

EIA/2024



SAZGAR ENGINEERING WORKS LIMITED

Extension of Automobile Assembling Unit

By

M/s SAZGAR ENGINEERING WORKS LIMITED

Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind
Road, Raiwind, Lahore

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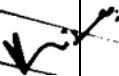
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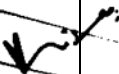
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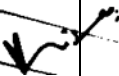
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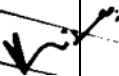
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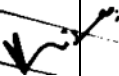
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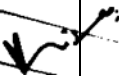
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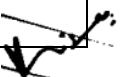
LIST OF ANNEXURES

Following documents are attached as annexure:

Annex-A:	Proponent CNIC
Annex-B:	EDB Letter
Annex-C:	Layout Map
Annex-D:	Land Ownership Documents
Annex-E:	Google Map
Annex-F:	Monitoring Reports
Annex-G:	Socio-Economic Questionnaire
Annex-H:	Glossary
Annex-I:	References

LIST OF ABBREVIATIONS

CO₂	Carbon dioxide
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
EMP	Environmental Management Program
Engr.	Engineer
EPA	Environmental Protection Agency
ESPAK	Environmental Services Pakistan
ETP	Effluent Treatment Plant
IEE	Initial Environmental Examination
Ltd.	Limited
M/S	Messrs
m³	Cubic meter
m³/h	Cubic meter per hour
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEQS	Punjab Environmental Quality Standards
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
Pvt.	Private
SOPs	Standard Operating Procedures
SO_x	Oxides of Sulfur
WAPDA	Water and Power Development Authority
WWTP	Wastewater Treatment Plant



EXECUTIVE SUMMARY

1.1 Title and Location of Project

This executive summary presents an overview of the main findings of the Environmental Impact Assessment (EIA) Report for extension of Automobile Assembly unit under the name of M/s Sazgar Engineering Works Limited at Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind Road, Raiwind, Lahore. The coordinates of the site are: **Latitude 31°27'386.8" North and Longitude 74°19'426" East.** Management of M/s Sazgar has obtained Environmental approvals for Construction phase Vide letter No. DD(EIA)/EPA/F-117(EIA)/1601/2018/174 dated 28-02-2019 and operational phase vide letter No. DD(EIA)/EPA/F-117(EIA)/2018/275 Dated 21-08-2020, copies of the same has been attached herewith. Now project proponent wants to extend the area of said industry thus Environmental Impact Assessment of the project has been conducted in accordance of Punjab Environmental Protection Act, 1997 (amended 2012) and Punjab Environmental Protection Review of Initial Environmental Examination and Environmental Impact Assessment 2022. M/s Sazgar Engineering Works Limited is planning to extend assembly operation of 6 additional different models i.e.

Existing Models	New Models
<ul style="list-style-type: none"> • Sazgar BAIC BJ40L Jeep Turbo 2.0L, AT • Haval H6, 4WD, SUV (1998cc Turbo, AT) • Haval H6, SUV (1499cc Turbo, AT) • Haval Jolion AT, SUV, 1497cc Turbo Petrol • Haval H6, SUV (1499cc Turbo, AT), HEV Petrol • Haval Jolion, SUV (1497cc Turbo, AT), HEV Petrol <p>Note: Manufacturing Certificate Issued by Engineering Development Board, Ministry of Industries & Production Government of Pakistan Vide letter no EDB SRO-656/TBSI-33 dated: September 16, 2024 is attached herewith.</p>	<ul style="list-style-type: none"> • Tank 500 4WD SUV 2.0L (Turbo AT) HEV Petrol • Tank 500 4WD SUV 2.0L (Turbo AT) PHEV Petrol • H6 Front Wheel Drive 1.5L (Turbo AT) PHEV Petrol • H6 All Wheel Drive 1.5L (Turbo AT) PHEV Petrol • H6 GT 1.5L 4WD PHEV Petrol (Turbo AT) • POER Double Cabin PHEV 4x4 • POER Double Cabin Diesel 2.4L 4x4

The main objectives of the project are:

- Harmoniously blending safety, quality, efficiency and provide responsible stewardship to the community and environment while achieving stability and security now and for future generations.
- Foreign revenue generation shall enhance GDP of the country.
- This proposed plant will reduce the existing shortage among availability and demand in the sector as well as in market.
- Improving the socioeconomic conditions of the persons directly linked to the proposed project.
- Creation of new job opportunities and promoting income prospects for those engaged in transportation of raw materials and other construction sector activities can be counted as some secondary or indirect objectives of the project.

Name of the Proponent

The details of the proponent are as follow:

Proponent Details	
Name	Mr. Asif Aziz
Designation	<i>Senior Manager Legal & Administration</i>
Company	M/s Sazgar Engineering Works Limited
Address	Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind Road, Raiwind, Lahore

Copy of CNIC of proponent is attached as **Annexure A**

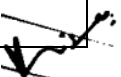
1.2 Name of Consultant

M/s Ecogreen Company (Pvt.) Limited has been engaged for conducting EIA Study of the above stated project. The main objectives of the said project are to establish baseline environmental conditions, identify potential environmental impacts and to suggest suitable mitigation measures accordingly.

1.3 A brief outline of the proposal (type, process, technology and land requirement)

As per Punjab Environmental Protection Act 1997 (amended 2012) and Punjab Environmental Protection Review of Initial Environmental Examination and Environmental Impact Assessment 2022 said project falls under **Category B Manufacturing & Processing** of the projects mentioned in **Schedule II** clause 20. Auto Mobile Manufacturing and Assembling Unit.

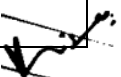
Extension of Automobile Assembling Unit by Sazgar Engineering Works Limited will be established within existing premises of already established industrial unit. The Proposed Project is more accurately described as assembly plant confined to produce body parts,



machining the engine, final assembly and painting. All other parts are typically bought in on a “just-in-time” basis, e.g. castings/forgings, electrical/electronic equipment, wheels/tires, instruments etc. The total project cost is **PKR 6 Billion PKR**.

1.4 Salient Features of Project

Project Title	Extension of Automobile Assembling Unit under the name of M/s Sazgar Engineering Works Limited.
Purpose of Project	Assembling different parts of automobile to shape into vehicles
Site Coordinates	Latitude 31°27'38.8" North and Longitude 74°19'42.6" East
Total Area of the Project	574 Kanals 15 Marla
Raw material	Automotive parts for assembling of vehicles in Kit Form
Cost of the Project	6 Billion PKR
Capacity of the project	30,000 units per annum
Products/Models	<ul style="list-style-type: none"> • Tank 500 4WD SUV 2.0L)Turbo AT) HEV Petrol • Tank 500 4WD SUV 2.0L (Turbo AT) PHEV Petrol • H6 Front Wheel Drive 1.5L (Turbo AT) PHEV Petrol • H6 All Wheel Drive 1.5L (Turbo AT) PHEV Petrol • H6 GT 1.5L 4WD PHEV Petrol (Turbo AT) • POER Double Cabin PHEV 4x4 • POER Double Cabin Diesel 2.4L 4x4
Environmental Budget	2 million
Proponent Name	Mr. Asif Aziz
Consultant Name	Ecogreen Company (Pvt.) Ltd.
Tree Planation	Trees will be planted in surrounding open spaces, lawns and along the boundary of Project Area.
Water Source	Groundwater,
Water Requirement	Water requirement mainly for the proposed project is for domestic, and water requirement will be fulfilled through ground water
Wastewater	From 2 Sources : 1. Phosphate Tank, (50,000 L) 2. Paint Booth
Wastewater Treatment	Phosphate Tank: Sedimentation and Filtration Paint Booth: Chemical Treatment
Power Requirement	Fulfilled through LESCO
Generators	1500 KVA CaterPillar 3512B



	810 KVA CaterPillar G3412 410 KVA Perkins 2300 (rental) 200 KVA Perkins 150 KVA Denvo 35 KVA Kubota Corporation
Manpower/Staff	10-15 Construction phase, 120 approximately Operation Phase

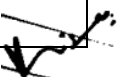
1.5 Major Impacts and Recommended Mitigation Measures

Keeping in view, all the findings of the baseline study, and through general observation, desktop study, and understanding of the activities and processes involved in the project, environmental impacts have been anticipated. Following impact assessment methodology; i.e. defining the criteria for evaluation of the impacts, identification of mitigation measures (all possible options), evaluation of the residual impacts and identification of the monitoring requirements, adequate and effective mitigation measures have been proposed for all construction and operation related likely adverse environmental impacts of the project. The mitigation measures have been proposed in order of attempts to eliminate or minimize the impact, provide some compensation or rehabilitate the environment by some means. Some environmental enhancement measures have also been included in the suggestions.

1.6 Proposed Impacts and their Mitigation Measures:

Table 1: Impact Summary

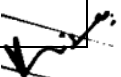
Environmental Parameters	Impact Assessment during Different Phases	
	Constructio	Operational
A: Physical		
Land Resources		
Soil Erosion and Transportation	-2p	0
Solid Waste and By-Land Use	-1t	-1t
	-2t	-1p
	-2p	NA
Air Resources		
Noise Pollution	-1t	-1t
Air Emission	-1t	-2t
Dust	-1t	-1t
Odor	NA	NA
Water Resources		
Ground Water	-1p	-1p
Surface Water	NA	NA
Wastewater	-1p	-1p
B : Ecological		
Flora		
Tree Cutting	-1p	+1p



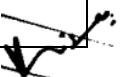
Fauna		
Terrestrial Fauna	NA	NA
C: Socio-Economic		
Employment	+1t	+2p
D: Hazards		
Biological Hazards	NA	NA
Physical Hazards	-1t	-1p
Chemical Hazards	0	0
Health and Safety	-1t	-1p
<i>Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible</i>		

Table 2: Possible Impacts and Their Mitigation Measures

Impact	Mitigation measure	
	CONSTRUCTION PHASE	OPERATION PHASE
Solid waste generation	<ul style="list-style-type: none"> • Provide solid waste handling facilities such as waste bins and skips in all sections of the factory • Ensure that solid waste generated is regularly disposed of appropriately • Waste will be managed by as per municipal practices. • Non-biodegradable and recyclable matter, such as containers, wastes, used materials, waste packaging materials, will be sold to local contractors for recycling or reuse purpose. 	<ul style="list-style-type: none"> • Proper solid waste handling will be done. • Sludge (slurry) will be sold; disposed off through contractors.
Wastewater generation	<ul style="list-style-type: none"> • No water will be disposed off into sewer lines without proper treatment. • Domestic wastewater will be treated through installed waste water treatment plant. 	<ul style="list-style-type: none"> • There are two major sources of wastewater generation. <ol style="list-style-type: none"> 1. Phosphate Tank: waste water produced will be treated through Sedimentation and Filtration process



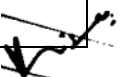
		<p>2. Paint Booth: Chemical Treatment will be adopted to mitigate the effects.</p>
<i>Air pollution</i>	<ul style="list-style-type: none"> • Management needs to regularly carry out checks of all machinery and carry out regular servicing and maintenance of it in order to keep the environmental impact on account of their emissions to its minimum level. • For reducing fugitive dust, regular water sprinkling on roads will be done. • All trucks proposed to be used for transportation will be covered with tarpaulin, maintained and optimally loaded. • Moreover, the garden development and tree plantation activities of proponent during operational phase would ensure minimal impact of fugitive dust emissions. 	<ul style="list-style-type: none"> • Exhaust gases from the proposed project will be released from car painting line ovens. • The exhaust air volumes from Ovens will not discharge to atmosphere directly but they will be treated through process called incineration. • In this process, the solvent fumes containing exhaust air will be combusted at high temperature and rotated back to the oven. • Ovens are designed in such a way that the 10 percent of gas is discharged to the atmosphere after incineration while 12-15% fresh makeup air will be added after filtration.
<i>Noise & vibration</i>	<ul style="list-style-type: none"> • Proper encasement of noise generating sources will be done to keep the noise levels within limits. • A thick greenbelt will be developed all around the plant which will be acting as noise barrier. • The use of concrete and masonry walls & barriers keeping in view the benefits of stiffness weight & cavity construction & the need to provide well sealed sound attenuating doors & windows. 	<ul style="list-style-type: none"> • The noise generated from the process activities shall be confined to the PEQS limits, however: • Workers will be protected by providing them with PPEs (ear muffs, ear plugs, etc.). • Safety issue will be managed by developing and updating from time to time, the SOPs for all work activities, training the workers to follow them, not



	<ul style="list-style-type: none"> • The use of complete or partial enclosures. • Attenuation by use of sound absorbents on walls and fixed or suspended ceilings 	<p>tolerating any careless attitude of the employees during work.</p> <ul style="list-style-type: none"> • Regular inspection to ensure no unsafe act or condition prevails at work site and lastly, by providing the workers with necessary PPEs (safety helmets, dust masks, safety shoes, ear plugs, special suiting for various jobs and areas, etc.) and encouraging the workers to use them.
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1.7 Proposed Monitoring

During construction & operation, monitoring will be carried out to check compliance of PEQS. Moreover, periodic monitoring should also be carried out regarding ambient air monitoring, noise pollution, wastewater & worker safety. A detailed site monitoring plan has been developed and given in **Chapter-09** of this EIA Report.



CHAPTER 1: INTRODUCTION

2.1 Purpose of Report

As per Punjab Environmental Protection Act, 1997 (Amended 2012) and the Punjab Environmental Protection Review of Initial Environmental Examination and Environmental Impact Assessment 2022 it is mandatory for the proponent of any development project to obtain Environmental Approval/NOC before commencing construction from EPA Punjab by filing an IEE or EIA as the case may be, before the Agency. This Study presents the Environmental Impact Assessment (EIA) Study for proposed extension of Automobile Assembling Unit by M/s Sazgar Engineering Works present within existing premises of already established unit. For this purpose, the proponent has engaged environmental consultant: M/s Ecogreen Company (Pvt.) Limited.

The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation of the said project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental Management and Monitoring Plan (EMMP) for implementation of the project in environment-friendly manner. This EIA Report provides relevant information, as required under the officially approved format, to facilitate the decision makers i.e. EPA Punjab for the issuance of Environmental Approval/NOC. The main objectives of this EIA Study are:

- To determine and document the state of environment of the project area to establish a baseline environmental condition in order to assess the suitability of said project in respective area.
- To identify the impacts during construction & operation activities
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would strengthen environment, improve ecological resilience, eliminate or minimize the negative impact on the bio-physical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

2.2 The Project

This EIA study represents extension of Automobile Assembling Unit under the name of M/s Sazgar Engineering Works Limited at Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind Road, Raiwind, Lahore. The manufacturing of motor vehicles involves the manufacture and assembly of the final product from a number of metallic, plastic and electrical components. A wide range of processes are involved including metal cutting, pressing, polishing, grinding, welding, plating, & painting.

The instant Project is more accurately described as assembly plant confined to produce body parts, machining the engine, final assembly and painting. All other parts are typically bought in on a “just-in-time” basis, e.g. castings/forgings, electrical/electronic equipment, wheels/tires, instruments etc. Vehicle Assembly plants are highly automated computer controlled assembly line operations.

The unpainted vehicle body (also known as the “body-in-white”) is assembled from formed body panels joined by welding, glue and riveting. The vehicle passes by conveyor to the paint shop for:

- Pre-treatment (degreasing and anti-corrosion inhibitor);
- Priming;
- Steam sealing and underbody preparation; vehicle
- Application of filler and finishing paint coats; bodies.
- Polishing, inspection and rectification;
- Under sealing and wax injection.

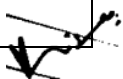
The Hard Trim is the fitting of items such as instrument panels, steering columns and body glass. The Soft Trim is the fitting of seats, door pads and upholstery. The vehicle is then fitted with the petrol tank, exhaust, and bumpers. At the same time, the engine is assembled. The engine and tires are then fitted and the vehicle is subjected to a rigorous inspection.

2.3 The Proponent

The details of the proponent of said project are given below:

Table 3: Details of the Proponent

Proponent Details	
Name	Asif Aziz
Designation	<i>Senior Manager Legal & Administration</i>
Company	M/s Sazgar Engineering Works Limited
Address	Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind Road, Raiwind, Lahore



2.4 Details of Consultant

The proponent of said project engaged M/s Ecogreen Company (Pvt.) Limited to carry out the environmental impact assessment study of aforesaid project in accordance with EPA, Punjab guidelines. For this purpose, the company nominated the team of professionals which comprises of Environmental Scientists and Environmental Engineers. The details of the consultant are given below:

Table 4: Consultant Details

Consultant Details	
Consultant	M/s Ecogreen Company (Pvt) Limited
Address	Plot#2, A-Block Commercial Area near Gate#1, Canal View Society, Lahore
Contact No.	042-35294297
Focal Person	
Name	Kiran Irshad
Designation	<i>Lead Environmental Professional</i>
Contact No.	0320-0800221

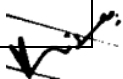
To prepare an EIA Report of the respective project the company engaged the following experts. The details of the experts are given below;

Table 5: Team Ecogreen

Sr. #	Name	Qualification
Team Leader		
i.	Miss. Kiran Irshad	M.Phil. Environmental Sciences
Environmental Scientist		
ii.	Dr. Areej Tahir	P.H.D Environmental Sciences

2.5 Project Nature, Size & Location

The instant project is extension of Automobile Assembling Unit under the name of **M/s Sagar Engineering Works Limited**". The estimated cost of project is **PKR 6 Billion PKR**. The geographical location of the project is **Latitude 31°27'38.8" North** and **Longitude 74°19'42.6" East**. The location of the project is shown in **Figure 1**:



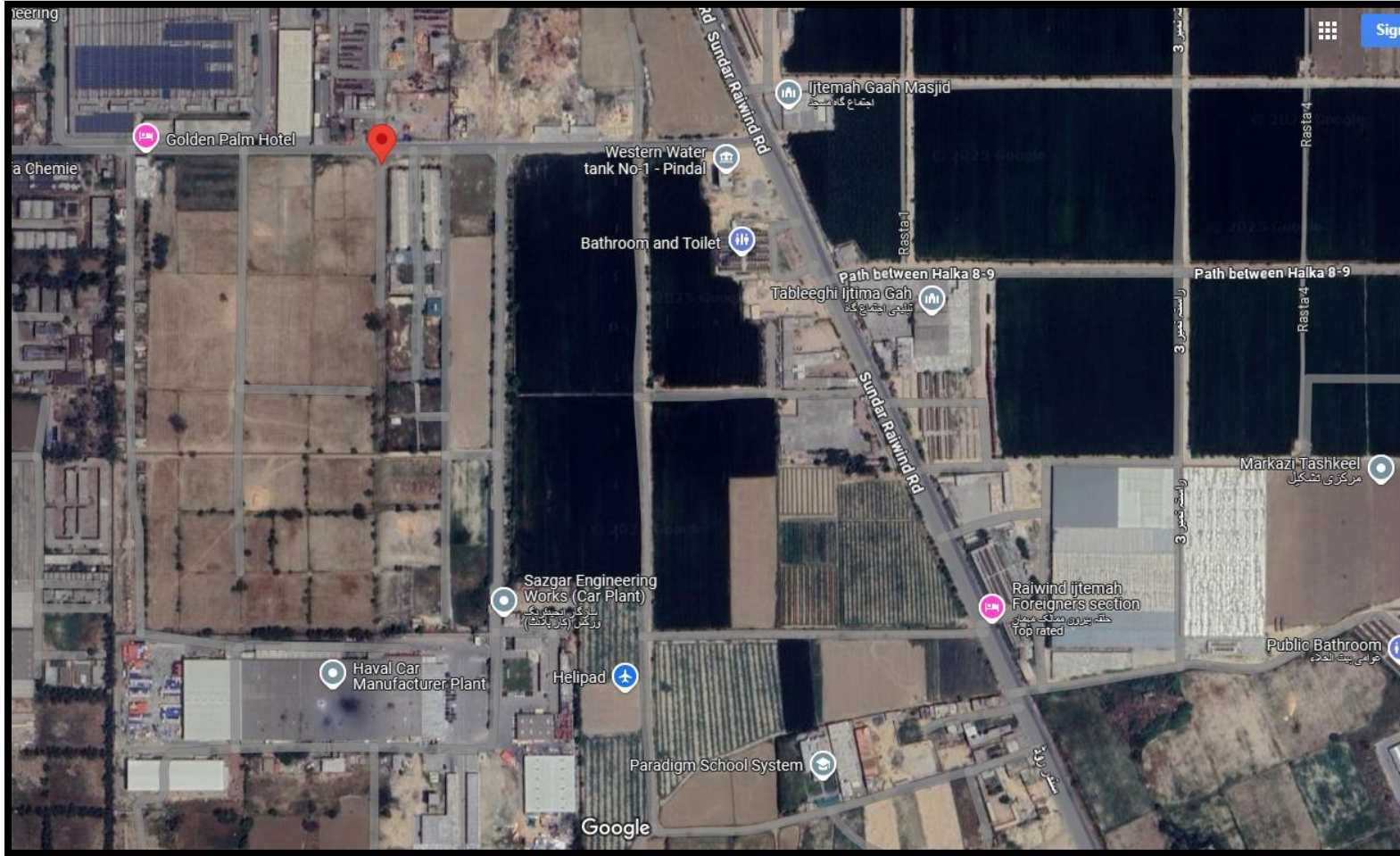


Figure 1: Unit Location



CHAPTER 2: SCREENING

Section 12 of Punjab Environmental Protection Act (PEPA), 1997 (Amended 2012) states:

“No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA), and has obtained from the Government Agency approval in respect thereof.”

As per Punjab Environmental Protection Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 under Section 12 of Punjab Environmental Protection Act, 1997 (Amended 2012), instant project i.e., Automobile Assembling Unit which falls under Schedule II **Category B. Manufacturing & Processing** clause 20. Automobile Manufacturing and Assembling Units.

CHAPTER 3: SCOPING

3.1. Spatial and Temporal Boundaries of Environmental Assessment

Instant project is extension of Automobile Assembling Unit within premises of M/s Sazgar Engineering Works Limited. By the implementation of said project, the gap between demand and supply of automobiles will be reduced significantly in the local and international markets. This site is selected because it's present within premises of already established industrial unit. It is also at safe distance from the residential areas as depicted in the google earth map attached below. The raw materials can be easily transported to the site as it is accessible through metaled road network. Moreover, following facilities are available on-site: electricity supply, water supply, sewer collection & disposal system and hence ensuring the smooth operation of the said facility.

The simple and efficient operation of the industrial unit will make sure to not disturb the ecosystem at any level and if there are any impacts, the proper remedial measures will be taken. The operation of said project employment opportunities for the locals will be increased and so will the GDP and exports of the country. The process itself has negligible impact on the environment. Raw materials will be purchased as per demand/requirement and will be manufactured as per international standards. The Google Earth Map (**Figure 2**) attached below shows the various residential and industrial facilities within 01-02km aerial distance of project site. Overall, no significant impacts can be seen over the longer run as proper management plan has been devised and will be implemented to cope up with any adverse effect.

3.2. Important issues and concern raised during consultation

During consultation it was observed that majority of the respondents were in favor of said project. The other related issues and concerns raised by general public are discussed in detail in **Chapter 10** (Stakeholder Consultation). However, during the social survey following concerns of the local community were noted:

- Nuisance must be controlled at source.
- Latest/State of the art technology must be installed instead of the used ones.
- Locals should be preferred for the job opportunities.
- Environmental monitoring should be done on regular basis as per SMART Rules.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be maintained.

- An effective EMMP should be designed and enforced with true spirit.
- Health and safety of the workers should be ensured.
- Proper disposal of sewage should be ensured.

3.3. Significant Impacts and Factors to be Determined

Main impacts and factors to be determined are;

- Occupational Health and safety
- Site Security
- Traffic Management
- Job opportunities for locals
- Energy efficient techniques must be adopted
- Proper site restoration after Establishment
- Tree plantation at designated green areas
- Emergency preparedness

CHAPTER 4: CONSIDERATION OF ALTERNATIVES**4.1 Site Alternatives, their selection and rejection criteria**

No site alternative was considered because the proposed site lies within premises of M/s Sazgar Engineering Works Limited and was found most possible for the development of the proposed extension. Due to implementation of said project no land use change is being foreseen as the Sazgar Engineering Works Limited is located within industrial cluster. The site is suitable for implementation of said project owing to the following characteristics:

- Selected site is present with premises of M/s Sazgar Engineering Works Limited.
- The site is accessible through metaled road network
- The site is located at the safe distance from sensitive receptors (residential area & protected area).
- The selected land is owned by M/s Sazgar Engineering Works Limited (copy of land ownership document is attached as **Annexure C**)
- No land use change is being foreseen due to implementation of said project.

4.1. Design/technology alternatives, their selection and rejection criteria**Completely Build Unit “CBU Kit”**

A completely built unit is the terminology when a car is imported /exported to/from some other country as a complete car fully assembled. These automobiles do not require an assembly before they can be sold out to the buyers in the target country’s markets. Most of the imported cars in certain countries come as a CBU. Completely Built Units (CBU) refers to several imported cars which are direct bought in ready shape for its sale. The whole car has to be booked and an order has to be placed for you to buy it. It certainly demands very high charges like Excise duty and such.

Completely Knock Down “CKD Kit”

Completely knocked down car is one which is imported or exported in parts and not as one assembled unit. Such units are first sent to an assembly plant in the target country where all these parts are assembled and one complete vehicle is made using the imported components. These kinds of units generate employment in the target country as more machinery and manpower investment is needed to assemble the components to make the vehicle.

CAR PAINT TECHNIQUE ALTERNATIVE

Among the vast array of industrial metal finishing options are two comparable processes known as electrophoresis deposition (colloquially known as electro coating or e-coating) and powder coating. These two processes are similar, as they both involve the application of a coating to a substrate for purposes such as enhancing corrosion protection, increasing wear resistance, promoting adhesion and many others.

However, there are some important advantages that e-coating has over powder coating that is explained below:

Electrophoresis Deposition or E-Coating

E-coating is more similar to electroplating than powder coating. With e-coating, the substrate is immersed in a bath that may consist of paint, epoxy or other water-based solution. An electric current is then used to attract the particles that are suspended in the liquid solution and deposit them onto the surface of the substrate. The electro deposition continues until the desired level of coating thickness is achieved, which can be regulated by increasing or decreasing the voltage level. The coated substrate is then cured in an oven to promote cross-linking.

Powder Coating

While e-coating is considered to be a “wet” process, powder coating involves the application of a dry powder consisting of a precise combination of epoxy resins and various curing agents. A spray gun is used to electro statically apply the particles onto the surface of the substrate. The fact that the particles are electrically charged is what causes them to adhere to the surface. Cring is also used as the finishing step in the powder coating process. Curing causes the particles to melt and also serves as the catalyst for a chemical reaction that produces the desired finish.

Why does E-coating make the most sense?

Because of the e-coating’s application, it is typically the better option when coating parts that contain hard-to-reach areas. That’s because the immersion of an object into a liquid promotes a more even and thorough distribution of the coating than can normally be achieved with a spray gun. The powder coating application process also tends to produce a thicker coating.

In contrast, the e-coating process provides greater ease of regulation of the thickness level – it's much easier to produce a thinner coating with e-coating than with powder coating. These two advantages are particularly important in the auto industry, where an e-coating is typically applied as a primer coat prior to painting for increased corrosion protection.

The above mentioned processes are efficient and effective in many ways but M/s Sazgar Engineering Works Limited has adopted Modular Assembly method where CKD kit will be assembled and Electrophoresis Deposition or E-coating methodology as the paint line of the proposed project. The above mentioned details explain the significance and advantages of using these methodologies.

4.2. Environmental Alternatives, their selection and rejection criteria

The selected processes are environmentally friendly and it is selected based on environmental alternatives.

4.3. Economic Alternatives, their Selection and Rejection Criteria

Instant project involves more than one process, and it's been ensured by management that process and raw material will be economically more stable.

CHAPTER 5: DESCRIPTION OF PROJECT**5.1 General**

This section of the study concentrates on details of the project and its salient features; such as; location, site layout, objectives, cost and magnitude of operation and various phases, inputs and discharges relevant to different phases of the project (groundwater, electricity, materials, etc.) have also been examined as a response to possible environmental concerns.

5.2 Project Objectives

The main objective for the Automobile Assembling Unit by **M/s Sazgar Engineering Works Limited** will be manufacturing of the exceptional automotive value for the customers by:

- Harmoniously blending safety, quality, efficiency and provide responsible stewardship to the community and environment while achieving stability and security now and for future generations.
- Foreign revenue generation shall enhance GDP of the country.
- This proposed plant will reduce the existing shortage among availability and demand in the sector as well as in market.
- Improving the socioeconomic conditions of the persons directly linked to the proposed project.
- Creation of new job opportunities and promoting income prospects for those engaged in transportation of raw materials and other construction sector activities can be counted as some secondary or indirect objectives of the project

5.3 Location and Site layout of Project

The selected site is present within premises of M/s Sazgar Engineering Works Limited at Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind Road, Raiwind, Lahore. The coordinates of the site are; **Latitude 31°27'38.8" North** and **Longitude 74°19'42.6" East**. The site layout is attached herewith as **Annex-B**. However, the Google Earth Map showing the project location and its distance from nearby sensitive receptors is shown in previous chapter.

5.4 Land Use On-Site

The selected site is located along the Raiwind Road Lahore and has industrial establishments on both sides of the project site as shown in Google Earth map (**Annexure D**) attached below;

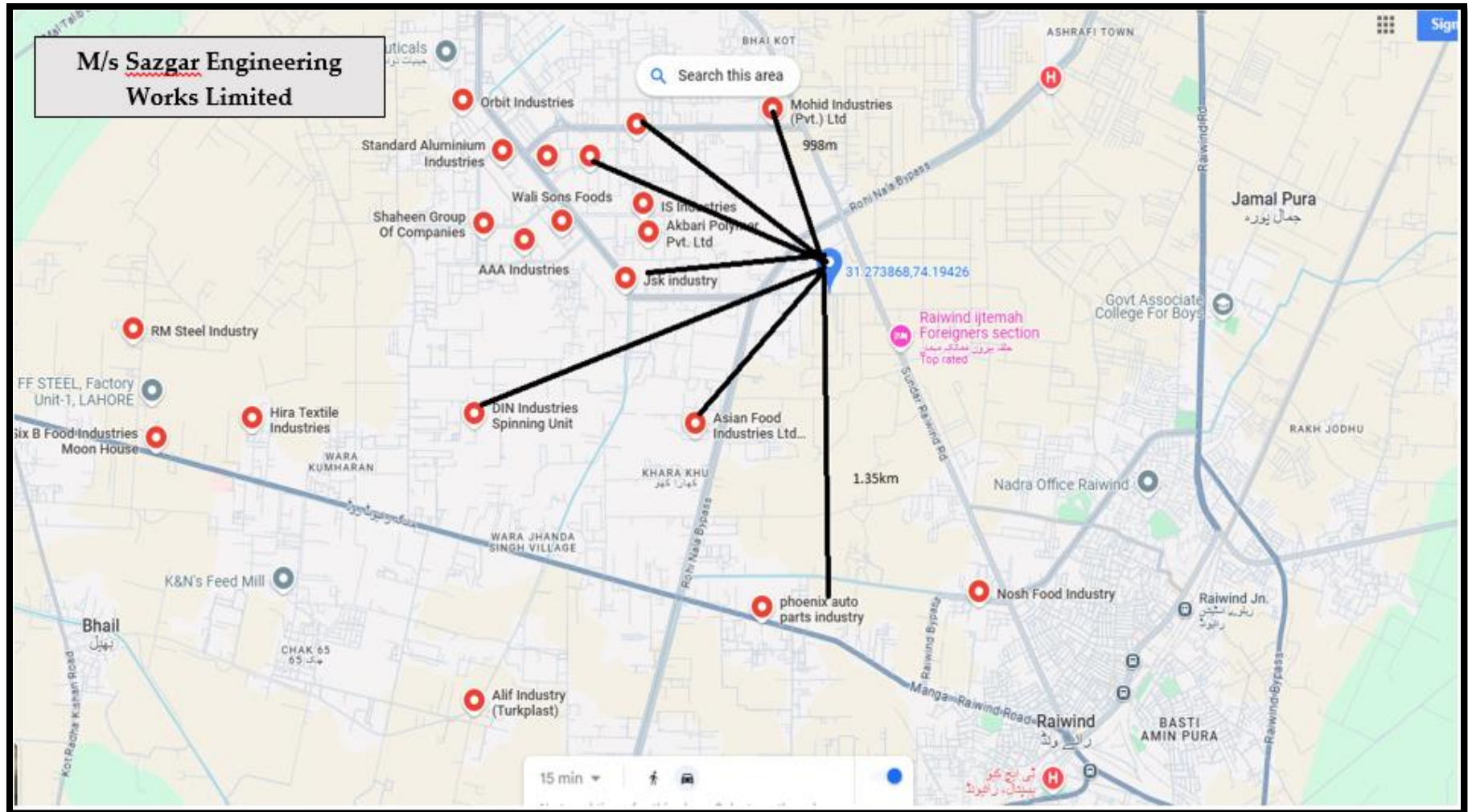


Figure 2: Nearby Industries



5.5 Road Access

The site is approachable via Sunder Road and Rohi Nala By Pass Road at the distance of 427.73m and 846.65m respectively.

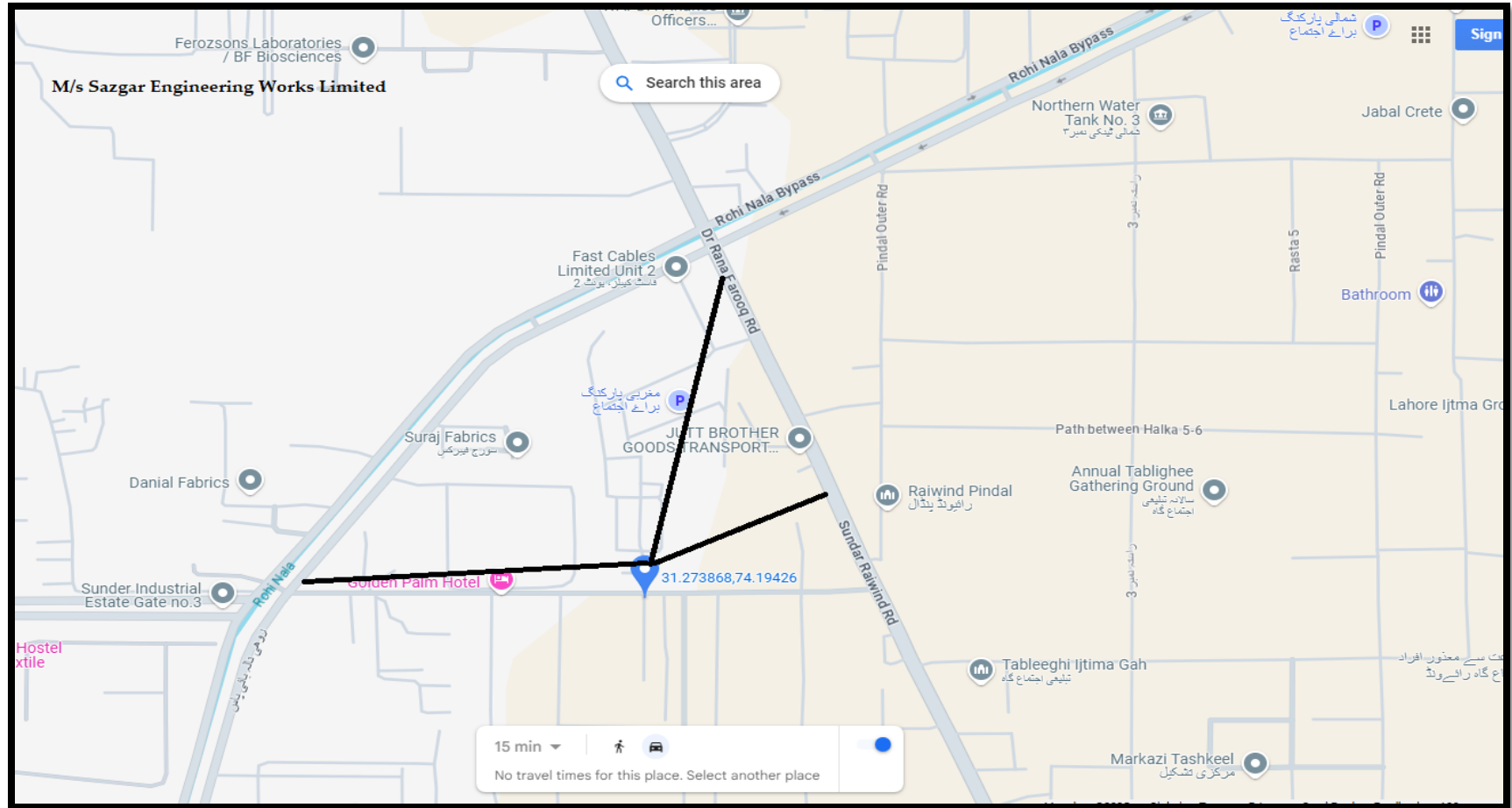


Figure 3: Road Access Map

5.6 Vegetation Features

The topography of the project area is flat and it is open land with herbs & shrubs species. Instant project does not involve any herbs, shrubs or tree cutting as selected site is present within premises of M/s Sazgar Engineering Works Limited. Moreover, tree plantation will be done along boundary & in all open spaces after completion of said extension.

5.7 Cost and Magnitude of Operation

The cost of the said project is **PKR 6 Billion** it includes; Land Cost, Civil Work, Raw Material, purchase of machinery & installation of machinery. The magnitude of operation includes:

- Civil work
- Purchase of machinery & equipment
- Testing and commissioning of operation
- Plantation of various ecologically important species on the designated green space.

5.8 Schedule of Implementation

The tentative schedule for said project implementation is approximately **06 months** and the detail timeline of the construction period is given in **Table 04:**

Table 6: Timeline for Project Development

Sr#	Activities	6 Month			6Month		
		4W	6W	14W	8W	10W	6W
1	Detailed Designing						
2	Mobilization of Contractors						
3	Civil Work						
4	Site Restoration & Rehabilitation						
5	Plantation at Site						
6	Commissioning						
W=Weeks							



5.9 Description of Project

The said project is extension of Automobile Assembling Unit under the name of M/s Sazgar Engineering Works Limited. Vehicle manufacturing plants from “knock down” (CKD) assembly plants that are fully integrated manufacturing complexes. Knock down assembly plants receive finished and pre-assembled parts in wood crates for manual body fabrication body paint operations and final assembly. Automated operations are limited. Few components, if any, are made on the premises. CKD facility is more sophisticated than any other assembly plant. Assembly takes place along a highly efficient assembly line.

- **Stamping Operations**

A blanking press receives coils or sheet steel and cuts it into flat sheets on a shear. Cut sheets are then transferred to other presses for stamping, either to single stand stamping presses or multiple stand transfer presses. Each stand of a transfer press acts as an individual stamping press. The incoming cut steel sheet is automatically placed on the first stand for the initial press or “hit.” The sheet is then automatically transferred to the second stand for the second hit. This activity continues as the sheet is gradually transformed into a body part such as a hood, fender, roof, rear deck lid, floor pan or a one-piece side wall of an auto body.

- **Body Fabrication**

Body fabrication is a highly automated process. The most common machines are the welding machines that spot weld metal stampings to form a uni-body chassis assembly or a “body on frame” vehicle, automated transfer machines load the stampings onto welding jigs and move partly assembled bodies to other welding stations. Hydraulic equipment can include hydraulic clamps to hold the body being welded. Less automated manufacturing facilities use manually operated welding equipment. These facilities include knock down assembly plants.

List of machinery and equipment’s proposed to be installed for Body Welding are as follows:

- a) Welding Jigs; for assembly operations covering underbody, Engine Compartment, Side Body/Side Panel, Main Body;
- b) Welding guns& Other Equipment’s; for above fixtures
- c) Hoist
- d) Necessary Tools;
- e) Body Handling Equipment’s;
- f) Tools & Gauges; for body parts fitting and body accuracy.

- **Body Paint Line**

Modern automotive coating methods consist of five main steps. They include the following:

- Pretreatment: removes and cleans excess metal and forms an appropriate surface structure enabling bonding of a corrosion protection layer.
- The next step is electro deposition (ED) of the anti-corrosion or rust prevention layer.
- A sealer like Poly Vinyl Chloride (PVC) is applied for anti-corrosion, elimination of water leaks, and minimization of chipping and vibration noise.
- A primer is then applied to promote adhesion between the surface and the basecoat; it also imparts a smoother surface for subsequent layers and has anti-chipping properties.
- Finally, the topcoats that include a basecoat and clear coat are applied; they provide surface properties that are sought after, including color, appearance, gloss, smoothness, and weather resistance

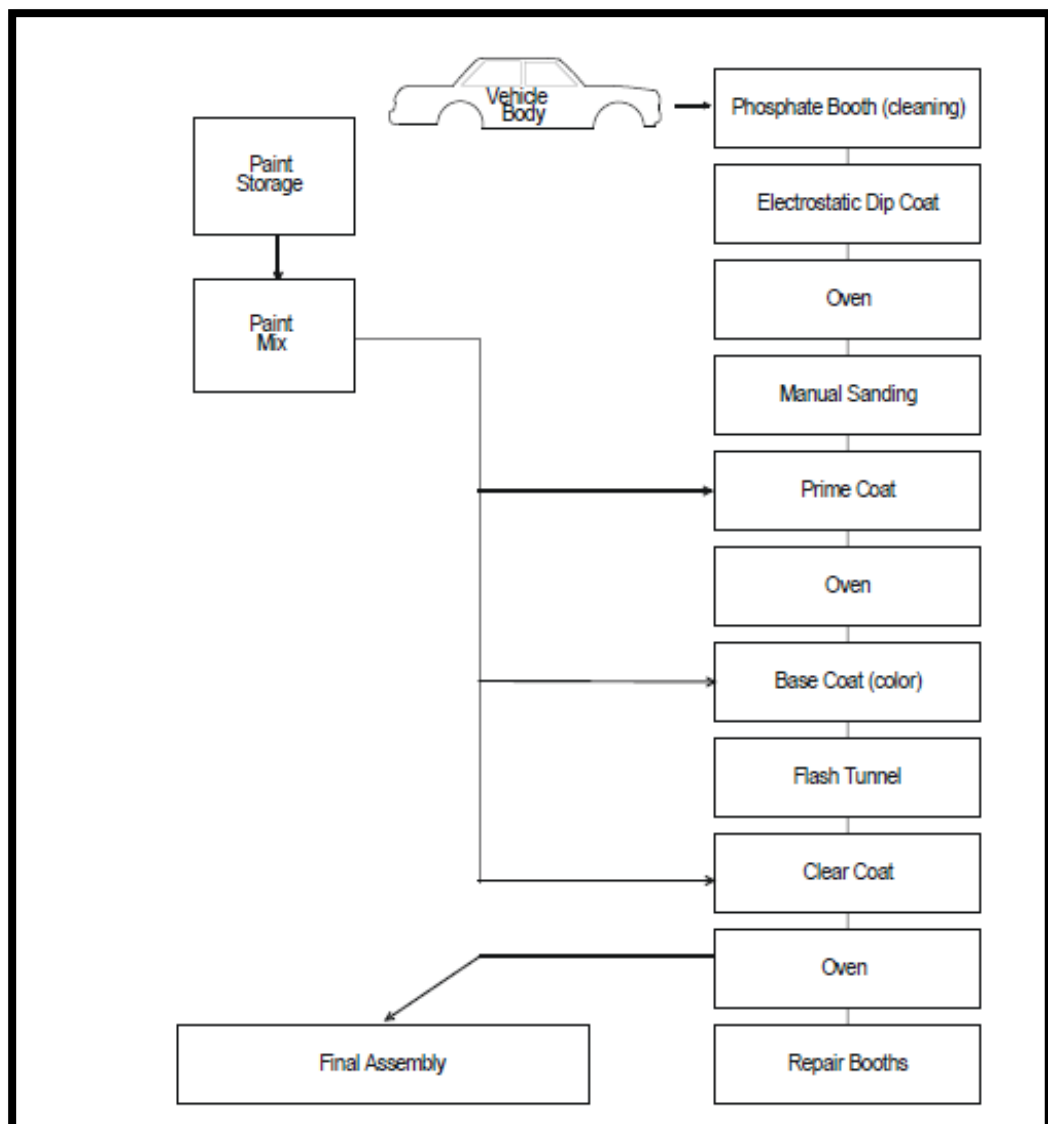


Figure 4: Vehicle Painting Process

For the external surfaces of an automobile to be easily visualized, the five main steps of coating produce a layered structure depicted in Figure below. These coatings are applied in a particular order and have different material and protection or finishing functionalities; also, each layer relates to the others and imparts a desired balance of properties.

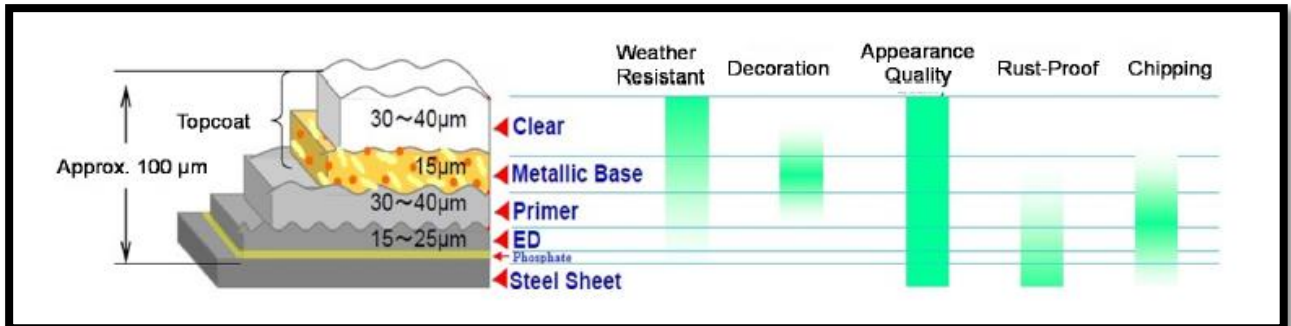


Figure 6: Automotive coating layers, their thickness and purpose of exterior coating

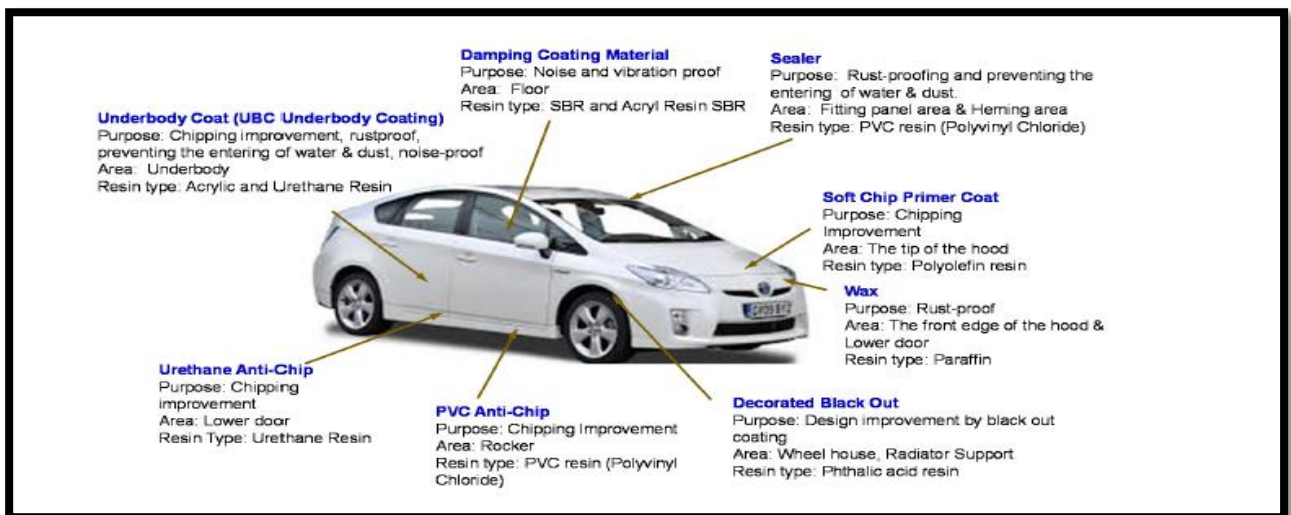


Figure 5: Coating Tasks for Specific Areas

- Pretreatment**

When the automobile body sheet metal components are welded together, the resulting structure is referred to as the body-in-white (BIW). The first sequence in preparing the BIW for subsequent coating is pretreatment. Pretreatment consists of cleaning the body surface to remove remaining oils from the stamping process and welding residues through three primary liquid dip processes of degreasing, conditioning, and phosphating. Pretreatment helps the primer to bond onto the metal. A phosphate treatment applies an inert layer of metal phosphate, providing resistance to corrosion spread. The degreasing solution is composed of alkaline salts and surfactants and can include caustic soda, tri sodium phosphate, and sodium carbonate. The surfactants are types of detergents for emulsifying oils and lubricants on the BIW. The degreasing zone typically consists of at least two sequences, including a spray stage known as knock-off-degrease (KOD) and a dip sequence. The advantage of using these two is that a significant portion of the oil and dirt



will be removed by the high-pressure spray, thereby leaving a relatively lower load for the dip sequence to clean.

The next sequence is surface conditioning (also called activation), which creates nucleation sites for phosphate crystal growth. It increases the number of crystallization nuclei on the metal surface that enhance bonding mechanisms for the subsequent phosphate sequence. In conditioning, an aqueous dispersion of titanium orthophosphate with pH between 8 and 10 is typically used. Finally, the liquid dip phosphate solution is composed of phosphoric acid, phosphate ions, nitrate ions, zinc and other divalent metal ions, hydrogen ions, and an accelerating compound. The free acid etches the steel surface, causing hydrogen to be released while metal phosphate ions are precipitated onto the surface in a crystalline form. The primary objective during phosphating is to deposit a thin, dense and uniform conversion layer on the cleaned and prepared metal surface.

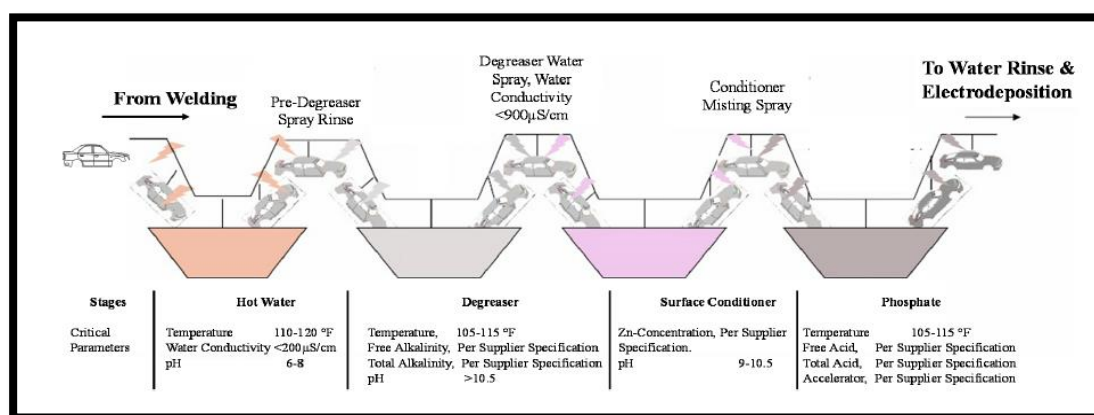


Figure 7: Pretreatment Sequence for BIW

- **Electro Deposition:**

The E-coat solution consists of a mixture of resin, binder, a paste containing the pigments, and a solvent. In cathodic electro deposition, the metal part is negatively charged while the paint is positively charged. In contrast to the anodic process, the cathodic process reduces the amount of iron that can enter into the paint film. Hence, cathodic coatings offer high performance and excellent corrosion resistance and have mostly replaced anodic coatings.

The E-coat process is considered to be relatively environmentally friendly; it uses only a 0.5% solvent solution. The pH of the solvent in the ED tank is a measure of the balance of acidic and caustic components in the tank. The balance is dominated by the functional groups in the resin and the neutralizing agents. A decreased pH in the cathodic ED tank lowers film thickness so that higher voltage needs to be applied with the danger of rupture effects. The pH can be influenced by the pretreatment chemicals in a detrimental way. In such a case, conductivity and pH drift to values outside of the specification and corrections have to be made by replenishing ultra-filtrate with de ionized water (D.I.) water.

E-coating involves dipping automobile bodies into the coating solution and passing an electric current through the body and the liquid ED paint solution. Because of the charged

nature of this coating process, the ED paint penetrates into places a spray would not reach. The ED paint is promoted to bond with the metal substrate, and a uniform coating thickness is produced. The result is an insoluble, deposited layer with a very high solids content and firm adherence to the pretreated body.

After the E-coat, the automobile body enters a bake oven, in which heating and keeping at a temperature of 160°C for 10 min causes film curing to promote maximum performance properties. The oven temperature and heating time primarily enhance chip resistance and film adhesion to the body; corrosion protection is affected less by these conditions. Because surface roughness influences the smoothness and brilliance of the topcoat, some sanding of the surface is usually performed to remove or eliminate defects before the body enters the next application step.

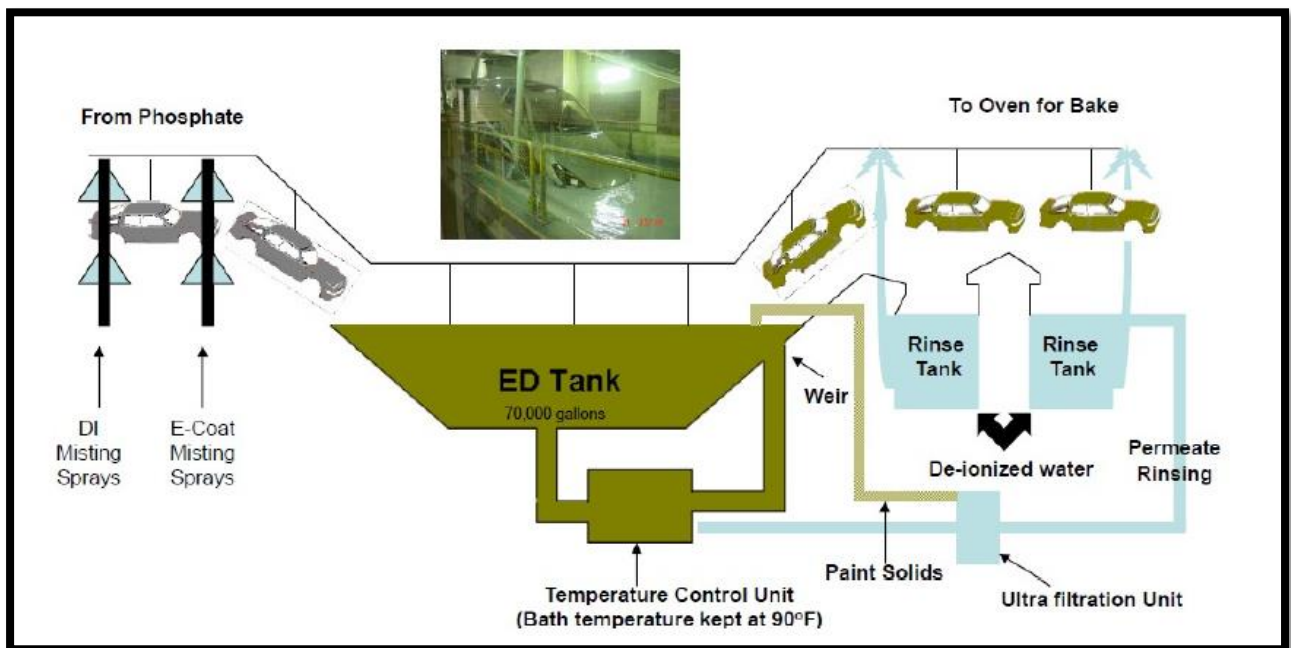


Figure 8: Electro Coating Process

- **Rust Proof Materials: Sealer/ PVC**

The third step is underbody coating (UBC) and seam sealing using PVC (Polyvinyl Chloride) and urethane. This sealing has multiple purposes, as shown in Table below.

Table 7: Purpose of Sealant in Automobile

Pre treatment ED	High Property UBC	Noise Proof UBC	Interior Sealer	Coating Type DC Materials	Asphalt Sheet	Exterior Sealer	Rocker PVC	Urethane at Lower Door	Primer Coat
Installation Purpose	•	•	•	•	•	•	•	•	Seal Chipping Noise Proof Vibration Deadening



The sealant is applied around and inside the doors, hood, trunk, and front dash, and onto the exterior and interior of metal joints and outer area of the back wheel well; application of the sealant is accomplished either manually or with robots and prevents air and water ingress and inhibits rust formation. Recently, PVC and acryl/urethane sealants have also been used in the underbody areas, a process called the Dampening Coat (DC), to impart noise-proofing and vibration-deadening. The noise and vibration are transferred from the engine, drive train, suspension system, road noise of the tires, and flowing air, and the underbody sealants reduce noise transfer into the passenger compartment of the automobile. The underbody coating also provides anti-corrosion and chipping protection; typically, it is accomplished using robots equipped with airless sprayers. Figure below displays the lower door sections and rocker panel locations where PVC or urethanes are applied as an anti-chipping protection, and shows the cross section of this layer with respect to the other coatings on the body parts.

During this third step, it is also typical to apply a soft tip primer coat that improves the chipping resistance (resistance against chipping by flying stones or debris). This layer is applied to the front edge of the hood, which is an area prone to chipping shock, using a high elastic resin that resides between the ED and primer coats. Also, during the third step, the radiator supports, wheel housing, and under rear areas of the body are coated with a relatively dull black pigment called a blackout coating.

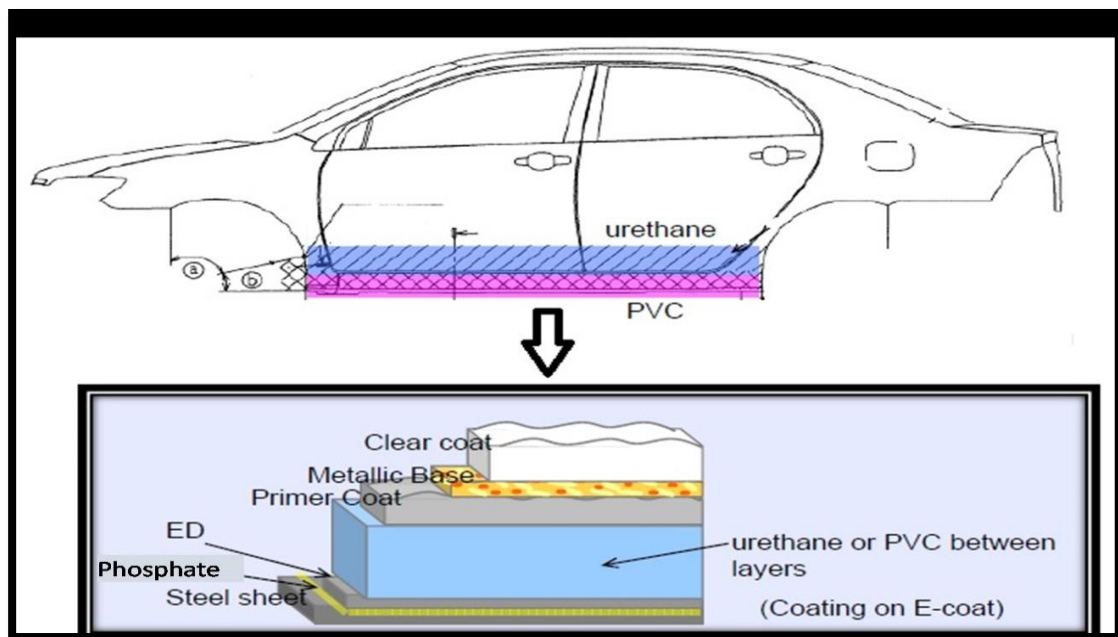


Figure 9: The Anti-Chipping material Coating on Lower doors and rocker panels

- **Primer:**

The fourth coating step is the application of a primer surface or simply primer. It can be water-borne, solvent-borne, or a powder. The primer fills and smoothen minor imperfections and scratches that may be created during prior steps and by the intermediate sanding or grinding used to remove small imperfections.

Additionally, most automobile bodies have surface imperfections that arise from the pressing, stamping, and welding operations, and these defects are typically accentuated during the ED step.

Hence, although the main purpose of the primer has been to act as a leveler that produces a smoother finished surface, it also provides additional protection against corrosion and maximizes adhesion between it and the E-coat and basecoat; thereby, the primer increases paint durability. The primer layer is important for stone chip resistance. Primer coating operations in an automobile assembly plant are usually implemented in three stages: interior coating, exterior coating, and then curing in an oven. Manual spray painting is used for the interior coating of the doors, engine compartment, and luggage or trunk space. Some of these areas are not sprayed with basecoat. It is important that the primer color matches the basecoat to be able to impart uniform coating appearances between interior and exterior coats. Subsequently, the primer is cured by passing the body through an oven at 140 °C for 30 min. For water-borne primers, preheating (or flashing) of the body before oven exposure is necessary because of the higher specific heat and longer drying times of water compared to that of solvent-borne primers.

- **Top Coat:**

The final step in the body coating process is to apply the topcoat, which consists of two layers—the basecoat and clear coat. The basecoat contains the primary coloring pigment, and the clear coat provides a protective coating against environmental effects, corrosion, and UV light degradation, promotes unmatched color retention, and provides a smooth, unblemished, and even finish. The body is first coated with either a water-borne or solvent-borne basecoat. If the manufacturer is using a wet-on-wet process, then the clear coat is applied onto the basecoat after a short flash-off, before curing in an oven. In the absence of a wet-on-wet process, the basecoat is cured before the clear coat is applied. Independent of which process is employed; typical thermal cure times and temperatures are 30 to 40 min at 125°C, respectively.

- **Base Coat:**

As part of the topcoat, the basecoat is the third layer added to the car after the primer and before the clear coat. Value, i.e., lightness or darkness, along with hue and chroma, are standard terms used in the color industry to describe the three-dimensional nature of the color created by using pigments in an automobile's basecoat. Pigments entail any colored, black, white, or fluorescent particulate solid that is insoluble in the paint in which the pigment is incorporated. Pigments retain their crystal or particulate structure throughout the basecoat coloration process. Hence, with various pigments and effect materials, it is

possible to design an unlimited number of automobile finishes having unique and distinct values, hues, and chroma.

- **Clear Coat:**

The final coating on an automobile’s surface is the clear coat; it provides durability, environmental etch, and scratch resistance to the overall coating. It protects against damage such as fading that is caused by UV rays from the sun and imparts a gloss and depth that otherwise are not as vivid. The clear coat also makes repairs and maintenance easier.

- **Inspection Room:**

The body after paint is inspected and minor repair or changes are highlighted.

- **Minor Repair Room:**

Minor repairs are done in this section by applying the required coat to eliminate the imperfection.

- **Wax Spray Room**

The final coat of wax is done to retain the glossy finish of the vehicle and is sent to the final assembly line.

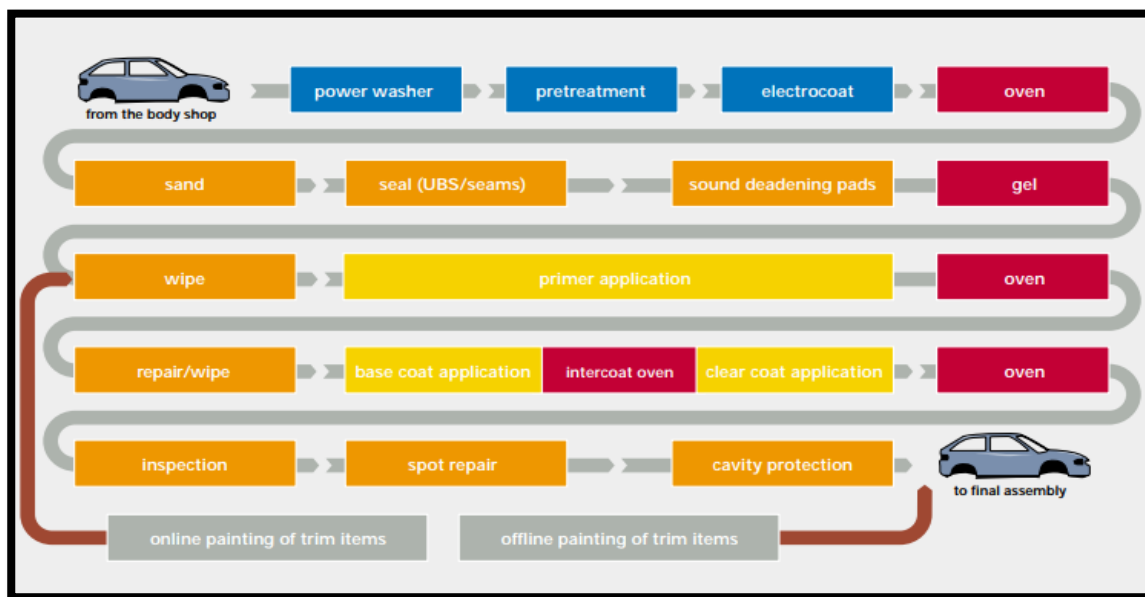


Figure 10: Comprehensive Overview of the Paint Line

List of equipment's and machinery proposed to be installed for Body Paint Shop are as follows:

a. Booth for;

- i. Pretreatment including Cleaning, Degreasing, Metal Preparation for Primer coat
- ii. Under coat Booth
- iii. Sealer Chamber
- iv. Top Coat Booth

b. Dry off/ Baking Ovens for;

- i. ED Oven
- ii. Under Coat Oven
- iii. Sealer Oven
- iv. Top Coat Oven

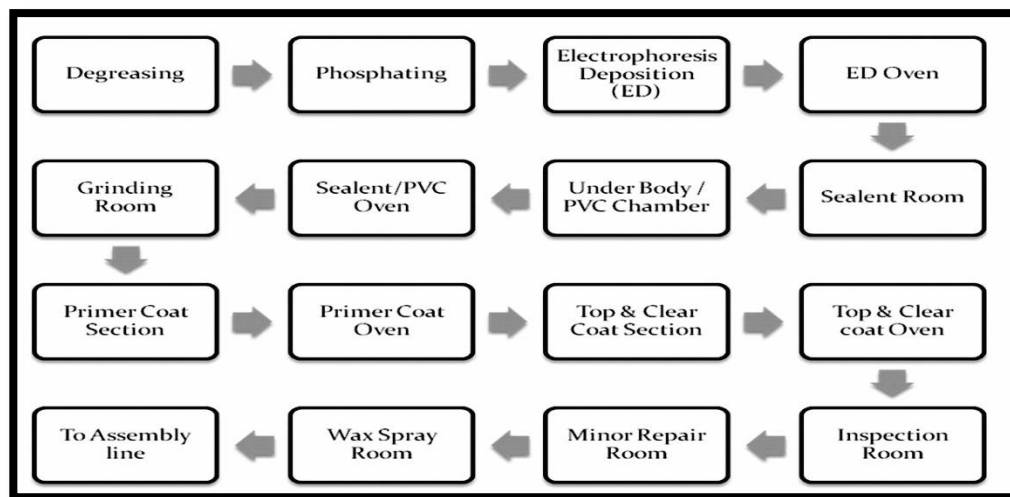


Figure 11: Process Flow of Paint Line

✓ **Vehicle Assembly**

Assembly of some interior and exterior parts as well as major components is fitted on painted body in assembly plant that is generally constituted of:

- *Trim Line*
- *Chassis Line*
- *Final Assembly Line*

A general listing of major parts and components that are assembled in different lines are as follows:

✓ **Trim Assembly**

- Harnesses and controls-other electrical
- Pedal assembly, insulator
- Air duct, heater, head liner
- Weather-strip, horn, stop switch

- Front/rear shock absorber, shift cable
- Wiper link, washer tank
- Condenser, rear seat belt, radiator insulator

Chassis Line

- Brake tube, filler neck, splash shield
- Fuel pipe, fuel tank, canister
- Rear axle, stabilizer
- Clutch tube, heat protector, engine
- Knuckle, tie rod
- Exhaust, undercover
- Tire, front /rear seat
- Front/rear bumper

Final Assembly

- Rear pillar trim, trunk lid latch
- Console bracket, carpet, trunk room trim
- License plate lamp, radiator, hose
- Seat belt, center pillar trim
- Heat hose, steering shaft
- Air-conditioner pipe
- Parking brake, garnish
- Glove box, battery tray, seatbelt anchor cover
- Rear combination lamp, sun visor
- Air cleaner, front/rear seat
- Battery cable, silencer
- Front grille, drip molding
- Front turn signal lamp, console box
- Combination meter, A/c gas
- Front/rear glass, roof molding

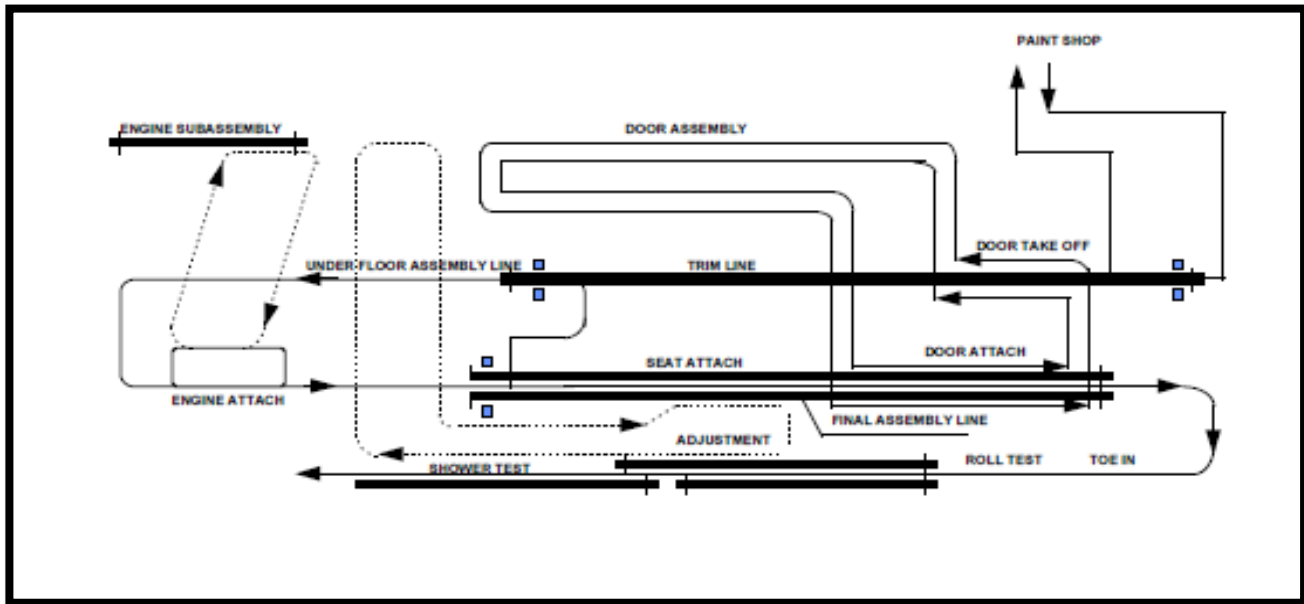


Figure 12: Typical Layout of Trim and Final Assembly

- **Trim Line:**

Painted body is transported to different stations - the number depending on production capacity of the facility. Doors are removed from the painted body before it goes down the trim line, and are transported by an overhead conveyor to door assembly line at the end of the final assembly line. The process allows easier access to the interior assembly of the car. Moreover, the door trim, glass and hard ware can be installed on a separate door assembly line ensuring better fit and finish. Mostly the operations are manually performed from both sides of a slat conveyor. Screw driver, box-wrenches and torque wrenches are used as hand tools for the assembly operations. Dampers and front wishbones are installed, and so are the fascia and instrumental panel. The air-conditioner and/or heater unit may be installed after the instrument panel. The lamps and bumpers-covered with molded protectors are also installed in trim line. Many subassemblies are carried out in cells located suitably to feed them to the trim line conveyor at appropriate locations. Some assembly such as strut subassembly requires special jigs. For others, some easy aids - mostly developed by the workmen themselves, are used.

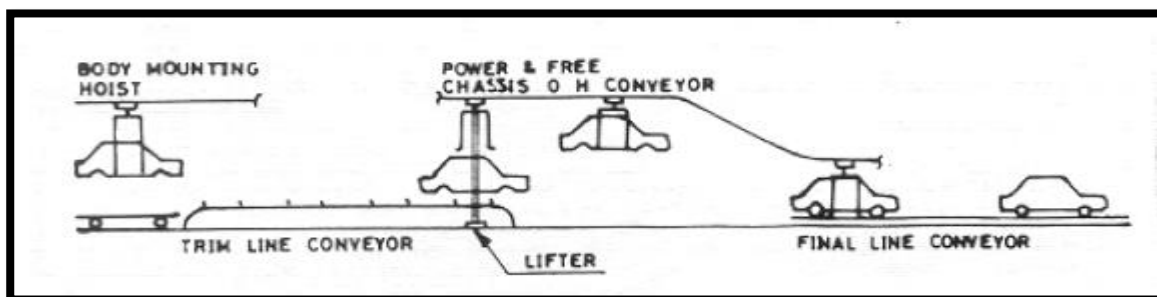


Figure 13: Transfer of Car Body from Trim Line

- **Chassis Line:**

The car bodies from trim line are picked up by overhead conveyor of chassis line that may be power and free type. Near the beginning of the chassis line, the fuel tank is assembled. As the tank generally comes complete with the fuel gauge unit and pump etc., the operator is required to connect only the breather pipe and some other minor components. Steering rack is generally mounted on the car directly. Docking station relates to mounting of power train to the body and is one of the main operations on chassis line. Engine and Axle setting conveyor is used for fixing engines & axles to bodies. At the next station, the exhaust system is installed in one or two stages along with heat-shields. Generally, at the end of the chassis line, wheels with tires are mounted.

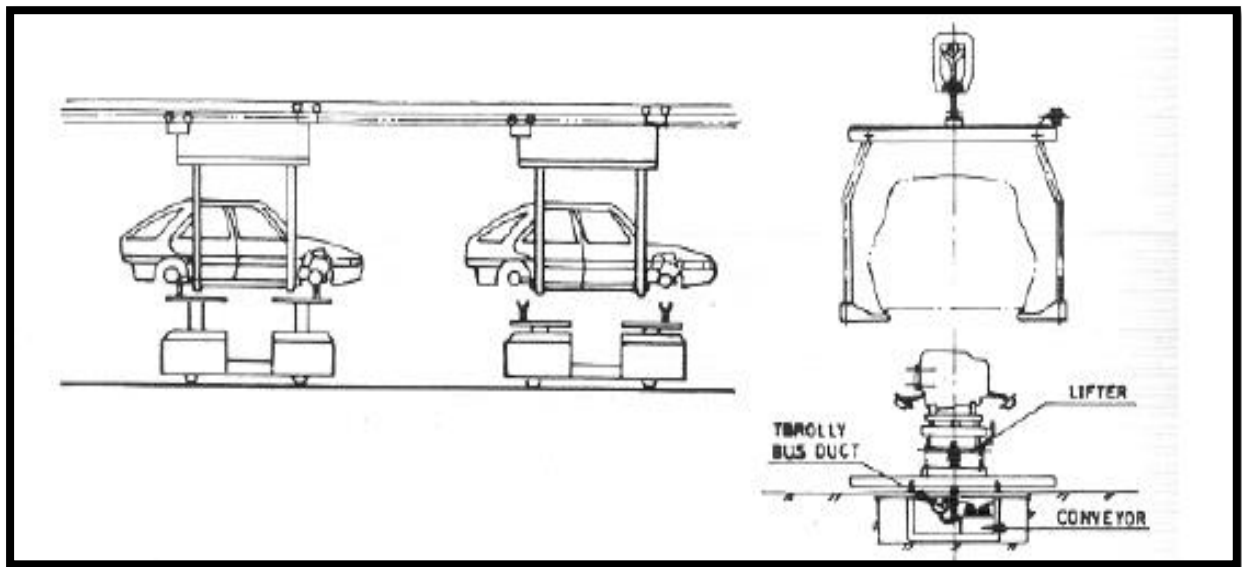


Figure 14: Chassis Line Mounting Process

A tire/wheel assembly system is located in an off-line assembly cell. For every vehicle, 5 tire wheel assemblies are required so the cycle time of the system is one fifth of that of vehicle assembly. Tire/tubes (or tube less tires) and wheels are fed from two separate conveyors to different stages of the system that consists of:

1. Tire soaping (or powdering) unit
2. Tire fitting unit
3. Tire inflating unit
4. Wheel balancing unit
5. Correction weight fixing unit

The units are linked by integrated conveyors. A tire handling system picks up and transports tire to both sides of the vehicle.

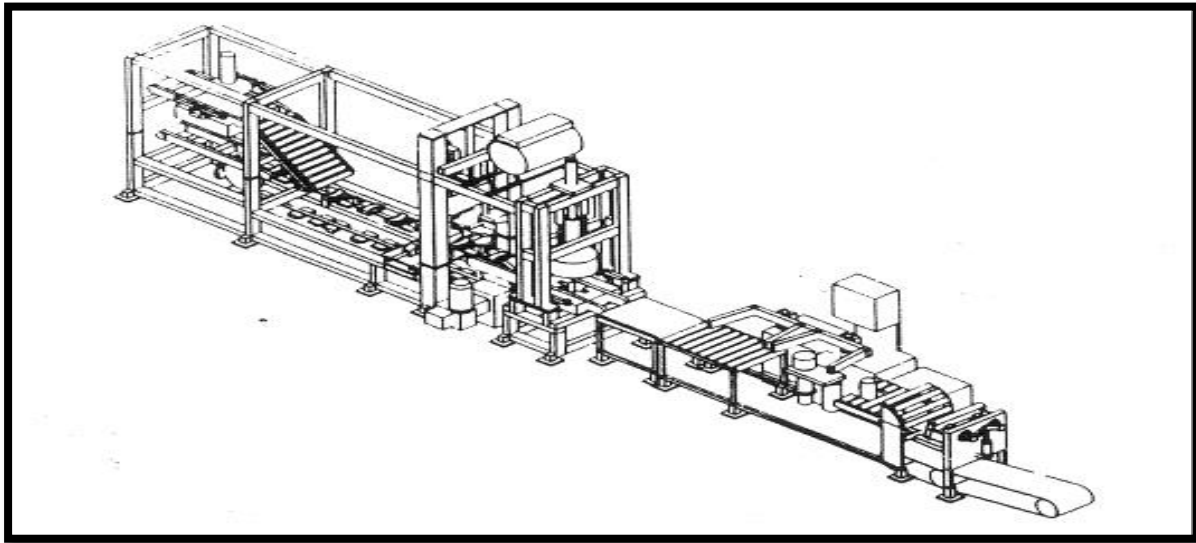


Figure 15: Tire/Wheel Assembly System

- **Final Assembly:**

In final assembly, all the remaining fitments are carried out. With equipment dependent on sophistication level, the different consumables are injected in the car to the desired quantity measure. Items are Engine oil, Transmission oil, Gasoline/diesel, Window washer liquid, Radiator liquid, Brake oil.

Near the end of the line, the doors are mounted. The door assembly line is generally located near the door mounting stations. Using an overhead conveyor the doors are lowered adjacent to the track. Special trolley on rollers may be used to mount the doors to the car in a well-designed line, no adjustment is needed, and the operator pushes the door into position, tightens the fasteners with a power-tool, and sheets the door before moving back to mount the second door.

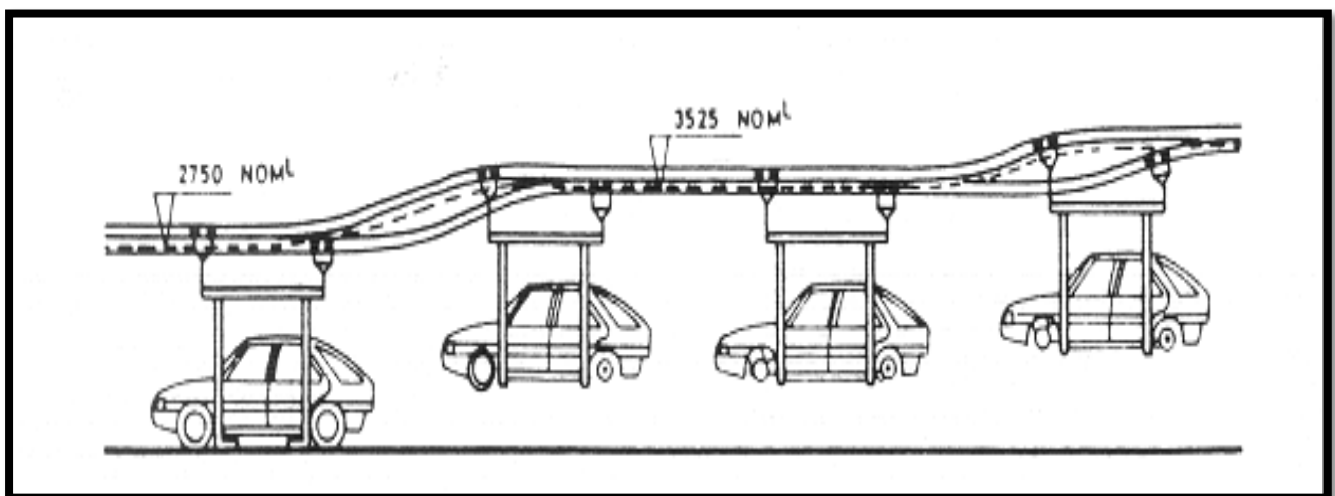


Figure 16: Bodies on Tires to Final Assembly Conveyor

List of machinery and equipment's proposed to be installed for vehicle final assembly are as follows:

a. Trim Line;

- i. Trim line with multiple stations
- ii. Sealer pumps
- iii. Conveyors
- iv. Pneumatic tools
- v. Torque wrenches
- vi. Other hand tools

b. Chassis Line with multiple stations equipped with hoists and underground pits;

- i. Central lifter
- ii. Engine docking machine/system
- iii. Axle lifting machine/system
- iv. Wheel sub-assembly/balancing
- v. Wheel assembly
- vi. Pneumatic tools

c. Final Line;

- i. Coolant Feeder
- ii. Brake bleeding machine
- iii. AC coolant filling, if applicable
- iv. Fuel filling

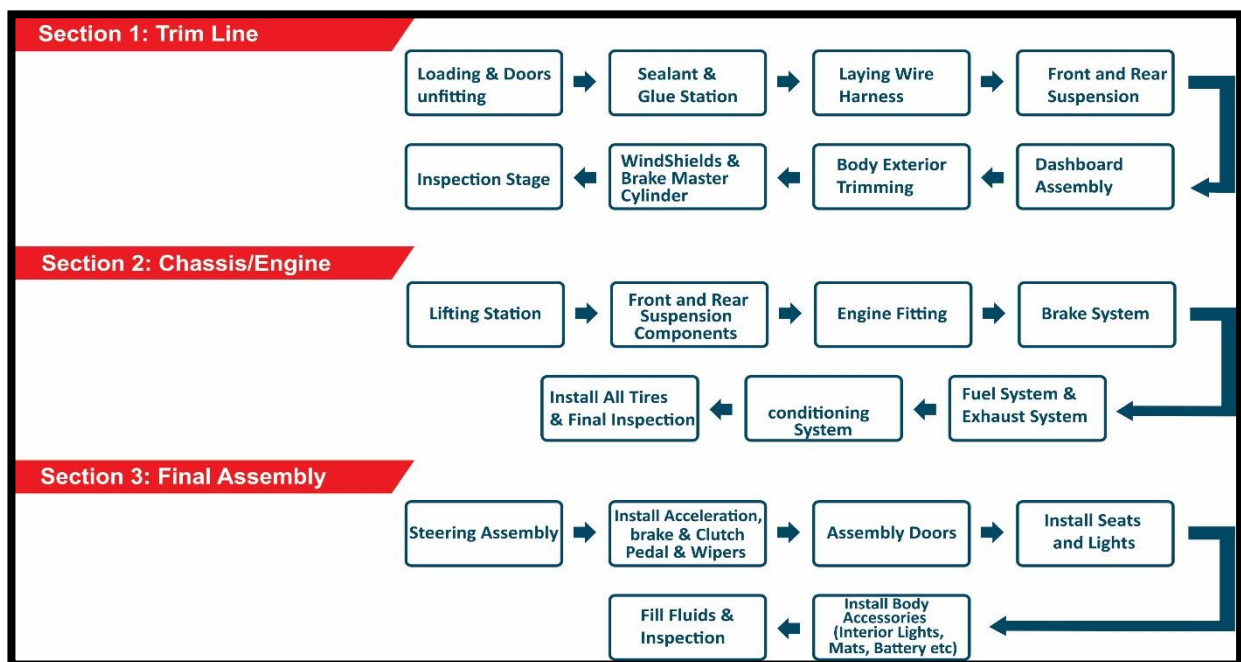


Figure 17: Process Flow from Trim to Final Assembly

Vehicle Performance Testing

After the vehicle comes out of the Final assembly line, it is driven on its own power to Vehicle Testing area. Inspection equipment includes:

1. Wheel alignment tester
2. Turning radius tester
3. Headlight tester
4. Side slip tester
5. Drum tester
6. Brake tester

Wheel Alignment Tester

It performs measurement/adjustment of toe of the front and rear wheels as well as camber of the front and rear wheels of an assembled vehicle. It also sets the steering wheel at a position where it becomes horizontal during the straight ahead running. The vehicle is driven onto the tester and is centered roughly by means of the equalizers and by its own propelling force. The roller for driving the wheels is rotated. Simultaneously the side rollers are pushed against the side of each wheel for accurate centering. The side rollers are used as measurement rollers. The amounts of toe and camber of the wheels are measured under the rotating conditions. The mean value of alignment measured during rotation is indicated.

Turning Radius Tester

It measures the right and left turning angle of the front wheels of an assembled vehicle in order to ensure that the turning angles are within the specified limit. The test vehicle is driven on to the tester; the front tread setting is automatically made. As for the rear equalizer, the rear tread is set forcibly by the air cylinder.

Head Light Tester

At about 4 meters ahead of the turning centers table of the turning Radius Tester, an opening / closing type screen device is provided. The director of photometric axis of head lamps of an assembled vehicle is aimed on the screen. The headlamps are adjusted in such a way that the light patterns on the screen get aimed on the specified positions. In test position the turn table remains locked.

Side Slip Tester:

It measures the amount of side slip of the front and rear wheels of the assembled vehicles. The vehicle driven by the driver passes slowly over the tester tread plates with the steering wheel held at its straight ahead position.

Drum Tester:

It conducts evaluation of the indication of speedometer of an assembled vehicle by driving the vehicle on rollers. It also checks the driving condition. The Tester consists of the front wheel section and rear wheel section connected with each other by means of a transmission section (comprising of V belt and pulleys in one case). During the test, the rollers driven by the driving wheel are put under the actual running conditions. Speed indication is compared with the speed applied and evaluation regarding meeting the specification is made.

Brake Tester

It conducts evaluation of the brake system of an assembled vehicle by measuring braking force of each wheel (drag, service brake, parking brake). In the tester, each of the rollers for right and left is rotated by a motor. When the brake is applied, a strain gauge detects the reaction force applied to the rollers and measures it as the braking force.

List of machinery and equipment's proposed to be installed for vehicle performance testing are as follows:

- a. Toe in tester
- b. Side slip tester
- c. Brake tester
- d. Drum tester
- e. Turning radius
- f. Headlight aiming tester
- g. Shower Tester

Inspection:

Final inspection of the vehicle is done by the expert and is stored in-house.

Storage:

Storage of vandomized /in-house parts, CKD Parts and finished goods are done in the store yard or room facility.

5.9.1 Raw-Material

List of Raw Material and its quantity are given below:

Table 8: Raw Material & Their Quantities

No.	Raw Material	Annual Requirement (tons)
1.	Degreasing Agent	15
2.	Surface	2.0
3.	Phosphating	25
4.	ED Paint	200
5.	Sealant	80
6.	PVC Adhesive	70
7.	Paint	120
8.	Thinner	6
9.	Varnish	45
10.	Anti-rust wax	1.2
11.	Damping Pad	100
	Total	664.2

Finished Unit/ Product:

- i. Tank 500 2.0 L Turbo PHEV
- ii. Double Cabin Cannon Alpha PHEW 2.0L
- iii. H6 PHEV 1.5L Turbo Front Wheel Drive
- iv. H6 PHEW 1.5 L Turbo All Wheel Drive
- v. H6 GT PHEW 1.5L Turbo4WD
- vi. Double Cabin Diesel
- vii. Tank 500 2.0L HEV

5.11 Supplies

Following supplies will be utilized for the construction and operation of instant project.

5.11.1 Manpower (Direct & Indirect)

During construction phase 10-15 workers will be involved. During the operation phase of the project, the total manpower requirement is estimated to be 120 approximately comprises of; administrative, engineers, supervisors, machine operators, shift in charge, computer operators and non-technical persons/workers. All recruited staff will be given appropriate training in order to educate them on the specific job tasks to be performed; safety procedures and monitoring parameters.

5.11.2 Amenities

Following amenities will be used during operation of said project

i. Electricity/ Power Supply

Power requirement for instant project will be fulfilled by WAPDA and generators will be installed, details of generators have been given in project summary.

ii. Wastewater Management

Quantity of waste water generated from domestic use will be 19.75m³/day whereas in proposed project, there are 2 main areas where water is needed to be treated. They are as follows:

Phosphate tank:

1. The phosphating liquid from the Cone-Shaped Groove of the phosphating tank is taken to the sedimentation tank where it is stopped for 10 minutes to ensure good precipitation
2. Sedimentation tank is equipped with anti-back flow pipeline and compressed air valves for blowing sediment,
3. The Phosphate liquid is then passed through the filter press and circulates back to phosphating tank.
4. The recovered Slag will be handed over to the disposal company.
5. No waste water is produced from this tank as the water is continuously circulated back into the tank.

Paint Booth:

1. The waste water at the rate of 2m³/day from the paint booth will be treated in the water treatment plant which is situated outside the Production hall.
2. In sludge pit, the paint-laden water is chemically treated so the paint sludge rises to the surface and can be collected.
3. The clean water is drawn through a filter by recirculation pump and recycled to the booth.

- The paint sludge is periodically collected in filter bags by government authorized Collection Company.

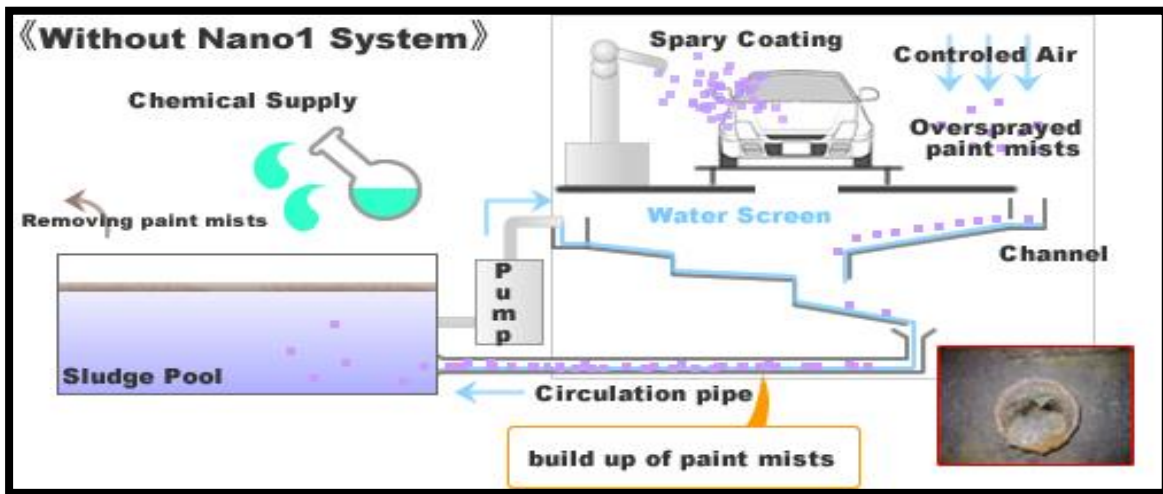


Figure 18: Wastewater Treatment Facility of the Proposed Project

iii. Air Emission

Air emission likely to be released during operation of the project; except the dust or PM to be produced during floor cleaning and other such operations, which also will not be posing any environmental threat (will not breach the safe standards). Wet suppression will be done to control dust emissions.

Table 9: Exhaust Gases from Drying Ovens of the Paint Line

No.	Name	Contaminant	Continuous Emissions
1	Electrophoresis	Organic gas	3000
2	Sealant drying Oven	Organic gas	2000
3	Primer drying Oven	Organic gas	3000
4	Top Coat drying Oven	Organic gas	3000
5	Spray Booths	Organic gas	200.000

Drying Oven Exhaust gas:

- The **exhaust air** volumes from Ovens are not discharge to atmosphere directly but they are treated through process called incineration.
- In this process, the solvent fumes containing exhaust air is combusted at high temperature and rotated back to the oven.
- Ovens are designed in such a way that the 10 percent of gas is discharged to the atmosphere after incineration while 12-15% fresh makeup air will be added after filtration.

Air masks, helmets and safety uniforms will be provided to the workers and proper check will be made to check its compliance in the premises.

iv. Noise

All the machinery with state of the art technology will be installed; from operation of machinery noise will not be a problem for the residents in the area nearby. Further Administration of the unit will take the precautionary measures to avoid the noise



emissions. There is no possibility of Noise pollution. Construction activities will however add great to the noise, but that noise will be temporary, and will be mitigated by measures as stated in **Chapter-4**. Further trees to be planted in the unit which will act as noise absorbers and workers will use PPEs whenever and wherever might be necessary.

5.11.3 Solid Waste

Waste generated during construction would include mostly construction material (mainly steel and wood), empty cement bags, excavated earth and general packaging waste. Reusable construction material will be recovered from the waste as much as possible. Sludge (slurry) will be sold; disposed off through contractors.

Magnitude of Operation:

Magnitude of project operation will depend on various factors such as the customer demand and financial resources, etc. Equipment safety will be assured if operations are carefully managed. No separate fund allocation is required. However, budget will be allocated for purchase and maintenance of standardized PPEs for workers and for waste management and environmental enhancement. Whereas 30,000 units per annum will be assembled.

SIZE, COST AND MAGNITUDE OF THE PROJECT

Table 10: Cost Breakdown of the Project

No.	Description	PKR
1	Land	3 billion
2	Building & civil Works	1.5 billion
3	Plant, Machinery and Equipment's	1 billion
4	Utilities	.5 billion
5	Environmental Budget	2 million
	Project Cost	6 billion approximately

5.12 Restoration and Rehabilitation Plan

After completion of construction site will be restored and leveling. Leftover constructional material will be removed from site and it will be reused in other activities. Renovation/repairing of machines done whenever required however, at the expiration of the useful life of the project; adequate arrangements will be made to remove all movable assets. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes.

Safety measures as desired under the code of demolition will be adopted to avoid any harm to humans, property around, or the environment in the project area. Generated dust will be minimized by sprinkling water on regular basis. After completion; all construction matrix, debris and garbage will be removed off immediately from the site within the minimum possible time under safe conditions. Any minor spillover of these materials will be cleared adequately.



CHAPTER 6: DESCRIPTION OF ENVIRONMENT

This section describes the baseline conditions, which shows the clear-cut picture of existing environmental resources; physical, ecological and socio-economic environment of the Project Area. Information on these aspects has been derived from field visits to the project area as well as information obtained through visits to the Government departments and other relevant agencies. The primary data was collected by surveying the project area and its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, hydrology and climatology) was obtained by visiting relevant departments and their official websites. The biological parameters (flora and fauna) were also studied in the project area. The vegetation of project area was studied by preparing a floristic list based on visual observation. The species were recorded with reference to their historical existence in the project area.

Information on wildlife fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area was compiled based on opportunistic observation, gathering the existing information and consultation with local experts, community members and government departments. The socio-economic aspects were studied and analyzed by conducting detailed socio-economic surveys.

6.1. Baseline Physical Environment

In this section, physical resources such as; topography, soil, climate, surface as well as ground water resources and its quality, ambient air quality and geology of not only the project site but also the city as a whole to assess whether the project under assessment can or does have any impacts on any of these parameters. The description of physical environment of the project site is present in the following sub sections

6.1.1. Topography & Geology

Lahore Lying between $31^{\circ}15' - 31^{\circ}45' N$ and $74^{\circ}01' - 74^{\circ}39' E$, Lahore is bounded on the north and west by the Sheikhpura District, on the east by Wagah, and on the south by Kasur District. The Ravi River flows on the northern side of Lahore. Lahore city covers a total land area of 404 square kilometers (156 sq mi). Lahore is the capital city of the Pakistani province of Punjab. The region is irrigated by a network of canals, including the Lower Chenab Canal, supporting its agricultural prominence. Geologically, it consists of Quaternary alluvial sediments of sand, silt, and clay, underlain by deep Precambrian and Cambrian rock formations. The soils are fertile, with loamy and clayey textures ideal for crops like wheat, rice, and sugarcane. The site is located at Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind Road, Raiwind, Lahore and the coordinates of the selected site are **Latitude $31^{\circ}27'38.8''$ North** and **Longitude $74^{\circ}19'42.6''$ East**.

6.1.2. Seismicity

According to Seismic Zoning of Pakistan, the project area lies in Zone 2A and represents in to moderate damage due to earthquakes. The seismic zoning of Pakistan is given below in Figure:

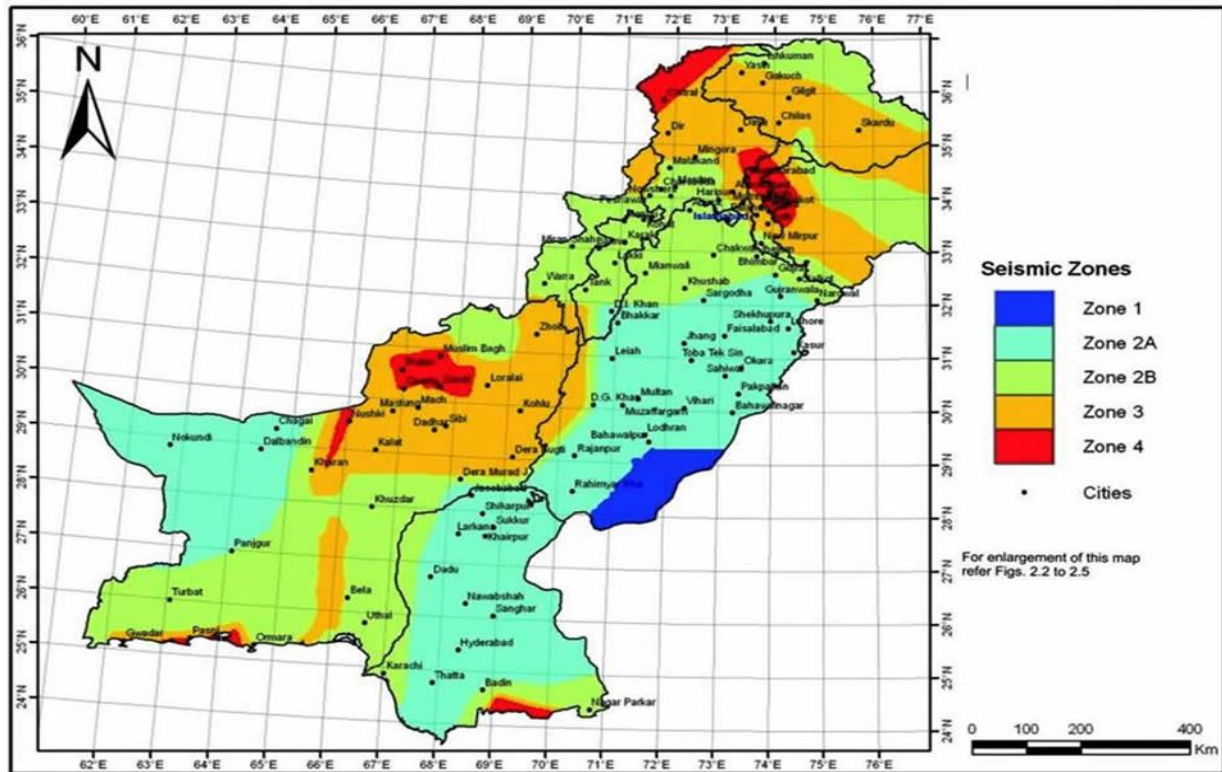


Figure 19: Seismic Zoning of Pakistan

6.1.3. Climate

Lahore Pakistan, has a semi-arid climate with hot summers, mild winters, and distinct seasonal variations. Summers, from May to September, are intense, with temperatures often exceeding 40°C, while winters, from November to February, are mild, with temperatures ranging between 5°C and 20°C. The region receives most of its annual rainfall, averaging 500-700 mm, during the monsoon season (July to September), while the rest of the year remains predominantly dry. Brief spring and autumn periods bring moderate temperatures, making these transitional seasons the most pleasant. The dust storms occur occasionally during the hot season, June, July and August.)¹.

¹ <https://en.climate-data.org/asia/pakistan/punjab/Kasur-1897/>



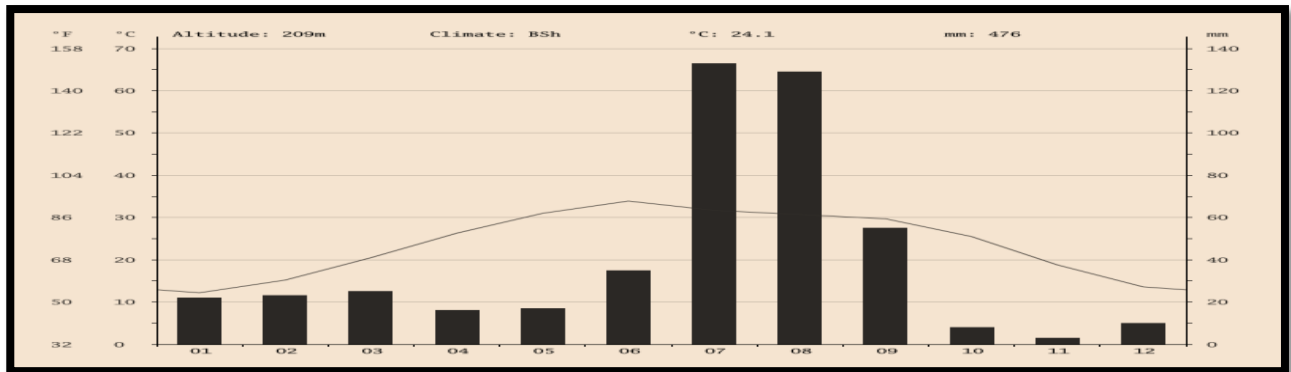


Figure 20: Temperature Graph



Figure 21: Rate of Precipitation

6.1.4. Ambient Air Quality

The primary air pollutants are; carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO₂), and particulate matter (PM). In order to determine the air quality of the area, environmental monitoring was carried out by SEAL (Solution Environmental & Analytical Laboratory being EPA certified Laboratory and having the requisite sampling device and expertise for collection of samples. To determine the air quality of the area ambient air monitoring was carried out and following results were obtained:

Table 11: Air Quality Monitoring Results

S#	Monitoring Source	CO	NO	NO ₂	SO ₂	PM _{2.5}	PM ₁₀
PEQs		mg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
		10	120	120	120	35	150
1	Midpoint	3.09	52.70	52.70	62.97	31.55	146.30

6.1.5. Ambient Noise

Noise level measurements had been carried out within the selected site. This analysis showed that values are much below the limit prescribed under the Punjab Environmental Quality Standards (PEQS). Monitoring reports are attached as **Annex E**.

Table 12: Ambient Noise Monitoring Results

S. No.	Monitoring source	Unit	PEQs	Conc.	Paint SHop
1	Midpoint	dB (A) Leq	75	66.6	73.5

6.1.6. Groundwater Quality

Groundwater quality results of project area are given below:

Table 13: Ground water Analysis Results

Sr#	Parameters	Unit	Drinking Water PEQS	Conc.
1	pH value	---	6.5-8.5	7.40
2	Temperature	°C	31.5	3 ⁰
3	COD	Mg/l	150	144
4	BOD	Mg/l	80	70
5	TDS	mg/l	<1000	1020
6	TSS	TCU	200	149.0
7	Oil & Grease	Mg/l	10	0.03
8	Chromium	Mg/l	1.0	ND
9	Copper	Mg/l	1.0	ND
10	Cadmium	mg/l	0.1	ND

6.2 Baseline Biological Environment

District Lahore is rich with biological and ecological resources. However, the flora and fauna of the district includes; shrubs, herbs, mammals, birds, reptiles, amphibians and insects are found. In sub-sections below biological features are discussed below:

6.2.1 Flora

The flora of Lahore district is typical of the fertile plains of Punjab, with vegetation largely shaped by its semi-arid climate and extensive agricultural activity. Native trees such as Shisham (*Dalbergia sissoo*), Kikar (*Acacia nilotica*), and Beri (*Ziziphus mauritiana*) are common, especially along roadsides and in rural areas. Cultivated crops dominate the



landscape, with wheat, rice, sugarcane, and fodder grasses being the primary vegetation due to the district's fertile soils and irrigation system. Orchards featuring mango, guava, and citrus trees also contribute to the region's flora. Shrubs and grasses adapted to dry conditions grow in less-cultivated areas, while the monsoon season briefly brings a burst of greenery and seasonal flowers.

The selected site is present within cluster of Industrial units, so no impact on local flora is being envisaged. After, completion of construction trees will be planted in open green spaces.

6.2.2 Fauna

The fauna of Lahore district reflects its agricultural landscape and semi-arid climate, with a mix of domestic, wild, and migratory species. Common mammals include jackals, mongoose, and small rodents, while livestock like buffaloes, cattle, and goats dominate rural areas. Bird species such as crows, pigeons, sparrows, and parakeets are abundant, with seasonal migratory birds, including ducks and cranes, visiting wetlands during the winter. Reptiles like lizards and snakes are also present, particularly in uncultivated areas. Aquatic life thrives in rivers and canals, with species such as catfish and rohu being common. The fauna is closely tied to the district's agricultural practices and natural habitats, though increasing urbanization poses challenges to wildlife. During site visit near site no such fauna was noticed that could be impacted due to construction of aforementioned project as the selected site is location within industrial cluster.

6.2.3 Archaeological Sites or Wetlands

It is envisaged that no building of archaeological, cultural and historical importance will not be damaged at the time of construction M/s Sagar Engineering Works Limited. Moreover, there is no wetland or surface water body reported to be affected due to the construction of the aforesaid project.

6.2.4 Endangered Species

There is no floral or faunal species inhabiting the project area that are included in the Red Data Book of IUCN. The populations of birds are reported to be reduced over time due to excessive pesticide sprays in agricultural crops and loss of habitat.

6.3 Baseline Socio-Economic Environment

Socio-economic environment is represented by the human and economic development and quality of life values. For the study of socio-economic environment of the project area, field surveys were conducted and interviews were held with the various stakeholders. The socioeconomic conditions of the project area are as follow;

6.3.1 Industry

Extension of said Automobile Assembling Unit will be done within premises of M/s Sazgar Engineering Works Limited located at Western Tank-1 Link Road, Near Ijtamah Chowk, Sunder-Raiwind Road, Raiwind, Lahore. The project site is also surrounded by various other industrial activities nearby industries are mentioned in below map:

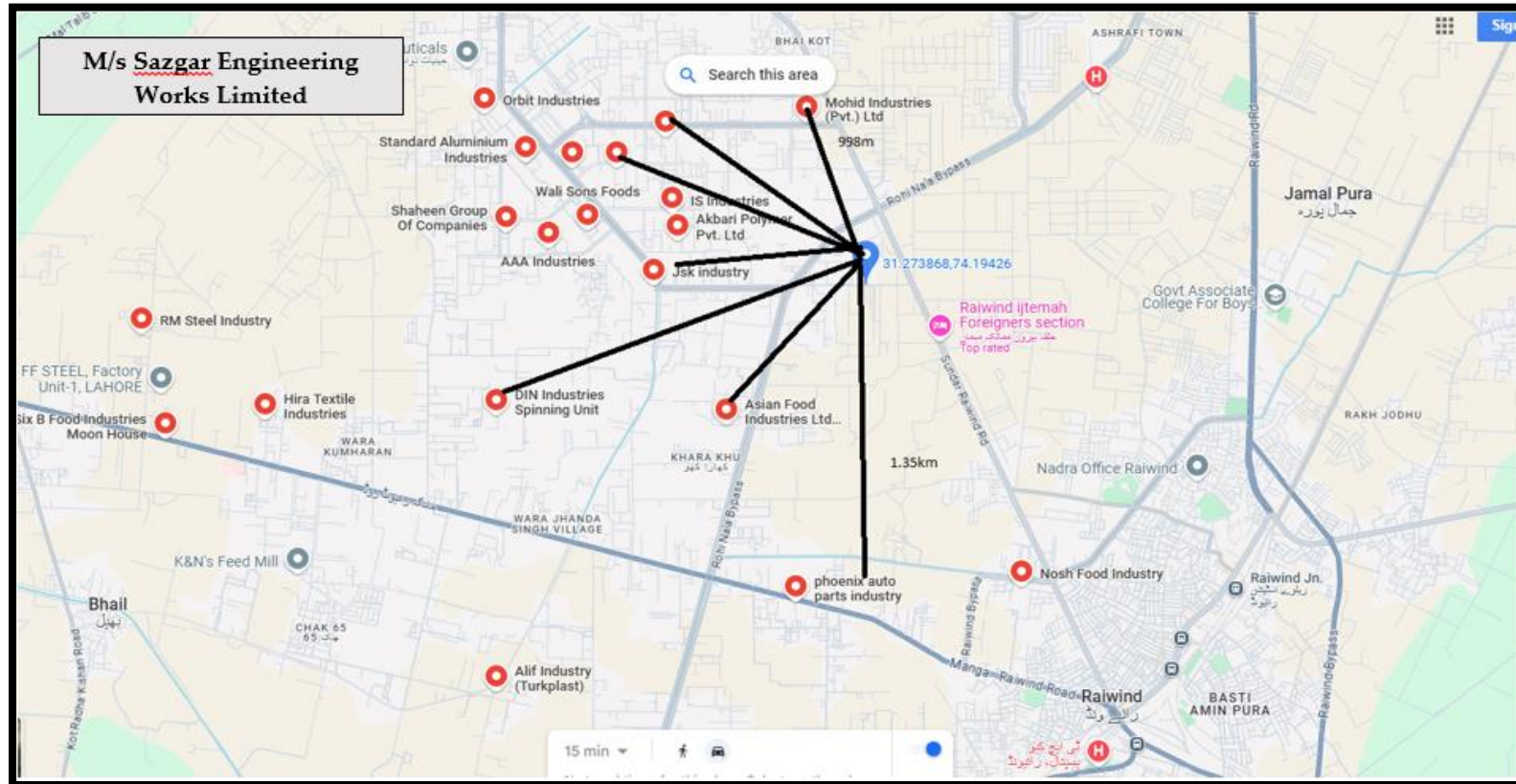


Figure 22: Nearest Industries



6.3.2 Health Facilities

Healthcare services are provided to the citizens by both public and private sector hospitals. The nearest hospital is; Al-Fajar Eye Hospital is present at the distance of 4.73km and Al-Shifa hospital is present at the distance of 5.43km. Moreover, there are a number of private hospitals, clinics and laboratories in the city.

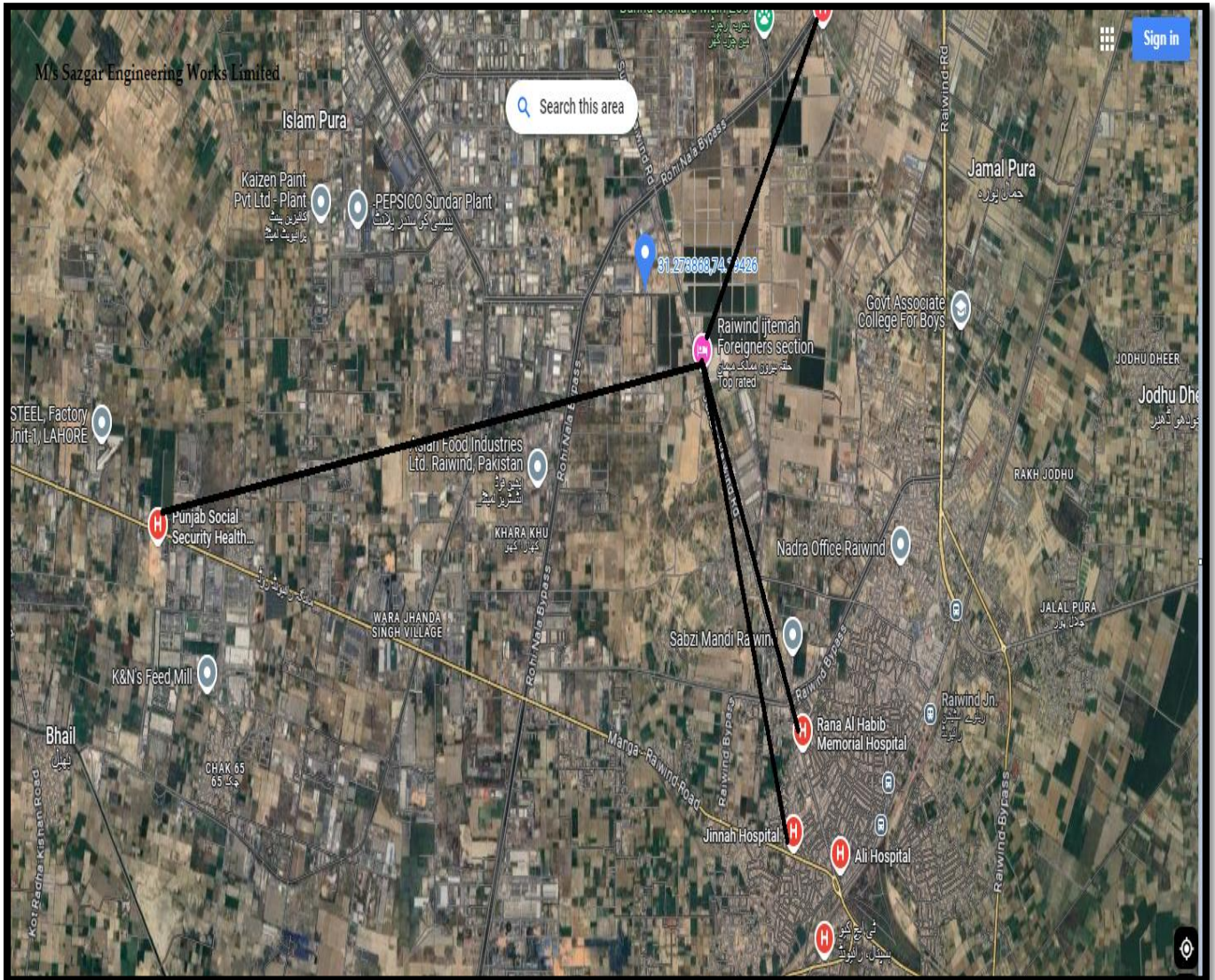


Figure 23: Nearest Hospitals

6.3.3 Educational Facilities

Education up to higher secondary is present in project area.

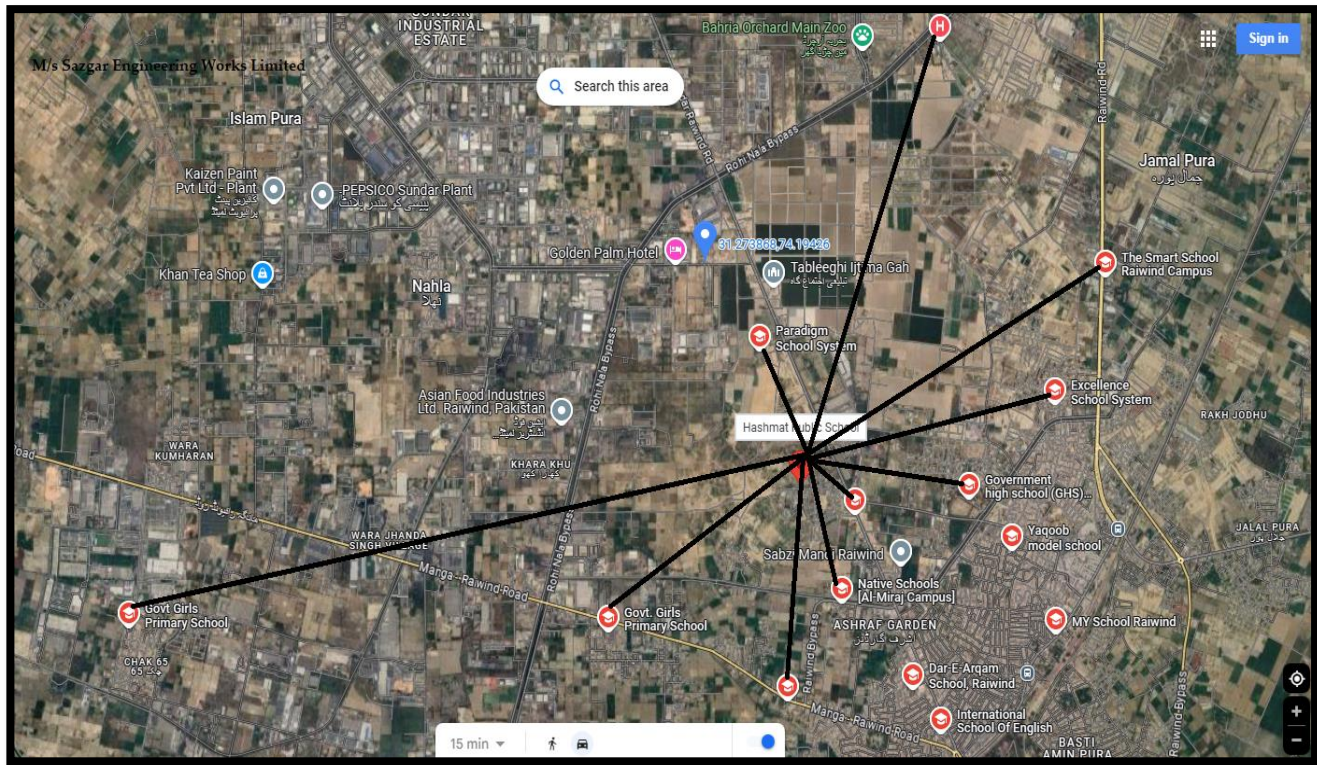


Figure 24: Nearest Educational Facilities

6.4 Lab Reports of Environmental Analysis

Testing of different parameters was carried out from EPA certified laboratory i.e. SEAL (Solution Environmental & Analytical Laboratory) to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, ground water quality analysis and noise) are attached herewith as **Annex-E**

6.5 Suitability of the Site

As the project site is located in industrial area. The site does not fall in environmental sensitive area and all commodities are at a suitable distance from project site as they will not be impacted by the construction and operational activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of proposed project.

CHAPTER 7: IMPACT ASSESSMENT & SCREENING PROCESS

This section discusses the potential environmental impact of instant project, methodologies for impact identifications and characteristics of impacts including nature, magnitude, extent, location, timing, duration, reversibility and risk. The assessment carried out in this Section is based on potential impacts on overall environmental receptors within the project area.

7.1 Methodologies for Impact Identification

During construction phase, adverse environmental & social impacts were depending on the resources and receptors involved along with other parameters such as; geographical scope (magnitude and extent), temporal scope (duration) and reversibility. But for establishment of instant project constructed industrial building has been taken on lease and it has been anticipated that this project will have beneficial social impacts, it will bridge the gap between supply & demand, employment opportunity will be increases for which locals will be preferred and socio-economic uplift of the proponent. Having identified and characterized the potential significant impacts during design, construction/ installation and operation phase of project an Environmental Impact Severity Matrix & //checklist to summarize all the identified impacts as mentioned below in tables.

Table 14: Impact Significance Criteria

Impact	Criteria
No Impact	When the said activity will have no impact
Long Term	When the impact is of high intensity with high spread and high duration or of high intensity with medium spread and medium duration
Moderate Term	When the impact is of moderate intensity with high spread and high duration or of high intensity with low/ moderate spread and low
Short Term	When the impact is of low intensity but with moderate spread and moderate duration or of moderate intensity
Insignificant	When the impact is of low intensity, low spread and low duration
Adverse	When the impact is of large intensity, spread easily and long-term
Beneficial	When the impacts are positive and improve the environmental conditions



Table 15: Impact Matrix Checklist for Construction Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		Impact Significance				
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
Physical Parameters													
Air Quality	✓											✓	
Noise		✓										✓	
Water Quality		✓										✓	
Biological Parameters													
Land Environment													
Flora													
Fauna													
Physical Parameters													
Local Economy	✓												
Social Impacts	✓												
Health & Safety	✓												

Table 16: Impact Matrix Checklist for Operational Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		Impact Significance				
	Low Intensity	Moderate Intensity	High Intensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
Physical Parameters													
Noise		✓											
Water Quality		✓											
Air Emissions	✓												
Biological Parameters													
Land Environment													
Flora													
Fauna													
Physical Parameters													
Local Economy													
Social Impacts													
Health & Safety													

7.2 Characteristics of Impacts

The impact characteristics are identified to screen out potentially insignificant environmental and social impacts from potentially significant adverse environmental and social impacts during planning & designing, construction and operational phases of the



project. The objective of impact screening process is to assess the significance of issues related to the air, water, noise, soil, transportation, civil work, communication, the hazards and external constraints. The beneficial and adverse impacts of project during planning & designing, construction/ installation and operational phases are identified based on their duration, location, frequency, extent, significance and reversibility. The impact of each activity on various environmental parameters is given below:

Table 17: Impacts Characteristics

Sr#	Environmental Component	Impact Characteristics												
		Duration		Location		Frequency		Extent		Significance			Reversibility	
		Long	Short	Direct	Indirect	Cont.	Intermittent	Wide	Local	Large	Moderate	Minor	Rev.	Irrev.
Beneficial Impacts														
1	Employment	☑		☑		☑			☑		☑		☑	
2	Solid Waste Management	☑		☑		☑			☑		☑		☑	
3	Land Value	☑			☑	☑			☑			☑		☑
4	Tree Plantation	☑		☑		☑			☑		☑			☑
Adverse Impacts														
1	Solid Waste	•		•		•			•			•	•	
2	Health and Safety		•		•		•		•			•		•
3	Physical Hazards		•	•			•		•			•		•
4	Security Risks		•	•			•		•			•	•	
5	Wastewater		•	•		•			•			•	•	
6	Air Emissions	•		•		•			•		•			•

CHAPTER 8: SCREENING POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This Chapter identifies the potential impacts (positive and adverse) on the physical, biological and socio-economic environment of project area due to instant project. It also identifies measures that will help to mitigate the adverse environmental and social impacts (if any) and it will enhance positive impacts of the project. Impacts are assessed by analyzing their magnitude and sensitivity, which is a legal requirement.

8.1 Project Location

The instant project is extension of Automobile Assembling Unit within premises of M/s Sazgar Engineering Works Limited many other industries are present near the project site. There is no human settlement, heritage building, social structure, grassland or preserved area in the project vicinity that could be damaged, dislocated or dismantled due to the project activity in said area. The selected land is owned by M/s Sazgar Engineering Works and land ownership documents area attached herewith.

Nature of Impact

The nature of the impact will be direct, low, short-term and hence in-significant.

Mitigation Measures

No impacts due to project location as the project is the Automobile Assembling Unit going to be established within premises of M/s Sazgar Engineering Works Limited and site is present within industrial cluster nearby industrial estate.

8.2 Design

The said project is designed to assemble automobile parts having capacity of 30,000 units per annum. However, in designing phase a management system should be devised & implemented to control the anticipated environmental impacts. The design of the instant project will adhere to all standard technical requirements in order to avoid adverse impacts on socio-environmental aspect.

Nature of Impact

The nature of impact will be direct, low, short-term and hence in-significant.

Mitigation Measures

Following mitigation measures will be adopted while designing the foresaid project:

- The process employed for the manufacturing is simple & environmentally friendly.
- The project is design to minimize the air & water pollution in-check.
- On-site training safety training will be given to the workers.
- Fire-fighting equipment will be installed on-site.

8.3 Impacts and Mitigation Measures during Construction Phase

During the construction phase following activities will be carried out on-site; civil structures work and building services. It would bring in immediate but short-term changes on various components of environment near the project site. This section explains how aforesaid project will affect different environmental aspects and its mitigation measures to manage the impact. The anticipated impacts will be temporary and localized in nature. Even though, the measures are proposed to minimize such impacts.

8.3.1 Soil Contamination

During constructional activities the chances of soil erosion and contamination are less, as no major constructional activities will be involved in said project. There are low chances of land contamination due to release/spill of lubricants, oil and other materials as no major construction is involved. The impact will be short term, localized and can be controlled through immediate appropriate management and mitigation measures. This impact is considered negative of minor magnitude. Hence, the impact is insignificant.

Nature of Impact

The nature of said impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted to protect the soil from erosion and contamination:

- Spill prevention and response plan for storage, usage and transfer of fuel should be prepared (if used on site) and implemented.
- Workers should be trained on spill prevention and response plan (if needed).
- Maintenance of vehicles as well as equipment will be carried out at designated areas within the facility.
- Any hard surface or tarpaulin should be spread on area to prevent soil contamination.
- Regular inspections should be carried out to detect leakages in construction vehicles and equipment.
- Machinery involved should be maintained properly to avoid leakages.
- The proponent will be required to instruct and train their workforce in storage and handling of materials that can potentially cause soil contamination.
- Solid waste generated during construction/installation will be properly and safely disposed of as per practices of area.

8.3.2 Air Emissions

The main source of air emission during said phase is dust. It will be generated due to movement of equipment at the site other constructional activities. Dust emissions are expected to result in increased particulate matter thus affecting baseline air quality, primarily in working area for a short duration.

Nature of Impact

The nature of proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted:

- In order to reduce concentration of suspended dust particles & transport roads will be sprinkled with water on the regular basis.
- Construction activities causing dust should not be carried out on excessively windy days.
- Workers will be provided with masks for protection against the inhalation of dust and they should be trained for its use.
- Strict speed limit for the vehicle carrying the raw-material should be imposed.
- Emission of exhaust gases from vehicles used for construction should be controlled.

8.3.3 Impact on Water Environment

The constructional activities will be associated with mechanical fabrication, assembly and erection. These associated activities do not consume large quantities of water. Sanitation facility present in Business Park will be used by the work force. The overall impact on water environment due to aforesaid project activities are considered short-term and in-significant.

Nature of Impact

The nature of said impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted:

- Water conservation techniques should be adopted to conserve water.
- Labor should be trained to conserve the water.

8.3.4 Impact on Flora & Fauna

No impact on the flora and fauna is being envisaged as said project will be established within premises of M/s Sazgar Engineering Works Limited. No additional disturbance is being envisaged for implementation of said project.

Nature of Impact

The nature of said impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted:

- After the completion of constructional phase trees will be planted in the designated green areas.
- For the management of landscape, local and native trees will be planted.
- Trees will be planted along the project area boundary.
- Unnecessary up-rooting of the trees and plants must be avoided.

8.3.5 Impact on Noise Environment

The noise produced during construction phase may not have significant impact on the existing ambient noise levels as all sensitive receptors are located at adequate distance. The activities like; foundation, infrastructure and plant are considered as the main source of noise generation. The major civil work will be carried out during the day hours only. The construction equipment may generate high noise which can affect the personnel operating the machines. Use of proper personnel protective equipment will mitigate any adverse impact of noise on the working population.

Nature of Impact

The nature of proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted:

- Selection of up to date and well-maintained equipment with reduced noise levels ensured by suitable in-built damping techniques or with appropriate muffling devices.
- Limiting noisy activities to the day hours, wherever possible.
- Providing the construction workers with suitable hearing protection like; ear cap, or earmuffs and training them how to use effectively.
- Use of low noise machinery, or machinery with noise shielding and absorption are the mitigation measures suggested for said project.

8.4 Socio-Economic Impacts:

In project area, no significant changes are envisaged in traditional life style and occupation of local people residing in the nearby communities as it is being established at adequate distance from various sensitive receptors. The local people are rather benefited due to the provision of job opportunities. No impact is envisaged due to influx of workers as local will be preferred and hired for working. Social issues may arise which will cause minor negative impact on the social life style of people. Moreover, health and safety related issues may arise during the construction activities.

These impacts are in-significant can be further reduced significantly by adopting best management practices.

Nature of Impact

The nature of said impact will be direct, low, short-term and hence in-significant.

Mitigation Measures

Following mitigation measures will be adopted to reduce the socio-economic impact on the community:

- Good relations with local communities will be promoted by encouraging Contractor to provide opportunities for skilled and un-skilled employment to the locals as well as on-job training.
- The contractor should prefer hiring local labor from adjacent community;
- The contractor will keep the copy of National Identity Card (CNIC) of his employees and will warn the workers not to involve in any anti-social activities otherwise they may face dire consequences.
- At the time of hiring the Contractor has to ensure that workers should be of good repute.
- First aid kits having all the necessary first aid stuff will be available at site.
- Routine medical check-ups of all the field staff including unskilled labor needs to be conducted by qualified physician and surgeon.
- Training of workers should be carried out for operating various constructional machinery, safety procedures should be adopted, environmental awareness should be carried out, equip all workers with safety boots, helmets, gloves, protective masks and monitoring of their proper and sustained usage will be carried out. In case of accidents, contractor will provide free medical treatment to the community.
- The Contractor will be responsible for sensitivity towards the local customs and traditions.

8.5 Impacts and Mitigation Measures during Operational Phase

The following section describes the potential impacts which are associated with the operation of above stated project.

8.5.1 Noise

Noise pollution is not expected to occur beyond PEQS during the operational phase. The mechanical and electrical components of the proposed technology work within the permissible noise limit levels. Moreover, even if the noise level exceeds the allowable levels during unexpected conditions, this will have no significant impact since the nearby residential areas are found at the safe distance as shown in the Google Earth Maps attached in **Section 3.1** and **Section 5.3**.

Nature of impact

The nature of said impact will be direct, low, short-term and hence in-significant.

Mitigations

In general, the following methods will be adopted to control the noise pollution from the proposed unit:

- Personal protective equipment like; ear plugs and ear muffs should be provided to employees working in the noise prone areas.
- Time to time tuning and maintenance of machineries should be done.
- Ambient noise levels as mentioned in PEQS will be complied.
- Monitoring of the ambient noise level will be carried out on regular basis.
- A greenbelt will be developed all around the plant which will be act as noise barrier.
- Residential area is at safe distance from selected site.
- Proper encasement of noise generating sources will be done to control the noise levels within limits.
- The use of complete or partial enclosures as and if required.
- Attenuation by use of sound absorbents on walls and fixed or suspended ceilings
- All the workers will be provided with ear plugs. All the transporters will be vised to carry out regular maintenance of their vehicles

8.5.2 Ambient Air Quality

During operational phase of said unit there will be no source of air pollution during process activities. Only the dust can be generated from unloading or loading of raw material.

Mitigations

Following mitigation measure will be adopted to keep the ambient air quality of the area intact.

- PPEs along with the face mask will be provided to the workers and their regular usage will be ensured by the In-charge.
- Proper air circulation will be carried out to keep the indoor environment healthy.
- Company owned vehicles will be maintained on regular basis in order to avoid air emissions.
- Monitoring of the ambient air quality will be carried out on regular basis.
- Generators will be provided with proper enclosure, tuning and maintenance to control emissions (if any).

8.5.3 Water Management & Wastewater

It is estimated that under normal conditions, there should be no emissions to sewer or waters from vehicle coating and refinishing operations using solvent coatings. The source of such emissions would be waterborne paint gun washes and spray booth wash waters. Emerging treatment for such waste water is chemical flocculation followed by filtration or sedimentation.

There are several areas with a potential to contaminate waters via accidental discharge to drains and sewers or onto ground. These include gun wash within the paint gun cleaning unit, residues from solvent-containing paint, waste gun cleaner or dirty water from wet filters (where used). There should be no open drains or sinks where solvent materials are being handled or stored. Other liquid waste include paint overspray caught by emissions control devices and unused paint.

Local communities and the environment may be affected by pollution due to discharge of untreated wastewater. The toxins in such water may affect local ecology as well as posing a hazard to drinking water supplies and contaminating land.

Nature of Impact

The nature of the impact will be direct, low, short-term

Mitigation

Following mitigation measures will be adopted to reduce the impacts on water resource

- Minimize the consumption of water used in production processes and equipment cleaning.
- Consider upgrades to wastewater treatment facilities.
- Recycle wastewater where possible, e.g. certain solvent wastes such as gun wash can be sent for recovery and reuse in another application where these facilities are available
- Ensure untreated wastewater does not discharge to watercourses through use of wastewater treatment facilities and monitoring of wastewater discharges.
- Discharge effluent will be treated in wastewater treatment plant

8.5.4 Solid Waste Management

The solid waste may arise from several sources during assembly and the majority of wastes by volume result from packaging - reusable or disposable. Reusable packaging covers metal racks, bins and containers and disposable packaging covers wood pallets, cardboard, plastic, polystyrene and polythene film.

Other solid wastes include:

- Scrap metal from the press shop, which is normally recycled off-site.
- Metal-rich dust generated by the abrasive disc smoothing of welds and soldered joints.
- Sludge generated by wastewater treatment facilities of equipped vehicle manufacturing plants.
- Additional wastes arise from general operations, cleaning and maintenance and the disposal of faulty equipment and parts.
- Improperly disposed of waste can lead to pollution and ground contamination

Nature of Impact

The nature of impact will be direct, medium, long-term and significant.

Mitigation

Following mitigations should be adopted to reduce the issues related to the solid waste:

- The reusable waste will be sold to the in the open market whereas the rest will be managed as per the municipal work practices being observed in the area.
- Recyclable material should be separated at source and will be sold in the open market or to vendor (if any).
- Domestic solid waste should be stored in the covered bins in order to avoid the growth of vectors and rodents as well as to control the odor and to reduce public nuisance. It should be collected and disposed of as per area practice.
- Appropriate in-housekeeping, sanitary and solid waste management practices should be adopted.
- Regular visual monitoring will be carried out to ensure good house-keeping practices.

8.6 Possible Emergencies and Plant Failure

Operational difficulties may be experienced at start-up or during periods when equipment malfunctions. For this purpose, vendor will train the team and that team will give trainings to the other team members.

Nature of impact

The nature of said impact will be direct, medium, long-term and hence significant.

Mitigations

- Equipment should be kept in good operating conditions to prevent equipment failure.
- Training program for operation and maintenance activities should be included as part of the project's technical assistance program.
- Regular inspection should be carried out.
- Engines and other machines should be maintained on regular basis.

8.7 Emergency Response

Emergency response preparedness committee will be formulated consisted of heads of departments. Project Manager/ HSE Manager will be the head of the team who will chair incident control. In the case of minor emergency, the first aid box will be provided. For incidents and accidents that may take place unexpectedly during project operations no matter how effective, strong and efficient the mitigation measures for all adverse impacts; especially the safety issues may be adopted. These may include; accident and natural disasters.

Nature of Impact

The nature of the said impact will be direct, low, long-term and hence significant.

Mitigation

- Workers should be given adequate training of handling machinery.
- Emergency call service must be made available 24/7.
- The drills to check the response of the workers against any emergency situation will be carried out on regular basis.
- Safety and hazards signs will be displayed within the facility to avoid any unfortunate incident.
- Only authorized persons will be allowed for the handling of the chemicals.

8.8. Occupational Health and Safety

Chemicals involved in the motor vehicle assembly may have a wide range of hazardous effects, including being toxins, carcinogens or highly corrosive upon skin contact. Direct skin and eye exposure to and/or inhalation of hazardous chemicals can result in health impacts for workers. Prolonged exposure over years can induce chronic health effects. Particular substances to be aware of include:

- **Coating powder.** Some components of coating powders can cause irritation of lungs, eyes and skin and allergic skin reactions. They can also cause long-term health effects or asthma.
- **Curing agents.** Some curing agents may damage genetic material, which could cause some diseases including cancer and impaired fertility.
- **Organic solvents.** The most commonly used solvents for degreasing are chlorinated solvents. These substances may be harmful to health if inhaled. The ill-health effects from inhalation would depend on the substance in use and the concentration and length of exposure. At high concentrations all organic solvents exert a strong narcotic effect and can be fatal. Skin exposure can cause irritation and dermatitis.

Mitigation Measures

- Provide personal protective equipment (PPE) that is fit for the task to prevent injury and maintain hygiene standards.

- Train staff in the correct selection, use and maintenance of PPE, and put in place measures to encourage/ mandate its use.
- Implement a program of assessment of routine monitoring of worker health

8.9 Noise and Vibration

Vehicle assembly plants can be noisy work places due to the high level of use of machinery. Transport of products by road may also generate noise. Those at risk include machine operators and those working nearby, e.g. maintenance staff, cleaners, forklift truck drivers and shop floor supervisors. Noise may reach levels that are hazardous to health, leading to symptoms associated with permanent deafness. Noise, particularly during unsocial hours, may cause annoyance or disruption to local communities.

Hand-arm vibration syndrome from the prolonged use of vibrating tools and machinery causes effects on the body's blood circulation known as 'vibration white finger' (VWF). Other damage may be caused to the nerves and muscles of the fingers and hands causing numbness and tingling, reduced grip strength and sensitivity. Pain and stiffness in the hands, and joints of the wrists, elbows and shoulders are other possible symptoms.

Mitigation Measures

- Conduct a noise survey and mark out dedicated areas with signage where there are elevated noise levels and PPE is required.
- Enclose noisy machines to isolate people from the noise where practicable.
- Reduce vibration exposure times and provide PPE where people may be exposed to vibration.
- Limit scrap handling and transport during unsocial hours to reduce noise.

8.10 Machinery

Moving parts of machinery can result in entanglement and entrapment. Particular attention should be paid to the following situations:

- Handling sheet or strip metal.
- Handling of small pieces of metal with sharp edges during work at presses.
- Accidental contact with scrap metal, banding, principally during cleaning and disposal.
- Contact with machinery blades, cutters or tools during use and when fitting, removing, cleaning or storing.

Mitigation Measures

- Train staff in correct selection, use and maintenance of PPE.
- Train workers in correct use of machinery and safety devices.
- Avoid direct handling of sharp edged items and/or remove sharp edges by machining.

8.11. Manual Handling and Repetitive Works

Lifting and carrying heavy or awkwardly shaped objects, such as bags, can result in manual handling injuries.

Mitigation Measures

- Redesign manual processes and rotate work tasks to reduce heavy lifting/repetitive activities, and where possible install mechanical lifting aids.
- Train workers in correct lifting technique.
- Separate people from moving equipment:
- Ensure that the process layout reduces opportunities for process activities to cross paths; and
- Install safeguards on moving parts of conveyor belts to reduce the risk of entrapment of employees.
- Install walkways to separate people from vehicle movements to reduce risk of collision

8.12 Strips, Trips and Fall

These are primarily caused by uneven surfaces, inappropriate footwear, poor lighting, weather conditions, trailing cables and pipe work, especially during unblocking, maintenance and cleaning activities.

Mitigation Measures

- Ensure that walkways are constructed of non-slip materials and route cables and pipework under walkways.
- Working Conditions
- Implement a program of routine monitoring of worker health.

Implement a grievance/dispute resolution mechanism for workers

8.13 Potential Environmental Enhancement Measures

Following potential environmental enhancement measures will be adopted:

i. Enhancement in Employment Opportunities

During construction the employment opportunity will be enhanced. Workers will be hired from local community, include; skilled and un-skilled workers. During construction phase 10-15 workers will be hired and in operational phase approximately 120 workers will be employed. It will include technical and non-technical staff. Locals will also have the opportunity to diversify their income by being employed during various project phases. Hence, there will be an increased employment opportunity for the local people which will have a positive impact on the socio-economic status of the area.

ii. Tree Plantation

At the end of the establishment of packaging industrial unit landscape of the area will be enhanced by planting native and ornamental plants at the designated green areas. This will enhance the aesthetic beauty of the area.

CHAPTER 9: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

9.1 General

This chapter summarizes the various mitigation measures as outlined previously in this EIA Report that will be implemented during the designing, construction operational and decommissioning stages of project. It does not discuss further the mitigation measures which have been adopted within the design and planning of the project, as these are comprehensively covered in previous section of this EIA Report. Outline and key features of the EMMP for operations phase of the aforesaid project is presented in the sub-sections below. As per the environmental legislation in Pakistan, the compliance status of the conditions mentioned in the construction should be submitted along with other documents to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and requires regular environmental monitoring.

9.2 Objectives.

An Environmental Monitoring Plan (EMP) was outlined alongside Environmental Management Plan to ensure all the corrective actions to counter adverse impacts which gives a detailed EMMP. The EMMP will serve as a principal execution module of the project that would not only mitigate adverse environmental impacts during the construction and the operational phase of the project but also ensures that environmental standards and good in-housekeeping are being practiced. Continuous environmental monitoring is exercised to ensure that preventive measures are in place and effective to sustain environmental integrity. The key objectives of EMMP are:

- To outline functions and responsibilities of persons associated with the commencement of the instant project.
- To state and implement standards and guidelines which are required under environmental legislations particular in context to the proposed project commencement.
- To facilitate the implementation of the mitigation measures by providing the technical details of each Project's impact and proposing implementation schedule of the proposed mitigation measures.
- Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and effectively implemented.
- Identify the resources required to implement the EMMP and outline corresponding financing arrangements.

9.3 Proposed Mitigation Actions and Monitoring Program

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect in line during construction phase and operational phase with the administrative framework involving all the responsible implementing authorities who are required to take the planned actions/measures and monitor it accordingly. It enhances project benefits by reducing its impacts and making it environmentally friendly. The environmental management and monitoring plan is given below in Table 18.

Table 18: Environmental Management Plan

Project Activities	Type of Impact	Potential Impacts on Environment	Mitigation Measure	Monitoring	Responsibility
Land acquirement and land use	Physical, Social and Aesthetical	Positive use of land but proper planning will be required	<ul style="list-style-type: none"> • Extension of Automobile Assembling Unit will be done within premises of M/s Sazgar Engineering Works Limited and site is present within industrial cluster. • The leftover constructional waste will be removed as soon as possible after completion of the constructional activities. • Visual monitoring will be carried out to keep in check the in-house keeping practices and other hazards in check. 	Visual Monitoring	Proponent* Proponent may give responsibility to contractor
Use of local manpower	Social	Employment Generation	<ul style="list-style-type: none"> • Local people will be hired for less technical work or non-skilled work. • Locals will be preferred and will be involved at various stages of project development. • This will improve the socio-economic status of the people directly linked with the project. 	Regular checking & inspection by HR Manager	Proponent*
Civil works	Physical, Social, & Aesthetical	Dust, Noise & Vibration, Employment, Health & Safety of Workers	<ul style="list-style-type: none"> • Water sprinkling will be done to reduce dust emissions. • Noise control measures will be implemented. • Safety of the workers should be protected where the physical activity is involved. • PEPS will be provided to the workers and their usage will be ensured. 	Visual Monitoring & Regular Inspection on daily basis	Proponent*



Movement and fueling of vehicles	Physical & Aesthetical	Noise, dust	<ul style="list-style-type: none"> Maintenance and inspection of vehicles should be carried out on regular basis. Vehicles with leaks will not be operated. All vehicles carrying raw material and equipment's will be maintained in good working condition. 	Regular checking while entering and exit of the vehicles from the facility	Proponent*
Transportation of construction material	Bio-physical	Dust and Particulate, Noise Generation, Safety and Health Effects	<ul style="list-style-type: none"> Excessive use of horns will be avoided up to the extent possible. PPE's will be provided to workers and their usage will be ensured. Covering of raw-material transporting material trucks with tarpaulin. Night time driving of project vehicles will be limited whenever possible. Noise will be monitored on regular basis by using Digital Sound Meter. 	Regular checking while entering and exit of the vehicles from the facility	Proponent*
Ovens of paint Lines	Air Emissions	Ambient Air Quality of the area	<ul style="list-style-type: none"> The exhaust air volumes from Ovens will not discharge to atmosphere directly but they will be treated through process called incineration. In this process, the solvent fumes containing exhaust air will be combusted at high temperature and rotated back to the oven. Ovens are designed in such a way that the 10 percent of gas is discharged to the atmosphere after incineration while 12-15% fresh makeup air will be added after filtration. 	Regular monitoring of the ambient air quality by EPA Certified Lab	Supervisor/ HSE Manager



		<ul style="list-style-type: none"> • Proper ventilation plan, good housekeeping, and regular monitoring for preventive maintenance are the control measures which will check air pollution. • Air masks, helmets and safety uniforms will be provided to the workers and proper check will be made to check its compliance in the premises. • No anticipated air pollution will occur as the plant will be equipped with best pollution control technologies. • Ambient air monitoring will be carried out as per SMART Rules to comply with PEQS. • PPEs along with the face mask will be provided to the workers and their regular usage will be ensured by the In-charge. • Proper air circulation will be carried out to keep the indoor environment healthy. • Company owned vehicles will be maintained on regular basis in order to avoid air emissions. • After the completion of the construction trees will be planted in open green areas which will improve the aesthetics of the site and improve ambient air quality of the area. 		
Wastewater	Water quality	<ul style="list-style-type: none"> • Phosphate Tank: waste water produced will be treated through Sedimentation and Filtration process • Paint Booth: Chemical Treatment will be adopted to mitigate the effects • Proper waste water management will be carried out to control the anticipated impacts in the environment 	Wastewater will be monitored as per SMART Rules to	Supervisor/ HSE Manager

			<ul style="list-style-type: none"> • Close the water tap when not in use to conserve the water resource. • Provision of safe drinking water to the workers will be ensured. • No wastewater will be disposed of into drain without being treated in installed Wastewater treatment plant. • The final sewage discharged from the unit will be monitored as per SMART Rules to comply with PEQS. 	comply with PEQS	
	Solid waste	Land pollution & health impacts	<ul style="list-style-type: none"> • Recyclable material should be separated at source and will be sold in the open market or to vendor. • Domestic solid waste should be stored in the covered bins in order to avoid the growth of vectors and rodents as well as to control the odor and to reduce public nuisance. It should be collected and disposed of as per area practice. • Good management practices should be adopted to avoid the spread of diseases among the locals. • Appropriate in-housekeeping, sanitary and solid waste management practices should be adopted. • Regular visual monitoring will be carried out to ensure good house-keeping practices. 	Regular visual monitoring will be carried out to ensure good house-keeping practices	Housekeeping staff



9.4 Schedule for Implementation and Environmental Budget

The construction will be completed within 3-6 months after getting Environmental Approval/NOC. The total cost of the project is **PKR 6 Billion PKR approx.** which includes; the cost of civil work, purchase of machinery and its installation, implementation of mitigation measures as suggested in EIA Report, site restoration, etc. Environmental budget of **PKR 2 million** will be allocated to protect the environment which will include; tree plantation, environmental monitoring as per SMART Rules, etc.

9.5 Environmental Management Team

The primary responsibility for implementing different aspects of the EMP within the company lies with the concerned departments of M/s Sazgar Engineering Works Limited.

9.6 Proposed Monitoring program

Environmental monitoring is a vital component of the Environmental Management Plan. It is the mechanism through which the effectiveness of the EMP in protecting the environment is measured. The feedback provided by the environmental monitoring is instrumental in identifying any problem or lapse in the system under implementation and planning corrective actions. For domestic activities already constructed facilities will be used. Solid waste disposal will be according to standard practices of area. It should be noted that it is difficult to outline a formal monitoring protocol for specific environmental parameters and key impacts until detailed project design has been completed. A formal monitoring protocol will be included within the revised EMP once the detailed project design has been completed.

Table 19: Proposed Monitoring Program

Components	Parameter to be Monitored	Measurement	Frequency	Location	Responsibility
Land Resource	Soil quality	Regular visual monitoring and soil analysis	Daily	On-site	Project Manager
Noise Levels	Noise level on the site and adjacent area on dB(A) scale	Noise level reading will be measure on regular basis	Regularly	At all noisy locations within the facility	HSE Officer
Workers safety	Injuries and accidents	Recording injuries	Daily	On-site	HSE Officer



Wastewater	As per SMART Rules	Testing by EPA Certified Lab	Monthly	On-site	Environmental Manager, HSE Officer
Air Emissions	As per SMART Rules	Testing by EPA Certified Lab	Monthly	On-site	Environmental Manager, HSE Officer
Ecological Resource	Flora & Fauna of the area	Observation by conducting surveys	During Baseline Survey, once in a year and after the completion of the Project	Around project site	Project Manager/Environmental manager

9.7 Proposed EMP reporting and reviewing procedures

Following protocols will be adopted for reporting & reviewing EMP:

- During construction EMP reporting and reviewing will be done by the contractor/HSE department. Regular monitoring will be done and reports will be submitted in EPA, Punjab as per condition of Environmental Approval of construction/Installation phase.
- Monitoring reports will be reviewed by Environmental Management Team and HSE Department of M/s Sazgar Engineering Works Limited and then will be shared with EPA, Punjab.
- Photographic records will also be maintained on regular basis.
- Recorded data will be reviewed by supervisory contractor/proponent so that it can be further improved if required.

9.8 Environmental Training

M/s Sazgar Engineering Works Limited will ensure in-house training for the project staff, labor and the supervisory staff through the provision of one day basic training and one day advanced training, covering environmental and social aspects of the projects in general and implementation requirements will emphasis on the development project in general, on the roles & responsibilities of the staff and the labor while executing the



environmental monitoring plan in particular. The training protocols will include the following aspects:

- Procedures for monitoring the air quality parameters and measures to be adopted for avoiding/minimizing air pollution, particularly from the transportation of raw material and final goods will be given to the Environmental Management Team.
- Safety measures against hazards for workforce and the local communities arising from the construction and installation activities.
- Emergency response trainings.
- Fire-fighting trainings and drills.
- Use of safety gadgets by the workforce.

CHAPTER 10: STAKEHOLDER CONSULTATION

10.1 General

Public consultation refers to the process by which the concerns of local affected persons and others who have plausible stake in impacts assessment of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the IEE and EIA Review Regulations, 2022 public consultation is mandatory for any socio-environmental study. For this purpose, assessment survey and public consultation sessions held with different stakeholder groups that may be impacted. The consultation process was carried out in accordance with the guidelines laid by EPA, Punjab. The objectives of this process were to:

- Share information with stakeholders on project construction and operation.
- To access the impacts on the physical, biological, and socio-economic environment.
- Understand stakeholder concerns regarding various aspects of the project.
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area.
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of said project.
- To invite people to express their views about the positive/negative impacts on their life styles and environment.

This report includes all the comments, which were taken into account in preparing the definitive development concept for the installation of the purposed plant. Public consultation performas are attached herewith as **Annex-F**.

10.2 Consultation Mechanism

Primary stakeholders were consulted during informal and formal meetings. The consultation process was carried out in the Urdu language. During these meetings a simple, non-technical, description of the project was given, with an overview of the project's likely human and environmental impact. This was followed by an open discussion allowing participants to voice their concerns and opinions. In addition to providing communities with information on the proposed project, their feedback was documented during the primary stakeholder consultation. The issues and suggestions raised were recorded in field notes for analysis and interpretation.

By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal EIA involved the community in active decision-making. This process will continue even after this EIA has been submitted, as well as during future EIA in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues.

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to-face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA Report.

This section involves communication of possible impacts and concerns with

- ✓ Proponents Environmental Management Team
- ✓ The responsible authority
- ✓ Other departments and agencies
- ✓ Environmental Practitioners and experts
- ✓ Affected and wider community

10.3 Proponents Environmental Management Team

Consultation regarding M/s Sazgar Engineering Works Limited was done with Proponent's Environmental Management Team and anticipated impacts were discussed. Concerns of locals, Environmental Practitioners & experts were discussed and asked to consider them while construction of above-said project. Locals will be preferred for employment after providing proper training. Mitigations measures mentioned in EMP will be truly implemented.

10.3.1 Responsible Authority

Overall responsibility for implementation of EMP will be that of project proponent. An HSE Manager/Asst. Manager of relevant qualification will be appointed. HSE Manager/Asst. Manager will act as Environmental Manager and will manage the all-safety related hazards, environmental issues and ensure the compliance of PEQS.

10.3.2 Other departments and agencies

Different departments were consulted regarding said project within study area of project area.

10.3.3 Consultation with Government Departments

Various departments were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices.

10.3.4 Environmental Practitioners and experts

Consultation with environmental practitioners and experts was noted and their comments and suggestions were observed and mentioned below.

Table 20: Consultation with Environmental Practitioners and Experts

Sr. No	Name	Qualification	Comments/Suggestions
1.	Nimrah	B.S Environmental Engineer	<p>She said that:</p> <ul style="list-style-type: none"> Environmentally friendly operation of said facility should be ensured. Moreover, it will help to comply with PEQS. Wastewater should be disposed of properly.
2.	Salman	BS Environmental Sciences	<p>Following comments/suggests were noted:</p> <ul style="list-style-type: none"> He said that locals should be preferred for employment opportunity. In case of outsider's residence must be provided within the facility or in its nearby vicinity. Proper mitigation measures must be adopted during construction and operation of said project.
3.	Farah	B.S Environmental Engineer	<ul style="list-style-type: none"> She said that in case of removal of vegetation trees must be planted after construction at designated green areas. More water conservation strategies must

			<p>be adopted.</p> <ul style="list-style-type: none"> • Solid waste must be collected and dispose off properly by using standard practices of the area.
4.	Tania	B.S Environmental Engineer	<ul style="list-style-type: none"> • Proper leveling and commissioning must be done at the end of civil work. • Environmental manager must be hired to ensure the compliance of PEQS. • By installation of said project the impact due to the disposal of wastewater should be adopted as per standard practices of the area

10.4 Affected and Wider Community

Social survey was conducted to consult with local community. Their concerns were noticed and discussed with proponent and their team. Majority was in favor of project their details are given below in table

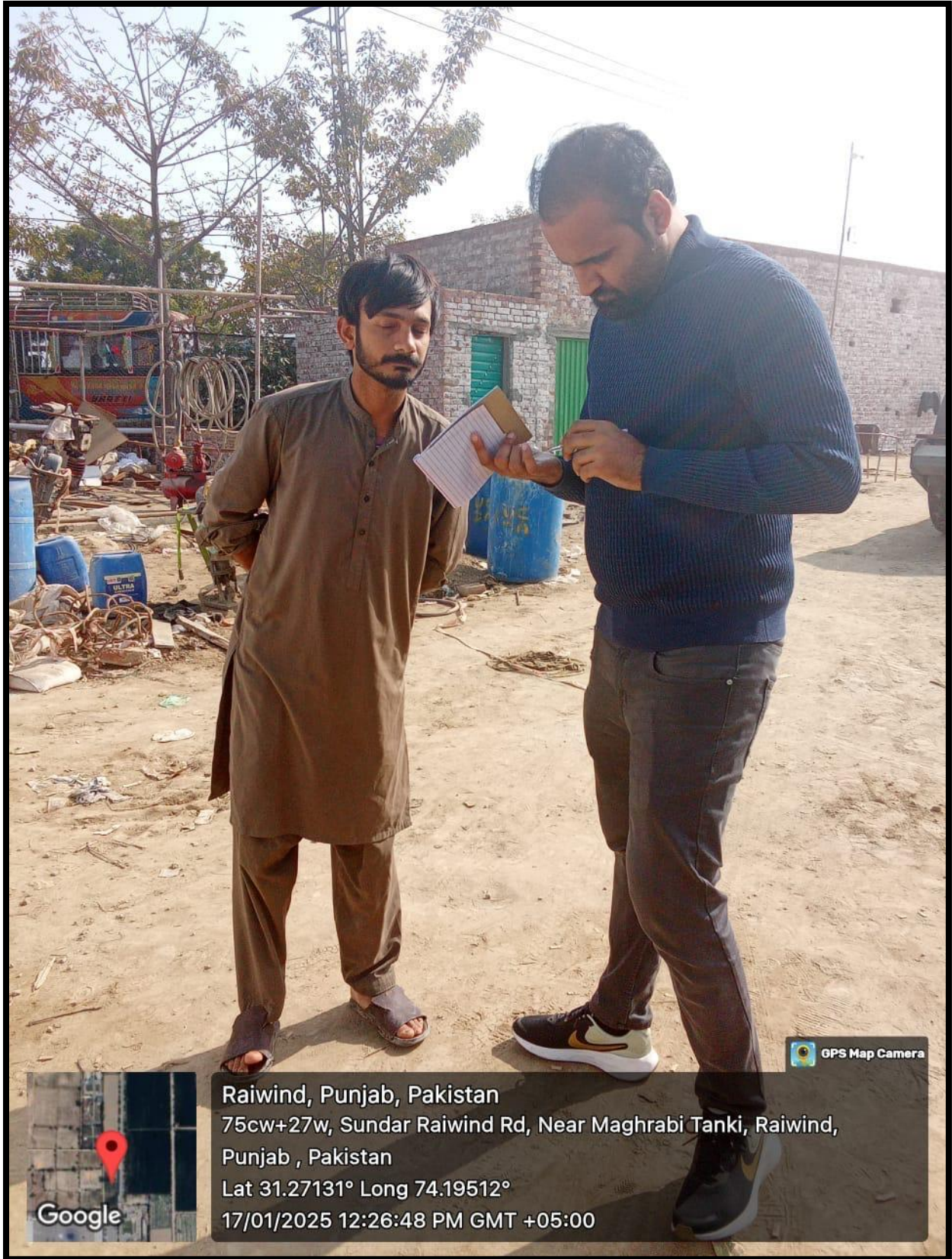
Table 21: Concerns Noted during Community Survey

Sr.#	Respondents	CNIC/Contact No.	Concerns
i.	Mudassar Ali	35102-2959371-3	<p>During the survey in the study area following concerns of the local community were noted:</p> <ul style="list-style-type: none"> ➤ During construction and operation locals should be preferred for the job opportunities. ➤ Solid waste should not be collected at site, it should be disposed of properly. ➤ Health and safety of
ii.	Muhammad Afzal	30402-1033553-1	
iii.	Khadim Hussain	35202-6186717-7	
iv.	Ajmal Shah	35101-2509804-5	
v.	Shazia Ashraf	35102-6733291-6	
vi.	Shaukat Ali	35201-844078-6	
vii.	Javaid Akram Ali	35404-3622616-7	
viii.	Shaista	35201-3236823-4	
ix.	Nazia Bibi	35101-3379008-6	
x.	Muhammad Yasin	35102-9264858-9	
xi.	Tahir Maqsood	35301-5814610-9	
xii.	Rao Abdul Rasheed	35102-0597328-7	
xiii.	Asif Mashi	35102-3522898-9	

			<p>the workers should be ensured.</p> <ul style="list-style-type: none"> ➤ Workers should be hired from local community. ➤ Indigenous trees around the project area should be planted to control air pollution. ➤ During construction phase dust emission should be controlled. ➤ An effective EMMP should be designed and enforced with true spirit.
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17/01/2025 12:24:32 PM GMT +05:00







Figure 25: Stakeholder Consultations