Executive Summary

Environmental Impact Assessment (2nd Schedule)

Proposed Recycle Pulp & Packaging Paper Plant

Lot 79114, Tanjung Duabelas, Kuala Langat, Selangor

Project Proponent

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Overview

Location
PT47767 (110.27 ac ;44.62 ha)

Zoning
Industrial

Raw material
2,226,000 MT/yr
Recycle/Waste paper

Other Components

Waste paper yard
Finished product warehouse
Raw water intake station
Water treatment plant
Solid waste sorting plant
Wastewater treatment plant
Co-generation plant
Thermal treatment plant

Phasing

Phase 1 (Sep 2021)	Phase 2 (Sep 2024)
Dry pulp board	PM49 paper line
PM47 paper line	PM50 paper line
PM48 paper line	

Production Output
1,460,000 MT/yr
High strength packaging paper

600,000 MT/yr
Dry pulp board

Statement of Need

Increased Demand
for boxboard and corrugated paper products. Demand expected to reach 10 million tons by 2019.

Environmentally Friendly
Project will use recycled waste paper to produce the needed paper pulp. Will also reduce the amount of electricity consumed

Foreign Direct Investment (FDI)
Establishment of the Project expected to bring in FDI amounting to RM1.1 billion and a profit tax of RM50 million

Economic Growth
ASEAN region is forecasted to be the next export/production hub

Employment
The Project is expected to produce 1,000 additional employment; 800 will be designated for local hire

Advanced Technology
Utilisation of advanced paper making technology reduces effluent discharge and resource consumption.

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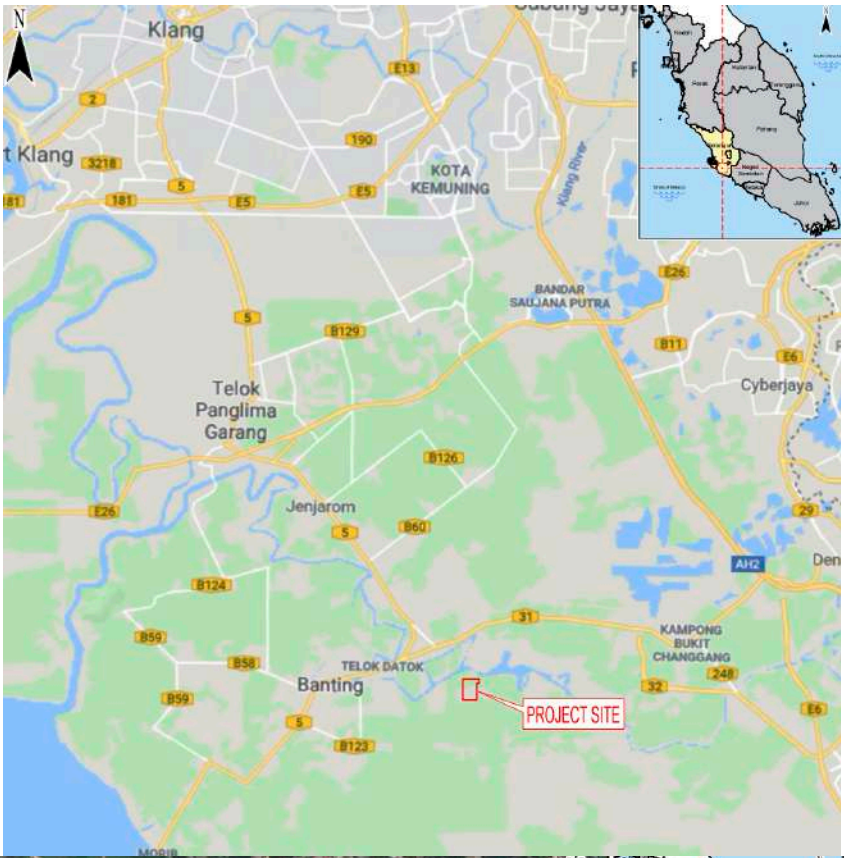
Project Location



No.	Coordinate
1	2°48'45.94"N 101°32'37.36"E
2	2°48'45.94"N 101°32'57.73"E
3	2°48'19.67"N 101°32'54.59"E
4	2°48'19.55"N 101°32'37.35"E

Legend:

- Project Site (110.27 acres)
- PT 47767 (225.661 acres)

Scale:

0 350 700 Meters

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Project Layout

Source: Kebenaran Merancang Harbour Home Sdn Bhd (2019)

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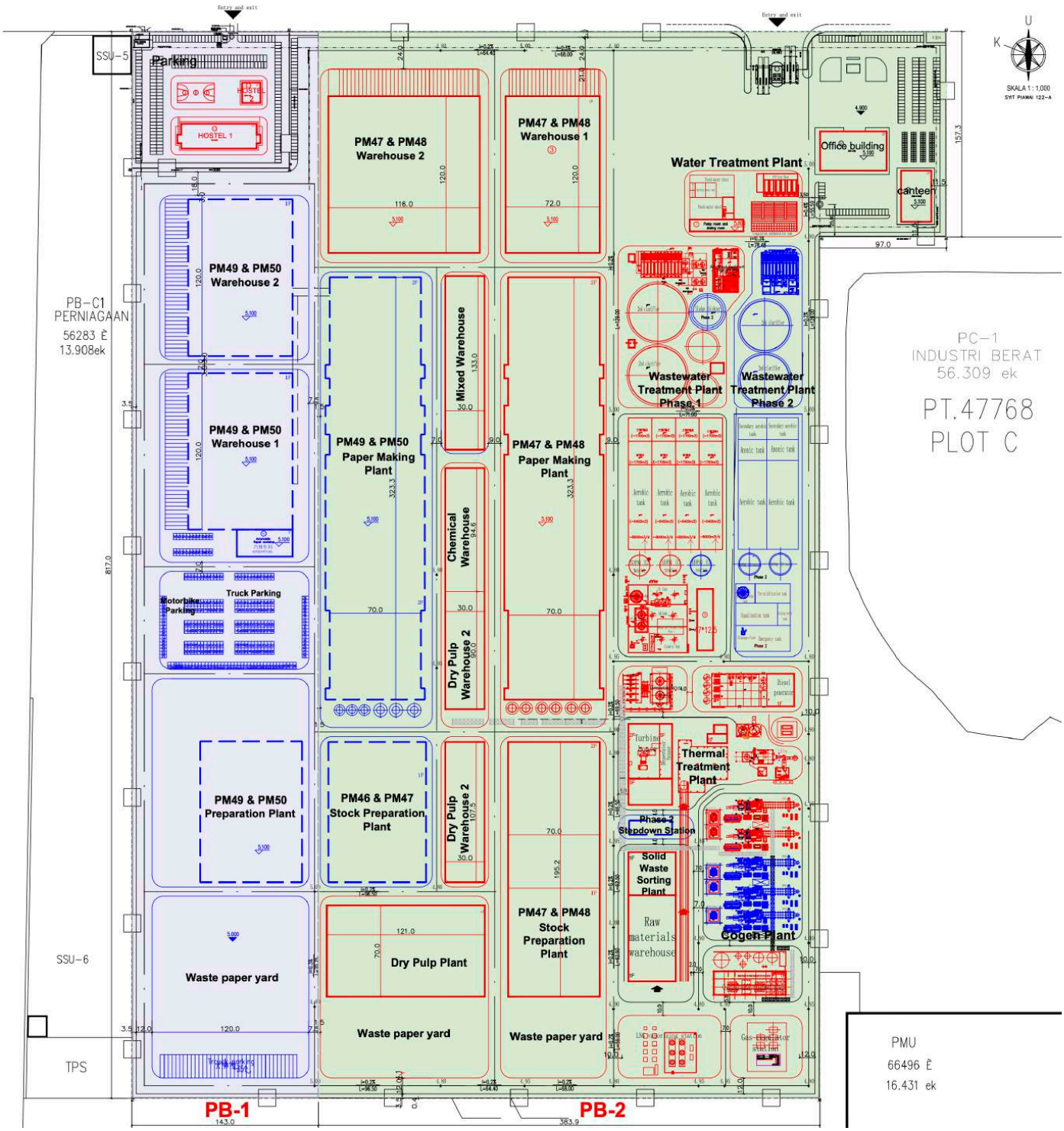
Project Layout



Legend:

- Phase 1
- PB-1
- Phase 2
- PB-2

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Project Concept

Solid Waste Sorting Plant

Capacity	874 MT/d (light rejects)
	41 MT/d (heavy rejects)
Waste moisture content	50%

Water Treatment Plant

Capacity	53 MLD
Intake Volume	51.3 MLD
Treated water to WWTP	48 MLD
Consumed	3.8 MLD
Storage capacity	5 MLD

Production Capacity

Paper Plant	Production Capacity (metric tons/year)
Phase 1 (Year 2021)	
Dry Pulp Board	600,000
PM47 Packaging Paper	400,000
PM48 Packaging Paper	300,000
Phase 2 (Year 2023)	
PM49 Packaging Paper	400,000
PM50 Packaging Paper	360,000

Wastewater Treatment Plant

Capacity	50 MLD
Influent	48 MLD
Discharge	47.9 MLD (Max)
Treated	38.7 MLD
Flowrate	1,611 m^3/hour
Reused	9.2 MLD
3-stage Treatment system	1. Anaerobic
	2. Aerobic
	3. Fenton

Thermal Treatment Plant

Steam production	88 t/h
System	Circulating fluidised bed combustion system
Fuel	Waste from plant operations (light rejects, pulp rejects, wastewater sludge, etc.,)
APCS	Dry desulfurisation
	Selective non-catalytic reduction
	Fabric filter
	Activated carbon injection system

Waste Acceptance Criteria

Grade	HS Code	Total Out Throw	Prohibitive Material	Allowable Moisture
Special OCC	4707100000	≤ 5%	≤ 1.5%	≤ 12%
Normal OCC	4707200000	≤ 10%	≤ 2%	≤ 12%
Normal OCC	4707300000	≤ 20%	≤ 2%	≤ 12%

Co-Generation Plant

Capacity	160 MW	**Supporting Facility**
Fuel	Natural gas	Heat recovery steam generator
No. of Turbines	5 (1 standby)	
Steam generation	286 t/hr	Demineralisation plant
		Deaerators

Worker's Dormitory

	Building Height	No. of Storeys	No. of Rooms
Dorm 1	25.2m	6	28
Dorm 2	29.1m	8	208

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Project Activities

Pre-Construction Phase

Topographic Survey

Conducted in October 2018 by the owner of the proposed industrial park.

Soil Investigation Study

- Conducted in November 2018 by Bumimetro Engineering Corporation Sdn. Bhd.
- Involving a total of 51 boreholes involving SPT tests, soil & groundwater sampling and laboratory analysis

Earthwork Phase

- Earthwork was conducted by Harbour Home Sdn. Bhd. and currently in progress.
- Works are approved under the proposed industrial park EIA

Earthwork Item	Estimated Volume (m^3)	
Cut	0	
Fill	Phase 1	556,050
	Phase 2	361,792
	TOTAL	917,842

Construction Phase

Piling and Foundation Works

Based on various design and legal requirements, the Project will utilize the hydrostatic piles foundation system

Construction of Buildings/Structures

Construction will involve brick works and masonry for creating the structural framework

Infrastructure & Utility Development

Temporary facilities will be provided for the purpose of construction including roads, electrical and water requirements.

Landscaping

Upon completion, where suitable, landscaping works will be conducted for aesthetic and erosion minimization purposes.

Project Implementation Schedule

The Project will be implemented in two (2) phases over a period of six (6) years:

- Phase 1: October 2020 to June 2022
- Phase 2: December 2023 to March 2025

Legal Requirement (EIA Order 2015)

Second Schedule:

i. Activity 6, Industry (e): Pulp or Pulp and Paper with production capacity of 50 tonnes or more per day

ii. Activity 14 (a) (i) Scheduled Waste: Construction of a thermal treatment plant; and

iii. Activity 14 (b) (i) Solid Waste: Construction of a thermal treatment plant

First Schedule:

iv. Activity 11 (a) Power Generation and Transmission: Construction of steam generated power station using fossil fuels (other than coal) and having the capacity of 10 megawatts or more, with or without transmission line

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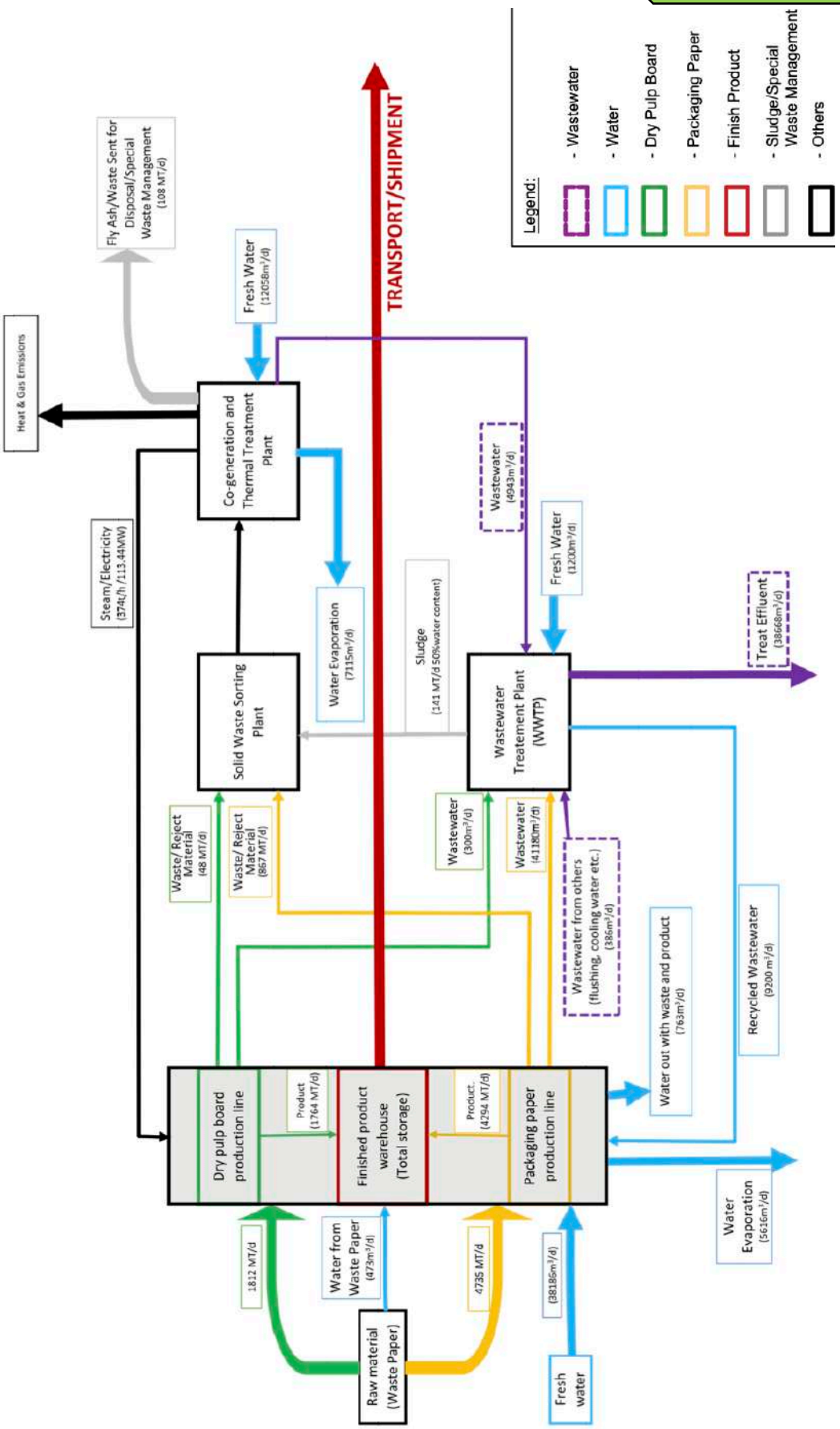
Overall Flow Diagram



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Existing Environment

Topography

Relatively Flat
Elevation between 0.64 – 4.06 m

Soil

Upper layers are silt & sand with presence of clay and gravel
Lower layers are primarily sand with occasional silt

Geology

Sedimentary bedrock of Kenny Hill Formation
Uppermost layer of the Beruas formation
Consist of clay, sandy clay and peat
Water table at 0.6 – 2.0 m below ground

Hydrology

Located within Sg. Langat Basin
Major tributaries include Sg. Lui, Sg. Semenyih, Sg. Beranang and Sg. Labu
11 WTPs are located within the basin
Seven (7) other industrial water abstrctors are present upstream and downstream of NDP

Socio-Economy

Located within BP1: Tanjung Dua Belas & BPK 1.10: Sungai Kelambu.
BP1 has the highest population growth in Kuala Langat

Hydrogeology

Project is located within an area with high groundwater level
If groundwater is viable for use, NDP will consider its usage in their operation
Sustainable groundwater yield is estimated at 45 MLD

Terrestrial Ecology

Recorded species include:

- 152 plant species
- 54 bird species
- 16 species of mammals
- 19 species of reptiles

Most recorded species were classified as 'Least concern' under the IUCN classification barring a few including:

- Green Iora
- Lesser wooly horseshoe bat
- Blyth's river frog

Climate & Meteorology

Wind Speed

Fluctuates between 1.2 - 2.7 m/s
Highest average in February (2.1 m/s)
Lowest average in November (1.6 m/s)

Rainfall

Highest in November (3,458 mm)
Lowest in June (1,204 mm)

Rain days

Highest in November (245 days)
Lowest in February (102 days)

Temperature

Highest average in May & June (28.3°C)
Lowest average in November (27°C)

Relative Humidity

Highest average in November (84.9%)
Lowest average in February (74.9%)

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Existing Environment

Community Health

Vector-Borne Disease
Lower case of Dengue (1,232 notifications)
Lower case of Malaria (3 notifications)

Zoonotic & Re-emerging Disease
Lower case of HFMD (1,342 notifications)
Lower case of Leptospirosis 35 notifications)

Vaccine Preventable Disease
Lower case of Measles (17 notifications)
Lower case of Pertussis (9 notifications)
No case of Diphtheria
Lower case of Tetanus (1 notification)
Lower case of Hep. B (38 notification)

Food Water-Borne Disease
Lower case of food poisoning (44 notifications)
Lower case of Dysentery (7 notifications)
Lower case of Typhoid disease (1 notification)
No case of Hep. A

Airborne Disease
Lower case of Tuberculosis (177 notification)
Lower case of Leprosy (1 notification)

Sexually Transmitted Infections
Lower case of HIV (247 notifications)
Lower case of AIDS (32 notifications)
Lower case of Syphilis (22 notifications)
Lower case of Gonorrhea (3 cases)
No case of Hep. C

Traffic

3 traffic survey stations are located within proximity of Project area.
All 3 stations recorded their respective road performance at LOS F.
Road traffic growth between 0.45 – 3.72% per year.

Aquatic Ecology

Recorded species include:
- 6 phyla of phytoplankton
- 3 phyla of zooplankton
- 3 phyla of macrobenthos
- 3 species of fish
- 9 riparian vegetation species

Environmental Baseline Investigation

Air Quality
All measured parameters comply with MAAQS limits.
Dioxin and Furan were measured below the limit of the Dioxin and Furan Regulation 2004.

Noise
Noise level were generally below the industrial limit of 70 dBA for day and night.
Day and night exceedance were only recorded in 2 locations.
Noise mainly from day-to-day activities of villagers

Vibration
Recorded vibration levels were generally below Curve B

Groundwater
Exceedance was recorded for 11 parameters; Conductivity, pH, Turbidity, BOD, COD, Ammonia, Sulphate, As, Cd, Fe, Pb, Mn and Se.

Odour
Perceived odour in the area are mainly categorised as unpleasant based on Charles McGinley (2000): Enforceable Permit Odor Limits.

Water Quality
Exceedance was mainly recorded for TSS, Mn, Fe and AN when compared against the NWQS Class III. Sg Langat WQI falls under Class III.
PFOS/PFOA were undetected (<0.01 µg/L) and below the safe limit of 0.7 µg/L

Ecologically Sensitive Area

South Kuala Langat Forest Reserve (4.3 km)
Paya Indah Wetland (7.7 km)
North Kuala Langat Forest Reserve (10.5 km)

Landuse

Nearest sensitive receptor is Kampung Sungai Kelambu (450 m south)
Other receptors all located beyond 1km
Sufficient buffer distance (680 m) from paper machine to nearest receptor

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5-km Land Use

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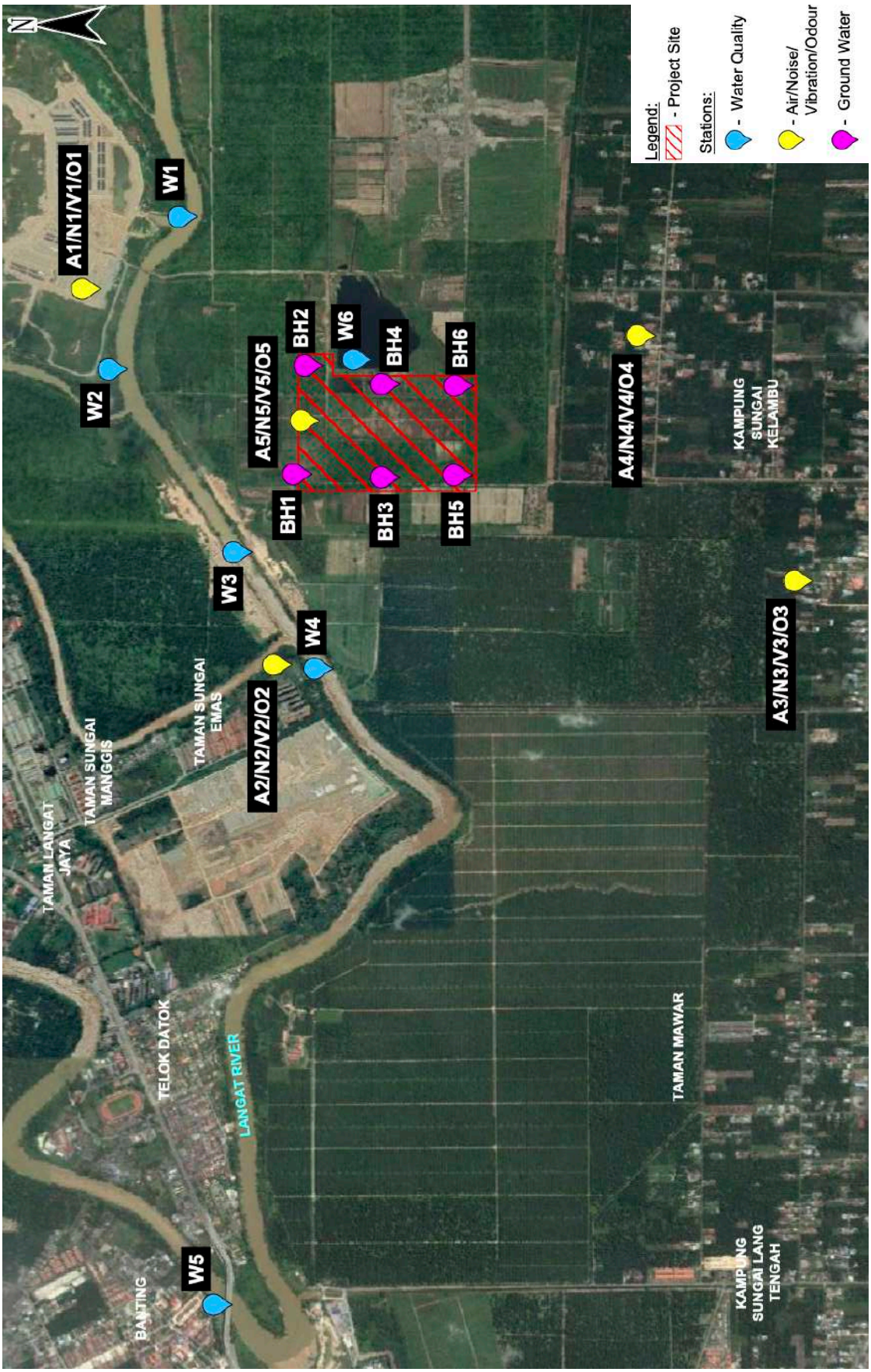
Baseline Monitoring Location



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Impact Assessment

Hydrology & Hydrogeology

Construction Phase

- Increased surface runoff generation.
- Impacts are not expected to be significant

Operational Phase

- Increased stormwater runoff
- No impact expected towards groundwater.

Water availability

- Abstraction rate (13.1 MLD) amount to 0.35% of normal Sg Langat flow (3,770 MLD).
- Flow reduction rate (13.1 MLD) amount to 4% of 7Q50 at NDP intake (323 MLD).
- Total abstraction of all industrial users (46.1 MLD) amount to 14.3% of NDP intake 7Q50.
- Impacts not expected to be significant.

Hydraulic impact

- Modelled using MIKE11 HD.
- All existing users amount to only 6mm reduction in water level.
- Including NDP, water level reduction increased to 7mm.
- Impacts not expected to be significant.

Waste Management

Source of Impacts

Construction Phase

- Construction waste
- General Municipal waste
- Scheduled waste

Operational Phase

- Solid (Non-scheduled) waste
- Scheduled waste

Construction & Operational Phase Impacts

- Odour and aesthetic issues.
- Attraction of disease vectors.
- Water, soil & groundwater contamination.
- Obstruction of drainage flow.
- Potential Fire Hazard

Ecology

Water abstraction

- No significant difference to water quality and water level.
- Potential population reduction due to entrainment

Effluent discharge

- Potentially create unfavorable aquatic living condition; lowering survival rate and affecting aquatic food chain & availability.
- Possible deterioration of water quality due to failure in wastewater treatment system.
- Potentially affecting local fisheries.
- Insignificant impact to downstream aquaculture.

Soil

- Existing condition soil loss rate 0.864 t/ha/yr
- Worst case condition soil loss rate of 53.76 t/ha/yt
- With mitigation measures, soil loss rate reduced to 0.594 t/ha/yr

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Impact Assessment

Socio-Economy

Construction Phase

- Increased employment opportunities
- Inflow of investment
- Better technology & infrastructure
- Increased inflow of population
- Potential friction between members of community due to differing backgrounds
- Increased generation of pollutants
- Increased health & road safety risks
- Temporary aesthetic issues (dumping grounds)

Operational Phase

- Increased employment opportunities
- Increased business opportunities & income generation.
- Increase inflow of population
- Potential friction between members of community due to differing backgrounds
- Minimal environmental impacts with implementation of proper mitigation
- Increased health & road safety risks

Quantitative Risk Assessment

Operational Phase

- Hazard zone contours does not reach involuntary recipients.
- Worst case credible scenario (WCCS) for fire extends slightly beyond project boundary
- MCCS for explosion extends slightly beyond project boundary.

Air Quality

Construction Phase

- Impacts predicted mainly from vehicular emissions and fugitive dust generated from onsite construction works.
- Air pollutants expected to be mainly TSP
- Impacts are expected to be minimal and short-term

Operational Phase

- Source of pollutants include the TTP, Co-gen plant and the Bio-scrubber system
- AERMOD was utilized for the modelling works.
- Comparison made against the MAAQS and the Ontario Ambient Air Quality Criteria 2012

Normal Operation

- All predicted maximum average incremental concentration (MAIC) for all parameters except NO_2 (1-hour average) comply with their respective limits
- All MAIC however are in compliance to the 25% threshold limit based on IFC guidelines.
- Impacts are not expected to be significant

Abnormal Situation

- All predicted MAIC levels for all parameters comply with the limits of the Acute Exposure Guideline Levels (AEGL) for Selected Airborne Chemicals from the National Academy of Science, USA (2010).
- The 1-hour average for identified pollutants were assessed to have significant impacts to the surrounding area

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Impact Assessment

Noise & Vibration

Construction Phase

- Noise modelling was conducted using CadnaA software
- Modelling was conducted for 2 scenarios based on the placement of the equipment; northwest and southeast boundary of the Project site.
- Both scenarios predicted noise levels to be lower than the recommended 75 dBA (L_{10}) and 90 dBA (L_{max}) of the Sixth Schedule, Planning Guidelines for Environmental Noise Limits and Control, 3rd Edition (2019)
- Vibration impacts predicted to be minimal

Operational Phase

- Predicted daytime noise levels at Bandar Sungai Emas and Horizon Livia were below 60 dBA (First schedule; DOE Noise Guideline 2019) however noise level in Kampung Sungai Kelambu was slightly higher.
- Noise level for onsite receptor were well within the recommended 70 dBA limit (First schedule; DOE Noise Guideline 2019)
- Night time noise levels were within the prescribed limit for all receptors
- Vibration impacts are expected to be minimal with the implementation of the relevant BMPs.

Water Quality

Construction Phase

- Anticipated increase in TSS loading particularly during storm events

Operational Phase

- Water modelling conducted using MIKE11 (ECOLab & Advection Dispersion (AD) modules) for pH, DO, BOD, COD, AN, TSS, TP, Chloride, NO_3-N and TOC
- WWTP is equipped with technology to treat effluent better than Standard A limit for BOD (15 mg/l) and AN (5mg/l). Predicted water quality of Sg. Langat is close to baseline levels during both low- and normal-flow (BOD: 10 mg/l & 8 mg/l; AN: 2.68 mg/l & 2.69 mg/l respectively)

pH

- Baseline pH between Class II – III. No significant change between normal & low flow from pre- to post-operation

DO

- DO concentration within Class IV and projected to deteriorate marginally at the discharge point upon plant's operation for both normal and low flow

BOD

- Baseline BOD levels within Class IV and predicted to marginally increase with the plant's pre- & post-operation.

COD

- Baseline COD level within Class III - IV and predicted to marginally increase with the plant's pre- & post-operation.

AN

- Baseline AN level within Class IV and predicted to marginally increase with the plant's pre- & post-operation.

TSS

- Baseline TSS between Class I & III and predicted to increase but not exceeding Class III

TP

- Baseline TP between 0.2 – 0.28 mg/l and expected to increase locally

NO_3-N

- Baseline nitrate between 3-4.6 mg/l and predicted to marginally increase at the discharge point

Chloride

- Baseline chloride between 15.8 – 1,005 mg/l and predicted to further increase particularly during low flow

TOC

- Baseline TOC between 3 – 3.5 mg/l and predicted to increase marginally with plant's operation.

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Impact Assessment

Traffic

Construction Phase

- Increased traffic movement due to transport of material and machineries to and from the site
- Increased domestic and construction traffic contribution to surrounding road.

Operational Phase

- Additional 321 truck trips for transport of material
- Additional 126 pcu generated from employee vehicles.

Community Health

Construction Phase

- Health impacts due to dust and noise exposure are predicted to be insignificant

Operational Phase

- Under normal operations, ambient air quality predicted to remain safe as all hazard index were recorded less than 1 and no carcinogenic substance detected
- Under abnormal operation, only the hazard quotient for TSP exceeded the value of 1. Carcinogens were within the acceptable limits ($1.3 – 1.9 \times 10^{-5}$).

Mitigation Measures

Hydrology & Hydrogeology

Operational Phase

- Installation of flow meter to record the amount of water abstracted
- Regular inspection of river banks and inlet structures
- Provision of measures as required by LUAS

Soil

Construction Phase

Mitigating measures as per recommended in the LDP2M2 including:

- Execution of construction in phases
- Clear demarcation of project boundary
- Stabilisation of all site entry points and constructed slopes
- Sufficient provision of drainage & surface runoff control measures

Air Quality

Construction Phase

- Provide perimeter fencing to reduce dust dispersion
- Implement safe material transport & handling practices
- Provision of dust suppression measures including wash trough and water bowsers.
- Exposed areas to be turfed as soon as possible.
- All vehicles, machineries and equipment to be regularly maintained

Operational Phase

- Monitoring of TTP as per DOE's *Technical Guidance on Performance Monitoring of Air Pollution Control.*
- Stack Emission monitoring as per the *EQ (Clear Air) Regulations 2014* and the relevant DOE *Best Available Techniques (BAT)* guidelines.
- Odour generated to be controlled using operational control methods including:
  1. Combusting biogas & sludge produced from WWTP in the TTP
  2. Storing raw materials within enclosed structures
  3. Provision of facilities such as Bio-scrubbers to remove odour particles in emissions

Noise

Construction Phase

- Limiting noisy construction activities to daytime working hours
- Erection of temporary perimeter hoardings
- Conduct regular maintenance of equipment and machineries
- Compliance to the OSH (Noise Exposure) Regulation 2019

Operational Phase

- Isolation and implementation of noise reducing measures in noisy areas.
- Conduct regular noise level monitoring.
- Conduct regular maintenance of equipment and machineries.
- Compliance to the OSH (Noise Exposure) Regulation 2019.

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Mitigation Measures

Water Quality

Construction Phase

- Mitigating measures as recommended in the LDP2M2
- Provision of septic tanks for the management of onsite sewage

Operational Phase

- Treatment of wastewater to comply with Standard A of the *EQ (Industrial Effluent) 2009*.
- To avoid production increase during low flow periods.
- Provision of holding tanks (5.2-hr retention time) in case of WWTP failure. Plant will be shutdown if WWTP fails to resume operation within 4 hours.
- Sewage to be treated in the CSTP for the proposed industrial park.
- To conduct water quality monitoring program periodically.
- To conduct periodical maintenance on WWTP.

Waste Management

Construction Phase

- To conduct waste minimization & segregation at source.
- Biomass waste to either left to decompose in green areas onsite or disposed to municipal landfills.
- General construction waste to be recycles as much as possible.
- Unsalvageable waste to be stockpiled and sold to interested parties or disposed in approved landfills.
- Domestic waste to be collected and disposed in licensed municipal landfills.
- Management of schedule waste as per the *EQ (Scheduled Waste) Regulation 2009*.

Operational Phase

- Solid waste to be segregated and either burnt in the TTP (metal, waste residue) of sold to interested parties (plastics).
- Municipal waste to be collected and disposed in licensed landfills.
- Management of schedule waste as per the *EQ (Scheduled Waste) Regulation 2009*.
- Where possible, to apply for Special Waste Management permit from DOE to manage scheduled waste.

Ecology

Construction Phase

- Perimeter drains to be regularly maintained. Any accumulated waste to be removed and disposed properly.
- Sewage to be contained and not allowed to be discharged into nearby waterbodies

Operational Phase

- To diligently control the amount of water abstracted from Sg. Langat at all times.
- To construct suitable barriers to prevent entrainment of aquatic creatures at the water intake point.
- To conduct regular maintenance of the water intake screen.
- To avoid production increase during low flow periods.
- Water quality monitoring to be conducted periodically.

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Mitigation Measures

Risk Management

Operational Phase

- To conduct fire and gas mapping
- To perform HAZOP study prior to operating
- To identify and prepare specific emergency response plans
- Undertake regular maintenance of all onsite equipment and machineries

Socio-Economy

Construction Phase

- Ensure all hired foreign labour have valid work documentation and legally registered with the Department of Immigration.
- Contractors to ensure hired workers are well managed and confined to their worksite.
- Contractors to be mindful and act on resident's complain with regards to the Project.

Operational Phase

- Ensure Project site and surrounding roads are properly organized and free of any obstructions and hazards.
- Conduct pre-employment health check for all workers.
- Cooperate with the JKKK to ensure the plant's operation does not cause any unnecessary grievances from the residents.

Community Health

Prevention of Respiratory Disease

- Proponent to monitor worker's health condition
- Good housekeeping and cleanliness to be kept at all times by all parties at all times
- Strict prohibition of open burning
- Local authority to conduct regular health monitoring and improvement on the solid waste collection system
- To conduct regular health awareness programs

Prevention of Communicable Disease

- Proponent to ensure all workers undergo full medical check-up prior to employment as well as yearly follow-ups
- Proponent to conduct comprehensive medical surveillance program including medical examinations, biological monitoring and serology monitoring among others
- Proponent to not permit suspected infected workers to come to the workplace

Traffic

Construction Phase

- Provision of appropriate road signages and safety measures
- Limiting material transport to outside of peak traffic hours
- Regular maintenance of all construction transport vehicles

Operational Phase

- Provision of adequate signage and safety measures on trucks to increase visibility and awareness
- Strict adherence to road transport regulations
- To properly schedule transport activities to reduce turn-around time and impact to local traffic.

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Proposed Environmental Monitoring Program

- 6 water quality monitoring stations
  - Compliance against Class III limits of the National Water Quality Standards
- 1 silt trap monitoring location
  - Compliance against EIA Approval Condition

- 4 air quality monitoring stations
  - Compliance against Malaysian Ambient Air Quality Standards

- 4 noise monitoring stations
  - Compliance against Schedule 2 (Industrial Zone) of the Planning Guidelines for Environmental Noise Limits and Control 2019

- 1 odour monitoring stations
  - Compliance against Schedule 2 (Industrial Zone) of the Planning Guidelines for Environmental Noise Limits and Control 2019

- 1 vibration monitoring stations
  - Compliance against Schedule 5 & 6 of the Planning Guidelines for Vibration Limits and Control in the Environment 2019

- 6 groundwater monitoring stations
  - Compliance against the National Groundwater Standard for Drinking Water (2019)

- Compliance monitoring
  - 1 station for WWTP: Compliance against Standard A, EQR (Industrial Effluent) 2009
  - 1 station for TTP: Compliance against 3rd Schedule, Item K, EQR (Clean Air) 2014
  - 1 station for Co-Gen Plant: Compliance against 3rd Schedule, Item A, EQR (Clean Air) 2014