includes production capacity enhancement in Ice Cream Plant (Moulded Stick Line Expansion) through allied

machinery / equipment, Installation of ice cream manufacturing equipment, rotary moulding machine, packing equipment/plant & freezers. The installed / production capacity of the proposed extension project will be 24,000 liters / day whereas the production capacity of the overall existing Ice Cream Plant is 250,000 liters / day. Therefore, after completion of said extension project the total production capacity of the Ice Cream Plant / facility will be 274,000 liters / day. The capital cost of the extension project will be approximately 919 Million PKR (2.4 Million Euro).

The existing unit is spread over an impressive area of 1,479,292 SFT whereas no new area will be constructed for the proposed extension project however only internal relocations in the current production hall will be undertaken as per requirements. The covered area of the existing factory is 231,625 SFT and the covered area will be the remain same because no new construction in terms of covered area will be involved for the proposed extension project.

b. Location of the Project

The proposed extension projects site is located within the premises of existing unit of M/s The Magnum Ice Cream Company Pakistan Ltd. located at 46-KM, Multan Road, Near Phool Nagar District Kasur.

1.14 Roles and Responsibilities

The executing firm/company of the proposed extension project will be the M/s The Magnum Ice Cream Company Pakistan Ltd.. Role and responsibilities have been proposed in the EIA report.

1.15 Implementation of Mitigation Measures

Proposed mitigation measures as defined in the EMP will be implemented with responsibilities assigned to various departments and agencies.

1.16 Role of Environmental Protection Agency, Punjab

The main responsibility of Environmental Protection Agency, Punjab will be to monitor the mitigation measures, which will be taken up or implemented by M/s The Magnum Ice Cream Company Pakistan Ltd.

1.17 Structure of the Report

Section 1 **"Introduction"** Briefly presents the project introduction, purpose of report, identification of project & proponent, details of consultant and brief description of nature, size & location of project.

Section 2 **"Screening"** this section covers the need of environmental study EIA or IEE and describes in which category the project falls as per Review of IEE & EIA Regulations, 2000.

Section 3 **"Scoping"** briefly presents the scoping of impacts and mitigation measures, spatial and temporal boundaries of environmental assessment,

important issues and concerns raised during consultation and significant impacts and factors to be determined.

Section 4 **"Consideration of Alternatives"** covers the different alternatives their selection and rejection criteria which includes Site alternatives, Design / Technology alternatives and environmental alternatives

Section 5 **"Policy, Legal and Administrative Frameworks"** Comprises the policy, guidelines, statutory obligations and roles of institutions concerning EIA study of the proposed project.

Section 6 **"Description of the Project"** Presents relevant information about objectives of project, location and site layout of the project, land use on the site, road access, vegetation features of the site, cost and magnitude of operation, schedule of implementation, description of the project and restoration & rehabilitation plans

Section 7 **"Description of Environment"** presents clear cut picture of existing environmental resources including baseline physical environment, baseline ecological environment & baseline socioeconomic environment. Moreover, this section also covers lab reports of environmental analyses and suitability of the site.

Section 8 **"Impact Assessment"** briefly presents the primary function of an environmental impact assessment study and includes methodologies for impact identification and characteristics of impacts (nature, magnitude, extent & location, timing, duration, reversibility, risk).

Section 9 **"Screening of Potential Environmental Impacts and Mitigation Measures"** Deals with the potential environmental impacts and mitigation measures, which have been proposed to mitigate the environmental impacts of the proposed project including project location, design, construction phase, operational phase and potential environmental enhancement measures.

Section 10 **"Environmental Management & Monitoring Program"** Outlines description of proposed mitigation actions, schedule for implementation and environmental budget, environmental management team, proposed monitoring program to assess performance or output of EMP, proposed EMP reporting & reviewing procedure and any training needs required to ensure implementation of EMP and Monitoring Plans.

Section 11 **"Stakeholders Consultation"** consists of consultation with stakeholders, objectives of consultation, methodology of consultation, categories of stakeholders consulted, findings of overall discussion, etc.

Section 12 "**Conclusions & Recommendations"** This chapter will conclude the whole report.

Section 2: SCREENING

2.1 General

The subject proposed extension project is a production capacity enhancement in existing Moulded Stick Line Plant / Facility of M/s The Magnum Ice Cream Company Pakistan Ltd. located at 46-Km Multan Road, Near Phool Nagar, District Kasur. The capital cost of the proposed extension project will be approximately 919 million PKR (2.4 million Euro). The production capacity of the proposed extension project will be 24,000 liters per day.

Screening was performed at the first stage of the EIA process which resulted in a key EIA decision, namely to either conduct the assessment (based on the likely significant impacts) or not conduct it (in the anticipated absence of such impacts). Screening was done as early as possible in the development of the proposal in order for the proponent and other stakeholders to be aware of possible EIA obligations.

The standardized approach i.e. defined in applicable regulations was applied. The proposed project was assessed based upon a set of criteria determined by Environmental Protection Agency (EPA) i.e. Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000 provided by Government of Pakistan, Ministry of Environment were considered for the purpose of screening mainly.

2.2 Screening of Proposed Project

“As per Punjab Environmental Protection (Review of Initial Environmental Examination & Environmental Impact Assessment) Regulations, 2022 the nature of the proposed extension project is food stuffs manufacturing and processing project and the proposed expansion project falls in Schedule II; category-B Manufacturing & Processing (4. Food Processing Industries including beverages, milk and dairy products with total cost more than Rs. 200 Million) of above-mentioned regulations made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environmental Impact Assessment (EIA) study is mandatory for getting Environmental Approval. The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project.”

Moreover, following factors were also considered at the earlier stage;

- Magnitude of change in environmental conditions
- Diversity of new features with the existing environment
- Potential for trans-boundary or over large area impact
- Number of people effected
- Likelihood of effecting receptors of other types (fauna and flora, businesses, facilities) be affected

- Probability of affecting valuable or scarce features or resources be
- Risk of breached environmental standards
- Risk of affected protected sites, areas, features
- High/low probability of the effect occurring
- Long/short duration of effect
- Either effect is permanent or temporary
- Is the impact continuous rather than intermittent
- If it is intermittent will it be frequent rather than rare
- Reversibility of impacts
- The likelihoods to avoid, or reduce or repair or compensate for the effect

After detailed analysis based on these factors; the proposed extension project was found suitable for Environmental Impact Assessment (EIA) Study rather than Initial Environmental Examination (IEE) Study.

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Section 3: SCOPING

Scoping is the process of identifying the key environmental issues and is perhaps the most important step in an EIA. It occurred early in the project cycle at the same time as outline planning and pre-feasibility studies. Several groups, particularly decision makers, the local population and the scientific community contributed in helping deliberate the issues, which should be considered, and scoping is designed to canvass their views. At this stage the option exists for cancelling or drastically revising the project; equally it may be the end of the EIA process if the impacts be found to be insignificant. Once this stage has passed, the opportunity for major changes to the project is restricted.

Scoping for this particular proposal was carried out with two main objectives

i. To pinpoint the problems early allowing mitigating design changes to be made before expensive detailed work is carried out.
ii. To ensure that detailed prediction work is carried out for important issues. So that after identifying the key issues, a full-scale EIA is considered and it incorporates terms of reference for further studies.

3.1 Methodology

Before the scoping exercise can be fully started, the remit of the study was defined and agreed by the relevant parties depending on the institutional structure. At a minimum, those who contributed to determining the remit included those who decide whether a policy or project is implemented, those carrying out the EIA (Sustainable Environmental Solutions) and those carrying out parallel engineering studies relating to the proposal. Following is the step-wise methodology adopted for the scoping of subject proposal.

- The key interest groups, both governmental and non-governmental, were identified – they include EPA, surrounding community and workers & management of adjacent industries

- Since, the people who can be affected by the project need to hear about it as soon as possible; so, scoping session was held inviting the representatives from identified groups and briefing them about the proposal while establishing good lines of communication. Their concerns are discussed in the coming sections.

- The main EIA techniques used in scoping were baseline studies, checklists and matrices. These techniques collected and presented knowledge and information in a straightforward way so that logical decisions can be made about which impacts are most significant.

- The concerns of the stakeholders were listened and noted down. If possible, negative ones were resolved at the spot whereas others area incorporated in the EIA study and decisions are made accordingly.

3.2 Spatial and Temporal Boundaries of Environmental Assessment?

Temporal and spatial boundaries for the effects assessment are defined by the characteristics of the project and the Valued Environmental and Cultural Components (VECC) being assessed. These boundaries encompass time period and areas during and within which the VECCs are likely to interact with or be influenced by the project.

Spatial boundaries vary according to the nature of the VECC but generally are defined in terms of:

- A local study area (LSA), where project effects can be predicted with a reasonable degree of accuracy and confidence and impacts are likely to be most concentrated – most of the subject project impacts are local e.g. air emissions, increased noise levels, wastewater and solid waste management, etc.
- A regional study area (RSA) where, depending on conditions (e.g., seasonal conditions, habitat use, more intermittent and dispersed project activities) – subject proposal does not impose any regional impacts

Following table represents the characterization of potential impacts of subject proposal based upon the spatial boundaries;

Table 3.1: Characterization of Potential Impacts Based Upon the Spatial Boundaries

Sr. No.	Potential Impacts	Spatial Boundaries	
		LSA	RSA
1	Air Quality	✓	✓ (if beyond limits)
2	Increased noise levels	✓	
3	Groundwater degradation	✓	
4	Surface water deterioration	✓	
5	Soil quality	✓	
6	Working personnel's Health & Safety	✓	
7	Lowering of ground water table		✓
8	Flora & Fauna	✓	✓

Temporal boundaries for project-related effects are defined in terms of the project phases:

- **Baseline** – covers ecological, physical and human-related characteristics of the environment, prior to the initiation of the construction phase;

- **Construction** – includes all activities associated with project construction and before commencement of operational phase such as:

  - Infrastructure development;
  - mobilization of equipment and supplies to the site by road and air;

- Construction of site facilities including camp, infrastructure, stockpile, waste rock storage dump, water management facilities (diversions, settling ponds, seepage collectors) etc.

- **Camp operations** and personnel transport during construction;

- **Operations** – includes ongoing industrial processing, effluent disposal, waste management, noise levels, transport of raw materials, end products and personnel;

- **Decommissioning** – includes all activities to decommission industry and remove equipment and materials from the site, re-contour the site and restore drainage patterns to stable long-term conditions, and implement the final site reclamation procedures to prevent erosion and restore vegetation cover where feasible;

- **Closure** – refers to conditions that will exist on the site after the site is abandoned and re-vegetation is complete.

Temporal boundaries are also defined for the cumulative effects assessment, spanning baseline to a point in the future, within which project effects on VECCs are predicted to overlap with effects of other projects or activities.

3.3 Important Issues and Concerns Raised during Consultation

The representatives from EPA, surrounding industries and community attended the scoping session. They were briefed about the objective of session, the proposal and its type, applicable regulations and potential environmental and socioeconomic impacts that can be anticipated. Following is a list of concerns raised during the session;

What are checks and balances that exist to make sure mitigation is implemented correctly and how will follow-up happen?

- Will the locals be preferred for every sort of employment – skilled or un-skilled?
- How health & safety of workers will be ensured throughout the construction and operational phase?
- What arrangements will be made for firefighting?
- How water will be conserved?
- How process solid waste and wastewater will be disposed of to not harm the environment?
- How noise levels will not be let increased?

All of these issues were sorted out during the session and recommendations are incorporated in the EIA study. However, most of the concerns were positive as

the proposed industry is believed to provide employment to a lot of local people thus contributing to national GDP. Also, it will bring industrial development in the country at the time when it is already trying to cope up with economic challenges.

3.4. Significant Impacts and Factors to be Determined

Substantial impacts that can be caused by the establishment of subject proposed extension project were identified and discussed with the key stakeholders. Recommendations for appropriate mitigation measures were also exchanged to be incorporated well in EIA study.

Following is the criteria adopted for determining significance of the potential impacts such as acceptability and mitigation measures requirement in relation to Ecological importance, Social importance, and Environmental standards;

Table 3.2: Criteria for Significance of Impacts

Categories	Impacts	Characteristics
Nature	Direct (D)	The environmental parameters are directly affected by the project construction or operation.
	Indirect (ID)	The environmental factor changes as a result of alteration in another parameter.
Duration of Impact	Short Term (ST)	The impact that last only during the construction of the proposed project e.g. noise from the construction activities.
	Medium Term (MT)	Lasting for a period of few months of a year; the project before naturally returning to the original condition such as loss of vegetation due to clearing of campsite, contamination of soil or water by fuels or oil.
	Long Term (LT)	Lasting for period much greater than medium term impact before naturally reverting to the original condition such as loss of soil due to erosion.
Geographical Extent	-	The geographical extent may be local or regional.
Project Phases	-	Designing (Pre-construction Phase), Construction Phase & Operational Phase
Reversibility of Impact	Temporary (T)	The impacts those don't cross ecosystem threshold value of resilience.
	Permanent (P)	The impacts that exceed ecosystem threshold value of resilience.
Likelihood of the Impact	Likely (L)	Impact will probably occur under most circumstances.
	Unlikely (UL)	Impact could occur at some time
	Possibly (P)	Impact may possibly occur at some time
	Rare (R)	Impact may occur but only under exceptional circumstances.
Impact Consequences Severity	Major (M)	When an activity causes irreversible damage to a unique Environmental feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has long-term effects (period of years) on socio-economic activities of significance or regional level.

	Moderate (Mo)	When an activity causes long-term (period of years), reversible damage to a unique environmental feature; causes reversible damage or change in abundance or distribution over one generation of a population of flora or fauna; has short-term effects (period of months) on socio-economic activities of significance on regional level.
	Minor (Mi)	When an activity causes short-term reversible damage to an environmental feature; slight reversible damage to a few species of flora or fauna within a population over a short period; has short term effects on socio-economic activities of local significance.
	Negligible (N)	When no measurable damage to physical, socio-economic, or biological environment above the existing level of public concern; and conformance with legislative of statutory requirements.

Following table represents the significance of determined impacts based upon above given criterion;

Table 3.3: Significance of the Potential Impacts ?

Categories	Impacts Significance	Potential Impacts						
		Air Quality Deterioration	Increased Noise Levels	Lowering of Groundwater Table	Surface Water Degradation	Soil Quality	Health & Safety	Flora & Fauna
Nature	Direct (D)	✓	✓			✓	✓	✓
	Indirect (ID)			✓	✓			✓
Duration of Impact	Short Term (ST)		✓				✓	
	Medium Term (MT)	✓				✓		✓
	Long Term (LT)			✓	✓			
Geographical Extent	Local	✓	✓			✓	✓	✓
Project Phases	Regional			✓	✓			
Reversibility of Impact	Temporary (T)	✓	✓		✓	✓	✓	✓
	Permanent (P)			✓				
Likelihood of the Impact	Likely (L)	✓					✓	
	Unlikely (UL)							
	Possibly		✓					✓

	(P)							
	Rare (R)			✓	✓	✓		
Impact Consequences Severity	Major (M)							
	Moderate (Mo)		✓				✓	
	Minor (Mi)	✓		✓				✓
	Negligible (N)				✓	✓		

Based upon this identification; mitigation measures are proposed in EIA study. Environmental Management and Monitoring Plan (EMMP) is prepared defining the monitoring program as well to effectively implement the recommended measures.

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Section 4: CONSIDERATION OF ALTERNATIVES

4.1 General

This section covers the project alternatives considered including site alternatives, design / technology alternatives, environmental alternatives & economic alternatives for establishment of the proposed project sustainable. An analysis of the available alternatives is necessary to establish that the most suitable management and technology options are adopted for the project, while minimizing environmental impacts. This evaluation explains the selection of the most feasible alternative in terms of economics, environment and health & safety. In particular, it outlines the following options that were considered for this project;

4.2 Site Alternatives, their Selection and Rejection Criteria

The subject proposed project is an extension project (production capacity enhancement in Moulded Stick Line Facility) and enough space is available in the existing production hall, within the premises of The Magnum Ice Cream Company Pakistan Ltd. So, no site alternatives have been considered.

4.3 Design / Technology Alternatives, their Selection and Rejection Criteria

The latest state of the art technology Moulded Stick Line with other necessary equipments will be installed for extension project, which will be imported and meet the international standards as well as Magnum / Unilever Global standards. Therefore, from design and technological point of view best technology will be adopted to safe guard the environment and produce the ice cream/sticks according to international standers of quality, health & hygiene.

4.4 Environmental Alternatives, their Selection and Rejection Criteria

During operational phase of the proposed extension project, no as such process air emissions containing obnoxious / flue gases will be produced having negative impact on environment and health of workers because only food product as ice cream will be produced. As far as concerned the generation of liquid waste, the wastewater will also be generated from the proposed extension project. An Activate Sludge Treatment Plant is currently installed and working efficiently and treating the wastewater producing from the existing unit ultimately to comply with PEQS prescribed limits. The said ETP / WWTP has enough capacity (installed capacity 1056 m^3/day) that can cater the wastewaters to be produced from the proposed extension project because only 2 m^3/day of wastewater will be produced from the under-study project. So, no need to upgrade/expand/extend the existing ETP / WWTP or installation of new ETP.

4.5 Economic Alternatives, their Selection and Rejection Criteria

As the proposed project is an extension in terms of production capacity enhancement in the existing ice cream factory. After increasing in the demand of ice cream products due to increase in population and change of trends the company management thoroughly search the market and then plan to invest in the said extension project. Therefore, no need to consider the economic alternatives because company is already involved in the business of ice cream making and this is very safe to invest in the said business because there is lot of potential in the market and right time to capture the opportunity for the company.

Section 5: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

5.1 General

This section deals with the current policy as well as legal and administrative framework related to carrying out of Environmental Impact Assessment (EIA) study of various projects.

Like other Projects, the proposed Extension Project, before its execution, is required to go through an Environmental Impact Assessment, in accordance with the provisions of the Punjab Environmental Protection Act, 1997 (Amended 2012).

5.2 Existing Regulations and Legal Framework

This EIA Study has been carried out in the light of the policy guidelines of the Government of Pakistan and Government of Punjab, under the procedures and practices formulated by the Federal / Provincial Environmental Protection Agency (EPA).

5.3 Relevant Legal / Institutional Framework

The applicable laws for the environmental study of the proposed extension project are briefly given below. The proponent of the proposed project will abide by the applicable laws and regulations.

5.3.1 National Conservation Strategy, 1992

On March 1, 1992, the Cabinet of Pakistan approved the National Conservation Strategy. It describes the stark reality of the country's deteriorating resource base and its implications for what is still largely a natural resource-based economy. It sets forth the beginnings of a plan to integrate environmental concerns into virtually every aspect of Pakistani economic life.
The strategy has three overriding objectives: conservation of natural resources, sustainable development, and improved efficiency in the use and management of resources.

5.3.2 PEPO, 1983 and PEPA, 1997

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO), which has now been replaced by the PEPA, 1997, through an Act of Parliament.

Under Sec. 8 of Environment Protection Ordinance (EPO) 1983, it was necessary to carry out IEE / EIA for all development projects, but there were no IEE / EIA regulations under that ordinance.

Under section 12 of the Pakistan Environmental Protection Act (PEPA, 1997), it is mandatory to carry out an IEE / EIA of all development projects causing significant environmental impacts.

5.3.3 Punjab Environmental Protection Act, 1997 (As Amended 2012)

On 18th April 2012, the Government of Punjab has notified the above mentioned environment act after minor amendments. So, the section 12 of the same act is also for obtaining of Environmental Approval. The section 12 is as under:

"(1) No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof".

5.3.4 National Environmental Policy 2005

Government of Pakistan (GOP) has notified National Environmental Policy 2005, for different projects / aspects in which guidelines/priorities have been given to undertake/commence the projects having significant environmental impacts.

5.3.5 (Draft) Punjab Environmental Policy, 2015

The Punjab Environment Policy 2015 provides an overarching framework for addressing the environmental issues facing Punjab, particularly pollution of fresh water bodies, air pollution, lack of proper waste management, deforestation, loss of biodiversity, desertification, water logging, natural disasters and climate change. It also gives directions for addressing the cross sectoral issues, underlying causes of environmental degradation to meet national and international obligations. The theme of the Punjab Environment Policy 2015 is sustainable development in the sense of enhancement of human well-being.

The Punjab Environment Policy provides broad guidelines to Provincial Governments and Local Governments for addressing environmental concerns related to them and ensuring effective management, restoration, enhancement of environmental resources and ensuring their sustainable use. The Punjab Environment Policy is a guide for actions in regulatory reform, programs and projects for environmental conservation; and will review and ensure the enactment of legislation, by Provincial and Local Governments. The policy has been approved by the Punjab Environmental Protection Council headed by the Chief Minister Punjab under Section 4 (b) of the Punjab Environmental Protection Act 1997 (amendment Act 2012) and is enforced with immediate effect.

Goal

The Punjab Environment Policy aims to protect, conserve and restore Punjab environment in order to improve the quality of life of the citizens through sustainable development.

Objectives

The objectives of the Policy are:

a. Protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and promotion of sustainable development and efficient management and enhancement of environmental resources.
b. Integration of environmental considerations in policy making and planning processes through environmental governance.
c. Integration of environmental concerns in Economic and Social Development.
d. Capacity building of government agencies and other stakeholders at all levels for better environmental management.
e. Meeting national and international obligations effectively in line with the Provincial aspirations.
f. Creation of a demand for environmental protection through mass awareness and community mobilization.

5.3.6 Punjab Environmental Protection (Review of IEE and EIA Regulations, 2022)

The Government of Punjab has issued Punjab Environmental Protection (Review of Initial Environmental Examination and Environmental Impact Assessment Regulations 2022) to review the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Reports.

5.3.7 Guidelines for the Preparation and Review of Environmental Reports, 1997

The GOP has also framed guidelines for the preparation and review of IEE/EIA of projects in various developmental sectors.

5.3.8 National Environmental Quality Standards (NEQS)

According to PEPA, 1997, National Environmental Quality Standards (NEQS) were established for municipal and industrial effluents and air emissions. The latest revision of NEQS carried out in year 2001 is attached as Annexure to this Report.

5.3.9 Punjab Environmental Quality Standards (PEQS), 2016

Under PEPA, 1997 (as amended 2012), Punjab Environmental Quality Standards including for Municipal & Liquid Industrial Effluents, for Industrial Gaseous Emissions, for Ambient Air, for Drinking Water, for Noise, for Motor Vehicle Exhaust and Noise and for treatment of Liquid & Disposal of

Bio-medical Waste have been established since 2016. It is mandatory to comply with these standards.

5.3.10 Guidelines for Sensitive and Critical Areas

GOP has issued Guidelines for Sensitive and Critical Areas in October, 1997. The objective of the guideline is to provide guidance to project proponents and other stakeholders in the environmental assessment process, so that the proposed projects are planned and sited in a way that protects the values of sensitive and critical areas.

5.3.11 Policy and procedures for the Filing, Review and Approval of Environmental Assessments, November-1997

Environmental Assessment is the Primary means of managing the approval of new development proposals in Pakistan. Environmental Assessment allows for the systematic examination of proposals, clear procedures which provide for the interests of relevant Government Departments and other stakeholders to carefully considered.

5.3.12 Guidelines for Public Consultation, Pakistan Environmental Protection Agency October, 1997

This guideline is part of a package of regulations and guidelines which include:

- Punjab Environmental Protection Act, 1997 (As Amended 2012)
- Policy and Procedures for filing, review and approval of environmental assessments
- Guidelines for the preparation and review of Environmental Reports
- Guidelines for sensitive and critical areas
- National Environmental Quality Standards (NEQS)
- Detailed sectoral guidelines

5.3.13 Factories Act, 1934

This act was framed in 1934. The Factories Act, 1934 is still the basic charter for the betterment of labour. Chapter III (Health & Safety) of this act provides guidelines for working conditions including occupational health and safety issues in factories.

5.3.14 Punjab Wildlife Protection Act, 1974

This act was framed in 1974 by the Province Punjab and is about of protection and conservation of Wildlife.

5.3.15 Forest Act, 1927

This act was framed in 1927. The Forest Act, 1927 is still the basic charter for the forest departments in Pakistan. This law empowers provincial governments to manage forest areas.

5.3.16 Explosive Act, 1884

This act deals with explosives in prohibiting either absolutely of subject to conditions, the manufacture, possession or importation of any explosive which is so dangerous in character that, in the opinion of the appropriate Government, it is expedient for public safety to issue the notification.

5.3.17 Pakistan Penal Code, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 272 and 273 of this Act deal with the adulteration of food or drink. Noise pollution has been covered in Section 268, which defines and recognizes noise as a public nuisance. *"A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right."*

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SECTION 6: DESCRIPTION OF THE PROJECT

6.1 General

This section of the report depicts the overview of detailed information about proposed extension project of production capacity enhancement in moulded ice cream sticks making Facility & other allied utilities, objectives of the proposed extension project, project description, work force, process flow diagram, land use on the site, road access, vegetation, cost and magnitude of operations, schedule of implementation, restoration and rehabilitation plans, etc.

6.2 Existing Unit Information

The existing unit (of M/s M/s The Magnum Ice Cream Company Pakistan Ltd.) is spread over an impressive of area of 14,79,292 SFT and Production capacity of the existing Ice Cream plant / facility is 250,000 liters /day. The unit runs for 24 hours of day in 3 shifts.

The salient features and facilities working under the existing unit are as follow:

- Imported latest art of technology plant which incorporates the requirements of PEQS rather the plant based on International Standards which are more stringent as compared to standards of Pakistan.
- Emergency Response Plan has been developed & implemented with letter & spirit.
- Central fire hydrant system backed by a 08-bar pressure connected with water reservoir. Fire extinguisher (wall mounted & portable/trolley type), fire alarm system, smoke detectors, heat detectors, etc.
- Emergency signs, safety sings, emergency exits have been displayed / mentioned.
- 03 Nos. emergency assembling points are mentioned in the factory and the workers are trained to cope with any emergency situation.
- A comprehensive Ammonia Emergency Release Response Plan has been developed and implemented. Firefighting arrangements including central fire hydrant system is already there. The firefighting/emergency arrangements/facilities are as under:
  - Fire Hydrants:
  - Water Trolleys:
  - Fire Extinguishers:
  - Smoke Detectors:
  - Heat Detectors:
  - Break Glasses:
  - Fire Blankets:
  - Eye Showers:
  - Spill Kits:

- The stand by generators are latest art of technology and well tuned within time. Silencer and sound proof canopies are also installed.
- An activated sludge treatment plant with capacity of 44 m^3/hour is already

working which is treating the wastewater well within the PEQS/NEQS limits and will also cater the wastewater produced from the proposed extension.
- The organic solid waste is handed over to interested contractors and the other recyclable and reusable solid waste is handed over to recyclers.
- Quality Assurance/Quality Control Department
- Ware House
- Standard Operating Procedures (SOPs)
- Regular training workshops & emergency / fire drills of workers.
- Ornamental plants / trees are grown up; grassy lawns have been developed at open places.

6.3 Proposed Extension Project Information

M/s The Magnum Ice Cream Company Pakistan Ltd. in the process to enhance the production capacity of Moulded Stick Line facility/Plant & allied utilities at existing Ice Cream Factory, located at 46-KM, Multan Road, Near Phool Nagar, District Kasur.

6.4 Objectives of the Project

The main objectives of the proposed extension project are as under:-

- Responding to the national priorities and local demand M/s The Magnum Ice Cream Company Pakistan Ltd. plans to extend the production capacity of Ice Cream Plant (Moulded Stick Line Expansion)
- To produce high quality ice cream at most modern and latest state of the art technology plant according to international standards of hygiene, health, safety & environment without damaging environment
- To provide the employment to the people
- To change the social life style of the area
- To uplift the socio-economic conditions of the area
- Revenue generation for the Government
- To earn profit for the business
- To give a lift to national economy in due course

6.5 Location & Site Layout of the Project

The proposed extension project site is located within premises of existing Ice Cream Factory / unit of M/s The Magnum Ice Cream Company Pakistan Ltd. located at 46-KM, Multan Road, Near Phool Nagar, District Kasur.

Further, the Google Earth Map is as under:

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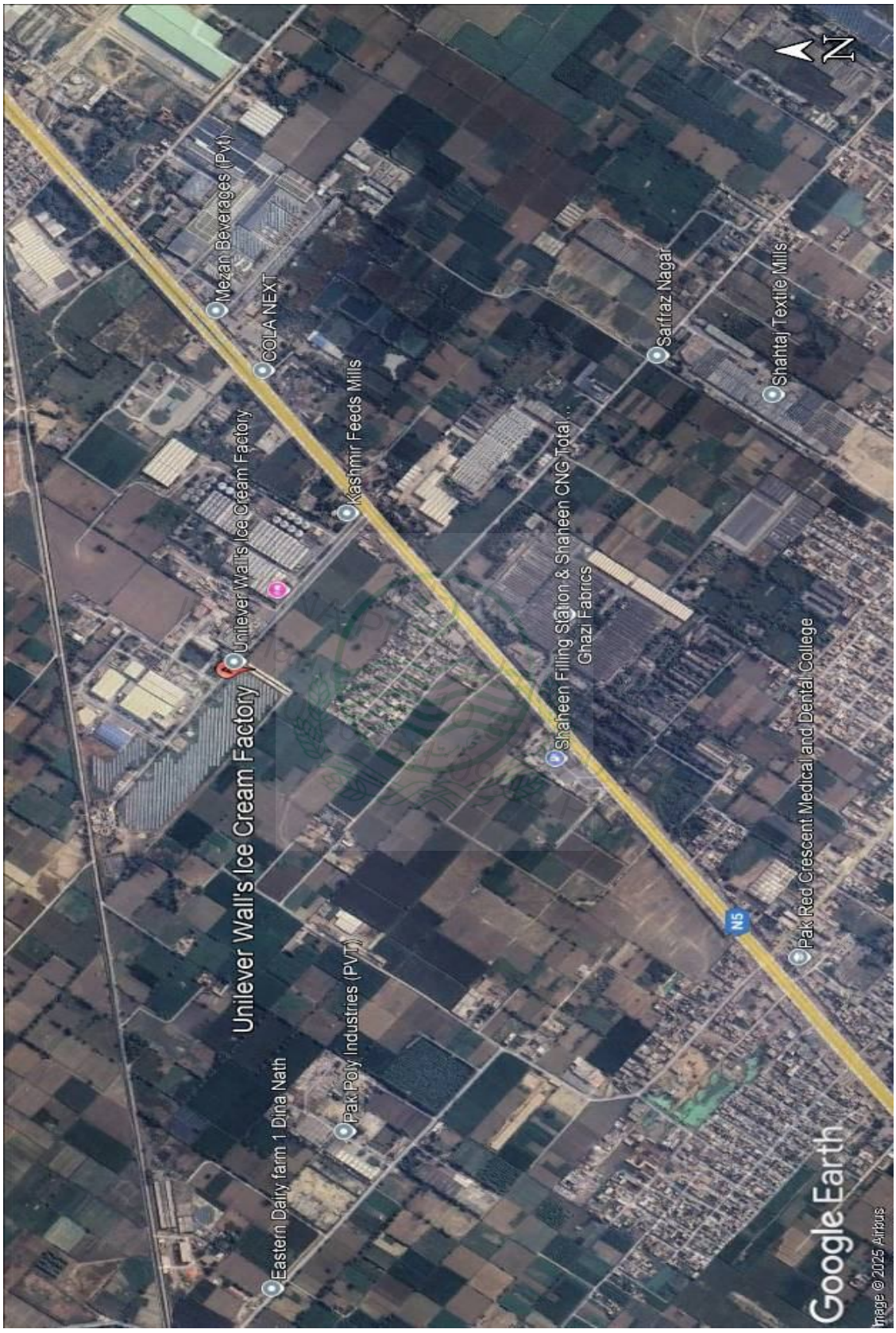


Figure 6.1: Google Earth Map

6.6 Land use on the Site

As mentioned earlier, no any further or new construction of building / hall will be needed for the extension / expansion project however, relocation / alteration will be required to install the machines of extension project in the existing moulded stick line hall, which will be started after issuance of Environmental Approval.

6.7 Road Access

The project site is located at Main Multan Road.

6.8 Vegetation features of the site

There is no any type of flora including trees, plants, shrubs/herbs and other types of vegetation at the site where subject extension project has been proposed to be planned.

6.9 Cost and Magnitude of Operation

The estimated capital cost of the proposed extension project (Moulded Stick Line Expansion Project) is approximately PKR 919 Million (Euro 2.4 Million).

So, far the magnitude of operation is concerned, after issuance of Environmental approval, during construction phase of the project alteration / modification / relocation within the existing building of moulded stick line plant building will be undertaken as per requirements to install expansion project machinery. Moreover, during the operational phase of the extension project moulded stick line operation will be undertaken and ice cream goods including Feast, Choc Stick, etc. will be produced.

6.10 Schedule of Implementation

Currently proponent is seeking Environmental Approval from EPA Punjab and construction work will be started after issuance of Environmental Approval. The construction work will approximately be completed within 16 months.

The various phases involved in the implementation of the project at different levels are given below:

a. Preliminary Phase

In this phase, land is selected within the existing unit of Magnum Ice Cream Factory.

b. Design Phase

During this phase, the proposed extension project is designed including construction work and installation of plant machinery. A copy of the design in the form of layout plan is attached in the document file provided with the report.

c. Legal Phase

In order to comply with Punjab Environmental Protection Act, 1997 (amended 2012); the proponent has to obtain Environmental Approval from Environmental Protection Agency (EPA). The proponent hired the services of SES consulting firm to carry out the Environmental Impact Assessment (EIA) Study. Moreover, NOCs from other concerned departments are also being obtained.

d. Construction Phase

After getting Environmental Approval from EPA, Punjab proper construction work will be started.

e. Plant Machinery Transportation & Installation Phase

For purchasing of machinery / equipments, the vendors will be contacted and agreements will be made for machinery / equipments purchasing after developing infrastructure. The machinery will be transported to the project site and installation will be done. The safety equipment shall also be installed as per requirements and standards. Also, the power supply system will be done. After completion of this phase an application for Confirmation of Compliance (Operational Phase Environmental Approval) will be submitted to EPA.

f. Commissioning Phase

After plant machinery installation, commissioning phase will start. During this phase, all machinery and associated sections will be operated on trial basis. The machinery and operational procedures will be evaluated for the purpose of quality and efficiency assurance before entering into regular project operations.

g. Operational Phase

After obtaining of Confirmation of Compliance (operational phase Environmental Approval) of the project form EPA Punjab, the operational phase of the project will be started. Regular operations of the proposed project will be started. This phase will continue throughout the project life with modifications and enhancements as per requirement.

6.11 Description of the Project

Project description is given in some detail in the preceding Sections 1 and 3; additional information is provided as under:

6.11.1 Number of Employees (During Construction & Regular Operation Stages)

About 50 workers / laborers will be required for the construction/development of the proposed extension project during construction stage and approximately 03 workers will be engaged during regular operational stage of the proposed extension project.

6.11.2 Electricity Connection/Standby Power Generators

No as such additional electricity connection will be required fort the extension project. And no separate standby power generator will also be required for the extension project.

6.11.3 Project Basic Raw Materials

The basic raw materials to be used for the production of Ice Cream are as under:

- SMP
- Sugar
- Palm Oil
- Whey Powder
- Glucose
- Cocoa

6.11.4 Manufacturing Process Description & Process Flow Diagram

a. Manufacturing Process Description:

The brief description of manufacturing processes is as under:

Raw Material Logistics (Reception, Handling, Storage)

The properties of ice cream and water ices are highly dependent upon the ingredients used for manufacture. These materials mainly include fat, glucose, skimmed milk powder, stabilizers and emulsifiers, colours, flavours, converters and sauces. As well as delivering attractive products to our customers, we need to ensure that they are safe. Within Wall's Ice Cream Factory, Lahore. We achieve this by keeping a tight control on which ingredients we use in our products and by ensuring that our suppliers meet our quality standards. Handling and storage are done in controlled environments i.e. low temperatures for pulps, ambient for dry ingredients like powders and high temperatures converters, glucose and fats.

Mix Preparation

The first stage in the manufacture of ice cream, water ice products etc. is the preparation of mix. The mix is made in the mix department of the factory. There are various types of mix e.g. dairy ice cream, vegetable fat ice cream, water ice etc.

Liquid and solid ingredients are blended together in pairs of mixing tanks. Correct ingredient quantities and blending temperatures are critical when mixing, to produce the required product texture.

Homogenization and Pasteurization

The blended mix is filtered, heated, and passed through a homogenizer; the mix is forced under high pressure through a restricted opening, causing the fat particles to breakup into smaller particles. This gives uniformity in texture by breaking down all particles to a uniform size.

After homogenization, the heated mix passes through a holding tube to maintain a specified temperature for a set time. This process, which partially sterilizes the mix, is known as “pasteurization”. After pasteurization the mix is cooled down. All mix must be pasteurizes before passage to mix storage to safeguard against bacteriological infection.

Mix Storage

Mix storage (aging) is required to provide a buffer between mix production and the manufacture of ice cream. The need for aging depends upon the nature of mix and the purpose for which it is to be used. Mixes intended for extrusion (a type of technology) it is important to age for prolonged periods.

Continuous Freezing

The mix is pumped from the storage tanks to the freezers on the production lines for conversion into ice cream. The ice cream freezer is at the heart of the manufacturing operation – without a freezer it would not be possible to produce ice cream.

Packing lines (cups and cone, extrusion, cold extrusion moulded)

Once mix is passed through the freezer it is called ice cream. Ice cream packing can pass through different technology. In ice cream factory, Lahore, we have four main types of technologies available:

- **Cup and cone line:**

  Cup and cone products are categorized by their complexity, often requiring a number of steps and ingredients to build the final product. All these products have ice cream as one component and waters/biscuits as another. Additionally, other ingredients such as chocolate or covertures, sauce and nuts may be present.

- **Extrusion**

  Extrusion facilitates production of novel shapes and co-extrusion of different materials. The use of clever nozzle design can also enable fine detail to be added to products (e.g. a mouth and eyes into a face shape). Complicated shapes with different colors and flavors are possible with this technology.

- **Moulded**

  Moulded stick products usually consist of water ice and/or ice cream frozen in a mould and eaten from a wooden stick. The products can be made in a vide variety of shapes and combination of colours and flavours.

- **Cold Extrusion and Tubs**

  This allows bulk packs and bigger volume products to be shaped into bricks or filled into tubs. Wall's ice cream factory Pakistan is blessed with having the latest cold extrusion lines from the best suppliers of the world.

Hardening

Hardening is the process of cooling an ice cream product following filing/extrusion and assembly. This is done in tunnels which are at temperature as low as -40 degrees to achieve good texture products.

Cartooning and palletizing

Once the product has been made into its final form, it is first packed into primary packing (example wrappers, tubs, sleeves and lids). It is inkjet printed to allow for expiry date printing and then packed into secondary packing in the form of corrugated shipping outers. These outers are arranged in a specific sequence in palletizing, marked for traceability and sent to cold storage.

Cold Storage

This allows bulk storage, release and dispatching of finished product from production hall. Product is kept here at temperature as low as -27 C. Dispatches into refrigerated vehicles occur from here.

Primary Distribution

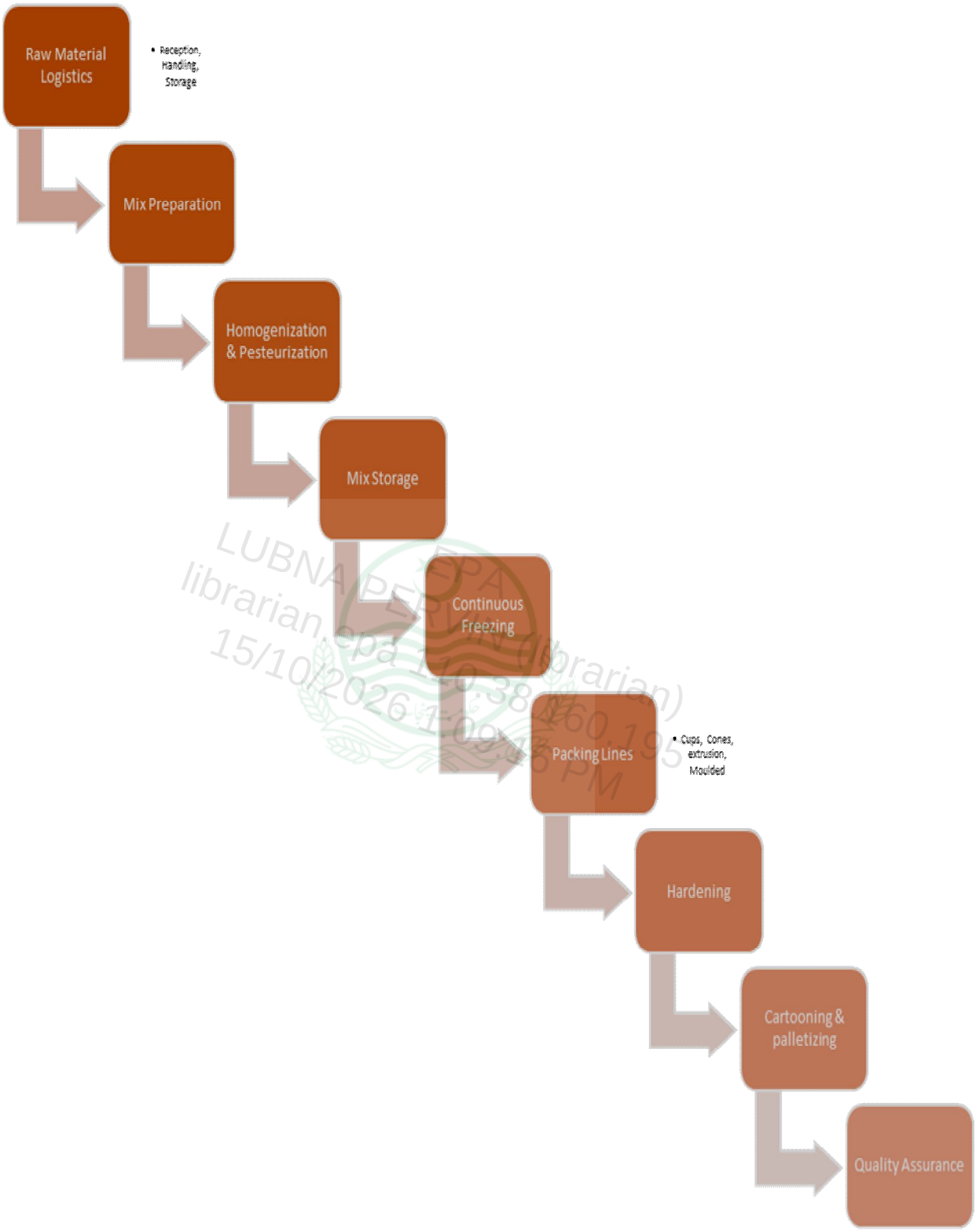
There is a special fleet of primary vehicles which are refrigerated and used for distribution. The product is moved from factory cold store to concessionaires and finally to retail outlets and trade to be made available for consumers.

Quality Assurance

At every step of the process, there is a strong gate in the form of quality controls and checks. Starting from raw materials, all materials are first checked by quality lab to ensure there is no microbial growth whether it is raw material or packing material. In packing material key check is in material itself, dimensions and variation in colour shades from the normal. During mix preparation, it is important to check fats and solid levels, the temperature at which mixes are dosed etc. At the packing lines, there are quality checks on product temperatures, product attributes, packing, sealing, printing, taping and palletizing, defected products are not allowed to be passed outside the factory to ensure that our consumers get the right quality and safe products.

b. Process Flow Diagrams:

Process flow diagrams of ice cream making facility / Plant and is as under:



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6.11.5 Finished Product and Plant Capacity

a. Extension Project Capacity (Moulded Stick Line Expansion)

- Ice Cream Products (Feast, Choc Sticks, etc.) **24000 Liters/day**

b. Existing Overall Ice Cream Plant Capacity

- Existing Ice Cream Plant **250,000 Liters/day**

c. Total Plant Capacity

After completion of subject proposed extension project total production capacity of the Ice Cream Factory will be as follows:

- Total Capacity **274,000 Liters/day**

6.11.6 Water Balance; water consumption & source of water

Approximately 2.5 m^3/day of water will be consumed during operational phase of the proposed extension project (production capacity enhancement in moulded stick line facility/plant) for production of ice cream. The source of water is underground water. Daily water consumption by the unit does not exert any negative impact on water table because the nature of the area is agricultural; cultivated lands, irrigational channel are present in the project area, moreover grassy lawns have also been developed within the unit's premises hence these are the sources to recharge the water table.

Water Conservation Strategies:

- At open places the grassy lawns have been developed to recharge the water table which is help to control the surface runoff during rainy season. More landscaping will also be done at available open place after completions of extension project
- The overall nature of the area is agricultural it is also help to recharge the water table.
- The workers have been given training to avoid wastage of water and workers of extension project will also be trained.
- Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.
- This is positive step ahead for conservation of water ultimately for the betterment of environment.

6.11.7 Wastewater Generation its treatment & disposal

Approximately only 2 m^3/day of wastewater will be generated from the proposed extension project such as process, washings, toilets / washrooms, etc. which needs to be proper treatment to comply with PEQS before proper disposal.

Treatment & Disposal:

- An activated Sludge Treatment Plant with capacity of 44 m^3/hour (1056 m^3/day) has already been installed for the treatment of existing unit's wastewater, it is properly working and treating the wastewater within the permissible limits of PEQS.
- Above mentioned treatment plant has enough capacity to treat the wastewaters to be produced from the proposed extension project.
- The treated wastewater of existing unit is being utilized for watering of landscaping, cooling tower(s) and washing of solar panels. Hence, the same policy / plan will be sustained for the extension project.
- The surplus treated wastewater will be drained out into wastewater channel, if needed/required.
- This is positive step ahead for conservation of water ultimately for the betterment of environment.

6.11.8 Solid Waste Generation & its disposal

During operational phase of the proposed extension project, non-hazardous nature wastes / recyclable nature wastes will be produced including packaging materials, paper & board, plastic bags, wood, engineering waste, production waste etc.

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Disposal:

- All the non-hazardous nature wastes / recyclable nature wastes will be handed over / sold to interested EPA Approved contractor for proper disposal / recycling of wastes in an environment friendly manner.
- A track record of solid wastes will be maintained.

6.12 Restoration and Rehabilitation Plans

The estimated life of the first phase of the project is 25 years. Much before the project approaches end of its first life cycle it will be completely renovated, refurbished and even new/latest state of the art machinery will replace the old one. All civil structures and related infrastructures will be extensively renovated. Even during its first life cycle, pre-emptive modifications, replacements and refurbishing will be carried from time to time under the "order of the day principle". This will ensure enhancement of the life of the project at very nominal costs. In this way the project life will be further enhanced for another hundred years or so.

All activities will be carried out in accordance with the prevailing environmental management laws and controls so as to avoid any damage to any segment of environment or human health around the project site.

6.13 Govt. Approvals and Leases Required by the Project

As far as concerned the Government Approvals / NOCs, the Environmental Approval from the EPA, Punjab is the major requirement. However, the proponent will also obtain relevant NOCs / approvals / permissions from other concerned departments per legal requirements.

SECTION 7: DESCRIPTION OF ENVIRONMENT

7.1 General

This section of EIA Study describes the baseline environmental conditions, which cover the existing environment including its dimensions physical, biological/ecological and socio-economic environment of the project site as well as project area & District Kasur. Data was collected by reviewing secondary data from different universities research articles and publications, Governmental department studies, Non-Governmental organization reports and primary data was collected from the field visit and survey at different timed intervals.

7.2 Baseline Physical Environment

Following is a brief description of various physical resources of the Project Site.

7.2.1 Topography

Kasur's topography is a flat, fertile plain defined by the Sutlej & Ravi Rivers with higher upland (Uttar; Riverine Area) areas away from riverbeds and low-lying riverine (Hithar; Upland Area) zones prone to flooding, featuring sandy soil and a gentle slope from northeast to southwest, averaging 150-200 meters above sea level

Topography of Project Area:

The proposed project area is a flat land and agricultural in nature and which has a depression of 2 meter to 3 meter and is at an elevation of 200 meter above the sea level.

7.2.2 Soils

Kasur District's soils are primarily fertile alluvial loams, but vary; riverine areas near the Sutlej have sandy, nutrient-rich soils, while uplands are flat plains with finer silty clay, often alkaline, with some areas showing contamination issues from tanneries, leading to concerns about heavy metals and brackish groundwater, though reclamation efforts are ongoing. The soils range from loamy/silty clay to sandy, generally moderately alkaline, with low organic matter, and are classified under Ustic Haplocalcids, Ustic Calciargids and Ustic Haplargids.

Soils of Project Area:

Soils around Phool Nagar, are typical of the fertile Indus Plain, likely dominated by **Alluvial Soils,** ranging from **Clay Loam to Sandy Loam**, ideal for the region's rich agriculture, supporting crops like sugarcane (due to nearby mills) and benefiting from irrigation from the Ravi River system

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7.2.3 Seismology

The area where the proposed project is situated falls in Zone 2A according to Seismic Zoning Map of Pakistan (Seismic Provisions 2007) i.e. minor damage zone corresponding to intensity V and VI of the modified Mercalli Intensity Scale. In this zone distant earthquakes with fundamental periods greater than 1.0 second may cause damage to structures. Figure 7.1 shows the seismic zoning map of Pakistan.

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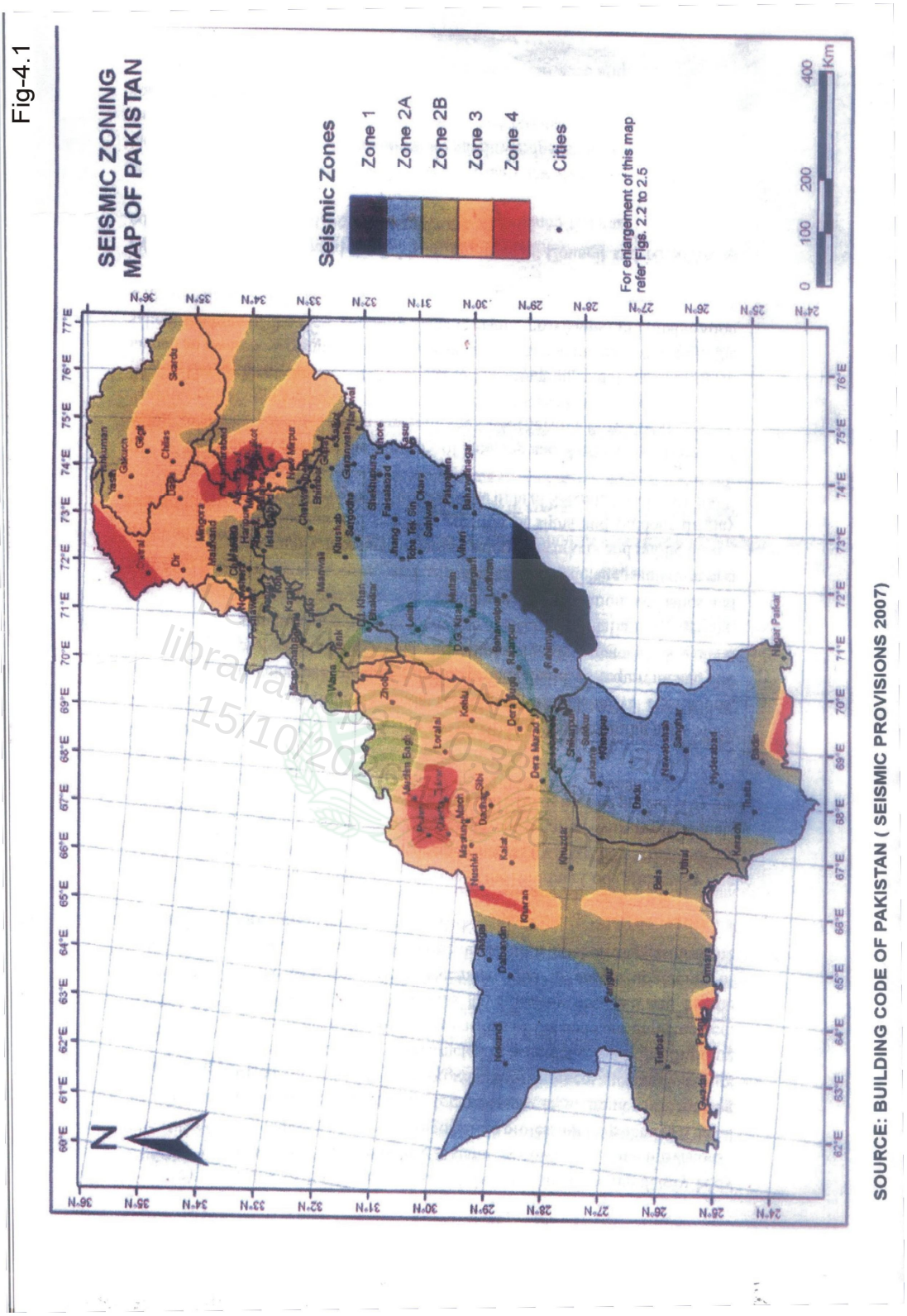


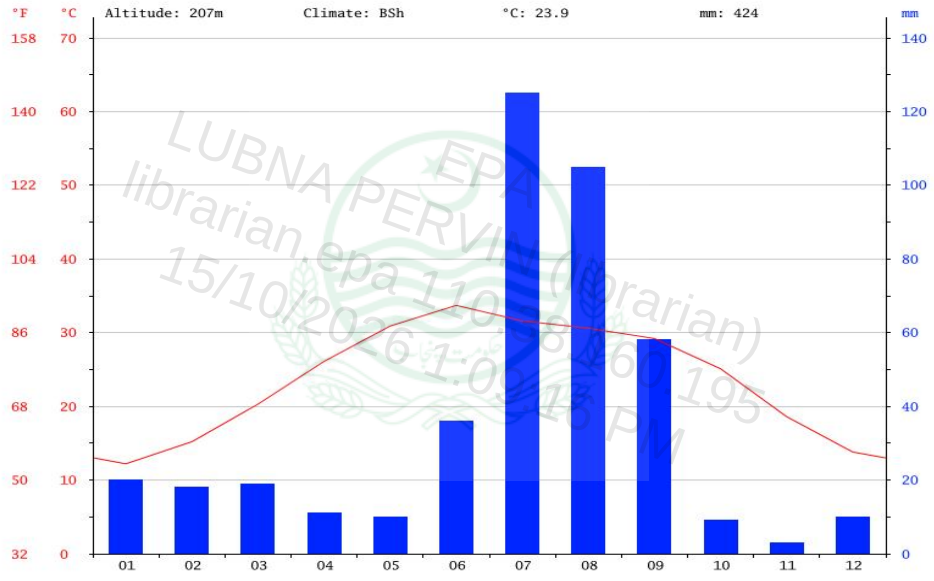
Figure 7.1: Shows the Seismic Zoning Map of Pakistan

7.2.4 Climate

Kasur, Pakistan, has a hot semi-arid to humid subtropical climate (Köppen: BSh/Cwa) with sweltering summers (April-July, peaking in June at ~103°F/45°C), a monsoon season (late June-Sept) bringing rain and humidity, and short, cool, dry winters (Dec-Feb, coldest in Jan) with mild days and frosty nights. The climate features distinct seasons, with hot, humid summers and cooler, drier winters, influenced by its location lies between Sutlej & Ravi River in the Punjab plains.

Climate of Project Area:

The proposed project area (Phool Nagar, Multan Road, District Kasur) falls under Tropical Arid climate zone where intense summer heat and cold weather are experienced.



Graph 7.1: Climate Conditions of Kasur

7.2.5 Seasons

The seasonal breakdown of the Phool Nagar Kasur is as under:

Summer (April – September): The hot season is intense, with average daily highs exceeding 36°C (97°F). **June** is the hottest month, where mean maximum temperatures reach approximately 45°C (113°F), with record highs documented up to 48°C (118.4°F).

Monsoon (Late June – Mid-September): Rainfall typically begins toward the end of June. During this time, the weather alternates between heavy rains and sultry, humid conditions. Riverine areas along the Sutlej and Ravi rivers are prone to inundation during these months.

Winter (November – February): The cool season features dry and mostly clear weather. **January** is the coldest month, with average highs around 22°C (72°F) and lows that can drop near 0°C (32°F). Occasional winter rains occur from January to March.

Spring & Autumn: These transitional periods offer the most pleasant weather, typically from mid-April to early May and mid-September to mid-Octo

7.2.6 Rainfall

The district receives an average annual rainfall of approximately 40.5 inches (1,030 mm), though some sources estimate it closer to 500 mm (20 inches) depending on the measurement period.

Monsoon (July – September): This is the wettest period, accounting for more than two-thirds of the annual rainfall.

Wettest Month: July is the peak month, receiving an average of 11.56 inches (293 mm) of rain across roughly 13 rainy days.

Winter Rains (January – March): This secondary rainy period brings lighter precipitation, typically ranging from 23 mm to 31 mm (0.9 to 1.2 inches) per month.

Dry Season (October – December): This is the driest period of the year. November typically records the lowest rainfall, averaging only 0.2 inches (5 mm).

7.2.7 Wind Speed and Wind Direction

Winter months are mostly calm with minimum windstorms. Windstorms are more common during the month of April to July with maximum occurrence recorded in June when low air pressures are developed due to high temperature. In winter, the wind mainly blows from North - West while in summer it is from opposite direction i.e. from South - East which brings the Monsoon rains. The predominant wind direction in Kasur is north - West and during Monsoon season it is south - east.

7.2.8 Hydrology; Surface and Ground Water

The area is fed with canal water. However, tube wells are also the source of irrigation. At the project site and around, the underground water is sweet and used for irrigation and drinking, among other purposes.

There is no lake and river near the project site. The canal water comes through system under the Sindh Tass Agreement between Pakistan and India.

7.3 Baseline Ecological Environment

Ecological resources including fisheries, aquatic biology, wildlife, forests, rare or endangered species of the project area has been discussed in details as follows:

7.3.1 Fishery and Aquatic Biology

There is no source of fishery in the project area. Neither there are any fish farms around the proposed project site. There is no river, canal and other water body flowing in the proximity of the project area. So, there is nothing sort of aquatic biology in the context of the project area.

7.3.2 Biodiversity

Natural capital of a country mainly includes all of a country's wilderness areas and scenic landscapes, including the associated flora and fauna. Pakistan has a total of nine major ecological zones. The contribution of the "Natural capital" is recognized at three distinct levels: species, genera, and communities (habitat and ecosystem). Both collectively and within each level, the range or variety of the resources is referred to as the Biological Diversity". The term has relevance for each of Pakistan's administrative units-district, province, and particularly country. The more the number of species, genera and habitats and ecosystems present within these units, the greater is said to be the Biodiversity. The biodiversity of the area, with this background, is discussed as under:

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7.3.3 Forestry

Up to very large distances there is no forest of any nature. The entire area is irrigated and agriculture boom is there.

7.3.4 Wildlife

The project site is situated near the agriculture lands. Natural habitat conducive to wildlife to flourish is nowhere up to long distances. Consequently, there is no wildlife in the true sense in the area. However, some common native animals, reptiles and birds (both captive and non-captive) like buffaloes, cows, goats, sheep, camels and donkeys (in very small number), cats, dogs, hare, pigs and jackals (very few), lizards, snakes, wild rats, Goh (iguana), crows, doves, sparrows, quails (seasonal), and pigeons and snakes, rats and lizards are found.

7.3.5 Flora

The proposed project area is situated in agricultural zone at project site presently no any type of vegetation or flora is existed.

However, the vegetative resources around the proposed site of the project are cultivated crops as wheat, sugar cane, cotton, rice, maize, tobacco, Legumes and pulses.

The trees surrounding the project area are in the fields Kikar (Acacia Arbica), Shisham (Dalbergia Sissoo), Bohar (Ficus Inclica), Pipal (Ficus Religiosa),

Mulberry (Mourusalba), Aam (Mangiferra indica), Siris (Albizzia lebbek), Jamolan (Engenia Jambolana, amaltas (cassia amaltas), lasura (teccoma Unclulata), Kikar and shisham trees. They are the most useful and provide hard wood for construction, agriculture implements manufacturing and for a variety of many other purposes like especially furniture manufacturing. They are sold at very high price.

7.3.6 Fauna

In and around the project area domesticated and wild animals and birds include buffaloes, cows, goats, sheep, camels and donkeys (in very small number), cats, dogs, hare, pigs and jackals (very few), snakes, wild rats, Goh (iguana), crows, doves, sparrows, quails (seasonal), pigeons, snakes, rats and lizards.

7.4 Baseline Socioeconomic Environment

Detailed description of Socio-economic environment of the proposed project are as under:

7.4.1 Socioeconomic Values

The project site is situated in the rural setting. Virtually entire land is under agriculture use. Modern agriculture implements like tractors and Tractor trolleys are in use. These are owned by a few well to do persons and are provided on rent. Majority of the people depend upon agriculture as their main source of life support system.

Most of the people belong to mid economic order. There is a fairly large cross section of poor people. A large proportion of the people are poor. While a small percentage of the residents are living little above the poverty line. The population of the area is undergoing transformation in almost all walks of life i.e. socioeconomic and cultural. Old traditions are being replaced by new social order under the influence of electronic and print media. Elders are the most respected segment of society. They even now have great say in decision making.

Inspite of transition, old customs and traditions are still surviving in the society. Arranged marriage system is followed and it is quite successful. People are proud of their traditions and customs inspite of a change. Joint family system is intact in most of the cases. Families are quite coherent. People are very hospitable specially to aliens. However, lifelong old traditional enmities are also going side by side. Sometimes a lot of money is wasted on disputes on very minor disputes.

Due to awareness about the importance of education, most of the younger generation, including both sexes, is now enamored of the values of education are struggling to get education. There is a rising trend in the society to change their old traditional socioeconomic pattern of life.

7.4.2 Population and communities

The project site is located at main Multan Road. Population/communities centers and project site is not located close to one and other.

7.4.3 Industries

There are number of industrial units and commercial entities at both sides of the Multan Road in the proposed project area.

7.4.4 Infrastructure

Electricity from the WAPDA grid station is available in the project area. There is a network of roads in the entire area. Private buses and wagons are available as public transport. Underground water of good quality suitable for drinking and irrigation is available from shallow depth.

7.4.5 Educational Institutions

In most of the villages primary and high schools are available both for girls and boys. For intermediate and graduate level education, students have to travel mostly to Phool Nagar, Pattoki or Kasur City, the District Head Quarter of the area.

The Government Hospitals at Phool Nagar, Pattoki and Kasur City provide health care to the people under the scheme of the Government of the Punjab.

7.4.6 Transportation: roads, rail, airports, navigable rivers

There is a vast network of roads connecting the proposed project to market. Virtually most of the villages are connected with each other through these roads. The project is located at Multan Road.

7.4.7 Land use planning

The project site is situated in the agricultural zone. The entire land use planning is carried out according to the provincial laws. Under the present Government system, the District Government/management is responsible for all land use planning.

7.4.8 Power sources and transmission

Water and Power Development Authority (WAPDA) controlled by Lahore Electric Supply Company (LESCO) provides electricity to the propose project area. Transmission of power is through overhead electric transmission lines.

7.4.9 Agricultural and mineral development

The project area lies in the agricultural zone. Land holdings are very small. Agriculture mainly depends upon canal water. Underground water, where available of irrigation quality, is used for agriculture purpose through tube wells.

7.4.10 Public Health / Health Facilities

Though some villages have some type and level of medical treatment facility, yet by and large it is quite in adequate as compared to the required level.

7.4.11 Recreational Resources and Development

There are no recreational resources and activity in the near proximity of the proposed project area.

7.4.12 Cultural and Esthetic Values

Though cultural and aesthetic values are in the transitional stage towards modern ones, yet old traditional cultural and aesthetic values are over power these changes. Old customs are the integral part of the day-to-day life. It will take very long time to see a tangible change in the old customs, virtues, and rituals.

There is large number of people living life below poverty line. Media is playing some role to bring change in the traditional aesthetic values presently prevailing among a large cross section of the society. A tangible change is appearing among a very small cross section of the society who is trying to pursue the modem aesthetic values of life.

Financial and religious factors influence aesthetic and culture values of the society. People religiously have strong commitment to Islam. This relation contributes to good aesthetic and cultural values among the people.

7.4.13 Archeological and Historic Treasure

There is no worth mentioning archeological and historic treasures in the vicinity of the project area.

7.5 Environmental Conditions

Environmental conditions of the proposed project area including ambient air quality & noise levels are as under:

7.5.1 Air Quality

The proposed project site is located in the agricultural area however many industries are also located around the project site. The setup of the entire area is rural so the air quality is good.

7.5.2 Noise level

Noise levels at the project site and around the project area is less than within the permissible limits of Punjab Environmental Quality Standards (PEQS). Because of the entire area, where the proposed site is located, is a rural setup and there is no such noisy operation/activity that causes noise pollution.

7.6 Lab Reports of Environmental Analyses

Lab Reports of Environmental Analyses from EPA certified lab including ambient air quality, groundwater and noise level monitoring are attached at the end of this study as appendices.

7.7 Suitability of the Site

Site selection is very important because site should not be prohibited, environmentally sensitive, incompatible to surroundings and unsuitable. Following factors have been considered while site selection:

- **Not Prohibited**

The subject proposed extension project site is not located in the prohibited area which is notified by the Govt. where industrial activities are banned.

- **Environmentally Sensitive Areas**

Environmentally sensitive localities don't exist in the project area as mentioned above site is located in the existing industrial unit located at Multan Road where numbers of industrial and commercial entities are present. So, no any type of sensitive segment of environment or any environmentally sensitive settlement is present in the project area.

- **Incompatible to Surroundings & Unsuitable**

The proposed extension project site is located within the existing ice cream factory where already industrial activity is going on hence the subject project is not incompatible to the surroundings & unsuitable to the locality

- **Land use Planning**

The proposed extension project site is located within the existing ice cream factory, where already industrial activity is going on.

The entire land use planning in the project area is carried out according to the provincial laws. Under the present Government system, the District Government is responsible for all land use planning.

- **Presence of Hazardous Conditions**

The subject proposed project site and the project area overall is free from any Environmental hazardous conditions such substances, situations, or activities that threaten the natural world or human health, stemming from natural events (like floods, fires) or human actions (like pollution, chemical spills), impacting air, water, soil, wildlife, and people with risks ranging from respiratory issues to cancer, requiring assessment and management for sustainability.

Additionally, the subject proposed extension project site and the project area overall is free from the all type of hazards including Chemical Hazards**,** Physical

Hazards, Biological Hazards, Natural Disasters and Human-Induced (Anthropogenic) Hazards.

- **Availability of Essential Services / Utilities**

Essential services / utilities which are basic requirement to run the project like Electricity Supply, Gas Supply, Water Supply, Sanitation System have been well served in the project area.

- **Basic / Communication Infrastructure**

Basic infrastructures like road networks are present near the site and or in and around the project area.

- **Availability of Construction Materials**

The contractors provide the construction materials like cement, steel, crush and bricks at the site on as required basis or these are procured by the proponent. All these material are available locally.

- **Skilled and Unskilled Labour**

The people are available at economical rates all the time. The project will provide jobs to the local residents as well as those from suburban areas.

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Section 8: IMPACT ASSESSMENT

8.1 Assessment of Impacts

The primary function of an environmental impact assessment study is to predict and quantify the magnitude of potential impacts, assess and evaluate the magnitude. The impact assessment forms the basis for development of Environmental Management Plan. Environmental impacts could be positive or negative, direct or indirect, local or regional and also reversible or irreversible.

8.2 Identification of all impacts

All the potential environmental impacts had been identified during literature review, visits of project site and nature / manufacturing process of the proposed extension project. Various types of environmental issues likely to crop up during life cycle of project are grouped in different phases; project location related impacts, project design related impacts, construction phase impacts and operational phase impacts.

8.3 Methodologies for Impacts Identifications

Methodologies for impacts identifications are including checklists, matrices, networks, overlays and GIS & Computer expert system. The details of methodologies for impact identifications are as under:

a. Checklist

Project impact evaluation checklist have also been developed to identify the potential environmental impacts while the proposed project's various phases including design phase, construction phase and operational phase. These impacts have been categorized as follows:

- None
- Minor
- Medium
- Major

Table 8.1: Project Impact Evaluation Checklist

Potential Impacts	Possible Risk / Damage to Environment	Mitigation Measures	Significance of Impact			
			None	Minor	Medium	Major
A. Potential Environmental Impacts Relating to Design Phase						
a. Physical Environment						
Changes in Land Appearance	No significant change in land appearance	Beautiful landscaping will be done	X			
Seismic Hazard	Damage due to earthquake	To design the building / structure in such a way to moderate large				X

		scale earthquake				
Emergency Response	Damage due to emergency situation fire, earthquake, etc.	To design the building in such a way which incorporates emergency exits				X
b. Ecological Environment						
Impacts on Flora	Construction activity may affect the flora	Site selection and designing of structure will be done to avoid tree cutting or other type of flora		X		
Impacts on Fauna	Fauna (wild birds) may be disturbed from extension project	Planning of construction activities and operation of the extension project in such a way to avoid disturbance to fauna at design / planning phase		X		
B. Potential Environmental Impacts Relating to Construction Phase						
a. Physical Environment						
Change in land use	No significant change in land use due to extension project	Beautiful landscaping will be done on open places	X			
Change of land appearance	No significant change of land appearance also due to extension project	Beautiful landscaping will be done on open places	X			
Impacts on Topography	No major changes regarding topography of the site while construction phase	Resurfacing of exposed areas to avoid any negative impact	X			
Impacts on soil	Overall geology/soil quality of the site is not expected to be adversely impacted	Plantation needs to take place so that soil may become stabilized	X			
Impacts on Air Quality	Negligible change may occur in ambient air quality due to	Regular ambient air monitoring plan Regular water sprinkling Maintenance of		X		

	construction activities	construction machinery				
Disposal of Mucking Material	Mucking material / solid waste from construction activities may be haphazard	Utilization of muck/construction solid waste within project site as earth fill work Transportation of muck material in covered loaders		X		
b. Ecological Environment						
Impacts on Flora	Construction activity may impose some impacts on flora	To avoid any negative impact on flora		X		
Impacts on Fauna	Negligible impact on fauna	To avoid any disturbance to fauna		X		
c. Socio-Economic Environment						
Health & Safety of Workers	Construction activities can impose certain negative impact on health & safety of workers	Training of workers Regular checks to ensure that contractor is following safety measures Provision of PPEs			X	
C. Potential Environmental Impacts Relating to Operational Phase						
a. Physical Environment						
Impacts on Air Quality	Deterioration of air due to stack emissions	Development of air quality monitoring & improvement plan Installation of safety devices on stacks Maintenance & overhauling of standby power generators & boilers		X		
Noise Pollution	Nuisance due to noise pollution	Development of noise level monitoring & improvement plan Construction of proper foundations for machines Maintenance & overhauling of standby power generators & boilers		X		
Water Consumption	Insignificant impact on water	Training or workers to conserve the	X			

	table	water Regular inspection of water tapes, valves and water supply lines				
Wastewater Generation	Damage to the environment due to process wastewater	About 2.5 m3 of wastewater will be produced from the proposed extension project. Treatment through effluent treatment plant is already in place.			X	
Solid waste generation	Indiscriminate disposal may be haphazard and damage to the environment	Solid waste will be produced from the proposed extension. Proper disposal of solid waste as per requirement and record keeping			X	
Emergency response	Severe damage due to emergency situation	Development of comprehensive Emergency Response Plan Arrangements of firefighting equipments				X
b. Ecological Environment						
Impacts on Flora	Insignificant on Flora	Beautiful landscaping will be done	X			
Impacts on Fauna	Operation of extension project may have minor impact on fauna	Beautiful landscaping will be done Noise level monitoring		X		
c. Socio-economic Environment						
Health & safety of workers	Risk of safety & health of workers	Job specific training of workers Regular monitoring & inspection of health & safety measures Provision of PPEs			X	

b. Matrix

The impact evaluation matrix was developed and different environmental parameters likely to be affected by the proposed project actions grouped into categories i.e. Physical Environment, Ecological Environment and Socio-

economic Environment. For the impact assessment, project impact assessment matrix is used by dividing the project action into different phases such as Design Phase, Construction Phase and Operational Phase. Impact evaluation matrix with suitable mitigation measures is incorporated at the end of this section in the form of Table 8.2.

8.4 Impact Analysis and Prediction

In order to give correct categorization to the present project Rapid Environmental Assessment Procedure was followed. It revealed that there some major impacts of the project have identified which will be controlled by adopting proper mitigation measures. These impacts are mainly attributed to the generation of stack emissions, wastewater and solid waste while operational phase of the proposed extension project but most of the impacts are projected as moderate/minor impacts although project has many positive impacts on local public and economy. Magnum Ice Cream Company will install latest state of the art technology imported plant / machinery and adopt proper standards operating procedures to carry out the operations in environment friendly manner.

a. Meetings

For the impact analysis and predictions detailed meetings were held with the proponent/company management of M/s The Magnum Ice Cream Company Pakistan Ltd. and with other stakeholders. Issues were discussed that may affect the environment and also the implementation of proposed extension project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

b. Consultations

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders, inhabitants of the villages, shopkeepers and workers in the area. The purpose of such consultations is to obtain the feedback from the relevant persons. The environmental issues have been identified during literature review, consultation with stakeholders, relevant reports and visits to project site.

8.5 Characteristics of Impacts

Impacts were assessed on the basis of magnitude, immediacy, likelihood and sustainability. Evaluation criteria are as follows:

- **Nature of Impact**
  Nature of impact; Direct or Indirect

- **Magnitude or degree of impact**
  Size or Scale (whether large or small scale)

- **Extent and Location of Impact**
  Point or degree (local or widespread)

Location (On-site or Off-site)

- **Timing of Impact**
  Timing of impact (during construction or after construction/during operational)

- **Duration of Impact**

  Duration of impact (short-term, mid-term or long-term)

- **Likelihood of impact**
  Likelihood of impact occurrence (Certain, Likely, Unlikely)

- **Reversibility of Impact**
  Reversibility of impact (reversible or irreversible)
  Reversibility (Possible or How)

- **Sustainability of Impact**
  Mitigability (fully, partially)
  Monitoring (fully, partially)

- **Impact Consequence Severity**
  Impact consequence severity (severe, moderate, mild)

- **Signification of Impact**
  High, Medium, Low

8.6 Impact Significance

Impacts significance has been evaluated on the basis of none, minor, medium and major which are enlisted in project impact evaluation checklist. The impacts have been evaluated so that the nature, magnitude, extent & location, timing, duration, reversibility and risk could be clarified either some are acceptable and other might be mitigated with suitable protection measures so that those would be eliminated or minimized to an acceptable level as prescribed in PEQS.

All the impacts have been studied while different phase of the project design phase, construction stage and operational phase thoroughly and suitable mitigation measures have also been suggested.

a. Ecological Importance

The impacts relating to the ecological environment such as flora & fauna, concern & importance of these impacts and suggestion of suitable mitigation measures have been done while all three phases of the proposed project including design phase, during construction stage & during operational phase at next pages of this section. However, the impacts relating to ecological environment are acceptable and the significance of these impacts is minor scale.

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b. Social Importance

The impacts which are linked with socio-economic environment including employment generation, changes in land value, uplift in socio-economic conditions of the area, tax/revenue generation and health & safety of workers and importance of these impacts have also been discussed while various stages of the proposed project including design phase, during construction stage & during operational phase at next pages of this section. The impacts regarding socio-economic environment are vitally important and having positive nature.

c. Environmental Standards

Environmental standards such as Punjab Environmental Quality Standards (PEQS) / Pakistan Environmental Quality Standards (NEQS) will be monitored and complied with letter & spirit. Monitoring will be done throughout project lifecycle during construction phase and operational phase. The monitoring of different parameters including air/stack emissions, noise levels, ground/drinking water quality and wastewater quality will be done as per requirement.

8.7 Mitigation and Impact Assessment

Mitigation and impact assessment have been done on the following criteria:

a. Impact Assessment Criteria:

The impacts were assessed in the light of criteria give as under: -

- Magnitude or degree
- Time and duration of impact
- Likelihood of impact occurrence
- Sensitivity of impact
- Risk related to impact

b. Mitigation Assessment Criteria:

The Mitigation Hierarchy establishes a structure to guide development and application of measures to mitigate impacts on environmental values and associated components. The term ‘mitigation’ applies to four steps, or level in the mitigation hierarchy:

Step 1: Avoid
Step 2: Minimize
Step 3: Restore On-Site
Step 4: Offsite

c. General Principles:

1. Maintaining the integrity and natural functions and processes of ecosystems, and the resilience of ecosystems, is prerequisite to sustainable use of natural resources and essential to maintaining ecosystem goods and

services over time.
2. The mitigation hierarchy is applied in order of priority as follows:

    a. Avoid
    b. Minimize
    c. Restore On-Site
    d. Offset (Off-Site or On-Site)
3. Generally, the “higher” the priority of the environmental value and associated component, the more protective the mitigation measures.
4. For an action or measure to be considered “mitigation”, a party must accept responsibility for implementation of appropriate mitigation measures, and there must be certainty that the mitigation measures will be carried out.
5. Implementing mitigation measures can help resolve issues that may delay or prevent a proposed project or activity.

8.8 Purpose of Mitigation Measures

The basic purpose of mitigation measures is to reduce the impacts of the establishment of proposed project on the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

a. What is the problem?

The project under study is the extension project (production capacity enhancement in moulded stick line facility/ plant). The project is located at Dina Nath, Multan Road, District Kasur. The major impacts may arise by the subject project are wastewater, solid wastes and air emissions. Other impacts are of minor importance. These impacts may arise during the operational phase of the subject proposed extension project because the construction volume of the project is very small scale and within the premises of the site so it will not cause any major harmful impacts on the environment. While operational phase EMMP will be implemented whole heartedly to avoid adverse impacts on environment from the operation of the project in terms of air emissions, wastewater discharge and the management of the solid waste.

b. When the problem will occur and when it should be addressed?

The impacts from the project will occur during the operation. These issues included; noise generation, air emissions, solid waste management, wastewater disposal, Health and Safety issues and changes in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

Any impact that would arise due to the subject project activity will be addressed through proper channel and on site by implementing EMMP. Trainings will be conducted regarding HSE, firefighting, best work practices etc. while other precautionary measures are also adopted to make the project safe and environment friendly.

c. Where the problem should be addressed?

The problem will be generated from site development and operation of the unit. So, it should be addressed on source i.e. at site within the same timeframe. The problem should be address at the site and immediate response should be provided to address the problem which may arise.

Project proponent will be responsible for the implementation of EMP and if required he will appoint a HSE manager/environmental manager along with site manager to assess any impact that could be arisen during construction and operation of the project. He is responsible to address the problem and to mitigate it.

d. How the problem should be addressed?

Proper mitigation measures will be provided according to the nature of the impacts/problems. The main elements of mitigation in the EIA process is as; Avoidance**,** Minimization and Compensation. Avoidance aims at avoiding the adverse impacts as far as possible by using preventive measures or by not carrying out the proposed action. Minimization aims at reducing adverse impacts by scaling down the magnitude of a project, or employing technology that reduces the factors generating the undesirable environmental impacts, while compensation aims at remedying unavoidable residual adverse impacts. Compensation is the least desirable approach and should only be considered after the other elements have been completed.

8.9 Ways of Achieving Mitigation Measures

By adopting proper mitigation measures, any anticipated major or minor environmental impacts could be controlled or mitigated. The details of impacts and mitigation measures have been discussed earlier in this section. Management of Magnum Ice Cream Company, shall take appropriate measures to provide pollution free and safe environment during the development and operation stage of proposed project by implementing improved management practices and monitoring techniques suggested in EMP.

8.9.1 Changing in Planning & Design

Proposed design is developed considering environmental risk and hazards. The plan includes development away from hazard-prone areas, such as floodplains, to avoid putting people and property at risk. Moreover, there is no endangered and threatened species present in the project area. Any human settlement or infrastructure will not be dislocated or dismantled due to the proposed extension project development. Hence, there is no need to change the design of project.

8.9.2 Improved Monitoring & Management Practices

The anticipated impacts had been reduced significantly by adopting better management activities, as it will be carried out for betterment of the society.

While environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise and public nuisances in-check.

Project proponent will take appropriate measures to provide pollution free and safe environment during the project activity by implementing improved management practices and monitoring techniques suggested in EMP. Management will further take necessary actions to mitigate any residual impacts.

Project proponent will adopt such plan that will assure the minimum impact on the environment and health by implementing proper mitigation measures. Design of the building will assure the structure stability in a long run.

8.9.3 Compensation in Money Terms

Project site is the property of proponent especially the proposed extension project site is situated within existing factory / unit's premises and there are not any land ownership disputes and no any type of property, crops or other type of loss will be expected to occur due to development of the extension project. If in future any issue would arise regarding environmental degradation, the project proponent will compensate in money terms as he has assured to achieve NEQS/ PEQS and compliance to other regulations made under PEPA 1997 (Amended).

There is no protected or environmentally sensitive area present within 10.0 km vicinity of the project that could be impacted, as the project site is located at Multan Road, District Kasur. Hence, no compensation in the monetary terms will be required. However, proper tree plantation will be done as environmental enhancement measures.

8.9.4 Replacement, Relocation and Rehabilitation

As mentioned earlier the proposed extension project site is situated within the existing ice cream factory of M/s The Magnum Ice Cream Company Pakistan Ltd. which is located at Multan Road, District Kasur; no human population or preserved natural resource is present which could be impacted due to the commencement of the proposed extension project. No replacement, relocation and rehabilitation will be required for the commencement of the aforesaid extension project.

However, after completion of the proposed extension project beautiful landscaping including grown trees, ornamental / flowering plants, grassy lawns / parks, etc. will be done as per plan. Plantation will be done within the unit and for this area will be reserved. Plantation will be enhanced with native species within the unit, along the boundary wall and along the road side as per direction by EPA Punjab.

Table 8.2: Impact & Mitigation Matrix

Aspects	Potential Impacts / Risks	Likely Duration	Magnitude if not mitigated	Proposed Mitigation Measures	Responsibility
DESIGN STAGE					
a. Physical Environment					
Seismic Hazard	Damage due to earthquake	Permanent	Moderate Negative	▪ The existing structure of the factory which will also be used for proposed extension project has been designed & constructed in such a way that the structure may withstand moderate to large earthquakes.	Design consultant / proponent
Emergency Response	Risk of occurrence of emergency situations by natural & anthropogenic means such as earthquakes, floods, heavy rainfall, thunderstorm, fires due to electrical short-circuiting, over heating etc.	Permanent	Minor negative	The following mitigation measures will be adopted to minimize or eliminate the emergency situations: ▪ The design of the existing building also includes emergency exits which can be used during emergency situation emergency routes/pathways will also be well marked. ▪ Adequate internal and external water distribution system will be designed, which could also supply adequate quantity of water for firefighting during emergency. ▪ Firefighting arrangements including fire hydrant system connected with adequate water reservoir, fire extinguishers (DCP, AFFF, CO_2, etc.), Sand Buckets, fire alarm system (automatic & manual), smoke detectors, heat detectors, gas detectors, etc. will be provided at many locations where necessary.	Design consultant / proponent
b. Ecological Environment					
Impacts on Flora	No any type of flora is present at extension project site so construction activities may not	-	-	▪ Site selection and designing of structure for extension project will be done at where / or in such a way to avoid disturbing of current	Design consultant / proponent

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	affect the flora / landscaping present within the unit			landscaping including tree cutting or other type of flora. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns, have been developed at available open places in the existing unit and will be tried to develop more landscaping if possible at open place available after completion of construction.	
Impacts on Fauna	Fauna (wild birds) present at site may not be disturbed from development of extension project.	-	-	▪ Construction/alteration activities for the development of extension project will be done in such a way fauna (wild birds) if any within the site and outside the premises may not be disturbed or minimized the negative effects to an acceptable level. ▪ Best and latest technology will be selected which have low operational noise. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and which will act as sound barrier too if open places may be available.	Design consultant / proponent
c. Socio-economic Environment					
Economic Growth	Causing of Economic gain	Permanent	Minor positive	▪ This will be minor positive impact and not required any mitigation measure.	-
CONSTRUCTION STAGE					
a. Physical Environment					
Change in land use	The proposed extension project is being planned within boundaries of existing unit where already same industrial activity is going on and civil structure is also existed so the construction of new structure	-	-	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be	Contractor / Proponent

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	will not contradict to the factory premises / surrounding.			tried to develop at available open places.	
Change of Land Appearance / Layout	There would be no significant change in the land appearance as minor execution will be involved in construction activities and same structure is already existed at the site. The excavated earth material will be used for land filling / uplifting the floor level within the project site.	Temporary	Minor negative	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.	Contractor / Proponent
Impacts on Topography	Construction of structure for extension project will not bring significant change in the topography of the site.	Temporary	Minor negative	▪ There will be no significant changes off site the project area however resurfacing of the exposed area will be done to avoid any negative impact on site surface.	Contractor / Proponent
Impacts on Soils	The overall geology and soil quality of the project site is not expected to be adversely impacted due to the execution of the proposed project during construction period.	Temporary	Minor negative	▪ Plantation needs to take place at the project site so that soil may become stabilized.	Contractor / Proponent
Impacts on Air Quality	Air quality may be disturbed during construction stage of the proposed extension project.	Temporary	Minor negative	▪ Regular water sprinkling will be done on construction material like sand, soil/clay etc. and exposed areas of site for civil construction/excavations. ▪ Construction machinery will be maintained or overhauled in time to avoid any negative impact from their smoke especially standby power generator.	Contractor / Proponent
Disposal of Mucking Material	Inevitable cut and fill earthwork operations will open up scars on the land in and	Temporary	Moderate negative	▪ The spoil will be carefully examined and disposed off in an environmental friendly manner by transporting it in closed containers	Contractor / Proponent

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	around the project site. The excavated materials that are unsuitable for use need to be stored, transported and disposed off appropriately at the designated site.			and filling at appropriate sites. ▪ It is also desirable to utilize the muck in such a way that it is consumed for the construction of any other structure within the Project Site or in the immediate vicinity. Utilization of muck in the vicinity of the Project Site is considered as the best option for its disposal.	
b. Ecological Environment					
Impacts on Flora	Construction activities for development of extension project may not impose any negative impact on flora in the unit.	-	-	▪ Construction/alteration/renovation/repair will be done in such a way to avoid any negative impact on flora within the existing unit as well as outside. ▪ Moreover the affected landscaping (if any) will be developed at alternate available open place. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.	Contractor / Proponent
Impacts on Fauna	The construction of the said project will not affect the fauna (wild birds) if any present at within the factory boundaries.	-	-	▪ Construction activities for the development of extension project will be done in such a way fauna (wild birds) if any within the site and outside the premises may not be disturbed or minimized the negative effects to an acceptable level.	Contractor / Proponent
c. Socio-economic Environment					
Employment Generation	Employment generation during construction stage will be minor positive change.	-	-	-	-
Health and Safety of	Construction activities impose certain negative impacts on	Temporary	Moderate negative	Implementation of the following measures will ensure health and safety of the workers during	Contractor / Proponent

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Workers	health & safety of construction workers and public.			the construction stage: ▪ The Contractor will ensure that the construction workers / laborers are trained in safety procedures for all relevant aspects of construction; ▪ Proponents of the Project will make regular checks to ensure that the contractor is following safety working procedures/safety measures. ▪ Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident.	
OPERATIONAL STAGE					
a. Physical Environment					
Air Quality	Risk of deterioration of ambient air from emissions to be generated from stacks of standby power generators and boilers.	Permanent	Moderate negative	In order to minimize air pollution, following mitigation measures will be adopted: ▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of PEQS. ▪ Latest sate of the art technology standby power generators and boilers have been placed at concrete foundation equipped with sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will also be developed. ▪ Standby power generators and boilers will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke.	Factory Management / Proponent

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				▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,	
Noise	Noise pollution may be generated from operations of plant machinery, standby power generators and boilers and this noise pollution may affect the health of workers & ecological environment i.e. fauna.	Permanent	Moderate negative	▪ Proper foundation of the plant machinery has been designed to cope with the problem of tremor / vibration that will consequently abate the noise problem. ▪ Noise level monitoring and improvement plan has been developed and implemented with letter & spirit. The same plan will be implemented on extension project during its operational phase. ▪ The standby power generators and boilers will be over hauled and well tuned according to the schedule to avoid excessive noise. ▪ Proper set back will be provided from the boundary wall which will also help to minimize / eliminate the noise pollution. ▪ Extensive tree plantation along the boundary wall and at open places will also be done to act as sound barrier / sound absorber.	Factory Management / Proponent
Water Consumption	A small quantity of water (about 2.5 m^3) will be utilized by the extension project during its operational phase which shall not exert any negative change on water table.	-	-	▪ At open places the grassy lawns have been developed to recharge the water table which is help to control the surface runoff during rainy season. More landscaping will also be done at available open place after completions of extension project ▪ The overall nature of the area is agricultural it is also help to recharge the water table. ▪ The workers have been given training to avoid wastage of water and workers of extension project will also be trained. ▪ Regular inspection of water tapes, valves and water lines as per schedule or	Factory Management / Proponent

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				periodically will be undertaken. ▪ This is positive step ahead for conservation of water ultimately for the betterment of environment.	
Wastewater Generation	Wastewater to be generated from extension project while its operational phase would require proper treatment, if not done so, it will affect the environment negatively.	Permanent	Major negative	▪ An activated Sludge Treatment Plant with capacity of 44 m^3/hour (1056 m^3/day) has already been installed for the treatment of existing unit's wastewater, it is properly working and treating the wastewater within the permissible limits of PEQS. ▪ Above mentioned treatment plant has enough capacity to treat the wastewaters to be produced from the proposed extension project. ▪ The treated wastewater of existing unit is being utilized for watering of landscaping, cooling tower(s) and washing of solar panels. Hence, the same policy / plan will be sustained for the extension project. ▪ The surplus treated wastewater will be drained out into wastewater channel, if needed/required. ▪ This is positive step ahead for conservation of water ultimately for the betterment of environment.	Factory Management / Proponent
Solid Waste Generation	During operational phase of the proposed extension project, non-hazardous nature wastes / recyclable nature wastes will be produced including packaging materials, paper & board, plastic bags, wood, engineering waste, production waste etc.	Permanent	Moderate negative	▪ All the non-hazardous nature wastes / recyclable nature wastes will be handed over / sold to interested EPA Approved contractor for proper disposal / recycling of wastes in an environment friendly manner. ▪ A track record of solid wastes will be maintained.	Factory Management / Proponent
Emergency	The operation of the proposed	Permanent	Major	▪ A comprehensive Emergency Response Plan	Factory

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Response	extension project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.		negative	(ERP) for emergency / fire conditions and disastrous situations have already been developed and implemented and the same will be implemented on extension project while its operational phase. ERP is appended with this study for ready reference. ▪ Following mitigation / safety measures or fire fighting arrangements have already been undertaken: • Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit. The detail of firefighting arrangements are as under: • Central fire hydrant system backed by a 08 bar pressure connected to water reservoir specified for emergency/fire • Fire Hydrants • Fire Extinguishers • Fire Blankets • Water Trolleys • Smoke Detectors • Heat Detectors • Break Glasses • Eye Showers • Spill Kits • Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. • Emergency signs • Emergency exits • Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly.	Management / Proponent

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				▪ All firefighting, emergency and safety equipment shall be frequently checked and properly maintained.	
b. Ecological Environment					
Impacts on Flora	Operation of the proposed extension project will not exert significant negative impact overall on flora of the site and also flora of local / surrounding area because no any type of process air emissions will be generated.	Permanent	Minor negative	▪ To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within NEQS/PEQS limits. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.	Factory Management / Proponent
Impacts on Fauna	Noisy operation of machines, standby power generators and boilers will have some negligible impact on fauna (wild birds) if present within the unit. It will be moderate negative impact if not mitigated properly.	Permanent	Minor negative	▪ Best and latest technology will be selected which have low operational noise and emissions. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.	Factory Management / Proponent
c. Socio-economic Environment					
Employment Generation	Employment generation during operation phase of the proposed project will be positive change	Permanent	Major positive	-	-
Generation of	Generation of revenue and	Permanent	Major	-	-

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Revenue	taxes for government will also be positive impact		positive		
Health and Safety of Workers	The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If they do not properly trained and provided with Personal Protective Equipments (PPEs) this will be major negative impact if not mitigated properly.	permanent	Major negative	To mitigate the hazards of health and safety of workers the following mitigations measures will be undertaken: ▪ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances. ▪ The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes shall be available for all workers who may be exposed to any hazardous substance, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken to avoid from any bad smell/odor. ▪ There will be proper arrangement to handle accidental / disastrous situation. ▪ The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at suitable / prominent places. ▪ Adequate supply of water shall be made available t the workers for personal washing	Factory Management / Proponent

				as well as for washing their protective equipments. ▪ Protective clothing and equipment of the workers shall be washed and cleaned as often as required to ensure their efficiency. ▪ No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work. ▪ All firefighting, emergency and safety equipments shall be frequently checked and properly maintained. ▪ First aid medical facility equipped with required antidotes shall be available in the premises, supervised by trained staff. ▪ Medical checkup of all workers shall be carried out at the time of employment and at least once a year thereafter.	

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SECTION 9: SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

9.1 General

This section identifies the potential impacts due to implementation of the proposed extension project activities on the physical, ecological and social environment of the project surrounding/area. The potential environmental impacts related to the proposed extension project have been studied related to location, design, construction and operational stages. This section also identifies mitigation measures that will help to mitigate the project's adverse environmental effects or to reduce them to an acceptable level within the prevailing legislative and regulatory framework.

9.2 Screening of Impacts & Mitigation Measures

The subject project impacts and mitigation measures have been studied keeping in view of following parameters while its different phases:

- Project location related impacts & mitigation measures
- Design related impacts & mitigation measures
- Construction stage impacts & mitigation measures
- Operational stage impacts & mitigation measures

9.3 Project Location Related Impacts & Mitigation Measures

The subject proposed project is basically extension project (production capacity enhancement in moulded stick line facility/ Plant) and other allied utilities hence the site of extension project is located within existing unit of M/s Magnum Ice Cream Company Pakistan Ltd. where industrial activities are already going on. Therefore, in this context the extension project does not contradict to the status / nature of the site / surrounding area from project location point of view. Further, the entire basic infrastructure is available within the existing factory / unit. So due to extension project no impacts are being seen related to project location scenario.

9.4 Design Related Impacts & Mitigation Measures

The negative impacts related to design of the proposed extension project will not be significant as the proposed extension project site is situated within boundary limits of existing unit where, currently same manufacturing / industrial processes are being carried out that would be undertaken while operational phase of proposed extension project. The machinery is according to the latest state of art technology. The plant / machinery will be imported and manufactured according to European standards those are more stringent than of PEQS, so compliance of PEQS will automatically be done.

In view of these considerations, no environmental problems are foreseen in the context of design of proposed extension project. However, the possible impacts of proposed extension project regarding physical environment, ecological

environment and socio-economic environment have been considered and their mitigation measures proposed as under:

9.4.1 Impacts

Anticipated impacts relating to design of the proposed extension project regarding physical environment, ecological environment & socio-economic environment are as under:

a. Physical Environment

Impacts on physical environment during design stage are as under:

- **Seismic Hazard**

The project is situated in minor damage zone. In this zone distant earthquakes with fundamental periods greater than 1.0 second may cause damage to structures.

- **Emergency response**

There are always chances of occurrence of emergency situations by natural & anthropogenic means such as earthquakes, floods, heavy rainfall, thunderstorm, fires due to electrical short-circuiting, over heating etc. it will be major negative impact.

b. Ecological Environment

- **Impacts on Flora**

No any type of flora is present at extension project site hence construction activities including civil work, fabrication / installation, etc. may not affect the flora present at site in the form of landscaping.

- **Impacts on Fauna**

As mentioned earlier extension project site is located within the industrial unit where industrial activities are going on so the construction & operation of extension project may not affect the fauna (wild birds) present at site if any.

c. Socio-economic Environment

- **Economic growth**

After the development of proposed extension project economic growth will be gained by different dimensions e.g. employment generation, production capacity enhancement will be ultimately help to run the unit smoothly and earn more business which will uplift the local & national economy eventually.

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9.4.2 Mitigation Measures

Suitable mitigation measures for above mentioned anticipated impacts are as under:

a. Physical Environment

➢ **Seismic Hazard**

- The structure of the proposed extension project has been designed in such a way that the structure may withstand moderate to large earthquakes.

➢ **Emergency response**

The following mitigation measures will be adopted to minimize or eliminate the emergency situations:

- The design of building will also include emergency exits which can be used during emergency situation emergency routes/pathways will also be well marked.
- Adequate internal and external water distribution system will be designed, which could also supply adequate quantity of water for firefighting during emergency.
- Fire fighting arrangements including fire hydrant system connected with adequate water reservoir, fire extinguishers (DCP, AFFF, CO_2, etc.), Sand Buckets, fire alarm system (automatic & manual), smoke detectors, PA system, etc. will be provided at many locations where necessary
- These are in place in the existing factory as well.

b. Ecological Environment

➢ **Impacts on Flora**

- Site selection and designing of structure for extension project will be done at where / or in such a way to avoid disturbing of current landscaping including tree cutting or other type of flora.
- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns, have been developed at available open places in the existing unit and will be tried to develop more landscaping if possible at open place available after completion of construction.

➢ **Impacts on Fauna**

- Construction activities for the development of extension project will be done in such a way fauna (wild birds) if any within the site and outside the premises may not be disturbed or minimized the negative effects to an acceptable level.
- Best and latest technology will be selected which have low operational noise.

- Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level.
- Trees will be planted around the building as buffer zone and which will act as sound barrier too if open places may be available.

c. Socio-economic Environment

➢ **Changes in Land value**

- Employment generation & economic gain will be positive impact and not required any mitigation measure.

9.5 Construction Stage Impacts & Mitigation Measures

During construction phase of the under study proposed extension project, no full fledge construction of building / production hall will be undertaken, enough space is available within existing moulded stick line production hall hence, relocation / alteration just will be involved.

The potential environmental impacts of the proposed extension project along with their mitigation measures arising during the construction stage have been described as follows:

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9.5.1 Impacts

Anticipated impacts during construction stage of the proposed extension project have been discussed in context of physical environment, ecological environment & socio-economic environment as below:

a. Physical Environment

Anticipated impacts during construction phase on physical environment are as follows:

➢ **Impacts on Topography**

The construction of the proposed extension project will not bring major changes in the existing topography of the project site. The changes due to the construction of the unit will be of localized nature. There will be no significant changes off site the project area.

➢ **Impacts on Soils**

The overall geology and soil quality of the project site is not expected to be adversely impacted due to the execution of the proposed extension project during the construction period because construction will be very minor scale.

➢ **Impacts on Air Quality**

During construction phase, negligible change will occur in air quality due to dust and the construction machinery used for the development of proposed extension project.

- **Disposal of Construction Solid Waste**

Inevitable cut and fill earthwork operations will open up scars on the land in and around the Project Site. Proper landscaping will, therefore, be given due consideration along with re-establishment of the local/indigenous vegetation. The excavated materials that are unsuitable for use need to be stored, transported and disposed off appropriately at the designated sites.

b. Ecological Environment

- **Impacts on Flora**

Construction activities for development of extension project may not impose any negative impact on flora in the unit.

- **Impacts on Fauna**

As the proposed extension project site is located within the existing unit where industrial activities are currently going on and the construction of the said project will not affect the fauna (wild birds) if any present at within the factory boundaries.

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c. Socio-economic Environment

- **Employment Generation**

During construction/alteration stage of the proposed extension project, about 50 workers / laborers will be engaged. This will be positive change.

- **Health and Safety of Workers**

The construction activities can impose certain negative impacts on health and safety of the workers. These impacts will be minor because the construction volume is small, however mitigation measures will be required to minimize/eliminate health and safety related negative impacts of the project.

9.5.2 Mitigation Measures

Following mitigation measures are suggested to eliminate or minimize above mentioned potential negative impacts to an acceptable level during construction phase of the proposed extension project:

a. Physical Environment

- **Impacts on Topography**

- There will be no significant changes off site the project area however resurfacing of the exposed area will be done to avoid any negative impact on site surface.

➢ **Impacts on Soils**

- Plantation needs to take place at the project site so that soil may become stabilized.

➢ **Impacts on Air Quality**

- Regular water sprinkling will be done on construction material like sand, soil/clay etc. and exposed areas of site for civil construction/excavations.
- Construction machinery will be maintained or overhauled in time to avoid any negative impact from their smoke especially standby power generator.

➢ **Disposal of Construction of Solid Waste**

- The spoil will be carefully examined and disposed off in an environment friendly manner by transporting it in closed containers and filling at appropriate sites.
- It is also desirable to utilize the muck in such a way that it is consumed for the construction of any other structure within the Project Site or in the immediate vicinity. Utilization of muck in the vicinity of the Project Site is considered as the best option for its disposal.

b. Ecological Environment

➢ **Impacts on Flora**

- Construction will be done in such a way to avoid any negative impact on flora within the existing unit as well as outside.
- Moreover, the affected landscaping (if any) will be developed at alternate available open place.
- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces.
- After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.

➢ **Impacts on Fauna**

- Construction activities for the development of extension project will be done in such a way fauna (wild birds) if any within the site and outside the premises may not be disturbed or minimized the negative effects to an acceptable level.

c. Socio-economic Environment

➢ **Employment Generation**

- During construction of the project workers will get jobs. This will be positive change.

➢ **Health and Safety of Workers**

Implementation of the following measures will ensure health and safety of the workers during the construction stage:

- The Contractor will ensure that the construction workers / laborers are trained in safety procedures for all relevant aspects of construction;
- Proponents of the Project will make regular checks to ensure that the contractor is following safety working procedures/safety measures.
- Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident.

9.6 Operational Stage Impacts & Mitigation Measures

The anticipated environmental impacts and their suitable mitigation measures related to the proposed extension project, during its operational phase have been studied and listed as below: -

9.6.1 Impacts

Anticipated impacts from operational phase of the proposed extension project regarding physical environment, ecological environment & socio-economic environment have been discussed as follows:

a. Physical Environment

➢ **Air Quality**

During regular operation of the proposed extension project, no process air emissions will be generated. However, some negligible stack emissions will be generated from operation of standby power generators and boilers.

➢ **Noise**

During the operational stage, the noise will be produced from operation of plant machinery, standby power generators and boilers. Noise levels will be increased at some negligible level but it will be mitigated if not, may have moderate negative impact.

➢ **Water Consumption**

Approximately 2.5 m^3/day of water will be consumed during operational phase of the proposed extension project for production of ice cream sticks.

- **Wastewater Generation**

Approximately only 2 m^3/day of wastewater will be generated from the proposed extension project such as process, washings, toilets / washrooms, etc. which needs to be proper treatment to comply with PEQS before proper disposal.

- **Solid Waste Generation**

During operational phase of the proposed extension project, non-hazardous nature wastes / recyclable nature wastes will be produced including packaging materials, paper & board, plastic bags, wood, engineering waste, production waste etc.

- **Emergency Response**

The operation of the proposed extension project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.

b. Ecological Environment

- **Impacts on Flora**

Operation of the proposed extension project will not exert significant negative impact overall on flora of the site and also flora of local / surrounding area because no any type of process air emissions will be generated.

- **Impacts on Fauna**

Noisy operation of machines, standby power generators and boilers will have some negligible impact on fauna (wild birds) if present within the unit. It will be moderate negative impact if not mitigated properly.

c. Socio-economic Environment

- **Employment Generation**

When extension project will be in full operation, it will generate employment for 03 people. This will be a major positive impact.

- **Generation of Revenue**

Magnum Ice Cream Company will generate more revenue for Government. This will be a major positive impact.

➢ **Health and Safety of Workers**

The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If they do not properly trained and provided with Personal Protective Equipments (PPEs) this will be major negative impact if not mitigated properly.

6.9.2 Mitigation Measures

Mitigation measures for operation stage of the proposed extension project as mentioned above are listed below:

a. Physical Environment

➢ **Air Quality**

In order to minimize air pollution, following mitigation measures will be adopted:

- An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of PEQS.
- Latest sate of the art technology standby power generators and boilers have been placed at concrete foundation equipped with sound proof canopy, silencer, smoke arrestor and stack with proper height.
- Maintenance and overhauling schedule will also be developed.
- Standby power generators and boilers will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke.
- No leak system by proper maintenance of valves, seals & flanges
- Well capped containers
- Good housekeeping,

➢ **Noise**

- Proper foundation of the plant machinery has been designed to cope with the problem of tremor / vibration that will consequently abate the noise problem.
- Noise level monitoring and improvement plan has been developed and implemented with letter & spirit. The same plan will be implemented on extension project during its operational phase.
- The standby power generators and boilers will be over hauled and well tuned according to the schedule to avoid excessive noise.
- Proper set back will be provided from the boundary wall which will also help to minimize / eliminate the noise pollution.
- Extensive tree plantation along the boundary wall and at open places will

also be done to act as sound barrier / sound absorber.

- **Water Consumption**

- At open places the grassy lawns have been developed to recharge the water table which is help to control the surface runoff during rainy season. More landscaping will also be done at available open place after completions of extension project
- The overall nature of the area is agricultural it is also help to recharge the water table.
- The workers have been given training to avoid wastage of water and workers of extension project will also be trained.
- Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken.
- This is positive step ahead for conservation of water ultimately for the betterment of environment.

- **Wastewater Generation**

- An activated Sludge Treatment Plant with capacity of 44 m^3/hour (1056 m^3/day) has already been installed for the treatment of existing unit's wastewater, it is properly working and treating the wastewater within the permissible limits of PEQS.
- Above mentioned treatment plant has enough capacity to treat the wastewaters to be produced from the proposed extension project.
- The treated wastewater of existing unit is being utilized for watering of landscaping, cooling tower(s) and washing of solar panels. Hence, the same policy / plan will be sustained for the extension project.
- The surplus treated wastewater will be drained out into wastewater channel, if needed/required.
- This is positive step ahead for conservation of water ultimately for the betterment of environment.

- **Solid Waste Generation**

- All the non-hazardous nature wastes / recyclable nature wastes will be handed over / sold to interested EPA Approved contractor for proper disposal / recycling of wastes in an environment friendly manner.
- A track record of solid wastes will be maintained.

- **Emergency Response**

- A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations have already been developed and implemented and the same will be implemented on extension project while its operational phase. ERP is appended with this study for ready reference.
- Following mitigation / safety measures or firefighting arrangements have already been undertaken:

    - Central fire hydrant system, fire extinguishers, fire alarm systems, heat

detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit. The detail of firefighting arrangements are as under:

- Central fire hydrant system backed by a 08 bar pressure connected to water reservoir specified for emergency/fire
- Fire Hydrants
- Fire Extinguishers
- Fire Blankets
- Water Trolleys
- Smoke Detectors
- Heat Detectors
- Break Glasses
- Eye Showers
- Spill Kits
- Emergency assembly points are marked and factory workers are trained to cope with any emergency situation.
- Emergency signs
- Emergency exits
- Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly.

- All firefighting, emergency and safety equipment shall be frequently checked and properly maintained.

b. Ecological Environment

➢ **Impacts on Flora**

- To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within NEQS/PEQS limits.
- Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces.
- After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.

➢ **Impacts on Fauna**

- Best and latest technology will be selected which have low operational noise and emissions.
- Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level.
- Trees will be planted around the building as buffer zone and which will act as sound barrier too if open places may be available.
- Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.

c. Socio-economic Environment

- **Employment Generation**
- Employment generation will be positive impact.

- **Generation of Revenue**

- Generation of revenue or taxes which will be paid to the government, will be positive impact.

- **Health and Safety of Workers**

To mitigate the hazards of health and safety of workers the following mitigations measures will be undertaken:

- No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances.
- The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures.
- Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes shall be available for all workers who may be exposed to any hazardous substance, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment.
- To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical.
- Proper cross ventilation shall be undertaken to avoid from any bad smell/odor.
- There will be proper arrangement to handle accidental / disastrous situation.
- The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at suitable / prominent places.
- Adequate supply of water shall be made available t the workers for personal washing as well as for washing their protective equipments.
- Protective clothing and equipment of the workers shall be washed and cleaned as often as required to ensure their efficiency.
- No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work.
- First aid medical facility equipped with required antidotes shall be available in the premises, supervised by trained staff.
- Medical checkup of all workers shall be carried out at the time of employment and at least once a year thereafter or as per company policy.

9.7 Potential Environmental Enhancement Measures

Following potential environmental enhancement measures including safety & health enhancement measures will be implemented during construction & operational stages of the proposed extension project:

- Environmental Management and Monitoring Plan (EMMP) suggested in EIA Report should be strictly followed and operational throughout the project life. All monitored data should be reported to the EPA Punjab, Lahore for scrutiny at their end.
- No need of new ETP/WWTP or extension of ETP/WWTP to be installed / undertaken for the treatment of wastewater producing from the extension project.
- Solid waste management plan including safe storage, segregation (on site or off site by contractor), transportation and safe disposal should be developed and track record will be maintained.
- The generators must be placed on foundation with tremor / vibration absorber and equipped with silencer, sound proof canopy, smoke arrestor and stack with proper height.
- Standby power generators and boilers should be overhauled and tuned well within time or as per schedule to avoid black smoke, excessive noise & vibration.
- Environmental Monitoring plan including air quality monitoring, wastewater analysis and noise level should be developed and implemented to keep all the parameters within the limits of Punjab Environmental Quality Standards (PEQS) and specially to evaluate the performance of mitigations and control devices such as wastewater Treatment Plant, Air Emissions Control Devices, PPEs, etc.
- Emergency Response Plan (ERP) should be implemented with letter & spirit.
- ERP should be reviewed and update as necessary, periodically or annually.
- Sufficient / appropriate fire fighting arrangements according to the requirements of Civil Defense Department and international standards should be done.
- All fire fighting arrangements including fire extinguishers, fire hydrant system connected with water reservoir, sand buckets, smoke detectors, heat detectors, fire alarm system etc. must be arranged.
- Above mentioned fire fighting arrangements should be inspected periodically as per schedule and maintained.
- Safety signs, emergency exits, emergency routs should be displayed & mentioned at many / appropriate places.
- Emergency exits and routs must be kept clear from obstacles to avoid any hurdle / panic while emergency condition.
- The workers should be provided with complete PPEs according to the nature or requirement of their jobs including Protective clothing / apparel and others comprising face masks, rubber or plastic gloves and safety shoes and no worker shall be permitted to perform their job unless and until he is wearing such protective clothing and PPEs.
- All workers should be thoroughly trained in environment, health & safety precautions.
- Adequate supply of water should be made available to the workers for personal washing as well as for washing their protective equipments.
- Protective clothing and equipment of the workers should be washed and cleaned as often as required to ensure their efficiency.
- No worker should be permitted to eat or drink at work place & till he has removed his protective clothing and equipment, washed his hands and face

and left the place of work.

- First aid boxes equipped with required antidotes should be available in the premises, supervised by trained staff.
- Medical checkup of all workers should be carried out at the time of employment and at least once a year thereafter.

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SECTION 10: ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

10.1 Environmental Management

To implement the recommendations and suggestions for environmental protection included in Section "Screening of Potential Environmental Impacts & Mitigations Measures" of this study, a comprehensive management plan is needed.

The objective of the Environmental Management Plan (EMP) is to address all the major environmental issues and provide framework for the implementation of the proposed mitigation measures during the construction and operational stages of the proposed extension project. The proper implementation of the EMP will ensure that all the adverse environmental impacts identified in the EIA Study are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully adopted by the concerned institutions or regulatory agencies. The implementation of EMP will be carefully coordinated with design and construction program of the project to ensure that relevant mitigation measures are implemented at the most appropriate stage and those resources are properly allocated to achieve the desired results.

For effective environmental management, the proponent / company will assign the necessary responsibilities to an Environmental Management Team headed by a well-trained person in the field of environment, which will be responsible for the environmental monitoring of the project. The contractor will be responsible for the execution of the proposed extension project under supervision of the proponent / company management. The contractor will be bound to follow the provisions of the contract documents especially about the environmental protection measures and apply good construction techniques and methodology without damaging the existing environment. Obligation(s) of the contractor, to safeguard and mitigate adverse impacts and rehabilitate the environment will be addressed through environmental provisions in the contract document(s) as already highlighted in Chapter 6 and through adequate implementation at site.

10.2 Description of Proposed Mitigation Actions

Description of impacts & proposes mitigation measures, have been discussed in the following table:

Table 10.1: Description of Impacts & Proposed Mitigation Measures

IMPACTS	MITIGATION MEASURES
Impacts on Air Quality During regular operation of the proposed extension project, no process air emissions will be generated. However, some negligible stack	In order to minimize air pollution, following mitigation measures are recommended: ▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of PEQS.

emissions will be generated from operation of standby power generators and boilers.	▪ Latest sate of the art technology standby power generators and boilers have been placed at concrete foundation equipped with sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will also be developed. ▪ Standby power generators and boilers will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke. ▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,
Noise During the operational stage, the noise will be produced from operation of plant machinery, standby power generators and boilers. Noise levels will be increased at some negligible level but it will be mitigated if not, may have moderate negative impact.	▪ Proper foundation of the plant machinery has been designed to cope with the problem of tremor / vibration that will consequently abate the noise problem. ▪ Noise level monitoring and improvement plan has been developed and implemented with letter & spirit. The same plan will be implemented on extension project during its operational phase. ▪ The standby power generators and boilers will be over hauled and well tuned according to the schedule to avoid excessive noise. ▪ Proper set back will be provided from the boundary wall which will also help to minimize / eliminate the noise pollution. ▪ Extensive tree plantation along the boundary wall and at open places will also be done to act as sound barrier / sound absorber.
Water Consumption Approximately 2.5 m^3/day of water will be consumed during operational phase of the proposed extension project.	▪ At open places the grassy lawns have been developed to recharge the water table which is help to control the surface runoff during rainy season. More landscaping will also be done at available open place after completions of extension project ▪ The overall nature of the area is agricultural it is also help to recharge the water table. ▪ The workers have been given training to avoid wastage of water and workers of extension project will also be trained. ▪ Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken. ▪ This is positive step ahead for conservation of water ultimately for the betterment of environment.
Wastewater Generation	▪ An activated Sludge Treatment Plant with

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Approximately only 2 m^3/day of wastewater will be generated from the proposed extension project such as process, washings, toilets / washrooms, etc. which needs to be proper treatment to comply with PEQS before proper disposal.	capacity of 44 m^3/hour (1056 m^3/day) has already been installed for the treatment of existing unit's wastewater, it is properly working and treating the wastewater within the permissible limits of PEQS. ▪ Above mentioned treatment plant has enough capacity to treat the wastewaters to be produced from the proposed extension project. ▪ The treated wastewater of existing unit is being utilized for watering of landscaping, cooling tower(s) and washing of solar panels. Hence, the same policy / plan will be sustained for the extension project. ▪ The surplus treated wastewater will be drained out into wastewater channel, if needed/required. ▪ This is positive step ahead for conservation of water ultimately for the betterment of environment.
Solid Waste Generation During operational phase of the proposed extension project, non-hazardous nature wastes / recyclable nature wastes will be produced including packaging materials, paper & board, plastic bags, wood, engineering waste, production waste etc.	▪ All the non-hazardous nature wastes / recyclable nature wastes will be handed over / sold to interested EPA Approved contractor for proper disposal / recycling of wastes in an environment friendly manner. ▪ A track record of solid wastes will be maintained.
Emergency Response The operation of the proposed extension project will involve workers and visitors who may become ill or have work related accidents. In addition, disasters including natural & anthropogenic such as earthquakes, floods, heavy rainfall / thunder storm & fires due to electrical short circuiting, overheating, etc. may occur which have to be considered for minimizing their impacts.	▪ A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations have already been developed and implemented and the same will be implemented on extension project while its operational phase. ERP is appended with this study for ready reference. ▪ Following mitigation / safety measures or firefighting arrangements have already been undertaken: • Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit. The detail of firefighting arrangements are as under: • Central fire hydrant system backed by a 08 bar pressure connected to water reservoir specified for emergency/fire • Fire Hydrants • Fire Extinguishers • Fire Blankets • Water Trolleys • Smoke Detectors • Heat Detectors

	• Break Glasses • Eye Showers • Spill Kits • Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. • Emergency signs • Emergency exits • Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. ▪ All firefighting, emergency and safety equipment shall be frequently checked and properly maintained.
Impacts on Flora Operation of the proposed extension project will not exert significant negative impact overall on flora of the site and also flora of local / surrounding area because no any type of process air emissions will be generated.	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns, have been developed at available open places in the existing unit and will be tried to develop more landscaping if possible at open place available after completion of construction. ▪ To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within PEQS limits.
Impacts on Fauna Extension project will not impose any negative impact on fauna (wild birds). Because industrial activity is already going on in the existing unit, however safety measures will be undertaken to safeguard the ecological environment.	▪ Best and latest technology will be selected which have low operational noise and emissions. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna, which may disturbed them.
Health & Safety of Workers The workers especially working in the production hall / production area may be at health risk, because there are always chances of accident, incident, near miss, dangerous occurrence, work related ill-health while working at workplace. The workers may face ill-health, disease and temporary & permanent disability in case of severe injury and may face fatality in case of severe accident. If they do not properly trained and provided with Personal Protective Equipments (PPEs) this will be major negative impact if not	▪ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances. ▪ The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes shall be available for all workers who may be exposed to any hazardous

mitigated properly.	substance, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken to avoid from any bad smell/odor. ▪ There will be proper arrangement to handle accidental / disastrous situation. ▪ The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at suitable / prominent places. ▪ Adequate supply of water shall be made available to the workers for personal washing as well as for washing their protective equipments. ▪ Protective clothing and equipment of the workers shall be washed and cleaned as often as required to ensure their efficiency. ▪ No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work. ▪ First aid medical facility equipped with required antidotes shall be available in the premises, supervised by trained staff. ▪ Medical checkup of all workers shall be carried out at the time of employment and at least once a year thereafter.

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10.3 Schedule for Implementation and Environmental Budget

Currently the proponent is seeking Environmental Approval from EPA, Punjab and after obtaining of said approval construction will be started and will take the time period of 16 months for completion. The environmental budget will be implemented while in construction phase once in project life and during operational phase environmental budget will be allocated annually and it will be implemented throughout the project life.

The cost required to implement the mitigation measures effectively is important for the sustainability of the extension project. The proponent of the subject proposed extension project will allocate the Environmental budget as per requirements for construction and operational phases of the extension project for recover any damages done by the project activities on environment which will include Environment, Health & Safety, for restoration, rehabilitation & landscaping of the area, for the implementation of Environmental Management and Monitoring Program and other environment related aspects.

Environmental Budget and its breakup with Schedule for implementation is as under:

Table 10.2: Environmental Budget with Implementation Schedule

Environmental Component	Amount PKR	Schedule of Implementation
Construction Phase		
Landscaping	500,000	Once in project life
Environmental Monitoring	70,000	Quarterly
Operational Phase		
Environmental Monitoring	100,000	Quarterly
Ö & M Cost of WWTP	2,500,000	
Firefighting Arrangements	1,200,000	Yearly
PPEs	1,000,000	Yearly
Tree Plantation & O & M of Landscaping	100,000	Yearly

10.4 Environmental Management Team

Environmental management team will be made responsible for overseeing the environmental performance in the industry and develop, implement and monitor environmental strategies that promote sustainable production. The team will comprise Environmental Manager, Assistant Managers, inspectors; their responsibilities are as follows in the following table;

Table 10.3: Environmental Management Team their Roles & Responsibilities?

Position of Team Member	Roles and Responsibilities
Environmental Manager	▪ Implementing environmental policies and practices ▪ Devising strategies to meet targets and to encourage best practice ▪ Devising the best tools and systems to monitor performance and to implement strategies ▪ Ensuring compliance with environmental legislation ▪ Assessing, analyzing and collating environmental performance data and reporting information to internal staff, clients and regulatory bodies ▪ Confirming that materials, ingredients and so on are ethically or environmentally sourced ▪ Managing environmental strategy budgets ▪ Liaising with internal staff including senior managers and directors ▪ Acting as a champion or cheerleader for environmental issues within your organization ▪ Providing environmental training to staff at all levels ▪ Writing plans and reports ▪ Keeping up to date with relevant changes in environmental legislation and initiatives including international legislation where applicable ▪ Producing educational or information resources for internal

	staff, clients or the general public ▪ Liaising with regulatory bodies such as the Environment Agency
Assistant Manager Compliance	▪ Develop and oversee control systems to prevent or deal with violations of legal guidelines and internal policies ▪ Evaluate the efficiency of controls and improve them continuously ▪ Revise procedures, reports etc. periodically to identify hidden risks or non-conformity issues ▪ Draft, modify and implement company policies ▪ Collaborate with corporate counsels and HR departments to monitor enforcement of standards and regulations ▪ Assess the business's future ventures to identify possible compliance risks ▪ Review the work of colleagues when necessary to identify compliance issues and provide advice or training ▪ Keep abreast of regulatory developments within or outside of the company as well as evolving best practices in compliance control ▪ Prepare reports for senior management and external regulatory bodies as appropriate
Assistant Manager EHS	▪ Research health and safety regulations, such as OSHA laws, and create company safety protocols. ▪ Supervise safety and security staff. ▪ Look into accident and injury claims company-wide, ensuring results consistent with company goals. ▪ Educate all personnel on health and safety policies and company safety goals

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10.4.1 Institutional Capacity for effective Environment Management

To maintain or enhance the institutional capacity for effective Environment Management through implementation of Environmental Management & Monitoring Plan (EMMP), implementation of mitigation measures suggested in EIA Report, etc. proponent will form Environmental Management Team & Horticulture Committee (HC).

10.4.2 Horticulture Committee (HC) & its Responsibilities

A team will be formed named as "Horticulture Committee" (HC) to attend the issues relating to cleanliness, up keeping, aesthetic beauty of the project site, general environment enhancement, tree plantation, vegetation's promotion, planting of flowering and ornamental plants/trees in and outside of project site.

- To attend the issues relating to cleanliness
- To upkeep, aesthetic beauty of the project site
- To look after general environment enhancement
- Tree plantation, vegetation's promotion, plantation of flowering and ornamental plants/trees in and outside of project site.

10.5 Proposed Monitoring Program to Assess Performance or output of EMP

Environmental monitoring is normally undertaken during both construction and operational stages of the project to ensure the effectiveness of the proposed mitigation measures. In order to respond to unexpected environmental concerns at an early stage and to determine the accuracy of impacts predictions are also required. Specific monitoring programs are outlined below as well as responsibilities for the collection and analysis of data and the reporting requirements.

The various objectives of the environmental monitoring plan are:

(a) To evaluate the effectiveness of mitigation measures,

(b) To respond to the unanticipated environmental impacts when the project is under implementation.

10.5.1 Construction Phase

During construction stage of the proposed extension project environmental monitoring including air quality, noise level, ground water & wastewater will be done and detail is as follows:

a. Air Quality:

An ambient air quality monitoring will be done on quarterly basis or as prescribed by the EMT, in the construction stage at the representative locations.

1. CO
2. NO
3. NO_2
4. NO_x
5. SO_2
6. PM_{10}

b. Noise Level

Noise level monitoring will be done on monthly basis or as prescribed by the EMC, in the construction stage at the representative points.

c. Ground Water Quality:

Ground water quality monitoring will be done on quarterly basis, in the construction stage at the representative locations. The following parameters will be monitored.

1. pH
2. Total Dissolved Solids

3. Turbidity
4. Taste
5. Odor
6. Total Hardness
7. Chloride
8. Sulphate
9. Sodium
10. Calcium
11. Magnesium
12. Potassium
13. Nitrate
14. E-coli

d. Wastewater Quality:

Wastewater quality will be monitored on quarterly basis in the construction stage. The following parameters will be monitored.

1. Temperature
2. pH
3. DO
4. BOD_5
5. COD
6. TDS
7. TSS
8. Grease & Oil
9. Copper
10. Iron
11. Sulphate
12. Chloride

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10.5.2 Operational Phase

During operational phase of the proposed extension project, environmental monitoring including stack emissions, noise level, ground water & wastewater will be done and detail is as under:

a. Stack Emissions Monitoring:

Stack emissions (standby power generators & boilers) monitoring will be done on quarterly basis in the operational phase. The parameters of stack emissions prescribed in Punjab Environment Quality Standards (PEQS) approved by the Government of Punjab will be monitored as follows:

1. O_2
2. CO_2
3. CO
4. NO
5. NO_2
6. No_x
7. So_x

8. Temperature

b. Noise Levels:

Noise levels monitoring will be done on quarterly basis while operational phase of the project at different pints of / near boundary wall, outside production halls & at other representative points.

c. Groundwater Quality:

Groundwater quality will be monitored on annual basis while operational phase of the project. The following parameters will be monitored:

1. pH
2. Total Dissolved Solids
3. Turbidity
4. Taste
5. Odor
6. Total Hardness
7. Chloride
8. Sulphate
9. Sodium
10. Calcium
11. Magnesium
12. Potassium
13. Nitrate
14. E-coli

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d. Wastewater Quality:

Monitoring of wastewater analysis will be done on quarterly basis during the operational stage for the parameters given below or as prescribed by the NEQS:

1. Temperature
2. pH
3. DO
4. BOD5
5. COD
6. TDS
7. TSS
8. Grease & Oil
9. Copper
10. Iron
11. Sulphate
12. Chloride

10.6 Proposed EMP Reporting and Reviewing Procedure

The Environment Management Team will be responsible for environmental monitoring and reporting to the EPA Punjab throughout the construction and

operational stages and for the implementation of Environmental Management Plan in the unit.

EMP Reporting & Reviewing Procedures emphasize that the EMP should set forth in sufficient detail all the design measures, monitoring programs, best management practices, and emergency and contingency plans to assure best that all the potential impacts are methodically controlled and suitably mitigated. In addition to reviewing the EIA report's recommendations, the management of the industry should compare these documents and plans to the guidelines for such Industrial units in its evaluation of what is applicable or otherwise should be included in the EMP. Employee educational and training materials to be submitted to best for their review 3 weeks prior to the beginning of staff training.

10.7 Training Needs

The contractor will provide proper training to the construction workers on health and safety practices and conservation of resources. During the operational stage, the project staff will be trained about the requirements of Environmental Management System, including but not limited to the environmental health and safety efficient use of resources, emergency response, fire protection and safety / security issues etc.

10.7.1 Technical Training Programs

In order to raise the level of professional and managerial staff, they need to upgrade their knowledge in the related areas. The EMT will play a key role in this context.

Contractor's environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP because without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult for the contractor to implement effective environmental protection measures. A domestic training program is proposed to train the staff that will be involved in the construction and operational stage on environmental protection and management.

10.7.2 Training Schedule

One of the most important mechanisms for the enhancement of the project's overall environmental performance is to organize environmental trainings for the project personnel and the Contractor's team. Environmental training will form part of the ongoing environmental management of the project. Contractor's environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP because without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult for the Contractor's workforce to implement effective environmental protection measures. Adoption of these measures will help Proponent and the Contractor to achieve a high level of environmental awareness in the project team, which

should, in turn promote sound environmental management during project lifespan.

A training schedule will be developed by the Environmental Health & Safety Manager, organized, and maintained by the management of the project and contractors. Following is the comprehensive form of the training schedule;

Table 10.4: Training Schedule

Provided by	Trainee	Contents	Duration	Responsible Authority
Environmental Manager & Training Assistant	All Working Personnel	▪ Environmental laws and regulations, daily monitoring and supervision ▪ Introduction to project EIA and EMMP ▪ Importance of safety practices and usage of PPEs ▪ Environmental sensitivities of the project area ▪ Communication of environmental problems to corresponding officials ▪ Waste disposal	Monthly	Project Management & Contractor
Consultants / specializing in social management	Staff dealing in social matters	▪ Short seminars and courses on social awareness ▪ Effective public speaking / dealing	Monthly	Project Manager
Drivers	As specified	▪ Follow speed limits ▪ Road safety ▪ Road restrictions ▪ Vehicle / driving restrictions ▪ Applicable rules & regulations ▪ Defensive driving	Twice a month	Project Management & Contractor
Consultants / organizations specializing in occupational, health and safety issue	As specified	▪ Short lectures relating to occupational safety and health	Twice a year	Project CEO

10.8 Equipment and Instruments Maintenance Details

The project proponent will create their own system, i.e. equipment for monitoring of air, water and noise or hire the services of a private laboratory for the monitoring and analysis. The company management will maintain the records of Environment, Health & Safety and look after the EHS issues. The company management shall maintain PPEs, firefighting arrangements, conduct trainings as mentioned above and medical / first aid.

10.9 Environmental Management Plan (EMP)

The Environmental Management Plan (EMP) provides the framework for the implementation of mitigating measures and environmental management and monitoring during the construction and operational stages of the project. This document contains all commitments made in the EIA Report and can be used as a reference document to ensure that all environmental protection measures are implemented. This annotated outline presents information, which is included in the proposed Environmental Management Plan.

The detailed Environmental Management Plan having statement of impacts, setting of targets to achieve goals to protect environment, suggestion of mitigation measures and assigning of responsibilities in the Table 10.5 at end of this section.

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Table 10.5: Environmental Management Plan (EMP)

Sr. No.	Project Component or Impact	Target	Action	Responsibility
DESIGN STAGE				
d. Physical Environment				
1.	Seismic Hazard	To design in such a way to protect building / structure from seismic hazard	▪ No new structure is being constructed for the proposed extension. However, the previous structure which will also be used for the proposed extension as well; has been designed in such a way that the structure may withstand moderate to large earthquakes.	Design Consultant / Proponent
2.	Emergency Response	Incorporate in design of building emergency exits and routes and to mitigate emergency conditions	The following mitigation measures will be adopted to minimize or eliminate the emergency situations: ▪ As mentioned earlier, no new structure will be constructed however, the existing building also include emergency exits which can be used during emergency situation emergency routes/pathways will also be well marked. ▪ Adequate internal and external water distribution system has been/ will be designed, which could also supply adequate quantity of water for firefighting during emergency. ▪ Firefighting arrangements including fire hydrant system connected with adequate water reservoir, fire extinguishers (DCP, AFFF, CO_2, etc.), Sand Buckets, fire alarm system (automatic & manual), smoke detectors, heat detectors, gas detectors, etc. will be provided at many locations where necessary.	Design Consultant / Proponent
e. Ecological Environment				
3.	Impacts on Flora	To avoid negative impact and undertake beautiful landscaping after construction	▪ Designing/alteration of the structure for extension project will be done at where / or in such a way to avoid disturbing of current landscaping including tree cutting or other type of flora. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns, have been developed at available open places in the existing unit and will be tried to develop more landscaping if possible at open place	Design Consultant / Proponent

			available after completion of construction.	
4.	Impacts on Fauna	To ensure that fauna may be affected at minimum level	▪ No new construction activities are involved for the development of extension project; however, repair/ alteration/re-location/amendment activities will be carried out in such a way that fauna may not be disturbed or minimized the negative effects to an acceptable level. ▪ Best and latest technology will be selected which have low operational noise. ▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and which will act as sound barrier too if open places may be available.	Design Consultant / Proponent
f. Socio-economic Environment				
5.	Economic Growth	Not required	▪ This will be minor positive impact and not required any mitigation measure.	-
CONSTRUCTION STAGE				
d. Physical Environment				
1.	Change in land use	To avoid any negative change	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.	Contractor / Proponent
2.	Change of Land Appearance/Layout	To ensure correlation with surroundings	▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.	Contractor / Proponent
3.	Impacts on Topography	To avoid any negative impact on	▪ There will be no significant changes off-site the project area however resurfacing of the exposed area will be done to	Contractor / Proponent

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		topography	avoid any negative impact on site surface, if any.	
4.	Impacts on Soils	To ensure minimum change in soil	▪ Though no new major construction is involved however if required, plantation will be carried out at the project site so that soil may become stabilized.	Contractor / Proponent
5.	Impacts on Air Quality	To implement mitigation measures to avoid any negative impact on ambient air	▪ Regular water sprinkling will be done on construction material like sand, soil/clay etc. and exposed areas of site for civil construction/ alteration/ re-location/ repair etc. ▪ Construction machinery (if required) will be maintained or overhauled in time to avoid any negative impact from their smoke especially standby power generator.	Contractor / Proponent
6.	Disposal of Mucking Material	To avoid degradation of soil	▪ The spoil will be carefully examined and disposed off in an environment friendly manner by transporting it in closed containers and filling at appropriate sites. ▪ It is also desirable to utilize the muck in such a way that it is consumed for the construction of any other structure within the Project Site or in the immediate vicinity. Utilization of muck in the vicinity of the Project Site is considered as the best option for its disposal.	Contractor / Proponent
e. Ecological Environment				
7.	Impacts on Flora	To avoid negative impact on flora of surroundings	▪ Construction/re-location/ alteration will be done in such a way to avoid any negative impact on flora within the existing unit as well as outside. ▪ Moreover, the affected landscaping (if any) will be developed at alternate available open place. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.	Contractor / Proponent
8.	Impacts on Fauna	To ensure that fauna may be affected at minimum level	▪ Construction activities for the development/ alteration/repair/ re-location of extension project will be done in such a way fauna (wild birds) if any within the site and outside the premises may not be disturbed or	Contractor / Proponent

			minimized the negative effects to an acceptable level.	
f.	**Socio-economic Environment**			
9.	Employment Generation	Not required	▪ During construction phase of the project 50 workers will get jobs. This will be positive change.	-
10.	Health and Safety of Workers	To ensure health & safety of construction workers, visitors and member of public	Implementation of the following measures will ensure health and safety of the workers during the construction stage: ▪ The Contractor will ensure that the construction workers / laborers are trained in safety procedures for all relevant aspects of construction; ▪ Proponents of the Project will make regular checks to ensure that the contractor is following safety working procedures/safety measures. ▪ Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any accident.	Contractor / Proponent
OPERATIONAL STAGE				
d.	**Physical Environment**			
1.	Air Quality	To avoid degradation of air and comply with PEQS	In order to minimize air pollution, following mitigation measures will be adopted: ▪ An air quality monitoring and improvement plan will be developed to keep the air pollution level within the limits of PEQS. ▪ Latest sate of the art technology standby power generators and boilers have been placed at concrete foundation equipped with sound proof canopy, silencer, smoke arrestor and stack with proper height. ▪ Maintenance and overhauling schedule will also be developed. ▪ Standby power generators and boilers will be maintained or over hauled well within time according to schedule and periodically checked or inspected to avoid any excessive smoke.	Factory Management / Proponent

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			▪ No leak system by proper maintenance of valves, seals & flanges ▪ Well capped containers ▪ Good housekeeping,	
2.	Noise	To mitigate the noise problem	▪ Proper foundation of the plant machinery has been designed to cope with the problem of tremor / vibration that will consequently abate the noise problem. ▪ Noise level monitoring and improvement plan has been developed and implemented with letter & spirit. The same plan will be implemented on extension project during its operational phase. ▪ The standby power generators and boilers will be over hauled and well tuned according to the schedule to avoid excessive noise. ▪ Proper set back will be provided from the boundary wall which will also help to minimize / eliminate the noise pollution. ▪ Extensive tree plantation along the boundary wall and at open places will also be done to act as sound barrier / sound absorber.	Factory Management / Proponent
3.	Water Consumption	To ensure that project operation may not exert any negative change on water table	▪ At open places the grassy lawns have been developed to recharge the water table which is help to control the surface runoff during rainy season. More landscaping will also be done at available open place after completions of extension project ▪ The overall nature of the area is agricultural it is also help to recharge the water table. ▪ The workers have been given training to avoid wastage of water and workers of extension project will also be trained. ▪ Regular inspection of water tapes, valves and water lines as per schedule or periodically will be undertaken. ▪ These are positive steps ahead for conservation of water ultimately for the betterment of environment.	Factory Management / Proponent

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4.	Wastewater Generation	To ensure to comply with PEQS	▪ An activated Sludge Treatment Plant with capacity of 44 m^3/hour (1056 m^3/day) has already been installed for the treatment of existing unit's wastewater, it is properly working and treating the wastewater within the permissible limits of PEQS. ▪ Above mentioned treatment plant has enough capacity to treat the wastewaters to be produced from the proposed extension project. ▪ The treated wastewater of existing unit is being utilized for watering of landscaping, cooling tower(s) and washing of solar panels. Hence, the same policy / plan will be sustained for the extension project. ▪ The surplus treated wastewater will be drained out into wastewater channel, if needed/required. This is positive step ahead for conservation of water ultimately for the betterment of environment.	Factory Management / Proponent
5.	Solid Waste Generation	To establish proper management plan for safe disposal of solid waste	▪ All the non-hazardous nature wastes / recyclable nature wastes will be handed over / sold to interested EPA Approved contractor for proper disposal / recycling of wastes in an environment friendly manner. ▪ A track record of solid wastes will be maintained.	Factory Management / Proponent
6.	Emergency Response	To prepare emergency plan and proper procedures to cope with emergency conditions	▪ A comprehensive Emergency Response Plan (ERP) for emergency / fire conditions and disastrous situations have already been developed and implemented and the same will be implemented on extension project while its operational phase. ERP is appended with this study for ready reference. ▪ Following mitigation / safety measures or firefighting arrangements have already been undertaken: • Central fire hydrant system, fire extinguishers, fire alarm systems, heat detectors, smoke detectors, sand buckets, etc. have been placed / installed at many necessary locations in the unit. The detail of firefighting arrangements are as under: • Central fire hydrant system backed by a 08 bar pressure	Factory Management / Proponent

			connected to water reservoir specified for emergency/fire • Fire Hydrants • Fire Extinguishers • Fire Blankets • Water Trolleys • Smoke Detectors • Heat Detectors • Break Glasses • Eye Showers • Spill Kits • Emergency assembly points are marked and factory workers are trained to cope with any emergency situation. • Emergency signs • Emergency exits • Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. • Regular training workshops & emergency / fire drills of workers are scheduled to be held regularly. ▪ All fire-fighting, emergency and safety equipment shall be frequently checked and properly maintained.	
e. Ecological Environment				
7.	Impacts on Flora	To avoid negative impact and undertake beautiful landscaping after construction	▪ To avoid any negative impact on flora of the site and flora of project area / outside area, air emissions and wastewater quality will be monitored and kept controlled within PEQS limits. ▪ Beautiful landscaping including grown trees, ornamental / flowering plants & grassy lawns have been developed in the existing unit however, proponent is willing to establish more vegetation at available open spaces. ▪ After completion of construction phase of extension project, more landscaping will be tried to develop at available open places.	Factory Management / Proponent
8.	Impacts on Fauna	To ensure that fauna may not be affected	▪ Best and latest technology will be selected which have low operational noise and emissions.	Factory Management /

			▪ Proper foundations will be constructed with shock / vibration absorbers to avoid tremor / vibration which may increase the noise level. ▪ Trees will be planted around the building as buffer zone and play as sound barrier. ▪ Noise level monitoring plan will also be developed to control excessive noise to avoid any negative impact on fauna which may disturbed them.	Proponent
f. Socio-economic Environment				
9.	Employment Generation	Not required	▪ During regular operation of the proposed extension 03 persons will get jobs. ▪ Employment generation will be positive impact.	-
10.	Generation of Revenue	Not required	▪ Generation of revenue or taxes which will be paid to Government it will be positive impact.	-
11.	Health and Safety of Workers	To ensure health & safety of workers by giving them proper information, instructions, training, supervision and provision of complete PPEs according to the nature or requirement of their jobs	To mitigate the hazards of health and safety of workers the following mitigations measures will be undertaken: ▪ No worker aged below 18 years or over 60 years shall be employed for any job involving physical handling of hazardous substances. ▪ The workers will be given information, instruction, training and supervision specific to their job and / or nature / requirement of their work, in safety precautions and procedures. ▪ Protective clothing and equipment comprising helmet of cloth cap, safety spectacles or goggles, respirators or masks, rubber or plastic gloves and safety shoes shall be available for all workers who may be exposed to any hazardous substance, and no worker shall be permitted on job unless and until he is wearing such protective clothing and equipment. ▪ To avoid any potential environmental hazards the workers would be trained properly so that they know the potential hazard of chemical. ▪ Proper cross ventilation shall be undertaken to avoid from any bad smell/odor.	Factory Management / Proponent

			▪ There will be proper arrangement to handle accidental / disastrous situation. ▪ The instructions for the workers, safety signs and precautionary / preventive measures for the costumers / visitors would be displayed at suitable / prominent places. ▪ Adequate supply of water shall be made available t the workers for personal washing as well as for washing their protective equipment. ▪ Protective clothing and equipment of the workers shall be washed and cleaned as often as required to ensure their efficiency. ▪ No worker shall be permitted to eat, drink or smoke till he has removed his protective clothing and equipment, washed his hands and face and left the place of work. ▪ All firefighting, emergency and safety equipment shall be frequently checked and properly maintained. ▪ First aid medical facility equipped with required antidotes shall be available in the premises, supervised by trained staff. ▪ Medical checkup of all workers shall be carried out at the time of employment and at least once a year thereafter.	

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SECTION 11: STAKEHOLDER'S CONSULTATION

11.1 General

Consultation with the stakeholders is a tool for managing two-way communication between the project sponsor and the affected public. Its goal is to improve decision-making and build understanding by actively involving individuals, groups and organizations, which have a stake in the project. This involvement increases project's long-term viability and enhances its benefits to locally affected people and other stakeholders.

In order to evaluate the socioeconomic and environmental impacts, field surveys are extremely essential. In addition to the surveys at the preliminary stage, consultation with the community and their active participation plays a vital role in successful implementation of the project. To identify the different types of stakeholders and ascertain their perceptions about the construction of the proposed extension project (production capacity enhancement in Moulded Stick Line Facility) an Impact assessment survey was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following pages.

11.2 Objectives of Consultation

Public consultation plays a vital role in studying the effects of the Project on the stakeholders and in the successful implementation and execution of the proposed projects. Public involvement is a compulsory feature of environmental assessment, which leads to better and more acceptable decision-making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the construction of the proposed extension project.

Public Consultation is a mandatory part of the EIA process for developmental projects. It is a tool used for communication with a diverse group of stakeholders having multifarious aims such as information dissemination, exchanging views, soliciting feedback and suggestions on issues pertaining to the project, plan future actions. The adequacy of the public consultation and information disclosure is one of the basic criteria used to determine the project compliance with the national / international safeguard policies.

The consultation process was carried out in accordance with the requirements of Pakistan Environmental Procedures. The objectives of this process were to:

- Inform the public about what is proposed extension project
- Identify and involve all stakeholders, especially local residents, in the consultative and participation process
- Share information with stakeholders on the development of the proposed extension project and anticipated impacts on the physical, biological and socioeconomic environment of the project area

- Understand stakeholder's concerns regarding various aspects of the extension project, including the existing available facilities and problems, construction of the extension project and the likely impacts (positive & negative) of construction and operation related activities
- Understand the perceptions, assessment of social impacts and concerns of the communities in the vicinity of the proposed extension project
- Provide an opportunity to the public in the public consultation session to provide valuable suggestions for the project design in a positive manner
- Reduce the chances of conflict through the early identification of controversial issues and consult them to find acceptable solutions.
- This section describes the outcome of the public consultation sessions held with different stakeholders that may be directly or indirectly affected by the proposed extension project.
- Information dissemination, education and liaison
- Identification of problems and needs
- Collaborative problem solving
- Reaction, comment and feedback on proposed extension project
- Documenting mitigation measures proposed by the stakeholders

11.3 Methodology

The EIA Team carried out public consultations at various locations around the proposed project area. For ascertaining the perceptions of different stakeholders about the extension project (during construction/operation) consultation meetings were held with them in the vicinity of the proposed project. Consultation was carried out in order to establish stakeholder's opinion regarding project implementation. The methods used for public consultation with project stakeholders include Scoping Sessions, Formal Meetings, Informal Meetings and Individual Interview. All the stakeholders were briefed about the project verbally. Their feedback was noted, and all the concerns voiced in the discussion were relayed to the management team of the project.

The stakeholder's consultation during this phase of the work targeted the project area, administrative and private offices, Government offices, shops, etc. near the Project area:

- Selection of the stakeholders for consultation, reconnaissance of the proposed extension project site and initial discussions with the neighboring factory workers, villagers, shopkeepers, drivers etc.
- Appraising the targeted stakeholders initially for the purpose of consultation and working out a schedule for holding regular consultation meetings;
- Meetings with the stakeholders through the participation of environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

11.4 Categories of Stakeholders Consulted

The stakeholders contacted during the survey belonged to different categories of people are as under:

11.4.1 Proponent's Environment Management Team

Possible potential impacts and mitigation measures related to the proposed extension project during its construction / developmental/re-location and operational phases were discussed in detail with the project proponent / company management. They assured to undertake all suggested mitigation measures to control or eliminate or minimize to an acceptable level any anticipated potential impact generated by the proposed extension project and to make the subject extension project environment-friendly. The environmental management team of the proponent was made aware of their responsibilities which include;

- Oversee daily activities of team members to maintain environmental management system (EMS)
- Ensure that industrial operations are in compliance with local / provincial and federal environmental laws
- Follow and enforce environmental policies and procedures.

11.4.2 The Responsible Authority

Magnum Ice Cream Company and / or its management is the responsible authority to take all mitigation measures to safe guard the environment before or prior to commence the project. The mitigation measures suggested in the EIA Study will be implemented with letter & spirit by the proponent / company management during the various phases of the proposed extension project such as Design Phase, Construction Phase and Operation Phase.

11.4.3 Other Departments and Agencies

For the analysis of anticipated potential impacts detailed meetings were held with the management of Magnum Ice Cream Company, local community surrounding of the site at Multan Road, etc. Issues were discussed that might affect the environment and also the implementation of proposed extension project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan (EMP).

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area. The purpose of such consultation is to obtain feedback from relevant person.

11.4.4 Environmental Practitioners and Experts

Environmental expert's team of M/s Sustainable Environmental Solutions (SES) visited the proposed extension project site & project area, had discussions with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People of the area belong to different professions like mostly belong to employment, own business, doctors, lawyers, some in abroad, government employees, teachers, in agriculture, etc. People provide the massive information about the extension project and have positive remarks regarding the project development.

11.4.5 Affected & Wider Community

There is no affected community present in the radius of the study area. SES team has consulted the people of surrounding the project site especially at Multan Road. The people provided positive remarks regarding the proposed extension project. Stakeholder's participation and feedback by the people to evaluate the project impacts especially socio-economic impacts. Stakeholder's feedback attached as appendices with this EIA Study.

11.5 Consultation Meetings and Formal & Informal Group Discussions

Among all stakeholders some major stakeholders were identified in the proposed project area. Consultation meetings regarding project impacts, their magnitude and mitigation measures were held with the Management of company, environmental practitioners, local residents around the project or in close vicinity of the project site or project area, general public, customers and pedestrians to know their concerns regarding proposed extension project. Scoping sessions and meeting were conducted with these stakeholders. Generally, it was found that people were already aware of the proposed extension project because the project is to be located in the area where various industries are being established there time to time. Majority of the stakeholders showed their full support for the proposed extension project.

Following are the other concerns/ suggestions of the stakeholders;

- Exposure of noise and dust pollution will cause disturbance and health & safety issues to the local residents and other stakeholders throughout the construction stage due to the movement of construction machinery and transportation of construction materials.
- The effects of noise and dust pollution on the local residents should be minimized by making necessary arrangements. Dust pollution should be controlled by water sprinkling on regular basis.
- Moreover, the site is located within the existing unit and construction activities will be confined within the premises and would not create nuisance for the public.
- Due to the movement of loaded trucks during the construction period of proposed extension project, congestion on the access road will increase. Proper diversion route rather than access road should be clearly defined to avoid traffic blockage during the entire construction period.
- Local residents should be given priority for jobs during construction as well as operational phase of the project
- Public utilities should not be disturbed. Arrangements should be made to minimize the disruption of public utilities or should be rehabilitated on priority basis to reduce the impacts.
- A detailed health and safety plan must be developed to mitigate the construction and operational risks of the proposed extension project
- Solid waste and wastewater produced during construction and operational phases should be disposed of timely and appropriately.
- Overall activities of the project;
- Possible impacts on natural vegetation, land and properties;

- Possible mitigation measures;
- Benefits of the project specifically for the local people.

Mitigation measures proposed by EIA consultants for addressing the stakeholder's concerns are as follows;

- Significant efforts including change in design should be adopted to minimize the physical and economical disturbance of the local residents.
- Local residents should be given priority through hiring manpower during construction and operational phases of the proposed extension project.
- Construction machinery should be placed within the unit's premises or at adequate locations away from the sensitive areas to minimize the impacts related to the noise.
- Project facilities should be located within the unit's premises or outside the existing residential areas. In order to avoid restricting the daily movement of the local stakeholders; construction vehicles should remain confined within their designated areas of movement
- The utilities to be shifted due to the implementation of the proposed extension project should be rehabilitated on priority basis to minimize the impacts on the stakeholders. Landscaping must be done.
- Solid waste and wastewater generated during construction at site should be disposed of safely and in an appropriate manner to not impact the environment
- All necessary measures should be taken to ensure the safety of traffic during construction, including barricades (including signs boards, pavement markings, flags, and lights).
- Dust and noise levels should be kept to minimum employing the best suitable and effective mitigation measure
- The construction activities must be confined within the project site boundary

11.6 Findings of the Overall Discussion

- After the completion of the proposed extension project the site will be used for industrial activities.
- The proposed extension project will help to fulfill the increasing demand of ice cream (especially stick-ice cream).
- It will enhance the socioeconomic conditions/values of the area
- Project will increase revenue generation for the Government
- It will create employment opportunities
- Local people should be given preference for employment in the proposed extension project
- Construction of the proposed extension project should be completed in the designated timeframe to limit adverse impacts of construction.
- There will be additional load on the existing infrastructure i.e. utilities of water, telephone, electricity etc. due to the development of the proposed project which matter should be resolved with WAPDA / LESCO & other utility agencies.
- It will provide the employment to the people
- It will give a lift to national economy in due course

Majority of people favored the proposed extension project in a sense that the construction of the proposed extension project will fulfill the vital need of ice cream especially sticks which is growing due to population increase or change of eating trends in the country, generate employment opportunities and revenue for the government and enhance the socioeconomic conditions of the area.

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SECTION 12: CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

There are many concerns i.e. legal and environmental including its dimension like physical environment, ecological environment & socio-economic environment on the proposed plan for extension project (production capacity enhancement of Moulded stick making facility / plant) at M/s The Magnum Ice Cream Company Pakistan Ltd. located at 46-Km Multan Road, District Kasur.

The impacts during all of three stages design, construction and operation of the proposed extension project such as impacts on physical environments including changes in land use/appearance, seismic hazard, soils/geology, impacts on topography, impacts on air quality, noise pollution, impacts on groundwater, water consumption, wastewater generation, solid wastes, emergency conditions; ecological environment including impacts on flora & fauna and socio-economic environment including health and safety of workers, etc. have been considered and estimated/assessed in the light of nature of project, production process, visit of project site & area and stakeholders / public consultation including interviews, comments & feedback.

Baseline environmental and socio-economic information has been collected from a variety of sources including survey of the project area, private offices, Government departments and published literature. Collected information has been used to compose the environmental profile likely to be affected by the project. Details of these impacts have been discussed in Section 6.

The impact of the planned activities in the project area will be insignificant. Necessary mitigation measures proposed in the report have been made part of the project activities.
After the:

- Survey of the project site area;
- Collection of baseline data,
- Study of impacts during design, construction and operational phases and their mitigations.
- The intellectual expertise and experiences have been incorporated in preparation and suggesting mitigation measures by the EIA Study preparation team.
- The mitigation measures suggested in the EIA Report is sufficient to complete and run the project in an environmental friendly manner.
- Sustainability has also been ensured by recommending extensive plantation / landscaping after the completion of extension project.

It has been concluded that the proposed extension project is feasible at the proposed site from physical, ecological & socio-economic environmental point of view after implementation of mitigation measures suggested in Section 6 & EMP of this EIA Study. The mitigation measures are sufficient to ensure the sustainable development.

8.2 Recommendations

Following recommendations are suggested to protect the environment and for the safe development and operation of the proposed extension project while its construction & operational phase as well as for existing unit:

- Environmental Management & Monitoring Plan (EMMP) suggested in EIA Report should be strictly followed and operational throughout the project life. All monitored data should be reported to the EPA Punjab, Lahore for scrutiny at their end.
- The wastewaters to be produced from the extension project must be channelized to existing ETP / WWTP for the treatment ultimately to comply with PEQS
- Solid waste management plan including safe storage, segregation (on site or off site by contractor), transportation and safe disposal should be developed and track record will be maintained.
- Standby power generators generators must be placed on foundation with tremor / vibration absorber and equipped with silencer, sound proof canopy, smoke arrestor and stack with proper height.
- Standby power generators should be overhauled and tuned well within time or as per schedule to avoid black smoke, excessive noise & vibration.
- Environmental Monitoring Plan including air quality/stack emission monitoring, wastewater analysis and noise level monitoring should be developed and implemented to keep all the parameters within the limits of National Environmental Quality Standards (NEQS) and specially to evaluate the performance of mitigation measures control devices such as Wastewater Treatment Plant, Air Emission Control Devices, PPEs, etc.
- Emergency Response Plan (ERP) should be implemented with letter & spirit.
- ERP should be reviewed and update as necessary, periodically or annually.
- Sufficient / appropriate fire fighting arrangements according to the requirements of Civil Defense Department and international standards should be done.
- All fire fighting arrangements including fire extinguishers, fire hydrant system connected with water reservoir, sand buckets, smoke detectors, heat detectors, fire alarm system etc. must be arranged.
- Above mentioned fire fighting arrangements should be inspected periodically as per schedule and maintained.
- Safety signs, emergency exits, emergency routs should be displayed & mentioned at many / appropriate places.
- Emergency exits and routs must be kept clear from obstacles to avoid any hurdle / panic while emergency condition.
- The workers should be provided with complete PPEs according to the nature or requirement of their jobs including Protective clothing / apparel and others comprising face masks, rubber or plastic gloves and safety shoes and no worker shall be permitted to perform their job unless and until he is wearing such protective clothing and PPEs.
- All workers should be thoroughly trained in Environment, health & safety precautions.
- Adequate supply of water should be made available to the workers for

personal washing as well as for washing their protective equipments.

- Protective clothing and equipment of the workers should be washed and cleaned as often as required to ensure their efficiency.
- No worker should be permitted to eat or drink at work place & till he has removed his protective clothing and equipment, washed his hands and face and left the place of work.
- First aid boxes equipped with required antidotes should be available in the premises, supervised by trained staff.
- Medical checkup of all workers should be carried out at the time of employment and at least once a year thereafter.

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APPENDICES

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Appendices 1

GLOSSARY

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GLOSSARY

A

Approach - a way of dealing with a situation or problem. "we need a whole new approach to the job", synonyms: attitude, slant, perspective, point of view, view point, outlook, line of attack, line of action

Analysis - detailed examination of the elements or structure of something. "statistical analysis"; synonyms: examination, investigation, inspection, survey, scanning, study, scrutiny, perusal

Accident – unplanned event results in injury or ill-health of people or damage or loss to property, plant, materials or the environment or a loss of business opportunity

Accommodate – cater, ply, provide, supply; “give what is desired or needed, especially support, food or sustenance”

Other: (of a building or other area) provide lodging or sufficient space for. "the cottages accommodate up to six people"

Associated – (of a person or thing) connected with something else. "two associated events"

Accordingly – in a way that is appropriate to the particular circumstances. "we have to discover what his plans are and act accordingly"

Accordance – in a manner conforming with "the ballot was held in accordance with trade union rules"

Assessment – the action of assessing someone or something "the assessment of potential environmental impacts of the project activity"

Aid – help, typically of a practical nature. "he saw the pilot slumped in his cockpit and **went to his aid**"

Aforesaid – Another term for aforementioned. **synonyms:** above, above-stated, foregoing, preceding, precedent, earlier, previous, same, selfsame "the insurer undertakes to insure the aforesaid items against all risks"

Adverse – Preventing success or development; harmful; unfavorable. "taxes are having an adverse effect on production"

Arise – (of a problem, opportunity, or situation) emerge; become apparent. "new difficulties had arisen"

Authorized – having official permission or approval. "an authorized dealer"

Administrative – relating to the running of a business, organization, etc. "administrative problems"

Assembly – a group of people gathered together in one place for a common purpose. "an assembly of dockers and laborers"

Amendment – a minor change or addition designed to improve a text, piece of legislation, etc. "an **amendment to** existing bail laws"

Alternative – (of one or more things) available as another possibility or choice. "the various alternative methods for resolving disputes"

Anticipated – regard as probable; expect or predict. "she anticipated scorn on her return to the theatre"

Ambient Air – Ambient air quality refers to the quality of outdoor **air** in our surrounding environment. It is typically measured near ground level, away from direct sources of pollution.
Air quality: A measure of the health-related and visual characteristics of the air often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.
Alternative: Any one of a number of options for a project.
Ambient: Of the environment surrounding a body, encompassing on all sides. Most commonly applied to air quality and noise.
Amphibians – a cold-blooded vertebrate animal of a class that comprises the frogs, toads, newts, salamanders, and caecilians. They are distinguished by having an aquatic gill-breathing larval stage followed (typically) by a terrestrial lung-breathing adult stage.
Archaeological – the scientific study of material remains (as fossil relics, artifacts, and monuments) of past human life and activities.

B

Baseline: The existing conditions against which impacts of the proposed action and its alternatives can be compared.
Biological – relating to biology or living organisms. **Synonyms:** biotic, biologic, organic, living; More **2.** (of a member of a person's family) genetically related; related by blood. "His biological mother"
Bio-medical Waste - Biomedical waste, also known as infectious waste or medical waste, is defined as solid waste generated during the diagnosis, testing, treatment, research or production of biological products for humans or animals. Biomedical waste includes syringes, live vaccines, laboratory samples, body parts, bodily fluids and waste, sharp needles, cultures and lancets.
Building Materials – Building material is any **material** which is used for construction purposes. Many naturally occurring substances, such as clay, rocks, sand, and wood, even twigs and leaves, have been used to construct **buildings**.
Bricks – a small rectangular block typically made of fired or sun-dried clay, used in building.

C

Capacity – the maximum amount that something can contain.
Characteristics – a feature of quality belonging to a person, place, or thing and serving to identify “qualities or features that belongs to someone or something and make it recognizable”
Concrete – existing in a material or physical form; not abstract. "concrete objects like stones"
Cater – provide people with food and drink at a social event or other gathering. "my mother helped to **cater for** the party"

Categories – a class or division of people or things regarded as having particular shared characteristics. "The various categories of research"
Construction Waste – Construction waste consists of unwanted material produced directly or incidentally by the construction or industries.
Community - a group of people living in the same place or having a particular characteristic in common. Synonyms: group, section, company, set, circle, clique, coterie, ring, band, faction
Conveyor - An apparatus for moving material from one point to another in a continuous fashion. This is accomplished with an endless (that is, looped) procession of hooks, buckets, wide rubber belt, etc.
Cultivation – the action of cultivating land, or the state of being cultivated. “the cultivation of certain of certain crops”

D

Dangerous Occurrence – a near miss which could have led to serious injury or loss of life
Database - a database is a collection of information that is organized so that it can be easily accessed, managed and updated.
Deposition – the action of deposing someone, especially a monarch.
Disposal – the action or process of getting rid of something.
Dimensions – an aspect or feature of a situation, object
Determined – having made a firm decision and being resolved not to change it.

E

Ecological – Relating to or concerned with the relation of living organisms to one another and to their physical surroundings. “pollution is posing a serious threat to the ecological balance of the oceans”
Emission – Effluent discharged into the atmosphere, usually specified by mass per unit time, and considered when analyzing air quality.
Environmental impact – Any change to the environment either positive or negative, fully or partially from an organization’s activity
Emission – the production and discharge of something, especially gas, or radiation.” The effects of lead emission on health”
Evaluate – form an idea of the amount, number, or value of; assess. "The study will assist in evaluating the impact of recent changes"

F

Fill - Any material that is put back in place of the extracted ore to provide ground support.
Ferrous – (chiefly of metals) containing or consisting of iron
Flora – the plants of a particular region, habitat, or geological period.

Fauna – the animals of a particular region, habitat, or geological period. "the flora and fauna of Siberia"

G

Groundwater: Subsurface water that fills available openings in rock or soil materials to the extent that they are considered water saturated.
Guidelines – Any guide or indication of a future course of action:
Generation – the production or creation of something

H

Hazardous – Risky; dangerous. “we work in hazardous conditions"

I

ill-Health – a disease of medical condition that is directly attribute to work
Incident – work related events in which injury or ill-health could have occurred
Infrastructure: The facilities, services, and equipment needed for a community or facility to function, such as and including roads, sewers, water lines, and electric lines.
Indiscriminate – Done at random or without careful judgment.
Implementation – The process of putting a decision or plan into effect; execution.

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L

Layout - The design or pattern of the main roadways and workings. The proper layout of
mine workings is the responsibility of the manager aided by the planning department.
Land use plan: A plan or document developed by a government entity, which outlines specific functions, uses, or management-related activities of an area, and may be identified in combination when joint or seasonal uses occur and may include land used for
support facilities that are an integral part of the use.

M

Magnitude – the great size or extent of something, a number characteristic of a quantity and forming a basis for comparison with similar quantities, as length
Synonyms: immensity, vastness, hugeness, enormity, enormousness, expanse
Mechanisms – Machinery or mechanical appliances in general.
Manufacturing – The thing or material manufactured; product:
Mitigation Measures – the arrangements to cover the organization’s activities which can affect the environment “effluent treatment plant is necessary for the treatment of process wastewater”

Monitoring – An instrument for detecting dangerous gases, radiation, etc.

N

Near-miss – any incident that could have resulted in an accident
Noise – Loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities.
Nuisance – activity, conduct, or situation (such as loud noise, offensive odor, obstruction of traffic) that cause annoyance, inconvenience, or interference with the use of enjoyment of land or building (private nuisance), or with the comfort, health, or safety of the public (public nuisance)

O

Organic – A substance, especially a fertilizer or pesticide, of animal or vegetable origin.
Occur – happen; take place.
Operational – Fit for proper functioning; ready for use:

P

Potential – having or showing the capacity to develop into something in the future; Synonyms: possible, likely, prospective, probable, budding, in the making, etc.
Prediction - a thing predicted; a forecast, the action of predicting something, "the prediction of future behaviour"
Synonyms: forecast, prophecy, divination, prognosis, prognostication, augury;
Prevailing – having superior power or influence.
Prevent – To anticipate or counter in advance.
Prior – Proceeding in importance or privilege.
Proximity – nearness in space, time, or relationship. *Synonyms:* closeness, nearness, presence, juxtaposition, propinquity, adjacency

R

Resources - assets that can be drawn on by a person or organization in order to function effectively. *Synonyms:* assets, funds, wealth, riches, capital
Restoration - the action of returning something to a former owner, place, or condition *Synonyms:* repair, fixing, mending, refurbishment, reconditioning, rebuilding, reconstruction, remodeling, redecoration, revamping, makeover, overhaul
Rehabilitation - the action of restoring something that has been damaged to its former condition. "the rehabilitation of the mangrove forests"
Representative – Typical of a class, group, or body of opinion.
Renovation – the action of renovating a building.
Regulations – A rule or directive made and maintained by an authority.

Rapid – happening in a short time or at a great rate. "the country's rapid economic decline"
Risk – any object of situation that has potential to cause harm

S

Significant – Sufficiently great or important to be worthy of attention; noteworthy, "a significant increase in sales"
Sanitary – relating to the conditions that affect hygiene and health, especially the supply of sewage facilities and clean drinking water
Socioeconomic – Socioeconomics (also known as **socio-economics** or social economics) is the social science that studies how economic activity affects and is shaped by social processes. In general it analyzes how societies progress, stagnate, or regress because of their local or regional economy, or the global economy.
Scope – the extent of the area or subject matter that something deals with or to which it is relevant "We widened the scope of our investigation"
Surroundings – the things and conditions around a person or thing "I took up the time admiring my surroundings"
Sustainable – Able to be maintained at a certain rate or level. "Sustainable economic growth"
Stakeholders – a person with an interest or concern in something, especially a business.

T

Ton – A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a
metric ton is approximately 2 to 205 pounds.
Topography – The shape and features of the surface of the earth It includes the mountains, hills, creeks, and other bumps and lumps on a particular hunk of earth.
This handy word is a Greek-rooted combo of topos **meaning** "place" and graphein "to write."
Transportation – the action of transporting someone or something or the process of being transported "the era of global mass transportation"

U

Ultimately – Being or happening at the end of a process; final "their ultimate aim was to force his resignation"

V

Ventilation - Portion of main ventilating current directed to face of dead end entry by means of an auxiliary fan and tubing.

Appendices 2

LIST OF ABBREVIATIONS

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LIST OF ABBREVIATION

BOD_5	Biochemical Oxygen Demand
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COD	Chemical Oxygen Demand
CSW	Construction Solid Waste
DO	Dissolved Oxygen
EA	Environmental Approval
EIA	Environmental Impact Assessment
EMP	Environmental Management Plant
EMMP	Environmental Management & Monitoring Plan
EMS	Environmental Management System
EMT	Environmental Management Team
EPA	Environmental Protection Agency
ETP	Effluent Treatment Plant
GOP	Government of Pakistan
HC	Horticulture Committee
IEE	Initial Environmental Examination
LESCO	Lahore Electric Supply Company
LSA	Local Study Area
MSW	Municipal Solid Waste
NEQS	National Environmental Quality Standards
NOC	No Objection Certificate
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxide
NSL	Normal Surface Level
O_2	Oxygen
PEPA- 97 (amended-12)	Punjab Environmental Protection Act, 1997 (As Amended 2012)
PEPA -97	Pakistan Environmental Protection Act, 1997
PEPO-83	Pakistan Environmental Protection Ordinance, 1983
PEQS	Punjab Environmental Quality Standards

EPA Library, Lahore
SOBIA PERVIN (librarian)
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PM

$PM_{2.5}$	Particulate Matter size of 2.5 micron
PM_{10}	Particulate Matter size of 10 micron
PPEs	Personal Protective Equipment
RSA	Regional Study Area
SFT	Square Feet
SIA	Social Impact Assessment
SNGPL	Sui Northern Gas Pipelines Limited
SO_2	Sulphur Dioxide
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
VECC	Valued Environmental & Cultural Component
WAPDA	Water and Power Development Authority
WWTP	Waste Water Treatment Plant

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Appendices 3

LIST OF INDIVIDUALS AND ORGANIZATIONS CONSULTED ALONG WITH THEIR FEEDBACK & PICTORIAL PROFILE

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Muan, Ilocos Norte (Ilocos Norte)
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List of Individuals and Organizations Consulted and their Feedback

Sr.	Name of Individuals / Organizations	Qualification / Designation	Location	Feedback
1	Usman Tahir	Works Director	Proponent Representative	• The said proposed extension project will meet the growing / increasing demand of ice cream • The expansion project will contribute towards national GDP, which is a major requirement • EMMP will be implemented to make the project environment friendly • Sewerage / Wastewater to be produced from proposed unit will be treated through ETP/WWTP and disposed off properly • The company will install state of the art, most modern and advanced technology plant machinery ultimately to comply with PEQS • Sufficient firefighting arrangements as per requirements and international standards will be done and Emergency Response Plan will be developed. • Complete PPEs will be provided to the workers as per nature / requirements of their job / work. • The workers will be given training specific to their jobs.
2	Faisal Iftikhar Malik	Site Engineering Manager		
3.	Humza Niaz	BU Engineering Manager		
4.	Umair Pervaiz	APDM		
5	Muhammad Afzal	Matric	Local Residents & Pedestrians	• Exposure of noise and dust particles will cause disturbance and health issues to the working staff during construction • People will get employment due to industrial development and thus socioeconomic condition of the area will get better • The locals will be given preference for non-skilled jobs • The expansion project will contribute towards availability of
6	Niamat Ali	Matric		
7	Rana Gulzar Ahmed	Matric		
8	Muhammad Murtaza	Matric		
9	Munir Hussain	Intermediate		
10	Muhammad Arshad	Matric		
11	Syed Zahid Ali Bukhari	Intermediate		
12	Ghulam Rasool	Intermediate		

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13	M. Javed Rafi	Intermediate		good quality Ice Cream. • Area will get developed and socioeconomic condition of the area will get even better • This extension project will be reason for industrialization in the project area • Economy of the area will get a boost • The company management should implement safety measure for the safety of environment as well as health & safety of workers.
12	Faqeer Hussain	Bachelors	Working Personnel in nearby Industries	• Industrial development will contribute positive change towards economy of the area • Mitigatory measures must be implemented for the safe guard of environment. • Health & safety risks should be minimized and the workers should be provided with complete PPEs. • Employment opportunities are very low in the country and establishment of this industry will surely employ skilled and unskilled staff which will contribute towards country's GDP.
13	Munawar Jamir	Bachelors		
14	Tazeem Anjum	Bachelors		
15	Muhammad Aftab	Bachelors		
16	Tanveer Haider	DAE		
17	M. Asif Hashim	DAE		
18	Abdul Rasheed	Inspector	EPA Field Office Phool Nagar	• EMMP should be implemented whole heartedly so that the construction and operations of the unit may not affect the environment negatively. • The wastewater must be treated through ETP / WWTP to comply with PEQS • Environmental Monitoring should be done during the construction and operational phases of the project. • Environmental enhancement measures such as tree plantation, monitoring and safety should be ensured. • Firefighting arrangement should be done as per international standards and Emergency Response Plan should be developed.

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WE ALL SPEAK ICE CREAM
GPS Map Camera
Lahore, Punjab, Pakistan
46km Multan Rd, Lahore, Punjab 54000, Pakistan
Lat 31.256707° Long 74.013267°
02/10/25 11:18 AM GMT +05:00
Google


GPS Map Camera
Lahore, Punjab, Pakistan
46km Multan Rd, Lahore, Punjab 54000, Pakistan
Lat 31.256577° Long 74.013116°
02/10/25 09:53 AM GMT +05:00
Google

REFERENCES

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REFERENCES

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Source: ***Allama Iqbal International Airport (Lahore, Pakistan) weather station*** (https://weatherspark.com/averages/32865/Lahore-Punjab-Pakistan)

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Appendices 5

TERMS OF REFERENCES

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TERMS OF REFERENCES FOR EIA REPORT

The Agreement (hereinafter called Agreement) is made between M/s Sustainable Environmental Solutions (Consultancy Firm / Consultant) and M/s The Magnum Ice Cream Company Pakistan Limited (the Client) to prepare Environmental Impact Assessment (EIA) Report for obtaining Construction Phase Environmental Approval under section 12 of Punjab Environment Protection Act, 1997 (Amended 2012) from EPA, Punjab for the Extension Project (Production Capacity Enhancement in Ice Cream Plant - Moulding Stick Line Expansion) at existing unit of The Magnum Ice Cream Company Pakistan Ltd. located at 46-Km Multan Road, Near Phool Nagar, District Kasur.

Client has requested the consultancy firm to provide consultancy services for preparation of EIA Report and so that the client may obtain Construction Phase Environmental Approval from EPA, Punjab under section 12 of Punjab Environment Protection Act, 1997 (Amended 2012); so, mutually agreed terms and conditions are as under:

NOW THEREFORE the parties hereto hereby agree as follows:

- The client shall provide assistance and access to the requisite information / data and documents for preparation of EIA Study and for submission to EPA Punjab including feasibility study, layout plans and other project relevant documents as and when required by the consultancy firm / consultant for performance of his obligations.
- The client shall provide all available data, maps, reports, etc. about the project including but not limited to layout plan of the project. Client will provide document / information demanded by the EPA, Punjab through the Review Letter as and when required.
- The client will provide to the consultancy firm with the letter of introduction and authorization and other documents as may be necessary to enable the consultancy firm / consultant to perform the services.
- The consultancy firm / consultant shall carry out the services in accordance with the provisions of the agreement including;
- The consultancy firm / consultant shall prepare EIA Report and other file documents with due diligence, necessary / required for obtaining its Construction Phase Environmental Approval from EPA Punjab under statutory requirements of the PEPA, 1997 (amended 2012).
- The consultancy firm / consultant shall give the consultancy for the preparation of the detailed Environmental Management & Monitoring Plan (EMMP) for enhancing the environmental conditions during construction & operational phases such as mitigation measures for wastewater, solid waste, stack emissions, plantation, management of the surface runoff, mitigation of socially adverse impact if any.
- The consultancy firm / consultant will evaluate all the activities during construction & operational phases and recommend suggestions / mitigation measures to comply with PEQS.
- Consultancy firm / consultant will prepare the EIA Report and file documents in the light of information / documents provided by the client.

- The consultancy firm / consultant shall examine the entire activities and list of the details of activities likely to cause adverse impacts during and after construction phase. Consultant shall suggest mitigation measures for all such activities which may cause adverse impacts.
- The client shall be entirely liable for correctness and validity of information, data and any type of documents supplied to Consultancy Firm / Consultant and supplied to EPA, Punjab directly or through Consultancy Firm / Consultant.

For and behalf of the '***client***'
Authorized Representative

THE MAGNUM ICE CREAM COMPANY PAKISTAN LIMITED

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For and behalf of the '***consultancy firm / consultant***'
Authorized Representative

Sustainable Environmental Solutions
SES

Appendices 6

LIST OF NAMES, QUALIFICATIONS AND ROLE OF TEAM MEMBERS CARRYING OUT THE IEE / EIA STUDY

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List of Names, Qualification and Role of IEE Team Members

Team Members	Qualification	Role / Responsibilities
Waheed Ahmad Team Leader / Coordinator	**C. Qualification** • M. Phil Environmental Sciences (PU) • M.Sc. Applied Environmental Sciences (PU) • Post Graduate Diploma in Environmental Laws (PU) • NEBOSH IGC *"Occupational Safety & Health"* • IOSH *"Managing Safely"* • One Year Diploma in Environmental Management (MIIM) • HABC Level 2 in Fire Safety (QCF) • International Workplace Health & Safety (British Safety Council) • Occupational Health & Safety Management Training (OHSAS 18001) • Environmental Audit Training; ISO 14001 – Lead Auditor Course **D. Experience** 10 years of experience as Environmentalist for carrying out EIA Studies, IEE Studies, EMPs, Environmental Compliance Status Reports for various projects.	The responsibilities include meeting with the client, site visit, and collection of baseline data, identification of impacts, addressing mitigation of adverse impacts, preparation of environmental management plan and preparation of EIA report as per EPA guidelines. Over all supervision and technical guidance to team and preparation of IEE/EIA reports
Yahya Aslam Bambal Team Member	**C. Qualification** • M. Phil Environmental Sciences (PU) • M.Sc. Applied Environmental Sciences (PU) • Post Graduate Diploma in Environmental Laws (PU) • NEBOSH IGC *"Occupational Safety & Health"* • IOSH *"Managing Safely"* • HABC Level 2 in Fire Safety (QCF) • International Workplace Health & Safety (British Safety Council) • Occupational Health & Safety Management Training (OHSAS 18001)	The responsibilities include meeting with the client, site visit, and collection of baseline data, identification of impacts, addressing mitigation of adverse impacts, preparation of environmental management plan and preparation of Impact Assessment reports Responsibilities are to provide assistance in arranging meetings with the stakeholders and client, conduct public consultation meetings, data collection of the social impact analysis

	• Environmental Audit Training; ISO 14001 – Lead Auditor Course • Training in *"Skills in Administration"* (Pakistan Institute of Management) • *"Value Based Management"* (Pakistan Institute of Human Development) **D. Experience** 09 years of experience as Environmentalist for carrying out EIA Studies, IEE Studies, EMPs, Environmental Compliance Status Reports for various projects.	survey and its report writing, define the baseline socioeconomic conditions of the project area, quantification of the infrastructure to be relocated.
Zia-Ud-Din Kasuri Advocate Supreme Court (Member Legal)	• M.A • LLM, M. Phil • LLB (Shariah & Law) • Post Graduate Diploma in Environmental Laws (PU)	The responsibilities include look into the matters of legal aspects of Environmental Report. Preparation of terms of references and other legal matters.

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Appendices 7

APPROVALS FROM OTHER CONCERNED DEPARTMENTS

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OFFICE OF THE DISTRICT COUNCIL,KASUR.

DISTRICT OFFICER (PLANNING)
DISTRICT COUNCIL, KASUR
No. DO(P)/DCK/....454.... DATED.30-12-2023

Subject: **SANCTION LETTER FOR ADDITION/ALTRATIION BUILDING PLAN OF WALL,S ICE CREAM FACTORY OWNED TO UNILEVER PAKISTAN LIMITED**

(Under the provision of Section 206 in General & Clause 21 of the 7th Schedule of the PLGO 2022 in particulars and the requirement of building District Council building bye-laws in force).

Building Application submitted by Wall,s Ice Cream Factory Owned to Unilever Pakistan Limited Mr. Bilal Ahmed Malik S/O Malik Mushtaq Ahmed At Mouza Nathy Jageer And Chak No 66(Dina Nath) 46 KM Multan Road Tehsil Pattoki & District Kasur.

For Construction of Wall,s ice Cream Factory Owned to Unilever Pakistan Limited Total Land area 334K-08M and having Total Covered Area 14447 Sft located at Khasra No 2347,2353,2354,2355,2356,2357,2375,2376,2377,2378,2379,2380,2381,2382,2383,2384,2385,2386,2387,2388,2389,2390,2391,2392,2393,2394,2395,2396,2397,2398, 2399,2400,2401,2402,2403,2404,2405,2406,2407,2408,2409,2410,2411,2412,2413, 2414,2415,2416,2420,2421,2422,3655/2349,3657/2350,2608/53,2610/54,2612/55, 2614/56,2616/57 Khawat No.495,564 Khatoni No 1024,1035 At Mouza Nathy Jageer And Chak No 66(Dina Nath) 46 KM Multan Road Tehsil Pattoki & District Kasur

Following Condition / Directions;-

1. The sanctioned plan is adhered to absolutely every particulars.
2. The work will be completed within twelve months from the date of approval.
3. Privacy of adjoining building will not be disturbed.
4. **The sanctioned plan shall be kept at site and presented to the authorized building officials / officers of District council Kasur on demand.**
5. The date of commencement and completion must be notified to the officer concerned of District Council, Kasur.
6. In pursuance of clause 21 of seventh schedule of PLGO 2022, the **VALIDITY** of sanctioned building plan shall be for a period of **ONE YEAR** starting from the date of sanction. After the expiry of period this sanction shall have no effect whatsoever.
7. There of the ramp will be made lower than the Mattled road. A drain will be provided in the ramp so that the waste water of this building may not come on the road to cause damage to it.
8. This building plan is sanctioned on the basis of documents submitted by the owner / builder. However this sanction shall be considered as cancelled, if anything found contrary to these documents and as result if concealments of facts of fraud at any

Responsibility regarding the **STRUCTURE STABILITY** of the building will lie with the owner / builder. Entire **LIABILITY FOR ANY DAMAGE TO BUILDING OR LIFE** shall lie with the owner / builder in this regard. It shall be the responsibility of the owner / builder to use sound building material good quality and property put together so as ensure safety of the building.

10. The road side berm will not be made higher than the road running in front of the plot and a Katcha drain will be provided in the berm all alone the width of the plot for free passage of rain water.

11. This plan is permissible for construction only which is to be carried out **STRICTLY IN ACCORDANCE** with approval. However **IN NO CASE** this approval shall be treated as a proof of title / ownership. **NO RESPONSIBILITY** shall lie with the DC Kasur in the event of any dispute regarding the title of the property reference.

12. **The owner / builder, in pursuance of clause 29 of the seventh schedule PLGA 2021 / bye-laws within 30 days of the completion of the building shall report to the competent authority. The building shall not be put to use before completion certificate has been obtained from the DC.**

13. The owner / builder, **WILL PAY all charges,** balance amount etc., (if any) notified by the department itself in the course of routine scrutiny or on the observation / objection of audit or made applicable at any subsequent stage.

14. During the course of construction and in case of any **DAMAGE CAUSED** to the adjoining public utility service / roads and private property **THE DAMAGE COST SHALL BE RECOVERED FROM THE OWNER / BUILDER.**

15. Proper drainage facility shall be provided for the disposal of rain water, sewerage connection with trunk sewer.

16. The construction / building work shall be supervised by **REGISTERED ARCHITECT** who has been employed by the owner / builder and has affixed has seal on the in charge of building works before the same is completed. Further execution of the works shall forthwith be suspended until a fresh appointment is made as required under bye-laws 4 (i). **A CERTIFICATE** duly signed by the registered architect employed shall be obtained in token of the work or part of the work having satisfactory done under his supervision.

17. In addition to the special conditions mentioned above, the owner / builder shall be bound to observe the **GENERAL CONDITIONS** of building bye-laws.

18. The above Sanction of building plan is subject to No Objection Certificate from Environmental Protection Agency (EPA).

DISTRICT OFFICER (PLANNING)
DISTRICT COUNCIL, KASUR

Copy for information:-

1. The Administrator, District Council, Kasur.
2. The Chief Officer, District Council, Kasur.

OFFICE OF THE DISTRICT COUNCIL, KASUR

No: DO(P)/DCK/2025 633 Dated:- 09.07.25

To,

MR. USMAN TAHIR,
FACTORY HEAD-THE MANGUM ICE CREAM FACTORY,
AT MOUZA NATHY JAGEER & CHAK NO. 66 (DINA NATH) 46 KM MULTAN ROAD, TEHSIL PATTOKI & DISTRICT KASUR.

Subject: **CHANGE OF COMPANY NAME.**

Please refer to your application for the change of company name submitted to the office of the undersigned.

2. In this regard, it is submitted that this office has reviewed your application and attached documents for change of Company Name.

3. In view of the above this office has no objection for the change of company name from Walls Ice Cream Factory owned by Unilever Pakistan Limited to the Mangum Ice Cream Company. Therefore, the file of the subject case and sanction letter issued vide letter No. DO (P) / DCK / 659 dated 30.12.2023 is updated and the change of company name is recorded in favor of the Mangum Ice Cream Company.

DISTRICT OFFICER (PLANNING)
DISTRICT COUNCIL, KASUR

Appendices 8

LAB REPORTS OF ENVIRONMENTAL ANALYSES / BASELINE ENVIRONMENTAL MONITORING REPORTS

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Report Limitation: "This report is not valid for any Court Cases, Environmental Protection Orders, Compliance Reports for Operational Phase Approvals, or any regulatory action under Punjab Environmental Protection (Smog Prevention and Control) Rules, 2023. etc."

TEST REPORT

Ref #: PGG/LAB/2025-5912/AA

Issue date: 22-Aug-25

Name of Industry/Client:	M/s The Magnum Ice Cream Company Pakistan Ltd.
Site Location:	46-Km Multan Road, Near Phool Nagar, District Kasur
Nature of Monitoring:	Ambient Air
Monitoring By:	Pak Green Laboratories
Monitoring Instrument:	AQMS
Monitoring Date:	16-Aug-24 to 17-Aug-25
Validated by EPA Representative:	Muhammad Nadeem, RO EPA (Lab), Lahore

Results:

Parameters	CO	NO	NO_2	SO_2	PM_{10}	$PM_{2.5}$
	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	ug/m^3	ug/m^3
Methodology	Non-Dispersive Infrared Absorption (NDIR)	Chemiluminescence (CLD)	Chemiluminescence (CLD)	UV fluorescence (UVF)	β Ray Absorption method	β Ray Absorption method
Results	1.93	11.02	26.74	38.67	164.7*	58.3*
PEQS for Ambient Air	05 8-Hrs	40 24-Hrs	80 24-Hrs	120 24-Hrs	150 24-Hrs	35 24-Hrs

.....End of Report.....

PEQS: Punjab Environmental Quality Standards

Remarks: Parameters with * are not in compliance with the PEQS Limit.

Terms & Conditions:

- This report should be reproduced as a whole and not in parts.
- The responsibility of the ethical use of the results reported in this report lies with the client.
- The report is not valid for any negotiations.
- Dually calibrated instrument was used during monitoring.

Field Analyst	Chief Analyst	Laboratory Incharge
	Muhammad Raza Ullah	Mian Iftikhar Ahmed

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PAK GREEN ENVIRO-ENGINEERING (Pvt.) Ltd.
(Environmental Laboratories Division)

ISO/IEC 17025:2017 Accredited Testing Lab, ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

Head Office: 46-M, Gulberg III, Lahore-Pakistan. Ph: +92-42-35441444 Cell: 0303-4442334

EPA Certified

PGG/IMS/FF/159	Rev.#01	Rev date: 16-06-25

Report Limitation: "This report is not valid for any Court Cases, Environmental Protection Orders, Compliance Reports for Operational Phase Approvals, or any regulatory action under Punjab Environmental Protection (Smog Prevention and Control) Rules, 2023. etc."

TEST REPORT

Ref #: PGL/LAB/2025-5911/GW **Issue date:** 22-Aug-25

Name of Industry/Client:	M/s The Magnum Ice Cream Company Pakistan Ltd.
Site Location:	46-Km Multan Road, Near Phool Nagar, District Kasur
Nature of Sample:	Ground Water
Sampling By:	Pak Green Laboratories
Sample Source:	Tap Water
Date of sampling:	16-Aug-25
Sample Receiving Date:	16-Aug-25
Testing Facility:	Pak Green Laboratories
Testing Date:	16-Aug-25 to 22-Aug-25
Env. Conditions during Analysis:	Temperature: 22.0-23.4° Humidity: RH=53.4-58.0%
Validated by EPA Representative:	Muhammad Nadeem, RO EPA (Lab), Lahore

Results:

Sr. No.	Parameters	Unit	WHO	PEQS	Method / Technique	Results
1.	Taste	-	Non-Objectionable / Acceptable	Non-Objectionable / Acceptable	APHA-2160 C	Non-Objectionable
2.	Odor	-	Non-Objectionable / Acceptable	Non-Objectionable / Acceptable	APHA-2150 B	Non-Objectionable
3.	Color	TCU	≤ 15	≤ 15	APHA-2120 C	0.000
4.	Turbidity	NTU	< 5	< 5	APHA-2130 B	0.30
5.	Total Hardness^	mg/L	-	<500	APHA-2340 C	210
6.	Total Dissolved Solids^	mg/L	< 1000	< 1000	APHA-2540 C	440
7.	pH^	-	6.5-8.5	6.5-8.5	APHA-4500-H^+ B	7.274 at 23.8°C
8.	Chloride (Cl^{-1}) ^	mg/L	250	< 250	APHA-4500-Cl^{-1}B	105
9.	Electrical Conductivity (EC)^	µS/cm	-	-	APHA-2510 B	662
10.	Sodium (Na)^	mg/L	-	-	APHA-3111 B	53.8098

.....End of Report.....

PEQS: Punjab Environmental Quality Standards **WHO: World Health Organization** **^ PNAC Accredited**

Remarks: All Parameters are in compliance with the PEQS Limit.

Terms & Conditions:

- This report should be reproduced as a whole and not in parts.
- The Sampling was done as per the sampling and preservation protocol method APHA 1060-B&C.
- The responsibility of the ethical use of the results reported in this report lies with the client.
- The leftover sample (if so available) shall be retained for fifteen days after the issuance of the report unless otherwise negotiated between the client and the laboratory.
- The report is not valid for any negotiations.
- Dually calibrated instruments were used during testing activities and monitoring.

Lab Analyst	Chief Analyst	Laboratory Incharge
	Muhammad Raza Ullah	Mian Iftikhar Ahmed

PAK GREEN ENVIRO-ENGINEERING (Pvt.) Ltd.
(Environmental Laboratories Division)

ISO/IEC 17025:2017 Accredited Testing Lab, ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

Head Office: 46-M, Gulberg III, Lahore-Pakistan. Ph: +92-42-35441444 Cell: 0303-4442334

EPA Certified

PGG/IMS/FF/063	Rev.#03	Rev date: 16-06-25

Report Limitation: *"This report is not valid for any Court Cases, Environmental Protection Orders, Compliance Reports for Operational Phase Approvals, or any regulatory action under Punjab Environmental Protection (Smog Prevention and Control) Rules, 2023. etc."*

TEST REPORT

Ref #: PGG/LAB/2025-5913/NL **Issue date:** 22-Aug-25

Name of Industry/Client:	M/s The Magnum Ice Cream Company Pakistan Ltd.
Site Location:	46-Km Multan Road, Near Phool Nagar, District Kasur
Nature of Monitoring:	Noise Level
Monitoring By:	Pak Green Laboratories
Monitoring Time:	Real Time
Monitoring Instrument:	Land TEK SL 5868-P
Monitoring Date:	16-Aug-25
Validated by EPA Representative:	Muhammad Nadeem, RO EPA (Lab), Lahore

Results:

Sr. No.	Locations	Equivalent Noise Level dB (A)
1.	Point-01: East Side	63.2
2.	Point-02: West Side	67.4
3.	Point-03: North Side	65.5
4.	Point-04: South Side	70.8
PEQS (Day Time Commercial Area)		**75 dB(A)**

..... End of Report.....

PEQS: Punjab Environmental Quality Standards

Remarks: Noise level at all points are in compliance with PEQs Limit.

Terms & Conditions:

- This report should be reproduced as a whole and not in parts.
- The responsibility of the ethical use of the results reported in this report lies with the client.
- The report is not valid for any negotiations.
- Dually calibrated instruments were used during monitoring.

Field Analyst	Chief Analyst	Laboratory Incharge
	Muhammad Raza Ullah	Mian Ittikhar Ahmed

LUBNA PERVIN (Librarian) EPA Punjab 2610 38.160 195 26 PM

ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF THE PUNJAB
National Hockey Stadium, Gate No. 08
Gaddafi Stadium Complex, Lahore

EPA
ادارہ تحفظ ماحول حکومت پنجاب

Validation for Monitoring / Sampling of Stack Emission, Noise, Ambient air, Vehicular emissions

(Read conditions of certificate along with Regulation 9(1)(d) of CELR, 2000)

Cautions Related to scope, use & legal foundation of Validation

1. The Validation is quality control check under Regulation 91(d) for sampling & monitoring.
2. The Sampling / monitoring performed under Regulation 3(a) by Technical & Scientific Staff of private Laboratory as allowed through Conditions of Certificate.
3. The Scope of quality check of validation does not cover quality check of results declared with Report.
4. "The validated sampling / monitoring of the tests report is for non- punitive actions such as baseline study EIA/IEE, Self-monitoring, reporting under conditions of EIA/IEE, etc. while the report is not valid for Court cases, EPO, compliance reporting for operational Phase approvals, punitive actions such as Smog prevention & control Rules, 2023, complaint cases, etc". The same shall be exhibit at top of Report during its issuance under Regulation 12.
5. The tests Report cannot be used as evidence against any non-compliance SMR /report issued by EPA official Laboratory.
6. The EPA officer as well as certified Laboratory should also comply directions issued by authority vide letter No. 01-DD(Labs)/EPA dated 25.07.2022 while considering test report.

Nature Of Sample	Stack Emissions	Ambient Air✓	Vehicular Emission	Ambient Noise
Description of monitored source / Site	Ambient Air, Noise Level			
Name and category of Unit	The Magnum Ice Cream Company Pakistan Ltd. (Wall's Ice Cream Factory) - 46-Km Multan Road, Near Phool Nagar, District Kasur.			
Standard Method	NDIR+UV			
Equipment, Model,	AQMS, Noise Meter			
Field Tested Parameters ,	CO, NO, NO_2	Lab Tested Parameters **(Not Validated)**	Reported Result	

Industrial Gaseous Emissions			
Values of tested Field Parameters: CO .....mg/nM3, NOx ...mg/nM3 , excess air (%age):			
~~(i) 5 min Ramp-Up phase (ii) flow rate & EC Temp. measured during calibration & testing (iii) Data recorded with 15 min interval (iv) complied all QA/QC checks~~	~~Yes~~	~~NO~~	~~NA~~✓
Stack Particulate Matter (PM) Monitoring / Sampling under USEPA Method 5 / 17			
~~(i) Sample train is complete (ii) Leak Test Performed (iii) data sheet filled (iv) "K" & "Y" calculated (v) QA/QC complied (vi) suitability of filter ensured~~	~~Yes~~	~~No~~	~~NA~~✓
Stack SOx sampling as per Method 8 (Thorin Indicator Method)			
~~(i)Absorbent solution available (ii) Flow rate as per method (iii) sampling as per Method~~	~~Yes~~	~~No~~	~~NA~~✓
Ambient Air Quality Monitoring by Automatic Monitors for CO, O3, SO2, NOx, PM2.5 & PM10			
Zero/span check is performed (ii) CE of NOx 96% - 104.1% , Compliance of Critical Criteria (iii) Compliance of operational Criteria (iv) Comply PEQS measuring technique	Yes✓	No	NA
Ambient Air Sampling of SPM, PM10, Pb by High Volume Sampler			
~~(i) The flow rate of sampler 1.1m3/min, (ii) Calibration performed~~	~~Yes~~	~~No~~	~~NA~~✓
Vehicular Emissions & Noise Measurement			
Vehicle emissions and noise measurement performed as per method	Yes✓	No	NA

Remarks:-

M-Basharat: Pak-Green Lab
Dated: 16-08-2025

Pak Green Engineering (Pvt) Ltd. 46-M, Gulberg-III, Lahore Pakistan

Research Officer
Environment Protection Agency
Punjab Lahore

ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF THE PUNJAB
National Hockey Stadium, Gate No. 08
Gaddafi Stadium Complex, Lahore

EPA
ادارہ تحفظ ماحول حکومت پنجاب

Validation for Sampling of Wastewater & Drinking Water / Ground water

(Read conditions of certificate along with Regulation 9(1)(d) of CELR, 2000)

Nature Of Sample	**Waste Water**			**Drinking Water / Ground Water**					
Description of Sample source /Site				Tap Water					
Name and category of Project /Unit	The Magnum Ice Cream Company Pakistan Ltd. (Wall's Ice Cream Factory) - 46-Km Multan Road, Near Phool Nagar, District Kasur.								
Standard Method used for Sampling	EPHA-1060								
Field Tested Parameters ,	Field Tested parameter		Temp, PH, etc.	**Lab Tested Parameters (Not validated)**					
Waste Water Treatment facility	Primary			Secondary		Tertiary			
Total WW collected Sample .....NA				Total Collected Drinking water samples.....01					
Sample Tag for testing parameter is assigned on sample container							Yes✓	NO	NA
Sample is preserved properly for each testing parameter							Yes✓	NO	NA
Sample size is adequate for testing the target parameters							Yes✓	NO	NA
Wastewater Flow Measurement performed to ensure sample representativeness							Yes	NO✓	NA
No. of Waste Water outlets	Waste Water Flow m^3/hr from each outlet **(Optional)**		Water intake m^3/hr**(Optional)**	Water Mass balance **(Optional)**		Sample Type			
				Yes	No	Grab✓		Composite	

Parameter	Matrix W	Matrix WW	Container	Sample Size	Preservation	Yes	NO	NA
Coliform,TotalorFecal	✓		SterileContainer	100mL	Refrigerate6C	✓		
Coliform,TotalorFecal,ChlorinatedWater	✓		Sterile Container	100mL	0.008% Thiosulphate& cooled6C	✓		
Color, Turbidity	✓		P,G	500mL	Cool6C	✓		
Hardness,Total	✓		P,G	500ml	HNO3 to pH<2	✓		
Nitrogen,Nitrate+Nitrite , Phenolic Compounds, Oil & Grease, COD, NH3			P,G	2000 mL	H2SO4 topH <2,Cool6C			
Metals,General	✓		P,G Rinsed1.1 HNO3	500mL	HNO3 topH < 2	✓		
Cyanide,Total			P,G	500mL	NaOHtopH> 12,Cool 6C			
Pesticides,General			Glass	1Liter	Cool6C			

Field Parameters

Field parameter		PH Meter, Model Make	Measurement Method	Calibrated in Field	Measured value
pH		AS 218	APHA 4500 B	Yes✓ NO	
Temp					
Cl					

Remarks / Caution: (1) The Validation is quality control check under Regulation 91(d) for sampling & monitoring. (2)The Sampling / monitoring performed under Regulation 3(a) by Technical & Scientific Staff of private Laboratory as allowed through Conditions of Certificate (3)The Scope of quality check of validation does not cover quality check of results declared with Report (4) The validated sampling / monitoring of the tests report is for non- punitive actions such as baseline study EIA/IEE, Self-monitoring, reporting under conditions of EIA/IEE, etc. (5) The tests Report cannot be used as evidence against any non-compliance SMR /report issued by EPA official Laboratory (6) The EPA officer as well as certified Laboratory should also comply directions issued vide letter No. 01-DD(Labs)/EPA dated 25.07.2022 while considering test report.

M-Basharat: Pak-Green Lab
Dated: 16-08-2025

Pak Green Enviro Engineering (Pvt) Ltd. 46-M, Gulberg-III, Lahore Pakistan