2025

M/S GHANI GASES (PVT.) LIMITED

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

PROPOSED CONSTRUCTION OF LPG STORAGE PLANT

52- Km Multan Road, Tehsil Phool Nagar
District Kasur

PREPARED BY

Pak Green Enviro Engineering (Pvt) Limited

PAK GREEN
ENVIRO-ENGINEERING (PVT.) LTD.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

Annex A: TORs

Annex B: OGRA License

Annex C: Layout and Google Earth Map of Project

Annex D: Copy of CNIC & Relevant Documents

Annex E: Lab Reports

Annex F: Socioeconomic Questionaries

Annex G: Waste Water Disposal Agreement

EXECUTIVE SUMMARY:

1.1 Title and location of project

The subject project for which the Environmental Impact Assessment (EIA) is required is titled as the "**Proposed LPG Storage Plant** with a total capacity of **450 tons** under the name of **M/S Ghani Gases (Pvt.) Limited**." The project site is located **at Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52- Km Multan Road, Tehsil Phool Nagar District Kasur.**

1.2 Name of the proponent

Mr. Farzand Ali S/o Muhammad Akram, holding CNIC # **35202-2601199-7** R/o **Muhala Marghazar Colony, Multan Road, Lahore**, is the proponent for filing the application and completing related procedures to obtain environmental approvals.

1.3 Name of the organization preparing the report

Pak Green Enviro-Engineering (Pvt.) Ltd is an independent company, who conducts IEE, EIA, EMP and other environmental investigations through its panel of environmental consultants, public participation practitioners and experienced environmental managers. The company has its own instruments to check the baseline environmental data as per NEQS/ PEQS and lab analysis facility for water, waste water priority parameters.

Lahore office:	Pak Green Laboratory (EPA Certified), 46 M, Gulberg III, Lahore.
Islamabad office:	Suite No. 14 Shaukat Plaza, I-10 Markaz Islamabad.
Peshawar office:	House # 01, Old Bara Road, University Town, Peshawar.
Contact:	+92-4235441444, +92-303-4442334
Email:	info@pakgreen.pk

Sr.	Name	Qualification	Role in EIA
1	Abdul Hafeez Nasir	Ph.D Environment, LLB	Team Leader
2	Akhtar Ali	BS Environmental Sciences	Report Writing
3	Sabeera Tauheed	M. Phil Environmental Sciences	Proof Reading
4	Mian Iftikhar Ahmad	M. Phil Environmental Sciences	Supervision
5	Umair Rasheed	BS Chemistry	PEQs Monitoring

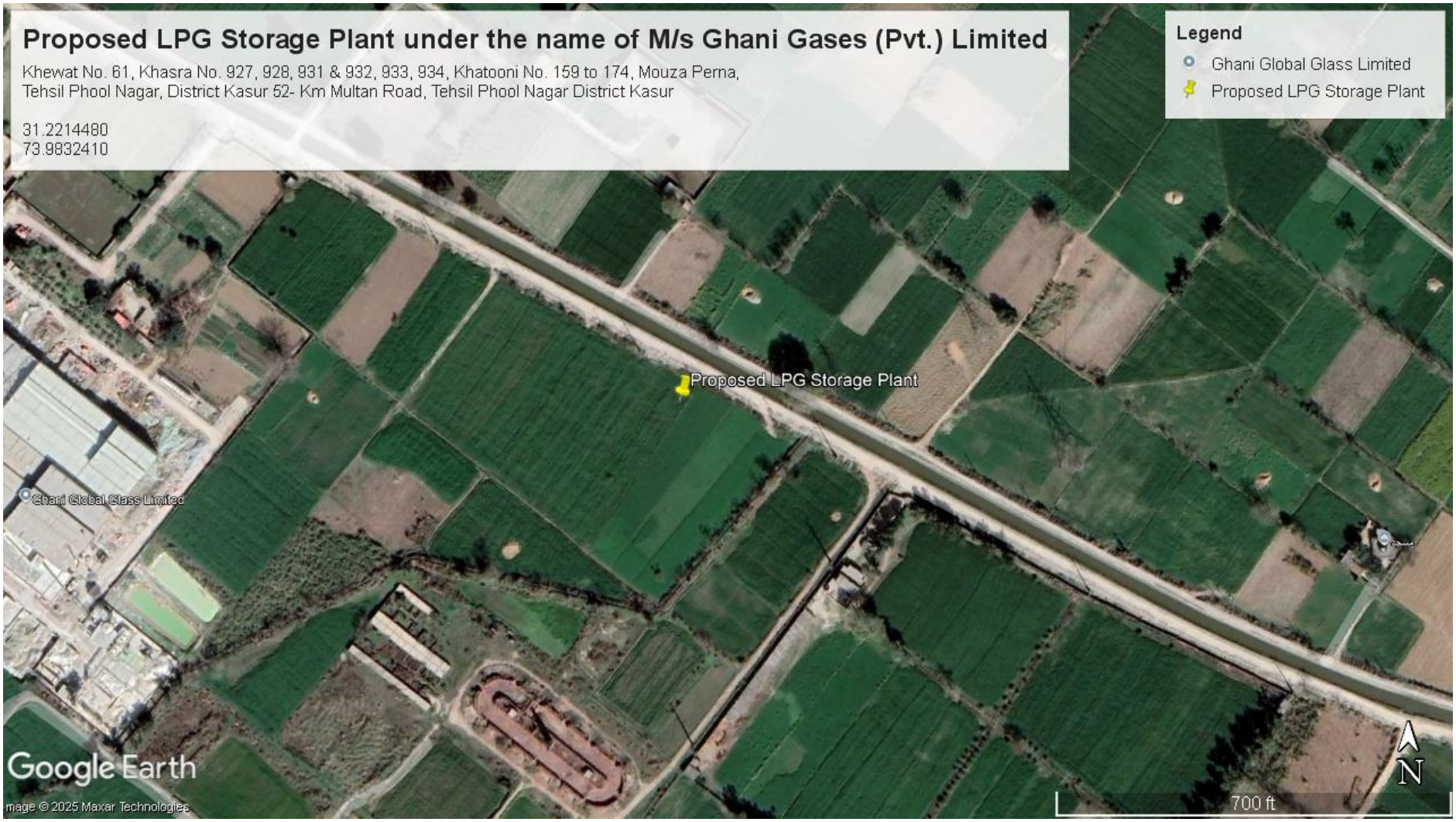
1.4 A brief outline of the Project

The proposed project involves the construction of a LPG Storage Plant with a total storage capacity of **450 tons.** The facility will be developed on a land area of **3.75 Acres**, with an estimated cost of **approximately 200 million PKR**. The project site is located **at** Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52-Km Multan Road, Tehsil Phool Nagar District Kasur. Land coordinates are

- 31°13'18.3"N 73°59'00.7"E

Project site is surrounded by:

North	Rana Iqbal Road	**East**	Agriculture Land
South	Covered Area	**West**	Industry


Proposed LPG Storage Plant under the name of M/s Ghani Gases (Pvt.) Limited
Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna,
Tehsil Phool Nagar, District Kasur 52- Km Multan Road, Tehsil Phool Nagar District Kasur
31.2214480
73.9832410
Legend
Ghani Global Glass Limited
Proposed LPG Storage Plant
Proposed LPG Storage Plant
Ghani Global Glass Limited
Google Earth
Image © 2025 Maxar Technologies
700 ft
N

1.5 The major impacts

Serial	Environmental Issues/ Impacts	Mitigation Measures
PLANNING, SITE SELECTION AND DESIGN STAGE		
1	**Observance of administrative and legal formalities**	It is recommended for obtaining of approval from other relevant departments
2	**Acquisition of land**	The proposed land is the property of the Ghani Chemicals.
3	**Loss of environmentally sensitive areas**	There is no any sensitive area near the project site however the project proponent will achieve the PEQS at the boundary wall of the subject project to avoid the environmental impacts on the nearby community
4	**Changes in traffic pattern**	There is no need to change the traffic pattern due the development of the subject project because only few vehicles will visit the project on daily basis.
5	**Potential conflicts with stakeholders**	There is no any conflict at the current stage of the project. People of the surrounding area have no any objection regarding development of the subject project as per proposed design.

		It is recommended to Settle the issues through scoping and specific group discussions.
6	**Resettlement issues**	No resettlement issues
7	**Project Design**	Structure Stability Assessment of soil should be done, as per building design i.e. total area of building, No. of stories, etc. Provision of Emergency Exits, Assembly Points, firefighting arrangements, water storage for firefighting should be incorporated in the design. Installation of Dust/flue gases/odor controlling devices should be incorporated in the design. Project proponent is committed to provide all these provision in the design of the project.
SITE DEVELOPMENT STAGE		
1	**Erosion due to stripping and site clearance**	Sprinkling of water on road side or dusty tracks
2	**Generation of noise**	Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner.

3	**Outbreak of fire**	Firefighting equipment must be maintained at the site in good working condition.
4	**Safety**	Safety of the workers and others must be ensured. Privacy of the neighbors must not be disturbed.
5	**Labor issues**	Employ the local labor as far as possible Wages of the labor should be as per Government policy
CONSTRUCTION STAGE		
1	**Minor erosion of land**	• There are two types of erosions: 1. Wind Erosion 2. Water erosion • It is recommended to construct the boundary wall first that will reduce the soil erosion due to wind and chances of water erosion due to water flow from the adjacent will be reduced also. • Clearing of land should be step wise; vegetation should be removed only from the area where main building will be developed.

		• Add more vegetation, restore the land by more plantation • Sprinkle water on dusty tracks is recommended
2	**Contamination of land and water**	Hazardous substances like oil, fuel, etc. should be kept on concreted surface. Essential services like water supply, sewerage disposal and solid waste management must be in working condition.
3	**Impacts of dust, noise and flue gases on neighbors**	Sprinkle water on dusty tracks is recommended Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner. Proper tunings of vehicles and machinery must be ensured. Schedule construction timings should be implemented for minimum disturbance to neighbors. Continuous Environmental monitoring must be ensured as per proposed monitoring plan.
OPERATION STAGE		

1	**Contamination of land and water sources**	Continuous vigilance on maintenance of services Tarpaulin sheets must be placed to avoid leaching of oil into ground Proper checking and maintenance of tanks must be ensured to avoid any leakage Careful handling, storage and transferring of oil must be ensured.
2	**Fire breakouts**	Training of workers regarding flammable substances will be ensured. SOPs of fire prevention will be adopted like forbidden of smoking, regular testing of electricity infrastructures and regular testing of gas supply system to the industry. Firefighting equipment must be kept in working condition at site
3	**Safety/security concerns**	Safety of the workers and others will be ensured. • Privacy of the neighbors will not be disturbed.
4	**Malfunction of utilities**	It is proposed to appoint maintenance engineer with technicians like plumber and electrician for smooth operation of utility services.

5	**Occupational Health, Safety and Environment**	• Regular medical check-ups must be ensured to improve the working condition and efficiency of workers. • Relevant safety devices like belts, gloves and testers must be strictly used by the operators at the work site. • Safety of management, workers and visitors must be ensured. • Observance construction and safety codes must be ensured. • Provision of emergency exits must be ensured.

1.6 Recommendations for mitigation measures

Sr. No.	Environmental Parameter/ Element	Mitigation measure to be taken during:			
		Construction	Regular operations	Recommendation	Responsibility
	PHYSICAL ENVIRONMENT				
1	**Health & safety**	Workers/people will be informed in advance when work is about to start at the project site. This may result in people keeping young children away from work areas. Machinery will never be left unattended.	Training of workers will be conducted regarding health and safety, firefighting and health hygiene. Use of PPEs will be implemented at workplace. First aid measures will be provided to workers.	According to LPG storage and handling fact sheet following measures are recommended. Keep the cylinder valves closed when not in use and fit and tighten the plug to the cylinder valve internal thread. Ensure that the cylinder is stored upright (vertical) at all times and is not at risk of tipping over. Inspect the cylinder on a regular basis to ensure it is in good condition, free from rust and housed properly. Ensure the cylinder is stored in an area that is adequately ventilated and not	**Project Manager / Operations Manager /HSE Manager**

		Safe driving practices will be adopted, particularly while passing through human settlements. Basic health facilities will be provided to workers.	Shift Rotation, proper ventilation will be provided to workers in case of thermal stress. Safety signs, safety boards, exit arrows etc. will be placed on site. An Assembling point will be kept to gather in case of emergency situation such as fire hazards. Fire Fighting Equipment's & system will be enhanced Floor will be kept clean without slippery to avoid any hazard. Electric wires, D. Bs will be kept covered & closed. Machinery will never be left in running condition.	susceptible to excessive temperature rise. Store the cylinder in a secure location to protect against falling, damage, being hit by ride on mowers, vandalism, etc. Provide PEPA rate storage for LPG away from the oxidizing gases (e.g. oxygen) by at least 3 meters. Use the cylinders only in well-ventilated areas. The LPG cylinder's date stamp is less than 10 years old. LPG cylinders must be re-tested every 10 years, and should not be used if the cylinder is "out-of-date". The LPG cylinder should be in good condition, and must be free from damage and rust. The LPG cylinder valve should be clean and in good condition. The hoses and appliance fittings should be in good condition.	

			Safe drinking water will be provided to workers and staff (admitted by the proponent) Keep away from heat and flame. Accidental release in case of spill or leak In case of fire, use water spray, dry chemical, foam or CO2. Water may cause frothing. Cylinder and equipment's should be marked and tagged properly Keep the cylinder valves closed when not in use and fit and tighten the plug to the cylinder valve internal thread. Inspect the cylinder on a regular basis to ensure it is in good condition, free from rust and housed	Give special attention to the rubber O-rings and rubber parts used on LPG regulators, and replace these as required. **While using the cylinder:** All LPG cylinders should be kept outdoors, upright, away from sources of heat, whether in use, or spare. that the cylinder should not be warmed by a heater or other appliance the LPG cylinder valve should be closed when the cylinder or appliance is not in use **When finished, it is essential that:** The cylinder valve should be closed. The cylinder should be stored safely, full or empty, away from sources of heat. Dirt, spiders and insects do not get inside the valve outlet during storage.	

			properly. Store the cylinder in a secure location to protect against falling, damage, being hit by ride on mowers, vandalism, etc. The LPG cylinder should be in good condition, and must be free from damage and rust. The LPG cylinder valve should be clean and in good condition. Tank and equipment's should be marked and tagged properly Proper housekeeping should be ensured Proper housekeeping will be ensured In order to avoid any fire hazard, use of drugs and narcotics Should be prohibited during working	(Plastic plugs should be available to keep the valve outlet clean.) The appliance should be stored safely to avoid damage.	

			hours at workplace. A proper smoking zone/area should be designated for the smoking and is allowed only in free hours. Handling and storage will be done as per handling and storage guidelines. Also, Material safety data sheet (MSDS) LPG must be followed there.).		
2	**Emissions of VOC's**	Nill	As the vaporized liquid act as a simple asphyxiates death may result from errors in judgment, confusion, or loss of consciousness which prevents self- rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning.	Follow best work practices. Use PPEs during handling and storage of LPG Ensure proper housekeeping to avoid any exposure in case of rupture. Regular maintenance and inspecting the cylinders and tanks for any leaks, joint failure, etc.	**HSE/ Environmental Manager**

			The liquid can cause severe burn-like injuries in case of eye contact In case of skin contact liquid phase can cause severe burn like injuries, can result in frostbite. Prompt medical attention is mandatory in all cases of overexposure to vaporized liquefied LPG gas. Rescue personnel should be equipped with self-contained breathing apparatus. In the case of frostbite from contact with the liquid phase, place the frost-bitten part in warm water, about 40 -42°C. If warm water is not available. Or is impractical to use, wrap the affected part gently in blankets. Encourage the patient to exercise the affected part whilst it is being warmed. Do not remove		

			clothing whilst frosted. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area, and given mouth-to mouth resuscitation and supplemental oxygen. In case of eye contact Immediately flush with large quantities of tepid water, or with sterile saline solution. Seek medical attention.		
3	**Gaseous emissions and particulate**	Construction materials i.e. sand, clay shall be transported to the project site as per HSE Rules.	Unit will not cause much gaseous emissions during functioning. During the operational phase dust will only be generated due to the	To control any discrepancies, arise during handling of cylinders keep away the cylinders from heat, hot surfaces, sparks, open flames and other ignition sources.	**HSE/ Environmental Manager**

	matter/dust emissions	Dust may generate during unloading of raw materials. Sprinkling will be done on dust tracks to control the particulate matter. All equipment, generators, and vehicles used during the project will be properly tuned and maintained in good working condition in order to minimize exhaust emissions. All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke. Ambient air quality has been monitored for baseline study and results have been	transportation. Particulate matter/dust will be generated during loading/unloading and transportation of cylinders. PPEs such as masks will be provided. All the places within the unit should be paved to avoid any dust emissions during loading/unloading and transportation of cylinders. Machinery & vehicles should be maintained properly According to section 6 & 7 of Material safety data sheet (MSDS) Liquefied LPG gas and propane) M/s Ghani Gases (Pvt.) Limited will use good quality valves that will prevent	Use only non-sparking tools. Use only explosion-proof equipment Do not enter any area where liquefied LPG gas has been spilled unless tests have shown that it is safe to do so. The danger of widespread formation of explosive LPG/Air mixtures should be taken into account. Accidental ignition could result in massive explosion.	

		incorporated within the report in *chapter Description of the Environment*.	the chances of leakage during the storage and handling. Monitoring should be conducted as per EPA NEQS Rules 2001		
4	**Firefighting**	Nil	Fire hazards during the handling, storage of the LPG. Fire extinguishers like CO2 water type Dry Chemical Powder type, Foaming type/AFFF will be made available at the site. Fire hydrants of the types reel type & canvas pipe type will be made available at site. Fire pumps of adequate capacity, fire tanks will be made available at site.	Firefighting plan should be formulated. M/s Ghani Gases (Pvt.) Limited *has* incorporated the firefighting detail in lay out plan.	**HSE/ Environmental Manager**

			Fire action plan Fire action plan will be formulated including arrangements for giving warnings, emergency telephones numbers are available at site. The manual for fire detection system will be maintained at site. The management will train all the employees/workers to reach the assembling point at the time of alarm within 15-20 minutes in case of any hazard.		
5	**Storage and Handling**	Nil	Handling should be in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the material from eyes, skin and	Storage and handling should be as per MSDS and Govt. regulations	**HSE/ Environmental Manager**

			clothing. Wash thoroughly after handling. Always use appropriate Personal Protective Equipment's (PPEs). Store in cool, dry area away from sun and heat. Keep containers tightly closed. Exposure to small amounts of moisture, even moisture in air, causes polymerization and renders the product unusable. Keep away from heat, sparks, flame and other ignition sources. Disposal should be in accordance with federal, state, and local regulations		

6	**Water supply**	It shall be ensured that no activity tempers with the water supply system.	It shall be ensured that no activity tempers with the water supply system. Project proponent committed to provide safe drinking water to all workers and staff	Use the water as per need only. Do not waste by any means.	**HSE/ Environmental Manager**
7	**Noise**	In order to avoid noise in the project area, vehicles will be properly tuned and training of operators/drivers will be conducted Ear plugs will be provided & implemented in case of heavy noise. Noise level monitoring has been conducted for the baseline study and results have been incorporated within the report	No activity producing extra ordinary levels of noise will be allowed as a policy matter. Ear plugs, ear muffs will be provided & implemented in case of any noisy work environment. Noise Monitoring will be conducted as per EPA-PEQS RULES 2000	If noise level exceeds the prescribed limits, then M/s Ghani Gases (Pvt.) Limited LPG plant will adopt proper mitigation measures by regular maintenance of the vehicles. .	**HSE/ Environmental Manager**

		in *chapter Description of the Environment*.			
8	**Odor**	Nil	Regular maintenance of cylinder and valve is recommended	Regular maintenance of cylinder and valve is recommended	**HSE/ Environmental Manager**
9	**Traffic related problems**	The vehicles number will be regulated in a way that no stampedes occur on the site. None of the vehicles will be parked on the road or foot paths in front of the building.	Proper parking area will be reserved for staff and visitors' vehicles No vehicle or motor cycle will be allowed to be parked in the front of the road. There would be no traffic issues due to this project A traffic controller will be designated to control the flow of traffic and avoid congestion Heavy traffic visit schedule will be followed, minimum use of horns at	Visiting vehicles	**HSE/ Environmental Manager**

			the site and provision of ample parking within the premises of site.		
10	**Trash burning**	No trash burning will be allowed in or oust side the site.	No trash burning will be allowed in or outside the site.	Solid waste or discarded material should be handed over to contractor	**Project Manager / HSE Manager**
	BIOLOGICAL ENVIRONMENT				
11	**Fauna and Flora**	Proposed site is devoid - off any protected species of both fauna & flora	Awareness programs will be planned regarding the protection of fauna & flora. Species of Indigenous plants will be planted at site. Animal/reptiles/birds Hunting will be prohibited	Proper tree plantation plan should be developed	**Project Manager / HSE Manager**
	SOCIOECONOMIC IMPACTS				

12	**Resettlement issues**	There is no any issue of resettlement due to the construction of the subject project.	There will not be any issue of resettlement due to the operation of the subject project.	Neighbor's privacy should be on priority.	**Project Manager / HSE Manager**
13	**Change in culture & language**	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the local people to resolve any emerging issue near the project area	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the local people to resolve any emerging issue near the project area	Local people should be preferred	**Project Manager / HSE Manager**
14	**Education**	School and colleges exist in the area. The project proponent will initiate an educational awareness program.	School and colleges exist in the area. The project proponent is committed to initiate an educational awareness program and will provide educational	Educational assistance should be provided	**Project Manager / HSE Manager**

			facilities for the children of the workers.		
15	**Health**	Heath facility already exists within the area The project proponent should provide first aid facilities at site and also social security and medical checkups of the workers.	Heath facility already exists within the area The project proponent is committed to provide first aid facilities at site and also social security and medical checkups of the workers.	First aid and medical facilities should be provided within the unit	**Project Manager / HSE Manager**
16	**Culture, Norms of the area**	Maximum local employment should be ensured to preserve the culture of the area	Maximum local employment should be ensured to preserve the culture of the area		**Project Manager / HSE Manager**

17	**Gender inequality**	Women involvement in decision making process should be ensured. Equal employment opportunity in suitable department of the proposed project should be ensured	Women involvement in decision making process should be ensured Equal employment opportunity in suitable department of the proposed project should be ensured	Public participation should be ensured	**Project Manager / HSE Manager**

1.7 Proposed monitoring

Sr No.	Parameters	Method	Frequency	Monitoring By
1	**NOx**	40 CFR Part 50, App F (US-EPA)	Biannual	Third party certified lab
2	**SOx**	EQSA-0197-114 (US-EPA)	Biannual	Third party certified lab
3	**CO**	40 CFR Part 50, App. C (US-EPA)	Biannual	Third party certified lab
4	**PM2.5/10 um**	UPEPA- EQPM-0798-122 UPEPA-CFR-40 Appen J	Biannual	Third party certified lab

1. INTRODUCTION:

This section of the report provides an overview of the rationale of the project, the objective of the project, the purpose of the report, and the approach adapted to conduct the Environmental Impact Assessment (EIA) for the establishment of the LPG Storage Plant.

1.1 Purpose of report

The Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Punjab, Lahore, in compliance with the legal requirement of the Pakistan Environment Protection Act-1997 (PEPA-1997), Section 12, to obtain a No Objection Certificate (NOC) prior to initiating any construction activity at the project site. The relevant regulations and guidelines considered while preparing this EIA report include:

- Policy and procedures for filing, review, and approval of environmental assessments.
- Guidelines for the preparation and review of environmental reports.
- Guidelines for public participation.
- Guidelines for sensitive and critical areas.
- Detailed sectorial guidelines.
- OGRA rules for storage of LPG products.

Various aspects, including environmental, social, and physical considerations of the project, both during construction and its regular operations, are highlighted in this EIA report. Measures necessary to mitigate any environmental impacts on the surrounding environment are also described. All critical information is presented to facilitate decision-making by the EPA Punjab, ensuring compliance with environmental standards before issuing the necessary approvals.

1.2 Scope of Study

The scope of the study includes conducting a baseline survey of the proposed project, collecting relevant data from primary and secondary sources, assessing the impacts related to the project, and suggesting mitigation measures to control the anticipated impacts. Furthermore, the study formulates an environmental monitoring program to check environmental parameters against PEQS, prepares an Environmental Management Plan (EMP) to implement recommended mitigation measures, and involves consultations with stakeholders or nearby communities to understand their concerns regarding the project.

1.3 Identification of project and proponent

The proposed project falls under **Schedule II**, **Category A, Clause 5** of the Punjab Environmental Protection (Review of EIA/IEE) Regulations, 2022.

1.3.1 Project Title

The subject project for which the Environmental Impact Assessment (EIA) is required is titled as the "**Proposed LPG Storage Plant** with a total capacity of **450 tons** under the name of **M/S Ghani Gases (Pvt.) Limited**." The project site is located **at Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52- Km Multan Road, Tehsil Phool Nagar District Kasur.**

1.3.2 Project Benefits

The project is being developed in response to several driving factors, including:

- Economic development.
- Meeting the growing demand for LPG storage.
- Reducing risks associated with outdated storage systems.
- Compliance with sustainable development goals.
- Contribution to national GDP.

- Providing job opportunities for the local population, including skilled and unskilled workers.
- Enhancing infrastructure development in the region.

1.3.3 Project Proponent

Mr. Farzand Ali S/o Muhammad Akram, holding CNIC # **35202-2601199-7** R/o **Muhala Marghazar Colony, Multan Road, Lahore**, is the proponent for filing the application and completing related procedures to obtain environmental approvals.

1.4 Details of consultant

Pak Green Enviro-Engineering (Pvt.) Ltd is an independent company, who conducts IEE, EIA, EMP and other environmental investigations through its panel of environmental consultants, public participation practitioners and experienced environmental managers. The company has its own recommended instruments to check the baseline environmental data as per NEQS/ PEQS and lab analysis facility for water, waste water priority parameters.

Table 1: Pak Green Laboratory Office Locations and Contact Information

Lahore office:	Pak Green Laboratory (EPA Certified), 46 M, Gulberg III, Lahore.
Islamabad office:	Suite No. 14 Shaukat Plaza, I-10 Markaz Islamabad.
Peshawar office:	House # 01, Old Bara Road, University Town, Peshawar.
Contact:	+92-4235441444, +92-303-4442334
Email:	info@pakgreen.pk

Table 2: Team Members and Their Roles in the EIA

Sr.	Name	Qualification	Role in EIA
1	Abdul Hafeez Nasir	Ph.D Environment, LLB	Team Leader
2	Akhtar Ali	BS Environmental Sciences	Report Writing
3	Sabeera Tauheed	M. Phil Environmental Sciences	Proof Reading
4	Mian Iftikhar Ahmad	M. Phil Environmental Sciences	Supervision
5	Umair Rasheed	BS Chemistry	PEQs Monitoring

1.5 Brief description of nature, size, and location of project

The proposed project involves the construction of LPG Storage Plant with a total storage capacity of **450 tons.** The facility will be developed on a land area of **3.75 Acres**, with an estimated cost of **approximately 200 million PKR**.

Location of the project:

The project site is located at Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52-Km Multan Road, Tehsil Phool Nagar District Kasur. Land coordinates are

- 31°13'18.3"N 73°59'00.7"E

Project site is surrounded by:

North	Rana Iqbal Road	**East**	Agriculture Land
South	Covered Area	**West**	Industry

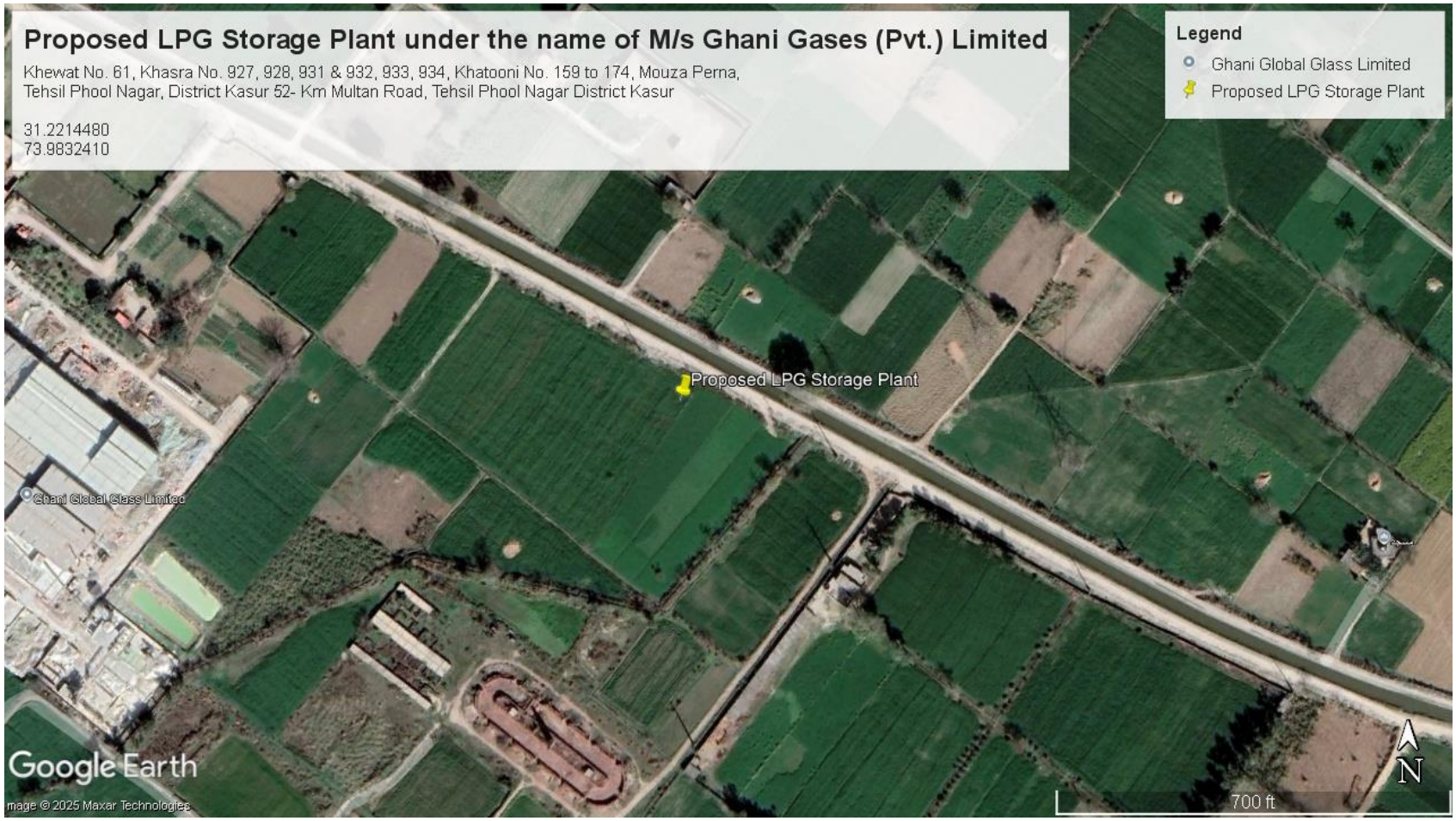


Figure 1: Google Earth Map of the Proposed LPG Storage Plant

For further details, please consult the layout plan of the project site and Google Earth map attached as **Annexure C.**

1.6 Methodology of the EIA Report

To prepare this report, a comprehensive analysis of environmental and social baseline data was conducted at and around the project site. The methodology adopted includes:

- Reviewing the layout plan.
- Conducting detailed meetings with the client.
- Holding orientation sessions.
- Developing a data acquisition plan.
- Analyzing collected data.
- Reviewing existing data and conducting primary and secondary data collection surveys.
- Screening potential environmental impacts and proposing mitigation measures.
- Conducting interviews with local community members to gather their opinions on the proposed project.

The findings indicate that the project will not have significant adverse impacts on the socio-economic environment of the surrounding community. The proposed mitigation measures and compliance with regulatory standards will ensure the project's environmental sustainability.

2. SCREENING:

The proposed project falls under **Schedule II, Category A, Clause 5** of the Punjab Environmental Protection (Review of IEE/EIA) Regulations, 2022. Given the nature and size of the **Proposed LPG Storage Plant** with a capacity of **450 tons,** the project requires an Environmental Impact Assessment (EIA) to address potential environmental and social impacts and comply with regulatory requirements.

2.1 Scoping

2.1.1 Spatial and Temporal Boundaries of Environmental Assessment

The spatial boundaries of the environmental assessment include the project site at Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52-Km Multan Road, Tehsil Phool Nagar District Kasur and its immediate surroundings. This includes nearby agricultural land, road infrastructure, and other relevant features within a 5 km radius. Temporal boundaries consider both short-term construction impacts and long-term operational effects of the LPG Storage Plant.

2.1.2 Important Issues and Concerns Raised During Consultation

Consultations with local communities and stakeholders highlighted several key concerns:

- Potential risks of environmental pollution during construction and operation.
- Safety measures to prevent accidents and leaks.
- Employment opportunities for local residents.
- Compliance with environmental standards and regulatory frameworks.

These concerns are addressed through mitigation strategies outlined in subsequent sections of the report.

2.1.3 Significant Impacts and Factors to be Determined

The significant environmental impacts identified include:

- Air quality degradation from dust and emissions during construction.
- Potential groundwater contamination due to spillage or leaks.
- Noise pollution from machinery and vehicular movement.
- Socio-economic benefits, including job creation and infrastructure improvement.

Mitigation measures will focus on minimizing these impacts while enhancing positive outcomes.

2.2 Consideration of Alternatives

2.2.1 Site Alternatives, Their Selection and Rejection Criteria

The selection of the current site was based on several criteria:

- Proximity to major transportation routes (Lahore-Okara Road).
- Availability of utilities and basic infrastructure.
- Absence of significant environmental sensitivities, such as protected areas or forests.
- Feasibility for commercial activities and regulatory compliance.

No alternative sites were considered as the proposed location meets all necessary requirements and has minimal environmental impact.

2.2.2 Design/Technology Alternatives, Their Selection and Rejection Criteria

The facility will incorporate advanced storage technologies, ensuring operational safety and environmental compliance. Manual storage technologies were rejected due to higher risks of accidents, inefficiencies, and non-compliance with regulatory standards. The selected design includes:

- State-of-the-art automated systems for monitoring and controlling storage conditions.

- Double-walled storage tanks to prevent leaks and enhance safety.

2.2.3 Environmental Alternatives, Their Selection and Rejection Criteria

To minimize environmental impacts, the project adopted the following measures:

- Use of impermeable flooring to prevent soil contamination.
- Development of a stormwater management plan to handle runoff.
- Installation of vapor recovery systems to minimize air pollution.

Alternatives with higher environmental risks were rejected to ensure compliance with environmental regulations and sustainable practices.

2.2.4 Economic Alternatives, Their Selection and Rejection Criteria

The proposed project is the most economically viable alternative, offering significant cost efficiency and long-term benefits. Alternatives involving smaller-scale facilities or outdated technologies were deemed less feasible due to limited storage capacity, higher operational costs, and increased safety risks. The selected approach ensures:

- Maximized economic returns for the proponent.
- Contribution to local economic development.
- Long-term operational sustainability.

3. DESCRIPTION OF THE PROJECT:

3.1 Objectives of Project

The primary objective of the proposed project is to establish a **LPG Storage Plant** with a total storage capacity of **450 tons.** This facility will meet the growing demand for LPG products in the region, enhance safety by utilizing modern storage technology, and support economic development through job creation and infrastructure improvement. Additionally, it aims to comply with national and international environmental standards and regulations for LPG storage and handling.

3.2 Location and Site Layout of the Project

The proposed LPG Storage Plant is located at Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52-Km Multan Road, Tehsil Phool Nagar District Kasur. The total land area of the site is 3.75 Acres, with a covered area of 1468 Sq.Feet. A detailed site layout and map are included in **Annexure C**.

3.3 Tank Design and Specifications

The LPG Storage Plant will consist of 3 storage tanks, each designed for the safe storage. These tanks are built to stringent safety and environmental standards, ensuring safe operations and compliance with all relevant regulations. The total storage capacity of the facility is 450 tons, divided among the tanks as detailed below. The facility is equipped with comprehensive safety measures, including fire prevention systems, to mitigate any potential risks.

1. **Tank Standards**:

All storage tanks and fitting design adhere to **ASME standards**.

2. **Construction Restrictions**:

- No basement or first-floor structures will be constructed on the premises.
- No openings are permitted in the boundary wall for enhanced security and fire containment.

- All the LPG and water line are above the ground.

3.4 Safety Arrangements

Adequate fire prevention and safety measures will be implemented on-site, including:

1. **Fire Hydrants**: 04
2. **Fire Water Tank**: 01
3. **Fire Water Pump**: 01
4. **Fire Water Line**: Covering all the three tanks

Table 3: Storage Tank Specifications and Capacities

Tank No.	Internal DIA (mm)	T/T Length (mm)	Capacity (ton)	15% Less Capacity (Ton)	Water Capacity (LITRES)	Position
1	3795	21600	150	127.50	267750	Above Ground
2	3795	21600	150	127.50	267750	Above Ground
3	3795	21600	150	2127.50	267750	Above Ground
Total			**450 Tons**		803250 LITRES	

This arrangement ensures adherence to safety and operational standards, providing a robust framework for safe LPG storage and handling at the facility.

3.5 Land Use on the Site

The site is suitable for the construction of the LPG Storage Plant. Surrounding areas are predominantly agricultural, with Rana Iqbal Road to the North, Covered are to the south, Agriculture land to the east, and industry to the west. The selected location does not overlap with any protected or sensitive environmental areas, ensuring minimal impact on local biodiversity.

3.6 Road Access

The site is well-connected by Lahore-Okara Road, which provides direct road access to major urban centers and transportation hubs. This access is crucial for the smooth transportation of LPG products to and from the facility, minimizing logistical challenges. Additionally, the surrounding road infrastructure supports the operational needs of the facility, including the movement of large vehicles and tanks.

3.7 Vegetation Features of the Site

The site currently has minimal vegetation, with the land primarily used for agricultural purposes. The proposed construction will involve minimal disruption to the existing flora, as the site is not within a sensitive ecological zone. Any potential impact on vegetation during construction will be mitigated by implementing appropriate environmental management practices.

3.8 Cost and Magnitude of Operation

The estimated cost for establishing the LPG Storage Plant is approximately 200 million PKR. The total storage capacity will be 450 tons, distributed across three storage tanks. The operation will be designed for long-term sustainability and safety, ensuring that environmental and operational standards are met.

3.9 Schedule of Implementation

The implementation of the project is planned in phases:

Phase 1: Site Preparation and Groundworks (1-3 months) – This phase will involve clearing the land, setting up site offices, and preparing the site for construction.

Phase 2: Construction of Storage Tanks and Associated Infrastructure (4-6 months) – Installation of storage tanks, pipelines, safety measures, and other required infrastructure.

Phase 3: Installation of Safety and Fire Prevention Systems (1-2 months) – Implementation of fire hydrants, fire extinguishers, and other safety systems as specified in the project's safety protocols.

Phase 4: Testing and Commissioning (1 month) – Final inspections, testing of the tanks, and commissioning of the storage facility.

Phase 5: Operation and Maintenance (Ongoing) – After successful commissioning, the facility will begin full-scale operations, with regular maintenance to ensure continuous safe operation.

3.10 Description of the Project (Process Flow, Technology, Raw Material, and Products)

The LPG Storage Plant will operate using state-of-the-art technology to ensure the safe handling and storage of various LPG products. The process involves the transportation of LPG products to the facility, where they will be stored in tanks. The tanks are designed to be double-walled to prevent leaks, with automated systems for monitoring tank levels, temperature, and pressure.

Raw Materials for Construction Phase

The construction phase of the LPG Storage Plant will require the following raw materials:

Table 4: Raw Material for Construction

1. **Concrete**	2. **Steel**	3. **Cement**
4. **Sand**	5. **Gravel**	6. **Pipes and Fittings**
7. **Insulation Materials**	8. **Fire Safety Equipment**	9. **Electrical Cables and Wiring**

10. Paints and Coatings	**11. Bitumen and Asphalt**	**12. Safety Barriers and Fencing Materials**
13. Ventilation and Air Conditioning Units		

Raw Material and product of Operational Phase

The raw material and product of the operational phase is same because it is LPG Storage Plant. It will store the LPG products and supply on demand, following LPG products will be stored.

3.11 Restoration and Rehabilitation Plans

Once the project is completed and operational, ongoing restoration and rehabilitation will be carried out to ensure the facility remains compliant with environmental standards. This will include regular monitoring of air quality, water quality, and noise levels. The facility will implement corrective actions if any discrepancies are found during routine inspections.

The rehabilitation plan will also address the restoration of any disturbed areas during construction, such as the landscaping around the facility, and ensure the proper disposal of construction waste and any hazardous materials. The implementation of the Environmental Management Plan (EMP) will guide these activities and ensure that the project maintains long-term sustainability.

4. DESCRIPTION OF ENVIRONMENT:

This section describes the baseline conditions, which cover the existing Physical, ecological and socio-economic environment of the project as well as study area. Data was collected by reviewing secondary data and field survey.

4.1 Physical Environment/ Resources

4.1.1 Topography:

Topographically speaking, Kasur District lies between the river Satluj which flows along its boundaries with India and river Ravi which flows its boundary with Sheikhupura District. The district may be divided into two parts, a low lying or riverine area along the two bordering rivers and upland, away from the rivers. The riverine area is generally inundates during monsoon season. The water level in this area is higher than in the upland. The soil is sandy. The upland is flat plains sloping from north-west to south-west. The general height of the area is from 150 to 200 meters above the sea level.

4.1.2 Climate:

The climatic conditions of the project area are same as the condition of the district Kasur. Kasur has extremes of climate; the summer season begins from April and continues till September. June is the hottest month. The mean maximum and minimum temperature for this month are about 45 and 27 degree Celsius respectively. The winter seasons lasts from November to February. January is the coldest month. The mean maximum and minimum temperatures for the coldest month are 22 and 0 degree Celsius respectively. Rainfall Towards the end of June monsoon conditions appear and during the following two and a half months the rainy season alternates with sultry weather. The winter rain falls during January, February and March ranging from 23 to 31 millimeters.

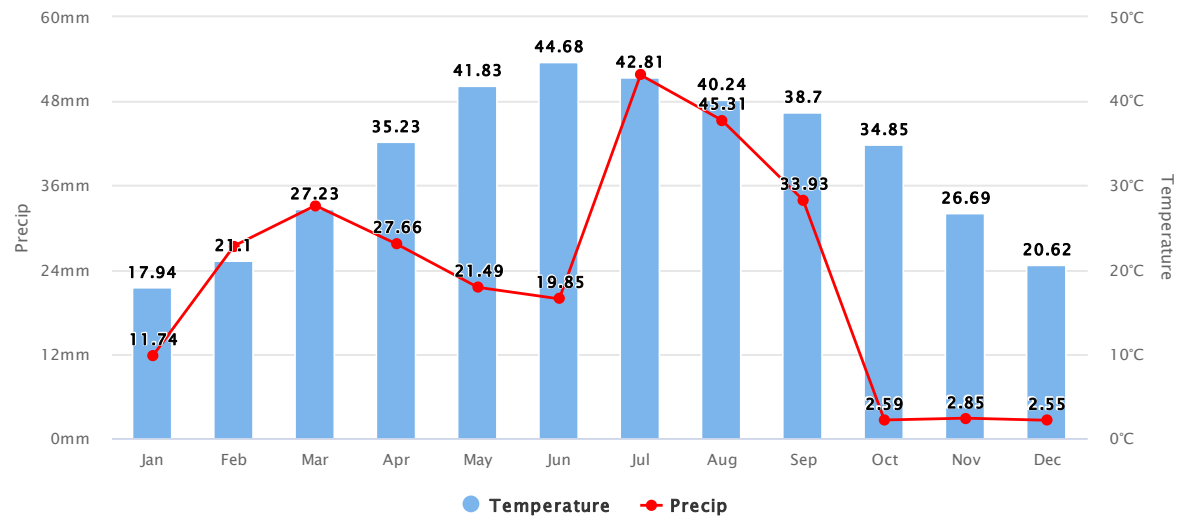


Figure 2: Graphical representation of climate of Kasur

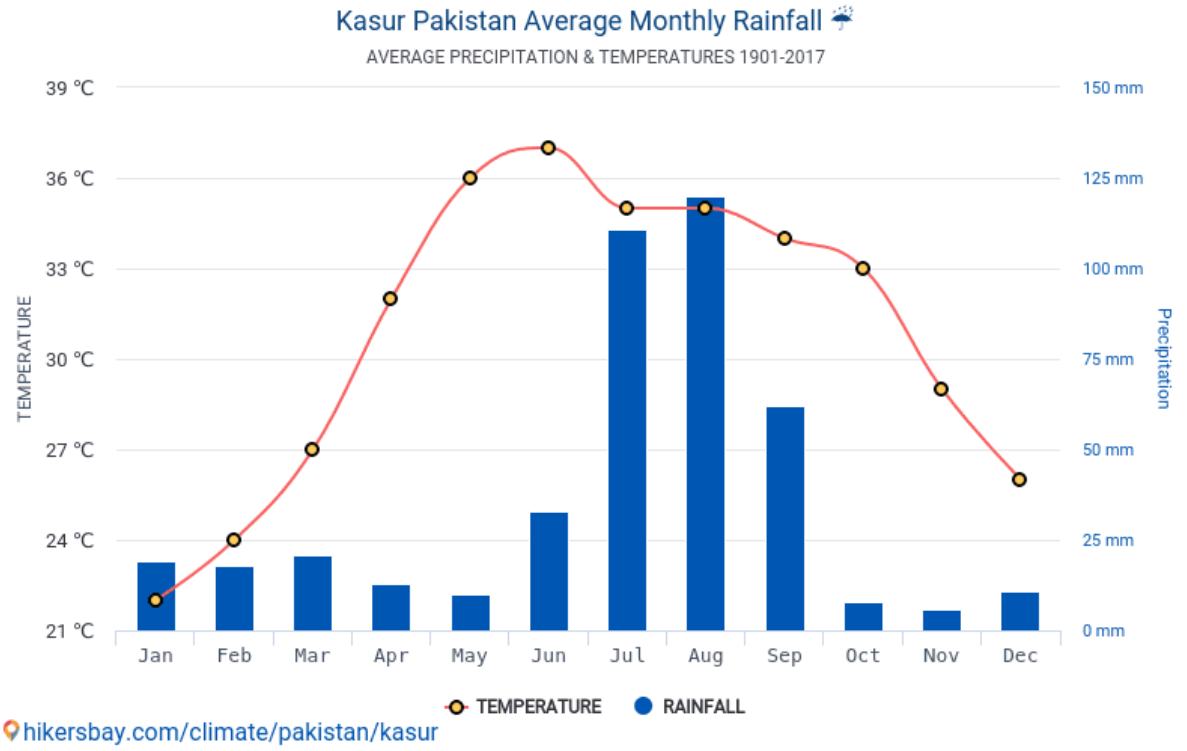


Figure 3: Precipitation at Project Site

4.1.3 Temperature:

Over the course of a year, the temperature typically varies from 5°C to 30°C and is rarely below 2°Cor above 44°C. At an average temperature of 33.7 °C, June is the hottest month of the year. The lowest average temperatures in the year occur in January, when it is around 12.2 °C.

Figure 4: Average Temperature of Kasur

Reference Source: http://www.worldweatheronline.com/Kasur-weather-averages/Punjab/PK.aspx
http://www.meteovista.co.uk/Asia/Pakistan/Kasur/3311772#ui-tabs-16

4.1.4 Air Quality:

Atmospheric pollution, particularly in industrial areas has a strong impact on daily life. Project site is located at Manawala opposite KTWMA Site, District Kasur where many industrial activities are already in process. Industries and vehicles are a major source of air pollution in the project area. Monitoring was conducted at the project site by using Fine Dust Sampler IPM-FDS 2.5/10µ and Ambient Air Analyzer.

To record the baseline ambient air quality of the project area, monitoring was conducted at advised locations to assess the concentration of priority pollutants (Carbon monoxide, Nitrogen dioxide, Sulphur dioxide and PM10) in the air. Lab reports of Ambient Air Monitoring are attached as **Annexure-E** with the EIA report.

4.1.5 Noise Level Monitoring:

4.1.6 Basic Environmental conditions:

During the measurement following conditions were prevailed on workplace:

4.1.7 Metrological Conditions:

During the noise level monitoring weather was dry and sky was clear. Air was blowing at normal speed.

4.1.8 Monitoring Instrument:

The description of the instrument used for the noise level monitoring is given below:

- Name: Digital sound level meter
- Model: AR824
- Company: Intel Instruments plus
- Frequency Range: 31.5 Hz to 8 kHz

4.1.9 Methodology adopted:

Noise level was monitored at four points; lab results are attached as **Annexure-D.**

4.1.10 Ground water:

The underground water will be used as a source of water at the project site. Sample was taken from the tube well near the project area to test its parameters. Lab results are attached as **Annexure-E.**

4.1.11 Ecological Resources

Biodiversity has an important role in the functioning of the ecosystem. Human being is one of the species of the ecosystem and that species is the end user in the food chain. Fauna and flora are the important components of the ecosystem. The observed species of fauna and flora at the project site are described below.

4.1.12 Flora:

Native plants of the Punjab have been restricted to the graveyards and other protected sites/area. The observed flora in and around the project area is being mentioned below.

- Kikar (Acacia arbica),
- Beri (Zizyphus jajaba),
- Shisham or Tali (Dalbergia sissoo)

4.1.13 Fauna:

Birds including sparrows and crows were observed in the vicinity of the project area. And during the interview of the local peoples, they reported the presence of jackal's and dogs in the night.

4.1.14 Socioeconomic Environment:

"The socioeconomic environment is one the component of the regional ecosystem." The development projects can impact either negatively or positively to the regional socio-economic environment.

The socioeconomic environment is one the component of the regional ecosystem." The development projects can impact either negatively or positively to the regional socio-economic environment.

4.1.15 Population

According to the local people the estimated population of nearby three villages present in the project area is approximately 25000 persons.

4.1.16 Profession

Main profession of the area is agricultural activities however some of the peoples are doing jobs in different institutes of the district and upcountry.

4.1.17 Income

Per-capita income in the surrounding area is approximately 25000-35000 Pakistani rupees.

4.1.18 Education Level

Literacy rate in the area is approximately ranging from 15-25% (Source: UC Chairman of village Babarkhai, Gehlan.

4.1.19 Language

The popular language of the area is “Punjabi”

4.1.20 Cultural Diversity

The important cultural events in the district are the Urs of Baba Bulleh Shah and Urs of Baba Imam Shah Bukhari as well as the Urs of Baba Sheikh Bhago. Kasur is also known in folklore for its slippers. A famous Punjabi folk song is:"JuttiKasuri, Pairenapuri, hairab baves ahnuturnapaya." (The slippers of Kasur don't fit me, Oh God, I had to walk!) Food: The staple food of the area is wheat, rice and pulses. Inferior grains are not generally eaten. Meat is frequently eaten specially in the urban towns. Wheat (flour) is baked in the form of chapattis on an iron plate placed on the fire hear.

4.1.21 Quality of life values

Quality of life the in the project area is poor as there are no proper sanitation system and basic health facilities. Some of the important factors are discussed are below;

4.1.22 Health & Education

Basic health & education facilities are available in the rural area of the project site but these health and educational facilities are not sufficient. People have to visit the city Chunian and Kasur for the proper health and educational facilities.

4.1.23 Compensation In Money Terms

As the project has been developed on the land of proponent and people are not getting affected from the project.

4.1.24 Archaeological and Historical Treasures

Archaeological or historical treasures within the project area are not available.

4.1.25 Lab reports of environmental analyses

Lab reports of ambient air, drinking water and noise level monitoring of project area is annexed as **Annexure-E**.

5. SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:

5.1 Environmental Issues

5.1.1 General

The environmental issues had been identified during literature review, consultation with stakeholders, relevant reports and visits to project site. Various types of environmental issues likely to crop up during the life cycle of project are grouped in the following stages:

- Impacts due to location
- Impacts due to design stage/Site development stage
- Construction stage
- Operation stage

5.2 Environmental impacts due to the project location

5.2.1 Project Location:

The subject proposed project is located at Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52-Km Multan Road, Tehsil Phool Nagar District Kasur under the Name of M/s Ghani Gases (Pvt.) Limited over an area of 163,030 SFT. Total open area of plot is 161,562 SFT. Total covered area of plot is 1,468 SFT.

5.2.2 Impacts

Subject project is present in suburban area of Kasur; Map is annexed with the EIA. Mainly the observed impact is acceptable and have a no toxic effect on life.

5.2.3 Mitigation measures

- Ample Parking area for the cars and motor cycle should be reserved within the subject project premises.
- For security purpose Security guard should be there.
- Location can be considered as positive impact on the community due to the Jobs opportunity provided to the community.

- Gas detection system should be placed for the detection of leakage of hydrocarbons to avoid the density of foul smell.

5.3 Site Selection and Design Stage

5.3.1 Land Use Planning

The present plot was empty. Construction of the project will provide the optimum use of the resource.

5.3.2 Presence of Hazardous Conditions

The site is free of any natural and man-made hazardous conditions to cause any negative impact.

5.3.3 Environmentally Sensitive Areas

The area is agricultural cum commercial. Therefore, environmentally sensitive localities do not exist.

5.3.4 Disturbance to other Site Users

The site is not used by others as it is the property of M/s Ghani Gases (Pvt.) Limited LPG Limited so disturbance to other users is out of question. Industry will not be involved to emit offensive odor, noise and other objectionable pollutants/pollution so there will be no environmental pollution issues to the nearby industries.

5.3.5 Availability of Essential Services

Water supply, drainage and sewerage disposal systems are present at proposed site.

5.3.6 Water Supply

Water is needed for cleaning, fire protection and for drinking purpose. Minimum one day's reserve will be kept at the project site. Water will be tested for chemical and bacterial contamination.

5.3.7 Waste Water

Waste water will be treated in septic tanks and then directed to drains.

5.3.8 Communication Infrastructure

The project site is well served by road network.

5.3.9 Availability of Construction Materials

The contractors will provide the construction materials like cement, steel and bricks at the site on as required basis. All the construction materials are locally available.

5.3.10 Skilled and Unskilled Labor

These workers are available at economical rates all the time. The project provides the jobs to the local residents as well as to those from the suburban areas.

Extensive operational & maintenance training will be imparted to staff through well-defined training program before and during system commissioning.

5.3.11 Extraction of Ground Water

The water requirement will be fulfilled by Factories own installed pump.

5.3.12 Traffic Issues

Vehicle access is required especially for transportation. The site is well served with the road network. Heavy traffic will be allowed only during night time during construction phase. The traffic issues at any stage of project life cycle will not arise.

5.4 Environmental Impacts due to the project design

Subject Project under the name of M/s Ghani Gases (Pvt.) Limited LPG Limited will be constructed in Khewat No. 61, Khasra No. 927, 928, 931 & 932, 933, 934, Khatooni No. 159 to 174, Mouza Perna, Tehsil Phool Nagar, District Kasur 52- Km Multan Road, Tehsil Phool Nagar District Kasur. Area for parking, store room, waste water treatment facility, gas detection system, might be have impact if these revealed facilities would have not been incorporated within the subject project. Firefighting plan, health & safety plan, tree plantation plan, emergency response plan must be incorporated during the design phase of the project. The subject project will have;

- Security guard rooms
- Main office

- water storage taken for the firefighting and domestic purposes
- Firefighting instrument room
- Parking Area
- Store room
- Generator Room (in future)
- Electricity room

Following are the major Environmental impacts due to the development related to the design:

5.4.1 Impacts

- Foul smell can be generated if the gas detection system would have not been installed.
- Soil structure and soil bearing capacity.
- Road infrastructure design.
- Emergency exit in the proposed project.
- Electrical hazard can be due to improper management of electrical system.

5.4.2 Mitigation measures and recommendations

Following are the mitigation measures and recommendation to minimize the anticipated impacts

- Plant design should be designed as per NEPA-58.
- Emergency exits points should be marked within the project building
- Firefighting system should be designed for the emergency situations.
- Electricity system should be design safe and sound.
- Water storage tanks should be established for fighter fighting purposes.
- Electricity wires should be covered by thick plastic/electricity resistant covers.

5.5 Impacts during Constructional Stage

5.5.1 Impacts

The construction stage may involve the following vulnerabilities:

- Generation of dust during loading and unloading of construction materials.
- Generation of noise on account of vehicular use and construction activities. On the basis of surveillances, it is noted that background noise level will be within the PEQS limits. These types of problem may arise on activity:
- Oil storage drum can be leak.
- Local flooding due to over-use of water and leakage of pipes.
- Injuries to worker during construction.
- Traffic problem may be arisen during operational phase.
- Any outbreak of fire due to electrical and other failures.

5.5.2 Mitigation Measures during Construction Stage

For Negative impacts in this stage, following mitigation measures are suggested:

Minor erosion of land after removal of existing vegetation will be reduced due to the pre-constructed boundary wall of the project and step wise clearing of vegetation cover. Land is almost clear and there would be no chance so of land erosion

Contamination of land will be avoided by keeping the leaching material on concreted surfaces or leaching proof material.

Safety of construction workers, people in the surroundings and passersby. Occupational Health & Safety means to provide and maintain a working environment in which employees are not exposed to hazards.

During Construction activities impacts like dust, noise and flue gases generated from vehicles and machinery will be reduced by effective management system and all parameter will be comply with PEQS by proper tuning of vehicles and machineries and water sprinkling for the dust emission control.

Construction materials will be stored within the boundary wall of the site.

Sprinkling of water will be done on site.

Oils storage drums must be placed over on paved area on the plastics sheets.

5.6 Impacts during Operation Stage

Main environmental issues associated with Project operation are as follow.

- Fire due to short circuits, leakage of tanks and other activities.

5.7 Main Environmental Issues

Main environmental issues associated with project are as follow.

- Waste water due domestic activities.
- Fire due to short circuits, leakage of cylinders and other activities.
- Solid waste generation due to domestic activities.
- Noise pollution from operation machinery and other machinery.
- Health & safety hazards including the electricity hazardous, fire hazards, handling of cylinders, during working and filling of LPG.
- Foul smell due to leakage of gas in cylinders.
- Traffic and parking issues may be the serious problems.
- Vehicle access is required especially for transportation. The site is well served with the road network. Heavy traffic will be allowed only during night time during operational phase. The traffic issues at any stage of project life cycle will not arise.
- About 25-30 persons will occupy the project site. The projects' operations will be kept in working condition so that the workers may give their input in environment friendly conditions.
- Management Committee will supervise the smooth functioning of the project site. All the activities will be managed by the qualified and experienced engineers.

5.8 Mitigation Measures during Operation Stage

Following points must be implemented during the operation stage.

- Keep water supply, sewerage disposal and electric supply in working condition.

- Keeps the firefighting arrangements in working condition at all times.
- Contacts of concerned departments like fire brigades, police, first aid, etc. should be displayed at prominent places in the project's building.
- A well design firefighting system will be constructed to cope with fire situations in the plaza.
- A watchman will control the traffic at gate during the construction phase
- Project proponent should submit all the monitoring report in the EPA Punjab Office for the compliance of the PEQS
- All the health & safety measures should be ensured to MSDS
- A Material Safety Data Sheet (MSDS) would be accessible to employee to follow the instructions at the workplace. The MSDS provides important information on propane including physical properties, health effects, first aid, safety precautions, and personal protective equipment (PPE).
- This program would provide instruction to handle all management system.

5.9 Gas and flame Detection

5.9.1 Millennium II Series — Fixed Gas Detection

- Single, multi-channel, or BASIC controller configurations
- Lowest power consumption of any gas detection package available on the market
- Wide voltage range allows for greater stability and system compatibility
- Universal toxic and LEL gas sensors
- are completely interchangeable with controller/ transmitter
- Robust construction and reliable performance designed for extreme conditions
- Advanced catalytic bead, electrochemical, and infrared sensor technology

5.9.2 UV/IRS Flame Detector

- Wide field of view (120°)
- Robust construction and reliable performance developed for extreme ambient conditions
- Low power consumption, lowers overall costs, increases uptime, allows flexibility, and lower overall costs
- Analog, HART, Modbus, and relay outputs
- Certified for worldwide use

5.9.3 References

Plant Engineer's Handbook by R Keith Mobley

5.10 Types of Negative Impacts

5.10.1 Minor Impacts

These are of minor intensity. For mitigation of the minor impacts, routine and limited actions are required.

5.10.2 Moderate Impacts

These impacts need specific and additional mitigation measures.

5.10.3 Major Impacts

These impacts have severe adverse impacts. These are intolerable. All possible preventive and multiple control measures are adopted to minimize their intensity and duration.

5.11 Impacts on Physical Environments

5.11.1 Groundwater Quality and Level

The proposed project would not affect the quality and level of groundwater. Project impact is nil.

5.11.2 Land Utility

It will increase significantly since the project has been planned to be constructed on the existing unused area.

5.12 Impacts on Biological Environments

5.12.1 Flora

The project site is devoid of any significant vegetative cover. Plants are present in the established park. Nil impact is envisaged.

5.12.2 Fauna

The fauna, including wildlife species, do not exist at the project site. The impact will be nil.

5.13 Impacts on Socio-economic Environments

5.13.1 Security

Because of the presence of security guards round the clock, the security at the project site will improve as well as in its vicinity. Impact will be moderate positive.

5.13.2 Land Value

Land value in the surrounding area will increase due to the completion of the present project. Impact will be moderate positive.

5.11Resettlement Issues

5.14.1 Dislocation of Population

The project does not involve dislocation of the people. There is no requirement of resettling a single person. Impact is nil.

5.14.2 Loss of Property/Infrastructure

No movable or immovable property and infrastructure of public and private sectors will be lost or damaged during construction and operation stages. Impact will be nil.

5.15 Environmental Enhancement Measures in Addition

- Sprinkling of water will be done on dusty roads and tracks.
- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed of or utilized properly.

- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during construction.
- Air pollution controlling devices will be installed within the project during operation.
- Machinery will be kept maintained.
- Proper SOPs will be followed with proper schedules along with the HSE conditions.
- The area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- Noise will be controlled by adopting proper measures.
- PPEs will be provided to workers during working.
- Firefighting equipment and systems will be installed.
- Safety signs will be placed at all locations where required.
- Hygienic conditions will be ensured, and proper quality will be maintained by quality control testing.
- First aid facilities will be made available.
- Precaution and safety measures will be adopted and followed for health & safety, use of tanks, filling, storage, and handling.

6. ENVIRONMENTAL MANAGEMENT & MONITORING PROGRAM:

6.1 Purpose and Objectives of the EMP:

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the EIA
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters in order to:
- Ensure the complete implementation of all mitigation measures
- Ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations
- Identify training requirements at various levels.

6.2 Management Approach:

The overall responsibility for compliance with the environmental management plan rests with the project proponent.

6.3 Institutional Responsibilities

Following functionaries will be involved in the implementation of EMP:

- Project Proponent
- HSE/Project Manager
- In-Charge Administration
- Supervisor of project
- Environmental Engineer

6.4 Training of Construction contractor

Training of construction contractor & workers will be the part of the TORs regarding the construction of the building. The provisions given in EIA Report *Chapter 4 Screening of Potential Environmental Impacts & Their Mitigation Measures* will be followed.

TORs will be including the training and submission of reports in the following area:

1. Handling of Machineries in a safe way
2. Use of PPEs
3. Maintenance of vehicles and submission of Environmental Monitoring Reports
4. Maintenance of Water Consumption records
5. Testing of water and waste water and submission of Environmental Monitoring Reports
6. Placement of safety signs/boards during construction
7. Monitoring of generator emissions

Training regarding all other aspects of HSE will be ensured by the contractor during the construction phase.

6.5 Responsibility of EMP

Overall responsibility for implementation of EMP will be that of project proponent. He will appoint an HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage the all HSE condition at the PEQS.

6.6 Training Schedules

Training for the management/contractors/engineers and workers on environmental aspects of the project will be arranged biannually during the construction phase of the project. It will be imparted by a team of experienced trainers.

6.7 Environmental Technical Assistance and Training Plan

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. HSE/Project Manager should play a key role in this respect and arrange the training programs.

HSE/Project Manager will provide training to staff and workers about the best environmental management practices at the construction site and affective implementation of the EMP.

The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, Punjab Environmental Quality Standards (PEQS), Usage

of personal protection equipment's, and health and safety related issues on the construction site.

The HSE/Project Manager will train all workers & staff in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of Sexually Transmitted Infections (STI) HIV/AIDS and in general health and safety matters, and on the specific hazards of their work. Training should also consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation.

HSE/Project Manager will arrange Training on monthly or quarterly basis regarding health & safety, hygiene, firefighting and first aid.

6.8 Proposed Environmental Monitoring Plan:

Ambient Air Quality

Ambient air quality report will be submitted to PEPA biannually by adopting the following recommended methods and frequency.

Table 05: Air Quality Monitoring Parameters, Methods, and Frequency

Sr No.	Parameters	Method	Frequency	Monitoring By
1	**NOx**	40 CFR Part 50, App F (US-EPA)	Biannual	Third party certified lab
2	**SOx**	EQSA-0197-114 (US-EPA)	Biannual	Third party certified lab
3	**CO**	40 CFR Part 50, App. C (US-EPA)	Biannual	Third party certified lab
4	**PM2.5/10 um**	UPEPA- EQPM-0798-122 UPEPA-CFR-40 Appen J	Biannual	Third party certified lab

6.9 Noise Level

A sound level meter or sound meter is an instrument that measures sound pressure level, commonly used in noise pollution studies for the quantification of different kinds of noise, especially for industrial, environmental and aircraft noise. Noise level should be monitored by EPA certified method using standard noise level meter and reports should be submitted to PEPA on quarterly basis. The current international standard that specifies sound level meter functionality and performance is the IEC 61672-1:2013.

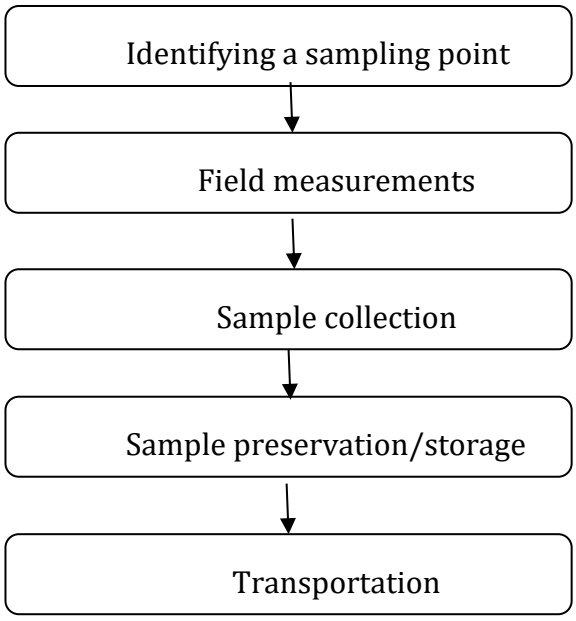
6.10 Water sampling

Following methodology will be adopted for water sampling and analysis:

6.11 Sample Collection:

The water samples will be collected from identified sampling points. The sampling will be carried out in accordance to the SOP based on the recognized methods of United State Environmental Protection Agency (UPEPA), World Health Organization (WHO) and American Public Health Administration (APHA) for water sampling and analysis.

Steps Involved in water sampling



6.12 Measurement of Field Parameters:

Parameters that quickly degrade after they will be sampled must be tested in the field. Following parameters will be measured in field that can significantly change during storage and transportation.

- pH
- Odor
- Color
- Temperature

Preservation:

Preservation is important in order to minimize the changes in the sample. The collected water samples should be preserved in appropriate containers as per Guidelines.

6.13 Sample Identification and Chain of Custody:

The collected samples should be labeled and assigned a unique sample identification number, sampling date and time of collection to collected samples. All the relevant information (sample location, time of collection, sample identification, temperature, pH, collected by, preservation techniques etc.) will be recorded immediately on the Chain of Custody form signed by Pak Green field Analyst.

6.14 Transportation:

A shipping container (Ice box with eutectic cold packs instead of ice) with maintained temperature of 4° C ± 3 °C must be used for transporting the sample from the collection site to the environmental laboratory.

6.15 Methodology for Drinking Water

Methodology for drinking water is given below:

Table 5: Drinking Water Testing Methods

Sr. No.	Parameters	Method / Technique
1	**pH**	**APHA-4500-H^+ B**
2	**Electrical Conductivity**	**Conductivity Method, TDS meter**
3	**TDS**	**APHA-2540 C**
4	**Turbidity**	**Nephelometric Method**
5	**Taste**	**By Sensory**
6	**Odor**	**By Sensory**
7	**Total Hardness**	**EDTA Titration**
8	**Arsenic**	**APHA-3120 B**
9	**Chloride (Cl^{-1})**	**APHA-4500-Cl B**
10	**Sulphate (SO_4^{-2})**	**APHA-4500-SO_4 C**
11	**Fluoride (F^{1-})**	**APHA-4500-F-C**
12	**Total Coli-form**	**MPN**

Table 6: Environmental Issues/Impacts and Mitigation Measures

Serial	Environmental Issues/ Impacts	Mitigation Measures
PLANNING, SITE SELECTION AND DESIGN STAGE		
1	**Observance of administrative and legal formalities**	It is recommended for obtaining of approval from other relevant departments
2	**Acquisition of land**	The proposed land is the property of the Ghani Chemicals.
3	**Loss of environmentally sensitive areas**	There is no any sensitive area near the project site however the project proponent will achieve the PEQS at the boundary wall of the subject project to avoid the environmental impacts on the nearby community
4	**Changes in traffic pattern**	There is no need to change the traffic pattern due the development of the subject project because only few vehicles will visit the project on daily basis.
5	**Potential conflicts with stakeholders**	There is no any conflict at the current stage of the project. People of the surrounding area have no any objection regarding development of the subject project as per proposed design.

		It is recommended to Settle the issues through scoping and specific group discussions.
6	**Resettlement issues**	No resettlement issues
7	**Project Design**	Structure Stability Assessment of soil should be done, as per building design i.e. total area of building, No. of stories, etc. Provision of Emergency Exits, Assembly Points, firefighting arrangements, water storage for firefighting should be incorporated in the design. Installation of Dust/flue gases/odor controlling devices should be incorporated in the design. Project proponent is committed to provide all these provision in the design of the project.
SITE DEVELOPMENT STAGE		
1	**Erosion due to stripping and site clearance**	Sprinkling of water on road side or dusty tracks
2	**Generation of noise**	Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner.
3	**Outbreak of fire**	Firefighting equipment must be maintained at the site in good working condition.

4	**Safety**	Safety of the workers and others must be ensured. Privacy of the neighbors must not be disturbed.
5	**Labor issues**	Employ the local labor as far as possible Wages of the labor should be as per Government policy
CONSTRUCTION STAGE		
1	**Minor erosion of land**	• There are two types of erosions: 3. Wind Erosion 4. Water erosion • It is recommended to construct the boundary wall first that will reduce the soil erosion due to wind and chances of water erosion due to water flow from the adjacent will be reduced also. • Clearing of land should be step wise; vegetation should be removed only from the area where main building will be developed. • Add more vegetation, restore the land by more plantation • Sprinkle water on dusty tracks is recommended

2	**Contamination of land and water**	Hazardous substances like oil, fuel, etc. should be kept on concreted surface. Essential services like water supply, sewerage disposal and solid waste management must be in working condition.
3	**Impacts of dust, noise and flue gases on neighbors**	Sprinkle water on dusty tracks is recommended Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner. Proper tunings of vehicles and machinery must be ensured. Schedule construction timings should be implemented for minimum disturbance to neighbors. Continuous Environmental monitoring must be ensured as per proposed monitoring plan.
OPERATION STAGE		
1	**Contamination of land and water sources**	Continuous vigilance on maintenance of services Tarpaulin sheets must be placed to avoid leaching of oil into ground Proper checking and maintenance of tanks must be ensured to avoid any leakage

		Careful handling, storage and transferring of oil must be ensured.
2	**Fire breakouts**	Training of workers regarding flammable substances will be ensured. SOPs of fire prevention will be adopted like forbidden of smoking, regular testing of electricity infrastructures and regular testing of gas supply system to the industry. Firefighting equipment must be kept in working condition at site
3	**Safety/security concerns**	Safety of the workers and others will be ensured. • Privacy of the neighbors will not be disturbed.
4	**Malfunction of utilities**	It is proposed to appoint maintenance engineer with technicians like plumber and electrician for smooth operation of utility services.

5	**Occupational Health, Safety and Environment**	• Regular medical check-ups must be ensured to improve the working condition and efficiency of workers. • Relevant safety devices like belts, gloves and testers must be strictly used by the operators at the work site. • Safety of management, workers and visitors must be ensured. • Observance construction and safety codes must be ensured. • Provision of emergency exits must be ensured.

Table 7: Environmental Management Plan

Sr. No.	Environmental Parameter/ Element	Mitigation measure to be taken during:			
		Construction	**Regular operations**	**Recommendation**	**Responsibility**
	PHYSICAL ENVIRONMENT				
1	**Health & safety**	Workers/people will be informed in advance when work is about to start at the project site. This may result in people keeping young children away from work areas. Machinery will never be left unattended. Safe driving practices will be adopted, particularly while	Training of workers will be conducted regarding health and safety, firefighting and health hygiene. Use of PPEs will be implemented at workplace. First aid measures will be provided to workers. Shift Rotation, proper ventilation will be provided to workers in case of thermal stress.	According to LPG storage and handling fact sheet following measures are recommended. Keep the cylinder valves closed when not in use and fit and tighten the plug to the cylinder valve internal thread. Ensure that the cylinder is stored upright (vertical) at all times and is not at risk of tipping over. Inspect the cylinder on a regular basis to ensure it is in good condition, free from rust and housed properly. Ensure the cylinder is stored in an area that is adequately ventilated and not susceptible to excessive temperature rise. Store	**Project Manager / Operations Manager /HSE Manager**

		passing through human settlements. Basic health facilities will be provided to workers.	Safety signs, safety boards, exit arrows etc. will be placed on site. An Assembling point will be kept to gather in case of emergency situation such as fire hazards. Fire Fighting Equipment's & system will be enhanced Floor will be kept clean without slippery to avoid any hazard. Electric wires, D. Bs will be kept covered & closed. Machinery will never be left in running condition. Safe drinking water will be provided to workers and staff (admitted by the proponent) Keep away from heat and flame.	the cylinder in a secure location to protect against falling, damage, being hit by ride on mowers, vandalism, etc. Provide PEPA rate storage for LPG away from the oxidizing gases (e.g. oxygen) by at least 3 meters. Use the cylinders only in well-ventilated areas. The LPG cylinder's date stamp is less than 10 years old. LPG cylinders must be re-tested every 10 years, and should not be used if the cylinder is "out-of-date". The LPG cylinder should be in good condition, and must be free from damage and rust. The LPG cylinder valve should be clean and in good condition. The hoses and appliance fittings should be in good condition. Give special attention to the rubber O-rings and rubber parts used on LPG regulators, and replace these as required.	

			Accidental release in case of spill or leak In case of fire, use water spray, dry chemical, foam or CO2. Water may cause frothing. Cylinder and equipment's should be marked and tagged properly Keep the cylinder valves closed when not in use and fit and tighten the plug to the cylinder valve internal thread. Inspect the cylinder on a regular basis to ensure it is in good condition, free from rust and housed properly. Store the cylinder in a secure location to protect against falling, damage, being hit by ride on mowers, vandalism, etc. The LPG cylinder should be in good	**While using the cylinder:** All LPG cylinders should be kept outdoors, upright, away from sources of heat, whether in use, or spare. that the cylinder should not be warmed by a heater or other appliance the LPG cylinder valve should be closed when the cylinder or appliance is not in use **When finished, it is essential that:** The cylinder valve should be closed. The cylinder should be stored safely, full or empty, away from sources of heat. Dirt, spiders and insects do not get inside the valve outlet during storage. (Plastic plugs should be available to keep the valve outlet clean.) The appliance should be stored safely to avoid damage.	

			condition, and must be free from damage and rust. The LPG cylinder valve should be clean and in good condition. Tank and equipment's should be marked and tagged properly Proper housekeeping should be ensured Proper housekeeping will be ensured In order to avoid any fire hazard, use of drugs and narcotics Should be prohibited during working hours at workplace. A proper smoking zone/area should be designated for the smoking and is allowed only in free hours.		

			Handling and storage will be done as per handling and storage guidelines. Also, Material safety data sheet (MSDS) LPG must be followed there.).		
2	**Emissions of VOC's**	Nill	As the vaporized liquid act as a simple asphyxiates death may result from errors in judgment, confusion, or loss of consciousness which prevents self- rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning. The liquid can cause severe burn-like injuries in case of eye contact In case of skin contact liquid phase can cause severe burn like injuries, can result in frostbite.	Follow best work practices. Use PPEs during handling and storage of LPG Ensure proper housekeeping to avoid any exposure in case of rupture. Regular maintenance and inspecting the cylinders and tanks for any leaks, joint failure, etc.	**HSE/ Environmental Manager**

			Prompt medical attention is mandatory in all cases of overexposure to vaporized liquefied LPG gas. Rescue personnel should be equipped with self-contained breathing apparatus. In the case of frostbite from contact with the liquid phase, place the frost-bitten part in warm water, about 40 -42°C. If warm water is not available. Or is impractical to use, wrap the affected part gently in blankets. Encourage the patient to exercise the affected part whilst it is being warmed. Do not remove clothing whilst frosted. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an		

			uncontaminated area, and given mouth-to mouth resuscitation and supplemental oxygen. In case of eye contact Immediately flush with large quantities of tepid water, or with sterile saline solution. Seek medical attention.		
3	**Gaseous emissions and particulate matter/dust emissions**	Construction materials i.e. sand, clay shall be transported to the project site as per HSE Rules. Dust may generate during unloading of raw materials. Sprinkling will be done on dust tracks to control the particulate matter. All equipment, generators, and vehicles used during the project	Unit will not cause much gaseous emissions during functioning. During the operational phase dust will only be generated due to the transportation. Particulate matter/dust will be generated during loading/unloading and transportation of cylinders. PPEs such as masks will be provided.	To control any discrepancies, arise during handling of cylinders keep away the cylinders from heat, hot surfaces, sparks, open flames and other ignition sources. Use only non-sparking tools. Use only explosion-proof equipment Do not enter any area where liquefied LPG gas has been spilled unless tests have shown that it is safe to do so. The danger of widespread formation of explosive LPG/Air mixtures should be taken	**HSE/ Environmental Manager**

		will be properly tuned and maintained in good working condition in order to minimize exhaust emissions. All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke. Ambient air quality has been monitored for baseline study and results have been incorporated within the report in *chapter Description of the Environment*.	All the places within the unit should be paved to avoid any dust emissions during loading/unloading and transportation of cylinders. Machinery & vehicles should be maintained properly According to section 6 & 7 of Material safety data sheet (MSDS) Liquefied LPG gas and propane) M/s Ghani Gases (Pvt.) Limited will use good quality valves that will prevent the chances of leakage during the storage and handling. Monitoring should be conducted as per EPA NEQS Rules 2001	into account. Accidental ignition could result in massive explosion.	

4	**Firefighting**	Nil	Fire hazards during the handling, storage of the LPG. Fire extinguishers like CO2 water type Dry Chemical Powder type, Foaming type/AFFF will be made available at the site. Fire hydrants of the types reel type & canvas pipe type will be made available at site. Fire pumps of adequate capacity, fire tanks will be made available at site. **Fire action plan** Fire action plan will be formulated including arrangements for giving warnings, emergency telephones numbers are available at site. The manual for fire detection system will be maintained at site.	Firefighting plan should be formulated. M/s Ghani Gases (Pvt.) Limited *has* incorporated the firefighting detail in lay out plan.	**HSE/ Environmental Manager**

			The management will train all the employees/workers to reach the assembling point at the time of alarm within 15-20 minutes in case of any hazard.		
5	**Storage and Handling**	Nil	Handling should be in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the material from eyes, skin and clothing. Wash thoroughly after handling. Always use appropriate Personal Protective Equipment's (PPEs). Store in cool, dry area away from sun and heat. Keep containers tightly closed. Exposure to small amounts of moisture, even moisture in air, causes polymerization and	Storage and handling should be as per MSDS and Govt. regulations	**HSE/ Environmental Manager**

			renders the product unusable. Keep away from heat, sparks, flame and other ignition sources. Disposal should be in accordance with federal, state, and local regulations		
6	**Water supply**	It shall be ensured that no activity tempers with the water supply system.	It shall be ensured that no activity tempers with the water supply system. Project proponent committed to provide safe drinking water to all workers and staff	Use the water as per need only. Do not waste by any means.	**HSE/ Environmental Manager**
7	**Noise**	In order to avoid noise in the project area, vehicles will be properly tuned and training of	No activity producing extra ordinary levels of noise will be allowed as a policy matter.	If noise level exceeds the prescribed limits, then M/s Ghani Gases (Pvt.) Limited LPG plant will adopt proper mitigation measures by regular maintenance of the vehicles. .	**HSE/ Environmental Manager**

		operators/drivers will be conducted Ear plugs will be provided & implemented in case of heavy noise. Noise level monitoring has been conducted for the baseline study and results have been incorporated within the report in *chapter Description of the Environment*.	Ear plugs, ear muffs will be provided & implemented in case of any noisy work environment. Noise Monitoring will be conducted as per EPA-PEQS RULES 2000		
8	**Odor**	Nil	Regular maintenance of cylinder and valve is recommended	Regular maintenance of cylinder and valve is recommended	**HSE/ Environmental Manager**
9	**Traffic related problems**	The vehicles number will be regulated in a way that no stampedes occur on the site.	Proper parking area will be reserved for staff and visitors' vehicles	Visiting vehicles	**HSE/ Environmental Manager**

		None of the vehicles will be parked on the road or foot paths in front of the building.	No vehicle or motor cycle will be allowed to be parked in the front of the road. There would be no traffic issues due to this project A traffic controller will be designated to control the flow of traffic and avoid congestion Heavy traffic visit schedule will be followed, minimum use of horns at the site and provision of ample parking within the premises of site.		
10	**Trash burning**	No trash burning will be allowed in or oust side the site.	No trash burning will be allowed in or outside the site.	Solid waste or discarded material should be handed over to contractor	**Project Manager / HSE Manager**
	BIOLOGICAL ENVIRONMENT				

11	**Fauna and Flora**	Proposed site is devoid - off any protected species of both fauna & flora	Awareness programs will be planned regarding the protection of fauna & flora. Species of Indigenous plants will be planted at site. Animal/reptiles/birds Hunting will be prohibited	Proper tree plantation plan should be developed	**Project Manager / HSE Manager**
	SOCIOECONOMIC IMPACTS				
12	**Resettlement issues**	There is no any issue of resettlement due to the construction of the subject project.	There will not be any issue of resettlement due to the operation of the subject project.	Neighbor's privacy should be on priority.	**Project Manager / HSE Manager**
13	**Change in culture & language**	Maximum employment of Local people is recommended to preserve the local cultural language.	Maximum employment of Local people is recommended to preserve the local cultural language.	Local people should be preferred	**Project Manager / HSE Manager**

		It will help in communication with the local people to resolve any emerging issue near the project area	It will help in communication with the local people to resolve any emerging issue near the project area		
14	**Education**	School and colleges exist in the area. The project proponent will initiate an educational awareness program.	School and colleges exist in the area. The project proponent is committed to initiate an educational awareness program and will provide educational facilities for the children of the workers.	Educational assistance should be provided	**Project Manager / HSE Manager**

15	**Health**	Heath facility already exists within the area The project proponent should provide first aid facilities at site and also social security and medical checkups of the workers.	Heath facility already exists within the area The project proponent is committed to provide first aid facilities at site and also social security and medical checkups of the workers.	First aid and medical facilities should be provided within the unit	**Project Manager / HSE Manager**
16	**Culture, Norms of the area**	Maximum local employment should be ensured to preserve the culture of the area	Maximum local employment should be ensured to preserve the culture of the area		**Project Manager / HSE Manager**
17	**Gender inequality**	Women involvement in decision making process should be ensured. Equal employment opportunity in suitable department of the proposed project should be ensured	Women involvement in decision making process should be ensured Equal employment opportunity in suitable department of the proposed project should be ensured	Public participation should be ensured	**Project Manager / HSE Manager**

7. STAKEHOLDERS CONSULTATION:

7.1 Introduction

Stakeholder consultation is a critical part of the Environmental Impact Assessment (EIA) process for any project. For the proposed project by M/s Ghani Chemicals (Pvt.) Limited, a series of consultations were held with various stakeholders from the local community, government agencies, and other relevant groups to gather their feedback on the project's potential social, economic, and environmental impacts. The consultations aimed to provide a platform for stakeholders to voice their concerns, suggestions, and expectations regarding the project.

7.2 Methodology of Consultation

The EIA team conducted public consultations through group meetings and individual discussions. A Comprehensive questionnaire attached as **Annexure F** was developed in order to conduct the survey. The primary focus was to engage local communities and gather their perspectives on the proposed construction of the facility, its potential benefits, and any concerns related to environmental impacts. The consultations targeted stakeholders including local residents, government officials, and business owners from the surrounding area. Public discussions were held at various locations near the project site, and stakeholders from local communities, educational and health institutions, shops, and other facilities were consulted. The team also made initial visits to the project site and held reconnaissance meetings to understand the local context better.

7.3 Stakeholder Identification

A three-tier approach was adopted for stakeholder identification, which considered the various levels at which stakeholders could be impacted by the project. The stakeholders were classified at the provincial level (e.g., Environmental Protection Agency (EPA), Agriculture Department, Wildlife Department), district level (e.g., local government bodies), and village level (e.g., local residents, shopkeepers, school representatives, etc.). The consultations continued throughout the project lifecycle, ensuring that feedback was integrated into the environmental management plan. Regular engagement with these stakeholders is crucial to maintain transparency and responsiveness to their concerns.

7.4 Proponent's Environmental Management Team

M/s Ghani Chemicals (Pvt.) Limited management assured that all necessary mitigation measures would be implemented to minimize any potential environmental impacts during the construction and operation phases of the project. The proponent's Environmental Management Team will oversee the adoption of these measures, including maintaining the aesthetics of the area and addressing concerns related to environmental degradation.

7.5 Responsible Authority

The responsibility for overseeing the implementation of the proposed mitigation measures lies with the management of M/s Ghani Chemicals (Pvt.) Limited. The company is committed to adhering to all environmental regulations and ensuring that the project's impact on the surrounding community and the environment is minimized.

7.6 Other Departments and Agencies

For the impact analysis, detailed meetings were held with local community leaders, educational institutions, health facilities, and NGOs. These discussions helped identify key issues related to the project and its potential effects. All relevant concerns were incorporated into the Environmental Management Plan to ensure a holistic approach to mitigating the project's impacts.

7.7 Environmental Practitioners and Experts

The team of environmental consultants from M/s Pak Green Enviro-Engineering (Pvt.) Ltd. conducted site visits and consultations with stakeholders from nearby villages. They gathered information on the socio-economic impacts of the project and incorporated feedback from different professionals, including local business owners, farmers, teachers, and health professionals. The consultations with women were also conducted, although some hesitated to provide personal information due to social constraints.

7.8 Affected and Wider Community

No specific community was found to be directly affected by the project within the study area. The consultations with the local population revealed a general positive response toward the project. Stakeholders emphasized that the project could bring tangible

benefits, such as job creation and local development, while ensuring that mitigation measures were taken to preserve the environment.

7.9 Consultation Findings

The results from the consultation meetings with stakeholders indicate a strong overall support for the project. The local community members expressed positive feedback regarding the project's potential to bring socio-economic benefits to the area, particularly in terms of employment opportunities and business growth. Many respondents felt that the construction of the project would improve the local infrastructure, contribute to social mobility, and increase the importance of the area.

However, there were also concerns raised regarding the potential environmental impacts, especially in relation to the potential effects on the area's aesthetic value and the environment. Some participants were worried about the impact on the scenic beauty of the area, but the project proponents assured that mitigation measures, such as land reclamation and maintaining the aesthetics of the area, would be implemented to address these concerns.

7.10 Stakeholder Feedback

The responses from stakeholders, summarized below, provide a more detailed picture of their views:

Sample Size

20 sample size was selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey; some of their names are mentioned in the above list of respondents while most of them were not willing to give personal information.

Statistical Analysis

Two Different statistical software excel and SPSS have been used for the statistical analysis of the data collected during the visit of study site villages through questionnaires.

Results and Discussion

Gender

The consultations involved 20 respondents, including both 11 male and 9 female participants.

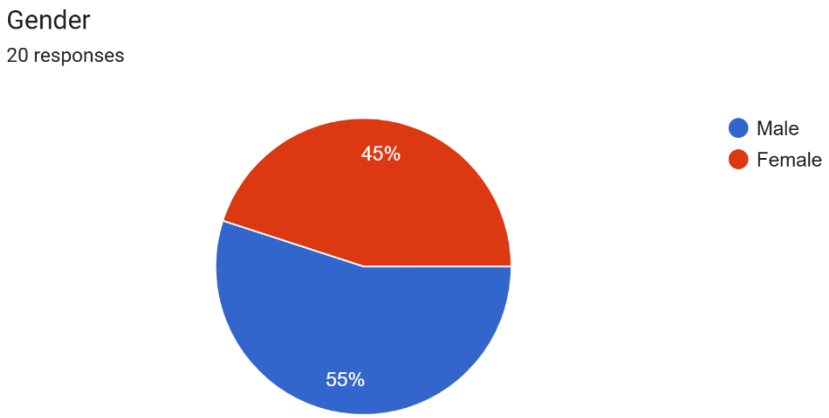


Figure 5: Gender of the Respondents

Project Support and Importance

The majority of the respondents (11), both male and female, expressed strong support for the proposed project. Most (9) agreed that the construction of the facility would increase the importance of the area, contributing to its overall growth and development. Participants were optimistic about the project's potential to raise the profile of the local community and enhance its standing within the region. The support for the project reflected a shared belief that it would bring significant benefits to the community.

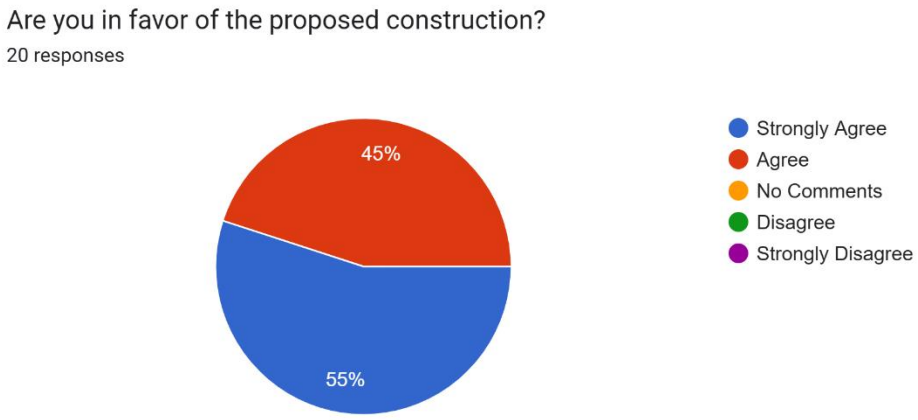


Figure 6: Respondents in favor of the Project

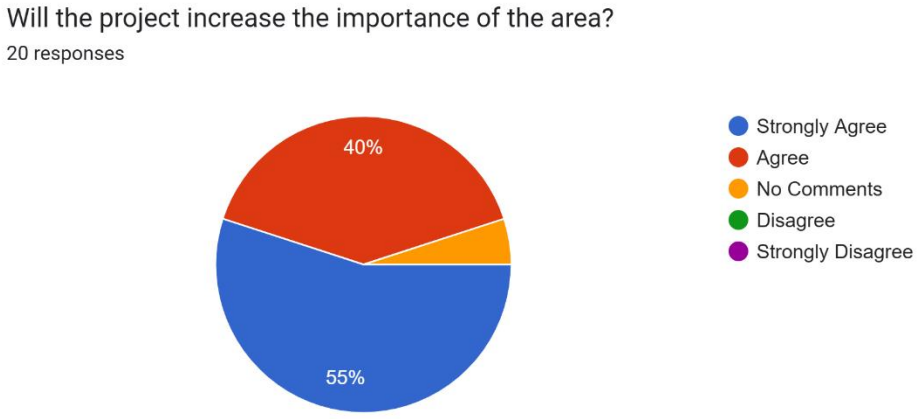


Figure 7: Respondents' Views on the Impact of the Project on the Importance of the Area

Improvement of Living Standards

While many respondents believed that the project would improve the living standards of the area, a few raised concerns. Approximately, 17 respondents strongly agreed or agreed that the project would result in better infrastructure, more employment opportunities, and improved services, which could enhance the overall quality of life. However, 3 individuals disagreed, possibly due to concerns over potential negative environmental impacts or uncertainties about the project's long-term benefits. Despite these

reservations, the majority of the community seemed confident that the project would lead to better economic prospects.

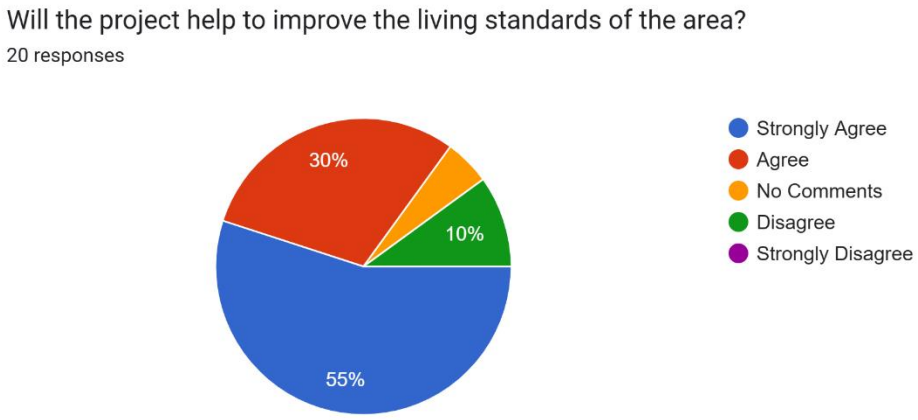


Figure 8: Respondents' Views on the Impact of the Project on the living standards of Area

Environmental Impact Concerns

When asked about the environmental impact of the project, responses were varied. 14 respondents strongly disagreed and 3 disagreed that the project would have any negative effect on the environment, 1 showed concern regarding its potential to disrupt area's aesthetic value. 2 responders were neutral and given no comments.

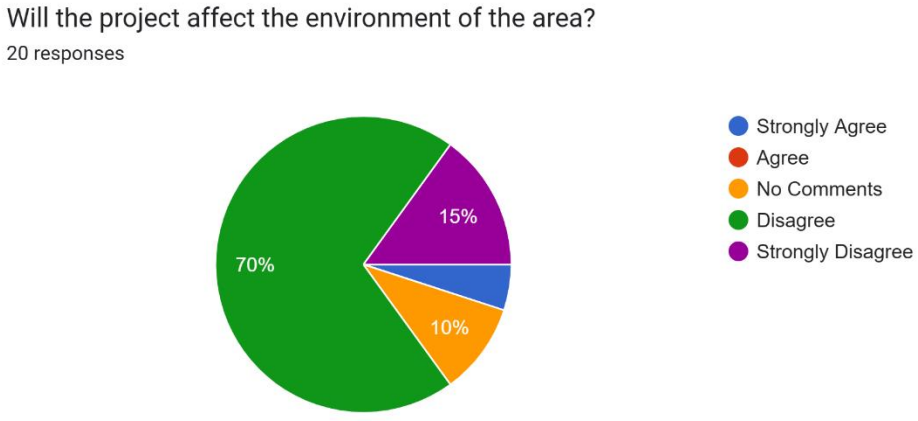


Figure 9: Respondents' Views on the Impact of the Project on the Environment of Area

Satisfaction with the Project

In terms of satisfaction, a substantial number of participants expressed their contentment with the project and its potential benefits. 18 respondents indicated their approval, citing the job creation and economic growth the project would bring. Their positive outlook on the project reflected their anticipation of tangible improvements in their community. However, 2 individuals, were neutral regarding the project satisfaction.

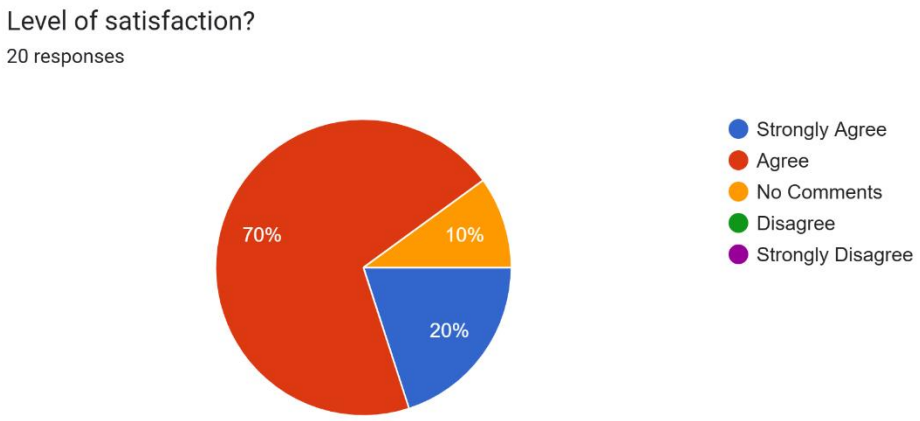


Figure 10: Respondents' Level of Satisfaction Regarding the Proposed Project

7.11 Conclusion

The stakeholder consultation process for the M/s Ghani Chemicals (Pvt.) Limited project demonstrated strong support for the initiative from the local community, with a clear recognition of its potential to boost the area's economic development. While environmental concerns were noted, the project proponents have committed to implementing mitigation measures to address these issues and maintain local aesthetic and environmental values. Continuous engagement with stakeholders throughout the project's lifecycle is crucial to ensure that any emerging concerns are promptly addressed.

8. CONCLUSION AND RECOMMENDATIONS

8.1 Conclusions

The Environmental Impact Assessment (EIA) study indicates that the M/s Ghani Chemicals (Pvt.) Limited LPG Storage Plant project is economically feasible, socially acceptable, and environmentally manageable. Upon completion, the project will provide significant benefits to the local community and contribute to the growth of the regional economy. The project will create additional job opportunities during both the construction and operational phases. The project proponent is committed to implementing the project in an environmentally responsible manner, adhering to all regulatory standards. Furthermore, M/s Ghani Chemicals (Pvt.) Limited intends to register the project with local authorities and establish a comprehensive Emergency Preparedness and Response Standard Operating Procedure (SOP) and a Security and Fire Fighting SOP to ensure the safety and security of the facility.

8.2 Main Environmental Issues

The primary environmental issues identified for the proposed LPG Storage Plant include:

- Health and safety concerns
- Fire hazards associated with LPG storage
- Dust emissions during the construction phase

8.3 Recommendations

Based on the findings of this study, it is recommended that further investigations are not required as the current assessment sufficiently addresses potential environmental impacts. The following mitigation and management measures are recommended for successful project implementation:

1. Flame detectors and gas detectors must be installed at critical process areas to ensure early detection of fires or gas leaks and to mitigate risks.
2. Tree plantation should be carried out around the site to enhance the aesthetic value and contribute to environmental sustainability.

3. The project manager should continue to engage with local communities through corporate social responsibility initiatives.
4. Strict no-smoking policies and prohibition on narcotics should be enforced during the handling of LPG products.
5. Personal Protective Equipment (PPE), including gloves, masks, and other relevant safety gear, should be provided to all workers.
6. The facility should adhere to Material Safety Data Sheets (MSDS) and best practices for LPG handling.
7. Safety signs, boards, and exit arrows should be prominently displayed around the site to guide workers in case of emergencies.
8. Machinery should not be left in a running state when not in use to prevent unnecessary risks.
9. First aid measures, health and safety equipment (PPEs), and an assembly point for emergency situations should be readily available.
10. Firefighting equipment and systems must be installed, and regular drills should be conducted.
11. Electrical wires and distribution boards should be adequately covered and maintained to prevent electrical hazards.
12. Proper shift rotation and ventilation systems should be provided to workers, especially during hot weather conditions, to prevent thermal stress.

The current EIA report meets all necessary administrative and legal requirements, and it is recommended that environmental approval be granted for the project.