Executive Summary

The Proposed Production Plant Expansion at PTD 5044, Jalan Rumbia 2, Tanjung Langsat Industrial Estate, Mukim Sungai Tiram, 81700 Pasir Gudang, Johor by Eternal Materials (Malaysia) Sdn Bhd

Introduction

- Project Proponent proposed expanding the production plant and add new production line to produce new products namely, dry film photoresist
- The total area of the site is 40 acres of land, where existing development occupies 26 acres. The proposed development will only occupy 14 acres of land.
- The implementation schedule of the Proposed Project includes construction stage and operation and maintenance stage.

Legislative Requirement

Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, First Scheduled,

- Prescribed Activity 6 (a): Chemical industry - capacity of each product or combined products of 100 tonnes or more per day.

Project Location

The Proposed Project site is located at PTD 5044, Jalan Rumbia 2, Tanjung Langsat Industrial Estate, Mukim Sungai Tiram, 81700 Pasir Gudang, Johor with centre coordinates of Latitude 1°28'22.76"N and Longitude 103°58'40.68"E.

Statement of Need

i. To increase production capacity and go further downstream process in the existing synthetic resin manufacturing plant with the establishment of production line called Precision Coating Material process.

ii. To meet growing demand for synthetic resin products and expand the plant's capacity to produce more products.

iii. To increase the scale of operation through the plant expansion which lead to economies of scale, reducing costs per unit and improving overall efficiency.

iv. To be globally trusted company with a strong presence through their continuous innovation, which flexibly cope with the diversified market needs and consumers sense of values.

Project Proponent

Eternal Materials (Malaysia) Sdn Bhd

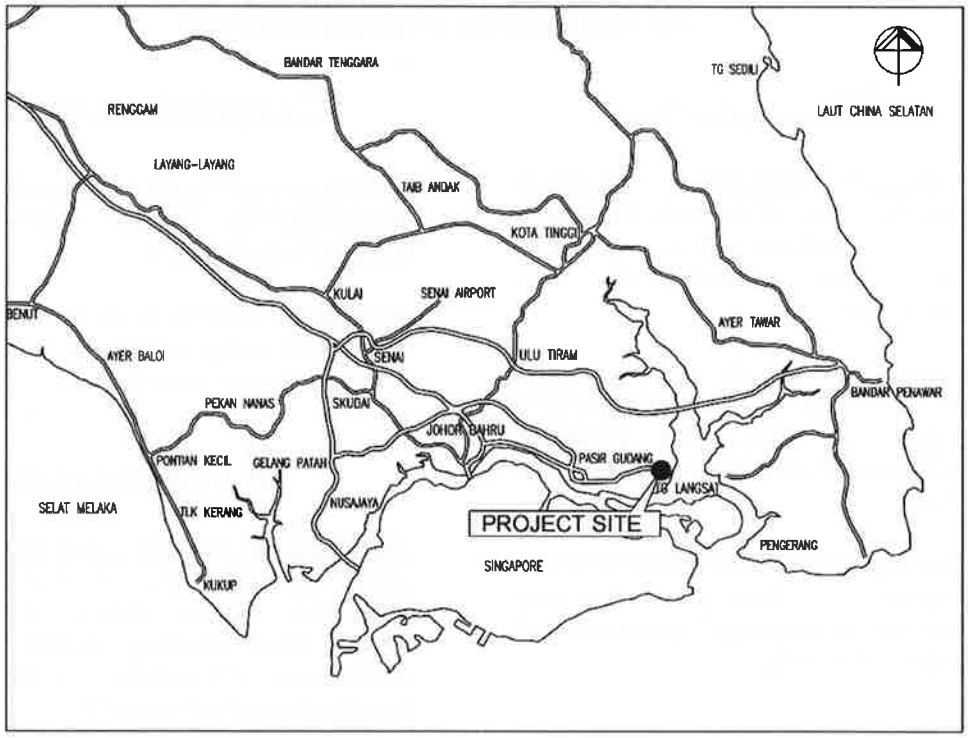
PTD 5044, Jalan Rumbia 2, Tanjung Langsat Industrial Estate, Mukim Sungai Tiram, 81700 Pasir Gudang, Johor

EIA Consultant

Ecochem Engineering Sdn Bhd

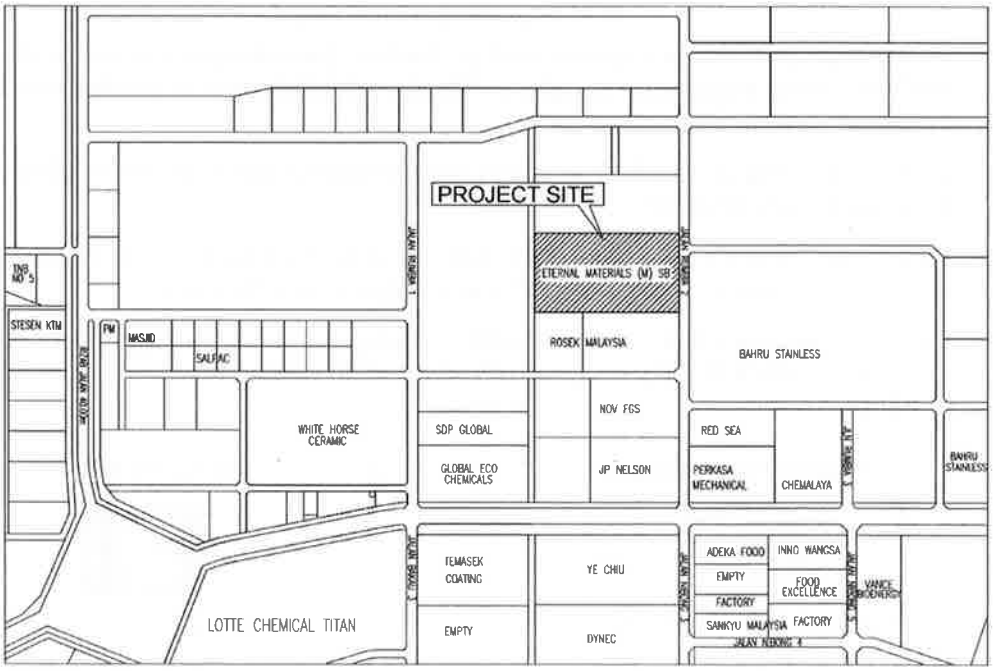
6B, Jalan Mutiara 1/14, Taman Mutiara Mas, 81300 Skudai, Johor

Key Plan & Location Plan



KEY PLAN NOT TO SCALE

Key Plan of The Proposed Project Site



LOCATION PLAN NOT TO SCALE

Location Plan of The Proposed Project Site

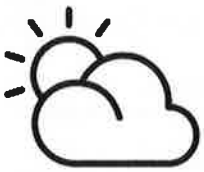
Project Boundary and Coordinates

Location of The Proposed Project Site and Boundary Coordinates

Existing Environment

Topography

Slope: < 15° for all part of Proposed Project
Elevation: does not exceed 5m above sea mean level



Climate

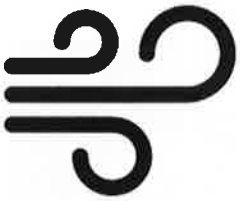
Senai Meteorological Station
Humidity: 84%
Temperature: 27.2°C
Rainfall: 7.7mm.
Wind speed: 1.4 m/s

Water Quality

WQI at all monitoring stations fall under Class III-IV.

Noise Level

The results show that noise level is below 75 dBA (daytime and nighttime) for all monitoring stations.



Air Quality

All monitoring stations comply to Malaysia Ambient Air Quality Standard, 2020.

Flood and Erosion

The risk of flood and erosion is minimal.

Traffic

Expressway:
Johor Bahru – Pasir Gudang Expressway
Highway:
Senai – Desaru Highway

Peak hours:
7.00 a.m – 8.00 a.m
5.00 p.m – 7.00 p.m

Socio-economic

The nearest residence is 2.65 km away from project site, which is Taman Kota Masai.

Existing Landuse

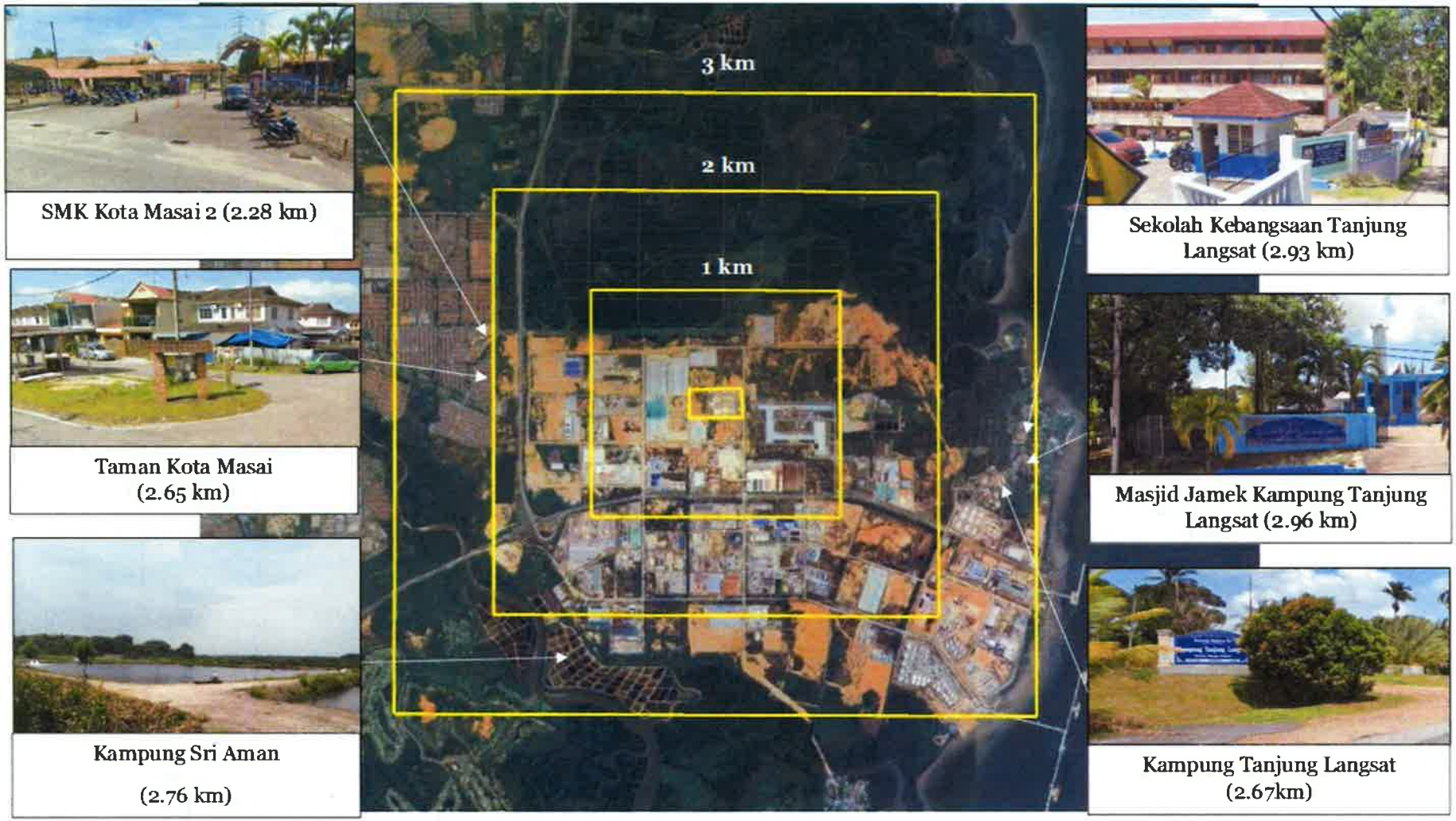
Ye Chiu Non-Ferrous Metal (M) Sdn Bhd (0.02 km to the west of Proposed Project site)

IKD (Malaysia) Sdn Bhd
(0.02 km to the south of Proposed Project site)

Remex Metal Processing Sdn Bhd (0.20 km to the north of Proposed Project site)

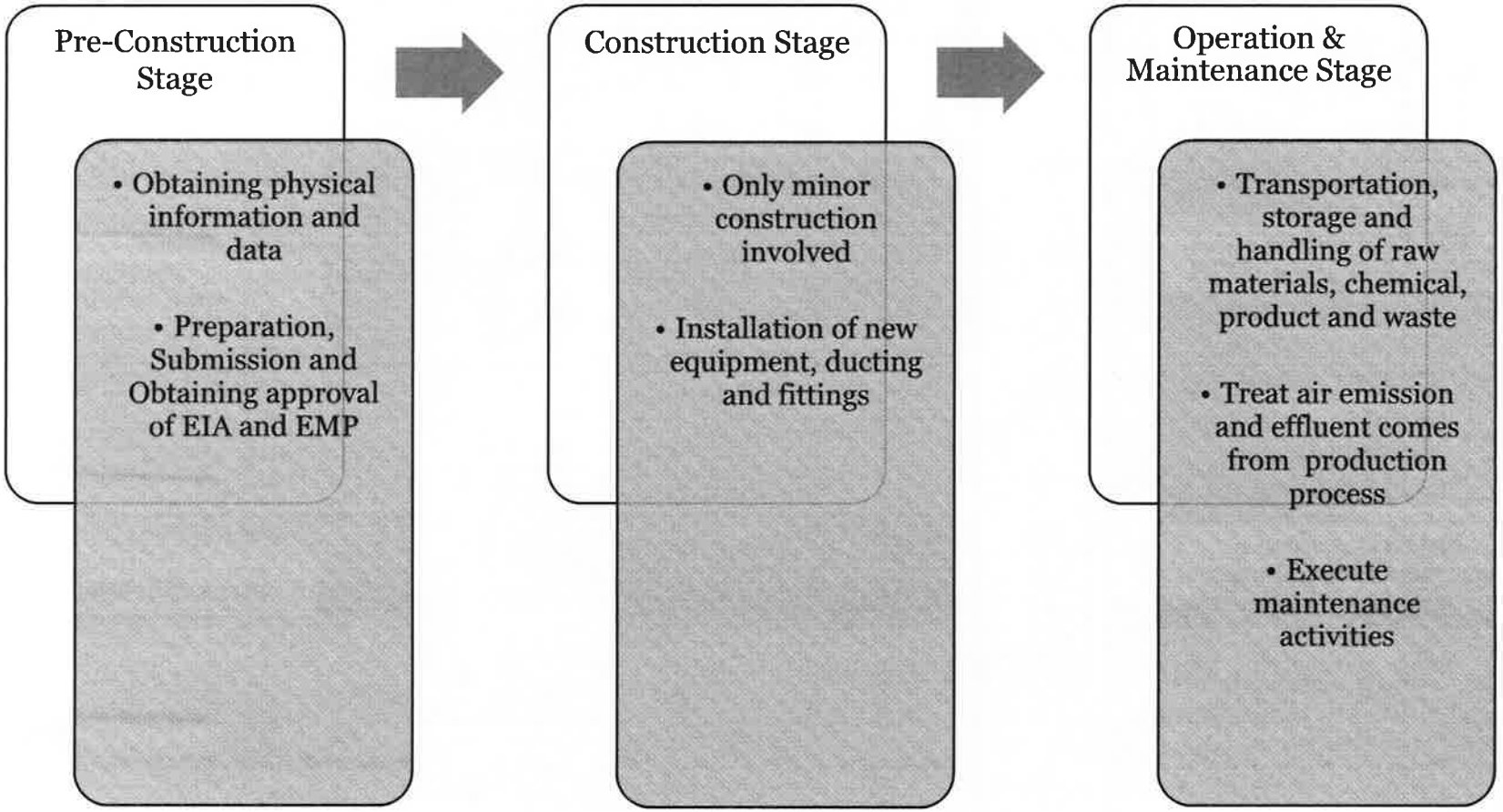
Wonderful Metal Sdn Bhd (0.30 km to the north of Proposed Project site)

Land use map within 500 m radius surrounding the Proposed Project site



Land use map within 3 km radius surrounding the Proposed Project site

Project Activities



Project Description

- Eternal Materials (Malaysia) Sdn Bhd is an existing synthetic resin manufacturing company located at Tanjung Langsat Industrial Estate, Johor.

- The existing plant produces four (4) types of synthetic resin such as Water Based Acrylic Resins, Solvent Based Acrylic Resin, Alkyd Resin & Unsaturated Polyester Resin.

- Recently, Project Proponent proposed increase the production capacity and go further downstream in the existing synthetic resin manufacturing plant with the establishment of Precision Coating Material (PCM) process to produce dry film photoresist in the same land plot.

- The total land area of Eternal Materials (Malaysia) Sdn Bhd is 40 acres, where the existing development occupy 26 acres of land. This proposed expansion will only occupy 14 acres of land which is enough to provide adequate space for all activities.

- This Proposed Project consists of 2 stage which are construction stage and operation & maintenance stage

- There are boilers, Rotary Regenerative Thermal Oxidizer (RRTO), Waste Liquid Thermal Oxidizer (WLTO) as fuel burning equipment; bag filters and fume hoods with activated carbon filter as air pollution control system and industrial effluent treatment system which used to treat effluent at project site.

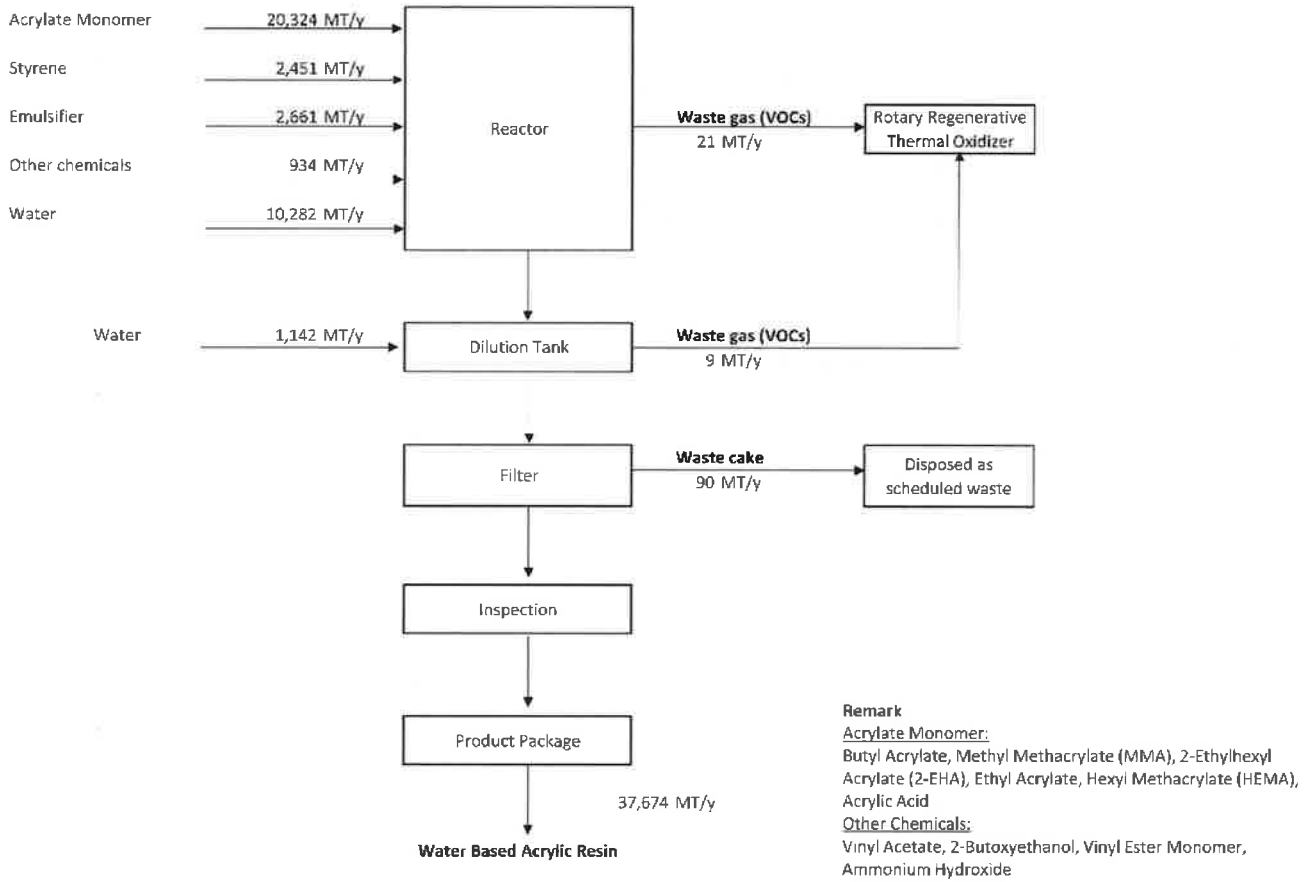
- A new Regenerative Thermal Oxidizer (RTO) (with capacity 23,740 SCFM and 99.5% efficiency) is proposed in this project to treat waste gas generated from the new downstream processes.

- The project capacity of the existing and proposed plant expansion is shown below.

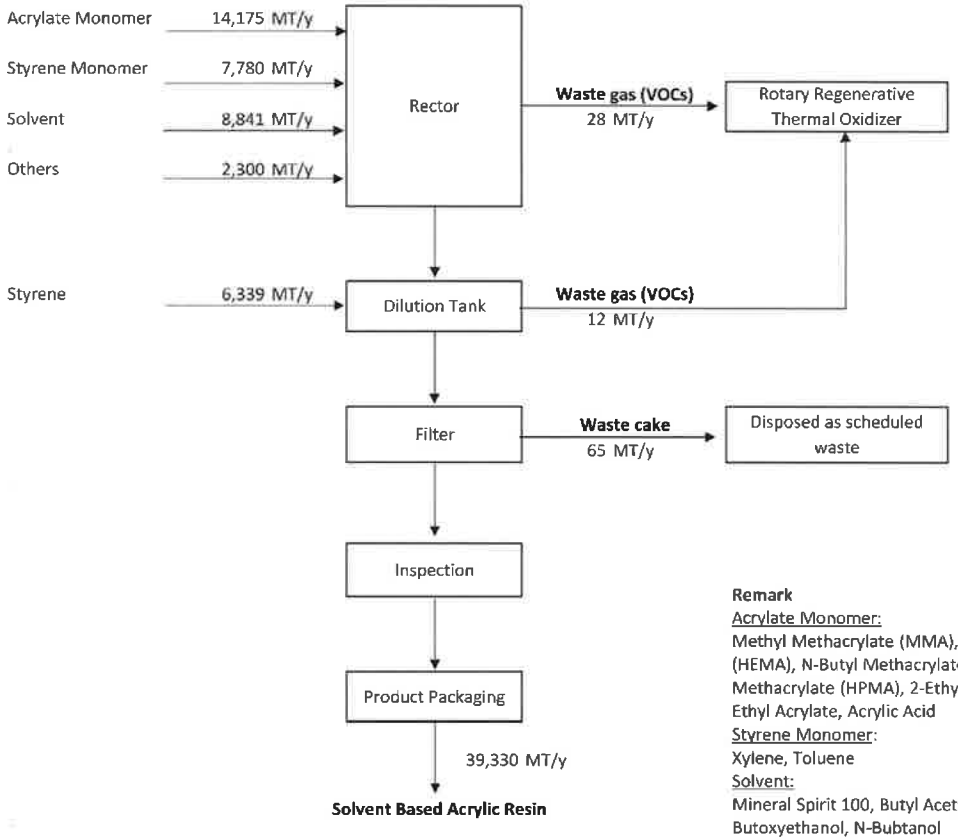
No.	Products	Capacity (MT/year)	
		Approved capacity as per EIA Approval 2015	Proposed expansion capacity
1	Water based acrylic resin	37,674.00	-
2	Solvent based acrylic resin	39,330.00	-
3	Alkyd resin	50,612.00	-
4	Unsaturated polyester resin	52,500.00	-
5	Dry Film Photoresist	-	9,119.96
Total Capacity		180,116	9,119.96
Sum (Existing & New)		**189,235.96**	

Process Flow

Process Flow Chart and Mass Balance for Water Based Acrylic Resin Production



Process Flow Chart and Mass Balance for Solvent Based Acrylic Resin Production



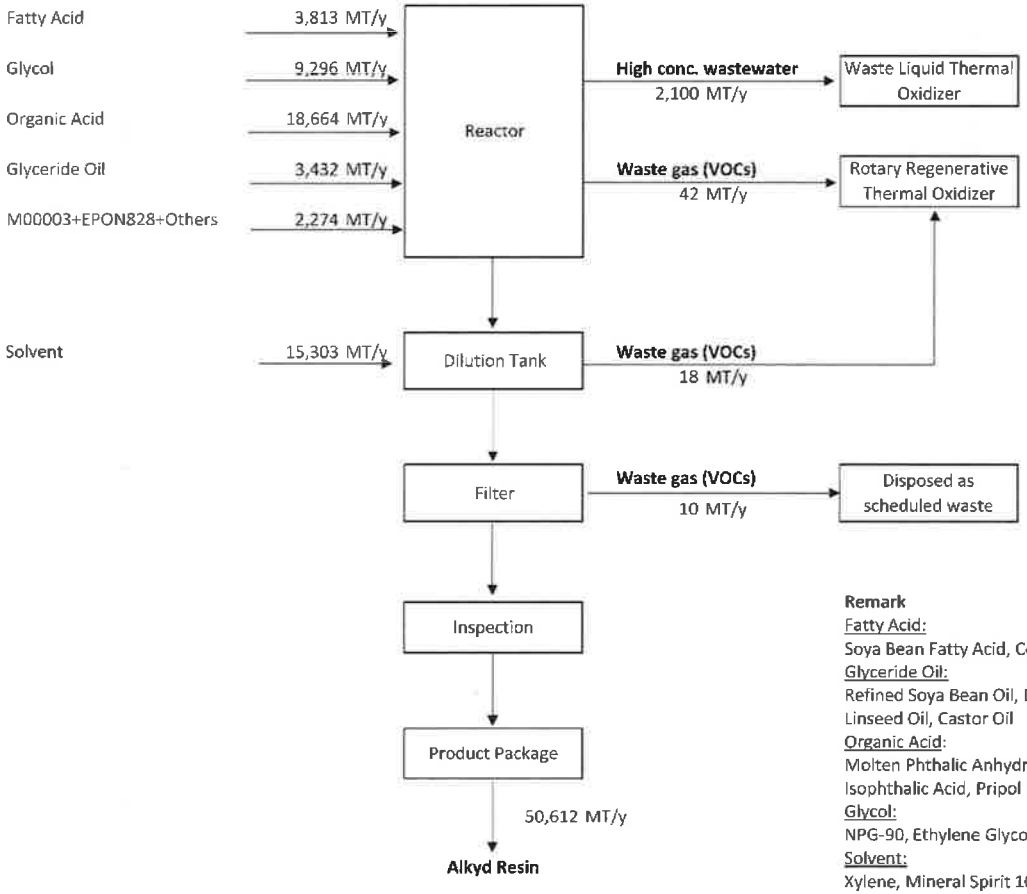
Remark

Acrylate Monomer:
Methyl Methacrylate (MMA), Hexyl Methacrylate (HEMA), N-Butyl Methacrylate, Hydroxy Propyl Methacrylate (HPMA), 2-Ethylhexyl Acrylate (2-EHA), Ethyl Acrylate, Acrylic Acid

Styrene Monomer:
Xylene, Toluene

Solvent:
Mineral Spirit 100, Butyl Acetate, Solvent 150, 2-Butoxyethanol, N-Bubtanol

Process Flow Chart and Mass Balance for Alkyd Resin Production



Remark

Fatty Acid:
Soya Bean Fatty Acid, Coconut Oil Fatty Acid

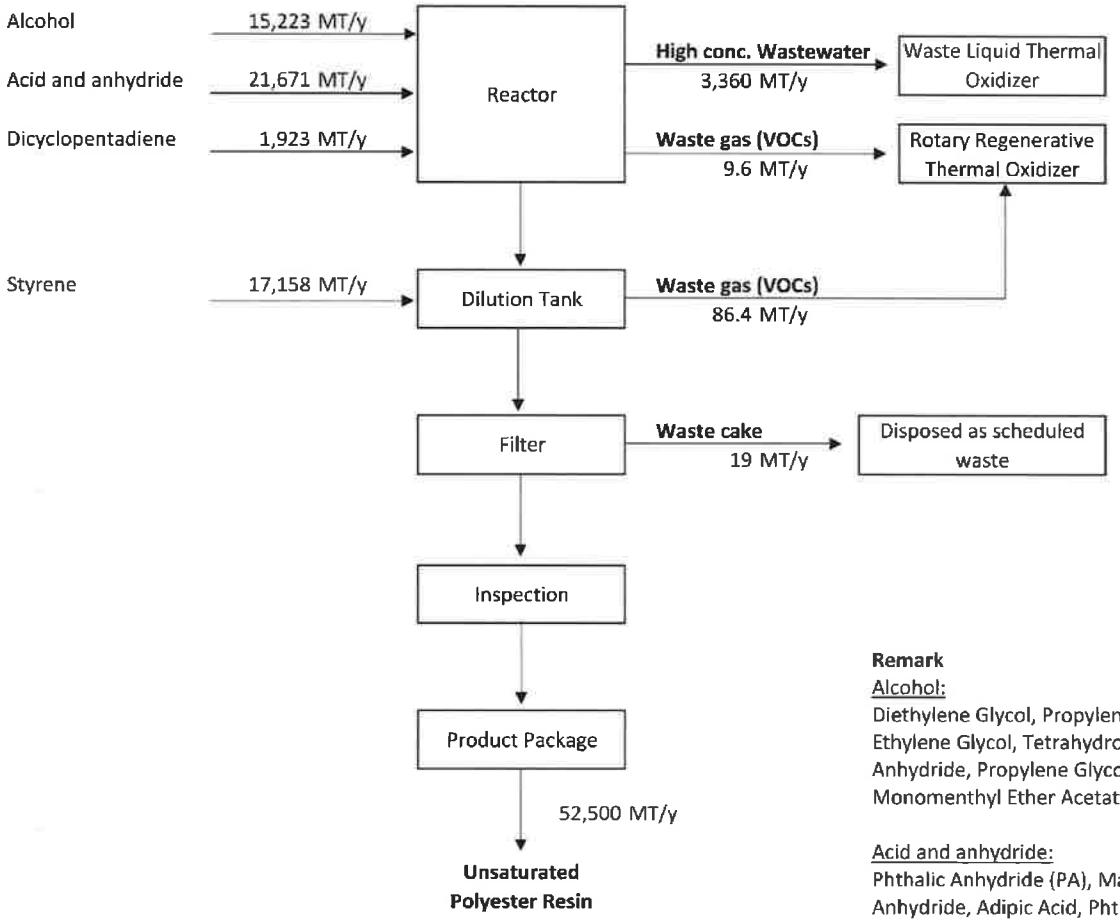
Glyceride Oil:
Refined Soya Bean Oil, Distilled Cashew Nut Shell Liquid, Refined Linseed Oil, Castor Oil

Organic Acid:
Molten Phthalic Anhydride, Phthalic Anhydride (PA), Adipic Acid, Isophthalic Acid, Pripol 1017, Octanoic Acid

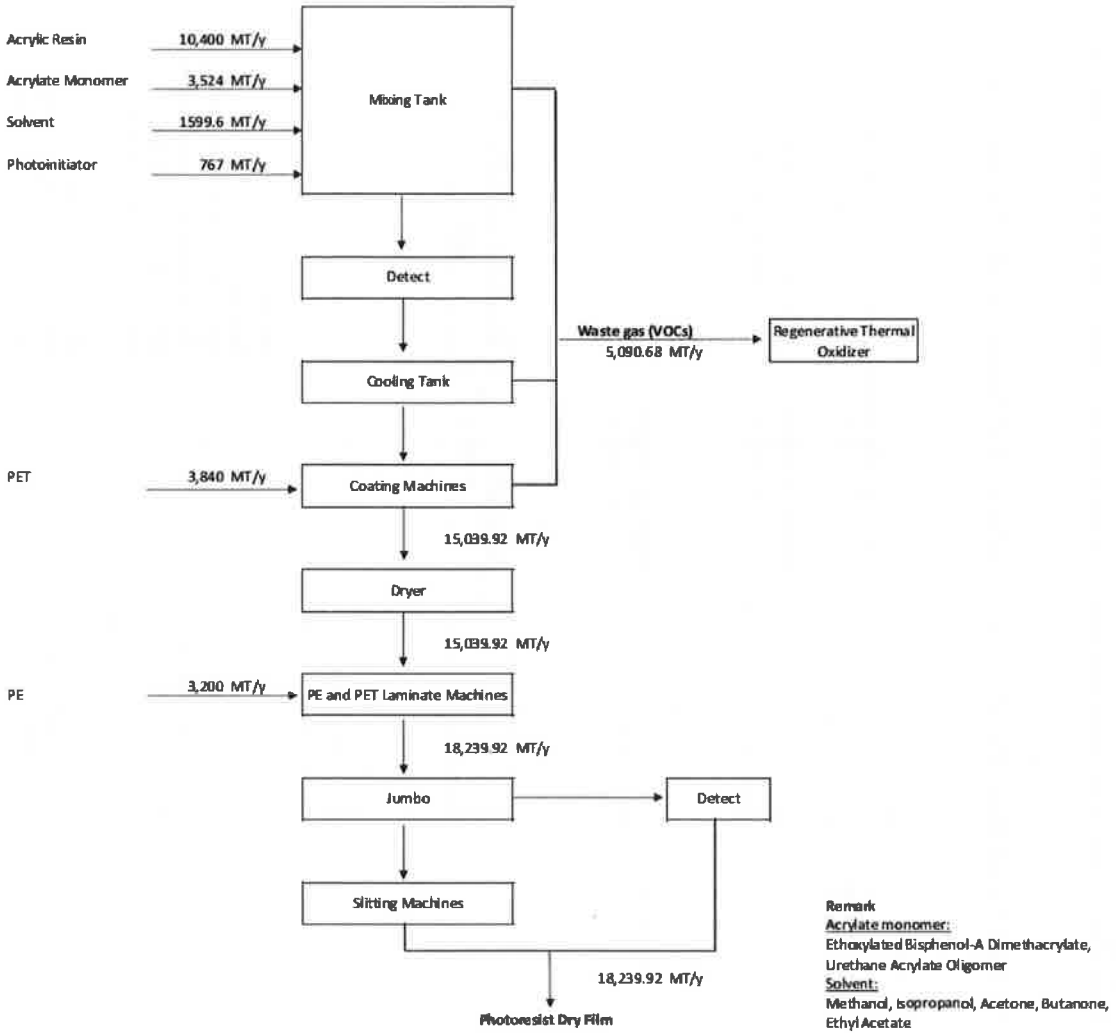
Glycol:
NPG-90, Ethylene Glycol, 2-Methyl 1,3 Propane Diol, Pentaerythritol

Solvent:
Xylene, Mineral Spirit 100, BCS, Glycerine, Butyl Acetate, M0103, n-butanol

Process Flow Chart and Mass Balance for Unsaturated Polyester Resin Production

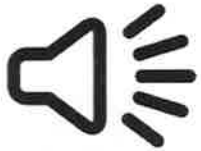


Process Flow Chart and Mass Balance for Dry Film Photoresist Production



Pollution Prevention and Mitigation Measures

	Potential Impact	Mitigation Measures
Air Quality	Construction Stage • Gaseous emission from chimney as the facility still in operation • Dust generated during construction activity and the movement of the transportation vehicle Operation & Maintenance Stage • Gaseous emission from chimney	Construction Stage • Air pollution control system shall be operated and supervised by competent person, Certified Environmental Professional in Scrubber Operation (CePSO) and Certified Environmental Professional in Bag Filter Operation (CePBFO) • Dusty materials shall be sprayed with water to reduce the dispersion of air borne particulate matters or fugitive dust during dry and windy season/weather Operation & Maintenance Stage • Air pollution control system (APCS) shall be in continuous operation to remove harmful pollutants

Noise 	Construction Stage • Slight noise might generated from the construction activity • Noise generated from the operating machineries during the existing production process Operation & Maintenance Stage • Noise generated from the operating machineries during production process	Construction Stage • Conduct noise monitoring and ensure adequate supervision of operation • construction activity shall be carried out during daytime only • Turn off transportation vehicles or machinery that not in use Operation & Maintenance Stage • The usage of low sound power levels equipment or machinery
Water Quality 	Construction Stage • Accidental spillage and leakage of chemicals, lubricants or scheduled waste into waterways • Direct discharge of effluent or sewage into water bodies	Construction Stage • All site workers are to be trained regarding the appropriate use, handling and disposal of site-based chemicals as well as emergency spill response • Effluent shall always be treated at IETS and comply with Standard A of EQ (Industrial Effluents) Regulations 2009

	Operation & Maintenance Stage • Accidental spillage and leakage of chemical, lubricants or scheduled waste into waterways • Direct discharge of effluent or sewage into water bodies	Operation & Maintenance Stage • Lubricant oil shall be stored properly in storage container in order to prevent spillage or leakage into waterways • Spillage cleaning kit shall always be available at project site
Solid Waste Management 	Construction Stage • Generation of solid wastes during installation of equipment Operation & Maintenance Stage • Generation of solid waste during operation and maintenance stage	Construction Stage • Solid waste shall be disposed at prescribed solid waste disposal site • Open burning of solid waste is strictly prohibited Operation & Maintenance Stage • Recyclables materials should be sent to relevant dealers for recycling purpose
Scheduled Waste Management 	Construction Stage • Generation of scheduled waste from the installation activity	Construction Stage • Ensure the use of durable container material and inspection of storage areas • Careful management of scheduled waste and good housekeeping shall be implemented

	• Generation of scheduled waste from the installation activity (continued.)	• Establish Emergency Response Plan (ERP) framework detailing action required
	Operation & Maintenance Stage • Generation of scheduled waste from production plant	Operation & Maintenance Stage • Proper waste management according to relevant regulation. • Storage of scheduled waste shall not be more than 180 days or more than 20 metric tonnes, whichever comes first
Quantitative Risk Assessment 	Construction Stage • Human injury might happen when the workers do not handle carefully with the equipment and machinery	Construction Stage • Inspection and maintenance of plant components and related equipment at project site shall be regularly carried out. • Workers should wear personnel protection equipment (i.e. glove, safety goggle) at workplace
	Operation and Maintenance Stage • Spillage of chemical or disposed of scheduled waste to the nearby area which may accidentally cause injury to the workers if not properly handled	Operation and Maintenance Stage • Inspection and maintenance of plant components and related equipment at project site shall be regularly carried out. • Emergency Response Plan (ERP) shall be aware by every personnel including the handling,

	• Potential machineries failure which will cause injury to the worker	storage, and process of hazardous materials as well as the planning on actions to be taken during emergency time.
Traffic & Transportation 	Construction & Operation and Maintenance Stage • Traffic impacts encountered during construction, operation and maintenance stage to the surrounding road networks	Construction & Operation and Maintenance Stage • Transportation operator employed shall made ensure to be well trained in handling the vehicle, emergency response equipment • Speed limit of not exceeding 90 km/hr on highways and 60 km/hr on normal is recommended
Socio-economy 	This Proposed Project will create job opportunities to the locals and boost economy to the surrounding area	Employment opportunities should be given consideration to the local community
Biological Environment 	Proposed Project is located at developed area. Thus, there is no endanger to the surrounding in biological aspect.	No mitigation measure is required.

Health Impact 	Transmission of vector-borne disease due to availability of mosquito breeding places & contagious disease transmission like COVID-19	• Regular inspection of the mosquito breeding area shall be done to remove or treat all potential breeding habitats • Regular and comprehensive medical check-ups to monitor workers are essential for at least six months after entering
Abandonment & Closure 	Construction Stage • Require the process of equipment dismantling and removal of construction materials from the project site. Operation & Maintenance Stage • Involve dismantling of plant components and demolition of all facilities and infrastructure.	Construction Stage • Preparation of detailed abandonment plan and to be submitted to DOE. • All waste shall be properly disposed of at licensed treatment and disposal facility. • Appropriate project remediation after removing and clearing of facilities and infrastructure shall be implemented by put proper cover crops on the cleared area to prevent soil erosion.

Monitoring Programme

Performance Monitoring (PM)

- Monitoring to ensure that the pollution control systems and other mitigation measures are perform in a good condition to reduce the adverse impacts from the Proposed Project at a minimum level.

- Performance Monitoring (PM) during construction stage
  - ✓ Air Pollution Control System
  - ✓ Industrial Effluent Treatment System

- Performance Monitoring (PM) during operation & maintenance stage
  - ✓ Air Pollution Control System
  - ✓ Industrial Effluent Treatment System

Compliance Monitoring (CM)

- Monitoring activities to be carried out to ensure that the EIA condition of approval (COAs) or any regulations under Environmental Quality Act 1974 are complied.

- An environmental audit may also be carried out to assess the overall project compliance.

- Compliance Monitoring (CM) during construction stage
  - ✓ Stack Emission
  - ✓ Final discharge from IETS

- Compliance Monitoring (CM) during operation & maintenance stage
  - ✓ Stack Emission
  - ✓ Final discharge from IETS

Impact Monitoring (IM)

- Monitoring to verify that the findings of EIA study of potential impacts identified during EIA preparation stages are correct and effective in mitigation the adverse impacts to environment

- Impact monitoring (IM) during both construction and operation & maintenance stage are:
  - ✓ Water Quality
  - ✓ Ambient Air
  - ✓ Noise

Proposed Monitoring Programme

Construction Stage

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Water Quality						
W1	N 1°28'18" E 103°58'50	Upstream of proposed factory discharge point	DO, BOD5, COD, TSS, AN, pH, temperature, *E. coli*, oil and grease, turbidity, fluoride, colour, NO3-, phosphorus, sulphide,	National Water Quality Standards (NWQS) Malaysia	Impact monitoring (IM)	Monthly
W2	N 1°28'42" E 103°58'50"	Downstream of the proposed factory discharge point				
Ambient Air Quality						
A1	1°28'19.42"N 103°58'49.87"E	Near existing gas meter station area	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, O_3	Malaysia Ambient Air Quality Standard, 2020	Impact monitoring (IM)	Quarterly
A2	1°28'19.92"N 103°58'38.53"E	Near bin centre area				
A3	1°28'28.20"N 103°58'39.61"E	Near open tank yard 1				
A4	1°28'28.31"N 103°58'47.64"E	Near existing onsite detention pond 1				

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Noise Quality						
N1	1°28'19.42"N 103°58'49.87"E	Near existing gas meter station area	Leq, Lmax, Lmin	Guidelines for Environmental Noise Limits and Control, 2019	Impact monitoring (IM)	Quarterly
N2	1°28'19.92"N 103°58'38.53"E	Near bin centre area				
N3	1°28'28.20"N 103°58'39.61"E	Near open tank yard 1				
N4	1°28'28.31"N 103°58'47.64"E	Near existing onsite detention pond 1				
Chimney Monitoring						
Bag Filter 1, 2 & 3	At project site (Existing)		PM10	Environmental Quality (Clean Air) Regulations 2014	Compliance Monitoring (CM)	Annually
RRTO			PM10, SO_2, NO_2, HCl, Cl_2, Hg, H_2S and NH_3			
WLTO			PM10, SO_2, NO_2, HCl, HF, CO, NMVOC and dioxins/furan			
Thermal Oil Boiler 1 & 2			PM10, NO_2 and CO			
Steam Boiler 1 & 2			PM10, NO_2 and CO			
Fume hood chimneys 1-16			PM10 and NMVOC			
Fumehood chimneys 19-21	At project site (Existing but yet to be declare)		PM10 and NMVOC			

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Industrial Effluent Treatment System						
Industrial Effluent Final Discharge	At project site (Existing)		Temperature, pH, BOD5, suspended solid, Hg, Cd, Cr hexavalent, Cr trivalent, Ar, CN, Pb, Cu, Mn, Ni, Sn, Zn, B, Fe, Ag, Al, Se, fluoride, formaldehyde, phenol, free CL, S, oil and grease, AN, colour, COD	Environmental Quality (Industrial Effluent) Regulations 2009, Fifth and Seventh Schedule, Standard A	Compliance Monitoring (CM)	Weekly (significant parameter: BOD, COD, SS for 3 weeks) Monthly (31 parameters)
Fuel Burning Equipment/Air Pollution Control System						
Thermal oil boiler 1 & 2	At project site (Existing)		Feedwater temperature, steam temperature, gas flowrate, pressure, opacity or stack condition, fuel feeding rate	Guidance document for Fuel Burning Equipment and Air Pollution Control Systems	Performance monitoring (PM)	Daily Weekly Monthly
Steam boiler 1 & 2						
RRTO						
WLTO						
Bag filter 1, 2, 3			Pressure drop, compressed air pressure, temperature, air flowrate, opacity or stack condition	Guidebook on Performance Monitoring of Bag Filter Dust Collector		
Activated carbon filter for all fumehood			Pressure loss	Technical Guidance On Performance Monitoring Of Air Pollution Control Systems		

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Industrial Effluent Treatment System						
IETS	At project site (Existing)		Flowrate, pH, temperature, BOD, COD, SS, dissolved oxygen, aluminium (all parameter shall be monitored accordingly to each IETS unit treatment operations)	Guidebook on Performance Monitoring of Industrial Effluent Treatment System Operations	Performance monitoring (PM)	Daily Weekly Monthly

Operation & Maintenance Stage

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Water Quality						
W1'	N 1°28'18.74" E 103°58'50.46	Upstream of proposed factory discharge point	DO, BOD5, COD, TSS, AN, pH, temperature, *E.coli*, oil and grease, turbidity, fluoride, colour, NO3-, phosphorus, sulphide,	National Water Quality Standards (NWQS) Malaysia	Impact monitoring (IM)	Monthly
W2'	N 1°28'28.42" E 103°58'50.6"	Downstream of the proposed factory discharge point				
Ambient Air Quality						
A1'	1°28'19.42"N 103°58'49.87"E	Near existing gas meter station area	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, O_3	Malaysia Ambient Air Quality Standard, 2020	Impact monitoring (IM)	Quarterly
A2'	1°28'19.92"N 103°58'38.53"E	Near bin centre area				

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
A3'	1°28'28.20"N 103°58'39.61"E	Near open tank yard 1	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, O_3	Malaysia Ambient Air Quality Standard, 2020	Impact monitoring (IM)	Quarterly
A4'	1°28'28.31"N 103°58'47.64"E	Near existing onsite detention pond 1				
Noise Quality						
N1	1°28'19.42"N 103°58'49.87"E	Near existing gas meter station area	Leq, Lmax, Lmin	Guidelines for Environmental Noise Limits and Control, 2019	Impact monitoring (IM)	Quarterly
N2	1°28'19.92"N 103°58'38.53"E	Near bin centre area				
N3	1°28'28.20"N 103°58'39.61"E	Near open tank yard 1				
N4	1°28'28.31"N 103°58'47.64"E	Near existing onsite detention pond 1				
Chimney Monitoring						
Bag Filter 1, 2 & 3	At project site (Existing)		PM10	Environmental Quality (Clean Air) Regulations 2014	Compliance Monitoring (CM)	Annually
RRTO			PM10, SO2, NO2, HCl, Cl2, Hg, H2S and NH3			
WLTO			PM10, SO2, NO2, HCl, HF, CO, NMVOC and dioxins/furan			
Thermal Oil Boiler 1 & 2			PM10, NO2 and CO			
Steam Boiler 1 & 2			PM10, NO2 and CO			

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Fume hood chimneys 1-16	At project site (Existing)		PM10 and NMVOC	Environmental Quality (Clean Air) Regulations 2014	Compliance Monitoring (CM)	Annually
Fume hood chimneys 19-21	At project site (Existing and yet to submit declaration letter)		PM10 and NMVOC			
RTO 1 & 2	At project site (New)		PM10, SO_2, NO_2, HCl, Cl_2, Hg, H_2S and NH_3			
Industrial Effluent Treatment System						
Industrial Effluent Final Discharge from IETS	At project site (Existing)		Temperature, pH, BOD_5, suspended solid, Hg, Cd, Cr hexavalent, Cr trivalent, Ar, CN, Pb, Cu, Mn, Ni, Sn, Zn, B, Fe, Ag, Al, Se, fluoride, formaldehyde, phenol, free CL, S, oil and grease, AN, colour, COD	Environmental Quality (Industrial Effluent) Regulations 2009, Fifth and Seventh Schedule, Standard A	Compliance Monitoring (CM)	Weekly (significant parameter: BOD, COD, SS for 3 weeks) Monthly (31 parameters)
Fuel Burning Equipment/Air Pollution Control System						
Thermal oil boiler 1 & 2	At project site (Existing)		Feedwater temperature, steam temperature, gas flowrate, pressure, opacity or stack condition, fuel feeding rate	Guidance document for Fuel Burning Equipment and Air Pollution Control Systems	Performance monitoring (PM)	Daily Weekly Monthly
Steam boiler 1 & 2			Feedwater temperature, steam temperature, gas flowrate, pressure, opacity or stack condition, fuel feeding rate			
RRTO			Feedwater temperature, steam temperature, gas flowrate, pressure, opacity or stack condition, fuel feeding rate			

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
WLTO	At project site (Existing)		Feedwater temperature, steam temperature, gas flowrate, pressure, opacity or stack condition, fuel feeding rate	Guidance document for Fuel Burning Equipment and Air Pollution Control Systems	Performance monitoring (PM)	Daily Weekly Monthly
Bag filter 1, 2, 3			Pressure drop, compressed air pressure, temperature, air flowrate, opacity or stack condition	Guidebook on Performance Monitoring of Bag Filter		
Activated carbon filter for all fumehood			Pressure loss	Technical Guidance on Performance Monitoring Of Air Pollution Control Systems		
RTO 1 & 2	At project site (New)		Feedwater temperature, steam temperature, gas flowrate, pressure, opacity or stack condition, fuel feeding rate	Guidance document for Fuel Burning Equipment and Air Pollution Control Systems		
Industrial Effluent Treatment System						
IETS	At project site (Existing)		Flowrate, pH, temperature, BOD, COD, SS, dissolved oxygen, aluminium (all parameters shall be monitored accordingly to each IETS unit treatment operations)	Guidebook on Performance Monitoring of Industrial Effluent Treatment System Operations	Performance monitoring (PM)	Daily Weekly Monthly