Appendices to Environmental and Social Impact Assessment (ESIA) for Integrated Manufacturing Facility comprising of Particle Board and Captive Resin

Project Location: Naidupeta Tehsil, Tirupati District, Andhra Pradesh

Final Report

November 2023

Client: Greenlam South Limited

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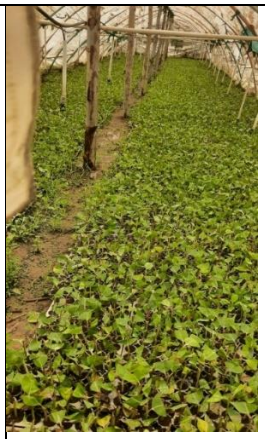

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Some representatives of the floral diversity


Peltophorum pterocarpum (DC.) K.Heyne


Azadirachta indica A.Juss.


Leucaena leucocephala (Lam.) de Wit


Borassus flabellifer L.


Ficus virens Aiton

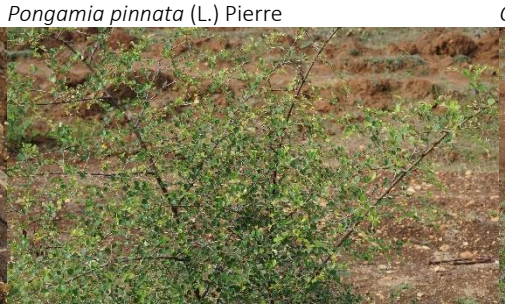

Ficus hispida L.f.


Eucalyptus hybrid


Pongamia pinnata (L.) Pierre

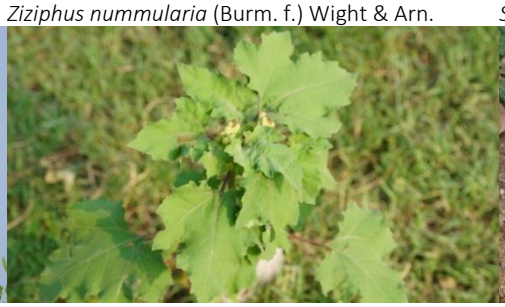

Cissus quadrangularis L.


Calotropis gigantea (L.) Dryand.


Ziziphus nummularia (Burm. f.) Wight & Arn.


Senna auriculata (L.) Roxb.


Dodonaea viscosa (L.) Jacq.


Xanthium strumarium L.


Croton bonplandianus Baill.


Schoenoplectus lacustris (L.) Palla


Ipomoea carnea Jacq.


Typha domingensis Pers.

Some representatives of the faunal diversity


Bonnet Macaque


Common Skittering Frog


Asiatic Water Snake


Lesser Whistling-duck


Indian Spot-billed Duck


Asian Openbill


Purple Heron


Grey Heron


Indian Cormorant


Pied Kingfisher


Intermediate Egret


Indian Pond Heron


Indian Roller


Indian Silverbill

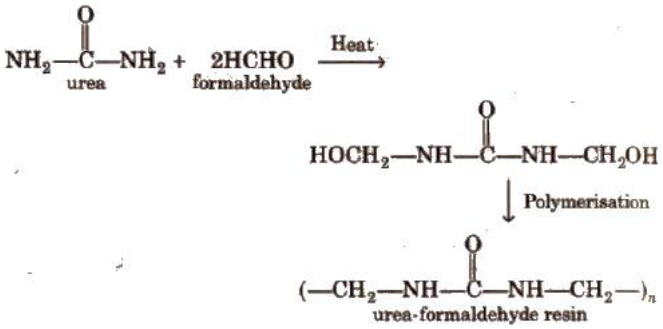

Tricoloured Munia

APPENDIX 3: Detailed Manufacturing Process for Various Resins

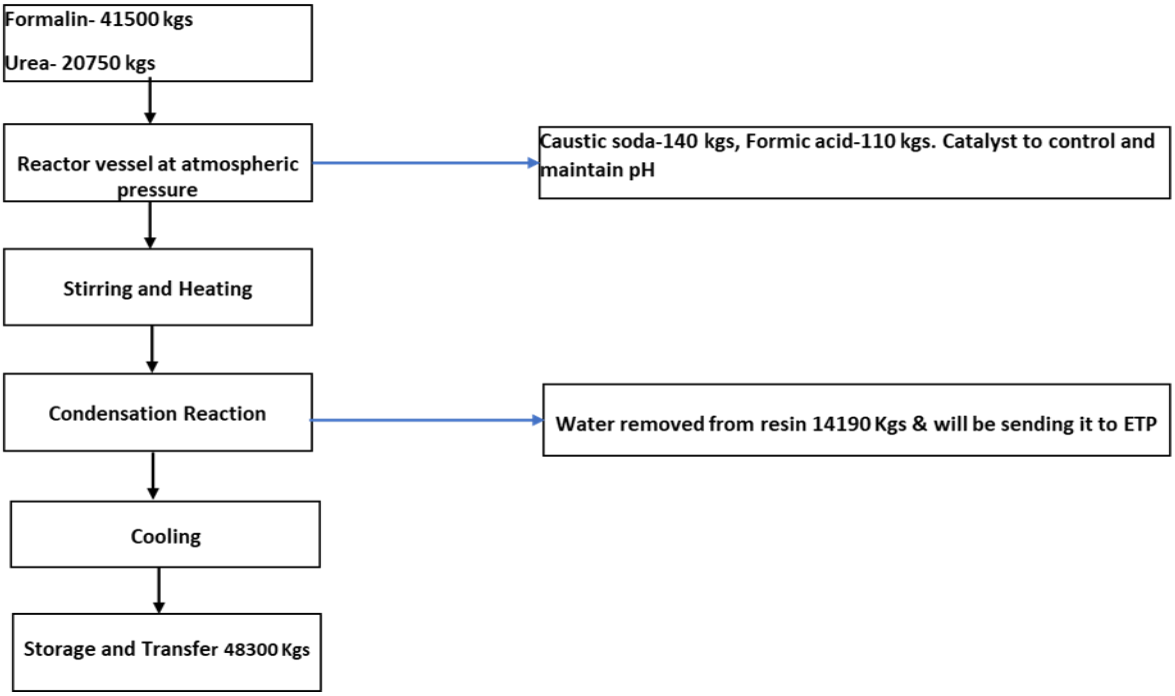
Manufacturing Process of Urea- Formaldehyde Resin for Particle Board

a. Formalin (HCHO), urea (CO(NH2)2) are taken in a kettle and the pH of the solution was adjusted with caustic soda (NaOH) solution;
b. The mixture is then stirred well;
c. The temperature is raised as per the formulation;
d. This is an exothermic reaction, hence heated by steam upto 90°C;
e. The reaction was accomplished by adding caustic soda (NaoH) in the solution. Caustic soda acts as catalyst and to maintain the pH;
f. The condensation reaction proceeds;
g. When the reaction is completed, resin is cooled down to room temperature; and
h. Then the resin is transferred to resin storage tank.

Reaction Chemistry of Urea- Formaldehyde Resin



Urea Formaldehyde Resin Process(For particle plant)-48.3 MT/day



Formaldehyde is used almost exclusively in the production of phenolic resins. The gaseous formaldehyde is absorbed in water, and the final product is aformaldehyde solution containing 36–50 % formaldehyde. Of the various chemicalforms of formaldehyde, the aqueous form is preferred for making phenolic resins,even though at

least half of this form is water. The physical and chemicalproperties of formaldehyde are given in below table.

Mass Balance Of 69 Mt/Day Urea Formaldehyde & Melamine Urea Formaldehyde Resin

Resin Requirement/day and Mass Balance to Produce 750 m3/day Capacity of Particle Board		
Total quantity of Urea Formaldehyde and Melamine-Urea Formaldehyde resin required/day-on Liquid basis	69	MT/day
70 % of the total quantity of resin will be Urea Formaldehyde resin for interior grade board production	48.3	MT/day
30 % of the total quantity of resin will be Melamine Urea Formaldehyde resin for high strength and water resistance board production	20.7	MT/day

Mass balance of 48.30 MT/day Urea Formaldehyde Resin

Sr. no	Raw Material/Chemical Required	Quantity in MT	Remarks
	Total liquid resin quantity required/ day	48.3	Resin used for interior production
1	Formalin	41.5	Input
2	Urea	20.75	Input
3	Caustic	0.14	Input
4	Formic acid	0.11	Input
5	Total quantity of resin before distillation	62.42	Total input quantity-1
6	Water distillation (water removal)	14.19	Sent to effluent treatment plant-Effluent-1
7	**Total resin quantity after distillation**	**48.3**	**Output Quantity-1**

Mass balance of 20.70 MT/day Melamine Urea Formaldehyde Resin

Sr. no	Raw Material/Chemical Required	Quantity in MT	Remarks
	Total liquid resin quantity required/ day	20.7	Resin used for interior production
1	Formalin	16.99	Input
2	Urea	3.84	Input
3	Melamine	5.92	Input
4	Caustic	0.05	Input
5	Formic acid	0.04	Input
6	Green dye	0.01	Input
7	Total resin quantity after distillation	26.85	Total resin quantity after distillation
8	Water distillation (water removal)	6.15	will be sent to effluent treatment plant-Effluent quantity-2
9	Total resin quantity after distillation	20.7	Output quantity-2

Summary Mass Balance

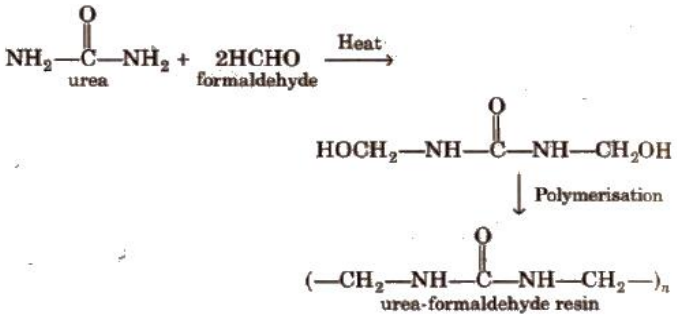
Sr. no	Raw Material/Chemical Required	Quantity in MT	Remarks
1	Total raw material/chemical input	89.35	MT/day
2	Total effluent generated in process through during distillation	20.35	MT/day (will be sent to ETP and then to CETP)
3	Total output resin	69	MT/day

Source: Greenlam South Limited

Manufacturing Process of Urea-Formaldehyde Resin for Pre-Laminated Particle Board

i. Formalin (HCHO) & urea (CO(NH2)2) are taken in a kettle;
j. The mixture is then stirred well;
k. The temperature is raised as per the formulation;
l. This is an exothermic reaction, hence heated by steam upto 90°C;
m. The condensation reaction proceeds;
n. When the reaction is completed, resin is cooled down to room temperature;
o. Then the resin is transferred to resin storage tank.

Reaction Chemistry of Urea- Formaldehyde Resin



Resin Requirement/Day and Mass Balance to Produce 50000 Sq.m/day Capacity of Pre-Laminated Particle Boards

Urea, also known as carbamide, is an organic compound with the chemicalformula CO(NH2)2. This amide has two –NH2 groups joined by a carbonyl (C=O) functional group. Urea serves an important role in the metabolism of nitrogen-containing compounds by animals and is the main nitrogen-containing substance in the urine of mammals. It is a colorless, odorless solid, highly soluble in water, and practically non-toxic. The physical and chemical properties of urea are given in Table

Mass Balance Of 8.22 Mt/Day Urea Formaldehyde Resin

Mass Balance of 8.22 MT/day Urea formaldehyde Resin

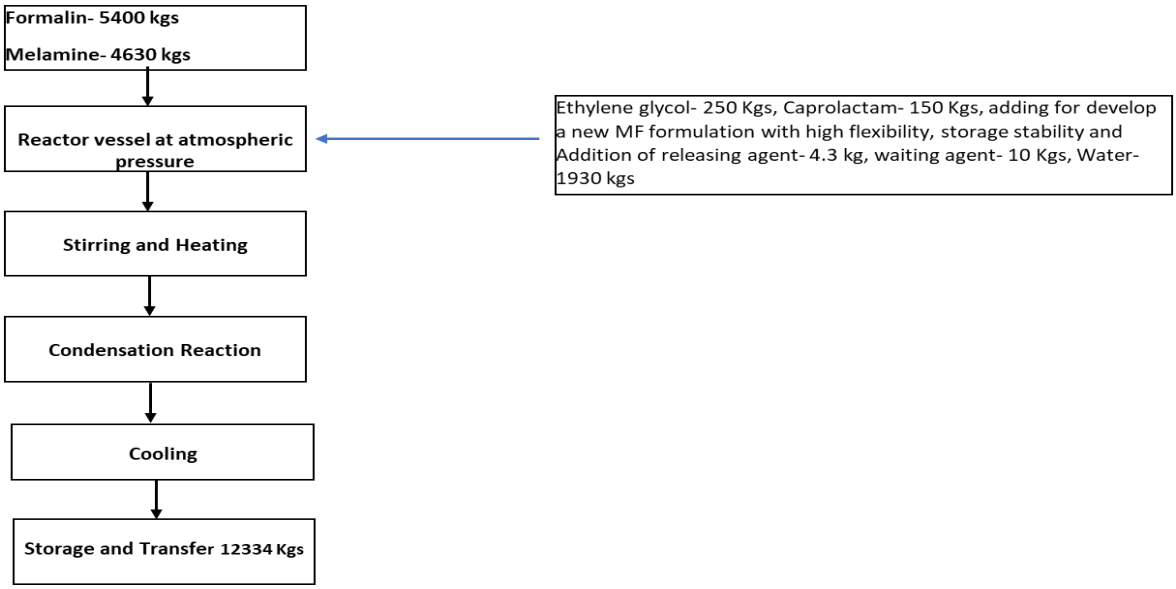
Sr.no	Raw Material / Chemical Required	Quantity in MT	Remarks
1	Total liquid resin quantity required/ day	8.22	
2	Formalin	3.75	Input
3	Urea	3.18	Input
4	Releasing agent	0.00288	Input
5	Wetting agent	0.01	Input
6	Water (addition)	1.28	Input
7	Total quantity of resin	8.22	Total output quantity

Source: Greenlam South Limited

Manufacturing Process of Melamine- Formaldehyde Resin for Pre-Laminated Particle Board

p. Formalin (HCHO) & melamine (C3H6 N6) are taken in a kettle;
q. The mixture is then stirred well;
r. The temperature is raised as per the formulation;
s. This is an exothermic reaction, hence heated by steam upto 90°C;
t. Ethylene glycol and Caprolactum were added during the synthesis process of melamine formaldehyde (MF) resins to develop a new MF formulation with high flexibility, storage stability;
u. The condensation reaction proceeds;
v. When the reaction is completed, resin is cooled down to room temperature; and
w. Then the resin is transferred to resin storage tank.

Melamine Formaldehyde Resin Process(for pre-laminated particle board)-12.334 MT/ day



Mass Balance Of 12.334 Mt/Day Melamine Formaldehyde Resin

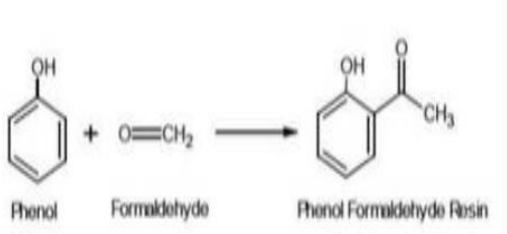
Mass Balance of 12.334 MT/day Melamine Formaldehyde Resin			
Sr.no	Raw Material / Chemical Required	Quantity in MT	Remarks
1	Total liquid resin quantity required/ day	12.334	
2	Formalin	5.4	Input
3	Melamine	4.63	Input
4	Di ethylene glycol (DEG)	0.25	Input
5	Releasing agent	0.00432	Input
6	Wetting agent	0.01	Input
7	Caprolactum	0.15	Input
8	Water (Addition)	1.93	Input
9	Total quantity of resin	12.334	Total output quantity

Source: Greenlam South Limited

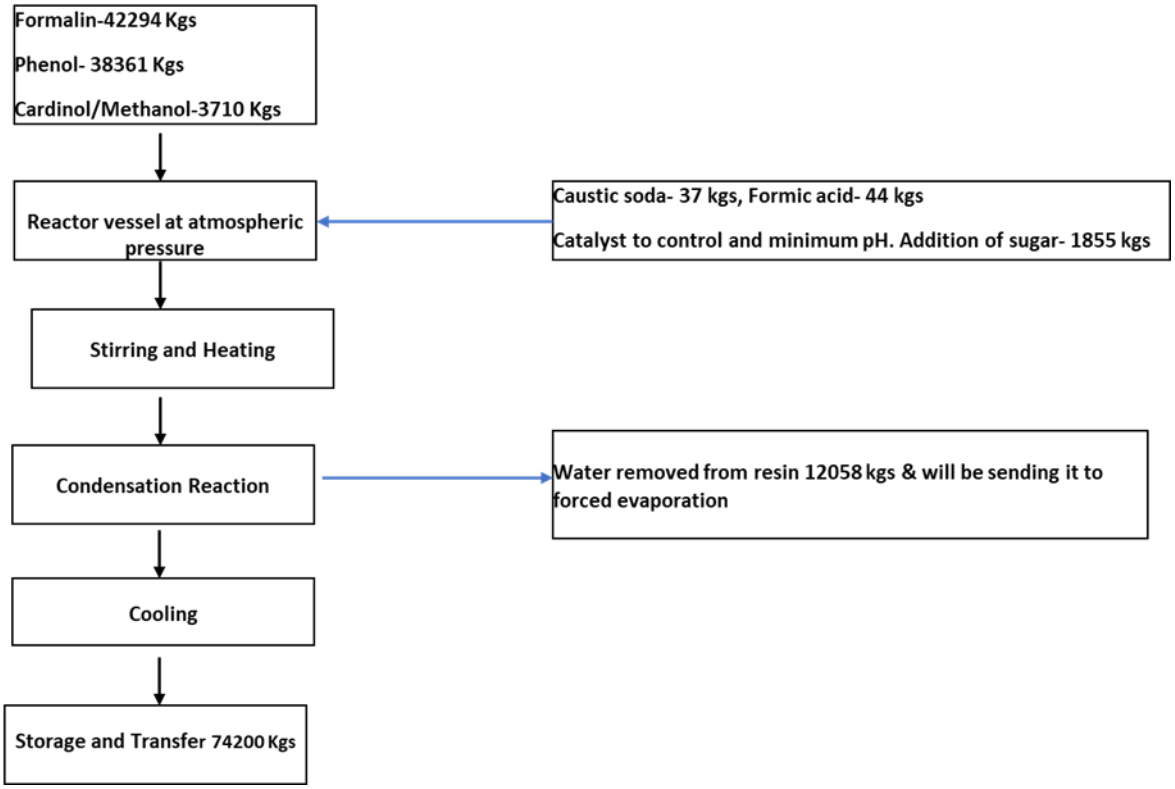
Manufacturing Process of Phenol- Formaldehyde (PF) Resin for High Pressure Laminate/Compact Board

x. First all raw materials like phenol, formaldehyde, cardinal/methanol & caustic will be added into closed vessel;
y. Stirring & heating will be done upto 60°C. After 60°C stop heating;
z. Reflux is done for 30 minutes upto 98°C;
aa. Vacuum distillation will be started;
bb. Water will be removed from the vessel as per the batch size;
cc. Methanol will be added;
dd. When the reaction is completed, resin is cooled down to room temperature; and
ee. Then the resin is transferred to resin storage tank.

Reaction Chemistry of Phenol- Formaldehyde Resin



Phenol Formaldehyde Resin Process(For High pressure laminates & Compact Boards)- 74.2 MT/Da



Resin Requirement /day And Mass Balance To Produce 27288 Sheets/Day Capacity of High Pressure Laminate & Compact Boards

Mass Balance 74.20 Mt/Day Of Phenol Formaldehyde Resin

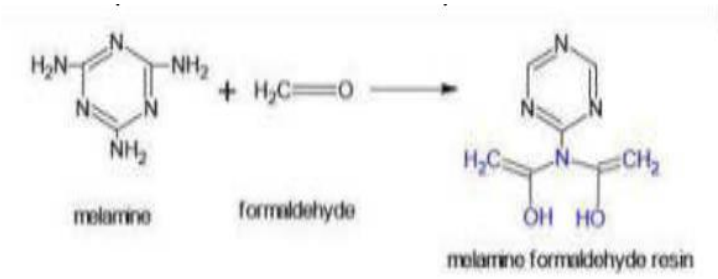
Mass Balance of 8.22 MT/day Urea formaldehyde Resin

Sr.no	Raw Material / Chemical Required	Quantity in MT	Remarks
1	Total liquid resin quantity required/ day	74.20	
2	Formalin	42.294	Input
3	Phenol	38.361	Input
4	Cardinol	3.339	Input
5	Caustic	0.037	Input
6	Sugar	1.855	Input
7	Total quantity of resin before distillation	85.886	Total input quantity
8	Water distillation(water removal)	12.058	Will be sent to forced evaporation
9	Methanol	0.371	Input
10	Total resin quantity after distillation	74.20	Total output quantity

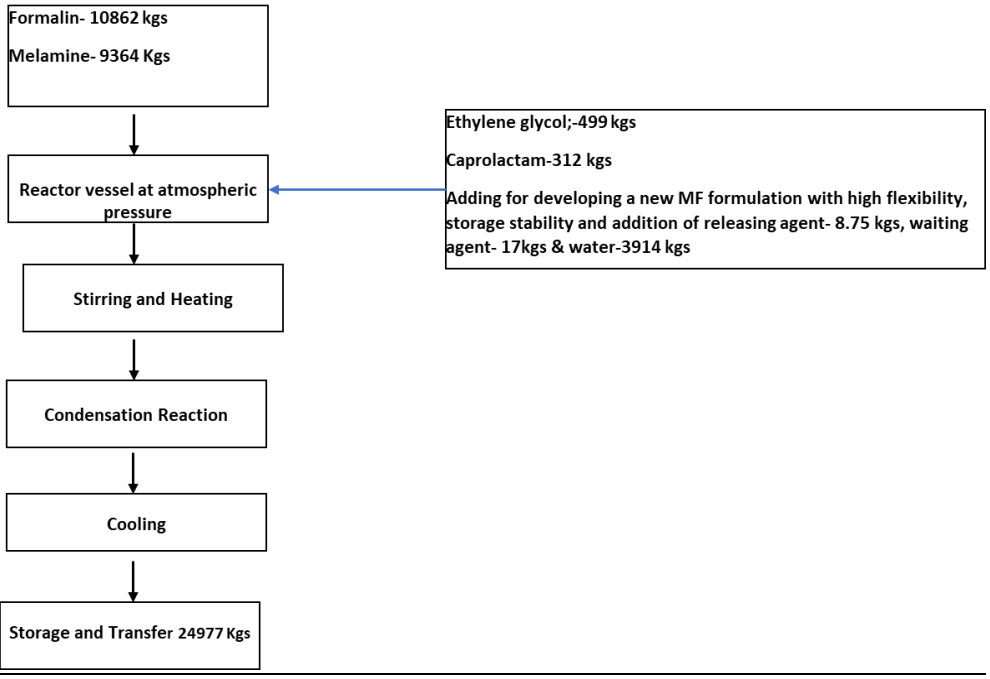
Manufacturing Process of Melamine - Formaldehyde (MF) Resin for High Pressure Laminate/Compact Board

ff. Formalin (HCHO) & melamine (C3H6 N6) are taken in a kettle;
gg. The mixture is then stirred well;
hh. The temperature is raised as per the formulation;
ii. This is an exothermic reaction, hence heated by steam upto 90°C;
jj. Ethylene glycol and Caprolactum were added during the synthesis process of melamine formaldehyde (MF) resins to develop a new MF formulation with high flexibility, storage stability;
kk. The condensation reaction proceeds;
ll. When the reaction is completed, resin is cooled down to room temperature; and
mm. Then the resin is transferred to resin storage tank.

Reaction Chemistry of Melamine- Formaldehyde Resin



Melamine Formaldehyde Resin Process(For high pressure laminates & Compact Boards)- 24.977 MT/Day



Resin Requirement /Day And Mass Balance To Produce 27288 Sheets/Day CapacityOf High Pressure Laminate & Compact Boards

Mass Balance Of 24.97 Mt/Day Melamine Formaldehyde Resin

Mass Balance of 24.97 MT/day Melamine Formaldehyde Resin			
S.No	Raw material/Chemical Required	Quantity in MT	Remarks
	Total liquid resin quantity required/ day	24.97	
1	Formalin	10.862	Input
2	Melamine	9.364	Input
3	Di ethylene glycol	0.499	Input
4	Releasing agent	0.009	Input
5	Wetting agent	0.017	Input
6	Caprolactum	0.312	Input
7	Water (Addition)	3.914	Input
	Total quantity of resin	24.97	Total output quantity

Source: Greenlam South Limited

Resin Storage Capacity, Source & Mode Of Transportation

Sr.No	Products	Quantity (TPA)	Mode of Storage	Material of Construction	Storage Capacity/MT	Resin Transportation to plants
1	Urea formaldehyde resin	18651.6	Vertical storage tank	MS/SS/FRP/MS with PP lining	200	Pipeline
2	Melamine Urea formaldehyde resin	6831	Vertical storage tank	MS/SS/FRP/MS with PP lining	200	Pipeline
3	Phenol Formaldehyde resin	24486	Vertical storage tank	MS	160	Pipeline
4	Melamine formaldehyde resin	12,318.9	Vertical storage tank	SS/FRP/MS with PP lining	125	Pipeline
	Total	62,287.5				

APPENDIX 4: PHYSICAL AND CHEMICAL PROPERTIES OF CHEMICALS USED FOR RESIN MANUFACTURING

The physical and chemical properties of the raw materials used for manufacturingof resins are described below:

Formaldehyde

Formaldehyde is used almost exclusively in the production of phenolic resins. The gaseous formaldehyde is absorbed in water, and the final product is aformaldehyde solution containing 36–50 % formaldehyde. Of the various chemicalforms of formaldehyde, the aqueous form is preferred for making phenolic resins,even though at least half of this form is water.

Physical And Chemical Properties Of Formaldehyde

Raw Material	Parameters	Description
Formaldehyde	Chemical formula	CH2O
	CAS No.	50 – 00 – 0
	Physical state	Liquid
	Color	Colorless
	Odor	Pungent odour
	Molecular weight	30.03 g/mol
	Vapor density (air=1)	1.0
	Melting point	-
	pH	2.6-3.0
	Boiling point	960C
	Flash point	590C
	Specific gravity	1.08
	Solubility in water	Complete@200C
	Flammability Limit (Lower exposure limit)	7.0 %
	Flammability Limit (Upper exposure limit)	73.0 %

Urea

Urea, also known as carbamide, is an organic compound with the chemicalformula CO(NH2)2. This amide has two –NH2 groups joined by a carbonyl (C=O) functional group. Urea serves an important role in the metabolism of nitrogen-containing compounds by animals and is the main nitrogen-containing substance in the urine of mammals. It is a colorless, odorless solid, highly soluble in water, and practically non-toxic.

Physical And Chemical Properties of Urea

Raw Material	Parameters		Description
Urea	Chemical formula		CO(NH2)2
	Physical state		Solid
	Color		White
	Odor		Odorless
	Molecular weight		60.06 g/mol
	Vapor density		Not available
	Melting point		132.7^{0}C
	Boiling point		Decomposes at 135^{0}C
	pH		8.8 in 10% solution
	Flash point		NA
	Specific gravity		1.335
	Solubility in water		545000 mg/L (at 25 °C)
	Flammability Limit	Lower exposure limit	NA
		Upper exposure limit	NA
	LD50 (Oral)		8.5 g/kg(rats)

Melamine

Melamine is an organic base and a trimer of cyanamide, with a 1, 3, 5-triazine skeleton. Like cyanamide, it contains 66% nitrogen by mass and, if mixed with resins, has fire retardant properties due to its release of nitrogen gas whenburned or charred, and has several other industrial uses. Melamine is also a metabolite of cyromazine, a pesticide.

Physical And Chemical Properties of Melamine

Raw Material	Parameters		Description
Melamine	Chemical formula		$C_3H_6N_6$
	CAS No		108-78-1
	Physical state		Solid
	Color		White
	Odor		NA
	Molecular weight		126.12 g/mol
	Vapor density		4.34
	Melting point		<250°C
	Boiling point		NA
	pH		7.5 to 9.5
	Flash point		NA
	Specific gravity		1.573 (Water=1)
	Solubility in water		3240 mg/l (20 °C)
	Flammability Limit	Lower exposure limit	NA
		Upper exposure limit	
	LD50 (Oral)		3850 mg/kg (rat)

Caustic Soda

Sodium hydroxide (NaOH), also known as caustic soda is an inorganic compound. It is a white solid and highly caustic metallic base and alkali of sodium which is available in pellets, flakes, granules, and as prepared solutions at different concentrations. Sodium hydroxide forms an approximately 50 % (by mass) saturated solution with water.

Physical And Chemical Properties of Caustic Soda

Raw Material	Parameters		Description
Caustic Soda	Chemical formula		NaOH
	CAS No		1310-73-2
	Physical state		Solid/Liquid
	Color		White
	Odor		Odorless
	Molecular weight		40.0 g/mol
	Vapor density		NA
	Melting point		318.38°C
	Boiling point		1388°C
	pH		Strongly alkaline
	Flash point		Not applicable
	Specific gravity		1.52 g/ml @ 68^0F
	Solubility in water		420 g/l
	Flammability Limit	Lower exposure limit	Product is not flammable
		Upper exposure limit	
	LD50 (Oral)		2000 mg/kg (Rat)

Formic acid

Formic acid, systematically named methanoic acid, is the simplest carboxylic acid,and has the chemical formula HCOOH. It is an important intermediate in chemicalsynthesis and occurs naturally, most notably in some ants. The word "formic" comes from the Latin word for ant, formica, referring to its early isolation bythe distillation of ant bodies. The physical and chemical properties of formic acid are given in Table-2.15.

Physical And Chemical Properties of Formic Acid

Raw Material	Parameters		Description
Formic acid	Chemical formula		HCOOH
	CAS No		Formic acid: 64-18-6 Water: 7732-18-5
	Physical state		Liquid
	Color		Clear colorless
	Odor		Pungent. Penetrating. Benzaldehyde-like
	Molecular weight		46.03
	Vapor density		The highest known value is 1.59 (Air = 1) (Formic acid). Weighted average: 1.47 (Air = 1)
	Melting point		8.4°C (47.1°F)
	Boiling point		100°C (212°F)
	pH		Acidic
	Flash point		69°C (156.2°F). (Formic acid)
	Specific gravity		Weighted average: 1.19 (Water = 1)
	Solubility in water		Easily soluble in acetone. Soluble in cold water, hot water, diethyl ether
	Flammability Limit	Lower exposure limit	Lower: 18 %
		Upper exposure limit	Upper: 57 %
	LD50 (Oral)		Acute oral toxicity (LD50) 795 mg/kg (Mouse) :

Di-ethylene Glycol (DEG)

Diethylene glycol (DEG) is an organic compound with the formula C4H10O3. It is a colorless, practically odorless, poisonous, and hygroscopic liquid with a sweetish taste. It is miscible in water, alcohol, ether, acetone, and ethylene glycol. DEG isa widely used solvent.

Physical And Chemical Properties of Di-Ethylene Glycol (Deg)

Raw Material	Parameters	Description
Di-ethylene Glycol (DEG)	Chemical formula	C4H10O3
	CAS No	111-46-6
	Physical state	Viscous liquid
	Color	Colorless
	Odor	Practically odorless
	Molecular weight	106.12
	Vapor density	3.66 (Air=1)
	Melting point	-10^0 C

Raw Material	Parameters		Description
	Boiling point		245^0C
	pH		Not available
	Flash point		124^0C (255.20^0F)
	Specific gravity		1.11
	Solubility in water		Soluble
	Flammabilit yLimit	Lower exposure limit	Not available
		Upper exposure limit	Not available
	LD50 (Oral)		Draize test, rabbit, eye : 50 mg Mild; Draize test, rabbit, skin : 500 mg Mild;Oral, mouse : LD50 = 23700 mg/kg; Oral, mouse : LD50 = 2300 mg/kg; Oral, rabbit : LD50 = 4400 mg/kg; Oral, rat : LD50 = 12565 mg/kg;

Caprolactum

Caprolactam (CPL) is an organic compound with the formula $C_6H_{11}NO$. Thiscolourless solid is a lactam (a cyclic amide) of caproic acid. Global demand for this compound is approximately five million tons per year, and the vast majority is used to make Nylon 6 filament, fiber, and plastics.

Physical And Chemical Properties of Caprolactum

Raw Material	Parameters		Description
Caprolactum	Chemical formula		$C_6H_{11}NO$
	CAS No		105-60-2
	Physical state		Crystalline
	Color		Colorless
	Odor		No data available
	Molecular weight		113.16 g/mol
	Vapor density		No data available
	Melting point		68 - 71 °C
	Boiling point		136 - 138 °C
	pH		7.0 - 8.5 at 333 g/l
	Flash point		152 °C - closed cup
	Solubility in water		Soluble
	Flammabilit yLimit	Lower exposure limit	Lower explosion limit: 1.6 %(V)
		Upper exposure limit	Upper explosion limit: 11.9 %(V)
	LD50 (Oral)		LD50 Oral - Rat - 1,210 mg/kg (ε-Caprolactam)

Cardinol

Cardinol is a phenolic lipid obtained from anacardic acid, the main componentof cashew nutshell liquid (CNSL), a byproduct of cashew nut processing. Cardinol finds use in the chemical industry in resins, coatings, frictional materials, and surfactants used as pigment dispersants for water-based inks. It is used to make phenalkamines, which are used as curing agents for the durable epoxy coatings used on concrete floors.

Physical And Chemical Properties of Cardinol

Raw Material	Parameters		Description
Cardinol	Chemical formula		$C_{21}H_{30}O$
	CAS No		37330-39-5
	Physical state		Liquid
	Color		Yellow to brown
	Odor		No data available
	Molecular weight		302.49
	Vapor density		No data available
	Melting point		No data available
	Boiling point		No data available
	pH		No data available
	Flash point		No data available
	Specific gravity		No data available
	Solubility in water		No data available
	Flammabilit yLimit	Lower exposure limit	No data available
		Upper exposure limit	No data available
	LD50 (Oral)		Based on available data theclassification criteria are not met.

Methanol

Methanol is a non-drinking type of alcohol (also known as wood alcohol and methyl alcohol) which is mostly used to create fuel, solvents and antifreeze. A colorless liquid, it is volatile, flammable, and unlike ethanol, poisonous for human consumption. Methanol is also used to produce a variety of other chemicals, including acetic acid.

Physical And Chemical Properties Of Methanol

Raw Material	Parameters	Description

Methanol	Chemical formula		CH4O
	CAS No		67-56-1
	Physical state		Liquid
	Color		Colorless
	Odor		Alcoholic, pungent, characteristic
	Molecular weight		32.04
	Vapor density		1.1
	Melting point		-97.8 °C (-144 °F)
	Boiling point		64.7 °C (149 °F)
	pH		No information found
	Flash point		12° C (53.6° F)
	Specific gravity		0.79
	Solubility in water		Miscible with water
	Flammability Limit	Lower exposure limit	6 %
		Upper exposure limit	36.5 %
	LD50 (Oral)		Oral Rat LD50: 5628 mg/kg Inhalation Rat LC50: 87.5 mg/L 6 HDermal Rabbit LD50: 15800 mg/kg

Phenol

Phenol is an aromatic organic compound with the molecular formula C_6H_5OH. It is a white crystalline solid that is volatile. The molecule consists of a phenyl group ($-C_6H_5$) bonded to a hydroxy group ($-OH$). Mildly acidic, it requires carefulhandling because it can cause chemical burns.

Physical And Chemical Properties of Phenol

Raw Material	Parameters		Description
Phenol	Chemical formula		C6H5OH
	CAS No		Phenol: 108-95-2 Water: 7732-18-5 Oxalic acid dehydrate: 6153-56-6
	Physical state		Liquid
	Color		Colorless
	Odor		Sweet
	Molecular weight		94.1
	Vapor density		3.2
	Melting point		42.8 °C / 109 °F
	Boiling point		182 °C / 359.6 °F
	pH		6
	Flash point		79.4 °C / 174.9 °F
	Specific gravity		1.0576
	Solubility in water		Slightly soluble in water
	Flammability Limit	Lower exposure limit	1.8 vol %
		Upper exposure limit	8.6 vol %
	LD50 (Oral)		Phenol: LD50 = 340 mg/kg (Rat)LD50 = 317 mg/kg (Rat)

APPENDIX 5: WASTE MANAGEMENT PLAN

All project generated wastes shall need to be managed and disposed of in a manner to prevent potential impacts on the environment and risks to human health. A Waste Management Plan (WMP) for the project has been developed. This has to be updated prior or during construction and operation phase.

Objectives

The construction and operation of the proposed project shall generate various type of waste which shall need appropriate collection, transportation and disposal. Hence, to serve the purpose, a Waste Management Plan has been formulated to demonstrate:

- Inventorisation of waste in different type of categories like garbage, rubbish, hazardous, waste etc.;
- Maintain the site in a clean and tidy state to reduce the attraction of pest species, impacts on the local environment and negative impacts on visual amenity; and
- Suggestion of options for waste handling and disposal during construction and operation phase of the project.

Scope

This plan shall be applicable to the contractor engaged by GSL for the construction phase of the proposed project and HSE team of GSL for the operation phase. The elements of the plan shall be directly implemented by the contractors while overall management and responsibility shall lie with GSL.

Applicable Laws and Standards

National Regulations

- Construction and Demolition Waste Management Rules, 2016
- Solid Waste Management Rules, 2016
- Batteries (Management and Handling) Rules, 2022
- Plastic Waste Management Rules 2016
- E-waste (Management) Rules, 2022
- Bio-Medical Waste Management Rules, 2016
- The Hazardous Waste Management Rules 2016 as amended till date is applicable

Roles and Responsibilities

- Onsite EHS Manager of GSL shall be responsible for implementation of this plan during construction and operation phases respectively. The onsite EHS Manager shall be responsible for the customization of this plan in case any new activity is carried out at the site which may require adequate waste management
- The Onsite EHS Manager will be supported by the EHS Officer of the EPC contractor during construction phase of the project for implementation of the plan. The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase.
- During operation phase, Onsite EHS Manager along with other EHS team members will be responsible for monitoring and effective implementation of the plan.
- Onsite EHS Manager shall be responsible for reviewing and reporting on the management of hazardous and nonhazardous waste within the manufacturing facility.
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including contractor's workers for effective waste management within manufacturing GSL.
- Project Manager shall take monthly update on implementation of the plan onsite from EHS Manager and share implementation records at the corporate
- GSL shall be responsible for ensuring overall EHS impacts are addressed and managed properly within the facility

Waste Type

All the waste generated from the project shall be categorized as either non-hazardous or hazardous following an assessment of the hazard potentials of the material, in line with local and national requirements.

Construction Phase

The main type of waste expected to generate include:

- Scrap metal.
- Municipal solid waste.
- Packaging waste.
- Construction debris.
- Sewage.
- Spoil piles due to construction of new structures
- Bio-Medical Waste

The construction phase shall require the use of hazardous materials such as diesel or petrol to cater the fuel equipment and vehicles and maintain equipment. The following hazardous wastes shall also be produced from construction activities.

- Oily rags.
- Paint and paint containers
- Used oil and oil filters - from generators or vehicle maintenance.

Operation Phase

- Food waste
- Office waste
- Metal Scraps
- Hazardous waste from facility such as organic residue, salts, spent solvents waste oils, used oils etc operation of D.G. sets, equipment/ machinery routine maintenance, electrical department, ETP and MEE, Resin manufacturing
- Batteries
- Ash from Boiler
- Wood Trimming Loss
- Dust from Screens and Sanding
- Detoxified containers or drums
- Used Bags
- Waste Oil
- Discarded bags and liners
- Bio-Medical Waste

Waste Handling, Management and Disposal

All wastes produced from the project activities on site shall be temporarily stored in designated waste storage areas. All wastes that cannot be reused or recycled shall be collected by approved waste contractors and transferred to an appropriately licensed waste management GSL for treatment and disposal. Following steps shall be taken to manage the waste generation during construction and operation phase:

Construction and Demolition (C&D) Waste Management

- The construction waste largely comprises of earth, stones, concrete, bricks, lumber, roofing materials, plumbing materials, electrical wires etc. The components of construction waste include – major components - cement concrete, bricks, cement plaster, rubble, steel (from RCC, door/window frames, roofing support, railings of staircase etc.), stone (marble, granite, sand stone); and minor components -

conduits (iron, plastic), pipes (GI, iron, plastic), electrical fixtures (copper/ aluminum wiring, Bakelite/ plastic switches, wire insulation), panels (wooden, laminated), others (glazed tiles, glass panes).

- The civil contractor responsible for the construction activities shall be responsible for sound handling and management of the C&D and municipal waste at the construction site including handling, storage, collection, re-use and clearing of the wasted construction material. The non-utilizable and utilizable C&D waste generated at site will be stored in a segregated manner at the construction site.
- Dumping of C&D waste in non-designated sites shall be strictly prohibited.
- All construction/demolition waste will be stored within the site itself. Metal mesh screen or GI screens will be provided so that the waste does not get scattered.
- C&D waste shall be stored separately and not allowed to get mixed with other waste (e.g., municipal / biomedical / e-waste / hazardous etc.).
- C&D waste shall be stored at the construction site in either skips or suitable containers and shall be directly transported to a suitable disposal GSL by engaging services of an authorized collection agency
- Scrap metals shall be stored separately and shall be hauled to scrap metal dealers. The scrap metal skip should be covered when not in active use.
- Scrap metal from construction, renovation, or maintenance work shall be deposited separately. Oils shall be purged prior to disposal of metals into this container.
- The storage bins/ designated area shall be in accordance with the quantum and nature of the C&D waste.
- Clearly label the containers, preferably with waterproof signage, detailing which material can be disposed of in each one.
- Efforts shall be made to reduce the rate of waste generation by adopting efficient construction techniques and limiting waste generating activities. The measures for controlling construction waste may include limiting site clearance activities, planned stocking and gathering of construction materials and equipment, fencing around the construction yard, maintaining existing right of way to carry construction materials, adopting proper sanitation system for employees, banning of waste burning, and quality housekeeping.
- A designated place shall be identified and well-labelled for waste stocking with appropriate impermeable linings.
- For controlling runoff from construction yard and liquid waste, appropriate measures such as provision of a garland drain will be made.
- In case of road construction within the premises, empty containers of paint, prime coat, tack coat (considered as hazardous waste) shall be stored at a designated place / or a skip and sent to an authorized hazardous waste handler. All the records of the sale of items to authorized hazardous waste vendors will be preserved 7 years after completion and final payment of the contract.
- EPC contractor of GSL shall pay relevant charges for collection, transportation, processing and disposal of C&D waste generated by them, as notified by the concerned authorities. Payment shall be as per the provisions made under the Construction and Demolition Waste Management Rules, 2016 and is dependent on the quantum of C&D waste generated. [if the C&D waste generated is more than 20 tons or more in one day or 300 tons in a month, then payment for waste processing and disposal shall also be made along with charges for storage and collection]
- The construction contractor will remove refuse collected from the designated waste storage areas at the site at least once a week;
- The construction debris will be placed in appropriate on-site storage containers and periodically disposed of by a licensed waste contractor;

Solid Waste Management

- Two bins of adequate size for collection of biodegradable and non-biodegradable waste shall be placed at all the locations of waste generation. All the bins will be labelled in Local language and English language for clear understanding of the users. Waste will be collected per day by designated collection agency and will be disposed by GSL.
- A solid waste inventory shall be maintained onsite by the EHS team on weekly basis
- A solid waste inventory form shall be maintained onsite. The inventory must include types of waste, quantities generated, recycling options and rates.

- The same checklist shall be circulated to the respective contractors to inventories the solid waste generated in weekly basis. Record of all Solid Waste and Solid Waste Disposal on construction site shall be maintained.
- Waste Storage and Handling, Management and Disposal
- No solid waste generated within the premises shall be littered on the street, open spaces drain or water bodies.
- A source-segregated waste storage system is recommended to be adopted inside the premises. The biodegradable waste shall not be mixed with any other type of wastes such as domestic hazardous wastes or construction and demolition waste.
- Different streams of solid wastes generated (as mentioned above) shall be collected through housekeeping personnel in a segregated fashion from all the areas.
- The bigger waste skips/ containers shall be color-coded - Green Bin (for storing biodegradable waste), Blue Bin (dry recyclables), Black Bin (institutional hazardous waste) and White skips (Construction and demolition wastes).
- The bins shall have rain protection lids / flaps and shall have 'easy to operate' design for handling, transfer of waste and handling during evacuation of waste should be user friendly and not cumbersome;
- Identify location of the waste skips/ containers within the premises.
- The waste trucks of the hired waste collection agencies shall visit these locations for waste pick up and transportation to the waste processing / disposal GSL.
- The concept of 3 Rs- Reduce, Recycle and Reuse shall be adopted to manage the non- hazardous solid waste generated within the premises.
- Burning of waste material shall not be allowed.
- Quality housekeeping should be maintained by regular inspection and checking.
- Initiatives must be taken to reuse and recycle of waste materials.
- Training on solid waste management procedures shall be part of the induction training for workers/ employees.
- Waste collection agencies/ recycling agencies, authorized by State pollution control Board shall be hired for their services for collection of Waste in segregated fashion.
- EHS Manager shall ensure that solid waste generated is disposed of in compliance with relevant regulations.
- A solid waste inventory shall be maintained onsite by the EHS team on weekly basis

Biodegradable waste including Horticultural waste (Green Waste)

- All the biodegradable waste shall be stored separately at their source of generation and not be mixed with any other types of waste such as hazardous waste, C&D waste, dry recyclables.
- The biodegradable waste shall be collected from all the points of generation by the housekeeping staff and brought to Green colored, high capacity waste containers, located at designated locations within the premises.
- Identify location of the waste skips/ containers within the premises.
- The waste trucks of the hired waste collection agencies shall visit these locations for waste pick up and transportation to the waste processing using a biological waste processing technology such as composting, bio methanation etc.
- The green waste shall be collected daily. EHS Manager, assisted by Site Safety Officer shall decide the frequency of collection per day, depending upon the quantity of waste generated.
- EHS Manager of the site will ensure that solid waste generated is disposed of in compliance with relevant regulations

Dry Trash (Recyclables) Management

- All the dry recyclable items such as paper, plastic sheets, plastic cups, plastic cans, PET bottles, metal scrap, cardboard box etc. shall be collected and stored separately and not be mixed with any other types of waste such as biodegradable waste, hazardous waste, C&D waste. Such waste shall be sold to recyclers/ scrap dealers.

- Glass waste including empty glass bottles, broken glass, window panes shall be stored separately in a container/ skip and sold off.
- The dry trash items waste shall be collected from all the points of generation, by the housekeeping staff and brought to Blue colored, high capacity waste containers, located at designated locations within the premises.
- The waste trucks of the hired waste collection agencies shall visit these locations for waste pick up and transportation to recycling GSL or resale/ scrap market.
- Pick up frequency of such wastes by the collection trucks shall be on weekly basis, however, it will be dependent upon the quantity of waste.

Sewage Disposal

- Appropriate number of toilets, separate for male and female employees and workers shall be provided in office area and shop floor and shall be maintained in hygienic conditions. The toilets shall be connected to sewerage system for its ultimate treatment in Sewage Treatment Plant for suitable capacity
- Sewage generated onsite shall be treated and disposed through septic tanks and soak pits as per specifications given in IS 2470: 1995 (Part I and II) until it is treated in STP.

Hazardous Waste Management

- GSL to identify all the hazardous waste generated during construction and operation phase as per the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016 (HMR 2016).
- GSL shall make an application in Form 1 to the State Pollution Control Board (SPCB) and obtain an authorization for managing hazardous and other wastes. SPCB, upon being satisfied, will grant an authorization in Form 2 which shall be valid for Five Years.
- GSL shall be responsible for safe and environmentally sound management of hazardous and other wastes by sending or selling the waste to authorized actual user or by disposing it in an authorized disposal GSL.
- As per Rule 8 of the HMR 2016, hazardous wastes cannot be stored on-site for a period exceeding 90 days. In case of storage of hazardous wastes on-site for a period in exceedance of that specified by the SPCB, management is required to intimate the same to the SPCB and obtain written permission to do so.
- A hazardous waste inventory form, attached as Hazardous Waste Management Inventory shall be maintained onsite by Site Safety Officer;
- GSL shall ensure that potential hazardous solid and liquid wastes (such as used/ waste oils, etc.) are not disposed of in dumpsters designated for general domestic trash.
- GSL shall ensure provision of secured storage (with adequate secondary containment) for all hazardous wastes generated on site.
- All containers containing liquid hazardous material (such as used oil, used transformer oil) should be kept in bunded storage or on bund trays.
- The designated hazardous waste storage area shall have proper enclosures with conspicuous signage, including safety requirements such as fire extinguishers, appropriate PPE and spill management kit (s).
- In order to have appropriate measures to prevent percolation of spills, leaks etc. to the soil and groundwater, the GSL shall ensure that the storage area is provided with impervious flooring.
- Oil soaked rags, used filters, used Personal Protective Equipment (PPE) (such as gloves, masks, etc.), empty chemical containers and liners are considered as hazardous and need to be disposed of as hazardous waste to SPCB authorized waste vendors.
- The hazardous waste containers shall be provided with a label in the prescribed format under the HMR 2016. The labelling shall be done as per Form 8 of HMR 2016.
- GSL shall maintain a record of hazardous and other wastes managed by them in Form 3 and prepare and submit to the SPCB, an annual return containing the details specified in Form 4 on or before the 30th day of June following the financial year to which that return relates.
- In case of spills / leaks, the GSL shall ensure usage of spill management kit for cleaning instead of water. All areas where there is a likelihood of spillages to occur should be provided with a drain outlet that outfalls into a sump. The sump should be constructed of impervious material and its integrity tested periodically.

The sump should be cleaned on a regular basis. Contents of the sump are to be treated as hazardous wastes and should be disposed of to SPCB authorized waste vendors only.

- The GSL shall ensure usage of adequate locks; control the issue of keys; and provision of fencing where appropriate.
- The hazardous waste storage area should be fenced properly and sign of "Danger" should be placed at the storage site.
- Signboards showing "Restricted Entry", "Hazardous Waste Storage Area" and the "Category of Wastes stored-", shall be displayed outside the earmarked area for storage of hazardous waste. "No Smoking" signs should also be placed conspicuously wherever any ignitable or reactive waste is stored.
- GSL shall ensure disposal of the hazardous waste to a SPCB authorized vendor/ GSL only.
- GSL shall ensure issuance of gate pass (challan) for all the hazardous wastes entering/leaving the site
- GSL shall ensure that the hazardous waste authorization of the vendor is checked and copies of the vendor operating permits and authorizations are maintained.
- Before transportation of hazardous wastes, GSL shall provide the transporter with relevant information in Form 10 (Waste Manifest) and Form 11 regarding the hazardous nature of the wastes and steps to be taken in case of emergency.
- Used/ Waste lead acid batteries (for e.g. lead-acid batteries associated with diesel generators) are to be handed over to a SPCB registered recycler as per the Batteries (Management & Handling) Amendment Rules, 2010 or to the supplier on a buy-back basis.

Biomedical Waste:

- Biomedical waste generated from first aid will include expiry medicines, ointments, band-aids, bandages, injections, blood contaminated cottons etc. Medical waste generated from the first aid should be disposed as per bio medical waste rules 2016, as amended, through an authorized vendors
- Medical waste generated from the first aid should be disposed as per bio medical waste rules 2016, as amended, through an authorized vendors.

Electronic waste: Electronic Waste generated at the site will be in the form of monitors, laptops etc. The same shall be disposed as part of buy back policy with vendor

Batteries: Lead Acid Batteries after having completed the scheduled life term need to be replaced. New ones shall be purchased under the 'buy back' system wherein the Dealer takes back the old battery and gives a new one at a discounted price. The dealer than passes on the old used batteries to the registered Lead Recycler.

Scrap: Metal scrap and other maintenance activity related wastes which has some monetary value shall be collected and stored at the designated place and shall be disposed through recyclers/ re-users on "as is where is" basis.

Fly ash management: GSL to store fly ash specifically in hopper in a designates area and disposal methods to be approved by SPCB and are to be environment friendly and in scientific manner and shall maintain proper records for the same. Fly ash hoppers/silos should be periodically maintained to avoid overloading of fly ash
The following measures for fly ash disposal have been identified and the same can be included in the draft plan which is to be shared with SPCB while for approval. The changes and suggestions provided by SPCB on the plan (if any) will be incorporated in the existing plan and implemented on ground during operation phase.

- Ash will be provided to the bona-fide farmers as free issue. This ash can be utilized by the farmers as a top layer manure as it enriches the soil with Na (Sodium) and K (Potassium) contents. The Ash is also considered as replacement for the chemical fertilizers like Urea and DAP. It keeps the soil nutrient value intact and results in better yields besides reducing the toxicity in the environment. Due to its quality, the ash contents would also prevent soil degradation.
- GSL is considering tie-up agreement with cement manufacturing plants situated in the nearby areas as 'free issue', to be used as raw material since the Ash has a decent Lime (CaO) content which is a major ingredient for the final product.
- 100% fly ash utilization plan as per SPCB shall be implemented at the project

- Agreements to be signed with the fly ash recipients prior to providing the fly ash. Quantity of fly ash to be provided shall be included along with the frequency of transportation.

Records

- Records/ Manifest of types of waste generated, handled and disposed during construction and operation phase
- A solid waste and hazardous waste inventory forms attached as Solid Waste Inventory shall be maintained onsite by the contractor which shall be shared with GSL's onsite EHS Manager on weekly basis.
- Solid Waste Inventory
- Hazardous Waste Inventory
- Fly ash quantities generated and disposed

Waste Inventory

Location	Date of Assessment
Construction Phase □	Operation Phase □
Prepared by	Verified by

The list shall be revised in case of any change in operations, layout or equipment. The present checklist shall be updated on weekly basis by EPC contractor during construction phase and by GSL's EHS team during operations
GSL's EHS Manager shall approve the inventory.

S. No.	Quantity of Solid Waste						Control Measure	Disposal Agency	Recycling Option	Remark
	Paper and Plastic Waste	Tires and Cables	Kitchen waste	Metal Scrap	Construction and demolition waste	Other				

Hazardous Waste Inventory

Office/ Location	Date of Assessment
Construction Phase □	Operation Phase □
Prepared by	Approved by

S.No.	*The list shall be revised in case of any change in operations, layout or equipment. The present checklist shall be updated on weekly basis by EPC contractor during construction phase and by GSL's EHS team during operations* *GSL's EHS Manager shall approve the inventory.*

	Name of the hazardous waste	Category of Hazardous waste as per HW Rules 2016	Date of generation	Quantity	Unit Kg/ Tons	Physical State	Disposal agency	Control Measure	Remark

APPENDIX 6: HAZARDOUS MATERIAL MANAGEMENT PLAN

The hazardous material management plan is developed to reduce the risk associated with hazardous material / substances and implement a process for the management of hazardous chemical.

Objectives

The construction and operation of the project shall handle hazardous material within manufacturing facility which shall need to be handled with care and precautions. There this plan aims to provide management measures for safe storage and handling of hazardous material.

Scope

This plan shall be applicable to GSL and the EPC contractor engaged by GSL for the construction phase of the proposed project. The plan shall be also applicable to the HSE team of GSL for the operation phase. The elements of the plan, during construction phase, shall be directly implemented by the EPC and contractors hired by the EPC contractor while overall management and responsibility shall lie with GSL.

Applicable Laws and Standards

National Regulations and Guidelines

- The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
- Supreme Court Monitoring Committee Guidelines on Hazardous Chemicals & waste.
- Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016 (HMR 2016).
- IFC EHS Guidelines on Hazardous Material Management

Roles and Responsibilities

- Onsite EHS Manager of GSL shall be responsible for implementation of this plan within manufacturing facility during construction and operation phases respectively. The onsite EHS Manager shall be responsible for the customization of this plan in case any new activity is carried out at the manufacturing facility which may involve hazardous material handling
- The Onsite EHS Manager will be supported by the EHS Officer of the EPC contractor during construction phase of the project for implementation of the plan. The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase.
- During operation phase, Onsite EHS Manager along with other EHS team members will be responsible for monitoring and effective implementation of the plan.
- Onsite EHS Manager shall be responsible for reviewing and reporting on the management of hazardous material within the manufacturing facility.
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including Contractor's workers for maintaining the material safety data sheet (MSDS) for all hazardous chemicals and other materials.
- Project Manager shall take monthly update on implementation of the plan onsite from EHS Manager and share implementation records at the corporate
- GSL shall be responsible for ensuring overall EHS impacts are addressed and managed properly within the facility

Construction Phase

- Hazardous material (Refer Appendix 5) shall be stored in designated places as per the norms specified for industrial safety.
- The storage area would be barricaded by providing a compound wall in order to restrict the movement of unauthorized staff.

- Preventive measures for potential fire hazards will be undertaken and requisite fire detection and firefighting facilities will be provided including adequate fire hydrant system.
- Training on hazardous chemical and material handling should be provided to the workers and PPEs such as rubber gloves, respirator, approved eye protection etc. should be issued

Operation Phase

Hazardous materials typically include of chemicals required for resin manufacturing, as well as oil, fuels, solvents, lubricants and other hazardous substances used including equipment and machinery maintenance. Spills may occur due to accidents (e.g., collisions, groundings, fires), or improper operating procedures.

Spill Prevention

- Oil and chemical-handling facilities should be located with consideration of natural drainage systems and environmentally-sensitive areas
- Workers should be trained on handling of hazardous material and to prevent/contain spills and leaks
- Hazardous materials storage and handling facilities should be constructed away from traffic zones and should include protective mechanisms (e.g., reinforced posts, concrete barriers, etc.) to protect storage areas from vehicle accidents.
- Covered and ventilated temporary storage areas should be provided for leaking hazardous materials and designed to facilitate collection of leaks and spills. Strong Oxidizing agents to be maintained and kept in a designated area separately
- The facility shall include secondary containment for above ground and underground liquid storage tanks and tanker truck loading and unloading areas. GSL shall ensure that secondary containment should at least be 110% of the volume of stored facilities, as per GIIP.
- Fueling areas should be equipped with containment basins. Fuel dispensing equipment should be equipped with “breakaway” hose connections that provide emergency shutdown
- Fueling equipment should be inspected prior to fueling activities to ensure all components are in satisfactory condition. Maintaining the necessary specific oil and noxious liquid substances spill prevention plans and procedures for operations in Special Areas
- GSL to maintain provided with Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS). Ensure instructions provided in the MSDS are strictly followed while handling the tanks.
- Safety permit system shall be followed for loading, unloading of hazardous chemical.

Spill Control Planning

- Identification of areas those are sensitive to spills and releases of hazardous materials and locations of any water intakes.
- Outlining responsibility for managing spills, releases, and other pollution incidents, including reporting and alerting mechanisms.
- Provision of specialized oil spill response equipment (e.g. containment booms, recovery devices, and oil recovery or dispersant application vessels)
- Training of response personnel in deployment of equipment and testing of the contingency plan through regular reporting and alerting exercises.
- Solvent shall be received by road tanker and stored in above ground storage tank in separated bulk storage area
- TREM CARD will be provided to all transporters and shall be trained for transportation Emergency of hazardous chemicals.
- Personal Protective Equipment (safety goggles, hand gloves, apron, masks, gum boots etc.) shall be provided along with Safety shower and eye washer shall be installed near storage area. Flame proof light fitting shall be provided at flammable storage area. Fire hydrant system shall be installed.

- Hazardous material should be stored away from the plant and safe distance shall be maintained, Fencing, caution note, hazardous identification board should be provided
- Safety permit system shall be followed for loading, unloading of hazardous chemical and Only authorized person shall be permitted etc.

Response Action in case of Spill

- Determine the size, location, spill content, direction and likelihood of affecting sensitive receptors
- Notify the agency (government/private) identified responsible for spill cleanup action
- Use of deflection techniques to bypass the spill from sensitive area to non-sensitive area
- Use of spill containment booms to stop the spillage from spreading
- Movement of trained professional with adequate PPEs at the spill area
- Removal of spill from site by trained professional and disposal in an environmentally friendly manner.
- Loading and unloading procedure shall be prepared for material received through road tanker

Precautions when using Chemicals & Other Hazardous substances

- All chemicals are to be assessed before initial use.
- All persons handling any chemical are required to refer to the Material Safety Data Sheet before the product is used for the first time.
- Personal protective clothing detailed by the material assessment is provided and must be worn by all staff at all times when they are handling a hazardous material.
- Products which are not on the approved list of chemicals must not be purchased or brought into the business without the prior approval of the Operations Manager.
- Chemicals must never be mixed under any circumstances.
- Waste must be controlled through being held in sealed bins in the work area and all bins are to be marked to identify their contents.
- Specific training should be given to all staff involved in the handling of hazardous materials. This training should establish the definition of a hazardous material.
- Hazardous materials must always be kept in their original containers, and they must always be kept sealed when they are not being used.
- Flammable materials must be held in a locked cabinet when not in use.

Records

- Material Safety Data Sheet (MSDS) on hazardous material used during construction and operation phase

APPENDIX 7: COMMUNITY HEALTH & SAFETY MANAGEMENT

Objective

This plan aims to identify community health and safety risks and hazards associated with project life cycle and include mitigation for effective management of the risks and minimize any incidents and accidents.

Scope

This plan is applicable to proposed project workers and nearby community. The plan provides management measures, at minimum to be implemented for the proposed project to ensure health and safety of nearby community

Note: There are no settlements located within 500 m of manufacturing facility. Nearest settlement to the manufacturing facility at an aerial distance of ~800M-1km

Applicable Standards

- International Finance Corporation (IFC), Environment, Health and Safety guidelines
- IFC EHS Guidelines on Community Health and Safety
- Chemicals and Hazardous Waste Management and Handling In India

Roles and Responsibilities

- Onsite EHS Manager shall be responsible for implementation of this plan within and outside manufacturing facility. Onsite EHS Manager shall be also responsible to ensure that this plan is abided by all the contractors and workers working at manufacturing facility.
- The Onsite EHS Manager will be supported by the EHS Officer of the EPC contractor during construction phase of the project for implementation of the plan. The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase.
- During operation phase, Onsite EHS Manager along with other EHS team members will be responsible for monitoring and effective implementation of the plan
- Onsite EHS Manager shall be responsible for reviewing and reporting on community health and safety performance due to manufacturing facility activities.
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including Contractor's workers (through Contractor Supervisor) working at manufacturing facility.
- Project Manager shall take monthly update on implementation of the plan onsite from EHS Manager and share implementation records at the corporate.
- GSL shall be responsible for ensuring overall health and safety impacts are addressed and managed properly within the facility

Management measures

The receptors for impacts on community health and safety will include settlements located in proximity to the access roads as no settlements are present in the vicinity of the Project site. The Community Health & Safety plan to be updated basis the hazard analysis or HIRA to be undertaken prior to the construction & operation phase. Threats to community health and safety due to Project activities are as follows:

- The major community health and safety risks include disputes among local and migrant labourers due to work related dissatisfaction, public accessibility and management of emergency situations, any viral or contagious disease due to influx of migrant workers in the study area, women safety due to influx of migrant workers etc. The movement of vehicles, material and commuters via the main access road may be a potential risk for daily commuters and cattle of nearby village. The specific receptors may include daily commuters from nearby villages, animals grazing in nearby vacant land parcels.
- Possible sources of impacts to community health and safety, considering the ongoing construction phase activities like construction activities, daily road commuters, workers and staff mobility, mobility of vehicles carrying construction materials etc. and upcoming operational phase are as follows:

  - Potential risk of accidents on access/ village road by trucks and vehicles engaged at the Facility for supply of construction materials during construction phase and raw or finished goods during operational phase;
  - Any spread of disease, virus by influx of migrant workers; and
  - Women safety due to influx of migrant staff and workers and road commuters etc.
- The community may be also exposed to accidents due to transportation of material including wood, chemical, finished goods etc to and fro from the plant periodically through roads and state highways. The increased number of vehicles used to deliver materials and supplies for construction and operational phase may result in a higher number of injuries and mortalities from traffic accidents, as well as spills of hazardous materials being transported. During construction, the potential for traffic accidents may be exacerbated by low community awareness and low exposure to increased volumes of traffic in the area. Construction activities will also limit access to natural resources in the Project area, thereby influencing income generating / subsistence opportunities from these livelihoods. Furthermore, influx of migrant workers may cause an increase in vector borne and communicable disease, community conflict over land and resources, etc.

Transportation of Construction Material

- The project will utilise national highways and state highways to the extent possible for transportation of construction material.
- In case of use of village roads at certain areas, sensitive receptors such as settlements, schools, hospitals shall be determined within the village road stretch and alternative routes shall be identified
- Drivers shall be trained on traffic safety and community safety
- Drivers with adequate driving skills and valid driving license shall be appointed for driving construction vehicles and other heavy-duty vehicles
- Drivers shall be encouraged to avoid dangerous routes and times of day to reduce risk of accidents
- Regular maintenance of vehicles shall be undertaken to avoid equipment malfunction
- Collaboration (if feasible) shall be done with responsible authorities to improve signage, visibility and overall safety of the road used for transportation of construction material
- Coordination with emergency responders to provide adequate first aid to vehicle driver and community in case of accident
- Use of locally sourced material to the extent possible to minimise transportation distance.
- Source of locally sourced materials should not be located within or immediately adjacent to natural and/or critical habitats.

Note: *GSL shall not be responsible for movement of vehicles outside manufacturing facility during operation phase, therefore, management measures for transportation and vehicle movement outside manufacturing facility has not been considered in this plan. However, training requirement for contractors has bene included. It is to be noted, that the transport providers will not only be specific to GSL, they may also be providing wood to other industries as well.*

Transportation of Chemicals:

- Solvent/Chemicals shall be received by road tanker and stored in above ground storage tank in separated bulk storage area.
- Loading and unloading procedure shall be prepared for material received through road tanker.
- Earthing/bonding shall be provided for static charges.
- Flexible steel hose shall be used for unloading from the road tanker.
- Flame proof electric motor shall be used during loading/unloading.
- NRV shall be provided on pump discharge line.
- Fixed pipeline with pumps shall be provided for transfer to vessel.
- TREM CARD will be provided to all transporters and shall be trained for transportation Emergency of

hazardous chemicals.

- Personal Protective Equipment (safety goggles, hand gloves, apron, masks, gum boots etc.) shall be provided.
- Only authorized person shall be permitted in storage tank area and register will be maintained

Transportation of Wood Logs

GSL to include clause on defensive driving in the agreement with the wood transporter to prevent any discomfort to the community. GSL to ensure that transporter fulfill the following requirements:

- Take into account load capacity of the trucks/tractors
- Overloading to be avoided. Transportation to be done within the weight limits
- Well maintained vehicles to be used and daily checks of the vehicles to be undertaken
- Adequate stacking to be done, thus avoiding possible accidents.
- Use strap and ropes of proper strength
- Drivers to be trained & licensed. Obey road rules and speed limits and drive in a careful manner and be considerate to other road users
- Drivers to adapt their driving to suit weather and traffic and road conditions
- Transport routes within log yards should be clearly demarcated and vehicle movement should be closely controlled
- Log stacks should be no higher than a safe height defined by risk assessment which should take account of site specific circumstances including stacking methodology
- Log decks should have stops, chains, or other guards to prevent logs from rolling down and off the deck
- It is recommended that the wood stacking be done in a pyramid shape, that is, forming a base with more logs at the bottom than at the top. In addition, the pile height must not exceed the truck's front panels or the sides struts. With proper stacking, cargo stability can be maintained throughout the journey. In this way, the possibility of load sliding is limited, thus avoiding possible accidents

Communicable Diseases

GSL may hire migrant workers for construction and operation of the proposed project. The workers may be provided with accommodation in nearby villages. Interactions of migrant workers with local population may expose community to communicable diseases. GSL shall:

- Ensure that local workers are appointed to the extent possible for construction and operation of the proposed project,
- Undertake health screening and surveillance of all its workers prior to appointment and on annual basis during the construction and operation phase
- Educate its employees on communicable diseases such as COVID-19. HIV, AIDS, Influenzas, chicken pox etc.
- Provide up to date information, materials and advice on communicable diseases to all workers, both through induction programmes and ongoing training programmes
- Facilitate in getting adequate health treatment to its workers
- Conduct immunization programs for workers in local communities to improve health and guard against infection.

Control Measures to be adopted during construction and operation phase

- Labour management plan (comprising of measures for maintaining relations with labour and community) will be developed and implemented
- As part of the stakeholder engagement, the community will be provided with an understanding of the activities to be undertaken during construction phase and the precautions taken for safety.

- Measures to avoid respiratory and hearing problem among community residing in proximity to the proposed project will be adopted
- Traffic Management: To ensure selection of routes and timings to decrease community threat to accidents and incident. This will be done through a Traffic Management Plan
- The traffic movement for the project in the area will be regulated to ensure road and pedestrian (including livestock) safety.
- Dedicated route for deployment of heavy-duty vehicles should be defined.
- Grievance Redressal Mechanism: To ensure all grievances of the community are heard and recorded, and mitigation measures for the same are implemented. This will be done through establishment and implementation of a grievance redressal mechanism (please refer to the site specific Grievance Redressal Mechanism for the Community);
- Community Liaison Officer: A Community Liaison Officer will need to be nominated by the Project to ensure Liasoning with nearby community. The Officer will be s single point of contact for the community;
- Project should conduct hazard analysis to identify areas of influence in case of accident in light of the distance to the nearest community area and action items as per the hazard analysis should be implemented and communicated to the nearby settlements.
- Vehicles sourcing construction materials, and wood and raw material (during operation phase) should be covered to avoid dust emission.
- The consequences of emergency events are likely to extend beyond the project boundary and it can also affect community health and safety due to labour influx. Emergency Response Plan developed for the Project should be communicated to the nearby community.
- Ensure pollution norms compliant vehicles are used for transportation.
- Any road diversions and closures will be informed in advance to the local community. Usage of horns by project vehicles will be restricted near sensitive receptors such as schools, settlements etc.
- Adequate training on traffic and road safety operations will be imparted to the drivers of project vehicles. Road safety awareness programs will be organized in coordination with local authorities to sensitize target groups viz. school children, commuters on traffic safety rules and signage.
- Warning signs: The Facility to install warning and danger signs at the construction site, areas with risk of electrocution and other relevant areas. The Facility will also need ensure that signage and boards are provided at the gates and approach roads to the site so that the nearby community and road users are aware of the location of the construction/operational Project site.
- Behavioral training for site security: Behavioral training will be provided to the site security team to ensure that the security team manages any conflicts with the nearby community in a way that it does not affect community health and safety

Records

- Premedical check-up records of workers appointed for the proposed project

APPENDIX 8: EMERGENCY PREPAREDNESS AND RESPONSE PLAN

Objective

The objective of the plan is to facilitate understanding of the Emergency Scenarios and Response requirements for site employees, contractors, and other stakeholders.

Scope

This plan is applicable to all employees (payroll and contractual), contractors, workers engaged through contractors and visitors. These are the minimum emergency scenarios against which procedures shall be adopted.

Definitions

Emergency: An emergency means a situation arising out of or as a result of any type of hazards like fire, explosion, uncontrolled gas release, or chemical spill which is likely to adversely affect the persons or population working on or near the site or residing in the adjacent or nearby areas around the work site.

Hazard: Source or situation with a potential for harms in terms of injury or ill health, damage to property, damage to the workplace environment, or a combination of these.

Incident: The event that gave rise to an accident or had the potential to lead to an accident.

NOTE: An incident where no ill health, injury, damage, or other loss referred to as a "near miss". The term "incident" includes "near-misses".

Risk: Combination of the likelihood and consequences of a specified hazardous event occurring.

Sub Agency/ Contractors/ Material Supplier: A company directly or indirectly employed by GSL to undertake activities on behalf of the Company.

Roles and Responsibilities

- Onsite EHS Manager of GSL shall be responsible for updating this plan with site specific details before mobilization/operation phase.
- The onsite EHS Manager shall be responsible for the customization of this plan in case of new emergency scenarios respect to Project activity are observed onsite
- Onsite EHS Manager shall be responsible for reviewing and reporting on the management of emergency scenarios and controls within the manufacturing facility.
- The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including Contractor's workers (through Contractor Supervisor) and workers at other manufacturing facility's.

Level of Emergencies

Level 0: An incident that can be resolved by site personnel or officer without outside agency involvement. May require an Incident/Accident report as documentation.

Level 1: Any incident, potential or actual, which will not seriously affect the overall functional capacity of the site. Can require an outside agency to respond, short-term evacuation and may involve injuries.

Level 2: Any incident, potential or actual, which affects an entire building or buildings, and which will disrupt the overall operation of the project site. Outside emergency services will probably be required.

Level 3: Any incident or occurrence that has taken place and has seriously impaired or halted the operations of the site. Level 3 situations will be where mass casualties and severe property damage may be sustained. A

coordinated effort of all resources is required to effectively control the situation. Outside emergency services will be essential. Major policy considerations and decisions will usually be required from top management during times of crisis.

Potential Emergencies

- The collapse of the structure, building, cranes.
- Gas leakage
- Spillage of Hazardous chemicals and fuels
- Fall from height with a severe consequence while erection.
- Personnel electrocuted/ electrical Hazards.
- Medical emergency
- Fire or Explosion involving storage of material flammable materials of a gas cylinder, Oil/Diesel storage, Chemical, wood, etc.
- The collision between moving vehicles/toppling Person falls in deep tanks.
- Food poisoning
- Floods
- Bomb Threat
- Earthquake
- Heavy Rains
- Scorpion and Snake Bite

Plant Emergency Facilities

The List of emergency facilities available at the site is as follows:

- Tie up with the nearest hospital
- Emergency alarm system
- Trained Paramedical personnel: (Names and contact details of the First aider)
- Fire Extinguisher and Fire Buckets placed at different locations (both ABC & CO2 type)
- Other firefighting arrangements shall be as per the norms
- Emergency Assembly Points at various places for easy access

Emergency Contact Numbers

Name	Designation	Emergency Contact Number

Plant Emergency infrastructure

- Fire Alarm System, PA System & Manual Call Point

- Fire Extinguishers, Monitor, Foam, Trolley, Fire Hydrant System
- Emergency Exit
- Assembly Point
- Emergency Lights and UPS Backup
- Fire Pumps
- Grecon Spark Extinguishing System
- Eye Wash cum Body Shower & Eye Wash Bottles
- Spill Kit
- First Aid Box
- Antidotes for Snake Bite
- Ambulance
- Emergency Control Centre
- Electrical Rescue Rod, Insulated Tools and Discharge Rod
- Fire Entry Suit, SCBA, Fire Axe, Fall from height rescue kit and other accessories

Responsibilities of Emergency Response Team (In house)

Emergency Control Coordinator

- Overall in-charge to control emergency, recovery & operation continuity.
- Authorize resources.
- Coordinate Emergency Control through on-site emergency teams.
- Communicate with the interested parties including Head office, Local Authorities, mutual aids, etc.
- Authorize for raise request for resources and its use at the site.
- Coordinate with Medical Team, Rescue Team, Fire Fighting Team, etc. to facilitate control, rescue & treatment of victims.
- Communicate with the Emergency Control Coordinator and apprise him of the emergency situation at the site.
- Responsible to assess and inform the end of an emergency at the site.
- Responsible to call the end of the emergency.
- Conduct regular internal fire audit
- Review and implement the findings from the third party life safety and fire audits (undertaken on annual basis)
- Supervision and monitoring of effective implementations of corrective actions

Technical Support Team

- Act in the capacity of the advisor to the Emergency Control Coordinator.
- Coordinate with Administration & Legal support team to handle the labour unrest, local authority, treatment options, HR issues, PR issues, etc.
- Investigate the causes of the Emergency & recommend corrective action.
- Log the sequence of events so that the report of the emergency operation can be prepared to identify the deficiencies in the Emergency preparedness system and recommend improvement.
- Evaluate the technical aspects of the control/ mitigation of the emergency operation continuity.
- Review the technical documents and recommend feasibility.
- Evaluate the need for emergency, understand the recovery measures, arrange for the resources, and supervise the recover till initiation of operation.
- Arranging for cranes, equipment, and electrical assistance and coordinating with the emergency team.
- Ensure the damage is controlled, removed from the site and the site is reinstated for the operation to start smoothly.

Administration & Legal Support Team

- Coordinate with the nearest Hospitals for the treatment of the injured.
- Coordinate with the Local Authorities including the Police etc.
- Communicate with the sub agencies and ensure no Labor Unrest takes place.
- Ensure communication to the relatives in case of a fatality.
- Ensure coordination and communication with local communities
- Manage the Media with assistance from the Emergency Control Coordinator.
- Arrange for the food/ welfare facilities etc. if the rescue, recovery & operation continuity activity extends beyond the regular working hours.

Medical Team

- Coordinate with the Plant Emergency Controller.
- Communicate & coordinate with the first aider to provide first aid to the injured.
- Coordinate with the ambulance & rescue vehicle & other mutual Aid Ambulance to remove the victim to the nearest Hospital.
- Assist the First Aider to organize personnel for assistance.
- Record the victims' details and communicate with the Project Site Emergency controller

Emergency/Fire Fighting Team

- Coordinate with the Plant Emergency Controller.
- Communicate & coordinate with the first fighters to control the fire in the initial stages.
- Coordinate with the fire brigade in the event of a big fire and extend necessary assistance especially in case of chemical fire provide MSDS & quantity etc.
- Ensure the fire is controlled and does not pose any threat to the people or property.
- Responsible to declare the fire is controlled to the Project Site Emergency Controller.

Rescue Team

- Coordinate with the Plant Emergency Controller.
- Organize the search and rescue operation.
- Coordinate Head Count operation, obtain the Missing details & initiate a rescue operation.

Actions to be taken in case of Emergency

Actions to be taken in the event of an Emergency to include but not limited to the following:

- Do not panic.
- Stop all the jobs and report to the Safe Assembly Point.
- Stop all the machinery and park in a secure place, ensure it does not obstruct movement of the fire engine etc.
- Communicate not to have any further entry to the manufacturing facility.
- Do not stop to collect personal belongings
- Turn Off generators, and other powered equipment, unless these provide power for emergency services.

- Attack fire with the firefighting equipment provided if it is safe to do so and you know to operate the equipment.
- Assist the Fire Fighting Team, Medical Team, Rescue Team, and technical team to control the emergency

Siren

Siren for declaring emergency

On receipt of the information about the Emergency, the emergency controller of the manufacturing facility will operate Siren at the manufacturing facility

The Siren to be sounded continuously for 30 Seconds with an interval of 5 Seconds to be repeated 10 times

Siren for declaring Evacuation

In case of evacuation, Siren to be sounded for 5 seconds till the area is evacuated by people or for 30 minutes whichever is less

Siren for returning to work after emergency is cleared

After confirmation from manufacturing facility authority, continuous ringing of siren for 5 minutes to declare return to work.

Fire Alarm

- An effective fire alarm system shall be provided throughout the facility. This shall include “break glass” fire alarm points or otherwise.
- Automatic systems shall be arranged in relevant areas
- fire safety authority shall be alerted in case of fire outbreak at the facility and operate appropriate fire-extinguishing appliances shall be used, as appropriate.
- Fire alarm system at the manufacturing facility shall be fully operational at all conditions, particularly during refurbishment work or maintenance work carried out in any location within the manufacturing facility.

Firefighting Equipment

- Adequate firefighting arrangement shall be installed within manufacturing facility. This shall include both mobile equipment such as fire extinguishers and fixed system such as hoses and hydrants.
- The location, type and number of firefighting equipment should be determined in accordance with national and local legal requirements
- All firefighting equipment shall be inspected at regular intervals
- Fire extinguishers should be kept at locations where it is visible at all times and not obstructed by machines, raw material, manufactured products etc
- Fire Equipment should be kept at designated areas in such a way that it can be brought in use as quickly as possible
- Firefighting agent is determined by the type of fire that is likely to occur and the nature of materials that are likely to be involved. The use of an inappropriate firefighting agent can be extremely dangerous. The most commonly used firefighting agents are:
    - Water
    - Foam
    - Carbon dioxide; and
    - Powders.
- Water is the most common firefighting agent and is suitable for use on most general fires. As well as extinguishing most fires, it also cools the surrounding area thus reducing the chance of the fire re-igniting or spreading.

- Water and water-based foams should never be used to fight fires involving electrical equipment or chemicals that may react violently with it
- The shelf life of all chemicals used to make chemical foams should be determined and stocks renewed periodically.

Safe Assembly Points

Assembly points have been identified for emergencies.

- Assembly Point 1: (Details to be added by GSL)
- Assembly Point 2: (Details to be added by GSL)
- Assembly Point 3: (Details to be added by GSL)

Evacuation Procedure

General

- In declared emergency on-site, all personnel to leave their area and proceed towards safe assembly points.
- Every person on-site shall know a minimum of two assembly points.
- DO NOT return to an evacuated building/areas unless told to do so by authorized personnel.
- After any evacuation, report to your designated area assembly point. Stay there until an accurate headcount is taken.
- Evacuate unnecessary people from affected area in case they may be harmed
- Evacuation is critical response in case of fire, explosion, major spillage, LPG Release, earthquake, electric shock
- Evacuation can be ordered by Section supervisor/officer/HOD or Security Supervisor or EHS or HR
- While evacuating from the affected site use the nearest safe exit
- Do not make heist otherwise persons may be harmed in stampede
- Visitors should be guided by the host employee
- HOD or his/her alternate will lead the assembly at the assembly point and will support Emergency Response Team in handling the emergency
- All persons should assemble at the nearest assembly point for head count
- In case the nearest assembly gets affected, security will guide the persons to other safe assembly point
- In case any person knows about somebody caught in the emergency or requiring rescue, he/she will immediately inform to security/HR/EHS at the assembly point

Medical Emergency

- Medical emergency arises when somebody gets sick or injured. On getting the information of medical emergency, security need to send ambulance immediately and inform Factory Medical Officer, HR and EHS about the incident
- Sectional first aiders inspect the person and provide suitable first aid
- First aid is aimed at Preventing infection, protecting an injury or damage from worsening
- Only trained first aiders should do first aid activities.
- Hospital where the injured/ diseased is to be sent for treatment will be selected by HR based on the recommendation of Factory Medical Officer
- Perform CPR if the circulation is not occurring in the victim, for electric shock and cardiac arrest case

Collapse of structure, buildings, cranes

In case of potential emergency of collapse is felt, proceed towards designated assembly points. Alert others to the same. CALL for Help.

- Wait for headcount.
- In case of declared emergencies and alarm raised to leave the site or manufacturing facility, proceed towards safe clear area, which is at least 500m away from the affected area or towards the manufacturing facility exit.

- Immediately after a collapse of the crane/ structure, do not attempt to go close to the crane without any standing instruction which may lead to further damage to the trapped personnel (in case any).
- EHS Manager is the command person in this scenario.
- The preliminary effort in this scenario will be to concentrate on areas where people were last seen or known to be. Provide HSE department with this information.
- Administration department to provide with a list of the people in the damaged area.
- Additional information can be gathered from the people who survived the collapse.
- Barricade the area to restrict entry.
- Call firefighting crew, ambulance for rescue.
- Notify legal authorities in this regard

Chemical/oil spillage

- Leave the spill area; alert others in the area and direct/assist them in leaving.
- Without endangering yourself: remove victims to fresh air, remove contaminated clothing and flush contaminated skin and eyes with water for 15 minutes
- Report to area safety officer or area engineer.
- Barricade the spill area to restrict further entry
- Shut off electrical equipment and power supply in the spill area.
- Do not attempt to go back into an area where a chemical spill has occurred.
- If the spill has occurred in confined space or closed room, isolate the area.
- Close the doors and barricade by means of tapes or posting warning signs.
- Establish exhaust ventilation if possible.
- Vent fumes only to the outside of the building.
- Open windows, if possible without exposing yourself to fumes
- Wait for spill control team for clean up

Trapped in the Confined Space

An emergency in a confined space or under soil could vary widely in degree or type, and include:

a) Employees are uninjured and evacuate themselves,
b) Employees are injured, but still capable of evacuating themselves,
c) Employees are assisted to evacuate by persons remaining outside the space,
d) Entry is required in order to evacuate employees,
e) Entry is required to provide medical treatment.

For situations a, b, c

- Inform the area officer or site engineer
- Rescue personnel

For Situation d & e

- Inform the area officer or site engineer
- Check for the presence of hazardous gases with the help of explosive meter or oximeter
- Provide appropriate PPE
- Rescue personnel.

Hazardous Spill

There may be chances of hazardous spill from the storage tanks which can be divided into 3 levels.

- **Level 1:** An incident or threat of a release which can be controlled by the first response agencies and does

not require evacuation of other than the structure or immediate outdoor area. The incident is confined to a small area and does not pose a direct threat to life or property

- Level 2: An incident comprising a greater hazard or larger area which poses a potential threat to life or property and which may require a limited evacuation of the surrounding area
- Level 3: An incident involving a severe hazard or a large area which poses an extreme threat to life and property and that will probably require a large scale evacuation; or an incident requiring the expertise or resources of city, county, state, and/or private agencies/ organizations

Fall from Height

- Inform the Medical team and rescue team
- All employees in the vicinity of the incident shall immediately stop working
- Attempt to communicate with the victim to determine their condition whether they can self-rescue or participate in an assisted rescue
- Record the time (best estimate) when the victim fell and the time when they were rescued. The difference is the length of time the victim was suspended
- Monitor the employee's condition constantly. The signs and symptoms of orthostatic intolerance that can start to be seen in 2/3 minutes include:
  - Faintness
  - Nausea
  - Breathlessness
  - Dizziness
  - Sweating
  - Paleness
  - Loss of vision
- The manufacturing facility emergency controller to evaluate the situation to identify any further hazards that have developed as a result of the accident.
- Assist the rescue team in transferring the victim to the nearby hospital

Electrocution

- Do not touch the victim
- If it is safe, shut off the power and rescue the victim from the current using nonconductive object such as dry wood, rubber, or plastic
- Do not attempt to rescue the victim until the current has been disconnected
- Inform the emergency controller, medical team, and rescue team
- If required, first aider/trained personnel should start cardiopulmonary resuscitation (CPR) and apply Automated External Defibrillator (AED) as soon as possible
- Restrict entry of unauthorised person at the affected area
- Assist in transferring the victim to the nearby hospital

Burns

- In case of severe burns, immediately inform the medical team
- Inform GSL's emergency controller
- Arrange for first aid
- Contact and cooperate with local hospitals and ensure that burn injuries can be adequately treated at these facilities
- Arrange for ambulance for transportation of the victim
- Inform the hospitals of the situation in case of a toxic release
- Maintain a list of blood groups of each employee with special reference to rare blood groups.
- As per GSL's emergency response plan, a burns ward is declared at the Inhouse Medical Centre to attend the 1st, 2nd, 3rd degree burns if the need be. This is to ensure respect to the dead as well as prevention of spreading disease due to decomposition of the same

Fire or Explosion

Fire and Explosion may occur at the manufacturing facility (but not limited to) the following reasons:

- Electrical Failure/Short Circuit
- Inadequate storage/ transportation of flammable substances within storage tanks or other areas
- Storage/ transportation of faulty flammable and/or hazardous material
- Fault in cranes and other operational equipment

The following actions should be undertaken in case of fire/explosion within the manufacturing facility.

- Evaluate the situation and determine equipment and manpower need
- Notify appropriate agency for assistance
- Know the location of the nearest fire extinguisher existing in your area and how to use them training and information to be provided by the HSE Department.
- If a fire is discovered, the alarm should be raised immediately as trivial fires frequently develop into serious fires. Everyone should be instructed how to activate the fire alarm in the event that a fire is detected. False fire alarms should be avoided and investigated and action taken where appropriate
- If a minor fire appears controllable, IMMEDIATELY contact the manufacturing facility in charge.
- Then upon selection of the appropriate fire extinguisher promptly direct the charge of the fire extinguisher towards the base of the flame source.
- If a suspected fire-related emergency exists, alert others by intermittent shouting as “fire”.
- Report to manufacturing facility emergency controller and GSL emergency controller
- Take action to shut off electrical power to affected area, provided illumination is not an overriding factor. Other utilities such as air, steam, and pressurized gas should be shut off unless necessary to emergency operations
- Proceed towards safe assembly points and alert others to do the same.
- In case of declared emergencies and alarm raised to leave the site, proceed towards safe clear area, which is at least 500 m away from the affected area or towards the side exit
- In case major fire, leave the affected area and give way to the GSL firefighting team to get the situation under control.
- Where attendance by different fire authorities may be necessary owing to the boundaries between their areas of responsibility, it is essential to ensure that no confusion can arise in the event of an incident on or near the boundary
- Routine fire inspections should be carried out. These should include inspections during periods when work is not in progress, as many fires result from smoldering and can break out several hours after their initial cause.
- All means of escape in case of fire should be kept free from obstruction at all times.

Vehicle Collision

- Inform the manufacturing facility emergency controller
- Inform concerned authorities and complete the legal formalities
- Assess the situation for injuries, vehicle damage and leakage
- Evacuate the vehicle drivers from the affected vehicle
- Record the accident timing (best estimate) and location of the accident
- Record the vehicles speed at the time of accident
- Arrange to transfer the victims to nearby hospital

Hit by Vehicle

- Inform the medical and rescue team
- Inform the manufacturing facility emergency controller
- Evacuate the vehicle drivers from the affected vehicle
- Arrange for first aid kit to provide initial bandage
- Arrange for ambulance to transfer victim from accident site to the nearest hospital for treatment

Natural Hazards

Flood

- Ensure all emergency response equipment such as life jacket, rubber boats are in order
- Do not panic
- In case of flood warning, shut down electrical appliances, move all the stored tanks to a safer place to keep it out of reach of flood water
- When flood hits, do not enter the flooded area with bare foot
- Use battery operated lights, do not switch on electrical supply unless it is safe to do so
- Rescue team to evacuate trapped persons (if any) from the manufacturing facility
- Stay alert and receive directions from emergency contact numbers
- Evacuate the manufacturing facility at the earliest and return after the situation is under control

Cyclone/Storm

- Do not panic
- Contact local authorities to receive advance information and advice on cyclone/storm
- Keep considerable time margin for safety
- Shift tanks with chemicals to a safer place
- Stay alert and receive directions from local authorities
- Vacate the manufacturing facility at the earliest (in case of high alert for cyclone) under the guidance of GSL and/or local authority
- Report damage/losses (if any) post cyclone/storm to concerned authority

Earthquake

- Do not panic
- In case outdoor, find a safe spot away from cranes, power lines, buildings.
- Stay lying on the ground until the tremor stops
- In case within vehicle, move to a safe location, stop the vehicle, fastened seat belt until the tremor stops
- In case indoor, move under a table until the tremor stops
- Stay alert and receive directions from emergency controller
- Report damage/losses (if any) post-earthquake to concerned authority

Bomb Threat

- Do not panic
- Keep the caller on call as long as possible and ask team member to inform emergency controller
- Try to extract details on bomb location from the caller during the call and trace the bomb location
- Stay away and do not touch any suspicious objects
- Arrange for a wall of sand bag around suspected article
- Prohibit the entry of unauthorised personnel at the bomb suspected area
- In case suspected object is located indoor, open all the doors and windows and do not operate any electrical installation
- Do not keep flammable or hazardous material near suspected object
- Do not flash light on any suspected object
- Stop work and ask the workers and nearby facilities to vacate the area, in case bomb is detected
- Inform bomb disposal squad to remove the bomb from the manufacturing facility.

Risk Assessment

A quantitative risk assessment (QRA)/ Hazard and Operability Study (HAZOP) should be conducted for potential hazards, explosions, access control and a security plan should be developed based on the outcome of the QRA/HAZOP study.

Risk Register

A risk register shall be developed by onsite HSE team to identify those events that could potentially have a significant negative impact on any person, the environment or area. These shall be categorised into two aspects:

- Emergency situations: serious injury, explosion, flood, poisoning, electrocution, fire, release of hazardous substances, incidents involving manufacturing facility equipment and infrastructure;
- Security: Depending on the Risk Assessment, plans may include (but not limited to) terrorism, theft, vandalism, protestors, cyber security;

Emergency Drills, Records & Reviews

The emergency drill shall be carried out at least once in six months by HSE Head and the findings shall be recorded. Mock drills shall be carried out for all the levels covering identified emergencies. This procedure shall be reviewed in the event of major modification recommended by the onsite EHS Manager following an emergency/ emergency drill. The records of the drills and the recommendations/findings shall be maintained and shared at the corporate level.

Training Needs

All the employees (payroll and contractual), contractors, workers engaged through contractors, visitors, workers working at nearby manufacturing facilities and other relevant stakeholders entering manufacturing facility shall be provided with induction training on emergency response in line with this plan.

In addition to the induction training, the above mentioned relevant stakeholders should be also provided with refresher training on emergency response at appropriate intervals

Records

Records on the following shall be maintained.

- Emergency Contact Numbers
- Contact List of GSL and other Authorities
- Emergency Line of Communication
- List of Chemicals/MSDS
- Spill Kit Location
- List of Fire Fighting Equipment
- Records of Mock Drills
- Records on accidents/incidents investigation

Note: GSL to follow State Disaster Management Plan and Emergency Action Plan in addition to the site-specific emergency preparedness and response plan. GSL to also participate in the mock drills and fire related trainings scheduled to be conducted by neighbouring industries.

Also, the ERP to be shared with the neighbouring industries. .

This EPRP shall be updated by GSL in line with State Emergency Action Plan (as and when required).

Emergency Contact Numbers

This list is to be made available at manufacturing facility, to be displayed at various locations and shall be updated regularly.

Personnel	Contact Details	External contact details
Onsite EHS Manager		
Emergency Controller		
Paramedical Staff		
First Aid Trained Professional		
Admin in-charge		
Control Room		
Fire Station (nearest location)		
Fire Station (location)		
Police Station (nearest location)		
Ambulance		
Hospital (nearest location)		
Disaster Helpline		
Blood Bank		
Traffic Police Control Room		

List of Chemicals/ Material Safety Data Sheet

This list is to be made available near the chemical/ container storage area. The material safety data sheets shall be attached or made accessible at relevant areas.

S. No	Name of Chemical	Name of manufacturer	Manufacturer contact number	MSDS Sheet
1.				
2.				
3.				
4.				
5.				

Spill Kit Location

This list to be updated regularly. The list shall be communicated to the employees, contractors and other staff during the trainings.

S. No	Spill Kit Number	Location of Spill Kit	Person in-charge	Last inspection date
1.				
2.				
3.				
4.				
5.				

List of Fire Fighting Equipment

This list shall be maintained at manufacturing facility site and shall be updated regularly. The list shall be communicated to the employees, contractors and other staff during the trainings.

S. No	Location	Type	Capacity	Last inspection date
1.				
2.				
3.				

4.

5.

6.

List of First-Aid boxes

This list is to be maintained at plant site must be updated regularly. The list to be communicated to the employees, contractors and other staff during the trainings.

S. No	Location of First Aid box	Name of Person in-charge	Contact details of person in-charge	Inspection date

Mock Drill Format

This format is to maintain in the records to ensure that records for mock drills are maintained and that the mock drills are conducted regularly during the project operation.

Mock Drill No.

Date:

Event:

Emergency declared at (time):

In-charge of Mock Drill:

Name of Controller:

Name of Observer:

Drill attended by :

Sl. No.	Time	Message from	Message	Action taken	Remarks

No. of mock casualties (if any) :

No. of DCP / Fire Extinguisher used
(Description):

Observations:

Controller: Observer:

Shortcomings:

Members present:

Corrective Action suggested:

Designated Safety Officer Authorized Signatory of Project

Records of Incident/Accident/ Occupational Diseases

	Accident Details								Detected Occupational Diseases						Incident /Dangerous Occurrence/ Emergency								
																		Person Affected					
																		Inside		Out side			
Sr. No.	Date	Time	Place	Type of Accident	Nature of Injury	No of Person Injured	No. of Death	Days Lost	Name of Disease	Chemical Involved	Date of Detection	No. of Persons involved	Type of effect	Remedial Measures	Date	Time	Place	Chemical Involved/ Type of Incident /D.O.	Injured	Died	Injured	Died	Duration of Emergency	Other Details
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1.																								
2.																								
3.																								
4.																								

Appendix 9: Traffic Management Plan

Objective

The construction and operation of the project shall deploy heavy duty motor vehicles for transportation of material during respective phases. Furthermore, the project will also deploy light motor vehicles for commuting of project team within manufacturing facility. Therefore, a traffic management plan has been formulated to guide GSL to ensure proper traffic management of vehicles, traffic path, pedestrian path and internal traffic.

Scope

This plan shall be applicable to the EPC contractor engaged by GSL for the construction phase and the HSE team of GSL, and raw material transporter deploying their trucks at manufacturing facility for material transportation during operation phase. GSL shall be overall accountable for managing sound traffic within manufacturing facility as well as adjacent property that may be impacted by its activities during the construction and operation phases.

GSL to include the following information in the project specific traffic management plan to be developed prior to construction and operation phase:

- Traffic Management inside the Plant
- Traffic Management for the transportation of raw material and movement of staff
- Traffic Management for pedestrian
- Any effect on existing neighboring property traffic or access.

Applicable Laws and Standards

National Regulations

- Vehicle compliance to Motor Vehicles Act, 1988 and the rules frame thereafter.

National Standards

- CPCB norms for vehicular exhaust

International Standards

- IFC General EHS Guidelines
- IFC EHS Guidelines on Community Health and Safety

Roles and Responsibilities

GSL's EHS team shall have the following responsibilities at minimum:

- Communicating traffic management plan to all the contractors deploying their trucks at manufacturing facility
- Periodically securing an updated list of all the construction and operation vehicle details, their Pollution Under Control (PUC) certificate check and corresponding environmental regulatory compliance details with respect to air emission and noise standards;
- Providing advice to drivers on transport management principles, policies and procedures as required.

Access Route Management

The projects in construction and operation phase will add to traffic on the access roads Following mitigation measures shall be incorporated:

- Proper management of vehicular movement within the site, especially during peak hours;
- Different time slots will be allotted to different suppliers. The same will be conveyed to all to prevent any inconvenience to others.
- GSL shall ensure adequate lighting is provided within the plant premises
- Stopping/Parking of vehicles in between the roads to be discouraged.

- Pedestrians walk ways to be adequately marked with proper zebra crossings.
- Loading/ unloading area will be located within the plant premises. Entry/ exit of all the vehicles will be made via the entry area designated by GSL. Vehicular movements within the premises will be managed by trained traffic management operatives. All vehicles will enter and exit the site premise in forward facing direction. It will be ensured that vehicle driver is aware of the plant layout and safe working procedures within the plant premises.
- The movement of heavy, wide or slow-moving loads will be planned at times when traffic volume on the roads concerned is least.
- Appropriate supervision will be provided to control flow of traffic when machinery needs to cross roads.
- Wheel washing on site and road sweeping will be carried out to keep the local highway clear of mud and debris.
- Training and testing of heavy equipment operators and drivers, including vision tests, with records kept of all trainings.
- GSL shall dedicate a separate area for staff who will require daily access parking area within the Plant. Dedicated parking area for visitors shall be provided.

Community Liaison & Community Safety

Traffic safety in local communities will be a high priority for GSL. It is to be ensured by GSL that the communities are advised in advance of project progress and near term activities where transport issues have the potential to impact local communities.

- Local community to be made aware of the increased traffic requirements from the project both construction and operation phase and mitigation / management measures in place to minimize the impact on the community
- Vehicle route planning and alternative route map will be prepared and explained to the drivers
- Impose and enforce speed limits (20 km/h on the internal access road and max speed limit of 80 km.hr on NH) on all haulage vehicles operating on haul routes
- Vehicles carrying fine and coarse materials like sand, gravel, cement etc. will be covered appropriately so as to avoid any deposition of loose materials on approach roads.
- Dedicated pedestrian route will be provided and vehicles will not be allowed to use pedestrian space. In case pedestrian have to use vehicle route safe crossing will be provided.
- Maintaining records of all accidents involving project vehicles and implementing a traffic complaint and corrective action procedure.
- Liaison with the police and other authorities prior to the movement of any abnormal loads or any over dimensioned consignment.
- If road closures are required, diversions will be planned and communicated to the authorities and affected communities in advance. All diversion will be constructed to the specifications of the applicable road authority and will be maintained in good drivable conditions until the completion of the re-instatement work.
- The vehicles entry will be via identified gates/routes and will make use of dedicated route to the loading/unloading area/ parking area. Sufficient number of loading/ unloading bays will be provided. A dedicated area for the turning of such vehicles will (if feasible) be formed and a banksman (helper) will oversee these movements whilst vehicles are maneuvering.
- A detailed plan for signage around the construction and operation areas to facilitate traffic movement, parking facilities, provide directions to various components of the works, provide safety advice and warnings will be prepared. All signs shall be posted in both English and regional dialect.
- The parking of vehicles along footpaths, single lane roads shall be prohibited on community roads and public roads in the vicinity of the project site.
- The project traffic or any project activity will not obstruct the access to neighboring properties.
- Ambulance and fire services will be consulted regarding road diversions. Road diversions will not increase the response time of these services to local communities.
- Clear road markings like reflective paint and signs should be used to alert pedestrians and vehicle operators to traffic hazards in the plant. Signs may indicate:
    - Entry point
    - Exclusion and safety zones

  - Parking and no parking zones
  - Speed limits
  - Vehicle crossings
- Signs and road markings should be regularly checked and maintained so they can be easily seen and read and sealed when they fade.

Management of Vehicle Movement

GSL shall assign responsibility for the coordination during construction and operation phases as the vehicles will be notified of the expected arrival times (for raw material delivery and pickup of manufactured or finished goods). To avoid traffic congestion at the entry gate and nearby areas, a specific "NO DELIVERY" time of \should be designated.

Vehicle Maintenance & Management

In order to minimize the accident rates and the overall transport fuel consumption, GSL will ensure that the vehicle fleet working is maintained according to the manufacturers' specifications. This shall include the compliance of all vehicles with all safety related specifications (such as the fitting of the correct tyres, with adequate reserves of tread, safe for movement in snow areas, inflated to manufacturer recommended levels), as well as mechanically maintaining vehicles to manufacturer specifications so as to minimize fuel consumption as well ensure safety on road.

GSL will ensure the following in respect of vehicle maintenance, noise and emission standards:

- All vehicles shall be maintained so that their noise and emissions do not cause nuisance to workers or local people.
- An up to date database of all vehicles and construction equipment's deployed at the project site will be maintained. The database will contain details about the periodical maintenance, schedule of maintenance, vehicular emission and noise emission testing done as per Indian regulatory requirements, copy of PUC certificates etc.
- New vehicles/equipment purchased 'as new' after contract award shall comply with emission standards in force on the purchase date.
- Older vehicles/equipment not purchased 'as new' after contract award shall be maintained so that noise and emissions levels are no greater than when the vehicle/ equipment was new.
- Avoidance of passage through and near settled areas during night time hours.
- Oil and fuel leaks must be addressed within 24 hrs of observation or reporting on any vehicle or construction equipment.
- Vehicle maintenance and management parameters will form a critical component of key performance indictor for the contractor responsible to maintain their vehicles.
- All heavy vehicles like cranes, battery operated trolleys etc. will be provided with reversing siren.
- Provision for dedicated parking area will be made near the project office for parking the private vehicles of construction personnel.
- Concrete paved areas will be provided for parking of vehicles and overhaul provisions will be made for any accidental spill of oil or fuel during parking or whenever the vehicle is idling
- Sufficient parking area will be provide within the Plant or sufficient parking space will be provided outside the premises. Parking outside the Plant will be managed by GSL and will be ensure that transportation vehicles do not cause inconvenience to the surrounding community.

Vehicle Co-ordination

Different time slots will be allotted to different suppliers. The same will be conveyed to all to prevent any inconvenience to others

Traffic Signage

Dedicated traffic signages which are clearly visible shall be displayed along the traffic route outlining the entry and exit path within manufacturing facility. Pedestrians (if any) shall have separate access from vehicle access by way of separate pedestrian entry and exit. The traffic signage within manufacturing facility shall include (but not limited to) the following:

- Speed Limit
- No Parking
- Pedestrian crossing (if any)
- Exit Signage along the route
- Parking Lot
- No U turns (where Applicable)
- No Overtaking
- Uneven Road (if any)
- No Right/Left Turn
- No Entry
- No Exit

Appointment of Trained Drivers

GSL shall ensure trained drivers are only recruited for vehicle driving. While hiring a driver for construction phases, following aspects will be inspected GSL:

- Driver Qualification.
- Driving Skills.
- Driving License.

GSL shall ensure unauthorized passengers in project related vehicles are strictly prohibited.

GSL's EHS Team shall coordinate with the drivers and driver trainers so that they are trained in accordance with driver training requirements. GSL shall conduct trainings for the drivers on quarterly basis which shall include awareness on the following issues and documents.

- Traffic Management Plan;
- EHS&S Standards and Practices;
- Vehicle Driving Speed Limits; and
- National and local legal requirements to drive a vehicle.

Driver Training

The project EHS requirements and Indian regulatory requirements specify the requirements for driver training. GSL along with EPC contractor will ensure that all drivers and driver trainers are suitably trained in accordance with driver training requirements.

The following issues and documents are to be addressed during driver training in a language (regional dialect) mostly understood by drivers:

- Trip Management Plan;
- Daily pre-use vehicle inspection by the driver;
- Safety kit in vehicle;
- Health and Safety Standards and Practices and;
- National and local legal requirements to drive a vehicle.

Unauthorized passengers in project related vehicles will be strictly prohibited. All the personnel who drive vehicles as a part of contract will have to be in possession of a driving license and will adhere to the general Driver's Safety code and Passenger's Safety code.

Drivers of project vehicles will be required to undertake first aid training and all project vehicles will carry first aid kit which should be adequate to cater for the number of passengers present on the vehicle.

Required Road Safety Trainings will be provided to the driver, to ensure smooth transportation of materials during construction and operation phase. GSL to include clause on defensive driving in the agreement with the wood transporter to prevent any discomfort to the community. GSL to ensure that transporter fulfill the following requirements:

- Take into account load capacity of the trucks
- Well maintained vehicles to be used and daily checks of the vehicles to be undertaken
- Adequate stacking to be done, thus avoiding possible accidents.
- Use strap and ropes of proper strength
- Drivers to be trained & licensed. Obey road rules and speed limits and drive in a careful manner and be considerate to other road users
- Drivers to adapt their driving to suit weather and traffic and road conditions
- Transport routes within log yards should be clearly demarcated and vehicle movement should be closely controlled
- Log stacks should be no higher than a safe height defined by risk assessment which should take account of site specific circumstances including stacking methodology
- Log decks should have stops, chains, or other guards to prevent logs from rolling down and off the deck
- It is recommended that the wood stacking be done in a pyramid shape, that is, forming a base with more logs at the bottom than at the top. In addition, the pile height must not exceed the truck's front panels or the sides struts. With proper stacking, cargo stability can be maintained throughout the journey. In this way, the possibility of load sliding is limited, thus avoiding possible accidents

Vehicle Inspection

GSL shall instruct its contractors to conduct monthly/quarterly vehicle inspection and share report with GSL's EHS team. The inspection shall ensure working of (but not limited to) the following:

- Windshield Wiper
- Brakes and horns
- Seatbelt
- Mirrors
- Engine oil level

- Tyre and Tyre Pressure
- Starter and Ignition
- Brake Lights
- Head Lights
- Turn Indicators
- Reflectors
- Vehicle Cleaning Frequency

GSL shall ensure all the vehicles deployed at the manufacturing facility during construction and operation phases are PUC certified.

Parking Area

A suitable location shall be identified as parking area for parking of vehicles. Separate entry and exit within the manufacturing facility to be provided. Vehicles shall not be allowed to park anywhere outside the hardstand area. Parking area will be provided with oil and fuel adsorbent materials or drip trays in case of any leakages.

Manufacturing facility will have parking space for cars, two wheelers and trucks.. GSL to ensure the vehicles are parked din the designated area's only. Details for parking space availability is mentioned below:

Details	No. of vehicles
Car parking	12-20
Cycle parking	75-100
Two-wheeler parking	45-60
Truck parking	40-50

Records

- Vehicle Inspection Details
- Route Map for traffic movement within manufacturing facility
- Details of vehicles and drivers appointed for vehicle driving such as valid driving license, valid vehicle documents as per Motor Vehicles Act, 1988

Appendix 10: Occupational Health and Safety Management Plan

Objective

The objective of the plan is to address occupational, health and safety risks and hazards associated with project life cycle and include mitigation for effectively managing the risks and minimize any incidents and accidents.

Scope

This plan is applicable to all employees (payroll and contractual), contractors, workers engaged through contractors. These are the minimum health and safety requirements and tracking procedures to be adopted.

Applicable Legislation and Standards

National Regulations

- The Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996
- Rule No 36 of Indian Electricity Rules 1956
- Andhra Pradesh Fire Prevention & Life Safety Measure Act, 2006 and Rules, 2009; National Fire Protection Association
- ESI Act, 1948 (Employees State Insurance Act, 1948)
- Workmen's Compensation Act, 1923

International Standards

- International Finance Corporation (IFC), Environment, Health and Safety guidelines
- IFC EHS Guidelines on Occupational Health and Safety

Roles and Responsibilities

- Onsite EHS Manager shall be responsible for implementation of this plan within manufacturing facility. Onsite EHS Manager shall be also responsible to ensure that this plan is abided by all the contractors and workers working within manufacturing facility
- The Onsite EHS Manager will be supported by the EHS Officer of the EPC contractor during construction phase of the project for implementation of the plan. The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase.
- During operation phase, Onsite EHS Manager along with other EHS team members will be responsible for monitoring and effective implementation of the plan
- Onsite EHS Manager shall be responsible for reviewing and reporting on health and safety performance at manufacturing facility.
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including Contractor's workers (through Contractor Supervisor) working at manufacturing facility.
- Project Manager shall take monthly update on implementation of the plan onsite from EHS Manager and share implementation records at the corporate.
- GSL shall be responsible for ensuring overall health and safety impacts are addressed and managed properly within the facility.

Safety Policy and Committee

- GSL should display QHSE Policy at dedicated locations and communicate the same to the workers
- Establish a safety committee on workplace safety for construction and operation phases
- Develop and implement a COVID -19 and communicable disease prevention and response plan

General health and safety

- Potable (drinking) water shall be made available free of cost to all workers and staff at the site office and toll plazas. Potable water outlets/ dispensers, if provided, shall be clearly labelled for identification. Periodic testing of water quality using external testing laboratories shall be carried out and records shall be maintained.
- Toilet facilities shall be available for all staff and workers. Separate facilities shall be provided for male and female employees and workers. Public toilets, if provided, will be maintained as per the good hygiene standards.
- All staff and workers will be issued personal protective equipment (PPE). The PPE shall be kept clean at all times and maintained in accordance with the manufacturer's requirements.
- The project site office, toll plazas and patrolling vehicles will be provided with portable extinguishers (such as CO2). Automated fire extinguishers shall be provided at strategic locations with a clear labelling of the extinguisher so the type of the extinguisher is easily identifiable. Automated fire detection system and fire alarms will be provided in the office buildings. Firefighting system shall be tested periodically for proper functioning. Toll plazas will be provided with public announcement (PA) system to notify the general public of any emergency situation such as fire.
- A safe assembly area will be identified near the toll plazas and site offices, and evacuation / emergency response procedures will be practiced regularly through mock drills.
- Safety measures in the form of Do's and Don'ts shall be displayed at strategic locations.
- In material storage areas, hazardous materials shall be stored based on their compatibility characteristics. Chemicals stored, if any, will be accompanied by material safety data sheet (MSDS).

Personal Protective Equipment

- Personal Protective Equipment (PPE) shall be provided to all the workers working at manufacturing facility during construction and operation phase;
- A PPE matrix shall be developed and adequate PPE shall be issued to the workers based on specific activity being carried out by each worker.
- Regular inspection of workers shall be conducted to ensure PPEs are worn by workers properly;
- Selection of PPE shall take account of the proper wearing and fitting of the equipment – Project team should take into account that PPE of one size may not fit all;
- Ensure purchased PPE is 'CE' or 'ISI' marked and complies with the requirements of the Indian Standards or European Communities (Personal Protective Equipment) Regulations which require PPE to have the appropriate ISI or CE mark. The marking signifies that the PPE satisfies certain basic health and safety requirements;
- Where PPE is provided workers shall be informed of the risks against which they are being protected by the PPE;
- Workers must also be provided with suitable information, instruction and training (including training in the use, care or maintenance of PPE) to enable them to make proper and effective use of any PPE provided for their protection;
- PPE users must be trained as regards to wearing, proper use and any limitations of PPE.
- Safety Risk Assessment (SRA) or equivalent PPE hazard assessment for PPE requirements shall be developed for each job task at the work place. These assessments will be incorporated into work instructions and/or PPE matrix.
- PPE will be distributed to each affected employee according to the findings of the PPE hazard assessment and/or SRAs. In addition, PPE will be provided at project expense
- Visitors will be provided with the appropriate PPE (e.g. Reflective Jackets, Safety Shoes, Safety helmet) while entering the manufacturing facility during both construction and operation phases. Exceptions shall be

approved by the onsite EHS team. Contractors shall provide PPE to their own employees if it is not stipulated in the contract.

- Engineering or administrative controls shall be implemented, where feasible, to reduce noise levels to acceptable levels. Where such controls are not feasible, hearing protection devices shall be provided and shall be required to be worn by employees
- Employees shall wear approved hearing protection when exposed to noise levels greater than the permissible noise exposures in 85 decibels (dB) as indicated by the governing regulation.
- The type of hearing protection to be used depends on the comfort of the user and noise exposure. Ear protectors fall into two main groups:
    - Ear Plugs (Insert Type) –Available in a variety of materials. Plugs must fit properly and remain correctly seated to provide the rated attenuation. Employees should wash their hands prior to handling or inserting earplugs.
    - Earmuffs –Proper fit is important. Seal must not be compromised by hair or glasses frames
- Personnel Fall Protection harnesses shall be used as an alternative fall protection when equipment and walking and working surfaces such as ladders, platforms, scaffolds etc., cannot be guarded as required.
- Harness lanyards shall be at least ½ inch (1.25 cm) diameter nylon rope or equivalent, shall have a nominal breaking strength of 5,400 pounds (2450 kg), and shall be of such length and arrangement that when tied off, will restrict a fall to less than 4 feet (1.2m) per best practice.
- It is required that employees and contractors use two lanyards or a two legged "Y" lanyard, to ensure that 100% tie off can be achieved including transitioning to different areas.
- All body harnesses, lifelines, and lanyards shall be inspected before each use
- All lines, belting, hooks, fastenings, and other parts should be checked for tears, breaks, damage, heavy wear, deformation, and missing parts. If any defects are found, the equipment must be immediately removed from service until the defective parts are appropriately repaired or replaced.

Permit to Work

A permit-to-work system is a formal written system used to control certain types of work that are potentially hazardous. The permit specifies the work to be done, and the precautions to be taken. Permits-to-work form an essential part of safe systems of work for many construction activities.

Identification of Access Controlled Areas

- A process shall be undertaken to identify workplace requiring controlled access arrangements for all high-risk areas within the manufacturing facility
- A hazard risk assessment shall be done to identify the hazards and determination of the type of access controls to be implemented.
- Access control may be communicated through site maps which identifies specific area requiring access controls.

Issuance of Permit to Work

Based on hazard risk assessment, GSL shall identify all the work activities that require a permit in order to commence the work:

- General Work
- Working at Heights
- Confined Space Entry (if any)
- Energy isolation including working with electrical installations
- Handling Dangerous Goods

Permit Authorization

A permit to work will be fully effective only after the appropriate permit has been completed and issued by the permit issuer.

Methods to be used and the precautions to be taken shall be agreed by the Permit Issuer and the Supervisor before signing off the document.

Permit Receipt

- The permit receiver is required to sign the permit confirming their understanding of work, hazards involved and the precautions required.
- The permit receiver is required to communicate the requirements described in the permit to all the workers involved in the work.
- If at any time, the conditions in the workplace change then the permit receiver should stop work and communicate this to permit issuer
- Employee must notify the permit issuer and the supervisor on arrival at the site for performing the specified work

Permit Duration

As work environment conditions may change, permits are valid only for a specific period of time (until the specified date on the work permit).

Pressure Vessels

- Pressure vessel inspections for licensing purposes are to be inspected by certified professionals. GSL to maintain a list of agencies who may be commissioned to perform boiler and pressure vessel inspections and employ individuals who have been certified.
- All pressure vessels shall be inspected for insurance and safety purposes after installation, at prescribed frequencies, and after any welding, alterations, repair or relocation
- The owner of a new or existing pressure vessel is responsible for maintaining the pressure vessel in accordance with the manufacturer's instructions
- Pressure vessels shall be rated to no less than 4 times the maximum allowable working pressure MAWP.
- Pressure sources shall be limited to the MAWP of the lowest rated system component by a regulator and relief device (valve or disk) downstream of the regulator.
- Gauges shall be graduated to the MAWP (but preferable 20% - 30% above MAWP). Materials shall be compatible with the fluid.
- Rupture disks, where used, shall be approved.
- Pressure control or any other switches which control pressure shall not be bypassed.
- Nonflexible metal pipe, tubing, fittings, and valves appropriate for the system fluid and rated at or above the system MAWP shall be used. Special flexible metal hose shall be used where flexing is required.
- Certificates must be turned in for pressure vessels that are no longer operational.

Boilers

- Proper registration: Contractors and inspectors should be registered with the appropriate regulatory agency (often at the state level) prior to installing or making any repairs or modifications to boilers.
- Review previous inspection reports and documents: GSL should make available all previous inspection reports and other documentation to the inspector for review prior to the date of inspection.
- Ensure proper construction and installation: High-pressure boilers should be constructed, stamped, and installed in accordance with the requirements outlined by Inspectorate of Boilers (IoB), GoA.
- Assess safety controls: Boilers installed require appropriate safety controls, safety limit switches, and burners, as well as electrical requirements, based on the applicable national or international standard.
- Assess remote shutdown: High-pressure boilers must have a manually operated remote shutdown switch, marked clearly for easy identification and positioned outside the boiler room door.

- Assess instruments, fittings, and controls: A variety of requirements related to gages, gage glass, operating pressure, shutoff valves, pressure-temperature ratings, water columns, connections, and other controls. Assess the boiler's instruments, fittings, and controls to ensure compliance with IoB.

Electrical Safety

- All the workers shall be trained on electrical safety prior to start of work at the electrical areas;
- All electrical parts exceeding 50 volts will be de-energized before a worker works on or near equipment. When any worker is exposed to direct or indirect contact with parts of fixed electrical equipment or circuits that have been de-energized, the electrical energy source will be locked out;
- Portable ladders will have nonconductive surfaces if they are used where the worker or the ladder could be exposed to electrical shock hazards;
- Workers will be provided with adequate light to work on energized equipment or equipment will be relocated to ensure adequate light is available;
- All electrical equipment and machinery must be grounded effectively so that there is no potential difference between the metal enclosures. Use the voltage detector to find discrepancies and other test equipment to determine the corrective action required.
- Where there is a worker exposure to potential line-to-ground shock hazards, Ground Fault Circuit Interrupters (GFCI) protection should be provided. This is especially important in work areas where portable electrical equipment is being used in wet or damp areas in contact with earth or grounded conductive surfaces;
- Provide insulation mats and electrical resistant personal protective equipment (PPEs), to the workers working on electrical circuits or electrical equipment;
- For combustible/flammable atmospheres (e.g., at hazardous material or explosive container storage areas), all electric equipment and wiring systems in classified locations must meet the regulatory standard.

Lock Out tag Out

Lockout and Tagout devices shall meet the following criteria to ensure that they are effective and not removed inadvertently.

- Lockout devices shall work under the environmental conditions in which they are used. Tagout device warnings shall remain legible even when they are used in wet, damp, or corrosive conditions.
- Lockout and Tagout devices shall be designated by colour, shape, or size. Tagout devices shall have a standardized print and warning format.
- Lockout devices and Tagout devices shall be strong enough that they can't be removed inadvertently. Tagout devices shall be attached with a single-use, self-locking material such as a nylon cable tie.
- Any worker who sees a lockout or tag out device must be able to recognize who attached it and its purpose.
- GSL shall do the following before implementation of LOTO:
    - Inform all affected workers of equipment shutdown.
    - Shut down equipment.
    - Isolate or block electrical energy.
    - Lockout or Tagout the energy sources.
    - Verify the equipment is isolated from the energy and de-energized.
- GSL shall do the following before they remove lockout or tagout devices and re-energize equipment:
    - Remove tools and replace machine or equipment components.
    - Ensure all workers are clear of the work area.
    - Verify machine or equipment power controls are off or in a neutral position.

  - Remove the lockout or Tagout device.
- Re-energize equipment.

Work at Height

- Conduct hazard risk assessment prior to undertaking any work at Factors to weigh up include the height of the task, the duration and frequency, and the condition of the surface being worked on.
- Avoid work at height where it's reasonably practicable to do so.
- Where work at height cannot be easily avoided, prevent falls using right type of equipment.
- Minimize the distance and consequences of a fall, by using the right type of equipment where the risk cannot be eliminated.
- Implement Permit to Work System for all types of work at height.
- Person to work at height must be trained.
- Medical testing for people required to work at height should be conducted and the tests should include conditions such as vertigo or illness that may affect the person or the work.
- Ensure workers can get safely to and from where they work at height.
- Ensure equipment is suitable, stable and strong enough for the job, maintained and checked regularly.
- Take precautions when working on or near fragile surfaces.
- Provide protection from falling objects.
- Consider emergency evacuation and rescue procedures.

Confined Spaces

- The engineering control commonly used in confined spaces is mechanical ventilation. The Entry Permit system is an example of an administrative control used in confined spaces. Personal protective equipment (respirators, gloves, ear plugs) is commonly used in confined spaces as well.
- The important thing to remember is that each time a worker plans to enter any work space, the worker should determine if that work space is considered a confined space. Be sure the confined space hazard assessment and control program has been followed.
- Before entering any confined space, a trained and experienced person should identify and evaluate all the existing and potential hazards within the confined space. Evaluate activities both inside and outside the confined space.
- Air quality testing: The air within the confined space should be tested from outside of the confined space before entry into the confined space. Care should be taken to ensure that air is tested throughout the confined space - side-to-side and top to bottom. A trained worker using detection equipment which has remote probes and sampling lines should do the air quality testing. Always ensure the testing equipment is properly calibrated and maintained. The sampling should show that:
- The oxygen content is within safe limits - not too little and not too much.
- A hazardous atmosphere (toxic gases, flammable atmosphere) is not present.
- Ventilation equipment is operating properly.
- The results of the tests for these hazards are to be recorded on the Entry Permit along with the equipment or method(s) that were used in performing the tests. Air testing may need to be ongoing depending on the nature of the potential hazards and the nature of the work.
- Implement permit to work system for confined space entry.

Noise Management

- All areas within the project premises which have a potential to be affected by noise and vibration shall be identified using and an inventory of such areas shall be maintained.
- Noise emissions shall be regularly monitored and recorded as appropriate

- Where necessary, vibration caused due to any machinery, equipment installed within GSL/GSL premises shall be monitored to ensure that no damage is being caused to adjacent buildings and services.
- Where any monitoring is being carried out, all records will be retained and reported as appropriate.
- All personnel on site will be made aware of their responsibilities to ensure noise is managed correctly.
- GSL shall provide noise control measures such as acoustic hoods, silencers, enclosures etc. on the sources of noise generation.
- Heavy construction activity shall be done during the day time.
- Working hour for worker working in high noise area shall be rotated. Hearing protection such as earplugs/muffs will be provided to those working very close to the noise generating machinery.
- Examples of high noise areas within GSL premises include:
    - Construction sites
    - Maintenance work location
    - Transformer room
    - Boiler Area
    - Loading and unloading areas
- Employees or workers engaged through the contractors shall not be exposed to a noise level greater than 85 dB for duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB.
- The use of hearing protection shall be enforced actively when the equivalent sound level over 8 hours reaches 85 dB, the peak sound levels reach 140 dB, or the average maximum sound level reaches 110dB. Hearing protective devices such as Earplugs/Muffs provided shall be capable of reducing sound levels at the ear to at least 85 dB
- Although hearing protection is preferred for any period of noise exposure in excess of 85 dB, an equivalent level of protection can be obtained, but less easily managed, by limiting the duration of noise exposure. For every 3 dB increase in sound levels, the 'allowed' exposure period or duration should be reduced by 50 percent.
- Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible.
- Periodic half yearly medical hearing checks i.e. audiometric test shall be conducted by a certified doctor on workers exposed to high noise level.
- GSL shall conduct regular ambient air monitoring with respect to noise and shall ensure that the noise level in the industrial area is regulated within the following specified limits: 75 dB during the day time (06:00-22:00); and 70 dB during night time.

Hot Work

- Special precautions must be taken to ensure proper ventilation of area when welding work is carried out as well as ensuring proper personal protective equipment is used including the use of fire blankets to prevent fire or damage to other products as required. Fire blankets must always be kept in good condition.
- Hot work should be avoided whenever possible and inherently safer methods should always be considered.
- Whenever possible, hot work operations should be conducted outdoors, away from critical operations and combustible materials. Identify a designated locations to undertake hot work;
- Implement the permit to work system for non-routine hot work;
- Properly trained personnel should be assigned to undertake and supervise hot work;
- Have a portable fire extinguisher and/or fire hose readily available and personnel is adequately trained in its use.
- Completely familiar with site-specific fire fighting arrangements and emergency notification procedures.
- Leave the hot work area in a safe condition after work is completed.

- All employees and contractor workers involved with hot work activities should receive annual training and ccertification. In addition, hot work management procedures should be formally reviewed annually, at a minimum, to assess the effectiveness of the program and any needed changes and/or improvements properly implemented.

Scaffold and Ladders

- Read and follow all labels/markings on the ladder/ scaffolds.
- Always inspect ladder prior to using; if it is damaged, it must be removed from service and tagged until repaired or discarded.
- Always maintain a 3-point (two hands and a foot, or two feet and a hand) contact on the structures when climbing. Keep your body near the middle of the step and always face the ladder while climbing.
- Ladders must be free of any slippery material on the rungs, steps or feet.
- Do not use a self-supporting ladder (e.g., step ladder) as a single ladder or in a partially closed position.
- Use a ladder only on a stable and level surface unless it has been secured (top or bottom) to prevent displacement.
- Do not place ladder/scaffolds on boxes, barrels or other unstable bases to obtain additional height.
- An extension or straight ladder used to access an elevated surface must extend at least 3 feet above the point of support. Do not stand on the three top rungs of a straight, single or extension ladder.
- The proper angle for setting up a ladder is to place its base a quarter of the working length of the ladder from the wall or other vertical surface.
- A ladder placed in any location where it can be displaced by other work activities must be secured to prevent displacement or a barricade must be erected to keep traffic away from the ladder.
- Do not exceed the maximum load rating of a ladder. Be aware of the ladder's load rating and of the weight it is supporting, including the weight of any tools or equipment.
- The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.
- Scaffolds and their components shall be capable of supporting without failure at least four times the maximum intended load.
- Nails or bolts used in the construction of scaffolds shall be of adequate size and in sufficient numbers at each connection to develop the designed strength of the scaffold. Nails shall not be subjected to a straight pull and shall be driven full length.
- Scaffolds shall be provided with a screen between the toe board and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. Standard Wire one-half-inch mesh or the equivalent, where persons are required to work or pass under the scaffolds.

Fire Protection

- Wherever practical, the new structures at the manufacturing facility shall be constructed of non-combustible materials. If not practical, select construction material for new structures that will reduce the probability of fire and limit the consequences of any that may occur
- Follow national or local legal requirements which set out standards for compartments (subdivisions of a building), particularly those where flammable or other dangerous substances are kept
- Know the location of the nearest fire extinguisher, assembly area and fire exit
- Training on use of firefighting equipment shall be provided to the workers on by GSL
- If a minor fire appears controllable, immediately contact the area safety steward
- Upon selection of the appropriate fire extinguisher promptly direct the charge of the fire extinguisher towards the base of the flame source.
- If a suspected fire-related emergency exists, alert others by intermittent shouting as "fire".

- Report to onsite EHS Manager or site engineer.
- Proceed towards assembly points and alert others to do the same.
- In case of declared emergencies and alarm raised to leave the site, proceed towards safe clear area, which is at least 500 m away from the affected area.
- Sources of ignition shall be rigorously controlled, particularly in container yard, workshop area and other places where flammable materials are likely to be present

Fire Alarm

- An effective fire alarm system shall be provided throughout manufacturing facility. This shall include "break glass" fire alarm points or otherwise.
- Automatic systems shall be arranged in relevant areas
- GSL fire safety authority shall be alerted in case of fire outbreak at the manufacturing facility and operate appropriate fire-extinguishing appliances shall be used, as appropriate.
- Since the manufacturing facility occupies a large area, it may not be necessary to alert all employees and workers in the manufacturing facility immediately in the event of a fire, however, a staged fire alarm system that allows different areas to be alerted may be adopted. The fire alarm system in any building of manufacturing facility shall be audible throughout the entire building.
- Fire alarm system at the manufacturing facility shall be fully operational at all conditions, particularly during refurbishment work or maintenance work carried out in any location within the manufacturing facility.

Firefighting Equipment

- Adequate firefighting arrangement shall be installed within manufacturing facility. This shall include both mobile equipment such as fire extinguishers and fixed system such as hoses and hydrants.
- The location, type and number of firefighting equipment should be determined in accordance with national and local legal requirements
- All firefighting equipment shall be inspected at regular intervals
- Fire extinguishers should be kept at locations where it is visible at all times and not obstructed by material.
- Fire Equipment should be kept at designated areas in such a way that it can be brought in use as quickly as possible
- Firefighting agent is determined by the type of fire that is likely to occur and the nature of materials that are likely to be involved. The use of an inappropriate firefighting agent can be extremely dangerous. The most commonly used firefighting agents are:
    - Water
    - Foam
    - Carbon dioxide; and
    - Powders.
- Water is the most common firefighting agent and is suitable for use on most general fires. As well as extinguishing most fires, it also cools the surrounding area thus reducing the chance of the fire re-igniting or spreading.
- Water and water-based foams should never be used to fight fires involving electrical equipment or chemicals that may react violently with it
- The shelf life of all chemicals used to make chemical foams should be determined and stocks renewed periodically.

Escape in case of Fire

- Adequate means of escape shall be determined and communicated to all the workers and employees at the manufacturing facility. Escape should lead to safe places away from the fire outbreak area

- Escape should normally be available by at least two different routes, except where very small travel distances are involved
- Assembly points to which workers can safely go in the event of a fire should be clearly identified.
- Fire drills shall be conducted on a periodic basis and records shall be maintained.

Risk Assessment

- A quantitative risk assessment (QRA)/ Hazard and Operability Study (HAZOP) should be conducted for potential hazards, explosions, access control and a security plan should be developed based on the outcome of the QRA/HAZOP
- A Hazard risk assessment (HRA) should be conducted depending on the types of chemicals being handled at the manufacturing facility to ensure safety and wellbeing of the workers.

Training Needs

- All workers should be trained to do their work safely and efficiently, as well as to develop general safety awareness.
- Workers should be made aware of the potential effects of their actions on others, as well as the specific hazards of their work and methods to control them.
- Training should include both general induction training and training relevant to their specific work.
- Consideration should be given to the need for continuation or refresher training in addition to initial training
- Records should be maintained of the training that each worker has received and the competencies that have been attained.
- All workers (regular and contracted) should be provided with training on Health and Safety policies in place with appropriate refresher courses throughout the life cycle of the Project

Induction Training

- General induction training should be given to all persons who are working at the manufacturing facility, or who may visit the manufacturing facility. This training should cover the general hazards associated with manufacturing facility
- The training should also include site-specific hazards and relevant local rules, emergency arrangements and the need to cooperate with other persons working within manufacturing facility
- Visitors should be given information including, for instance, leaflet setting out basic information, including the action to be taken in an emergency

Job Specific Training

- Job-specific training, including knowledge of material/chemical-handling methods including handling of dangerous goods, should be provided to all the workers
- Training should generally include both theoretical training in a classroom and practical training.
- Relevant information on matters that are likely to affect worker's safety or health should be available to all workers. The information should be given to them in writing or made available in local language or by other means, including posting in working areas
- The information should include relevant safe systems of work, material safety data sheets relating to flammable, that they use during their work that could be harmful to their health, and reference to relevant manufacturing facility safety and health legal requirements.

Management Measures

- Develop and implement a COVID -19 and communicable disease prevention and response plan
- All workers (regular and contracted) should be provided with training on Health and Safety policies in place with appropriate refresher courses throughout the life cycle of the Project

- Permit to work system should be implemented to ensure that work at confined space, work at height and cranes and lifting equipment is operated by trained and authorized persons only
- Adequate firefighting system should be installed at the project site including fire extinguishers, fire hydrants, sprinklers, sand buckets etc.
- Training of the workers on climbing techniques, and rescue of fall- arrested workers should be provided
- Training on hazardous chemical and material handling should be provided to the workers and PPEs such as rubber gloves, respirator, approved eye protection etc. should be issued
- Appropriate safety harnesses should be provided for working at heights
- Safe drinking water as per IS 10500:2012 should be provided to the workers
- Signs of "no smoking" should be provided at designated locations.
- Workers should be provided with 1 hour break in every 8-hour shift.
- Notice boards with all safety measures to be taken at construction site and accident-prone areas should be displayed at designated locations within the construction site.
- Driver safety trainings should be provided to the workers involved in transportation of construction material
- An incident investigation system shall be developed and records on occupational incidents, accidents, contraction of diseases shall be maintained and shared at the corporate level and to the lenders as per agreed frequency
- First aid kit with sufficient quantity of medicines to meet requirement of labors during construction activity should be maintained at site.
- The assembly area, nearest hospital, ambulance, fire station and police station should be identified in the implemented emergency management plan.
- Project should tie up with nearby hospitals for treatment of workers in case of emergency
- Pre- medical checkup of workers should be conducted prior to appointment at construction site
- Vehicle movement and parking within the premises will be manned to avoid accidents
- Route for vehicle movement shall be marked and pedestrian shall be restricted on the vehicle route.
- Excavated areas should be temporarily fenced to avoid access to outsiders
- Workers who are engaged in welding works will be provided with welder's protective eye shields
- The use of any toxic chemical will be strictly in accordance with the manufacturer's instructions
- Electrical and maintenance work should not be carried out during poor weather and during lightning strikes.
- Appropriate sign boards should be displayed with life-saving equipment giving clear instructions for raising the alarm in the event of an emergency and for the resuscitation of a person rescued from drowning.
- Adequate and suitable life-saving equipment should be provided and maintained for the rescue of anyone in danger of drowning. These should include lifebuoys, throwing buoys or lines, boathooks/poles of sufficient length or other suitable equipment.
- Life-saving equipment should be located at suitable places at intervals of not more than 50 m. The locations should be kept free of obstructions so as to be easily visible at all times.
- Adequate illumination, lighting and reflectors should be provided at the construction site for work during nigh time
- All permanent or temporary obstructions should be clearly marked to be visible by day and night.
- Visual sign boards should be displayed on wet and slippery floors. Pedestrian path should be clear of any unwanted objects that may lead to trip and fall.

- Workers should be provided with earplugs to work at areas with high noise levels i.e., areas where machineries are being operated.
- Working hours should be rotated and no worker should be allowed to work at high noise areas i.e., areas where machineries and vehicles are being operated for the entire shift
- Develop and implement standard E&S covenants for the EPC contractor and other contractors to ensure that all GSL E&S requirements of the project (e.g. ESMP, ESMS, labor) are cascaded and implemented. It should include requirements to provide workers' accommodation aligned with IFC/EBRD guidelines.

Management Measures Particular to Operation Phase

- SOPs to be developed for handling of different types of chemicals and materials ((inclusive of hazardous, explosives, flammable substances, poisonous or toxic substances, infectious substances, corrosive substances, and combustible substances) and staff (direct and indirect) to be adequately trained
- Protocol of government and GSL to be followed for handling of explosives, other hazardous /dangerous goods. Staff to be adequately trained on handling and storage of different types of material and chemicals
- Life-saving equipment should be located at suitable places at intervals of not more than 50 m. The locations should be kept free of obstructions so as to be easily visible at all times.
- Display emergency contact numbers and assembly area at dedicated locations
- Tie up with nearby hospitals for treatment in case of emergency
- Develop a training calendar with activity specific trainings to be provided to the workers including loading and unloading, handling containing explosives and hazardous material, disposal of contaminated rags, used oil, handling oil spills and leaks
- Separate movement of pedestrian workers from areas of vehicle traffic and make vehicle route one way to the extent possible
- Signs of "no smoking" should be provided at designated locations.
- Design materials handling operations to allow for a simple, linear layout and to eliminate the need for multiple transfer points, which can increase the possibility of accidents/injuries.
- Provide permit to work prior to working at confined areas
- Workers should be provided with earplugs to work at areas with high noise levels i.e., areas where machineries and vehicles are being operated.
- An incident investigation system shall be developed and records on occupational incidents, accidents, contraction of diseases shall be maintained and shared at the corporate level and to the lenders as per agreed frequency
- Provide training on using spill kits to manage small leaks and spills
- Communicating chemical hazards to workers through labeling and marking according to national and internationally recognized requirements and standards, including the International Chemical Safety Cards (ICSC), Materials Safety Data Sheets (MSDS), or equivalent. Any means of written communication should be in an easily understood language and be readily available to exposed workers and first-aid personnel
- Provide adequate firefighting system at hazardous and explosive container storage area
- Provide adequate PPEs such as masks, reflective vest, safety shoes etc. Provide adequate body suit for workers working at storage area of flammable materials
- Providing specific worker training in handling of flammable materials, and in fire prevention or suppression.

Records

- Training Records
- Hazard identification and Risk Assessment for each activity during construction and operation phases

- PPE Matrix
- Incident/Accident Reporting
- Medical records of employees and workers
- Container details including details on dangerous goods
- Quantitative Risk Assessment/ HAZOP Study
- Health Risk Assessment

Incident/ Accident Report Form

1.	Site/Plant Name:	
2.	Site/Plant Address:	
3.	Capacity:	
4.	Site Manager/Service Engineer/another reporter:	
5.	EPC Contractor/Cleaning Contractor	
6.	Date of Incident:	Time of Incident:
7.	Specify the Incident: □ Accident (Personnel Injury, property, environmental damage) □ Near miss (No Personnel Injury, property, environmental damage) □ Incident (loss or damage to the property or environment due to fire, natural disaster or any other unusual occurrences on the site)	
8.	Location of the Incident:	
9.	Who was involved in the incident: □ Employee □ Contractor Worker □Public □ Visitor □ Other	
10.	Name of Person(s) involved in an incident:	
11.	Name and Contact details of any witness of the incident:	
12.	Incident Description including any events leading to or immediately following the incident:	

13.	Root cause of the accident/incident:
14.	Attach Photograph of the Incident:
15.	Immediate Corrective Measures:

Signature of Reporter:	Date:
Name of Reporter:	
Signature of Reviewer:	Date:
Name of Reviewer:	

Training Records

This list shall be maintained to ensure that trainings are conducted regularly at the manufacturing facility.

Aspect	Details
Department:	
Date & Time:	
Person-in-charge:	
Training name:	

List of attendees:

Next date of training:
Prepared by:

Appendix 11: Air Emission Management Plan

Objective

The Objective of the plan is to prevent, control, and reduce air pollution within manufacturing facility. The procedures defined in the plan aims to establish the minimum requirements for management and supervision of air emission management during construction and operation phases.

Scope

The air emission management plan is applicable to GSL and its contractors and sub-contractors (if any) during construction and operation phases within the manufacturing facility.

Applicable Legislations and Standards

National Regulations

- The Environmental Protection Act / Rules – 1986
- The Air (prevention and control of pollution) Act 1981

National Standards

- National Ambient Air Quality Standards (NAAQS), Central Pollution Control Board (CPCB)

International Standards

- International Finance Corporation (IFC's) EHS Guidelines on Air Emissions and Ambient Air Quality- Table 1.1.1: WHO Ambient Air Quality Guidelines and Annex 1.1.2- Illustrative Point Source Air Emissions Prevention and Control Technologies
- IFC General Environment, Health and Safety Guidelines
- Emission limits for DG sets based on rated capacity, CPCB

Roles and Responsibilities

- Onsite EHS Manager of GSL shall be responsible for implementation of this plan within manufacturing facility during construction and operation phases. The onsite EHS Manager shall be responsible for the customization of this plan in case of specific activity is carried out during new construction or vehicular movement which may cause air pollution.
- The Onsite EHS Manager will be supported by the EHS Officer of the EPC contractor during construction phase of the project for implementation of the plan. The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase.
- During operation phase, Onsite EHS Manager along with other EHS team members will be responsible for monitoring and effective implementation of the plan.
- Onsite EHS Manager shall be responsible for reviewing and reporting on the management of air pollution controls within the manufacturing facility.
- Project Manager shall take monthly update on implementation of the plan onsite from EHS Manager and share implementation records at the corporate.
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including Contractor's workers (through Contractor Supervisor) for maintaining the inventory of potential sources of air emissions and its management.
- GSL shall be responsible for ensuring overall EHS impacts are addressed and managed properly within the port.

Construction Phase

Source of Emission during Construction Phase

The likely emissions from construction activities will typically include the following:

- Fugitive dust emissions from piling work, handling of construction materials at project site
- Vehicular emissions due to traffic movement at manufacturing facility and transportation route for transportation of construction material and machinery
- Dust emission due to loading, unloading and storage of construction material like cement, sand, silt
- Emission from batching plants, transit mixers
- Exhaust emissions from construction machinery and other equipment if any
- Emissions from diesel generators used for power back up
- VOCs emissions from paints, building and furnishing materials and other solvents, movement of diesel-based vehicles and other construction equipment.

Management Procedure for Construction Phase

- Inventorisation of all point and non-point sources of emission shall be undertaken as per the format provided in Air Emissions Inventory Checklist. The inventory of point and non-point sources of emissions shall also list the air pollution control devices (APCD) provided.
- GSL shall strictly comply with the standards/guidelines for the control of emission from stationary Diesel Generator Sets.
- Adequate stack height as per CPCB norms shall be provided for DG sets.
- Diesel generator use will be restricted to emergencies and power back-up only to minimize air emissions.
- GSL shall take all the possible measures to avoid all kind of fugitive dust emission from transportation of materials. All the trucks shall have a cover mechanism.
- Vehicle engines need to be properly maintained and should have a valid Pollution under Control (PUC) to ensure minimization in vehicular emissions.
- To control dust, emissions due to construction activities water sprinkling schedule shall be developed by the site supervisor in consultation with onsite EHS Manager.
- In case of excessive fugitive dust, work should be phase down until source of dust is identified and suppression measures have been implemented
- Excavated soil and waste at the construction site should be carefully handled and soil heaps should be appropriately covered to minimize dust generation
- Stockpiles shall be covered with tarpaulin sheets or adequately water sprinkled.
- Batching plant should be set up away from drainage lines. Periodic sprinkling should be done in the batching plant area to suppress dust emissions
- Speed of vehicles on site will be limited to 10-15km/h which will help in minimizing fugitive dust emissions due to vehicular movement.
- Unloading from cement delivery trucks would be done on pallets which would be covered with tarpaulin sheets during non-working periods
- Point sources of emissions shall be provided with adequate air pollution control devices (APCDs).
- The air pollution control devices shall be subjected to adequacy and efficiency evaluations.
- Where it is suspected that the ambient air quality is below standards notified in National Ambient Air Quality Standards (NAAQS), issued by Central Pollution Control Board (CPCB), Ministry of Environment, Forest and Climate Change, Government of India, EHS Manager, in consultation with the Management shall assess whether an air quality monitoring shall be carried out to determine the potential harmful contaminant and any remedial action necessary to control those contaminants
- Ambient air quality monitoring during construction phase should be conducted at manufacturing facility and reports to be shared at the corporate level and to the lenders
- Substitute fewer volatile solvents such as aqueous solvents in furnishing materials

Operation Phase

Source of Emission during Operation Phase

- Exhaust Emission from diesel generators for power back up, steam boiler, resin manufacturing process, and processing area
- VOC emissions from Chemical handling/liquid, raw material transferring to reactor
- Flue gas emissions from Heating process of resin
- Particulate matter emissions from Handling of raw material bags in storage area
- Exhaust emission from vehicles and equipment's
- Dust particulates from coal and ash handling systems, fly ash from stack flues, fly ash dust particles from ash silos and ash disposal area
- Wood dust arises from mechanical operations such as chipping and chip grading, and from cutting and sanding of pressed board

Management Procedure for Operation Phase

- Inventorisation of all point and non-point sources of emission shall be undertaken as per the format provided in Air Emissions Inventory Checklist. The inventory of point and non-point sources of emissions shall also list the air pollution control devices (APCD) provided.
- Design manufacturing facility layout and facilities, where possible, to minimize travel distances and transfer points,.
- Minimize engine idling to the extent possible
- Develop greenbelt around the manufacturing facility for carbon sequestration
- Vehicles owned by GSL shall use manufacturer recommended engine maintenance program regardless of the size of the vehicle
- Drivers should be instructed on driving practices to reduce fuel consumption including measures acceleration and safe driving limits
- Implement regular vehicle maintenance and repair program
- Diesel Generators at site should be provided with adequate stack height as per CPCB guidelines. DG sets which are already installed should be maintained at regular intervals and temperature within the stacks should be regulated. Stack emission should be within CPCB limits.
- For management of VOC, Kettle will be connected to the vapor condenser. The VOC emission in terms of handling losses will be reduced by storing liquid material in closed storage tanks as well closed loop transfer system.
- The formaldehyde in wood-based panels primarily comes from urea-formaldehyde resin (which is being manufactured at the captive resin plant), and there is a linear relationship between the formaldehyde content in resins and formaldehyde specific emission rate from wood-base panels, however drying and hot-pressing techniques are helpful in reducing the formaldehyde and VOC emissions from wood-based panels.
- Flue gas emission from heating process of resin as well as boiler to be margined by use of Multi cyclone system or Bag filter or ESP (As per APPCB pollution norms & guidelines)
- Passenger Vehicles used by the Facility or contractors for inspection and O&M purpose should be Pollution Under Control (PUC) certified
- Monthly ambient air quality monitoring will be conducted at manufacturing facility by GSL. Records of ambient air quality monitoring conducted shall be maintained by GSL. A communication protocol shall be developed between GSL and contractor to receive monthly air quality monitoring data
- Use of machines, DG, equipment and vehicles only with appropriate pollution fitness certificates. Also carry out periodic maintenance of equipment and vehicles
- Substitute less volatile solvents such as aqueous solvents for painting works (if undertaken)

- Coal dust would be generated generally at the conveyor transfer points, coal unloading area and coal stockpile area. Hence, track hopper, coal transfer points and coal stockyard to be provided with dust suppression facilities.
- Dust collection system to also be provided in coalbunkers to evacuate dust and hazardous gases like Methane from the coalbunkers. Collected dust to be returned to either the associated belt conveyor or to the coalbunker. The dust collector outlet emission would be restricted to 100 mg / Nm^3.
- GSL to ensure that the facility is equipped with heating, ventilation and air conditioning (HVAC) and industrial evaporative cooling systems. They are to be maintained and operated so as to prevent growth and spreading of disease agents (e.g. Legionnella pneumophilia) or breeding of vectors (e.g. mosquitoes and flies).

Fly ash Management

Combustion of wood and coal at the facility will generates ash and other material remaining after incineration. GSL will ensure that fly ash will be temporarily collected and stored in the plant premises to be later provided to facilities and factories utilizing fly ash, also the fly ash will also be provided to farmers to be utilized in the farming activities. Also, ensure to quench the ash with treated wastewater to avoid fugitive dust emissions. GSL will ensure that the disposal of fly ash will be undertaken as per the Fly Ash notification, 2016 and the amendments thereafter.

In additions to above, GSL will ensure to undertake following measures to prevent, minimize, and control measures for incineration:

- Design the incinerators to, as far as possible, physically retain the wood chipping and coal within the combustion chamber (e.g. narrow grate bar spacing for grates, rotary or static kilns), and use a throughput rate that provides sufficient agitation and residence time of in the incinerator at sufficiently high temperatures, including any ash burn-out areas, in order to achieve a total organic carbon (TOC) value in the ash residues of below 3 weight percent and typically between 1 and 2 weight percent;
- Manage bottom ash separately from fly ash and other flue gas treatment residues to avoid contamination of the bottom ash for its potential recovery;
- Separate remaining ferrous and non-ferrous metals from bottom ash as far as practicably and economically viable, for their recovery;
- Treat bottom ash on or off-site (e.g., by screening and crushing) to the extent that is required to meet the specifications set for its use or at the receiving treatment or disposal site (e.g., to achieve a leaching level for metals and salts that is in compliance with the local environmental conditions at the place of use);
- Bottom ash and residuals should be managed based on their classification as hazardous or non-hazardous materials. Ash may be considered for recycling in construction materials or sent to facilities using fly ash.

VOC Emission Management

- Identify different Sources of VOC emissions along with types of VOCs which might be released from each of these sources.
- Ascertain the secondary photochemical transformations likely to take place
- Prepare a program for ambient air quality assessment of VOCs and hydrocarbons
- Ascertain likely health impacts which might occur due to release of said VOCs
- Analyze the various VOC parameters in ambient air as well as indoor air quality monitoring
- Study with respect to compliance as per GSR186 (E) dt 18.03.2008 for Fugitive Emissions, Storage tanks and Loading and Unloading areas.
- Evaluate efficiency of VOC control Technologies implemented and other International best practices (like API etc) to ascertain load to environment from present day activities and possible reduction after implementation of control measures.

- Evaluate other aspects of their activities which may generate VOC emissions such as Pigging, Tank washing, resin manufacturing etc. wrt International Best Practices to ascertain load to environment from existing operations and proposed reduction with control

Monitoring Plan

S.No.	Monitoring	Parameters	Total Samples	Frequency	Responsibility	Estimated Cost
Construction Phase						
1.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, SO_2, NOx and CO	Twice a week for one week at 2 locations within manufacturing facility for 24 hours and 2 locations in the project surrounding	Monthly	Onsite EHS Manager	~ INR 25,000
Operation Phase						
2.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, SO_2, NOx and CO, formaldehyde	2 locations twice a week for one week within manufacturing facility for 24 hours 2 locations in the project surrounding	Quarterly	GSL Records to be maintained by GSL	~ INR 25,000
3.	VOC's		2 locations within the within manufacturing facility	Quarterly	GSL Records to be maintained by GSL	~ INR 45,000 (portable VOC sensor)

Also, a continuous ambient air quality station will be setup for continuous monitoring as per the requirement of APPCB

Sample Monitoring and Reporting Template

Create sufficient sections in the table for each separate location by copying and pasting the sections.

Sample Frequency (e.g. quarterly)	Ambient Air Quality Parameter	WHO Permissible Limits *	India Regulatory Limits and units *	Monitoring results (in comparable units) **
Particulate Matter (PM_{10})				
	Annual arithmetic mean	15 µg/m^3	60 µg/m^3	µg/m^3

	Maximum 24 hour average	45 µg/m³	100 µg/m³	µg/m³
Particulate Matter ($PM_{2.5}$)				
	Annual arithmetic mean	5 µg/m³	40 µg/m³	µg/m³
	Maximum 24 hour average	15 µg/m³	60 µg/m³	µg/m³
Sulphur Dioxide (SO_2)				
	Annual arithmetic mean	µg/m³	50 µg/m³	µg/m³
	Maximum 24 hour average	40 µg/m³	80 µg/m³	µg/m³
Oxides of Nitrogen (NO_2)				
	Annual arithmetic mean	10 µg/m³	50 µg/m³	µg/m³
	Maximum 24 hour average	25 µg/m³	80 µg/m³	µg/m³
Ozone (O_3)				
	8-hour daily maximum	100 µg/m³	100 µg/m³	µg/m³
	8-hour mean, peak season	80 µg/m³		µg/m³

* Current standards as per the latest WHO norms for ambient air pollution 20201

** Monitoring results should be accompanied by reports submitted by laboratory.

Point Air Emissions Monitoring

Point air emission monitoring will be conducted during operation phase.

Create sufficient sections in the table for each separate emission source by copying and pasting the sections.

Sample Frequency (e.g. quarterly)	Air Emission Parameter	Flue Gas emission standards as IFC EHS Guidelines for Boiler	India Regulatory Limits and units	Monitoring results (in comparable units) **
	Particulate matter (PM_{10})	mg/Nm³	mg/Nm³	
	Sulphur Dioxide (SO_2)	mg/Nm³	mg/Nm³	
	Oxides of Nitrogen (NOx)	mg/Nm³	mg/Nm³	
	Carbon Monoxide	mg/Nm³	mg/Nm³	
	Particulate matter (PM2.5)	mg/Nm³	mg/Nm³	
		mg/Nm³	mg/Nm³	

** Monitoring results should be accompanied by reports submitted by laboratory.

Records

- Air Emission Inventory Checklist
- Records of monthly air quality monitoring within manufacturing facility

Air Emission Inventory Checklist

Air Emissions Inventory (Point and Non-Point Sources)

Location	Date of Assessment
Prepared by	Approved by

The following section lists all point and non-point sources of emissions during the construction and operation phases. If there is a change in operations, layout, or equipment, the list must be updated. The current checklist must be prepared separately for the operations and construction phases. The checklist will be updated by the EPC contractor and shared with GSL's EHS manager on monthly basis during construction phase.
During Operation phase, the checklist will be updated by GSL's EHS team on monthly basis

S. no.	Source of emission	Source Identity Number (if any)	Point or non-point source (P/ NP)	EmissionControl Measure	Monitoring Frequency	Reference Standard	Remarks

Appendix 12 Noise Emission Management Plan

Objective

The objective of the plan is to regulate and control noise producing and generating sources within manufacturing facility. The procedures defined in the plan aims to establish the minimum requirements for management and supervision of noise emission management during construction and operation phases.

Scope

The noise emission management plan is applicable to GSL and its contractors, sub-contractors (if any) appointed for construction and operation phases within the manufacturing facility.

Applicable Legislations and Standards

National Regulations and Standards

- The Environmental Protection Act / Rules – 1986
- Noise Pollution (Regulation and Control) Rules, 2000.

International Standards

- International Finance Corporation (IFC), Environment, Health and Safety Guidelines- Table 1.7.1: Noise Level Guidelines
- IFC EHS Guidelines for Noise Management

Roles and Responsibilities

- Onsite EHS Manager of GSL shall be responsible for implementation of this plan within manufacturing facility during construction and operation phases. The onsite EHS Manager shall be responsible for the customization of this plan in case any new activity is carried out at the manufacturing facility which may lead to noise emission.
- The Onsite EHS Manager will be supported by the EHS Officer of the EPC contractor during construction phase of the project for implementation of the plan. The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase.
- During operation phase, Onsite EHS Manager along with other EHS team members will be responsible for monitoring and effective implementation of the plan
- Onsite EHS Manager shall be responsible for reviewing and reporting on the management of noise pollution controls within the manufacturing facility.
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including Contractor's workers for maintaining the inventory of potential sources of noise emissions and its management.
- Project Manager shall take monthly update on implementation of the plan onsite from EHS Manager and share implementation records at the corporate
- GSL shall be responsible for ensuring overall EHS impacts are addressed and managed properly within the port.

Construction Phase

Source of Emission during Construction Phase

The typical construction activities that may lead to increase in noise levels include the following:

- Civil work at construction site
- Operation of construction machineries such as concrete mixers, cranes, earth moving equipment etc.
- Vehicular movement for transportation of construction material.
- Operation of diesel generators for power back up

Management Procedure for Construction Phase

- Select equipment with lower sound power levels
- Use noise barriers at the construction area and muffling devices for combustion engines
- Provide noise control measures such as acoustic hoods, silencers, enclosures etc. on the sources of noise generation
- Ambient noise quality monitoring should be conducted onsite quarterly.
- Periodic inspection of machineries and vehicles should be done and appropriate lubrication and tightening of moving parts should be done in case of increased noise levels during operation
- All vehicles entering the project site will be instructed to obey speed limits and not to blow horns unless absolutely necessary.
- Anti-honking sign boards to be placed in the parking areas and at entry / exit points
- DG sets to be provided with acoustic enclosure
- Compliance with the standards/guidelines for control of noise from stationary Diesel Generator sets. These standards and guidelines are prescribed under notification of Ministry of Environment & Forest, Govt. of India. G.S.R 371 (E)
- Machine emitting high noise during operations should be inspected and regular lubrication of machine parts should be carried out to reduce noise levels.
- Machines generating high noise >85 dB should be operated only during daytime
- Working hour for worker working in high noise area such as machine operating areas shall be rotated
- Hearing protection such as earplugs/muffs will be provided to those working very close to the noise generating machinery
- Vibration dampers and sheet barriers will be used to effectively mitigate vibration during construction phase
- Since GSL conducts noise monitoring once in every six months, noise monitoring should be conducted at the under-construction site by GSL on quarterly basis and reports should be shared at the corporate level and to the lenders
- Maintain noise levels at the construction site within permissible limit set by CPCB guidelines and IFC/WB EHS guidelines, whichever is more stringent.
- All personnel on site will be made aware of their responsibilities to ensure noise is managed correctly

Operation Phase

Source of Emission during Operation Phase

- Boiler
- Diesel generator
- Rotary equipment's like feed pumps, fans, blowers
- Noise generating units like process equipment of particle board, pre-laminated particle board and HPL plant
- Vehicular movements for loading/unloading of raw and finished materials and other transportation activity
- Activities at the workshop area such as wood cleaning and processing activities such as peeling, chipping, sanding, trimming, and cutting of wood etc
- Operation of DG sets at the substation for power back up

Management Procedure for Operation Phase

- Substitute diesel engines with electric power to the extent possible
- Employees or workers engaged through the contractors shall not be exposed to a noise level greater than 85 dB for duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB.
- The use of hearing protection shall be enforced actively when the equivalent sound level over 8 hours reaches 85 dB, the peak sound levels reach 140 dB, or the average maximum sound level reaches 110 dB. Hearing

protective devices such as Earplugs/Muffs provided shall be capable of reducing sound levels at the ear to at least 85 dB

- Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible
- Monitor noise level and shall ensure that the noise level in the industrial area is regulated within the following specified limits: 75 dB during the day time (06:00-22:00); and 70 dB during night time
- Periodic inspection of the project equipment and cranes should be conducted
- Vehicle drivers should be instructed not to blow horns until necessary.
- Equipment and cranes should be shut down when not in use
- GSL shall discuss with GSL to provide onshore power supply to all the vessels arriving at the manufacturing facility
- Strict adherence to maintenance schedule of generators, as specified by vendors
- GSL to conduct noise monitoring on quarterly basis and reports should be shared at the corporate level and to the lenders.
- Noise levels at the manufacturing facility should be maintained in accordance with the CPCB guidelines and/or IFC EHS Guidelines, whichever is more stringent.

Monitoring Plan

S.No.	Monitoring	Parameters	Total Samples	Frequency	Responsibility	Estimated Cost
Construction Phase						
1.	Ambient Noise Quality	Leq Noise Levels in dB(A), day and night	Once at 4 locations, 2 within manufacturing facility for 48 hours and 2 in the surrounding area	Quarterly	Onsite EHS Manager	~ INR 10,000
Operation Phase						
2.	Ambient Noise Quality	Leq Noise Levels in dB(A), day and night	Once at 4 locations, 2 within manufacturing facility for 48 hours, 2 in the surrounding area	Quarterly	Onsite EHS Manager	~ INR 10,000

Records

- Inventory of noise emission sources
- Records of quarterly noise quality monitoring conducted by GSL

- Records of noise quality monitoring conducted by GSL

Noise Emission Inventory Checklist

Noise Emissions Inventory

Location	Date of Assessment
Prepared by	Approved by

The following section shall list all sources of noise emissions during the construction and operation phases. If there is a change in operations, layout, or equipment, the list must be updated. The current checklist must be prepared separately for the operations and construction phases. The checklist will be updated by the EPC contractor and shared with GSL's EHS manager on monthly basis during construction phase.
During Operation phase, the checklist will be updated by GSL's EHS team on monthly basis.

S. no.	Source of emission	Source Identity Number (if any)	EmissionControl Measure	Monitoring Frequency	Reference Standard	Remarks

Appendix 13: Water Quality and Wastewater Management Plan

The purpose of this plan is implementing a process for the management of water and also to plan a process for the minimization and management of waste water.

Objectives

The construction and operation of the proposed project shall generate wastewater which shall need appropriate treatment before discharge/ reuse. Hence, to serve the purpose, a Water quality and wastewater Management Plan has been formulated to demonstrate:

- Identify different sources of wastewater; and
- Treat wastewater and discharge as per the Good International Industry Practice (GIIP) so as to prevent impact on the local environment.

Scope

This plan shall be applicable to the GSL and EPC contractor engaged by GSL for the construction phase of the proposed project and HSE team of GSL for the operation phase. The elements of the plan, during construction phase, shall be directly implemented by the EPC and contractors hired by the EPC contractor while overall management and responsibility shall lie with GSL.

Applicable Laws and Standards

National Regulations

- The environmental Protection Act / rules – 1986
- The Water (Prevention and Control of Pollution) Act, 1974

National Standards

- Drinking water quality- Indian Drinking Water Standard (IS 10500: 2012)
- General standards for discharge as prescribed under the Environment Protection Rules, 1986 and amendments (G.S.R 422 (E) dated 19.05.1993 and G.S.R 801 (E) dated 31.12.1993 issued under the provisions of E (P) Act 1986)

International Standards

- International Finance Corporation (IFC's) EHS Guidelines on Wastewater and Ambient Water Quality- Table 1.3.1 Indicative Values for Treated Sanitary Sewage Discharges
- IFC EHS Guidelines on Water and Sanitation

Roles and Responsibilities

- Onsite EHS Manager of GSL shall be responsible for implementation of this plan within manufacturing facility during construction and operation phases respectively. The onsite EHS Manager shall be responsible for the customization of this plan in case any new activity is carried out at the manufacturing facility which may lead to water pollution.
- The Onsite EHS Manager will be supported by the EHS Officer of the EPC contractor during construction phase of the project for implementation of the plan. During operation phase, Onsite EHS Manager along with other EHS team members will be responsible for monitoring and effective implementation of the plan.
- Benchmarking the resource consumption and effluent generations against the WBG standards/ GIIP norms, identification of opportunities for resource conservation and reduction in pollution levels and implementation of these measures

- The EHS officer of the EPC contractor shall be responsible for maintaining checklists and monitoring records in line with this plan. The EHS officer of EPC contractor shall share monthly EHS records as mentioned in this plan with GSL's Onsite EHS Manager during construction phase
- The GSL's EHS team will be responsible for periodic monitoring of water and wastewater at the manufacturing facility during operation phase.
- Onsite EHS Manager shall be responsible for reviewing and reporting on the management of water pollution controls within the manufacturing facility and share records with Project Manager.
- Onsite EHS Manager shall ensure that the plan is extended to all the workers including Contractor's workers for maintaining the inventory of water pollution sources and waste water disposal points.
- Project Manager shall take monthly update on implementation of the plan onsite from EHS Manager and share implementation records at the corporate.
- GSL shall be responsible for ensuring overall EHS impacts are addressed and managed properly

Generation of wastewater

Liquid effluents associated with manufacturing facility includes stormwater and sewage.

Management Practises

Management measures shall include:

Construction Phase

- Regular inspection of leaks, spills, discharge should be conducted by EHS Manager
- Record the water consumption from borewell, tankers etc and assessment against the water requirement and source of water including the source of water in the tankers used
- Wastewater from site shall be disposed in line with consent received from Pollution Control Board
- Onsite EHS Manager shall ensure that the contractor's site supervisor develops a water balance for construction phase mentioning water requirement along with waste water generation and disposal mechanism as per format provided in Water and Waste Water Inventory
- Suitable storage areas shall be prepared to ensure that ground water quality is not put at risk from inadequate material and chemical storage
- The drainage should be designed adequately to serve both construction and operation phases and take into consideration natural hazards such as flood, water logging etc.
- It shall ensure that identified drainage system shall be provided of various types of waste water streams (sewage and stormwater) and shall not be allowed to mix
- Sewage generated onsite shall be treated and disposed through septic tanks and soak pits as per specifications given in IS 2470: 1995 (Part I and II) until it is treated in STP. A licensed vendor to be engaged for cleaning of septic tanks and soak pits
- Surface runoff from potential sources of contamination shall be prevented. Silt traps should be constructed to control onsite surface runoff
- Water shall be recycled and reused to the maximum possible extent to reduce the quantity of wastewater generated and fresh water being used
- Water meter shall be provided at the inlet and outlet of various wastewater streams. Records of water meter readings shall be maintained.
- Adequate arrangement for treatment and disposal of wastewater shall be carried out
- Where any monitoring is being carried out all records shall be retained and reported on as appropriate.
- Handling of waste, hazardous material/ chemicals to be as per the Good International Industry Practice (GIIP) to prevent any kind of contamination
- All personnel on site shall be made aware of their responsibilities to ensure that no water pollution incidents occur, and shall be trained in appropriate methods of containment relevant to their work activity

- Onsite EHS Manager shall ensure that the civil contractor's supervisor develops a water balance for construction phase mentioning water requirement and its sources along with waste water generation and disposal mechanism
- Oil spill kits should be maintained to avoid oil spills and leakage into the ground or water source contaminating the surface water and groundwater respectively

Operation Phase

- Regular inspection of leaks, spills, discharge should be conducted by EHS Manager
- Install oil-grit or oil-water separators in all runoff collection areas
- Regularly maintain oil-water separators
- Sewage from the manufacturing facility shall be treated in sewage treatment plant of adequate capacity and shall be reused on site to reduce freshwater requirement
- Adequacy and efficiency reports for the water and wastewater treatment system shall be developed
- Regular monitoring of various parameters of treated effluent shall be undertaken to ensure that the treatment system is working efficiently, and polluted water is not discharged in the environment
- Quantity of water consumption and generation of wastewater shall be in compliance to Consent received from PCB
- Sludge from STP shall be disposed in an environment friendly manner, as per the good international industry practice
- Handling of hazardous chemicals/ substances shall be as per norms so as to prevent contamination.
- The Organic and Inorganic solid wastes, Spent Carbon, process residues will be sent to the authorized users or recyclers approved by the APPCB
- Untreated wastewater from the premises will not be discharged outside. Treated water will be recycled for secondary purposes and landscaping i.e. non-contact purposes only.
- GSL to provide continuous effluent quality monitoring system and connect the data to the APPCB server.
- GSL to comply with all the conditions stipulated in the EC dt.06.01.2022 issued by SEIAA, A.P.
- GSL to ensure that there shall be no discharge into the Telugu Ganga canal located adjacent to Northern boundary of the site, under any circumstances.
- Effluent treatment plant of capacity 73KL / day, STP of 40cum/day and MEE of 15KLD will be developed. Treated water will be used within the process as well as for landscaping and non-contact purposes. Also, Zero discharge concepts will be adopted
- High COD & Low TDS effluent will be sent to incinerator, Low COD & Low TDS will be sent to conventional ETP and the Low COD & High TDS effluents are routed through Stripper with scrubber followed by MEE and rejects of MEE will be sent to ATFD. The Organic and Inorganic solid wastes, Spent Carbon, process residues will be sent to the authorized users or recyclers approved by the APPCB
- The condensate of the MEE will be sent to RO. The permeate from the RO plant will be re-used in the plant and rejects to MEE
- Send the used / spent solvents to the recyclers (or) process them at their own solvent recovery facility within the premises
- The LTDS and HTDS effluents to be stored in above ground level collection tanks separately. Hoods to be provided to the tanks and connect to the scrubber to mitigate emissions

Monitoring

A wastewater and water quality monitoring program with adequate resources and management oversight shall be developed.

Monitoring for inlet and outlet water from the sewage treatment plant, Effluent treatment plant shall be undertaken at regular intervals during operation phase to ensure suitability of treated wastewater from STP and ETP for reuse and recycle.

Monitoring Plan

S.No.	Monitoring	Parameters	Total Samples	Frequency	Responsibility	Estimated Cost
Operation Phase						
2	Sewage Treatment Plant (Inlet and outlet)	• pH, BOD, COD, TSS, Ammonical Nitrogen, total nitrogen, Turbidity • IFC EHS Guidelines on Wastewater and Ambient Water Quality- Table 1.3.1 Indicative Values for Treated Sanitary Sewage Discharges	-	Monthly	GSL EHS Team	~ INR 30,000

Liquid Effluent Discharges and Sludge

This monitoring will be applicable during operation phase.

- ❑ *Please describe the water course(s) which the effluent is discharged into (e.g. river, municipal system).*
- ❑ *If the effluent is treated prior to discharge from the site please describe the level of treatment provided.*
- ❑ *If the effluent is discharged into a municipal system please confirm the level of treatment provided and where the municipal system discharges to.*

Sample Frequency (e.g. quarterly)	Treated Effluent Quality Parameters	WBG/IFC Permissible limits	Indian Regulatory Limits and Units *	Monitoring results in comparable units **
	pH	6-9		
	Biochemical oxygen demand (BOD_5)	50 mg/L		mg/L
	Chemical oxygen demand (COD)	250 mg/L		mg/L
	Oil and grease	10 mg/L		mg/L
	Total suspended solids (TSS)	50 mg/L		mg/L
	Total coliform bacteria, Most Probable Number (MPN) or plate count (PC)	400 /100 ml		/100 mls
	Ambient temperature of receiving waters at edge of zone where mixing with effluent takes place (if not defined, 100 meters from discharge point).	3^0C (maximum increase is 3^0C)		^{0}C
	Heavy Metals, Total	10 mg/L		mg/L
	(list other parameters)*	mg/L		mg/L

** Monitoring results should be accompanied by reports submitted by laboratory.

* List other parameters as well. The parameters listed are not detailed.

Indicative parameters for sludge includes the following. Please note, the sludge parameter and compliance requirements to be followed as mentioned in the CTO for the project.

S.No.	Parameters	Unit	Sludge Sample
1.	Temperature	^{o}C	
2.	pH	-	
3.	Alkalinity	-	
4.	BOD	mg/l	
5.	COD	mg/l	
6.	Total suspended solid	mg/l	
7.	Volatile Suspended Solid	mg/l	
8.	Moisture Content	%	
9.	Heavy metals	mg/l	

Ground Water Monitoring

Groundwater monitoring is applicable during both construction and operation phases

Sample Frequency (e.g. quarterly)	Ground Water Quality Parameters	WBG/IFC Permissible limits	Indian Regulatory Limits and Units *	Monitoring results in comparable units **
	pH	6-9		
	Biochemical oxygen demand (BOD_5)	50 mg/L		mg/L
	Chemical oxygen demand (COD)	250 mg/L		mg/L
	Oil and grease	10 mg/L		mg/L
	Total suspended solids (TSS)	50 mg/L		mg/L
	Total coliform bacteria, Most Probable Number (MPN) or plate count (PC)	400 /100 ml		/100 mls
	Heavy Metals, Total	10 mg/L		mg/L
	(list other parameters)*	mg/L		mg/L

Records

- Records of Water and Waste water Quality Monitoring conducted by GSL
- Daily water consumption records
- Water and wastewater inventory
- Inspection of spills and leaks

Water and Wastewater Inventory

Water and Waste Water Inventory

Location	Date of Preparation
Prepared by	Approved by

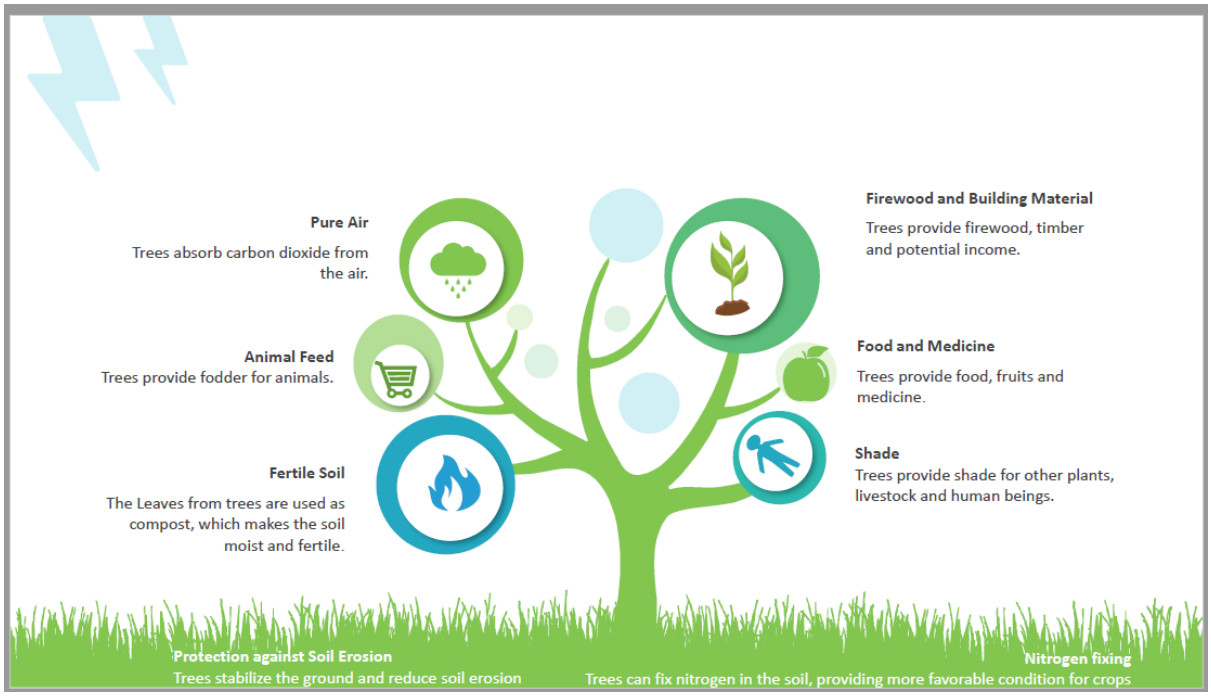
S.No.	Source Of Discharge				Monitoring Frequency	Treatment System	Reference standard	Remark
	General	Surface RunOff	Polluted Water	Domestic Sewage				

Appendix 14: Sustainable Agroforestry Plan including Integrated Pest Management

Agroforestry

Agroforestry refers to a combination of forestry and agriculture resulting in enhanced productivity of land. Agroforestry systems can provide a wide range of economic, socio-cultural, and environmental benefits and are crucial to smallholder farmers - as they have the potential to enhance food supply, income and health. In a country like India, large number of smallholders are present. Hence, agroforestry has a great significance. 86% of the farmers in India are categorized as small and marginal farmers owing less than 2 ha land while such farmers own merely 47.34% of the total cultivated area in the country.
Agroforestry also provides a wide range of ecological benefits for the farmers as it has the potential to moderate the climate, halting land degradation and increasing biomass production.

Figure: Importance of Agroforestry



Challenges in Agroforestry

- Lack of awareness: It has been observed that many farmers are reluctant to grow the trees on farmland as they feel that growing trees together with crops would drastically reduce crop production.
- Poor market linkages: Marketing linkages for sale of trees by farmers are not well developed and the farmers are exploited by middlemen. In fact, there are frequent fluctuations in the market prices and farmers are often not aware of the market scenario.
- Regulation on harvest of trees from farmlands: Government regulations related to tree felling/harvesting, transportation and marketing limit the wide-scale adoption of agroforestry in the country. For example, in Andhra Pradesh the farmers are free to harvest tree species from the non forest / private land[1]. However, majority of farmers do not have clear understanding of regulatory procedures related to tree felling and hence they refrain from cultivation of trees on their farmlands.

[1] https://nmsa.dac.gov.in/pdfDoc/circulers/State%20wise%20list%20of%20Trees%20Species%20free%20from%20Felling%20and%20Transit%20Regulations%20grow.pdf

Site Selection

For commercial plantation and cultivation, it is an important task to identify or select the site suitable for high yield with low maintenance and assistance. At the time of site selection, the climatic and edaphic requirements of the tree should also be the considered as the key factors along with the topography.

Site Preparation

- After confirming a site for the plantation on the basis of topography, soil and climate; it is required to prepare the site suitable for plantation activities. There should be two kind of approaches, site preparation in already vegetated area and in non-vegetated area. In vegetated area, clearance of ground flora (grasses, herbs and creepers) and lower canopy (shrubs and small trees) is required before plantation. On the other hand, in non-vegetated area the clearance of weed, grasses and shrubs is required.
- Deep ploughing of the soil with disk ploughs or mould-board ploughs in both directions is recommended for preparing the fields for transplanting of clonal saplings.

Selection of planting material

During the selection of the most desirable tree with characteristics such as straightness of stem, annual growth rate, disease resistance, crown structure, wood density, fibre morphology, cellulose / lignin balance, bark to solid wood, under bark relationships etc. should be considered.

Plantation

- Spacing of 3 x 2 m is recommended for the production of poles and pulpwood, and larger spacing is desirable for production of timber.
- Transplanting in 30 cm^3 pits is carried out during the early parts of the monsoon rains so that plants establish and grow well benefiting from the good moisture availability throughout the monsoon rains.
- Soil in and around the planting pit is treated with 2 ml of Chloropyriphos in 1 litre of water to prevent damage to the young clonal saplings by termites during the critical establishment stage.
- Application of botanical pesticides like kodesa (*Clistanthus collinus*) for controlling termites was introduced as an eco-friendly replacement to chemical pesticides.
- At time of planting apply neem-based nutrients along with Phosphate (50 gm per pit) and vermicompost (250 - 300 gm per pit).
- Cultural practices recommended include timely weeding and soil working, protection against damage by insect pests and cattle and raising of leguminous crops in between the 3 m wide planting rows for green manuring.
- In addition, inter-cultivation with cotton, chili, tobacco, pulses, vegetables, and horticulture plants was encouraged during the first year of planting which gives additional earnings to the farmers.
- As most of the soils in the region are deficient in nitrogen and phosphorous, application of fertilizers to supplement availability of these deficient plant nutrients is recommended.
- Soil and water conservation measures like raised field boundaries and staggered trenches have been recommended in well-drained planting sites for holding the rainwater. However, in low-lying areas or poorly drained heavy black cotton soils, drainage has to be improved during the rainy season.

Maintenance

- The plantation requires an immediate irrigation at the time of sapling transplantation from nursery to field. It requires sufficient moisture for luxuriant growth. To avoid the water stress condition and water logging, a managed irrigation as well as drainage system is important to get optimum production.
- Although, Eucalyptus is a drought resistance species, but it requires irrigation for 1st and 2nd year (this may vary as per edaphic and climatic conditions of the area) during the dry season. While Casuarina and Leucaena requires irrigation in every month during the dry season.
- Turmeric, and ginger or medicinal plants can be taken as intercrops with the plantation.

- Fertilizers: Eucalyptus requires 50 gm of NPK fertilizer per plant in first and second year. Casuarina requires 5, 8, 10, 12, & 15 kg Mono Ammonium Phosphate (MAP) per acre for 1 month, 6 months, 12 months, 18 months and 24 months age respectively. In Leucaena, fertilizers are generally not required.
- Also take hand weeding operation and keep check on weed growth. At initial stage two or three hand weeding are required to keep field weed free.
- In Casuarina, pruning of side branches at the age of 12 and 18 months is required for better growth in diameter.

Harvesting

- In general, all the three plantations (Eucalyptus, Casuarina, & Leucaena) could be harvested in 3-4 years.
- Use of chainsaw is a general practice of harvesting.
- Beside Eucalyptus, both (Casuarina, & Leucaena) species require replantation after every harvesting. While the farmers can gain up to 3 crops of Eucalyptus after one-time plantation.

Pest Management

- The outbreak of diseases caused by various fungi on Eucalyptus in nursery and field revealed main pathogens as *Cylindrocladium* spp. and *Alternaria* spp. The disease resistant clones short-listed are 1, 3, 6, 7, 288 and 316. For Leucaena 12 clones and 15 clones for Casuarina were shortlisted as promising clones.
- Invasive Gall Wasp (*Leptocybe invasa*) is causing gall on young shoots of Eucalyptus in nursery and plantations. The percentages of parasitization by *Quadrastichus mendeli*, *Aprostocetus causalis*, and *Megastigmus viggianii* were 2.96%–19.53%, 2.30%–26.38%, and 24.93%, respectively could be used as biological control agents[2].
- Psyllid is causing little leaf (witches broom) disease of Eucalyptus. Drought-stressed eucalyptus are more susceptible to the disease. To prevent the plantation from the disease, i. Provide sufficient soil moisture by periodic irrigation during the water stress[3]; ii. Avoid using nitrogen fertilizers as it increases tree susceptibility to psyllids (use slow-release nutrient formulations[4] i.e. Isobutylidenediurea and urea-formaldehyde if required); iii. Use *Psyllaephagus pilosus* (for *Ctenarytaina eucalypti*)[5], *Psyllaephagus bliteus* (for *Glycaspis brimblecombei*)[6], Psyllaephagus gemitus (for *Ctenarytaina fiscella*)[7].
- Damping off, Blister bark, and Root/Collar rot are the major diseases of Casuarina reported in India. Damping off occurs at nursery stage and can be controlled by treating seeds with 0.1% Bavistin and proper drainage. Blister bark is caused by a fungus *Trichosporium vesiculosum* and can be controlled by drenching of root zone and spraying with Diathane M - 45 or 0.1% Bavistin as preventive measures. Root/Collar rot is caused by *Ganoderma lucidum*, again a fungus and can be controlled by spraying 0.25% Copper Oxychloride.
- Bark eating caterpillar, Mealy bug and Termite are the major pest problems in Casuarina. Bark eating caterpillar can be controlled by removal of feeding parts and application of Dichlorvos 15 ml l^{-1}; Mealy bug by the application of 0.2% Dimethoate; and Termites by 0.2% Chlorpyriphos.
- Although Leucaenas have a reputation for high disease resistance, but damping off, Leucaena psyllids or jumping lice, stem gummosis, and root rot are the major diseases of Leucaenas[8]. Damping-off is caused by the fungal species *Pythium* or *Rhizoctonia* spp. in moist soils and controlled by good nursery techniques, use of well-drained soil, and use of fungicides such as 0.1% Benlate. Leucaena psyllids or jumping lice is caused by *Heteropsylla cubana* and biologically controlled by Beetle (*Curinus coeruleus*)

[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5178379/
[3] https://ipm.ucanr.edu/PMG/PESTNOTES/pn7423.html
[4] https://edis.ifas.ufl.edu/publication/HS1255
[5] http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7460.html
[6] Santana, D.L.Q. & Burckhardt, D. (2007). Introduced Eucalyptus psyllids in Brazil. Journal of Forest Research, vol. 12, pp. 337-344
[7] http://www.nzffa.org.nz/farm-forestry-model/the-essentials/forest-health-pests-and-diseases/Pests/Cardiaspina-fiscella/Parasitoid-Cardiaspina-FHnews95
[8] Brewbaker JL (1989) Leucaena: a multipurpose tree genus for tropical agroforestry. In: Steppler HA & Nair PKR (eds) Agroforestry: a decade of development. pp. 289-323.

the parasitic wasp *Psyllaephagus* nr. *rotundiformus*[9], foliar spraying of 0.001% Cypermethrin or 0.03% Monocrotophos[10] and use of resistance cultivers like K6, K8, K500 & K636[11]. In Leucaena, stem gummosis has also been reported from the Indian subcontinent, caused by *Fusarium semitectum* and *Fusarium acuminatum*, which can be treated by using Pyraclostrobin (200 g/L), Thiram (400 g/L), Fludioxonil (25 g/L), and one fungicide contains together imazalil, metalaxyl, and tebuconazole (50, 40, and 30 g/L, respectively)[12]. *Ganoderma lucidum* caused root rot in Leucaena on moist sites and can be treated with 25% Copper Oxychloride.

[9] https://www.doc-developpement-durable.org/file/Culture/Arbres-Bois-de-Rapport-Reforestation/FICHES_ARBRES/bonaramantsina%20Leucaena%20leucocephala/Leucaena%20leucocephala%20(1).pdf

[10] Joshi KC & Jamaluddin (2007) Handbook of Diseases, Insect Pests and Their Control Measures in Forest Nurseries / Plantations. Tropical Forest Research Institute, Jabalpur, Madhya Pradesh, India.

[11] Roychoudhury N & Mishra RK (2020) Leucaena psyllid, Heteropsylla cubana and its control measures. *Vaniki Sandesh* 11: 10-15.

[12] https://www.bio-conferences.org/articles/bioconf/full_html/2020/02/bioconf_vizr2020_00022/bioconf_vizr2020_00022.html#:~:text=Three%20fungicides%20contain%20singly%20pyraclostrobin,g%2FL%2C%20respectively).

Appendix 15: Stakeholder Engagement Plan and Grievance Redressal Mechanism

Stakeholder Engagement is defined as "the basis for building a strong constructive and responsive relationship that is essential for the successful management of a Project's environmental and social impacts. Stakeholder engagement is an ongoing process that may involve, in varying degrees, the following elements: stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism and ongoing reporting to affected communities" Stakeholder Engagement is thus an umbrella term which encompasses a range of activities or interactions between a company and its internal and external stakeholders, through the life of the Project.

Stakeholders for the Project are those people or groups that will have an interest in the operations or have an ongoing relationship with Greenlam and can influence the Greenlam operations. This document puts a plan that shall guide the stakeholder identification, analysis and engagement process for Greenlam. This plan applies to the construction and operation phases of the Project.

This appendix presents stakeholder engagement plan (SEP) and grievance redressal mechanism (GRM) for the Project. The SEP is aimed at managing and facilitating future engagement activities with identified stakeholders through the various stages of the Project's lifecycles (construction and operation). The primary purpose of this plan is to allow for the Project development to be undertaken in a manner that is consistent with the principle of information disclosure and stakeholder engagement of IFC.

Objective of the Stakeholder Engagement and Grievance Redressal

Stakeholder Engagement (***Details of Roles and responsibilities are given in subheading implementation roles and Responsibilities***) is fundamental to building trust with the local communities and other identified stakeholders The purpose of SEP is to enable the project to identify key stakeholders, ensure vulnerable groups are identified early on, understand sensitivities within each stakeholder groups and develop appropriate engagement mechanism to ensure all identified stakeholders are aware of the Project and its impacts, are consulted on a regular basis, and establish a two-way communication with the identified stakeholders.

The SEP is aide to guiding and facilitating the engagement of the Project with identified stakeholders in a systematic, inclusive, transparent, and culturally appropriate approach. The goal of the SEP is to facilitate decision making for Greenlam and create an atmosphere of active participation of the stakeholders in timely manners, such that they can voice their concerns and influence Project decisions.

The purpose of the SEP and GRM is three (3) fold:

- To identify Project's specific external and internal stakeholder groups, who will be mapped, consulted, and engaged (as applicable) through the project's lifecycle
- To demonstrate commitments and mechanisms to help align the stakeholder engagement process to the applicable standards
- To provide a consistent framework to document stakeholder engagement and inform decision making and project execution through redressal mechanism.

Grievance Redressal is one of the most critical components of effective stakeholder engagement. As defined the grievance mechanism as a system or specified procedures for methodically addressing grievances or complaints and resolving disputes[13]. Further, for the purpose of this document grievance is defined as "a concern or compliant raised by an individual or a group affected by the project. Both concerns and complaints can result from either real or perceived impacts of a Greenlams's operation and may be filed in the same manner and handled with the same procedure". The purpose of the GRM is to provide a forum to the identified external and internal stakeholders to voices their concerns, queries, complaints, and issues with the Project. The mechanism

[13] Grievances and complaints are used interchangeably in the document.

will provide the stakeholder with one (1) project personnel or one channel through which their complaints will be channeled as well as ensure timely responses to each complaint. The specific objectives of the GRM are as follows:

- To allow stakeholders the opportunity to raise comments/concerns
- To structure and manage the handling of comments, responses, and grievances, and allow monitoring of the effectiveness of the mechanism
- To ensure that comments, responses, and grievances are handled in a fair and transparent manner
- Scope of the SEP and GRM

This SEP and GRM applies to the entire Project, including any associated facilities. This document is applicable to the entire life cycle of the Project. This document shall be a "living" document and will be updated regularly based on the emerging needs and patterns for engagement with various stakeholders.

Applicable Reference Framework

Applicable National Acts and Rules

The Industries Disputes (Amendment) Act, 2010:

- Every industrial establishment employing twenty or more workmen shall have one or more Grievance Redressal Committee for the resolution of disputes arising out of individual grievances.
- The Grievance Redressal Committee shall consist of equal number of members from the employer and the workmen. Details of GRM committee is given sub heading GRM and Manpower
- The chairperson of the Grievance Redressal Committee shall be selected from the employer and from among the workmen alternatively on rotation basis every year.
- The total number of members of the Grievance Redressal Committee shall not exceed more than six: Provided that there shall be, as far as practicable, one-woman member if the Grievance Redressal Committee has two members and in case the number of members is more than two, the number of women members may be increased proportionately.
- Notwithstanding anything contained in this section, the setting up of Grievance Redressal Committee shall not affect the right of the workman to raise industrial dispute on the same matter under the provisions of this Act.
- The Grievance Redressal Committee may complete its proceedings within forty-five days on receipt of a written application by or on behalf of the aggrieved party.
- The workman who is aggrieved of the decision of the Grievance Redressal Committee may prefer an appeal to the employer against the decision of Grievance Redressal Committee and the employer shall, within one month from the date of receipt of such appeal, dispose off the same and send a copy of his decision to the workman concerned.
- Nothing contained in this section shall apply to the workmen for whom there is an established Grievance Redressal Mechanism in the establishment concerned. ***Details of channels for receiving grievances is given in subheading GRM***

Stakeholder Identification and Analysis

This section provides the stakeholder identification and mapping for the Project based on the current planning stage. The identification is based on present status and understanding developed during the consultations with GSL. The analysis of the identified stakeholder is based on stakeholders' profiling and the significance of impact/influence of each stakeholder in relation to the Project.

Stakeholder Identification and Characterization

A stakeholder is "*a person, group, or organization that has a direct or indirect stake in a project/organization because it can affect or be affected by the Project/company's actions, objectives, and policies*". Stakeholder thus vary in terms of degree of interest, influence and control they have over the Project. While those stakeholders who have a direct impact on or are directly impacted by the Project are known as Primary Stakeholders, those who have an indirect impact or are indirectly impacted are known as Secondary Stakeholders. Keeping in mind the nature of the Project and its setting, the stakeholders have been identified and listed in the table given below:

Table 1 Stakeholder Group Categorization

Category	Primary Stakeholders	Secondary Stakeholder
Community	• Wood Plantation Farmers • Plantation Nursery • Labors engaged in plantation & transport • Local Wood Aggregators • Transporters • Opinion holders • Community leaders	Nil
Institutional Stakeholders	• APFDC (Andhra Pradesh Forest Development Corporation limited) • Local Gram Panchayats • Project Investors	• Village Institutions (education and health department) • Political Parties
Government Bodies	• Regulatory Authorities • District Administration	• State Administration
Other Groups	• Employees • Contractors and sub-contractors • Contractual workers	• Media • Local NGOs

Stakeholder Mapping

"Stakeholder mapping" is a process of examining the relative influence that different stakeholders have over the Project as well as the influence of the Project over them. The purpose of stakeholder mapping is to:

- Identify each stakeholder group
- Study their profile and the nature of the stakes
- Understand each group's specific issues, concerns as well as expectations from the Project
- Gauge their influence on the Project

Based on such an understanding, the stakeholders are categorized into High influence/priority, medium influence/priority, and low influence/priority.

The stakeholder engagement starts in the early stages of the Project, also need to be included in the impact assessment and risk identification process and continues across the life cycle of the Project. The stakeholder analysis also shapes the stakeholder engagement strategy for the Project and needs to be continuously update the stakeholder analysis and helps in integrating the impacts and risk identified in the Project designing and during the implementation stages to help the company better addresses the associated impacts with the Project.

Table 2 Stakeholder Analysis

Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
Primary Stakeholders					
Wood Plantation Farmers	The stakeholder group is spread across the potential 4 districts that is Tirupati, Nellore, Prakasham and Chittoor respectively. This stakeholder group consist of the famers who will be cultivating and selling the wood to the project. Although they would be selling /supplying wood to the project but there will be no formal contract farming on behalf of the project. Famers are free to supply or sell their wood to any wood-based industry in the region. As informed since long time the area is having the presence of wood-based industries therefore farmers are very much experienced in wood cultivation and farming business. Most of these farmers are doing wood cultivation as cash crop and generally less fertile land is used for wood cultivation.	• The expectations and concern of this group from the project: – The Key expectations are with respect to getting good price for the wood – Get advance notice with respect to rates and especially changes in the procurement policy – Getting technical support and training – Getting advanced variety of saplings and concessions in the rates of sapling especially for the weaker sections of society of farmers belonging to SC/ST communities	• Due to the nature of the project this stakeholder group is very important and requires continuous engagement as the project is dependent on them for the supply of wood. • As this group is very large and spread over large geographical area (4 districts) therefore there might be fringe elements who can potentially negatively influence the project	• The project can prove to be potential source of livelihood /employer of the people in the area. • Project has potential to develop the capacity of stakeholders in terms of technical knowledge as well as can develop new model local entrepreneurs . • Project can be instrumental in bringing community development in their areas through CSR activities.	• Influence of Stakeholder: **HIGH** • Influence of Project: **HIGH**

Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
Plant Nursery	This stakeholder group is one of the key groups who will be responsible for the onetime supply of the quality saplings to farmers. Although their numbers will be less however the same will be spread over different parts of the region. Most of these nurseries were privately owned however project need to have supply agreement with these nurseries and provide technical support.	• Timely formal agreements for supply of saplings • Advance notices for projected sapling requirements • Training and Capacity buildings on nursery management • Financial support for technological advancement • Advice on species selection and disease control	• As the entire wood supply is dependent on the supply of right species of tree therefore this stakeholder group is concorded to be critical for the business continuity • The group will be widely distributed in the region therefore any potential issue can lead negative impact on the project	Project will be providing increased business opportunity and livelihood to the people engaged in plant nursery business The project will incapacitate individuals to grow and equip with better knowledge of nursery management Project can potentially make new entrepreneurs	• Influence of Stakeholder: **HIGH** • Influence of Project: **HIGH**
Wood Transporters /associations	This stakeholder group will be important from the supply standpoint. They will be spread across the project and districts. Further most of the transporters in India are having trade associations/ unions. Often seen these associations have power to influence the fright and fright rates. Although supply of wood does not come directly under the purview of project and mostly it is taken care off by the wood aggregators. However, any potential issues may have direct impact on wood supply and production.	• Getting timely payments • Smooth fright movements • Insurance and no accidents • Timely delivery and signing off • Less waiting time at the factory • Compliance to legal permits and licenses	• As mentioned before this stakeholder is not directly associated with the project however for ensuring the supply of wood, they contribute important part therefore this group have significant influence on the project	The project via wood aggregators will contribute towards giving more business and livelihood opportunity Project can provide necessary training and capacity building in road safety fleet management, traffic management and legal compliances	• Influence of Stakeholder: **HIGH** • Influence of Project: **HIGH**
Wood Aggregators	This stakeholder group is most critical for ensuring the supply of wood based raw material for the project. The group will be spread all over the region and have strong relationship with the	• Getting confirmed advance projection for wood supply • Getting enough wood supply from the famers to meet the demand	• The stakeholder group will be having high influence on the project because wood supply is totally dependent on them. Although there	The project will have high influence on terms of employment, livelihood and income and providing more business opportunity	• Influence of Stakeholder: **HIGH** • Influence of Project: **HIGH**

Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
	potential wood farmers. As understood from the discussion wood aggregators are functional at different level and working is different capacities at village level there will be small aggregators who might be associated with the big aggregators Woking at cluster level and so on. Hence their numbers might be less however they have very strong influence on the wood supply chain.	• Ontime transporting wood to the factory • Timely payment • Supply of wood as per the specifications	might be some direct purchase options as well, but majority of the wood shall be procured from them, and any potential issues may have impact of supply of wood based raw material		
Opinion Holder and Community Leaders	This stakeholder group is comprised of those individuals of the local community who hold traditional and rational power. These stakeholder group members include the elders, community and political leaders in the village and play a critical role in the decision making in the local community	• The expectations and concerns of this group from the project includes: – Receiving benefits from the project in terms of employment and development of infrastructure and the community – Regular updates on the project activities and the opportunities from the same	• This group, though powerful enough to affect the functioning of the Project in their vicinity • This stakeholder group may play an important role in the public opinion formation, implementation of the CSR activities planned by the project	These groups due to their social status, may already have access to several economic benefits from the other Projects, and thus may not be completely dependent upon the Project for access to development opportunities	• Influence of Stakeholder: Low/ **MEDIUM** • Influence of Project: **LOW/MEDIUM**
Local Gram Panchayats	This stakeholder group is comprised of the lowest level of local governance. The gram panchayats consist of one or more revenue villages and are the lowest level of decision-making bodies for development activities in the villages	• The expectations and concerns of this group from the project: – Receiving benefits from the project in terms of employment and development	• The panchayat members can influence the decision-making process of the landowners and the entire community, at large; and • This stakeholder may also play an	The project can play an important role in the development of the villages by undertaking CSR activities in collaboration with the Gram Panchayat, especially in areas	• Influence of Stakeholder: **LOW** • Influence of Project: **LOW**

Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
		of infrastructure – Implementation of community development programmes in consultation with the Gram Panchayat and the local community – Preference to the local community in contractor and employment opportunities from the project – Regular updates on the project activities and the opportunities from the project	important role in the implementation CSR activities planned and the execution of other plans such as stakeholder engagement and grievance management.	where there is a paucity of government funds	
Regulatory Authorities	This stakeholder group is comprised of the central, state and district level regulatory authorities. These authorities influence the project in terms of establishing policy, granting permits and approvals for the project, monitoring, and enforcing compliance with the applicable rules and regulations	The key expectations and concerns of the group from the project include: • Project's compliance to the regulatory requirements; and • Timely disclosure of information and provisioning of updated through the life of the project.	• The failure of the project to comply with the various rules and regulations applicable can affect the timely implementation of the project • This stakeholder group is also critical for various permits/clearances required for the commissioning of the project	• The influence of the project on the stakeholders pertains to the role the project will play in the development of the Project in the area	• Influence of Stakeholder: HIGH • Influence of Project: LOW
District Administration	This stakeholder group is comprised of the government bodies at the district level. These bodies are vested with funds and decision-making authority through the	The key expectations and concerns of the group from the project include: • Project's compliance to the regulatory requirements	• This stakeholder group is critical for obtaining various permits/clearances required for the commissioning of the project and its	• The influence of the project on the stakeholders pertains to the role the project will play in the development of	• Influence of Stakeholder: HIGH • Influence of Project: LOW

Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
	decentralization process. Accordingly, the bureaucracy, the forest officer, RTO, Industrial estate, and Revenue Officer have become extremely influential.	• Timely disclosure of information and provisioning of updates throughout the life of the project	smooth functioning thereafter • This group serves as important points of contact between the state level authorities and the local community	the Project in the area	
Staff & Contractors and Sub-Contractors	This stakeholder group is comprised of the technical & non-technical staff of Greenlam and staff and workers of sub-contractors	The primary concerns and expectations of the group from the project include: • Timely completion of the project • The role of the project in continued economic opportunity and work generation • Avoidance of any reputational risks associated with the project due to any future community unrest or project activities • Clarity in terms of scope of work, expectations, key performance indicators and timelines • Timely and adequate disclosure of information to allow the project activities to be carried out • Fair business opportunities and contract closure • Business continuity • Payment of wages and other concerns related to Labor welfare s	• This stakeholder group is critical for the smooth functioning and timely implementation of the project • This group may also play an important role in the formation of public opinion towards the project	The influence of the project on the group pertains to the role of the project in business opportunities and the process of contract closure	• Influence of Stakeholder: **HIGH** • Influence of Project: **HIGH**

Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
Contractual workers	This group is comprised of skilled and semi-skilled workers, involved in the project on a contractual basis. This group is most likely to be comprised of the semi-skilled workers involved in the construction work of the project.	The primary concerns and expectations of the stakeholder group pertaining to the project is as follows: • The role of the project in continued economic opportunity, work generation and a source of income • Timely settlement of dues and payments in keeping with the legal requirements • Continued work opportunities • Safety at work.	• This stakeholder group is critical for the smooth functioning and timely implementation of the project • This group may also play an important role in the formation of public opinion towards the project	The influence of the project on the group pertains to the roles of the project in the continuance of economic opportunities, timely payment of wages and ensuring the health and safety of the workers	• Influence of Stakeholder: **MEDIUM** • Influence of Project: **HIGH**
Secondary Stakeholders					
Village Institutions	This stakeholder group is comprised of health, education institutions and training centres at the village level. The institutions in the immediate vicinity of the project are the primary schools in the villages	The main concerns and expectations of the group from the project pertain to: • Adequacy of community development activities in the area • Contribution of the project towards the overall development of the area • Involvement in the formulation and implementation of the community development activities; and • Timely and adequate disclosure of information pertaining to the project.	The influence of the group on the project pertains to the role of the played by these institutions in the opinion formation and implementation of community development programmes and CSR activities	The influence of the project on the group pertains to the role of the project in the development of these institutions	• Influence of Stakeholder: **LOW** • Influence of Project: **LOW**

Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
Political Parties	This stakeholder group is comprised of political parties, which are active in the area. This group plays a critical role in the sensitization of the population and the creation of the public opinion	The key expectations and concerns of the group from the project include: • The role of the project in the overall development of the area • The impact of the project on the local community • Adequate community development activities throughout the life of the project; and • Timely disclosure of information pertaining to the project activities.	The influence of this stakeholder group on the project pertains to the role of the political parties in the formulation of public opinion towards the project.	The influence of the project on the group is expected to be extremely limited, pertaining to the role of the project in the development of the area	• Influence of Stakeholder: **MEDIUM** • Influence of Project: **LOW**
State Administration	The state administration is comprised of the state level agencies of the various departments/authorities such as industries department, revenue department, labour department and land department etc.	The main expectations and concerns of the stakeholder group from the project include: • Compliance to the regulatory requirements for the project • Project's role in the development of the area • Timely disclosure of information pertaining to the project activities	This stakeholder group is also critical for the obtaining of the various permits/clearances required for the commissioning of the project	The influence of the project on the stakeholders pertains to the role the project will play in the development of solar energy in the state	• Influence of Stakeholder: **HIGH** • Influence of Project: **LOW**
Media	The media, comprising of both print and visual media, has a presence in the district. They are known to have played an extremely important role in generating awareness amongst the community.	The main expectations and concerns of the stakeholder from the project include: • Compliance to the regulatory requirements for the project • Project's role in the development of the area • Maintenance of positive	The influence of the stakeholder group on the project is likely to pertain to the opinion formation amongst other stakeholders towards the project	The influence of the project on the stakeholder is likely to be extremely limited due to the nature of the project activities	• Influence of Stakeholder: **Medium** • Influence of Project: **LOW**

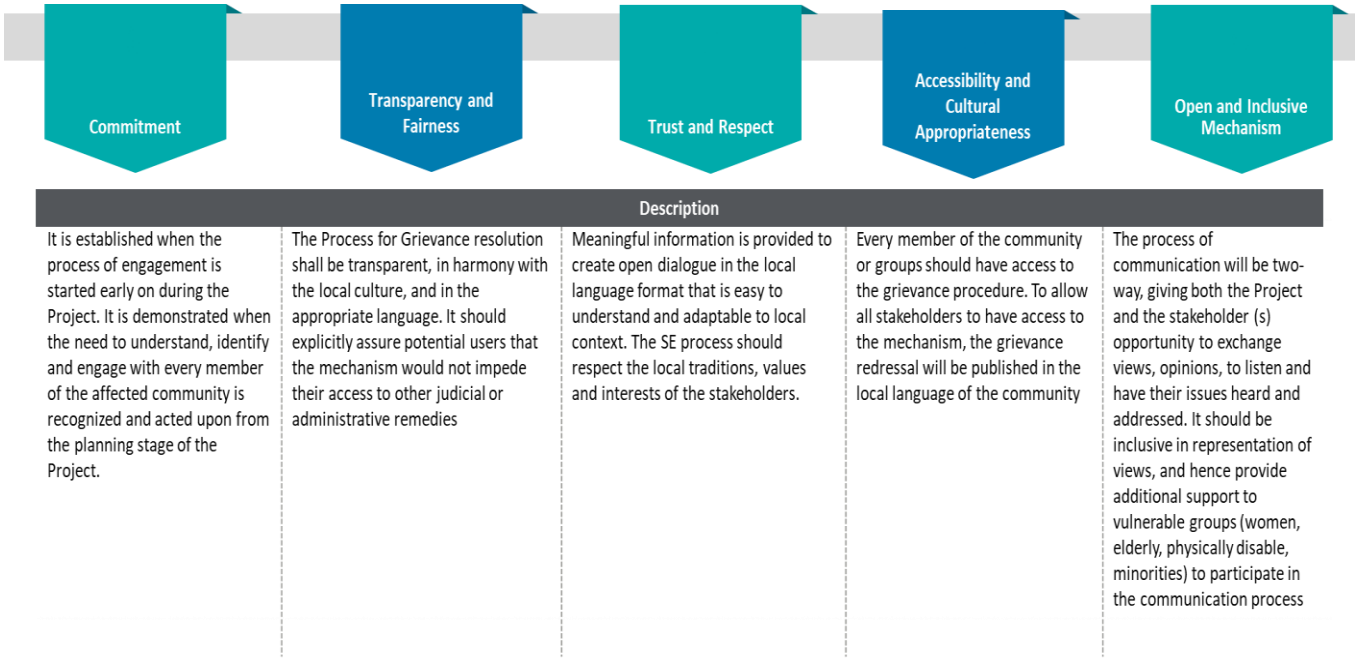
Relevant Stakeholders	Profile	Concerns and Expectations from the project	Influence of Stakeholder on Project	Influence of Project on Stakeholder	Influence Rating
		relationship with the local community and other stakeholders • Timely disclosure of information in regard to the project activities			

Propose Stakeholder Engagement Activities

This section provides the stakeholder engagement plan for the Project lifecycle going forward. This engagement plan builds on the activities undertaken thus far, the existing relationship with the stakeholders and their expectations and the requirements of the IFC . This section puts in place, the principle to be followed for stakeholder engagement through the Project lifecycle, the methods that may be used and the engagement plan This section provides an overall plan for the entire project lifecycle and a detailed plan for the land procurement and other phases of the Project. This is a living document and will be reviewed and updated on a regular basis.

Principle of Engagement

The stakeholder engagement process is informed by a set of core values that determines consultation, negotiation, and grievance management. The stakeholder engagement and grievance redress for the Project will be based on the following principles:



Methods of Engagement

The methods of engagement incorporate individual profiles, concerns, and expectations of the groups. The need for different modes of engagement is necessary because the utilization of a common modes of engagement for all the stakeholders and for the whole project duration may result in the failure of the engagement process to achieving its intended goals. Therefore, the following methods have been identified for the purpose of this Project.

- One to One interviews and interactions
- Focus group discussions
- Meetings –Public meetings, and meetings with the community in the Project footprint
- Formal Communication (written)
- Awareness campaigns

In deciding the appropriate engagement method and frequency of such method used for the identified stakeholders, the following criteria has been considered:

- The acceptability of the engagement method
- The current level of engagement and desired level of engagement
- The aimed outcome of the engagement activity

Grievance Redressal Mechanism (GRM)

Grievance redressal is another critical component of effective stakeholder engagement. The purpose of GRM is to provide a framework to the internal and external stakeholders to voice their complaints, concerns, queries, and issues with the project. Such a mechanism provides the stakeholders with one channel of communication through which their complaints and queries can be raised, and timely response can be ensured. This allows for trust building amongst the stakeholders and prevents the accumulation of multitude of small issues into major community unrest. The GRM is aimed at being accessible and understandable to all stakeholders in the project and for the entire project life. The GRM will also be applicable for any contractor appointed during the construction and operations phases of the Project.

- This section contains the following:
- Objectives of GRM
- Grievance definition and categories, and GRM principles
- The process of receiving, documenting, addressing, and closing grievances

Objective of GRM

- To provide stakeholders with a clear process for providing comment and raising grievances
- To allow stakeholders the opportunity to raise comments/complaints through using the grievance redressal committee established
- To structure and manage the handling of comments, responses, and grievance are handled in a fair and transparent manner, in line with Greenlam internal policies, and international best practices

Grievance Definition and Categories

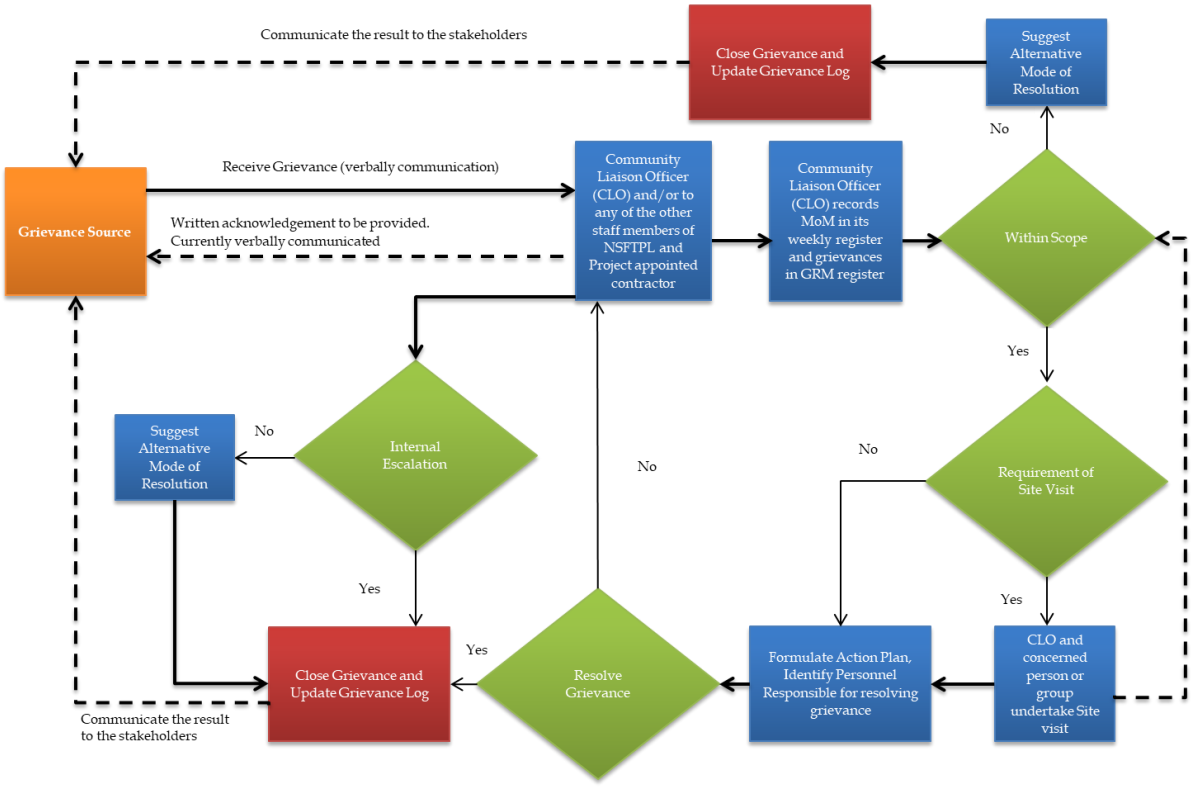
A grievance is a concern or complaint raised by an individual or a group within stakeholders affected by the company's operations. Both concerns and complaints can result from either real or perceived impacts of the company's operations and may be filed in the same manner and handled with the same procedure. Grievances may take the form of specific complaints for actual damages or injury, general concerns about Project activities, incidents and impacts or perceived impacts.

Anonymous Complaint

The project shall also consider anonymous compliant as part of this GRM and the resolution of the compliant shall be in accordance with the provisions of this management plan

Internal and External Grievance Mechanism

The Process to be followed for the redressal of the external stakeholder grievances is summarized below:



In the above diagram. The bold lines represent the grievance escalated from stakeholder to concern staffs and then from concern staff to further escalated. The dotted lines are the representation of communicating back of resolution to the stakeholder.

Publication and Disclosure of the GRM

The GRM will be disclosed to the stakeholders through written and verbal communication. The medium to use for this purpose are public meetings, group discussions, and display of GRM provisions in Gram Panchayat , Wood Aggregators office, Collection centers, Greenlam office and other key locations. As part of the public meetings, the project will provide a refresher of the provisions of the GRM, and the way grievances can be communicated.

Receiving and Recording Grievances

A complaint can be submitted to Greenlam and Project through the following methods:

- During regular meeting held between stakeholders and Greenlam team
- By submitting verbal complaint to appointed contractors and other Greenlam's team
- For written communication of complaints, a sample grievance register is provided below:

S. No	Date	Village/ Location	Topic of grievance	Summary of grievance	Stakeholder Group	Acknowledgement date	First response date	Follow-up (if applicable)	Unique Grievance ID	Status
1.										
2.										
3.										

Maintaining a Grievance Register

A grievance register will be created and maintain at the facility by the Community Liaison Officer (CLO). Details of the stakeholder(s) communicating issues/compliant are noted along with the summary of the grievance. Depending upon the nature of the grievance, the option of legal redressal can be taken if requires.

The grievance register will regularly be updated at each stage of grievance redressal. Once the grievance is recorded in the register, a preliminary analysis will be undertaken by the concerned staff to ensure that the grievance is within the scope of the GRM. The grievance will be registered in the grievance register by CLO.

Acknowledgment of Grievance

Greenlam will establish a timeline of communication such that – once the grievance is received and recorded, the stakeholder will be provided with an acknowledgment of the receipt within seven (7) working days, along with a summary of the grievance, as specific below:

GRIEVANCE REGISTRATION	
Grievance No.:	Date:
Name:	Father's/Spouse's Name:
Village:	Taluka:
Phone no.	
Category of grievance:	
Summary	
Name of person recording grievances:	
Designation of recording person:	
Proposed date of response to grievance:	
Signature of recording person	Signature of complainant
ACKNOWLEDGEMENT RECIEPT	
This receipt is acknowledgement of grievance registration by_____ _____, resident of village _____ on date _____. His case number is _____ and the date for response is _____.	
Name of the person recording grievances:	
Designation of the recording person:	

GRIEVANCE REGISTRATION		
Grievance No.:	Date:	
GRIEVANCE REDRESSAL RESPONSE		
Date of redresses:		
Decision of CLO (give full details):		
Claimant accepts the outcome:	Accepted	Not accepted
Signature of claimant:		
Signature of CLO:		
Note: Please note, if at any time the grievant is unsatisfied with the resolution of the grievance, they may choose to ask for an escalation to the next level or may resort to legal redress.		

Providing Initial Response

The stakeholder that lodged the initial comment is then contacted within seven (7) working days to acknowledge that the Project site team will log the grievance and provide feedback in the written format. A copy of this notification is submitted to the stakeholder. The notification contains details of the next steps to be taken for investigation.

Investigation and Resolution

Depending upon the sensitivity of the grievance, and nature of the complaint, a site inspection may be required, but not in all cases. The purpose of the site inspection is to check the validity and severity of the grievance. For this purpose, the personnel may also undertake discussions with the external stakeholder concerned. The inspection is undertaken within **fifteen (15) working days** of receiving the grievance. After site inspection, the assigned individual then works with other relevant members of the Project team to investigate the problem, communicate an update to the concerned complainant, and identify measures to resolve the grievance as appropriate.

The update on the grievance is communicated to the aggrieved person, on a weekly basis or at frequency suitable for the nature of the case by the Project team.

Resolution, Escalation and Closure

The CLO, in consultation with the staff concerned, will identify a suitable resolution to the issue. This resolution is accordingly communicated to the aggrieved stakeholder within seven (7) working days of completing the investigation.

Update of Records

The records of the grievance register are updated every working week with the present status of the grievance. Once the grievance is resolved, and the same has been communicated to the complainant, the grievance is closed in the grievance register. The grievance register also provides an understanding of the manner in which the grievance was resolved. These instances shall then serve as references for any future grievances of a similar

nature. However, the project will ensure that all grievances communicated will be maintained in a confidential manner.

Monitoring and Review

It is vitally important to monitor the effectiveness of the response and grievance mechanism. Appropriate measures/KPIs for this to be included in monthly reporting on the number of grievances received, resolved and outstanding. In order to track the performance of grievance resolution process, analysis of the trends of the GRM will be undertaken. Greenlam will involve the views of the stakeholders to improve the effectiveness of SEP and GRM.

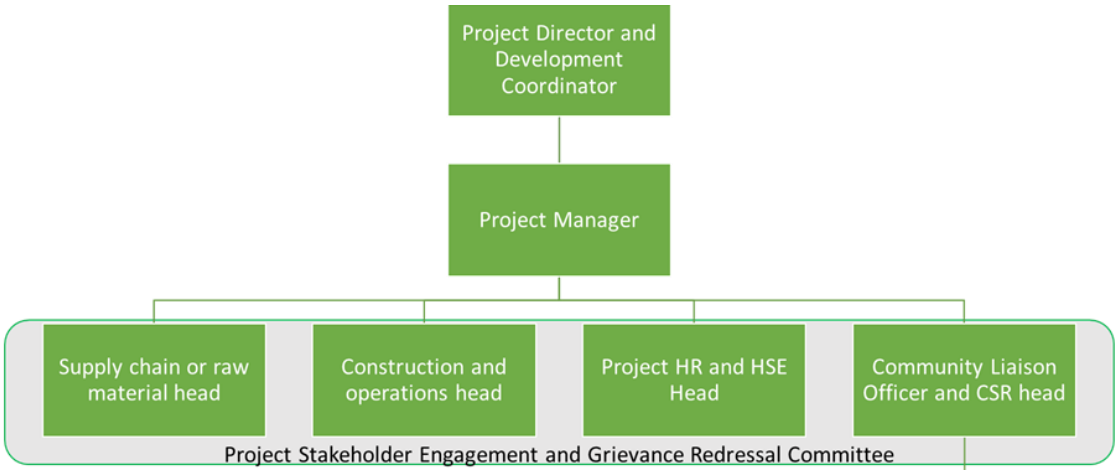
Implementation Roles and Responsibilities

For the purpose of ensuring the proper and effective implementation of the SEP and GRM, this engagement and grievance redressal process is given importance as the other Project activities. Resources, both manpower, and financial, are made available for the same. The following sub-sections discuss both these resources requirements, in detail.

Manpower

The project will identify specific project personnel who will manage the stakeholder engagement and grievance redressal process through the life of the Project. The following figure provides a tentative understating of the entities involved with the implementation of the SEP and GRM.

Figure 1 Organizational Structure of SEP and GRM Implementation



In the above diagram, the bold line represents the hierarchy order and the main communication channel, from the Project level to the top level and the project SEP and GRM committee.

Responsibilities of implementation entities

The table given below outline the responsibility of each entity

Entity	Responsibility
Project Director and Development coordinator, and Project Manager	• Approves and is accountable for implementation of the stakeholder engagement and GRM • Provide support for implementation of the grievance resolution process and enforcement of specific agreements, if required or escalated by the project stakeholder engagement and grievance redressal committee • Intervenes when the proposed resolution is not accepted by the stakeholder and identified additional actions to address the grievance

Entity	Responsibility
	• Approves the close-out of grievance when an agreement cannot be reached with the stakeholder
Project stakeholder engagement and grievance redressal committee	It has been set up specifically for stakeholder engagement and grievance resolution. The main responsibilities of the committee will be involved but are not limited to: • Manage all community liaison related tasks • Implement community engagement strategy and oversee all community liaison related matters • Manage the grievance mechanism at the project level and if required escalate the grievance to the top management team • Oversee implementation and monitoring project CSR activities or community development plans • Establish a monitoring and evaluation plan and other tools established such as the grievance register, and consultation register • Ensure that all individuals with responsibilities under the stakeholder engagement and grievance mechanism are made aware of the existence of the process and receive adequate training
Supply chain or raw material head	To effectively meet Project's commitment towards sustainable supply chain, the head shall engage with all identified stakeholders across the supply chain of the Project. Engaging stakeholders shall involve: • Finalization of supplier based on internally decided sustainability criteria, undertake due diligence of suppliers' EHS&S process and regular monitoring of suppliers' compliance towards applicable regulatory requirements • Integrating supplier in internal activities tap knowledge and further resources when, for example, selecting suppliers or assessing existing suppliers and striving for standards and certification • Addressing suppliers' requirements at the internal dimension's centers on transparency through one-way or two-way communication but also immediate technical transformation of internal process (e.g., changed sourcing strategy) to maintain or grain legitimacy
Construction and operation heads	The role of construction and operations heads includes (but is not limited to): • Finalization of contractors on internally decided sustainability criteria, undertake due diligence of contractors' EHS&S process and regular monitoring of contractors' compliance towards applicable regulatory requirements • Integrating contractors in internal activities tap knowledge and further resources when, for example, selecting contractors or assessing existing contractors and striving for standards and certification • Addressing contractors' requirements at the internal dimensions' centers on transparency through one-way or two-way communication
Project HR and HSE Head	The role of Project HR and HSE head includes (but is not limited to): • Describe regulatory, company and/or other requirements for consultation and disclosure of information • Provide strategy and timetable for sharing information and consulting with each of internal groups (e.g., employees, contractual workers, another department) • Implement and regular monitoring of internal grievance redressal mechanisms for employees, contractual workers, etc. • Update or prepare policies, or SOPs related to labor welfare, terms and employment and Health & safety • Provide regular training one labor welfare, terms and employment and Health & safety • Regular auditing and monitoring of Human resources providing contractors on their compliance with applicable regulatory requirements
Community Liaison officer/CSR head	The CLO will be appointed or delegate of duty of existing employee to maintain stakeholder relations between Greenlam and the community and to implement social management process and GRM, and improvement in community development program or CSR activities as per the feedback received from community. The role of the CLO is as follows: • Establish and maintain an affective relationship between the local community and the Project • Build and foster an environment that supports community involvement, continuous community engagement • Provide community members with opportunities to express their concerns and raise issues

Entity	Responsibility
	• Provide regular and timely information and project updates to the local community and relevant stakeholders • Create stakeholder database, develop, and regularly update community profiles and expectations • Deliver weekly and monthly reports on activities • Identify and develop proposals for community development projects aligned with the established CSR policy and commitment • Serves as principal point of contact and liaison with complainants • Ensure communication with the complainant and follow specified procedures and timelines • Maintains a log of complaints received • Resolves complaints that do not need a substantives expert • Supports the substantive expert, if necessary • Serves as a liaison between the project and the third parties, as required • Monitors resolution of complaints • Prepares monitoring reports • Provides feedback on the effectiveness of the GRM to management

Training Requirements

Greenlam or its responsible employee will regularly undertake a review of the existing skill set and the need for skill enhancement in the resource identified related to SEP and GRM. This will also be done in keeping with the evolving project's changing stakeholder dynamics on the ground. The following compulsory training shall be done for the effective implementation of the SEP and GRM:

- **Training contractor(s)**: for the construction and operation phase, the HR department or CLO will orient the contractors on the established SEP and GRM. The appointed contractors shall be inducted on the standards and guideline regarding the SEP and GRM, and the profile and importance of each stakeholder group associated with the Project.

Financial Resources

The project shall ensure that the budget formulated for the purpose of the SEP and GRM is sufficient to meet the expenses of the same. In case of grievance requiring monetary compensation, the amount for the same shall be provided through dedicated budget set up for the Project.

Documentation, Monitoring and Reporting

As the SEP is a 'live document', it will be regularly reviewed keeping in mind attributes such as the stakeholders, the evolving priority level, changing dynamics and the engagement process for each stakeholder and the reporting time for each. The documentation will be at two (2) levels – minutes of meetings including signatures/names of attendees and photographs (attendance of every meeting). All such documentation will be linked to a database maintained for SEP that contains the engagement activities undertaken in chronological order. This SEP database is available for review of Greenlam management and the Project team.

Monitoring

The monitoring will be carried based on the below provided process:

Figure 2 Monitoring of the SEP and GRM Implementation

The annual monitoring and review will include:

- Auditing the implementation of the SEP in keeping with the principles and engagement plan developed
- Monitoring the effectiveness of the engagement process in managing impacts and expectations by:
    - Tracking feedback received from engagement activities
    - Recording and tracking updates given to the stakeholder
    - Assessing the efficacy of the engagement activities in terms of the purpose of engagement and the participation of the stakeholder groups
- Tracking of grievances received and their resolution status
    - Number of grievances received
    - Nature of grievances received
    - Proportion of grievances closed in satisfaction to the complainant
    - Proportion of grievances closed within seven (7) working days of receiving the grievances
    - Proportion of grievances escalated due to internal non-resolution
    - Proportion of grievances escalated by complainants due to non-satisfactory outcomes

Reporting

Based on the documentation and monitoring process, the following reporting is maintained for the SEP and GRM.

- Weekly reports:
    - The CLO maintains a register of its weekly meeting that is conducted on a regular basis. The register contains two (2) parts – attendance of the participants and minutes of meeting. In addition, the GRM register is maintained and updated by the CLO in the local language format
    - These weekly reports are shared by CLO with the Project SE and GRM committee, and translated into English language for of understanding of other management
- Monthly report: the CLO will prepare monthly reports on stakeholder engagement activities for the Project SE and GRM committee. It will include:
    - Activities conducted during each month
    - Public outreach activities (type of engagement and stakeholder attendance)
    - Entries to the grievance register
    - Number of grievances raised to the Project SE and GRM committee
    - Progress on partnership and other social projects
    - New stakeholder groups identified (where relevant)
    - Plan for the next month.

Reporting back to stakeholders

Project SE and GRM committee will share the reports with stakeholders as part of the information disclosure process on matters relating to:

- Main findings from the annual monitoring review of the Project

- Progress on implementation of social investment initiatives or CSR activities
- Trends in Grievance redressal and analysis of grievance categories

Appendix 16: Supply Chain Management Plan (Part 1)

Introduction

The Subcontractor and Supplier management plan defines responsibilities of Greenlam and provides EHS&S (Environment, Health, Safety and Social) requirements for selection and monitoring of subcontractors and suppliers by Greenlam. The purpose of these requirement is to avoid, minimize or eliminate potential risks related to the environment and EHS&S associated with contractors and supply chain. This plan contains information regarding the procedures for selection of sub-contractor and suppliers, contractual agreement, safeguards on EHS&S aspects, regular monitoring, and reporting of EHS&S aspects.

Purpose and Scope of the Plan[14]

The management plan is intended to outline the relationship between the Greenlam and its contractors and sub-contractors, and to describe the process on how the overall contract will be managed.

The scope of the management plan is to:

- Summarize the contractors and sub-contractors' engagement, management processes, procedures, and systems to be used
- Set out the procedure for selection of sub-contractors and suppliers
- Set out the processes to ensure the implementation, by the respective sub-contractors, and is intended to assure the work to be done in compliance of the Applicable Reference Framework of this ESIA report.
- Define monitoring and reporting procedures including Key Performance Indicators (KPIs), to monitor the performance of sub-contractors and suppliers

Objective

This document is a project specific sub-contractor and supplier management plan to be implemented by the project during the project life cycle. The key objective of this plan includes the following:

- Identify the key subcontractors and suppliers that will be engage for the proposed project
- Identify a subcontractor and supplier management procedure which aims to ensure that applicable E&S requirement are considered and implemented by all involved subcontractors and suppliers engaged by the project
- Identify monitoring and reporting requirement related to the plan
- Identify roles and responsibilities related to the plan

This document is to be considered as a live document that will be regularly updated to accommodate changing circumstances.

Identification of subcontractors and supplier

Sub-contractors

Subcontractors are identified as any entity (international or local) appointed directly by the project through contractual arrangements to undertake construction activities within the project area or provide a specific service/supply for the project during the operation phase. This could include but not be limited to the appointment of civil, electrical, and mechanical subcontractors during the construction phase; crane operators, transportation and other suppliers, manpower (labour work during operation phase) or services, etc.

Note: The project construction was already initiated and most of the subcontractors were mobilised on ground.

[14] This contractor management plan covers the formally organized contractors' vendors and suppliers.During operations the wood supply will be taken through local wood aggregators on supply contract basis and most of these wood aggregators are not formally organized and most of them does not have the formal EHSS systems and procedures in place, therefore to check their compliance checklist is provided as addendum to this plan.

Where possible (i.e., subcontractors shall be competitive and can meet the technical requirements which needs to be achieved), the project (and assigned subcontractors) try to give priority to the local subcontractors based out of region operating close to the proposed project which will ensure the positive impact on Micro, Small and Medium Enterprises (MSMEs).

Suppliers

Suppliers are identified as any entity (internal or local) appointed directly by the project or through contractual arrangement to supply products (which may include raw material, equipment, material, or components) required for the project. However, currently project is at construction stage and for operation stage supplies are yet to be finalised

Note: The project construction was already initiated and most of the subcontractors were mobilised on ground

Where possible (i.e., supplier shall be competitive and can meet the technical requirements which needs to be achieved) by the project or (and assigned supplier) try to give priority to the local suppliers based out of region operating close to the Project which will ensure the positive impact on Micro, Small and Medium Enterprises (MSMEs).

Sub-contractor(s) and supplier(s) management procedure

This section identifies the key management procedure that will be implemented by the Project to manage subcontractors and suppliers on the Project. The below management procedure is applicable for both subcontractors and suppliers unless otherwise stated throughout the text.

Sub-contractor(s)/supplier(s) contracting and induction

Screening

Where applicable, as part of the bidding process, project management ***(The procurement head, project in charge, E&S Lead & HR)*** will identify the key E&S requirements that will be applicable for the scope of work of the subcontractor/supplier and the same shall be included within the tender document.

This will include but not limited to national requitements, but it should also match the IFC's E&S requirement *which may include the adherence to performance standards , company's environmental, social, and health and safety policies, ESMS, accreditations such as ISO 14001/OSHAS 18001, held by the company, and/or alignment with ISO 26000, GRI, United Nations Global Compact, World Business Council for Sustainable Development, and/or other social responsibility standards/guidelines/ formal initiatives etc.*

Tender documents should specify how they intend to comply with such requirements as part of their scope of work. In addition, where applicable, bidders will be required to submit a preliminary E&S prequalification survey as provided in (Preliminary E&S questionnaire given in this document)

If required, the project will conduct clarification meetings with potential subcontractors/suppliers to describe the scope of work and clarify applicable E&S requirements for the Project

The above factors shall be considered as part of the subcontractor/supplier selection process. Bidders that are unable to demonstrate sufficient evidence to meet the E&S requirements enlisted for the Project shall not be considered for further short listing and hence all the bidders who are unable to match key EHS&S requirement shall be disqualified.

In the case there is no tendering process (e.g., direct award), where applicable, the subcontractor/supplier shall be required to submit the preliminary E&S prequalification survey as provided (Form I: preliminary E&S questionnaire). Based on the responses provided by the respective entities further scrutiny will be carried out by the EHS&S Team and those entities who are unable to meet the EHS&S requitement and unable to demonstrate or provide sufficient evidence to meet the E&S requirements shall be disqualified.

The outcome of the screening shall be recorded within the subcontractor and supplier log as provided under (Form II: subcontractor and supplier register).

Proposal Evaluation and sub-contractor(s)/supplier(s) selection

Greenlam shall establish an evaluation criterion along with the Request for proposal (RfP) and these shall be included with the RfP so that sub-contractor(s) can see early on the relative weightings of the EHS&S aspects of their proposal.

Evaluation methodology, criteria, KPIs and weightings will be established in discussion with the Project team and EHS&S team. Primarily, the evaluation will be done based on the sub-contractor(s)' existing policies, their capacity to implement EHS&S requirements, and the past EHS&S implementation experience and performance.

While the evaluation methodology will vary according to the different category of sub-contractor(s), scope of work, and any other specific requirements, it will be agreed on by the project team and EHS team. However, at minimum following will be considered as grounds for disqualification:

- Failure to provide information on past E&S performance, including health and safety records
- Reports of past performance deemed unacceptable for the current phase of the Project
- Notices of material labor issues between workers and management
- Fines and sanction imposed by EHS and labor regulators and authorities
- Material community grievances and negative media /adverse press report on EHS&S matters

Further the team evaluating proposal, should have at least one (1) qualified and experienced EHS&S professional who had experience of evaluating bids or have been involved in the development of RfP and subcontractor evaluation criteria.

Selection

After initial screening is undertaken, the next steps given below shall be undertaken before awarding of contract to the preferred subcontractor/supplier. The project E&S manager with the support from the project will undertake the following:

- Confirmation of appropriate and valid corporate registration in host country and valid license to operate as a subcontractor/supplier in host country. Should those not be provided within the prescribed time frame sub-contractor/supplier shall not be engaged on the project
- Subcontractor/supplier shall have E&S policies as well as HR policies and other polices to safeguard the workers against exploitation which may be child & forced labor, equal opportunities, and anti-sexual harassment etc.
- Undertake an online desktop review (including media research) on the subcontractor/supplier, their owners, and shareholders on E&S reputational issues. The objective is to identify any major issues of concern which could include but not limited to the following:
    - Criminal acts (embezzlement, corruption, collusive bidding, etc.)
    - Human right abuses related to workers and employees (discrimination, child labour, forced labour, etc.)
    - Major environmental incidents and penalties if any

Should any of the above major issues of concerns be substantiated by conviction of charges before a court of law, the subcontractor/supplier should not be engaged on the Project.

In those circumstances, in which: (i) the above issues are raised and allegation unsubstantiated by conviction or charges before a court of law, or where the direct implication or nature of the issues are unclear, or (ii) desktop review indicates any other key E&S including reputational issues apart from those identified above (e.g., occupational health and safety malpractices) the following shall apply:

- The subcontractor/supplier shall be requested in a formal letter to explain the identified issue in detail. And on satisfactory explanation along with documentary evidence by the respective subcontractors/ supplies they

can then only be engaged. The copy of the letters supported by evidence and rationale behind the selection of the subcontractor should be properly documented and records shall be maintained for the prescribed for retention period as per the applicable laws.

- The subcontractor/supplier shall be cautioned /informed that going forward if there are any instance in which the company or its officers or employees are accused of any criminal charges, court cases, fine of any major adverse media report will constitute the grounds for the review of their engagement on the Project and based on the outcomes of the management review and scrutiny if required immediate dismissal or demobilization may be done unless an adequate explanation is provided along with supporting documents to the project management.

The Project should undertake an E&S audit on the subcontractor / supplier's offsite premises to assess the risk of major environmental impacts, human right abuses, criminal abuses or other. Based on such an audit key control measures shall be identified to control such risks throughout the engagement phase by the Project The project will undertake continuous audits to such offsite premises to ensure such control measures are implemented as discussed in "contracting" below.

Contracting

Based on the pre-qualification (commitment, capacity, and track record analysis) and selection procedure, identification of EHS&S plans which is to be developed by the sub-contractor(s) will be identified. The same plans will be incorporated in the EHS&S conditions of the contract. The EHS&S conditions will have applicable EHS&S management plans and associated documentation. The updated implementable management plan prepared by the sub-contractor(s) should be submitted for review and approval of Greenlam within an agreed timeline.

Specific provisions of EHS&S requirement will be included in the contract after the approval from Greenlam management team. The project management team who will be approving the management plan of the respective contactor should have EHS&S representative(s) approval committee.

General terms and condition for all sub-contractor(s)/supplier(s)

Greenlam shall ensure that their contracts shall include key EHS&S requirement (but not limited to) given below for all sub-contractor(s)

- Explicit commitment to compliance with applicable EHS&S rules and regulations, conditions of approval and acquisition of all required permits, license, consent, and approval prior to undertaking the activities being permitted or otherwise approved
- Specific to reference of the applicable reference framework of the ESIA
- Creation and maintenance of records on EHS&S performance
- Penalties or incentives for EHS&S performance
- Clear contract statement that the sub-contractor(s) is responsible for the EHS&S performance of their appointed contractor(s)
- Statement that invoices of sub-contractor(s) will be approved based on the EHS&S performance of sub-contractor(s), and Greenlam and its contractors have authority to temporary or permanently withhold the payment
- Contract must have statement that if the sub-contractor(s)fail/ on failure to meet the EHS&S requirements mentioned in the contract (such as to prevent significant adverse impacts on workers, local communities or individual or environmental resources), and on the sub-contractor(s) failure to correct such deficiencies upon receiving proper notice, Greenlam has the right to dismiss the contract / appoint any other contractor to repair damage or otherwise reduce payment or deduct payment of the sub-contractor(s) against such damages and pay the recovered amount to any other third-party contractor.
- Contractor should strictly purchase wood from the agroforestry plantations.

Greenlam and Contractor(s) shall ensure that their supplier(s) shall include key EHS&S requirement (but not limited to) given below,

- Agricultural land used for food crops should be avoided to convert into agroforestry plantation.
- Genetically Modified (GMO) clones should not be practised for agroforestry.
- The appropriate clones / hybrids should be selected to decrease the use of chemical fertilizers and pesticides.
- Strict adherence to the prohibition of banned pesticides contributes to the conservation of habitats and prevents their degradation.

Monitoring Requirement

Sub-contractor(s)

- All workers will be subject to an HSE induction training, Toolbox Talks (TBT), and other specialized training. All subcontractor workers will be required to attend such trainings.
- The Project Contractor will undertake the following to ensure subcontractor adhere to E&S requirements of subcontractors:
    - Develop and conduct trainings
    - Daily site walkovers
    - Weekly site inspections
    - Fortnightly E&S site inspections
    - Weekly E&S Audit
- Upon completion of the works by each subcontractor, an E&S completion audit shall be carried out to ensure that all relevant E&S obligations related to the project have been complied with. These will include, but not be limited to, the following:
    - Evidence of satisfactory resolution of all worker and stakeholder grievances relevant to the subcontractor
    - Payment of any fees/cess to the regulatory bodies
    - Satisfactory documentary evidence and verification of salary and applicable social security payments to the subcontractor employees / workers involved in the project
    - Inspection of subcontractor areas to ensure that all subcontract material and waste have been removed and that there is no evidence of contamination or areas requiring remediation
    - Inspection of subcontractor offsite ancillary facilities (e.g., worker accommodation) to ensure that decommissioning of hand over can be completed without E&S liabilities

- As discussed previously under “Screening”, in the case of issues raised within reputational assessment, the project could undertake an E&S audit on the subcontractor’s offsite premises to assess the risk of major environmental impacts, human right abuses, criminal abuses or other. Such E&S audits on offsite premises will be undertaken again (frequency to be determined on a case-by-case basis) to ensure control measures identified within the audits are implemented.
- In terms of invoice management, the following will be undertaken:
    - EHS&S Manager or representative will be part of the process for signing of all payment to sub-contractor(s) EHS&S manager will work closely with the Project manager or finance department to determine if there are any outstanding EHS&S items and whether including the full or partial payment under specific line item of the bill of quantities will be withheld, either temporary or permanently.

      E&S Review of Sub-contractor(s) Invoices

        - Temporary withholding shall be done in case of repeated minor violation of EHS&S requirement that are not leading to significant impacts on workers, external parties,

or resources; minor violations that are not corrected after repeated warnings of first-time major violation that can be corrected easily and that have not led to permanent EHS&S impacts. The withheld amounts shall be paid upon sub-contractor(s) correction of the defiance to the Greenlam's satisfaction

- Permanent withholding will be done for minor violations that are not corrected after repeated warnings and that could result in significant impacts. The percentage of amount may be decided by the management. however, it is recommended the portion of such withholding may be released upon satisfactory resolution of the issues, but some should be permanently withheld as a penalty to discourage repeated incidents

  - In case if the sub-contractor(s) does not take timely action to reach compliance with EHS&S requirement, Greenlam EHS&S manager and the project manager or finance department will continue to take appropriate action to encourage compliance, which could include orders to stop work, withholding of further payments or escalation of the issue to higher management of Greenlam. If significant impacts are occurring or imminent. Greenlam may notify the sub-contractor(s) that another external party will be brought in to deal with the issue and the payment of the sub-contractor(s) will reduced by the amount paid to the appointed external party.

Suppliers

- The appointed supplier shall adhere to following condition (plus shall adhere to the requirement of above-mentioned management plans). For example, this includes the following (but not be limited to):
  - Water management: water supply company to provide required licenses / permits for water abstraction, utilize water manifests, and other
  - Hazardous Material and Waste Management: waste collection company to provide required licenses for waste collection and disposal at landfill, utilize waste manifests and other
  - Security management: security provider to perform valid background checks on potential security guards' employees and provide original certified documentation from relevant governmental entities which prove that recruited security guards are not involved in any past abuses, inappropriate use of force, or other criminal activity and wrongdoing.
- As discussed previously under "Screening", in case of issues were raised within reputational assessment the Project undertake an E&S audit on the supplier's offsite premises to assess the risk of major environmental impacts, human right abuses, criminal abuses or other. Such E&S audits on offsite premises will be undertaken again (frequency to be determined on a case-by-case basis) to ensure control measures identified within the audits are implemented.
- In terms of invoice management, the following will be undertaken:
  - All invoices to be processed to the supplier will require the sign-off of the Project E&S Manager
  - Invoice will not be processed to supplier in the case the audit indicates more than three (3) open non-conformities. Once non-conformities are resolved, Project E&S Manager will provide his/her sign-off.
- Invoice will not be processed to supplier in the case there are more than one (1) open non-conformity that is repeated (refer to above mentioned invoice management for sub-contractors).

E&S staff requirement and recruitment process

<u>This section is considered applicable for subcontractors only.</u>

Subcontractors are required to abide by the following:

- Subcontractors with less than 20 workers shall deploy a non-dedicated E&S Manager who would have other tasks and duties as applicable
- Subcontractors with more than 20 workers shall deploy a dedicated HSE officer and an additional HSE officer for each additional 50 workers deployed onsite

The HSE Officer(s) shall have a minimum three (3) years of experience in HSE Management with an Environmental or Engineering degree or similar and/or relevant additional qualifications (e.g., NEBOSH Diploma/IGC, ISO Auditor, etc.).

The subcontractor will submit the Curriculum Vitae (CV) of the HSE Officer(s) to the project E&S Manager for review and approval. Should the CV be approved, a formal interview will be undertaken with the HSE officer(s) E&S Manager.

The HSE Officer(s) will not be engaged until a formal written approval is provided by the project E&S Manager to the respective subcontractor (s).

Following two written warnings, the project E&S Manager may require the subcontractor to remove (or cause to be removed) the HSE Officer(s) or any person employed on the site or works if such personnel is deemed unsuitable or not appropriately qualified to implement the E&S requirements. Key E&S personnel shall be replaced within two weeks, subject to the Project Company's clearance of the proposed replacement candidate.

Tracking and Tracing Mechanism for procured wood

To ensure that the sourced wood originates from sustainable and environmentally friendly sources, it is crucial to implement a tracking and tracing mechanism that aids in verifying its origin and minimizing the disruption of natural habitat. The Greenlam has been advised to conduct the following activities in collaboration with subcontractor(s) to meet this goal,

- Establish communication with farmers and primary suppliers to convey the significance of employing sustainable resource utilization practices and actively participating in habitat conservation efforts.
- Conducting regular inspections of resourcing cluster centers to verify the origin of raw materials.
- In addition, biannual third-party audits of the wood supply chain can effectively meet the need for ensuring the sustainable utilization of resources

Form I: Preliminary E&S Questionnaire

HSE Questionnaire for Subcontractors and Suppliers			
1	Leadership & HSSE Culture	Documents to be supplied	Explanations
Commitment to HSE aspects through leadership	How are senior managers personally involved in HSE management for example objective-setting and monitoring?	HSE meetings attendance	
	How organization promotes a positive culture towards HSE matters?	Details of Content	
2	HSSE Policy & Strategic Objectives		
HSE Policy Documents	Does company have a HSE policy document?	HSE Policy	
	Who has overall and final responsibility for HSE in organization?	Name the person and position	
	Does company have strategic HSE objectives?	HSE Objectives and distribution records	
	Does the company have the itemize the methods for communicating strategic HSE objectives to the attention of all your employees?	HSE Objectives and distribution records	
3	Organization, responsibilities, resources, standards, and documentation		
Organizational structure for HSE management	How the organization structured to manage and communicate HSE effectively?	Organization chart. HSE positions, reporting line.	
	Do GSL and contractor meet regularly to discuss and action any interface situations?	How do you share H&S issues with related stakeholders? Please describe	
HSE training of managers, supervisors and HSE critical positions	Have the managers and supervisors at all levels who will plan, monitor, oversee and carry out the work received formal HSE training in their responsibilities with respect to conducting work to HSE requirements?	Training Matrix, Training Content	

	What specialist HSE resources does your organization have available?	HSE Resources available	
	How does your company provide HSE specialized training for HSE staff?	Training program plan for HSE specialist staff. Certificates	
General HSE training	What arrangements does your company have to ensure new employees have knowledge of basic occupational HSE, and to keep this knowledge up to date?	Details of Content	
	What arrangements does your company have to ensure new employees have been instructed and have received information on any specific hazards arising out of the nature of the activities?	Details of Content	
Competence assurance	Does your organization have a competence system in place?	Please describe the scope and content of your competence system.	
	What arrangements does your company have to ensure existing staff HSE knowledge is up to date?	Please describe	
Contractor management process	Does your company have a contractor management process or system?	Provide procedure and an outline of the process.	
	How do company assess contractors, HSE competence or HSE performance?	Please describe and show evidence	
	Have the company has defined company standards that your contractors to require to meet?	Please describe and show evidence	
	How company ensures these standards are met and verified?	Please describe and show evidence	
HSE standards	How the company identify new industry or regulatory standards that may be applicable to your activities?	Please describe and show evidence	
	Are your company standards aligned with OGP/industry guidelines or recommended practices?	Please describe and show evidence	
4	Risk Management		

Risk Assessment & Control	How does your company identify hazards, assess risk, control, and mitigationconsequences, to a level as low as reasonably practicable?	Who, When how?	
	How do you specialize your generic risk assessment to cover site specific hazards? Please provide Safe Method of Statements.	Safe Method of Statements	
	How often or under what conditions company review and update your risk assessments?	Please Describe. Where it described?	
5	Planning & Procedures		
HSE operations manual	Do your company have HSE-MS manual (or operations manual with integrated HSE requirements) which describes in detail your company approved HSE working practices relating to your work activities? If the answer is YES, please attach a copy of an index and relevant supporting documentation.	HSSE-MS manual index & supporting information	
Infrastructure and equipment integrity	How do you ensure that infrastructure, plant, and equipment used within your operations (own premises, GSL site, or at other locations) are correctly certified, registered, controlled, and maintained in a safe working condition?	Please describe your maintenance and assurance system. Do you have preventative maintenance system?	
Management of change	How do you manage changes and assess associated risks e.g., personnel, equipment, processes, documentation?	Management of Change Procedure and application samples	
Emergency planning and response	What arrangements does your company have for emergency planning and response?	Emergency Plan Procedure	
	Which emergency drills are performed regularly?	Please describe and add emergency drill reports, performance review and corrective actions	
6	Implementation and performance monitoring		

HSE-MS implementation and active performance monitoring of work activities	What arrangements does your organization have for monitoring the implementation of your HSE-MS?	Please describe and show evidence	
	How does your company assure the implementation of work procedures within your work-site operations e.g., compliance with procedures, toolbox talks, safety meetings, supervision, job observations?	Please describe H&S assurance system.	
	How do you monitor employee HSE performance e.g., hazard identification systems, HSE participation?	Company, region, and staff individual H&S KPI spreadsheet	
	How do you report, and correct deficiencies identified?	Sample incident reports. Corrective action follow-up process	
	How do you communicate the results of active performance monitoring to relevant personnel?	please describe and show evidence	
	Please provide safety performance indicators	HSE key performance indicators	
	How is environmental performance monitored and recorded? What are your environmental risks?	Please describe Environmental Policy, procedures, action plans	
	How is health performance monitored and recorded?	Health Screening Plan	
HSE incident and investigation follow-up	What types of HSE incident are investigated?	Near Miss incidents investigated? How do you define hazard potential of the incident?	
	What process is used to investigate HSE incidents?	Do you have incident investigation procedure? Please add procedure.	
	Who conducts HSE incident investigations?	The resource allocated to investigate incident according to its severity. Is it defined at procedure? Are those resources competent to conduct a H&S investigation?	
	How are the findings of an incident investigation followed up to ensure effective prevention of recurrence?	Follow-up records	

	How is incident learning communicated to all relevant personnel?	Communication Procedure	
7	HSE auditing and management review of HSE-MS		
Audits	Do you have a written procedure for HSE auditing? If yes, please attach a copy.	HSSE-MS manual index & supporting information	
	Who is involved in conducting HSE audits? How are audit team members selected to have specific expertise and be independent from the activities being audited? What are the qualifications required for auditors?	Audit Procedure	
	How does your company schedule HSE audit and what scope of auditing is covered? e.g., internal, regulatory compliance, supplier/contractor, HSE management system implementation.	Audit Plan	
	How does management follow up on audit findings and ensure effective close out of action items?	Follow-up records	
Management review and follow-up	Do you have a written procedure for management review of the HSE-MS?	Please attach a copy of procedure	
	How often are HSE-MS reviews conducted and who is involved in the process?	Please attach a copy of review report	
	How are identified actions and improvement efforts recorded and tracked to effective completion?	Follow-up records	
8	HSE management - additional features		
Certification of your HSE-MS	Please provide information on any certification which you have received from certification bodies	ISO 14001. etc.	
Membership of associations	Describe the nature and extent of your company's participation in relevant industry, trade, and governmental organizations		
Additional features of your HSE-MS	Does your organization (globally, regionally, or locally) have any HSE features, or arrangements not described elsewhere in your response to the questionnaire?		

Form II: Sub-contractor(s) and supplier(s) register

Name	Contact Details	Overall roles and responsibilities	Outcomes of Screening (Pass / Fail)	Outcomes of Selection (Pass / Fail)	Registration and Licenses Available (Y/N)	Summary of Reputational Assessment

Appendix 17: Local Wood Aggregators and other informal service providers Management Plan (Part 2)

As mentioned earlier the scope of Subcontractor Supply Chain Management Plan that during the project implementation phase, most of the wood shall be procured from local wood aggregators and farmers. Based on the site assessment it was understood that most of these wood suppliers /aggregators are not formally organised as companies and does not have formal EHS&S policies and procedures as well as they don't have robust system and polices to ensure the compliance of applicable labour laws and protect /safeguard workforce against exploitation. Most of the wood aggregators work as proprietorship firms or work as individual suppliers. Therefore, to meet the minimum standard Greenlam needs to develop system and process to meet the expectation of IFC in terms of compliance to performance standard 2. Thus, this document put the broad guidelines for Greenlam to ensure the compliance to the requirement of PS-2.

Scope

The management plans broadly cover the following:

- Local Wood aggregators
- Village level Wood collectors
- Transporters
- Manpower suppliers for wood cutting, loading & unloading
- Plantation Nursery (operations)
- Farmer's group/cooperatives / Farmers Producer organisations
- Any other associated with wood supply chain of providing services for the project and not formally organised under regulatory regime.

Objective

The overall objective of the plan is to ensure the compliance of appliable national laws to the extent possible by the respective suppliers and adherence to the broad principles of PS-2. The broad objective of the plan is given below:

- To ensure the compliance of national laws such as payment of wages act, payment of minimum wages act, payment of equal wages act, workmen compensation act etc
- Provide basic amenities and safe working conditions to the workers
- Ensure the safety of the workers engaged in the informal supply chain and other informal service sector
- Provide regulated working hours
- Ensure the compliance against gender discrimination, child and forced labour etc.
- Ensure that no biodiversity risk involved in supply chain

Process of Selection

Pre-Qualification Survey and Screening:

The wood procurement team along with EHS&S (environment and social expert) shall carry out the prequalification survey of the respective suppliers, the basic objective of the survey is to understand the capacity and competency of the suppliers to manage the EHS&S associated aspects with their operations especially related to labour and biodiversity . The screening survey will include physical verification of the office if any, skills, business model, practices , types and quality of equipment used, qualification, experience, reputation in the area especially in the wood growing community, compliance past records, registration if any etc. (refer pre-screening survey checklist)

Document verification

After the successful completion of the pre-screening survey the list of short-listed suppliers shall be prepared by the survey team and the team will carry out the necessary document verification of the respective suppliers

The document verification[15] will include but not limited to the following:

- The registration details if any
- Permanent Account number / AADHAR
- Qualification and skills of the suppliers
- Employees details if any
- Past experiences or certificate or work order or agreements with other companies
- Copy of valid permit, licences and insurance and fitness of vehicles
- Last five year's Income Tax Return
- Bank account / Statement / Credit information Report
- Assets /Loan and Mortgage
- Character Certificate form the district administration
- Property Value Certificate etc

Background checks

It is assumed that there might be some of the suppliers who are unable to meet the document verification process and hence may be disqualified. Therefore, the team will again update the list of the suppliers and carry the background check of the selected suppliers. The background verification shall be carried out to further negate any of possibility of reputational and other risks associated with the unorganised suppliers. The team may carry out the verification process on their own or can hire the third party to carry out the background verification of the short-listed suppliers. The background variation will include the following but not limited to:

- Police verification to check any potential criminal cases against the suppliers
- Verification of civil cases and any history of conviction under appliable laws
- Accident records for transporters in civil hospital and RTO
- Any other as required

Once the physical verification and pre-screening survey is completed. The survey team shall prepare the detailed notes on the selection process and tabulate the results of the survey. The summary of the pre-screening survey along with list of short-listed vendors shall be prepared and approval of these short-listed suppliers shall be taken from the project management committee.

Awards of supply contract

After the approval of the short-listed suppliers and service providers formal contract agreement shall be signed with the Greenlams representative and the respective suppliers and service providers. To ensure and avoid / minimise the potential risk associated with the supply chain the contract agreement shall have specific terms and conditions to ensure the compliance of applicable regulatory requirements related to EHS&S aspects including labour and working conditions.

Terms and conditions of supply contract

Terms & conditions to be added to the contract to include but not limited to the following:

- The suppliers shall comply the appliable national laws such as payment of minimum wages act, payment of wages act, equal remuneration, workmen compensation and motor vehicles act etc.
- Supplies shall maintain the required records of payment of wages, minimum wages, attendance register and mater roll including others and on demand shall produce the same for verification and Audits.

[15] The list is indicative the based on the nature of the job and risks team may update, include, or delete any of the following documents form the document verification list

- Suppliers/ service provider shall provide training to all the workers working for the project on the health and safety and will also train the workers on safe handling of machines and equipment.
- Suppliers /service providers shall ensure that there shall be the health and safety of the workers and provide necessary PPEs and safe working conditions to the workers.
- Supplier/service provider shall ensure that no child labour or forced or bonded or any of modern slavery shall not be practiced
- Suppliers should take the necessary insurance to safeguard their worker against accidents and occupations injuries and indemnify Greenlam against such claims and loses
- Greenlam is free to carry out inspection and Audits as required and have right to terminate the contract with or without notice if any other suppliers /service providers fail to comply the terms and conditions of the contract agreement.

The contract agreement shall be review annually and based on the performance rating the contracts may extended for agreed time.

Roles and Responsibility

The overall responsibility to manage the supply chain lies with the procurement team however for the performance review and EHS&S monitoring shall be carried out by the project EHS&S team. The EHS&S team should have qualified Environment expert having bachelors or master qualification in environmental sciences or relevant disciplines and Safety expert having certification and qualification in industrial safety and social expert having bachelors or master's degree in social sciences labour laws and other humanities. The EHS &S team must have at least 10 years of experience in the relevant fields and experience in the wood-based industries shall be preferred.

Review & Monitoring

The EHS&S team along with procurement team should carry out regular monitoring of the suppliers and service providers to endure the compliance and requirements of the management plan. The review may include the management meetings, document verification, checking of status of compliance and onsite inspection. Based on the review if there are any gaps, shall be communicated officially to the respective suppliers /service providers. And if, any of the suppliers fails to comply with the repeated observations, show cause notice may be issued and in case of non satisfactory response , supply order may be suspended till the time management feels deemed fit to close the gaps.

In the initial phase annual audits of the suppliers shall be conducted by the department along with EHS&S personnel and based on the satisfactory performance of the suppliers the contract shall be renewed. If there are any gaps that can be closed shall be closed prior to the renewal of the contract agreement. Such gaps shall be closed prior to the renewal of the contract agreement and the suppliers or service providers who fails to close the gaps may be either dropped off or need to take conditional approval by the project management committee.

Pre-Screening Survey Check List

Core Areas	Key Questions /indicators	Documents	Remarks
Organisational Capacity	• Annual Turn over • Existing Supply Orders • Association with other wood-based industry • Total area under command • Type of wood generally specialised in • Total machine and equipment's	• Audited Balance Sheet • Supply Orders • Agreement with farmers • List of machines and equipment's • List of staff and subcontractors	

Core Areas	Key Questions /indicators	Documents	Remarks
	• Total manpower on roll and subcontracted		
Key Qualification & Skills	• Key Qualification of the owner • Number of years' Experience in the wood supply and collection • Reputations in the industry • Police records /fines /penalties etc	Copy of valid registration, PAN, ADHAR CV of the owner Work order	
Compliance	• Valid registration • GST Number • Current Account • Audit process • Record Keeping • Amenities in the office • HR process • Copy of vehicles registration details, fitness, and insurance	• Copy of Registration • GST number /account details • Water, sitting space, toilet • Wages, attendance invoice • Insurance and fitness certificates,	

Checklist of Review and monitoring

Core Area	Key questions /indicators	Remarks
Adhere to terms of Contract	• Status of Compliance to appliable laws • Record Keeping (wages, attendance, leaves, overtime etc) • Regulatory fine, penalties especially road transport officer • Management of local manpower (welfare and safeguards) especially accommodation, food toiled for during wood harvesting & transportations • Worker and workplace safety protocol during wood harvesting • Adherence to safety protocol during wood harvesting and loading and unloading use of PPEs • Reported accidents and incidences or first aid cases • Filing of returns under applicable laws • Type and number of observations • Open and closed issues and their seriousness • Grievances of the community and the farmers against the suppliers related to payment	

	• Availability of free , fair, transparent mechanism of pricing and negotiation for wood to farmer • Availability , type, and frequency advance Information disclosure for pricing negotiations to farmers • Access to grievance mechanism for farmers • Technical support and payment to farmers

Appendix 18: Mandal Demographic Profile

Sr.No.	Revenue Division	Mandal	Number of Households	Total Population	Number of literates		
					Total	Male	Female
	TIRUPATI DISTRICT						
1		Chandragiri	14904	57286	38265	20908	17357
2		Chinnagottigallu	7439	26150	15683	9013	6670
3		Pakala	15000	56667	38516	21170	17346
4		Puttur	19750	79166	53916	29193	24723
5		Ramachandrapuram	8345	31373	19374	10932	8442
6		Tirupati Rural	29369	117445	79399	43703	35696
7		Tirupati Urban	100000	407232	314249	166491	147758
8		Vadamalapeta	8588	32407	21282	11826	9456
9		Yerravaripalem	7816	28011	15795	9270	6525
10		K.V.B Puram	10875	42111	21092	12072	9020
11		Nagalapuram	8728	34026	19566	10904	8662
12		Narayanavanam	9366	37041	23611	13350	10261
13		Pichatur	8739	31524	18162	10346	7816
14		Renigunta	19339	75789	51318	28382	22936
15		Srikalahasti	34860	137637	88035	47635	40400
16		Thottambedu	11614	43044	23765	13204	10561
17		Yerpedu	14635	56403	31310	17802	13508
18		Buchi Naidu Kandriga	9175	34261	19677	10863	8814
19		Doravarisatram	9875	35971	19899	11225	8674
20		Naidupeta	21075	79648	52150	28111	24039
21		Ozili	9570	34528	19687	11173	8514
22		Pellakuru	9486	34455	19374	10744	8630
23		Satyavedu	13561	52979	32495	17770	14725
24		Sullurpeta	22261	83760	55009	29108	25901
25		Tada	12185	46468	26714	15016	11698
26		Varadaiahpalem	12005	45068	27011	15057	11954
27		Balayapalli	9572	33864	17872	10190	7682
28		Chillakuru	15301	53138	28431	16328	12103
29		Chittamuru	11041	40241	20754	11734	9020
30		Dakkili	10846	40452	20485	11557	8928
31		Gudur	30915	116330	75205	40229	34976
32		Kota	14682	55226	32858	18355	14503
33		Vakadu	11031	37695	20400	11355	9045
34		Venkatagiri	20485	79588	49758	27515	22243

Sr.No.	Revenue Division	Mandal	Number of Households	Total Population	Number of literates		
					Total	Male	Female
	SRI POTTI SRIRAMULU NELLORE (SPS NELLORE) DISTRICT						
35		Nellore urban	133022	558548	420228	225154	195074
36		Nellore rural	20005	73243	42977	23527	19450
37		Indukurpet	16687	58543	34393	18499	15894
38		Tp gudur	14005	50490	28964	15135	13829
39		Muthukur	15911	58003	32729	18422	14307
40		Venkatachalam	17133	61275	33274	18140	15134
41		Podalakur	18089	68148	40486	22382	18104
42		Rapur	11639	45747	24288	13566	10722
43		Kovur	20948	76598	49837	26364	23473
44		Buchireddypalem	21400	78470	47503	25759	21744
45		Manubolu	11155	39074	21770	11641	10129
46		Sydapuram	11939	43704	23076	13100	9976
47		Atmakur	16029	61217	38161	21508	16653
48		Kaluvoya	11341	43242	23277	13693	9584
49		Chejerla	8875	34630	18949	11158	7791
50		A sagaram	11185	42950	23233	13874	9359
51		As pet	9003	33620	19451	11431	8020
52		Sangam	12294	44735	24671	13366	11305
53		Sr puram	5547	22785	12940	8008	4932
54		Udayagiri	9020	36378	22481	13379	9102
55		Marripadu	10875	44698	25595	15387	10208
56		Kavali	38990	150333	95515	51880	43635
57		Allur	14853	52602	29836	16234	13602
58		Kodavalur	13376	48820	31184	16413	14771
59		Vidavalur	13669	47489	26724	14822	11902
60		Vinjamur	10407	41392	26489	15687	10802
61		Dagadarthi	10209	37438	21259	12051	9208
62		Bogole	13403	49088	28109	15642	12467
63		Jaladanki	12252	45853	24608	13973	10635
64		Duttalur	6250	27291	15759	9490	6269
65		Kalgiri	11476	43954	24976	14767	10209
66		Kondapuram	9817	39007	20997	12815	8182
67		Varikuntapadu	7725	32828	19854	12015	7839
	PRAKASAM DISTRICT						
68		Kandukuru	24116	98769	59671	33392	26279
69		Lingasamudram	9333	38094	19387	11364	8023

Sr.No.	Revenue Division	Mandal	Number of Households	Total Population	Number of literates		
					Total	Male	Female
70		Gudluru	11540	46883	23249	13579	9670
71		Ulavapadu	14240	53918	27387	15456	11931
72		Voletivaripalem	9353	39855	19104	11538	7566
	CHITTOOR DISTRICT						
73		Chittoor	54441	212816	159641	84754	74887
74		Gudipala	11047	43306	30546	16636	13910
75		Gangadhara Nellore	16718	69543	46218	25956	20262
76		Yadamari	12807	50176	32141	17904	14237
77		Irala	13435	50631	34188	19088	15100
78		Puthalapattu	12530	46412	30972	17349	13623
79		Penumuru	10683	41539	27017	15218	11799
80		Thavanampalle	13751	53708	35498	19631	15867
81		Pulicherla	9791	37108	22617	13119	9498
82		Rompicherla	7096	26335	15530	8960	6570
83		Srirangarajapuram	9700	38926	24207	13624	10583
84		Vedurukuppam	11676	46853	26511	15558	10953
85		Nagari	22949	96152	62640	35089	27551
86		Nindra	7369	28993	17437	9772	7665
87		Vijayapuram	7957	30048	17353	9801	7552
88		Karvetinagar	12198	47764	30038	16599	13439
89		Palasamudram	5514	23657	15511	8633	6878

Source: Census 2011

Appendix 19: Mandal Occupational Profile

S.No.	Revenue Division	Mandal	working Population			Main workers Population			Marginal Workers population			Non-Working Population		
			total	male	female	total	male	female	total	male	female	total	male	female
	TIRUPATI DISTRICT													
	Tirupati Revenue Administration													
1		Chandragiri	23849	15586	8263	23329	15361	7968	520	225	295	33437	12748	20689
2		Chinnagottigallu	12666	7506	5160	10206	6398	3808	2460	1108	1352	13484	5515	7969
3		Pakala	25221	16145	9076	21787	14764	7023	3434	1381	2053	31446	11880	19566
4		Puttur	31360	21617	9743	25110	18777	6333	6250	2840	3410	47806	17569	30237
5		Ramachandrapuram	16537	9424	7113	14229	8661	5568	2308	763	1545	14836	6245	8591
6		Tirupati Rural	44709	32411	12298	40729	30311	10418	3980	2100	1880	72736	27038	45698
7		Tirupati Urban[1]	137585	106600	30985	127637	101123	26514	9948	5477	4471	269647	97678	171969

8	Vadamalapeta	15360	9330	6030	12042	7747	4295	3318	1583	1735	17047	6866	10181
9	Yerravaripalem	14680	8366	6314	10896	6861	4035	3784	1505	2279	13331	5757	7574
Srikalahasti Revenue Administration													
10	K.V.B Puram	23573	12905	10668	16738	10627	6111	6835	2278	4557	18538	8060	10478
11	Nagalapuram	17714	10128	7586	14492	8986	5506	3222	1142	2080	16312	6631	9681
12	Narayanavanam	16399	10456	5943	15837	10270	5567	562	186	376	20642	8202	12440
13	Pichatur	16186	9353	6833	11802	7599	4203	4384	1754	2630	15338	6157	9181
14	Renigunta	29301	20982	8319	24827	18389	6438	4474	2593	1881	46488	17108	29380
15	Srikalahasti	55136	38533	16603	42631	31657	10974	12505	6876	5629	82501	29284	53217
16	Thottambedu	21490	12744	8746	18774	11556	7218	2716	1188	1528	21554	8654	12900
17	Yerpedu	28479	16677	11802	23953	15182	8771	4526	1495	3031	27924	11454	16470
Sullurpeta Revenue Administration													
18	Buchi Naidu Kandriga	18661	10139	8522	15190	8969	6221	3471	1170	2301	15600	6958	8642
19	Doravarisatram	0	0	0	0	0	0	0	0	0	0	0	0
20	Naidupeta	15067	11297	3770	13531	10378	3153	1536	919	617	25761	9324	16437

21	Ozili	0	0	0	0	0	0	0	0	0	0	0	0
22	Pellakuru	0	0	0	0	0	0	0	0	0	0	0	0
23	Satyavedu	23689	14591	9098	21032	13273	7759	2657	1318	1339	29290	11404	17886
24	Sullurpeta	11556	9377	2179	10995	9035	1960	561	342	219	23751	7481	16270
25	Tada	2347	1731	616	1752	1392	360	595	339	256	3776	1335	2441
26	Varadaiahpalem	23269	13460	9809	19486	12286	7200	3783	1174	2609	21799	9168	12631
	Gudur Revenue Division												
27	Balayapalli	0	0	0	0	0	0	0	0	0	0	0	0
28	Chillakuru	266	200	66	243	185	58	23	15	8	421	146	275
29	Chittamuru	0	0	0	0	0	0	0	0	0	0	0	0
30	Dakkili	0	0	0	0	0	0	0	0	0	0	0	0
31	Gudur	27170	20822	6348	23894	19073	4821	3276	1749	1527	46180	15256	30924
32	Kota	0	0	0	0	0	0	0	0	0	0	0	0
33	Vakadu	0	0	0	0	0	0	0	0	0	0	0	0
34	Venkatagiri	19639	14358	5281	15708	12367	3341	3931	1991	1940	33049	11774	21275
	SRI POTTI SRIRAMULU NELLORE (SPS NELLORE) DISTRICT												
	Nellore Revenue Administration												
35	Nellore urban	181948	147327	34621	164970	136648	28322	16978	10679	6299	376600	136827	239773

36	Nellore rural	33988	22000	11988	26811	19227	7584	7177	2773	4404	39255	14933	24322
37	Indukurpet	0	0	0	0	0	0	0	0	0	0	0	0
38	Tp gudur	0	0	0	0	0	0	0	0	0	0	0	0
39	Muthukur	0	0	0	0	0	0	0	0	0	0	0	0
40	Venkatachalam	0	0	0	0	0	0	0	0	0	0	0	0
41	Podalakur	0	0	0	0	0	0	0	0	0	0	0	0
42	Rapur	0	0	0	0	0	0	0	0	0	0	0	0
43	Kovur	0	0	0	0	0	0	0	0	0	0	0	0
44	Buchireddypalem	0	0	0	0	0	0	0	0	0	0	0	0
45	Manubolu	0	0	0	0	0	0	0	0	0	0	0	0
46	Sydapuram	0	0	0	0	0	0	0	0	0	0	0	0
	Atmakur Revenue Division												
47	Atmakur	0	0	0	0	0	0	0	0	0	0	0	0
48	Kaluvoya	0	0	0	0	0	0	0	0	0	0	0	0
49	Chejerla	0	0	0	0	0	0	0	0	0	0	0	0
50	A sagaram	0	0	0	0	0	0	0	0	0	0	0	0
51	As pet	0	0	0	0	0	0	0	0	0	0	0	0
52	Sangam	0	0	0	0	0	0	0	0	0	0	0	0

53	Sr puram	0	0	0	0	0	0	0	0	0	0	0	0
54	Udayagiri	0	0	0	0	0	0	0	0	0	0	0	0
55	Marripadu	0	0	0	0	0	0	0	0	0	0	0	0
	Kavali Revenue Division												
56	Kavali	32250	24782	7468	29544	23412	6132	2706	1370	1336	57849	20127	37722
57	Allur	0	0	0	0	0	0	0	0	0	0	0	0
58	Kodavalur	0	0	0	0	0	0	0	0	0	0	0	0
59	Vidavalur	0	0	0	0	0	0	0	0	0	0	0	0
60	Vinjamur	0	0	0	0	0	0	0	0	0	0	0	0
61	Dagadarthi	0	0	0	0	0	0	0	0	0	0	0	0
62	Bogole	0	0	0	0	0	0	0	0	0	0	0	0
63	Jaladanki	0	0	0	0	0	0	0	0	0	0	0	0
64	Duttalur	0	0	0	0	0	0	0	0	0	0	0	0
65	Kalgiri	0	0	0	0	0	0	0	0	0	0	0	0
	Kandukuru Revenue Division												
66	Kondapuram	0	0	0	0	0	0	0	0	0	0	0	0
67	Varikuntapadu	0	0	0	0	0	0	0	0	0	0	0	0

	PRAKASAM DISTRICT												
68	Kandukuru	42472	28090	14382	38472	26790	11682	4000	1300	2700	56297	21571	34726
69	Lingasamudram	20566	11372	9194	16379	9667	6712	4187	1705	2482	17528	7742	9786
70	Gudluru	24855	14088	10767	17520	11061	6459	7335	3027	4308	22028	9726	12302
71	Ulavapadu	27347	16127	11220	23898	15111	8787	3449	1016	2433	26571	10845	15726
72	Voletivaripalem	22149	12012	10137	17859	10730	7129	4290	1282	3008	17706	8163	9543
	CHITTOOR DISTRICT												
	Chitoor Revenue Administration												
73	Chittoor	77967	58827	19140	68723	53580	15143	9244	5247	3997	134849	47384	87465
74	Gudipala	19387	12525	6862	17008	11589	5419	2379	936	1443	23919	9007	14912
75	Gangadhara Nellore	31863	20553	11310	26178	18261	7917	5685	2292	3393	37680	14740	22940
76	Yadamari	23299	14448	8851	20334	13039	7295	2965	1409	1556	26877	10668	16209
77	Irala	25617	15372	10245	19926	13258	6668	5691	2114	3577	25014	9972	15042
78	Puthalapattu	20796	13251	7545	19056	12562	6494	1740	689	1051	25616	10007	15609

	Penumuru[5	19374	12297	7077	15785	10925	4860	3589	1372	2217	22165	8676	13489
80	Thavanampalle	25511	15930	9581	22927	14847	8080	2584	1083	1501	28197	10808	17389
81	Pulicherla	17952	10901	7051	15825	9831	5994	2127	1070	1057	19156	7841	11315
82	Rompicherla	14136	8059	6077	11754	7333	4421	2382	726	1656	12199	5109	7090
83	Srirangarajapuram	19591	11219	8372	17388	10283	7105	2203	936	1267	19335	8343	10992
84	Vedurukuppam	23706	13233	10473	20236	11965	8271	3470	1268	2202	23147	10466	12681
Nagari Revenue Administration													
85	Nagari	41635	26867	14768	35675	23912	11763	5960	2955	3005	54517	21191	33326
86	Nindra	15431	8504	6927	11891	7009	4882	3540	1495	2045	13562	5837	7725
87	Vijayapuram	15907	8848	7059	13575	7861	5714	2332	987	1345	14141	6104	8037
88	Karvetinagar	22845	12953	9892	17848	11270	6578	4997	1683	3314	24919	10767	14152
89	Palasamudram	12292	7050	5242	9944	6085	3859	2348	965	1383	11365	4803	6562

Appendix 20: Demographic Profile of Study Area

Villages	No. of HH	Population	Average HH Size	Sex Ratio	% SC	% ST	% Lit	% F Lit
Study Area 1 : Manufacturing Site								
Menakuru	656	2412	3.67	938	32.33	13.02	61.77	52.48
Buffer Zone: Manufacturing Site								
Manavali	268	875	3.26	1002	46.05	0	58.05	50.68
Study Area 1 Total	**924**	**3287**	**365.63958**	**970**	**39.19**	**6.51**	**59.91**	**51.58**
Study Area 2: Plantation Area / Supply Chain								
Padiri	379	1463	3.86	977	34.5	0	61.44	53.52
Tripuranthakapuram Kota (TP Kota)	668	2564	3.83	1010	29.56	4.91	52.57	44.99
Arimenupade	NA	NA	NA	NA	NA	NA	NA	NA
Rachapalem	305	1084	3.55	1117	23.7	23.52	60.7	55.94
S.G. Palli	NA	NA	NA	NA	NA	NA	NA	NA
Muttukuru	3752	14333	3.82	1073	19.96	12.74	59.56	56.86
Ravullakollu	94	367	3.9	962	29.97	2.99	58.58	47.22
Chowdaripalem	NA	NA	NA	NA	NA	NA	NA	NA
Yedlurupadu	NA	NA	NA	NA	NA	NA	NA	NA
Study Area 2 Total	**5198**	**19811**	**3.792**	**1027.8**	**27.538**	**8.832**	**58.57**	**51.706**

Appendix 21: Land Use in the Study Area

Villages	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Un-cultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Net Area Sown (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
Study Area 1: Manufacturing Site												
Menakuru	1018	160	235.01	94.07	0	0	207.2	57.06	34.8	229.86	162.45	159.27
Buffer Zone: Manufacturing Site												
Manavali	752	0	210.57	114.3	14.14	9.29	0	204.42	10.58	188.7	281.72	121.98
Study Area 1 Total	**1770**	**160**	**445.58**	**208.37**	**14.14**	**9.29**	**207.2**	**261.48**	**45.38**	**418.56**	**444.17**	**281.25**
Study Area 2: Plantation Sites												
Padiri	906	0	32.37	5.26	30.35	0.81	42.08	107.64	87.81	599.68	680.98	114.15
Tripuranthakapuram Kota (TP Kota)	2158	847.61	219.74	567	112.5	16.59	27.52	106.43	161.87	98.74	148.14	218.9
Arimenupade	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Villages	Total Geographical Area (in Hectares)	Forest Area (in Hectares)	Area under Non-Agricultural Uses (in Hectares)	Barren & Un-cultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in Hectares)	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Net Area Sown (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
Rachapalem	404	0	129.95	18.71	6.06	10.91	32.32	18.98	47.77	139.3	184.19	21.86
S.G. Palli	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Muttukuru	1183	0	350.42	24.68	18.21	20.23	23.47	97.28	0	648.71	97.28	648.71
Ravullakollu	457	0	8.09	72.84	0	6.07	3.64	78.91	88.75	198.7	330.34	36.02
Chowdaripalem	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yedlurupadu	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Study Area 2 Total	**5108**	**847.61**	**740.57**	**688.49**	**167.12**	**54.61**	**129.03**	**409.24**	386.2	1685.13	1440.93	1039.64

Appendix 22: Water Sources in the Study Area

village	Treated Tap water	Untreated Tap Water	Covered Well	Uncovered Well	Hand Pump	Tubewell/ Borewell	Spring	River /Canal	Tank/Pond/ Lake
Study Area 1 : Manufacturing Site									
Menakuru	1	0	0	0	1	1	0	0	0
Buffer Zone: Manufacturing Site									
Manavali	1	0	0	0	1	0	0	0	0
Study Area 1 Total	2	0	0	0	2	1	0	0	0
Study Area 2: Plantation Area (Supply Chain)									
Padiri	0	1	0	0	1	1	0	0	0
Tripuranthakapuram Kota (TP Kota)	0	1	0	0	1	0	0	0	0
Arimenupade	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rachapalem	1	1	0	1	1	0	0	0	0
S.G. Palli	NA	NA	NA	NA	NA	NA	NA	NA	NA
Muttukuru									
Ravullakollu	1	0	1	0	1	0	0	0	0
Chowdaripalem	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yedlurupadu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Study Area 2 Total	**2**	**3**	**1**	**1**	**4**	**1**	**0**	**0**	**0**

Appendix 23: Occupational Profile of the Study Area

VILLAGE	WORKING POPULATION			MAIN WORKERS POPULATION			MARGINAL WORKERS POPULATION			NON-WORKING POPULATION		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Study Area 1 : Manufacturing Site												
Menakuru	1027	680	347	590	430	160	437	250	187	1385	564	821
Buffer Zone: Manufacturing Site												
Manavali	638	324	314	519	290	229	119	34	85	237	113	124
Study Area 1 Total	**1665**	**1004**	**661**	**1109**	**720**	**389**	**556**	**284**	**272**	**1622**	**677**	**945**
Study Area 2: Plantation Area / Supply Chain												
Padiri	592	407	185	580	400	180	12	7	5	871	333	538
Tripuranthakapuram Kota (TP Kota)	1358	784	574	951	628	323	407	156	251	1206	491	715
Arimenupade	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rachapalem	588	341	247	301	228	73	287	113	174	496	171	325
S.G. Palli	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Muttukuru	5503	3908	1595	4748	3577	1171	755	331	424	8830	3006	5824
Ravullakollu	178	118	60	109	82	27	69	36	33	189	69	120
Chowdaripalem	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yedlurupadu	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Study Area 2 Total	**8219**	**5558**	**2661**	**6689**	**4915**	**1774**	**1530**	**643**	887	11592	4070	7522

Appendix 24: Construction Phase Audit

Introduction and Project Overview

M/s. Greenlam South Limited (GSL) is in the process of developing an Integrated manufacturing facility with captive resin plant of capacity of 62,287.5 TPA (188.75 TPD) for manufacturing of High-Pressure Laminates, Plain Particle Board, Pre-Laminated Boards and UV Coated Boards (Particle boards, MDF, HPL Sheets & Compact Boards). The integrated manufacturing facility is currently being developed in Naidupeta mandal of Tirupati District, whereas the plantation and wood procurement (raw material sourcing) is proposed to be done from 3 districts, 10 revenue divisions and 87 mandals as detailed below. As informed the plantation activity will be carried out in phases with an annual target of 6000 ha and will be covering 30000 ha in five years.

Table 3 Wood Procurement & Plantation District and Mandals

S. No	District	Revenue Division	Mandals		Original District
Plantation & Wood Procurement[16]					
1	Tirupati	Tirupati	• Chandragiri • Chinnagottigallu • Pakala • Puttur • Ramachandrapuram	• Tirupati Rural • Tirupati Urban • Vadamalapeta • Yerravaripalem	Chittoor
		Srikalahasti	• K.V.B Puram • Nagalapuram • Narayanavanam • Pichatur	• Renigunta • Srikalahasti • Thottambedu • Yerpedu	
		Sullurupeta	• Buchi Naidu Kandriga • Doravarisatram • Naidupeta • Ozili • Pellakuru	• Satyavedu • Sullurpeta • Tada • Varadaiahpalem	SPS Nellore
		Gudur	• Balayapalli • Chillakuru • Chittamuru • Dakkili	• Gudur • Kota • Vakadu • Venkatagiri	
2	Sri Potti Sriramulu Nellore (SPS Nellore)	Nellore	• Nellore urban • Nellore rural • Indukurpet • Tp gudur • Muthukur • Venkatachalam	• Podalakur • Rapur • Kovur • Buchireddypalem • Manubolu • Sydapuram	N.A
		Atmakur	• Atmakur • Kaluvoya • Chejerla • A sagaram • Aspet	• Sangam • Sr puram • Udayagiri • Marripadu	
		Kavali	• Kavali • Allur • Kodavalur • Vidavalur • Vinjamur	• Dagadarthi • Bogole • Jaladanki • Duttalur • Kaligiri	
		Kandukuru	• Kondapuram • Varikuntapadu • Kandukuru	• Gudluru • Ulavapadu • Voletivaripalem	

[16] Names of the mandals have not been finalized as yet from which raw material procurement will be done

S. No	District	Revenue Division	Mandals		Original District
			• Lingasamudram		
3	Chitoor	Chitoor	• Chittoor • Gudipala • Gangadhara Nellore • Yadamari • Irala • Puthalapattu	• Penumuru • Thavanampalle • Pulicherla • Rompicherla • Srirangarajapuram • Vedurukuppam	N.A
		Nagari	• Nagari • Nindra • Vijayapuram	• Karvetinagar • Palasamudram	

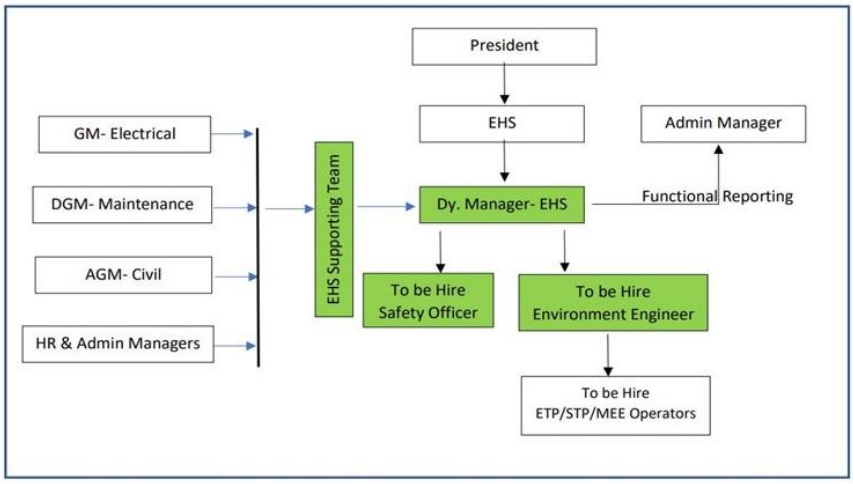
Scope of this report includes E&S audit of the on-going construction activity and common facilities in line with the requirements of IFC Performance Standards (PSs).

Team comprising of an EHS expert, social expert and ecological expert conducted visit to the Project site on 20th March 2023. On the date of site visit the project site was observed to be under construction for Phase 1 activities. The Project is being developed in two phases, Phase 1 includes civil work of resin manufacturing, machinery installation and development of project facilities such as fire hydrant systems, water treatment system, storage, substation, admin building and other works such as mechanical and equipment installation, fabrication & electrical installation etc and Phase 2 includes complete installation, construction of particle board manufacturing & Pre-lamination facility. As understood during the site visit, construction for Phase 1 was initiated in January 2021 and as on the date of site visit (20th March 2023) 70% of the civil works was observed to be completed with machinery installation in progress. Operations of laminates manufacturing is understood to be initiated by Quarter 1 of FY 2023-2024. Civil works and machine delivery process for Phase 2, was observed to be initiated at the time of site visit. As reported by Greenlam representative, operations of particle board manufacturing is anticipated to be initiated by Q4 of Financial Year 2023-2024.

During the site visit it was observed that labor camps is situated close to the project outside the project boundary . As informed these labor camps were constructed by the respective contractors to accommodate the labor working at the project site. The camps were constructed with tin shed having basic amenities such as water, toiles and security arrangement. Detail assessment with respect to labor accommodation is given in Gap assessment Section.

Organizational Structure

Organisational structure for the Project is as presented below.



GSL has a dedicated EHS team onsite during the construction phase. The EHS team comprise of a dedicated onsite EHS Deputy Manager and a safety officer.

EHS Deputy Manager is currently responsible for day to day management of EHS aspects, monitoring of contractor's performance as well as development of mechanisms for dealing with day to day environmental and social issues, going forward a safety officer will be also be engaged to support EHS deputy manager. They also ensures that the activities of the contractors are conducted in accordance with good practice measures and implementation of E&S management measures as required through contractual documentation. At the time of site visit, EHS Deputy Manager and has already been deputed at site is currently looking after the EHS management at site. As understood, the EHS Deputy Manager has previous experience in the same sector and directly reports to the EHS Head.

Resource Requirement

Resource requirement during construction phase is as presented in Table below

Table 4 Resource Requirement during construction phase

Sr. No.	Resource	Approximate Quantity	Source
1.	Water	Domestic & drinking water requirement at the facility and labor camp • Total domestic water requirement for Phase 1 and Phase 2 is estimated to be ~2 to 3 KLD, considering workforce of 1200 to 1500 @ 80-180 liters/person/day[17]. • Domestic water requirement for Phase 1 is estimated to be ~0.9 to 1.3 KLD, considering workforce of 463 deployed @ 80-180 liters/person/day[18]. • Potable water requirement is and will be met through packaged drinking water. Construction Works, Dust Suppression activities, Batching Plant • Water requirement during construction phase for civil work and dust suppression activities etc. is reported to be approximately 150 KLD.	• The facility is located in a developing industrial area, and the water supply from APIIC has not yet started. As reported water supply from APIIC is scheduled to start from November 2023, however exact details were not know to the site representative. • As observed during site visit, the facility has installed borewells within the premises. Permission of installation of four (04) borewells has been received from government of Andhra Pradesh, Ground Water and Water Audit Department via letter no 1168/Hg-II/2018 dated 31st August 2021 and the facility is withdrawing the ground water during the construction phase. • As per the approval received, GSL is permitted to pump out 220 KLD of groundwater from four (4) newly recommended bore wells with I0 hours of pumping per day duly following the terms and conditions as mentioned in NOC. As observed, GSL has installed four borewells for abstraction of ground water. • Potable water is being sourced from third party
2.	Construction Material	**Material** / **Phase 1** / **Phase 2** Cement / 11077.00 MT / 13830.00MT Sand / 28562.00 MT / 29222.00 MT Metal / 55559.00 MT / 68272.00 MT	Local Suppliers. Transportation of material to the site is in the scope of the suppliers All the suppliers are authorized sellers for the construction material and have required permission for storage and transportation of the materials. As reported sand is being sourced from suppliers who have a valid royalty challan.
3.	Fuel	**Fuel** / **Phase 1** / **Phase 2** LPG Gas / 1.50 KL / 1.50 KL Diesel / 190 KL / 190 KL Petrol / 1.20 KL / 2.00 KL	Source of fuel during construction phase is the nearby dispensing stations.

[17] IFC Worker's accommodation Guideline
[18] IFC Worker's accommodation Guideline

Sr. No.	Resource	Approximate Quantity		Source
4.	Electricity	-	13,000kwh/month13,000kwh/month	Source of power for the manufacturing facility during both construction phases is AP TRANSCO Naidupeta Industrial Park APIIC Substation (33 KV sub-station).

Workforce

As reported the project (construction stage) workforce includes both GSL on roll staff and subcontracted staff. During the day of site visit nearly 101 persons from GSL and 570 subcontracted staff were reported to be working at site. As estimated manpower requirement for operations will be 400-500 on roll staff and 500- 600 subcontracted staff. The details of subcontractor and their total estimated workforce utilized for the construction of the project is given in table in below:

Table 5 Resource Requirement during construction phase

Sr. No	Name of the Contractor	Scope/nature of work	Manpower
1	Suroj Buildcon Pvt. Ltd.	Phase-1 Civil	300
2	Dalapathi Constructions	Phase-2 Civil	170
3	Pennar Industries Ltd.	Phase-1 PEB Building	13
4	Zamil Steel Buildings India Pvt. Ltd	Phase-2 PEB Building	10
5	Unique MEP Projects Pvt. Ltd	Fire Hydrant System and Plumbing Works	30
6	Techmet Engineers	Project Mechanical Works & Equipment Installation Works	50
7	Thermal Associates	Project Mechanical Works	12
8	Deep Enterprises	Greenlam Fabrication Works	9
9	PC Chandra Reddy	Electrical Sub Station Work	6
10	Forbesvyncke Private Limited	Hot Water Generator, Thermic Fluid Heater Erection and Installation	13
11	Orbittal Electromech Engineering Projects Pvt. Ltd.	Electrical Work	30

Source: Greenlam Details of Contractor

Permitting & Compliance Status

Status of applicable permits as observed during site visit is presented in table below.

Table 6 Status of Applicable Permits

S. No	Permit & Regulatory Agency	Applicability & Status
1	EIA Notification (2006) and its amendments Responsible Authority: State Level Impact Assessment Authority, Andhra Pradesh	**Applicable, Obtained** As per EIA Notification 2006 and its amendments, the resin manufacturing process of the project falls under Item No.5 (f), i.e. Manufacturing of Synthetic organic chemicals industry (dyes & dye intermediates; bulk). Hence, the project requires Environmental Clearance (EC) from the Ministry of Environment Forest and Climate Change (MoEF&CC)

S. No	Permit & Regulatory Agency	Applicability & Status
		or the State Environmental Impact Assessment Authority (SEIAA), whereas the manufacturing of particle board and high pressure laminates does not require EC. EC via EC identification number EC22B021AP157099 under category B1 has been obtained for the captive resin manufacturing plant, and it also categorizes the manufacturing of particle board and high pressure laminates as non EC products.
2	Environment Protection Act, 1986 and as amended. The Air (Prevention and Control of Pollution) Act, 1981. The Water (Prevention and Control of Pollution) Act, 1974 Responsible Authority: Andhra Pradesh Pollution Control Board (APPCB); Ministry of Environment, Forest & Climate Change (MoEFCC); Central Pollution Control Board (CPCB)	**Applicable, Obtained** As per CPCB notification dated March 07, 2016, manufacturing of synthetic organic chemicals industry (dyes & dye intermediates; bulk) is categorized under red category and the project is required to obtain the Consent To Establish & Operate. Also, permissible limits for Ambient Air Quality, Water Quality, Noise Limits laid down by CPCB under EP Act, 1986 are required to be complied with. GSL has obtained Consent for Establishment (CFE) under section 25 of the Water (Pollution and Prevention) Act, 1974 and under Section 21 of Air (Prevention and Control of Pollution) Act 1981 dated 3rd February 2022 via order No 278/APPCB/CFE/RO-NLR/HO/2022. The CFE is valid for a duration of 7 years. Consent to Operate to be obtained prior to start of operation phase.
3	Ground water extraction permission Responsible Authority: Andhra Pradesh Pollution Control Board (APPCB)	**Applicable, Obtained** The manufacturing facility has installed borewell within the facility. Permission of installation of four (04) new borewells has been received from government of Andhra Pradesh, Ground Water and Water Audit Department via letter no 1168/Hg-II/2018 dated 31st August 2021 and the manufacturing facility is withdrawing the ground water during the construction phase. As per the approval received, GSL is permitted to pump out 220 KLD of Groundwater from four (4) newly recommended bore wells with I0 hours of pumping per day against the requirement of 275 KLD duly following the terms and conditions as mentioned the NOC. As per Central Groundwater Authority (CGWA), Ministry of Jal Shakti, Notification dated 24 September 2020[19], industries will have to obtain authorization from CGWA before abstraction and use of groundwater. As per CGWB, Nellore District, Naidupeta Mandal (where manufacturing facility is located) falls is an area marked as “critical” in terms of groundwater development, whereas as per the Ground water assessment report developed by Andhra Pradesh Ground water and water audit department for the GSL site, Menakuru village (facility location village) is categorized as Over-Exploited. Furthermore, as per CGWA notification dated 24 September 2020, all industries drawing ground water in safe, semi-critical and critical assessment units shall be required to pay ground water abstraction charges as applicable as per Tables 5.2A and 5.3A of the said notification. Where as in Over-exploited assessment units, No Objection Certificate shall not be granted for ground water abstraction to any new industry except those falling in the category of Micro, Small and Medium Enterprises (MSME). Since the manufacturing facility village is falling in over-exploited category and the mandal falls in Critical category, ground water withdrawal by GSL has been permitted only by constructing the recommended artificial recharge structures.
4	AP Fire Service Act, 1999 as amended till date Responsible Authority:	**Applicable, Obtained** Manufacturing facility is required to obtain Provisional Fire NOC before start of the construction.

[19] Central Groundwater Authority (CGWA), Ministry of Jal Shakti ((Department Of Water Resources, River Development and Ganga Rejuvenation), Notification dated 24 September 2020. Link: http://jalshakti-dowr.gov.in/sites/default/files/CGWA_GWExtraction_Notification_24-09-2020.pdf

S. No	Permit & Regulatory Agency	Applicability & Status
	Fire Services Department, Andhra Pradesh	GSL has obtained Provisional Fire NOC from Andhra Pradesh State Disaster Response and Fire Services Department for the construction of Non Multi Storied building of GSL via RC No 18105/MSB/SR/NLR/2021SDP dated 23rd February 2022. Provisional Fire NOC prior to construction phase was obtained for Canteen Building 1, Canteen Building 2, Production Block, Resin Plant, Hot water generator and thermic fluid heater, raw material godown, Security Room gate-1, Admin Block, Security Room gate-2, Substation, Fire pump room and UG Sump, HR Office, Store, Staff accommodation and Drivers waiting room. All the conditions in the Provisional NOC are to be complied during construction phase and Final NOC to be obtained before start of operations.
5	Explosives Act, 1884 Responsible Authority: Chief Controller of Explosives	Applicable, Obtained Approval for storage and use of HSD and Methanol has been obtained. GSL has received license in Form XV of the Petroleum rules 2002 for the installation & storage of Petroleum Class A products via letter no A/P/SH/AP/15/1553 (P551273) dated 22nd February 2022. The license has been granted by Jt. Chief controller of Explosives, petroleum and explosive safety organization (PESO), Ministry of commerce and Industry, Government of India, on presence of the following documents: • Site Layout, • Application in Form IX, • License fee, • Safety and Test Certificate required under rule 130 and 126 of the Petroleum Rules, 2002 issued by Competent person, • No objection certificate issued under Rule 144 of the Petroleum Rules, 2002 as per prescribed proforma by the District Authority through Licensing System for District Authority (LSDA) module only together with a copy of drawings/plans endorsed with his sign and seal. GSL is also required to follow the requirement/provision of " Solvent, Raffinate and Slop (Acquisition, Sale, Storage & Prevention of use in Automobiles)" Order 2000 notified by Government of India, Ministry of Petroleum and Natural Gas vide G.S.R. 519(E) dated 05/06/2000.
6	Registration of Wood Based Industries Under Rule (8) of Wood Based Industries (Establishment & Regulation) Rules, 2018	Applicable, Obtained As the industry will be using round log / timber as raw material collected from the surrounding agroforestry plantation, a registration of the industry is required and obtained from the state forest department. Annual Return in Form-II(A) and II(B) of A.P Wood Based Industries (Establishment & Regulation) Rules, 2018 must be submitted to the DFO(T) having jurisdiction by 30th of April of the succeeding Year.
7	Factory Approval	As informed the layout for the project is approved however the copy of the same was not available for review
8	Contract labor Registration (Principal Employer Registration)	As informed that GSL and their contractors were having the valid labor permits project however the copy of the same was not available for review
9	Interstate Migrant Workman (Principal Employer Registration)	As informed that GSL and their contractors were having the valid labor permits for the project however the copy of the same was not available for review
10	BOC (Building & Other construction workers)	As informed that GSL and their contractors were having the valid registration however the copy of the same was not available for review
11	ESI Registration	Reportedly the deductions under ESIC is done for every worker however the copy of the ESIC registration and ESIC card were not available for reviews
12	PF Registration	Reportedly the PF is deducted for every worker however the copy of the PF registration and PF challenges were not available for review

E&S Compliance & Gap Assessment vis-à-vis Performance Standards

A gap assessment of the under construction project has been undertaken vis-à-vis the applicable reference framework and presented in ***Section 1.3 (of the ESIA report).*** The compliance definitions used in the assessment are as provided in ***Table*** below.

Table 7 Compliance Definitions

Status	Definition
Aligned	Information available indicates that the Project/Company fulfils the requirement and/or is aligned with intended outcome of the requirement.
Partially Aligned	Information available indicates that the Project/Company partially fulfils the requirement and/or is partially aligned with intended outcome of the requirement.
Not Aligned	Information available indicates that the Project/Company does not fulfil the requirement.
Insufficient Information	There is insufficient information to assess the level of alignment.
Not Applicable	The requirements do not apply to the Project at the current time.

Table 8 E&S Compliance & Gap Assessment

S. No	Aspects	Observations	Status	Recommendation
Performance Standard 1				
1	Management Systems	Greenlam Industries Limited (GIL) at the corporate level has a dedicated Integrated Quality Manual (IMS) which is benchmarked against requirements of ISO 9001:2015, ISO 14001: 2015 & ISO 45001:2018. The IMS is applicable to Greenlam's businesses and operations that it carries out either directly or in association with turnkey contractors and subcontractors throughout the life cycle of the projects. i.e. the IMS and its associated standard operating procedures (SOP) are applicable to GSL site. The developed IMS manual includes Quality, Environment and Health & safety (QEHS) Policy, Procedures, Work Instructions and SOPs, Formats and Checklist for record keeping. The developed procedures have been mentioned below: • **Hazard Identification and Risk Assessment**: The objective of the procedure is to establish, implement and maintain a process for hazard identification that is ongoing and proactive. The developed procedure includes a process to: (i) Identify OH&S Risks and Opportunities (ii) Opportunities to reduce risks and eliminate hazards. The procedure identifies the type of hazards, source of identification, risk consequence, matrix for hazard identification as well as risk matrix. • **Aspect-Impact Analysis**: This procedure is to maintain documented information for its (i) environmental aspects and associated environmental impacts (ii) criteria used to determine its significant environmental aspects and (iii) significant environmental aspects. The developed procedure also includes process flow for aspect impact analysis. • **Emergency preparedness and response**: This procedure includes the following components o potential emergency situations, including those that can have an environmental impact. o Implementation and maintenance processes needed to prepare for and respond to potential emergency situations. o Hazard Identification to consider Potential Emergency Situations. o Preparation guidelines for updated on-site emergency plan and details to authority for off-site emergency plan and required trainings • **Training and awareness:** Includes trainings and awareness pertaining to statutory requirement as well as the EHS and the safety procedures • **Waste Management:** The procedure includes management of C&D Waste, Hazardous waste, Biomedical waste, E-Waste, Battery Management, MSW, Plastic Waste etc.	**Partially Aligned**	• GSL to develop project specific SOP's and procedures. • The Waste management SOP to be updated based on the latest rules and amendments. Also, the waste management plan to be updated to include waste handling and storage requirements. • GSL to update the existing IMS procedures to be aligned with the requirements of IFC PS standards. The SOP's developed to be updated to include Air, Water and Noise Pollution Prevention and Management Procedure and Community Health & Safety Management Plan • Recommendations with respect to Labor Management, Grievance Handling Mechanism & Stakeholder Engagement Process are given in Row 2,4 & 9 respectively

		• Permit to Work & Lockout-Tagout • Incident management system • Management Review • Covid-19 Prevention • Safe shutdown process As understood, the above procedures are implemented by the GSL at the manufacturing site. However as reviewed, site specific procedures have not been developed. It was reported the above mentioned SOP's are being implemented at the site. However on review of the SOPs' they were not observed to be project specific. GSL at the corporate level has a dedicated Environmental, Health and Safety (EHS) plan which includes aspects pertaining to OHS & Safety and Emergency Response Plan (ERP) which is applicable to the project. Measures provided in the respective plans are implemented at site by the contractors of GSL. The EHS team of GSL ensures the implementation of the said EHS plan and compliance and adherence to the GSL policies and plans are part of the contractual agreement.		
2	Policy	• Currently Greenlam Industries Limited has existing Quality, Environment and Health & Safety (QEHS) policy for its existing sites. As understood, the QEHS Policy is also applicable to the GSL site, i.e. construction & operations of the under construction site i.e., manufacturing High Pressure Decorative Laminates, High Pressure Veneers, Veneered Decorative Plywood , Fire Rated and Non-Fire Rated Doors & Frames, Pre Laminated Particle Boards, Pre Laminated Medium Density Fiber board and Engineered Wood Flooring etc. The key objectives of the QHSE policy are as follows: o strive to achieve Zero accident, zero defect and zero occupational disease in all products, processes and operations o provide safe and healthy working conditions for the prevention of work-related injury and ill health o eliminate hazards and reduce OH&S risks using hierarchy of controls. i.e. elimination, substitution, engineering, administrative and personal protective equipment controls o comply with all applicable statutory and other applicable requirements related to occupational safety & health, environment and quality that are relevant to its products, processes and operations o fulfil customer requirements and try to exceed them wherever feasible o integrate QEHS requirements in all of its processes and operations o minimize our ground water consumption by recycling & reuse of waste water and other practical measures • QEHS Policy applies to all the employees and the contractors working or engaged across all locations. The policy was observed to be displayed at the under-construction	Partially Aligned	• GSL should develop the policy towards retrenchment and accordingly implement the same as and when required. • GSL should update the GRM policy & procedures and include the provision for resolving anonymous complaints as well as install suggestion box inside the plant and develop the procedure for handling of suggestion boxes.

project site and GSL is responsible for implementation of QEHS policy for the project. Also, training pertaining to QHSE policy has been provided to employees and contractors on site.

HR Policy

The review of documents indicates that GSL is having detailed HR policy which is applicable to their staff. The policy broadly covers the following aspects:

- Working Hours
- Leave and Attendance
- Dress Code
- Leaves & Holiday Policy
- Company Car Policy
- Conveyance Reimbursement
- Mobile Phone Policy
- Laptop & Data Card Policy
- Staff Accommodation policy
- Wages & Salary (Loan /Advance) policy
- Medical Benefits
- Bonus & Production incentive policy
- Special Gifts Policy
- Travel Policy (Domestic & International)
- Recruitment & Selection Policy & Procedures
- HIV & AIDs Policy
- Grievance Redressal Mechanism policy (GRM)
- Equal Opportunity Policy
- Other facilities (Including training)

The review of HR policy indicates that currently GSL is not having policy towards retrenchments as well as the GRM does not the provisions of anonymous complaints and suggestions boxes.

Supplier Code of Conduct Policy

As informed currently GSL is following the policies and procedure of its parent company GIL (Greenlam Industries Limited). Reportedly GSL is in process of developing its own policies. Until the specific policies are formed GSL will continue to follow the broad policies and procedures of GIL. GIL's suppliers code of conduct policy broadly focus on the responsible souring and ensure ethical behaviors of the suppliers. As per the GIL's policy, suppliers have to comply with the following requirements :

- Compliance to applicable laws and accordingly maintain the records
- Human Rights with respect to child labor and human trafficking
- Anti-Harassment & Non Discrimination

		• Anti-Corruption & Bribery • Information protection • EHS Policy • Product Quality		
3	Identification of Risks and Impacts	• GSL has undertaken Environmental Impact Assessment (EIA) for the resin manufacturing plant in line with the requirements of EIA notification and has identified environmental risks / impacts and mitigation measures to prevent and minimize impacts. • In addition to EIA, GSL is in the process of identification of E&S issues, risks, potential impacts that come up across activities during the construction & operation phase of the project. GSL has initiated an Environmental and Social Impact Assessment (ESIA) for the under construction project site. The ESIA includes assessment of environmental, OHS, physical, chemical, labour and community health, safety and security risks impact from the project and supply chain in line with the requirements of IFC PS. The construction phase audit is a part of the ESIA. • Risk Evaluation criteria along with guideline for hazard identification and risk assessment (HIRA) has been developed. GSL has developed HIRA for its constriction phase. The HIRA has identified the activities and categorized the hazards and identified the potential consequences with the risk prioritization. • Legal and regulatory compliance for site being is assessed and tracked by GSL. GSL tracks compliance with various EHS aspects as well as trainings, incidents and audits provided by the contractors. Sample Weekly and Monthly checklist was reviewed where the same is being tracked. • Also, GSL tracks the contractor as per the requirement laid in Sub-Contractors Ethical Trade Initiatives which also covers aspects such as Legal Compliance/Management Systems, Health & Safety.	**Aligned**	--
4	Organizational Capacity and Competency	• GSL has the ultimate responsibility for implementing and overall management of the site. • GSL has a dedicated EHS team onsite during the construction phase. The EHS team comprise of a dedicated onsite EHS Deputy Manager and a safety officer for this Project during the construction phase. • As understood, the EHS Deputy Manager is engaged at the site and is not trained on the requirements of IFC PS and other Good International Industry Practices (GIIPs). As understood, the EHS Deputy Manager has previous experience in the same sector. • EHS Deputy Manager is currently managing the on-going E&S management, monitoring of contractor's performance as well as development of mechanisms for dealing with day to day environmental and social issues. They also ensures that the activities of its contractors are conducted in accordance with good practice measures, implementation of which will be required through contractual documentation.	**Partially Aligned**	• GSL to train their EHS team on the requirements of IFC PS and other GIIPs.

		• As reported, one EHS personal from the contractors side is also present onsite, who report to EHS deputy manager and have prior EHS & Safety experience. • GSL's EHS team is responsible for managing the contractor and sub-contractors engaged during different phases and will be responsible for implementation of mitigation measures. • Currently the community engagement is taken care of by the HR or wood procurement division.		
5	Emergency Preparedness and Response	• GSL has developed a site-specific Emergency Preparedness and Response Plan (EPRP) in line with the Emergency Preparedness & Response framework to guide the workers at site to respond efficiently in case of an emergency. The EPRP includes the following: o Identification of the emergency scenarios o Specific emergency response procedures o Trained emergency response teams o Contact details for the trained emergency rescue team o Permanently stationed emergency equipment and facilities (e.g., first aid stations, firefighting equipment, spill response equipment, personal protection equipment for the emergency response teams) o Clear identification of muster points o Emergency contact numbers o Emergency drills and their periodicity based on assigned emergency levels or tiers • However, EPRP does not cover the existing facilities adjacent to the project boundary. • As reviewed, Mock drills and trainings pertaining to the fire fighting and emergency scenario's are being provided to the workers by the contractors. The training records abs photographs rea being shared by the contractors to GSL on Weekly and Monthly basis. • Sign board for assembly area was observed to be present along with contact details of identified emergency contact team of GSL at office area.	**Partially Aligned**	The EPRP should include provision of emergency notifications to adjacent facilities.
6	Monitoring	• Prior to engaging the contractors on site, GSL had visited the ongoing construction sites and evaluated the procedures developed and implemented by the contractors. As reported, an evaluation checklist for finalizing the contractors included aspects policy, No of accidents/incidents, child labour etc. • GSL has developed a monitoring and auditing mechanism for monitoring the contractors and sub-contractors in terms of manpower, Incidents/Accidents, trainings, and PTW. • EHS reports are being submitted by the respective contractor to GSL on weekly and monthly basis. The Reports includes details pertaining to EHS Trainings and meetings organized/conducted, details of incidents/accidents, first aid cases, identified unsafe acts, conditions and work practices, issued	**Aligned**	--

		permit to work and hot work permits, audits conducted, awards given etc. Sample completed Weekly, and Monthly EHS reports were reviewed. • Also, GSL maintains a EHS daily observation excel where details pertaining to all the unsafe acts/condition observed are being mentioned and kept track of. The information is collated in reference to the contractors and their labours. This excel is updated on daily basis. GSL has an active WhatsApp group as well as an email id for reporting of all the unsafe act/conditions. The reports are verified on the basis of the photographs as shared by observer The EHS observations are rectified/updated within 24-48 hours of the unsafe observation. • Similar daily EHS observation checklist is maintained for the labour colony as well. • Safety check method statements from contractors are being obtained on regular basis • GSL has included aspects pertaining to health & safety and environment as part of the Guidelines for Greenlam's Sub-Contractor Compliance for Ethical Trade Initiatives as well as Supplier Code of Conduct policy. • Also, EHS plan has been included in the contract agreements to ensure adherence to the policies and practices adopted by GSL. The same has been communicated to the contractors and EHS monthly and weekly checklist received from the contractors ensures the monitoring and the adherence.		
7	Training	• GSL has a developed a Training & Awareness SOP, the same is being used to impart trainings to the employees/workers/contractors etc. • Also, the trainings are being imparted by the contractors are on housekeeping, EHS procedures such as material handling, first aid, firefighting, snake bite, hot works, working at height, JSA Training, HIRA Training, electrical shock, road awareness, emergency procedures, awareness of risk areas, awareness on use of PPEs, pollution prevention, conservation of resources, accident prevention, fire prevention, managing waste, working at height, electrical safety etc. • The Contractors keeps a record of the trainings provided and are communicated to GSL in the form of weekly and monthly updates. • Training records and attendance sheet along with training photographs are being maintained at the project site.	**Aligned**	--
Performance Standard 2				
8	Human Resources Policies and Procedures	Same as above (Ref Row 2 under HR Policy subheading)	**Partially Aligned**	Same as above (Ref Row 2 under HR Policy subheading)

9	Working Conditions and Terms of Employment (include migrant workers and worker's housing)	• As mentions in the earlier section the staff of the GSL are governed by their HR policies and procedures and the subcontracted staff were either governed by their own HR policies of appliable Indian labor laws. • During the site visit following observations were made with respect to labour and working conditions of the subcontracted staff: o Daily attendance register with in and out time was not available at site for review o Workers were not having the valid identity cards o Reportedly the subcontracted workers were covered under ESIC and PF schemes however most of the workers are not aware of their PF (UAN) and ESIC cards. o The details of payment of wages register was not available at site for the review and however reportedly workers were provided the salary between 1st and 2nd week of every month. o Reportedly the wages for man and women were reported to be different (500 and wages for the women is 400) for the local contractor engaged for boundary wall works. The reason sighted for such dissimilarity between the wages for men and women by the site in charge was the nature of work . However it appears that both men and women are doing the same kind of work such as manual unskilled labour. o The workers are not aware of the GSL grievance redressal mechanism and same was not found to be displayed at the site. **Workers Accommodations** • As informed, some of the GSL staff are accommodated in the company rented guest house and some have managed their own rented accommodations close the project in Naidupeta area • The Subcontracted workers who are from other areas were accommodated in the temporary labor camps provided by the respective contactors which is located outside the project boundary wall. • The labor camps were made up of MS tin shed which does not have adequate thermal protection and has inadequate ventilation and not provided for protection from the insects and mosquitoes • The camps had basic toilet and bathing facilities however the drainage system was not found to working properly and water logging was observed . • The Drinking water is supplied from local RO units however the water testing report was not available at site for review • It was observed that cooking is done with firewood and the arrangements for fire fighting was inadequate. • The camps were not provided with proper electricity connection, as informed the electricity is supplied though power generators during nights. Further there is no street lighting outside the camp area. • It was observed the workers have made temporary arrangement for phone charging/sockets with unsafe electricity connections.	**Partially Aligned**	• GSL should ensure the all the mandatory records with respect to labor compliance such as wage , holiday and attendance register are maintained at site. • All the workers should be provided with the PF (UAN) account number and EISC cards. • GSL should ensure the compliance to applicable labour laws and carry out periodic monitoring of the compliance labor laws especially with regards to the payment of wages including payment of equal wages and other related acts. • GSL should provide necessary training to subcontracted workers on GRM and widely display the GRM process. • The GSL should develop/modify the labor camps as per Workers' accommodation: Processes and standards by IFC. • GSL should ensure that the camps should have proper thermal insulation and protection from the insects. • Adequate drainage facility & disposal bins shall be provided within the camps after proper inspection. • GSL should ensure that the use of (WHO) approved insecticide to avoid spread of any vector borne diseases . • The camps should be provided with the adequate facility of cooking , safe fuel and fire fighting arrangements • GSL should carry out periodic monitoring of the labor camps to ensure the proper sanitary and health and hygiene conditions of the camps to be maintained all the times during the construction period including checking of parameters of noise, dust and drinking water.

		• Overall the heath and sanitary conditions of the workers camps was poor with water logging and improper disposal of waste.		
10	Workers' Organization	As informed during discussions, currently GSL does not recognize any workers organization for the project. However, it was reported that once the project comes into operation, forums for representation of workers and collective bargaining might be developed by GSL.	**Aligned**	--
11	Non-discrimination and Equal Opportunity	As per the HR policy, GSL is has specific commitments towards nondiscrimination and equal opportunity.	**Aligned**	--
12	Grievance Mechanism & Stakeholder Engagement	• As part of HR policy GSL has a detailed procedure of handling grievances of their own staff as well as covers the subcontracted staff. However during the site visit most of the subcontracted workers were not aware of the GRM process and further the records on grievances, if any was not available for review . • The current GRM procedure does not covers the external grievances. • As part of corporate procedure ESMs GSL is having generic stakeholder engagement plan which broadly covers the stakeholder identification , mapping and methods of communication.	**Partially Aligned**	• GSL should update the GRM procedure and include the provision of addressing the external grievances including community. • The GSL should widely display the GRM policy and procedure in the local language at conspicuous places and complaint boxes should be installed . • As per the GRM policy, GSL should establish the system for receiving , recording and tracking of grievances (as open and closed). • GSL should form the project level GRC (Grievance Redressal Committee) and GRC should hold monthly meetings and minutes of the meeting of GRC should be recorded. • The workers and stakeholder should be made aware about the GRM policy •
13	Protecting the Work Force Child labor/Forced Labor)	As per the GSL HR policy and suppliers code of conduct, child labour and other forms of forced labor is strictly prohibited. And no incidence of child or forced labor was reported or evident during the site visit.	**Aligned**	--
14	Occupational Health and Safety	• GSL at the corporate level has a dedicated environmental, health and safety (EHS) plan comprising of Occupational Health & Safety Plan and emergency response plan (ERP) which is applicable to the project. Measures provided in the respective plans with respect to health and safety are implemented at site. • The developed EHS plan includes the aspects pertaining to EHS as well as OHS. The following aspects have been included: o Safety Organization o Safety Training o Reporting of Accidents o Emergency Action Plan o Safety in the workplace	**Partially Aligned**	• Refer recommendation in row 9 for worker accommodation • The nearest hospital, ambulance, fire station and police station should be identified and included in the implemented emergency management plan; • The contractors to ensure that all the workers engaged use adequate PPE's and COVID protocol as per the prevalent government notifications.

- Safety in material handling
- Safety in welding & gas cutting
- Safety in use of electricity
- Safety in use of hand power tools and power operated tools
- Safety in use of ladders and stairs
- Safety in use of lifting appliance
- EHS plan for Pre-cast erection
- Safety in the use of transport, earthmoving equipment
- Safety in Piling work
- Safety in erection, use and dismantling of scaffolds
- Safety in the construction of structural frame & formwork
- Safety in Concrete Work
- Safety in construction of catch platforms and hoardings
- Safety in the use of chutes
- Fire Safety Provisions
- Important Indian Standards Related to Safety
- Formats for Permits and Approvals & Schedule

- The engagement with various construction activities involves a range of occupational health and safety risks and hazards mainly for the construction workers (local and/or migrant) who are involved in the construction works. Following potential occupational health and safety risks are envisaged due to construction activities:
  - Fall from height during erection and installation of machineries and other storage components
  - Risk while working at confined spaces at excavated areas
  - Accidents during driving heavy duty vehicles for transportation of construction material at site including transportation of raw material as well as manufactured products
  - Fire hazards and accidents while handling chemicals & oils and operating construction machineries including cranes and mechanical lifting equipment
  - Electrocution while working with live electrical components like electrical parts etc.
  - Diseases due to unhygienic conditions at site including contaminated drinking water for workers
  - Hearing problems due to noise generation from construction machineries
  - Exposure to extreme heat while working at site during summers
  - Risk of accidents from being struck in machinery or moving equipment or parts
  - Exposed to faulty electrical devices, such as cables, cords, hand tools etc.

The following measures were observed to be implemented during site visit

- All construction activities are carried out during daytime hours and vigilance is maintained for any potential accidents

- Construction vehicles are routed only during non- peaking hours i.e. other than during 0700 to 1100 hours and 1600 to 1900 hours.
- Adequate personal protective equipment such as ear plugs, safety helmet, safety shoes etc. are provided to the workers. However, during the site visit some workers were observed to be working without gloves (required while working with cement and POP)
- Workers who are engaged in welding works are provided with welder's protective eye shields
- Health and safety training on working at height, material handling, working at confined space is being imparted to the workers
- All equipment are turned off and checked when not in use
- Cranes and other lifting equipment are operated by trained and authorized persons
- Excavated areas are temporarily fenced to avoid access to outsiders
- Site Specific Emergency Response Plan is present at the site which includes the contact details of the Emergency Rescue Team.
- A work permit system has been implemented by EPC Contractor for all the workmen on the project premises for relevant tasks
- As understood, electrical and maintenance work are not carried out during poor weather and during lightning strikes.
- Appropriate safety harnesses and lowering/raising tools are used for working at heights.
- Periodic trainings for all the employees at the site are being provided by the contractors. Details of the training imparted are being maintained and shared with GSL. Training provided are also in line with the training and awareness SOP developed at corporate level
- Mock drills are conducted at the site at a frequency defined in the training calendar, relating to emergency response, fire safety, hazardous material, natural calamity, threats, civil disturbances, snake bites etc.
- First Aid box was observed to be present at various locations during the site visit.

- GSL has included aspects pertaining to health & safety and environment as part of the Guidelines for Greenlam's Sub-Contractor Compliance for Ethical Trade Initiatives as well as Supplier Code of Conduct policy. The aspects mentioned are being tracked and covered as part of weekly and monthly monitoring checklist
- EHS reports are being submitted by the respective contractor to GSL on weekly and monthly basis. The Reports includes details pertaining to EHS Trainings and meetings organized/conducted, details of incidents/accidents, first aid cases, identified unsafe acts, conditions and work practices, issued permit to work and hot work permits, audits conducted, awards given etc. Sample completed Weekly, and Monthly EHS reports were reviewed.

		• Also, GSL maintains a EHS daily observation excel where details pertaining to all the unsafe acts/condition observed are being mentioned and kept track of. The information is collated in reference to the contractors and their labours. This excel is updated on daily basis. GSL has an active WhatsApp group as well as an email id for reporting of all the unsafe act/conditions. The reports are verified on the basis of the photographs as shared by observer The EHS observations are rectified/updated within 24-48 hours of the unsafe observation. • Similar daily EHS observation checklist is maintained for the labour colony as well. • Safety check method statements from contractors are being obtained on regular basis		
Performance Standard 3				
15	Resource Efficiency and Pollution Prevention	• GSL has developed project specific EHS Plan which also includes broad management and disposal of debris and waste material including management of hazardous material and has implemented Waste Management SOP developed at corporate level. However specific SOP's for site environmental control procedures which includes aspects pertaining to Water Management, Air Emissions, Noise Control, and energy consumption have not been developed separately. **Potential Sources of Emissions & Waste during construction phase** • **Air Emissions:** Fugitive dust emissions from excavation work, digging, stacking of soils, filling, handling of construction material, transportation of material, plying of heavy construction machinery etc.; Vehicular emissions due to traffic movement at the facility and on the connecting roads; Gaseous emissions from operation of diesel generators for power requirement during construction phase; The fugitive emissions from the batching plant, construction material loading and unloading areas are likely to remain highly localized and confined to the manufacturing facility but would require adequate mitigation measures to prevent their spread outside the footprint of the facility • **Noise Sources:** The sources of noise in the construction phase include civil work, operation of batching plant, operation of DG sets and construction machineries such as cranes, drillers, bull dozers etc. and movement of vehicles, fabrication, etc. • **Waste**: General construction waste generated generally comprises of surplus or off-specification materials such as concrete, wooden pallets, steel cuttings/filings, packaging paper or plastic, wood, metals etc; Municipal domestic wastes consisting of food waste, plastic, glass, aluminum cans and waste paper is also likely to be generated by the construction workforce at canteen facility/ labour colony; A small proportion of the waste generated during construction phase will be hazardous and may include used oil, hydraulic fluids, waste fuel, grease and waste oil containing rags. If improperly managed, solid waste and wastewater could create impacts on land.	**Partially Aligned**	**Air Quality- Best Practices** • GSL to ensure that the soil and sand stored within site are covered with tarpaulin. Also, it is to be ensured that the material being transported to the site is to be covered. • GSL to ensure that the access road with the site and near the construction area sprinkled regularly and kept damp. • The stock piles of the soil should be kept moist/covered to avoid wind erosion of the soil; • Emissions from the D.G. set and other stationary machines to be controlled by ensuring that the engines are always properly tuned and maintained; • Cease or phase down work if excess fugitive dust is observed. Investigate the source of dust and ensure proper suppression measures; **Ambient Noise- Best Practices** • Only well-maintained equipment should be operated on-site; • If it is noticed that any particular equipment is generating too much noise then lubricating moving parts, tightening loose parts and replacing worn out components should be carried out to bring down the noise • Machinery and construction equipment that may be in intermittent use should be shut down or throttled down during non-work periods

- **Waste Water**: There is a potential for contamination of groundwater resources resulting from improper management of sewage at manufacturing facility or other accidental spills/leaks at the storage areas

The following measures were observed to be implemented during site visit

Air Quality

- Excavated top soil at the construction site was observed to be handled adequately and was heaped and water was observed to be sprinkled done to minimize dust generation. However the heap was quite large and the same was not observed to be covered with tarpaulin.
- Also, sand stored near the batching plant was also observed to be uncovered.
- Speed of vehicles on site was limited to 10-15km/h which helps in minimizing fugitive dust emissions due to vehicular movement. Signage board for the same was observed to be present around the site.
- As reported, Periodic water sprinkling is being undertaken done near the access roads and the sand and soil storage within the site at the construction area to avoid dust emission, however there is no fixed schedule or timing for sprinkling. The same is done as and when required.
- As per the ambient air quality monitoring conducted, as part of the ESIA, within 5 km of the project site all the parameters were found to be within NAAQS permissible limit for all the samples
- As observed on site, no fugitive emissions were observed . As it had rained a previous day, the site was observed to be muddy.
- As reported, PUC for the incoming vehicles are verified on regular basis.

Ambient Noise

- The working hours for construction activities were defined i.e. from 8 am to 6pm.
- As reported, Operation of high noise level construction machineries are restricted during daytime only. If work is extended beyond the defined hours, it was reported, that it is limited to activities that do not produce noise.
- As reported, workers working in high noise area are provided with adequate PPE such as earmuffs
- During the time of site visit, no heavy equipment's were observed to be operational.
- The operation, maintenance and use of DG sets (observed on site were under the scope of the contractors). The DG sets were observed to be present within the acoustic enclosure.
- As per the ambient monitoring results conducted for the site, the Leq Day and Leq Night of all the samples were found to be within the CPCB limits for industrial as well as residential area as well as IFC EHS guidelines.

Waste management

Waste Management

- Waste to be managed as per the site specific waste management plan (refer as Appendix 5) as well as hazardous material management plan (refer Appendix 6)
- All waste should be stored in a shed that is protected from the elements (wind, rain, storms, etc.) and away from natural drainage channels;
- Hazardous material should be kept on impervious layer with secondary containment
- A log book should be maintained for quantity and type of hazardous waste generated;
- Daily collection and period disposal should be ensured for waste generated on site;
- Contractor should ensure that no unauthorized dumping of used oil and other hazardous waste is undertaken;
- Construction and Demolition Waste should be stored separately and be periodically collected by an authorized treatment and storage facility;
- Oil spill kits should be maintained onsite to handle minor leaks and spillage
- In case of accidental/unintended spillage, the contaminated soil should be immediately collected and stored as hazardous waste.
- As a best practice, site clearance, piling, excavation and access road strengthening will not be carried out during the monsoon season to minimize erosion and run-off

Waste Water Management

- Spill/ leakage clearance plan to be developed and adopted for immediate cleaning of spills and leakages
- Recycling/reusing to the extent possible
- Records of water abstraction & usage from the borewells to be maintained on site.

- As reported and observed during the site visit, due to absence of kitchen or cooking facilities within the project site, food waste is not being generated
- As observed during site visit, waste Inventorization is not being undertaken. Facility has not developed waste management plan comprising of disposal of construction debris, recyclables, etc. Separate designated area for storage of hazardous waste has not been provided. As reported, hazardous waste is not generated till date and the same was not observed stored at site during site visit.
- As reported, soil generated from excavation work is being reused to the extent possible for backfilling purpose,
- Construction waste generated at the site is being reused to the extent possible and remaining waste such as scraps, metals etc. as mentioned is being disposed through authorized vendor.
- Designated areas/Bins have been provided for Municipal Solid Waste
- Spoils which cannot be reused are being disposed through authorized vendor.
- GSL has obtained membership certificate for management of hazardous waste via an authorized vendor (Coastal Waste Management Project (Unit-2)). This membership is valid upto March 2024.

Water & Waste Water Management

- Refer Section 1.1 for details on water requirement during the construction phase.
- As understood, water requirement during the construction phase is being met via borewells installed within the facility. As observed, no records for water consumption are being maintained at site.
- The facility is located in a developing industrial area and has installed borewells within the boundary for fulfilling the water requirement (for construction activity) during construction phase. Potable water requirement is being met through packaged drinking water
- Sewage generated onsite is treated and disposed through septic tanks and soak pits as per specifications given in IS 2470: 1995 (Part I and II) thereby reducing the environmental impact of wastewater discharge. As understood, a licensed vendor has also been engaged for cleaning of septic tanks and soak pits. However, cleaning of soak pits and septic tanks has not been undertaken during the construction phase.
- Adequate stormwater drainage have been developed in and around the facility to avoid any disruption to the existing drainage channels within the facility premises. As observed, no disruptions have been done to the existing drainage channels within/nearby the facility premises.
- Training are being provided to workers on water conservation and encourage optimal use of water.
- Daily inspection (observations) on land, soil contamination, leaks and spills are being conducted to avoid soil and water contamination by GSL as well as contractor's EHS officer

	• The Batching Plant has been set up away from any drain inlet and is present within the facility			
Performance Standard 4				
16 Community Health and Safety	• Since there are no settlements located within 500 m of the facility, impact due to construction activity at the facility on community is not anticipated. Nearest residential settlements present in the Menakuru village located at ~ 1.8 km (aerial distance) from manufacturing facility and the project is situated within a designated industrial area. • However, the community present within the vicinity of the access roads will be impacted due to transportation of material and movement of manpower to the facility during construction phase.	**Partially Aligned**	• GSL to develop a Community Health & Safety Plan • GSL to ensure and limit the use of access road during peak hours to avoid congestion and risks of accidents • Dedicated route for deployment of heavy-duty vehicles should be defined. • Trucks/ dumpers will be covered by tarpaulin sheets during off site transportation;
Performance Standard 5				
17 Land Acquisition and Involuntary Resettlement	The integrated manufacturing facility is being developed within the Industrial Estate and the land for the facility has already been procured. The land procurement does not involve involuntary resettlement. Total land for the integrated plant is 26.90 ha (66.49 acres). Out of 26.90 ha (66.49 acres), about 0.46 ha (1.13 acres) is required for resin plant. The resin plant is located within the proposed project land premises. The proposed plant is located on Plot No. 19A-1(UDL) (land admeasuring to an extent of 16.49 acres/66736.00 sq.m and Plot No. 19 & 19A(UDL) (land admeasuring to an extent of 50.00 acres/202350.0 sq.m in Industrial Park, Naidupeta, SPSR Nellore district.	**Aligned**	--
Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources				
18 Specific requirements of PS 6 include (i) protection and conservation of biodiversity (modified, natural, critical habitat, legally protected and internationally recognized areas, invasive alien species); (ii) management of ecosystem services; (iii) sustainable	• As per the google earth satellite imagery and primary site survey, the study area consists of natural habitats (open scrub & water bodies), and modified habitats (agricultural land including plantation). • No protected area (PA)[20] as well as Important Bird and Biodiversity Area (IBA)[21] within the proximity of 10 km. The nearest protected area (also an IBA), Nelapattu Bird Sanctuary is about 15 km away from the manufacturing unit in the southeast	**Aligned**	Mitigation Measures suggested in the ESIA report should be implemented.

[20] http://wiienvis.nic.in/Database/Maps_PAs_1267.aspx

[21] Rahmani A.R., Islam M.Z. and Kasambe R.M. (2016) Important Bird and Biodiversity Areas in India: Priority Sites for Conservation (Revised and updated). Bombay Natural History Society, Indian Bird Conservation Network, Royal Society for the Protection of Birds and BirdLife International (U.K.), p. 1992 + xii.

management of natural resources; and (iv) supply chain	direction[22, 23]. Pulicat Bird Sanctuary (also an IBA) is also situated about 23 km away from the manufacturing unit in the southeast direction. • A total of fifty-eight (58) floral species including globally Endangered (as per IUCN RedList), *Tectona grandis* L.f. (Teak), and Near Threatened *Aegle marmelos* (L.) Corrêa (Wood Apple) were observed in the study area. • As per the literature review[24], local consultation and field survey, twenty-nine (29) herpetofauna (reptiles + amphibians) species were recorded (reported / observed) from the study area including one Near Threatened herpetofauna species- Red Sand Boa (*Eryx johnii*). • One Critically Endangered [White-Rumped Vulture (*Gyps bengalensis*)]; one Endangered [Great Knot (*Calidris tenuirostris*)]; six Vulnerable [Common Pochard (*Aythya ferina*), Greater Spotted Eagle (*Clanga clanga*), Indian Spotted Eagle (*Clanga hastata*), River Tern (*Sterna aurantia*), Tawny Eagle (*Aquila rapax*), & Yellow-throated Bulbul (*Pycnonotus xantholaemus*)] were reported in the secondary data review[25]. While no bird species, under any threatened category of the IUCN Red List was observed during the survey. • As per the literature review[26], local consultation and field survey, nine (09) mammals were recorded (reported and observed) from the study area including one Vulnerable species (as per IUCN Red List, Online Version 2022-2), Bonnet Macaque (*Macaca radiata*). Th construction phase activities are not affecting any sensitive biodiversity features present in and around the project site.		
Performance Standard 7			
19 Indigenous Peoples	Not applicable		
Performance Standard 8			
20 Cultural Heritage	Not applicable		

[22] http://wiienvis.nic.in/Database/Maps_PAs_1267.aspx
[23] Rahmani A.R., Islam M.Z. and Kasambe R.M. (2016) Important Bird and Biodiversity Areas in India: Priority Sites for Conservation (Revised and updated). Bombay Natural History Society, Indian Bird Conservation Network, Royal Society for the Protection of Birds and BirdLife International (U.K.), p. 1992 + xii.
[24] https://www.inaturalist.org/observations?lat=13.915696751721786&lng=79.82653432883035&place_id=any&radius=31.50479994315241&subview=map&view=species&iconic_taxa=Amphibia,Reptilia
[25] https://ebird.org/barchart?byr=2001&eyr=2023&bmo=1&emo=12&r=L5435997,L5424106,L6425561,L14354303,L10891558,L6873924,L12270884,L3167817,L1076318,L14354309,L10068233,L10278697,L14354258
[26] https://www.inaturalist.org/observations?lat=13.915696751721786&lng=79.82653432883035&place_id=any&radius=31.50479994315241&subview=map&view=species&iconic_taxa=Mammalia

Corrective Action Plan

The gaps/ issues identified in the section have been assigned a risk categorization based on the implications that they might pose on environment, health, safety and social aspects. The categorizations have been provided in the ***Table*** below and Corrective Action Plan has been provided in Corrective action plan Table 10

Table 9 Risk Rating

Rating	Description
Red Flag	Trigger of IFC Project Exclusion List / Prohibited Activities, or; material issue with potential severe consequences and limited opportunities of mitigating, leading to immediate operational shut down, reputational damage/ possibilities of significant reputational risks arising in the future, or impacts to sensitive environmental and social receptors including critical habitats and indigenous peoples, or lead to criminal proceedings.
High Risk Issues	Significant non-conformance with the regulatory requirements and standards, which may result in business interruption; a material cost, and/or affect sensitive receptors, and/or induce community opposition that may damage Owner's/Investor's reputation.
Medium Risk Issues	Non-conformance with the regulatory requirements and standards, which may result in non-material rectification cost or fine, but is unlikely to result, in the short-term, in business discontinuity in current regulatory enforcement context. Non rectification of this issue is likely to result in business interruption in the long-term.
Low Risk Issues	Minor regulatory or safeguard non-compliance, which may result in limited cost or only require management time to address the issue.

Table 10 Corrective Action Plan for Project's consideration

S.No	Recommendations on mitigation measures & Corrective Action Plan	Reference	Responsibility	Measurable Outcome	Risk Level	Timeline for Implementation
1	• GSL to develop project specific SOP's and procedures. • The Waste management SOP to be updated based on the latest rules and amendments. Also, the waste management plan to be updated to include waste handling and storage requirements. • GSL to update the existing IMS procedures to be aligned with the requirements of IFC PS standards. The SOP's developed to be updated to include Air, Water and Noise Pollution Prevention and Management Procedure and Community Health & Safety Management Plan	**Error! Reference source not found.**, Row 1	GSL's Project Management Team or Corporate Level	Updated SOP's	Low	Within 1 month
2	• GSL should update the GRM procedure and include the provision of addressing the external grievances including community. • The GSL should widely display the GRM policy and procedure in the local language at conspicuous places and install complaint boxes. • GSL should establish the system for receiving , recording and tracking of grievances (as open and closed) and same should be reported to GRC on fortnightly basis. • GSL should form the project level GRC (Grievance Redressal Committee) and GRC should hold monthly meetings and minutes of the meeting of GRC should be recorded. • The workers and stakeholder should be made aware about the GRM policy and procedure	**Error! Reference source not found.**, Row 1	HR/EHS and project management team	Copy of GRM updated policy and procedure	Medium	Immediate

S.No	Recommendations on mitigation measures & Corrective Action Plan	Reference	Responsibility	Measurable Outcome	Risk Level	Timeline for Implementation
	• GSL should update the stakeholder engagement plan include the relevant stakeholder and accordingly carry out the engagement activities					
3	GSL to train their EHS team on the requirements of IFC PS and other GIIPs.	**Error! Reference source not found.**, Row 1	GSL Corporate Team	Training Records	**Low**	Within 3 weeks
4	The EPRP should include provision of emergency notifications to adjacent facilities.	**Error! Reference source not found.**, Row 1	GSL EHS Team	Updated EPRP extended to adjacent facilities	**Low**	Within 3 weeks
5	GSL should ensure the all the mandatory records with respect to labor compliance such as wage, holiday and attendance register to be maintained at site.	**Error! Reference source not found.**, Row 1	HR/EHS / project management team	Copy of labor records	**High**	Immediate
6	All the workers should be provided with the PF (UAN) account number and EISC cards.	**Error! Reference source not found.**, Row 1	HR/EHS / project management team	Issued PF challan , UAN number EISC cards	**High**	Immediate
7	GSL should ensure the compliance to appliable labor laws and carry out periodic monitoring of the compliance labor laws especially for the payment of wages including payment of equal wages and other related acts.	**Error! Reference source not found.**, Row 1	HR/EHS / project management team	Copy of internal labor audit and monthly & fortnightly monitoring report	**High**	Immediate
8	GSL should provide necessary training to subcontracted workers on GRM and display the GRM process.	**Error! Reference source not found.**, Row 1	HR/EHS / project management team	Training records , photographs and attendance sheet	**Medium**	Within 3 weeks
9	• The GSL should develop/modify the labor camps as per Workers' accommodation: Processes and standards by IFC. • GSL should ensure that the camps should have proper thermal insulation and protection from the insects. • Adequate drainage facility & disposal bins shall be provided within the camps after proper inspection. • GSL should ensure that the use of (WHO) approved insecticide to avoid spread of any vector borne diseases • The camps should be provided with the adequate facility of cooking , safe fuel and fire fighting arrangements	**Error! Reference source not found.**, Row 1	HR/EHS / project management team	Updated layout of the camp , copy of approval , monitoring reports, photograph, and testing reports	**Medium**	Within 3 weeks

S.No	Recommendations on mitigation measures & Corrective Action Plan	Reference	Responsibility	Measurable Outcome	Risk Level	Timeline for Implementation
	• GSL should carry out periodic monitoring of the labor camps to ensure the proper sanitary and health and hygiene conditions of the camps to be maintained all the times during the construction period including checking of parameters of noise, dust and drinking water.					
10	• The nearest hospital, ambulance, fire station and police station should be identified in the implemented emergency management plan; • The contractors to ensure that all the workers engaged are using adequate PPE's and implementation of COVID appropriate guidelines	**Error! Reference source not found.**, Row 1	GSL's EHS Team	Updated Records	Medium	Within 3 weeks
11	**Air Quality- Best Practices** • GSL to ensure that the soil and sand stored within site are covered with tarpaulin. Also, it is to be ensured that the material being transported to the site is to be covered. • GSL to ensure that the access road with the site and near the construction area sprinkled regularly and kept damp. • The stock piles of the soil should be kept moist/covered to avoid wind erosion of the soil; • Emissions from the D.G. set and other stationary machines to be controlled by ensuring that the engines are always properly tuned and maintained; • Cease or phase down work if excess fugitive dust is observed. Investigate the source of dust and ensure proper suppression measures; **Ambient Noise- Best Practices** • Only well-maintained equipment should be operated on-site; • If it is noticed that any particular equipment is generating too much noise then lubricating moving parts, tightening loose parts and replacing worn out components should be carried out to bring down the noise • Machinery and construction equipment that may be in intermittent use should be shut down or throttled down during non-work periods	**Error! Reference source not found.**, Row 1	EHS Deputy Manager & Safety Officer	Updated Implementation Records	Low	Within 3 weeks
12	**Waste Management** • Waste to be managed as per the site specific waste management plan (refer as Appendix 5 of the ESIA report) as well as hazardous material management plan (refer Appendix 6) • All waste should be stored in a shed that is protected from the elements (wind, rain, storms, etc.) and away from natural drainage channels; • Hazardous material should be kept on impervious layer with secondary containment • A log book should be maintained for quantity and type of hazardous waste generated; • Daily collection and period disposal should be ensured for waste generated on site; • Contractor should ensure that no unauthorized dumping of used oil and other hazardous waste is undertaken;	**Error! Reference source not found.**, Row 1	EHS Deputy Manager & Safety Officer	Updated Implementation Records	Medium	Within 3 weeks

S.No	Recommendations on mitigation measures & Corrective Action Plan	Reference	Responsibility	Measurable Outcome	Risk Level	Timeline for Implementation
	• Construction and Demolition Waste should be stored separately and be periodically collected by an authorized treatment and storage facility; • Oil spill kits should be maintained onsite to handle minor leaks and spillage • In case of accidental/unintended spillage, the contaminated soil should be immediately collected and stored as hazardous waste. • As a best practice, site clearance, piling, excavation and access road strengthening will not be carried out during the monsoon season to minimize erosion and run-off **Waste Water Management** • Spill/ leakage clearance plan to be developed and adopted for immediate cleaning of spills and leakages • Recycling/reusing to the extent possible					
13	• GSL to develop a Community Health & Safety Plan • Limiting the use of access road during peak hours to avoid congestion and risks of accidents • Dedicated route for deployment of heavy-duty vehicles should be defined. • Trucks/ dumpers will be covered by tarpaulin sheets during off site transportation;	**Error! Reference source not found.**, Row 1	EHS Deputy Manager & Safety Officer	Updated Implementation Records & Developed Community Health & Safety Plan	**Medium**	Within 3 weeks

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