

# ENVIROMENTAL IMPACT ASSESSMENT (FIRST SCHEDULE)

## PROJECT TITLE

Title of the project is "Proposed Expansion of Scheduled Waste Recovery Plant on PLO 52, PLO 58 and PLO 59 Jalan Perak 2, Kawasan Perindustrian Pasir Gudang 81700 Pasir Gudang, Johor."

## PROJECT PROPONENT



Hydro Metal (M) Sdn Bhd

## LEGAL ASPECT

Prescribed Activity Number 14: Waste Treatment and Disposal (a) Schedule waste: (i) Construction of recovery plant (off-site)

## EIA CONSULTANT

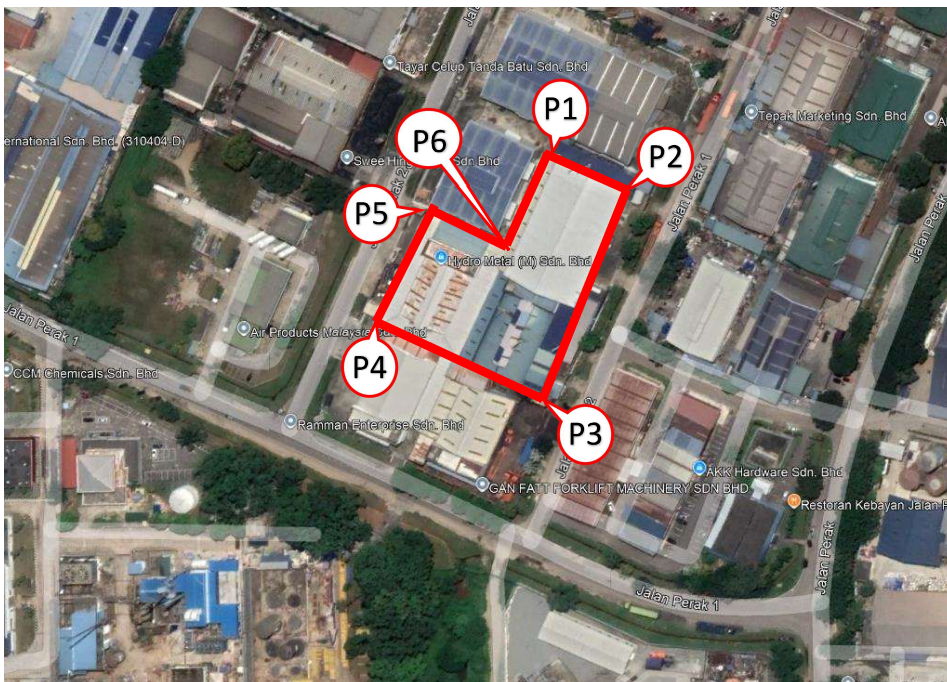


Sustainable Resources Management Sdn Bhd  
Qualified Person: Tsen King Foh "Sam"

## STATEMENT OF NEED

- Expansion of existing SW206 recovery line (IETS C) to increase capacity from 800 tonne/month (approved in EIA 2010) to 1200 tonne/month of SW206 (additioanal 400 tonne/month)

## PROJECT LOCATION



#	Latitude	Longitude
P1	1°27'20.52"N	103°53'16.32"E
P2	1°27'19.84"N	103°53'17.91"E
P3	1°27'16.60"N	103°53'16.45"E
P4	1°27'17.85"N	103°53'13.65"E
P5	1°27'19.45"N	103°53'14.37"E
P6	1°27'18.91"N	103°53'15.59"E

## PROJECT CONCEPT

- Proposed activities within existing premise with combined area of 0.7677 hA (1.897 ac).
- Addition 400 tonne/month of SW206 Spent Inorganic Acid.
- Proposed project involve expansion of IETS C by increasing approved capacity from 800 tonne/month to 1200 tonne/month
- Operating hours extend from 12 hours to 24 hours to allow sufficient time for preventive maintenance.

### NEW/ADDITIONAL RAW MATERIALS

No	Raw Material Description	Remarks	Capacity	
			tonne/day	tonne/month
1	Spent inorganic acid (SW206)	Additional Capacity	14.55	400

#### Energy Source

- Electricity supplied by Tenaga Nasional Berhad (TNB).
- Installed power load is 1000 kVA

#### Water Source and Consumption

- Syarikat Air Johor Sdn Bhd (SAJ)
- Water consumption is 350  $m^2$ /month

#### Labour Requirements

- During operation, expected labour will be 45 workers.

#### Transportation

- Transportation of raw materials and products during operation by tanker or lorry.

**PROJECT COMPONENT**

<b>Project Component</b>	<b>Unit</b>	<b>Land Area, m<sup>2</sup></b>
Factory Building PLO 52 (Existing)	1	2757.54
Factory Building PLO 58 (Existing)	1	2576.13
Factory Building PLO 59 (Existing)	1	2675.99
<b>Total Area</b>		<b>8009.66</b>
<b>Factory Building PLO 52 (Existing) :</b>		
<b>Amenities (PLO 52) (Existing)</b>		
• Guard House	1	9
• Toilet	2	24
• Car Park	4	54.4
• SW104 Storage Area	1	10
• SW325 Storage Area	1	6
• SW411 Storage Area	1	8
• SW410 Storage Area	1	6
• SW202 Storage Area	1	16
• SW110 Storage Area	1	30
• SW204 Storage Area	4	60
<b>Equipment (PLO 52) (Existing)</b>		
Press Machine	1	
<b>Factory Building PLO 58 (Existing) :</b>		
<b>Amenities (PLO 58) (Existing)</b>		
• Diesel Tank	1	3
• Chemical Store	1	16.68
• Toilet	1	12.25
<b>Equipment (PLO 58) (Existing)</b>		
• Rotary Drier	1	
• Washing Machine	2	
• Electroplating Tank	2	
• Chemical Dosing Tank	2	
• Water Tank	1	
<b>Air Pollution Control System for Chimney 3 (PLO 58) (Existing)</b>		
• Scrubber	1	
• Multicyclone	1	
• Cyclone	1	
• Blower	1	
• Chimney 3	1	
<b>Air Pollution Control System for Chimney 5 (PLO 58) (Existing)</b>		
• Scrubber	3	
• Blower	1	
• Chimney 5	1	
<b>Industrial Effluent Treatment Plant B (PLO 58) (Existing)</b>		
• Chemical Reaction Tank	3	
• Batch Reactor Tank	1	
• Neutralization Tank	1	
• Aeration Tank	1	
• Buffer Tank	1	
• Filter Press	1	
• Sand Filter	1	
• Dual Media Filter	1	
• Ion Exchanger	1	
<b>Industrial Effluent Treatment Plant C (PLO 58) (Existing)</b>		
• Chemical Storage Tank	4	
• Filter Press 1	1	
• Precipitation Reactor	1	
• AOP Reactor	1	
• Neutralization Tank	1	

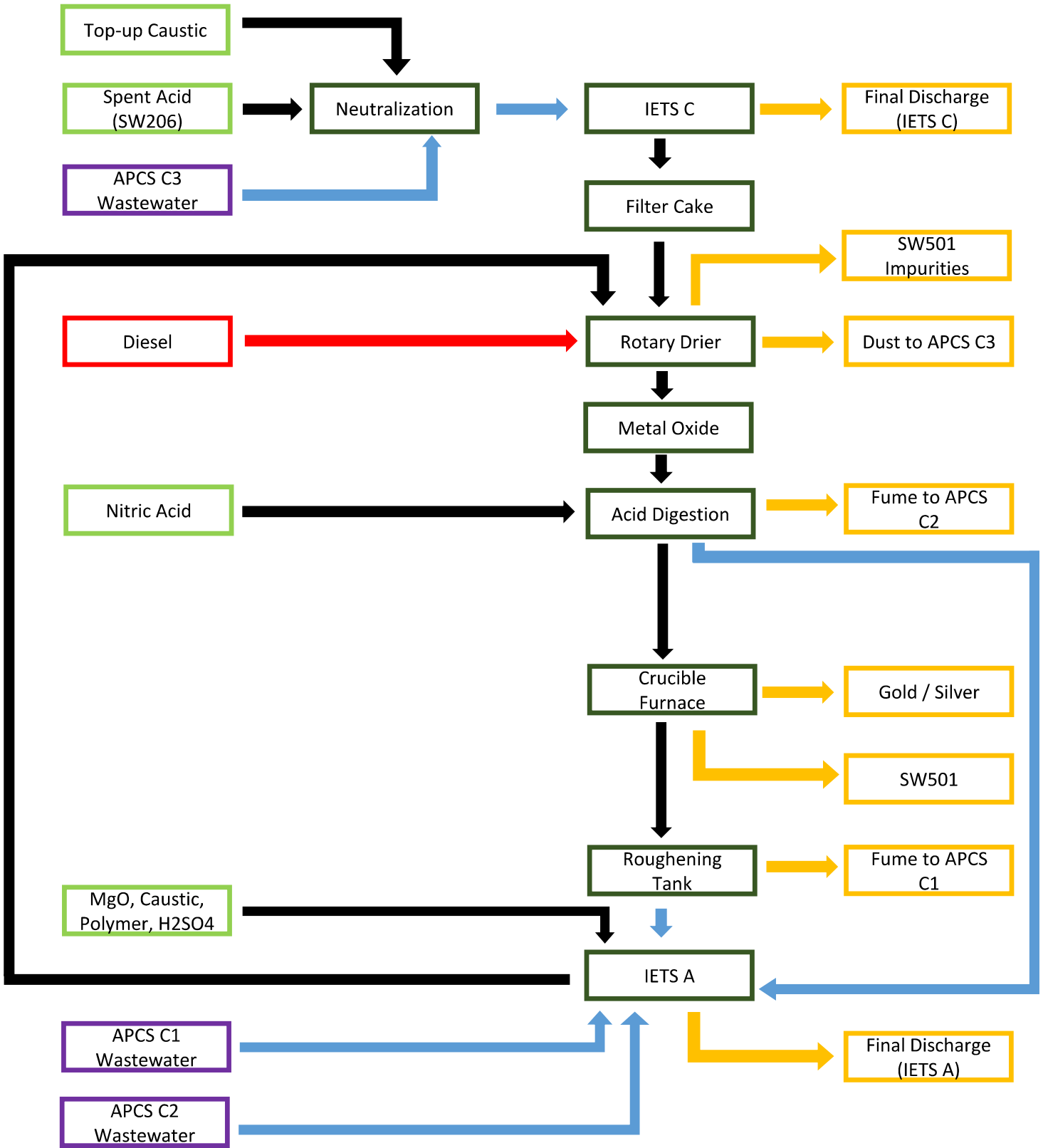
**PROJECT COMPONENT**

Project Component	Unit	Land Area, m <sup>2</sup>
<ul style="list-style-type: none"> <li>• Filter Press 2</li> <li>• Aeration Tank</li> <li>• Sand Filter</li> <li>• PM Filter</li> <li>• Granular Activated Carbon Filter</li> <li>• Ion Exchanger Filter</li> </ul>	<p>1</p> <p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>2</p>	
<b>Factory Building PLO 59 (Existing) :</b>		
<b>Amenities (PLO 59) (Existing)</b>		
<ul style="list-style-type: none"> <li>• Laboratory</li> <li>• Toilet</li> <li>• Office</li> <li>• SW325, SW204 Storage Area</li> <li>• SW501 Storage Area</li> <li>• Finish Product Storage</li> <li>• Chemical storeroom 1</li> <li>• Chemical storeroom 2</li> <li>• Utility Room</li> <li>• Genset</li> <li>• Wash Basin</li> <li>• Maintenance Room</li> <li>• Car Park</li> </ul>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>4</p>	<p>18.6</p> <p>18.3</p> <p>25.44</p> <p>56</p> <p>35.6</p> <p>11.22</p> <p>58.22</p> <p>10.56</p> <p>24.5</p> <p>2.3</p> <p>5.26</p> <p>28.54</p> <p>54.4</p>
<b>Equipment (PLO 59) (Existing)</b>		
<ul style="list-style-type: none"> <li>• SW206 Storage Tank</li> <li>• Shredder</li> <li>• Fume Hood</li> <li>• Operation Hood</li> <li>• Cabinet Hoods</li> <li>• Crucible Furnace</li> </ul>	<p>6</p> <p>1</p> <p>19</p> <p>2</p> <p>4</p> <p>1</p>	
<b>Air Pollution Control System for Chimney 1 (PLO 59) (Existing)</b>		
<ul style="list-style-type: none"> <li>• Roughening Tank</li> <li>• Wet Scrubber</li> <li>• Blower</li> <li>• Chimney 1</li> </ul>	<p>1</p> <p>4</p> <p>2</p> <p>1</p>	
<b>Air Pollution Control System for Chimney 2 (PLO 59) (Existing)</b>		
<ul style="list-style-type: none"> <li>• Scrubber</li> <li>• Blower</li> <li>• Chimney 2</li> </ul>	<p>1</p> <p>2</p> <p>1</p>	
<b>Air Pollution Control System for Chimney 4 (PLO 59) (Existing)</b>		
<ul style="list-style-type: none"> <li>• Scrubber</li> <li>• Blower</li> <li>• Chimney 4</li> </ul>	<p>1</p> <p>2</p> <p>1</p>	
<b>Industrial Effluent Treatment Plant A (PLO 59) (Existing)</b>		
<ul style="list-style-type: none"> <li>• Treated Water Tank</li> <li>• Heavy Metal Ion Exchanger</li> <li>• Dual Media Filter</li> <li>• pH Adjustment Tank</li> <li>• Filter Press</li> <li>• Buffer Tank</li> <li>• Sand Filter</li> <li>• Chemical Mixing Tank</li> <li>• Batch Reaction Tank</li> <li>• Equalization Tank</li> <li>• Sequential Batch Reactor</li> </ul>	<p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>2</p>	

# PROJECT DESCRIPTION

Operation

Overall Process



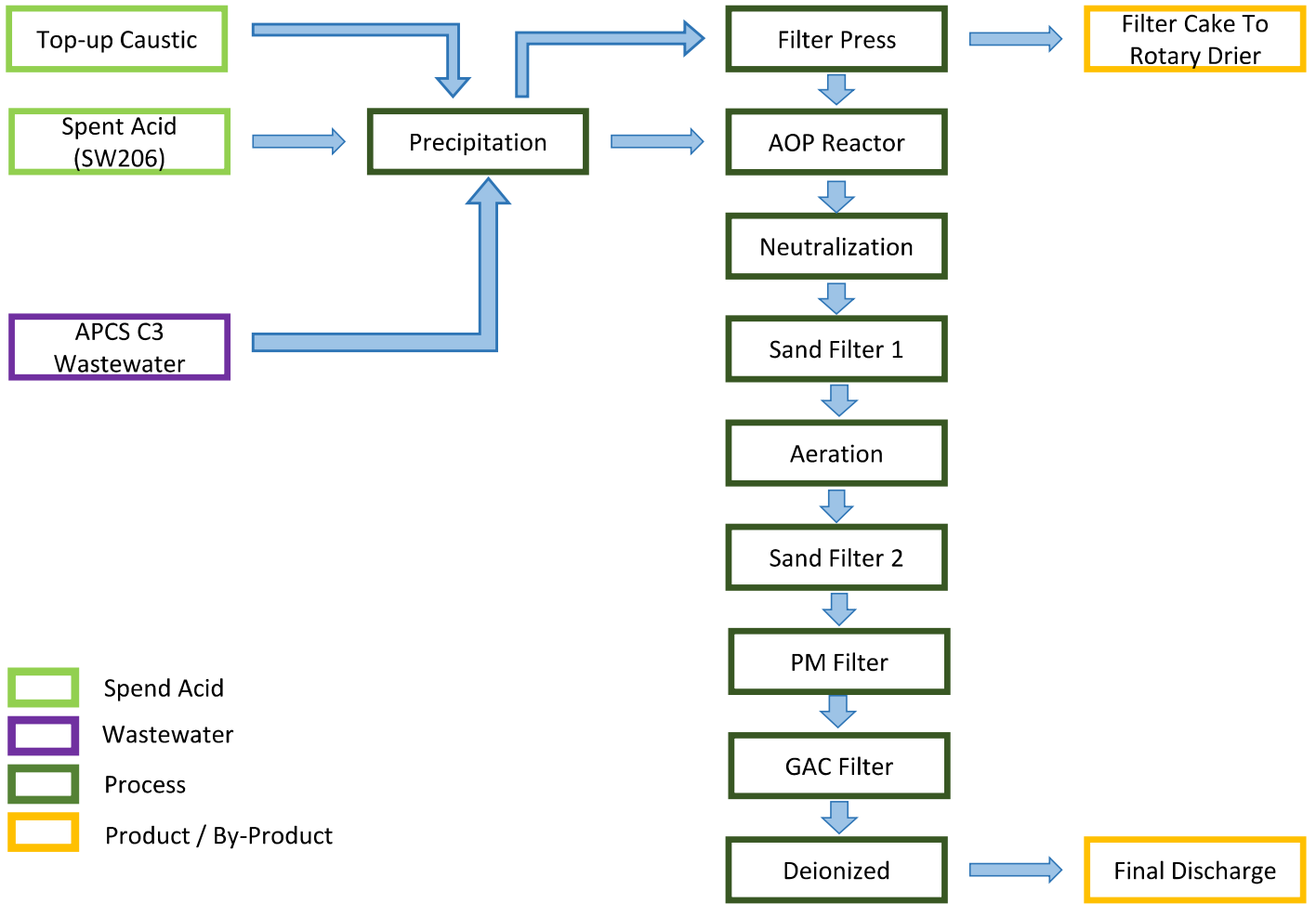
- Raw Material
- Fuel
- Wastewater
- Process
- Product / By-Product

- Material Flow
- Wastewater Flow
- Product / By-Product Flow
- Fuel Flow

# PROJECT DESCRIPTION

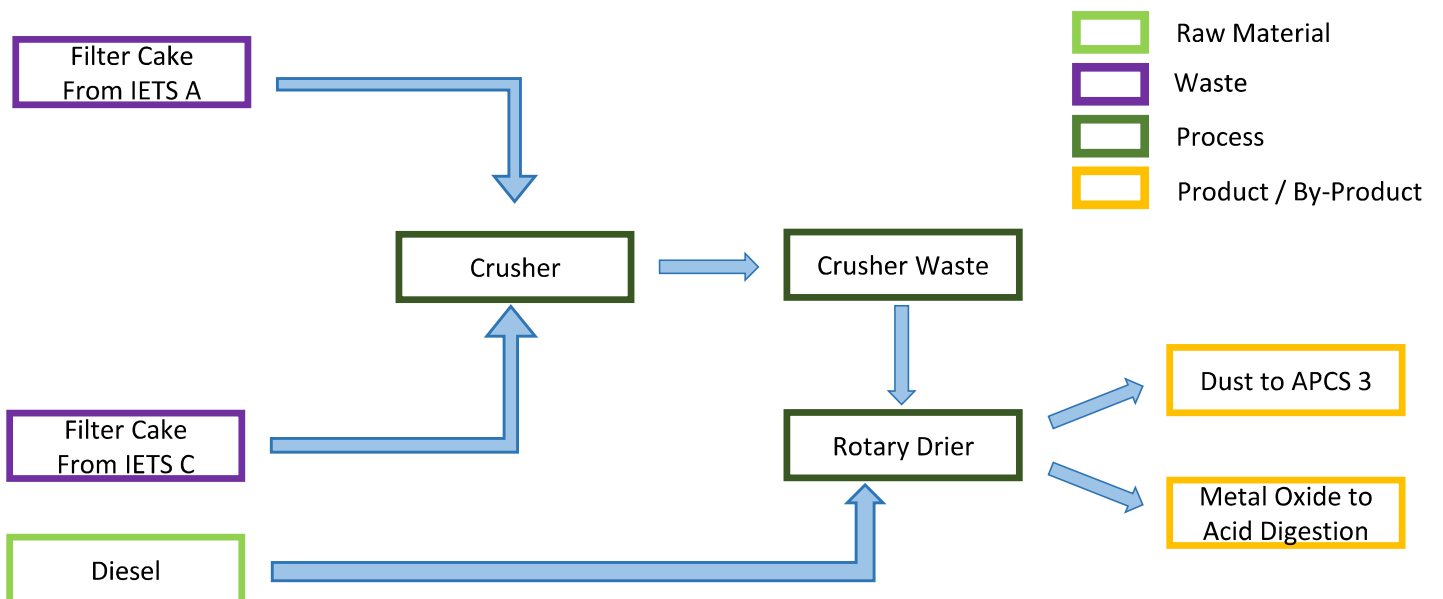
## Operation (IETS C)

## Neutralization Process



## Operation

## ROTARY DRIER



# PROJECT ACTIVITIES

## Operation Stage (Proposed in this EIA)

- Neutralization of SW206 with caustic soda
- Increase operating hours of rotary drier and IETS from 12 hours to 24 hours to allow sufficient time for preventive maintenance.

# EXISTING ENVIRONMENT

## Physical Characteristics

- The project site is an existing factory located within industrial area.

## Geological and Soil Condition

- Geological age is Quaternary
- The additional capacity on the process does not require any expansion on the site.

## Meteorology Wind

- Wind dominant from North with annual frequency 22.1 %
- Highest calm wind recorded 26.2%
- Highest mean wind speed 2.4m/s

## Rainfall

- Average Annual rainfall 2581.6 mm

## Temperature

- 1994 to 2023 Data
- Highest mean temperature 27.6°C in year 2016
- Lowest mean temperature 25.9 °C in year 2008

## Relative Humidity

- Lowest mean 24-hour RH : 82.9% in year 2005
- Highest mean 24-hour RH : 87.0% in year 2008

## Secondary Air Quality Records

- Data from telemetric station near Pasir Gudang
- API reading of near Pasir Gudang stations in year 2022 recorded 24.86% of days with good air quality and 75.14% at moderate status

# BASELINE WATER QUALITY MONITORING LOCATIONS



Station	Coordinates	Class	WQ Status
W1	1° 27'17.91"N 103° 53'17.08"E	II	Clean
W2	1° 27'16.24"N 103° 53'16.38"E	III	Slightly Polluted
W3	1° 27'13.87"N 103° 53'17.89"E	V	Polluted
W4	1° 27'15.62"N 103° 53'13.94"E	IV	Polluted
W5	1° 27'14.15"N 103° 53'14.96"E	V	Polluted
W6	1° 26'54.26"N 103° 53'15.31"E	III	Slightly Polluted

## BASELINE AIR, ODOUR & NOISE CLIMATE MONITORING LOCATIONS



### Ambient Air, Odour & Noise Climate Sampling

Air Station	Noise Station	GPS Coordinates
A1	N1	1° 27'17.96"N 103° 53'17.43"E
A2	N2	1° 28'03.79"N 103° 53'30.99"E
A3	N3	1° 27'20.44"N 103° 54'20.19"E
A4	N4	1° 28'07.97"N 103° 52'10.28"E

# IMPACT ASSESSMENT DURING OPERATION

Main impact during operation:

## Air Pollution



- Significant air pollutants emitted from the schedule waste recovery facility are PM10, PM2.5, NO<sub>2</sub>, SO<sub>2</sub>, and VOC

## Noise Pollution



- Multiple sources of noise are identified such as the rotary drier, crucible furnace, blowers, genset, filter presses, and chimneys.

## Water Pollution



- Potential water pollution is effluent discharge from IETS.

## Hazards



- Identified events are potential fire at diesel tank, crucible furnace, and rotary drier

## Land Contamination



- Potential spillage of scheduled waste.
- Leakage of oil from machineries under repair.

## Waste Generation



- Solid waste: generated from domestic sources (workers) and trade waste.
- Scheduled waste contain potential hazardous substances.

# MITIGATION MEASURES DURING OPERATION

Proposed mitigation during operation:

## Air Pollution



- Fume and dust emission mitigated using existing Air Pollution Control System (APCS)s.
- No further mitigation measures needed

## Noise Pollution



- No further mitigation measures needed

## Water Pollution



- Effluent will be treated to Standard B before discharge using existing IETS.

## Hazards



- Fire safety systems, inspection and maintenance procedures, emergency response plan, etc. will be implemented and adhered to at proposed site.
- Quality control in the process.
- Operation control includes on-site operator to facilitate loading/unloading operations, various automated safeguard alarms, safety valves and shut off protection.
- Regular maintenance / inspection.
- ERP, incident / accident reporting and documentation.

## Land Contamination



- Prevent water pollution and proper management of wastes.
- Emergency Response Plan to clean up any spillage.
- Comprehensive training programme for employees.

## Waste Generation



- Domestic waste: provide bin center and Mobile Garbage Bins (MGB).
- Trade wastes: metal and plastic scrap sold to licensed scrap collectors and unrecoverable disposed into landfill.
- Scheduled waste: store in designated scheduled waste store comply with Guideline for Packaging, Labelling and Storage of Scheduled Waste in Malaysia.

## PERFORMANCE MONITORING

### Performance Monitoring on APCS during Operation:

#	Aspect	System	Type of Maintenance	Frequency of Maintenance
1	Air Quality	Scrubber	Check recycle water flow rate	Daily
			Check scrubbing liquid pH value	
			Check discharge wastewater flow rate	
			Check discharge wastewater pH value	
			Check scrubber overall pressure drop	
			Check pressure drop across mist eliminator	
			Check pressure drop across packing	
			Check inlet & outlet temperature of gas stream	
			Check air flow rate	
			Check visually stack emission condition	
			Check recirculation pump discharge pressure	Weekly
			Check fan motor operating current	
			Check circulation pump motor operating current	
			Check fan vibration	Monthly
			Check pump vibration	
			Check pump/ piping leakages	
			Check fan motor temperature	
			Check spray nozzles plugging or leaks	
			Check pump motor temperature	
			Inspect fan on material built-up	Semi-annually
Inspect fan drive mechanism, bearing, belt tension , grease level	Half-yearly			
Inspect mist eliminator for any solid build-up				
Inspect packing for any fouling				
Pump servicing – replace bearing, grease & mechanical seal (for end suction centrifugal pump)				
Verify accuracy of monitoring instruments and calibrate	Annually			
Inspect physical condition of scrubber, housing, ductwork				
Overall system cleaning				

#	Aspect	System	Type of Maintenance	Frequency of Maintenance
1	Air Quality	Cyclone	Record cyclone pressure drops.	Daily
			Record fan motor amperage.	
			Inspect dust discharge hopper to assure dust is removed.	
			Check fan bearings.	Weekly
			Check gaskets, valves, and other opening for leakage	
			Check for signs of corrosion and other signs of deterioration	Monthly
Inspect inlet and outlet for dust-build up				

## PERFORMANCE MONITORING

### Performance Monitoring for IETS A :

#	Unit Operation	Parameter	Sample location	Sampling frequency
1	Equalization Tank	Flow	Tank Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily
2	Batch Reactor Tank	Flow	Tank Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily
3	Filter Press	Flowrate	Influent	Daily
		Inspection of press	-	Weekly
4	Buffer Tank	Flow	Tank Outlet	Daily
		Inspection of tank	-	Monthly
5	Aeration Tank	DO	3 points in aeration tank	Daily
		MLSS	in aeration tank	Daily
		MLVSS	-	Weekly
		SVI	aeration effluent	Daily
		pH	In aeration tank	Daily
		SS of RAS	RAS line	Daily
		SS of WAS	WAS line	Daily
		F/M ratio	-	Weekly
		SOUR	In aeration tank	Weekly
6	pH Adjustment Tank	Flow	Tank Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily
7	Sand Filter	Flow Rate	Tank Outlet	Continuously / Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		Pressure drop		Continuously / Daily
		SS		Daily / Weekly
		Turbidity		Daily / Weekly
8	Dual Media Filter	Flow Rate	Tank Outlet	Continuously / Daily
		Pressure drop		Continuously / Daily
		SS		Daily / Weekly
		Turbidity		Daily / Weekly
9	Ion Exchange Column	Flow	Column Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily
10	Treated Water Tank	Flowrate	Influent	Daily
		Inspection of tank	-	Monthly

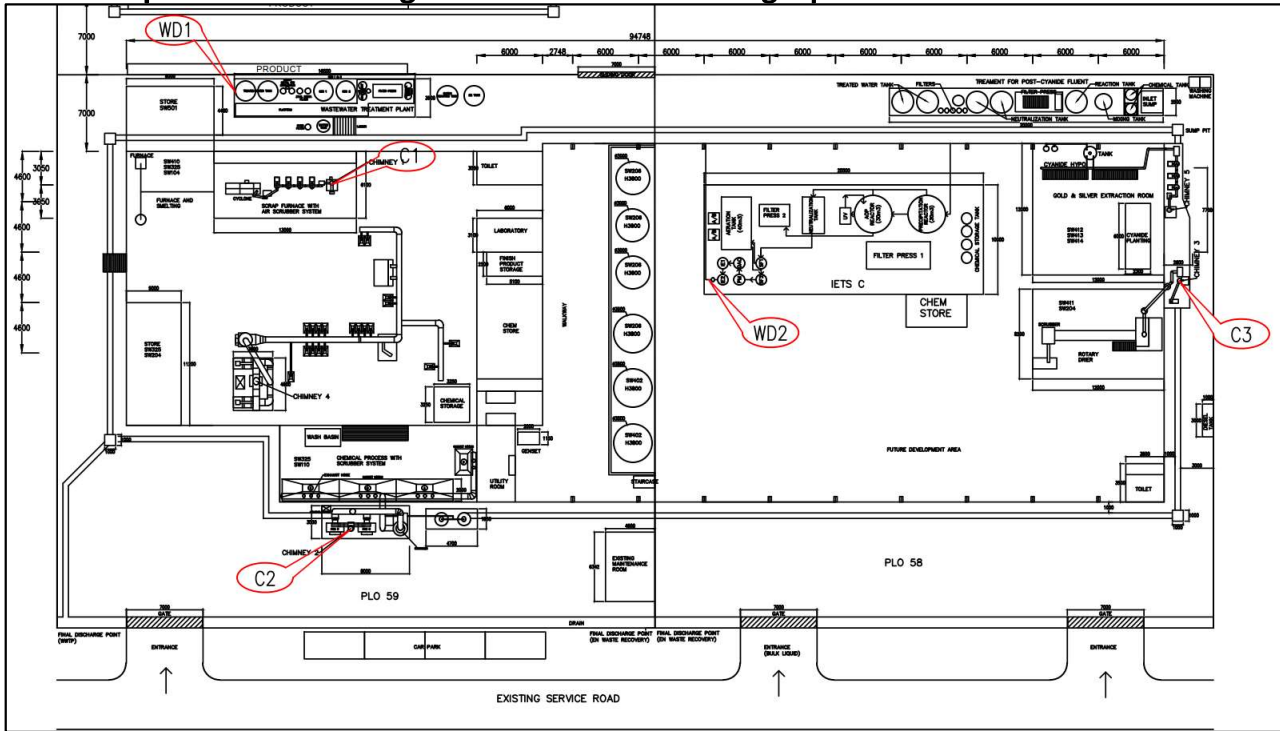
## PERFORMANCE MONITORING

Performance Monitoring on IETS C :

#	Unit Operation	Parameter	Sample location	Sampling frequency
1	Filter Press	Flowrate	Influent	Daily
		Inspection of press	-	Monthly
2	Precipitation Tank	Flow	Tank Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily
3	AOP Reactor	Flow	Tank Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily
4	Neutralization Tank	Flow	Tank Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily
5	Sand Filter 1 Sand Filter 2	Flow Rate	Tank Outlet	Continuous/Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		Pressure drop		Continuous/Daily
		SS		Daily/Weekly
		Turbidity		Daily/Weekly
6	PM Filter GAC Filter	Flow Rate	Tank Outlet	Continuous/Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		Pressure drop		Continuous/Daily
		SS		Daily/Weekly
		Turbidity		Daily/Weekly
7	Aeration Tank	DO	3 points in aeration tank	Daily
		MLSS	in aeration tank	Daily
		MLVSS	-	Weekly
		SVI	aeration effluent	Daily
		pH	In aeration tank	Daily
		SS of RAS	RAS line	Daily
		SS of WAS	WAS line	Daily
		F/M ratio	-	Weekly
		SOUR	In aeration tank	Weekly
8	Ion Exchange Column	Flow	Column Outlet	Daily
		BOD <sub>5</sub>		Weekly
		COD		Daily
		pH		Daily
		Metals		Daily

# COMPLIANCE MONITORING (CM) DURING OPERATION

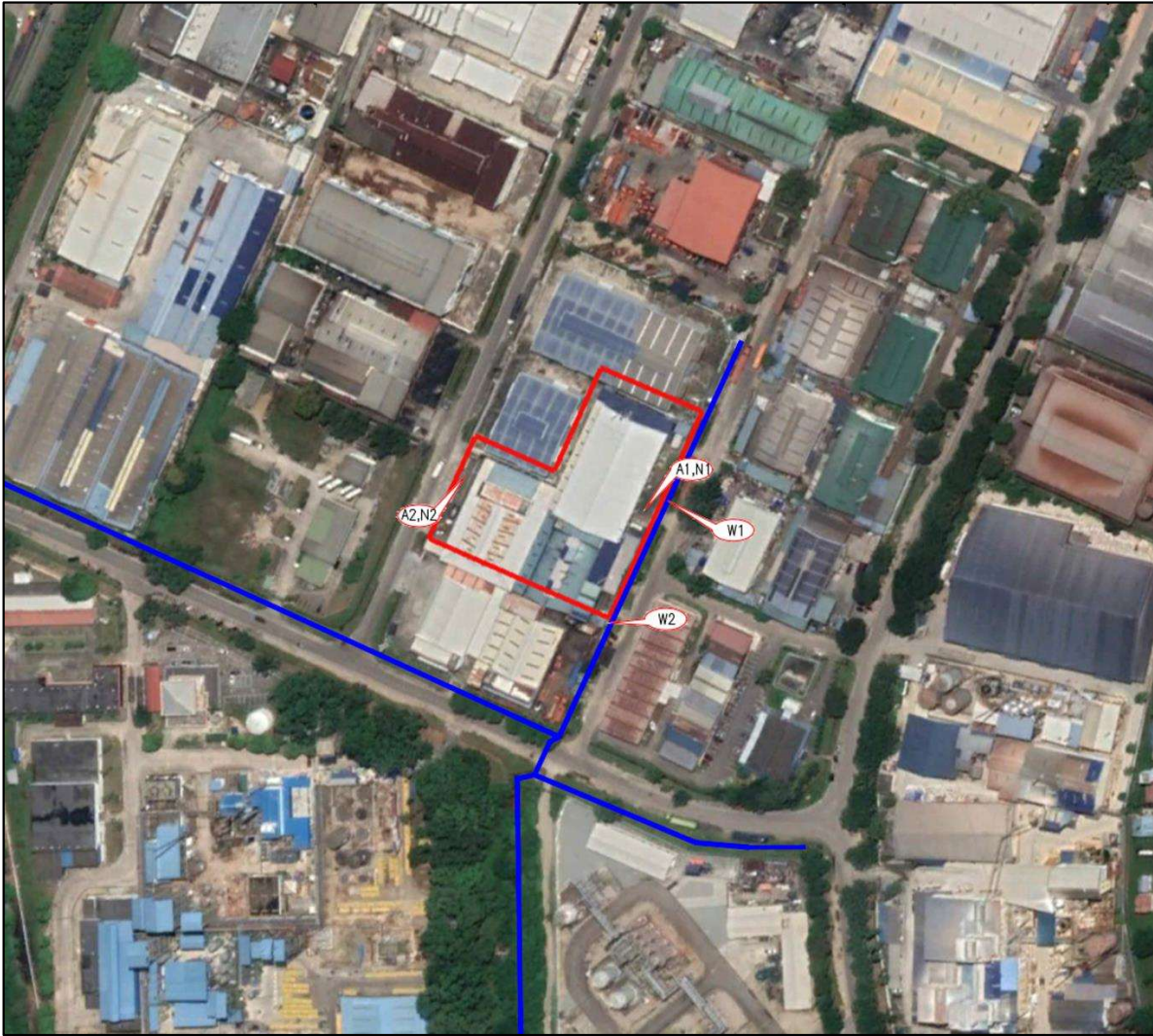
## Location of Compliance Monitoring for APCS and IETS during Operation



### Compliance Monitoring During Operation

Environment	Parameter / Unit with Limit Value	Frequency of Monitoring	Compliance Level	Reporting Requirement	Monitoring Locations
Effluent Discharge IETS	Temperature (40 °C) pH (5.5-9.0) COD (200 mg/L) BOD at 20°C (50 mg/L) Suspended Solids (100 mg/L) Arsenic (0.10 mg/L) Lead (0.5 mg/L) Copper (1.0 mg/L) Manganese (1.0 mg/L) Nickel (1.0 mg/L) Tin (1.0 mg/L) Zinc (2.0 mg/L) Phenol (1.0 mg/L) Sulphide (0.50 mg/L) Colour (200 ADMI) Oil and grease (10 mg/L) Cyanide (0.1 mg/L) Mercury (0.05 mg/L) Cadmium (0.02 mg/L) Chromium, Hexavalent (0.05 mg/L) Chromium, Trivalent (1.0 mg/L) Boron (4.0 mg/L) Iron (Fe) (5.0 mg/L) Aluminium (15 mg/L) Selenium (0.5 mg/L) Barium (2.0 mg/L) Fluoride (5.0 mg/L) Formaldehyde (2.0 mg/L) Free Chlorine (2.0 mg/L) Ammoniacal Nitrogen (20 mg/L)	Monthly	Results to be compared to: Environment Quality (Industries Effluent) Regulation 2009 Standard B	Report submit to DOE and Majlis Bandaraya Pasir Gudang (MBPG) quarterly	WD1, WD2
Chimney	Total PM (5 mg/m <sup>3</sup> ) SO <sub>x</sub> (400 mg/m <sup>3</sup> ) NO <sub>x</sub> (350 mg/m <sup>3</sup> ) VOC (20 mg/m <sup>3</sup> )	Half yearly	Result to be compared to: Baseline and Environmental Quality (Clean Air) Regulations 2014 (Schedule 2)	Report to DOE half yearly.	C1, C2, C3

# IMPACT MONITORING (IM) DURING OPERATION



## Impact Monitoring During Operation

Environment	Parameter / Unit	Frequency of Monitoring	Compliance Level	Reporting	Locations
Ambient Water	Temperature Dissolved Oxygen DO Biochemical Oxygen Demand BOD5 Chemical Oxygen Demand COD Total Suspended Solids TSS pH Ammoniacal Nitrogen NH3-N	Quarterly	Results compared to: Baseline & National Water Quality Standards for Malaysia NWQS Class III	Report submit to DOE and MBPG quarterly.	W1, W2
	PM2.5 PM10 SO <sub>x</sub> NO <sub>x</sub> VOC				A1, A2
Ambient Air		Quarterly	Results compared to: Baseline & Malaysia Ambient Air Quality Standard MAAQS 2020		
Noise Climate	L <sub>Aeq</sub> (Day) L <sub>Aeq</sub> (Night)	Quarterly	Results to be compared to: DOE 2019 (Guidelines) Second Schedule Day: 75dBA Night: 75dBA		N1, N2

## LOCATION OF IMPACT MONITORING (IM)

### During Operation

Type of Monitoring	Aspect	Station	Location	Description	Coordinates
Impact	Ambient Water	2	W1	Concrete drain at Jalan Perak 2. Upstream of project site.	1°27'17.91"N 103°53'17.08"E
			W2	Concrete drain at Jalan Perak 2. Downstream of W1.	1°27'16.24"N 103°53'16.38"E
	Ambient Air	2	A1	South Boundary of project site.	1°27'18.59"N 103°53'17.13"E
			A2	North Boundary of project site.	1°27'18.58"N 103°53'14.10"E
	Noise Climate	2	N1	South Boundary of project site.	1°27'18.59"N 103°53'17.13"E
			N2	North Boundary of project site.	1°27'18.58"N 103°53'14.10"E