EXECUTIVE SUMMARY

Second Schedule Environmental Impact Assessment (EIA)

for the Proposed Green Technology Paper Plant Development on part of PT 668, Pekan Bukit Selambau, District of Kuala Muda, Kedah Darul Aman.

INTRODUCTION TO THE PROPOSED PROJECT

LAND OWNER & STRATEGIC PARTNER

GENTING EHSAN (SP) SDN. BHD.
Lot 210 & 211 Fasa II,
Kuala Ketil Industrial Area,
09300 Kuala Ketil,
Kedah Darul Aman.
Tel.: 012-433 5787; Fax: 04-416 0224
Attn.: Mr. Wilson Lam Yee Haur

PROJECT PROPONENT / INITIATOR

YUHUA PAPER INDUSTRY SDN. BHD.
Lot 210 & 211 Fasa II,
Kuala Ketil Industrial Area,
09300 Kuala Ketil,
Kedah Darul Aman.
Tel.: 012-297 9233; Fax: 04-416 5781
Attn.: Mr. Wan Congen

PROJECT HISTORY

- The Project Site was one of the Kedah State Project (i.e., Taman Industri Perabot Bukit Selambau) and has been previously cleared for industrial lot development.
- There are three (3) woods flooring factories have been built within the Project Site and have obtained planning approval (Kebenaran Merancang) from Majlis Perbandaran Sungai Petani, Kedah on 20 May 2020 with approval reference: MPSPK(BS)R-20/2019 – 102430 (33).

ENVIRONMENTAL CONSULTANT

EUROPASIA ENGINEERING SERVICES SDN. BHD.
No. 63A-2 & 65-2, Petaling Utama Avenue,
Jalan PJS1/50, Taman Petaling Utama,
46150 Petaling Jaya, Selangor Darul Ehsan
Attn. : Ms. Geetha P. Kumaran (CEP - CS0033)
(EIA Study Team Leader)

CURRENT CONDITION

- The project site is a disturbed land and currently overgrown with shrubs and grass.
- Currently the middle portion of the Project Site have been constructed with 3 wood flooring factories and warehouses and it is completed
- Sg. Gajah flows at the southern boundary of the project site prior flows into Sg. Muda.
- No habitation present within the Project Site.

PROJECT SCOPE

- Overall Project Site of Lot 668
  = 51.6 acres (20.88 hectares)
- EIA study area Phase 1-Phase 3
  = 47.84 acres (19.36 hectares) exclude Block A wood flooring factory.
- Completed Block B and Block C factory is included in the study.

JURISDICTION

Majlis Perbandaran Sungai Petani (MPSPK)

ACCESSIBILITY

The Project Site is accessible using North-South Expressway (NSE) then Jalan Sungai Lalang-Bukit Selambau (K152) or Butterworth-Kulim-Baling Highway (BKE) and Jalan Jeniang (K17) in order to access to the northern of the Project Site.

LEGAL ASPECT

PRESCRIBED ACTIVITIES

First Schedule, Item No. 17: Industrial Estate Development

- There overall acreage of the Lot PT 668 is 51.6 acres or 20.8825 Ha (as per land title).

Second Schedule, Item No. 6: Industry.

(f) Recycle paper industry: Production capacity of 50 tonnes or more per day.

- The industry will be producing a total of 1,917.8 tonnes/day or 700,000 tonnes/year for the overall 3 phases.

❖ Project Proponent has obtained manufacturing license under Industrial Co-ordination Act 1975 (Act 156) [Akta Penyelarasan Perindustrian, 1975 (Akta 156)] from Ministry of International Trade and Industry (MITI) on 31 December 2020 for paper production of core paper board, kraft paper board and corrugated medium paper.

ZONING COMPATIBILITY

- The Proposed Project is compatible with the Rancangan Tempatan Daerah Kuala Muda 2020 and Draft Local Plan Daerah Kuala Muda 2035.
- The proposed Project lies within Blok Perancangan BP 16 – Tekoi Kiri and Blok Perancangan Kecil (BPK) 16.2. The Project site zoning falls under Industry which land use category allows siting of medium to heavy industry.

PROJECT DEVELOPMENT SCHEDULE

Year / Activity	2020	2021	2022	2023	2024	2025
EIA Study and Approval						
KM submission & Technical Approvals						
Phase 1						
Earthworks						
Building, Utility and facility						
Commissioning & Operation						
Phase 2						
Earthworks						
Building, Utility and facility						
Commissioning & Operation						
Phase 3						
Earthworks						
Building, Utility and facility						
Commissioning & Operation						

STATEMENT OF NEED

Strategic Location & High Accessibility

- It is located with Bukit Selambau Industrial Park and surrounded with oil palm & rubber estates and residential areas. Besides that, it is also located near to:
  i. Sungai Petani - 25 km
  ii. Kulim - 43 km
  iii. Penang Port – 55 km
- The Project Site is accessible from North-South Expressway (NSE) then Jalan Sungai Lalang-Bukit Selambau (K152) or Butterworth-Kulim-Baling Highway (BKE) and Jalan Jeniang (K17).

Other Supporting Matters

- Increase in state and nation's revenue through issuance of licenses and collection of taxes.
- Provides 630 job opportunities.
- Technology transfer and expertise can be channelled at all levels of local workers positions.

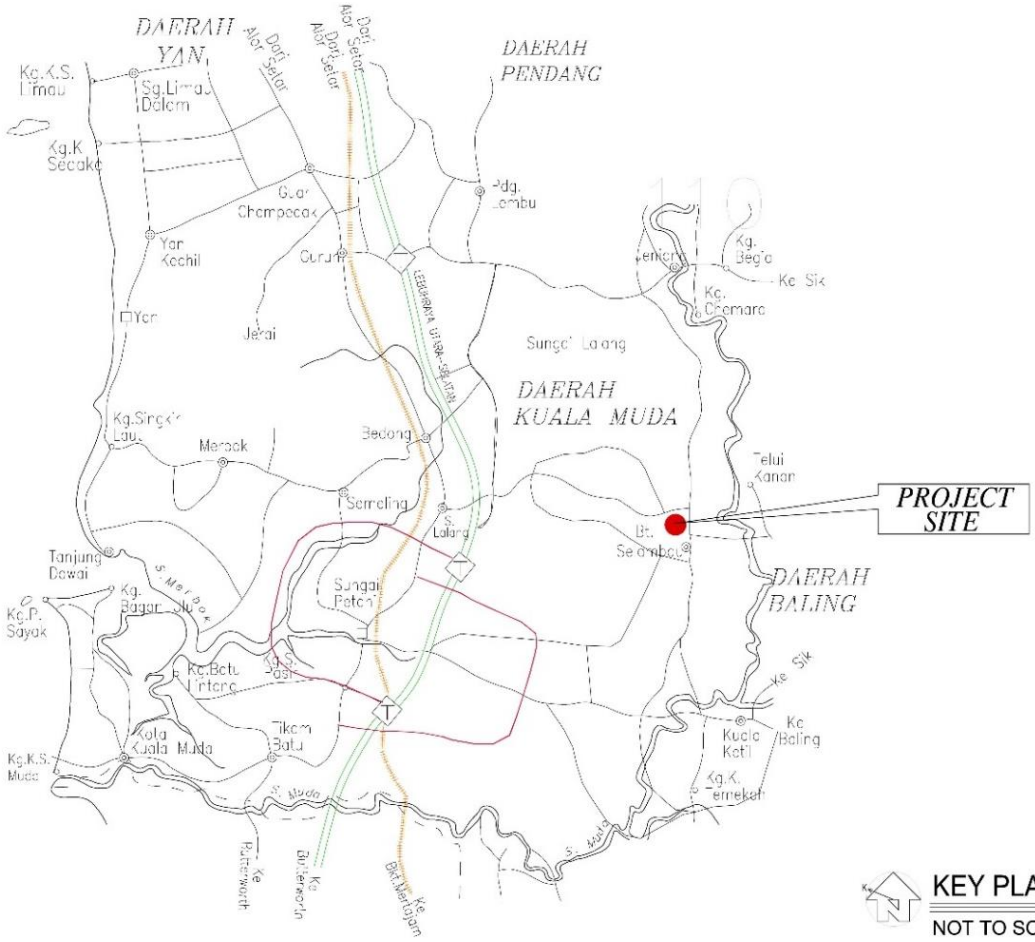
Environmental Consideration

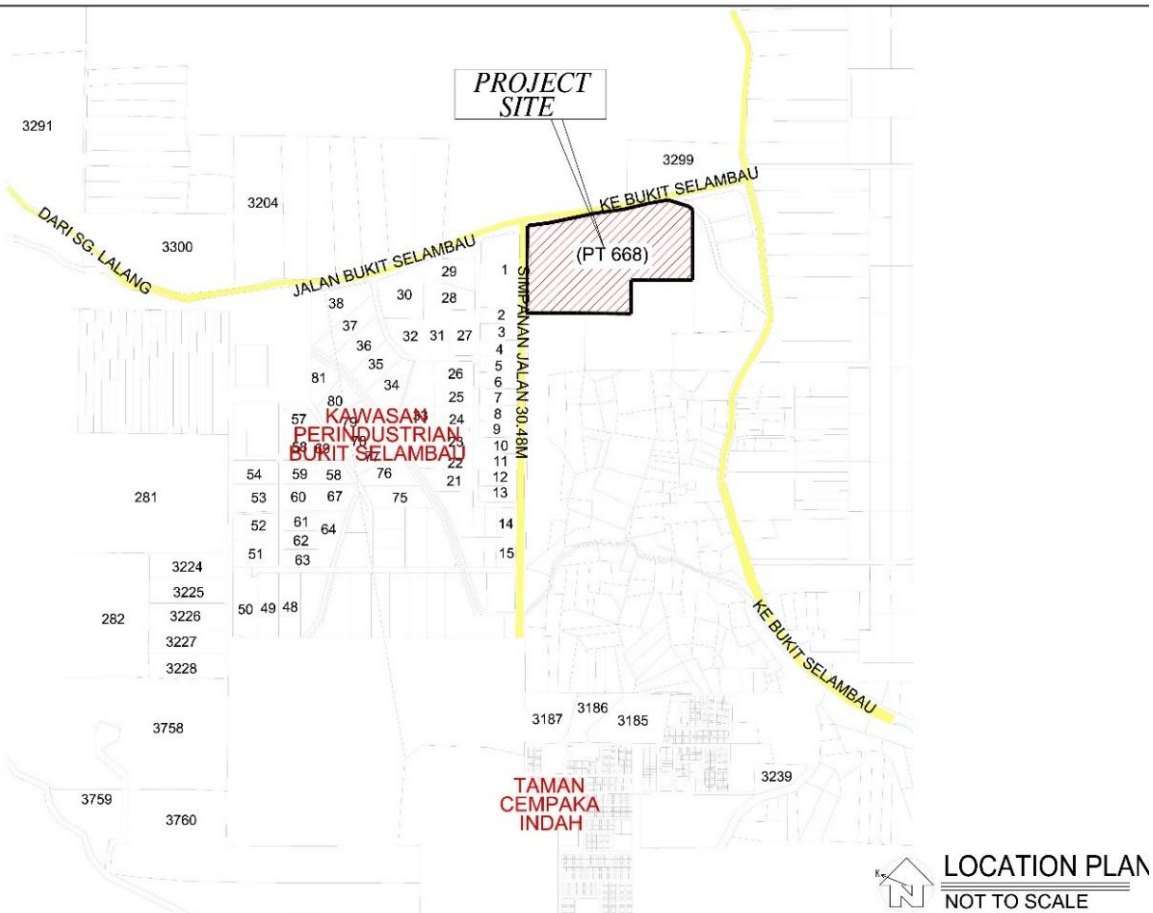
- From an ecological point of view, the current biodiversity of the flora and fauna composition of the site has been affected as the project site has been previously.
- The proposed development includes in its concept the development of landscaped areas and appropriate buffer zone with its surroundings can improving/reducing the anticipated pollution (i.e., air, noise, water, etc.) generated.

Landuse Optimization

- The proposed Green Technology Paper Plant development would upgrade the economic state of land with a yearly production capacity of 700,000 tonnes.
- Congruent with the surrounding area landuse; the proposed development would be able to maximize the usage of existing infrastructure e.g., the existing road network.
- The development will indirectly increase the value of property in the surrounding areas and create more job opportunities

KEY AND LOCATION PLAN





CURRENT CONDITION ON-SITE AND SURROUNDING THE PROJECT SITE

Hoarding along the western boundary of the Project Site

Southeastern portion of the Project Site boundary with saw mill

Southern portion of the Project Site boundary with orchard and bird houses

Main entrance of the Proposed Project Site

Eastern portion of the Proposed Project Site and there is an existing water tank

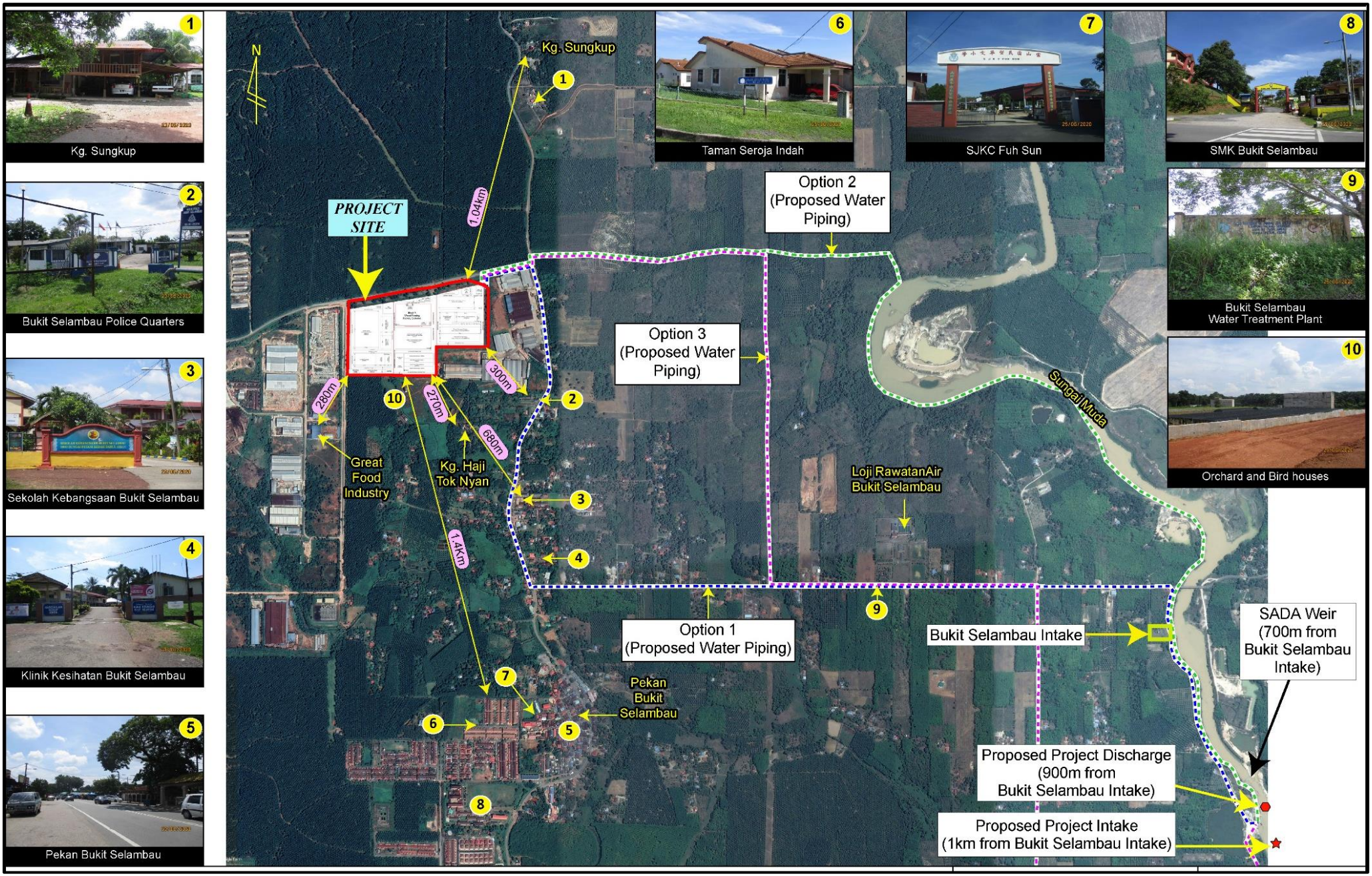
Existing hoarding and vegetation along the northern boundary of the proposed Project Site

Western portion of the proposed Project Site

Existing factory buildings in the middle of the Proposed Project Site

Junction into the proposed Project Site from State Route K152 (Jalan Bukit Selambau)

NEAREST RECEPTORS TO THE PROJECT SITE

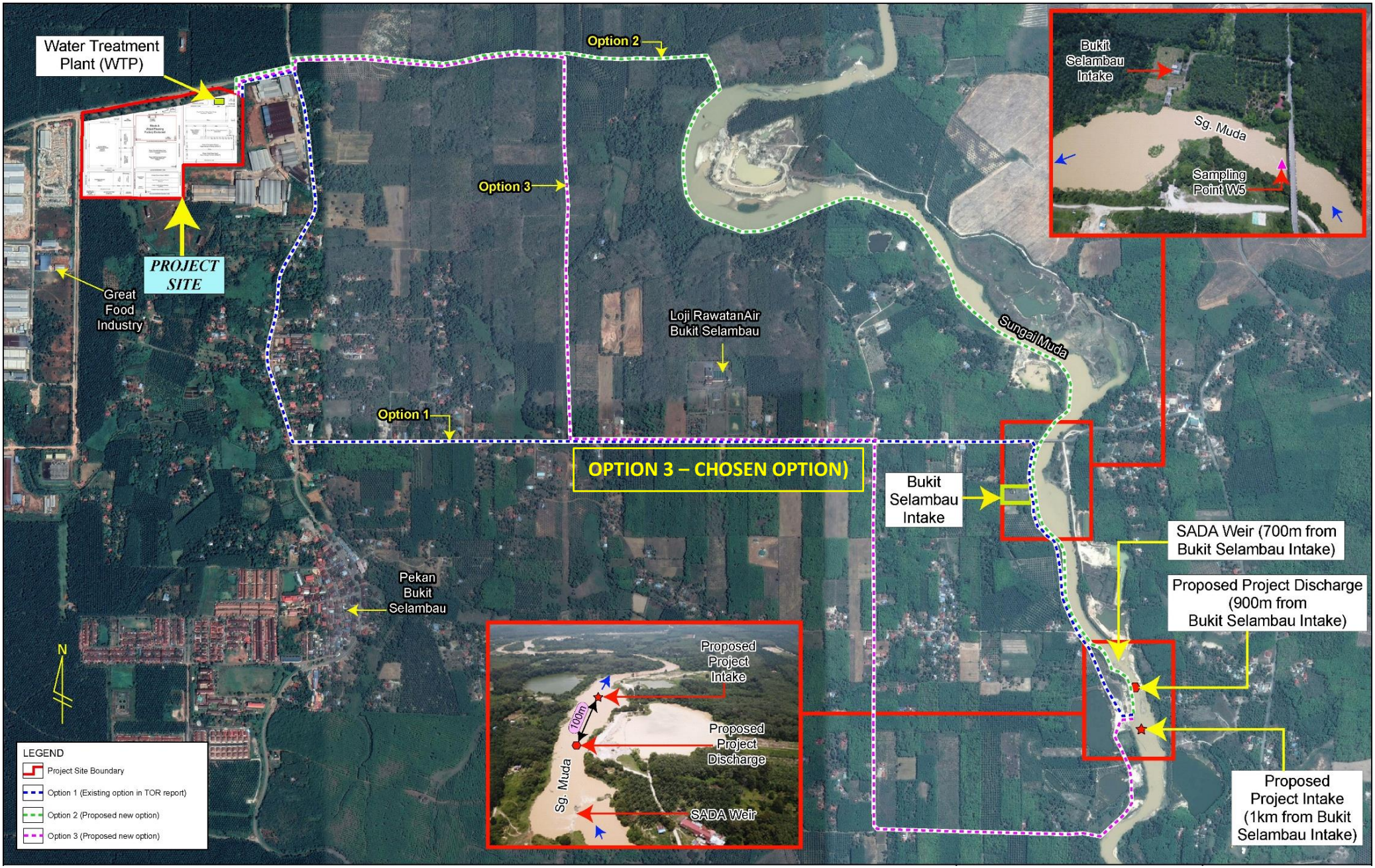


PROJECT DESCRIPTION

Capacity / Item	Phase 1	Phase 2	Phase 3
Production Capacity	100,000 tons/year	250,000 tons/year	350,000 tons/year
Development Timeline	Mid 2021	2022- 2023	2023- 2024
Land area (acre)	Overall Lot 668 is 51.6 acres. However, the proposed Project Site is 47.84 acres excluding Block A wood flooring factory.		
Installation capacity (kVA)	4,000	15,000	15,000
Electricity consumption (kWh/y）	32,000,000	125,000,000	119,500,000
Water consumption (m^3/h)	160.58	404.83	565.96
Steam consumption (t/y)	110,000	450,000	560,000
Waste paper demand (t/y)	112,371	273,497.5	397,108.5
Number of General Plant Workers (estimated)	110	205	315

Plant Development Phase	Year	Finished Product	Quantity (ton/year)
1	2021 – 2022	Core Board Paper (Grade A bobbin Paper board) 	100,000
2	2022 – 2023	Kraft paper board 	250,000
3	2023- 2024	Core Board Paper (Grade A bobbin Paper board)	100,000
		Corrugated medium paper 	250,000
Total =			700,000

PROPOSED PIPING OPTIONS FROM THE PROJECT SITE TO SUNGAI MUDA



PROPOSED LAYOUT PLAN OF THE GREEN TECHNOLOGY PAPER PLANT

Kindly refer to Chapter 5, Figure 5.2 for clearer A1 Plan.

KM Approved on 20th May 2020, Ref. MPSPK(BS)R-20/2019-102430(33)

River water abstraction pump house (Refer to Figure 5.3)

Entrance & Exit Point of the Project Site to Jalan Bukit Selambau

Final Discharge Point of IETS to Sungai Muda via Underground Pipeline (5°41'57.69"N, 100°37'34.49"E)

Water Intake from abstraction Point of Sg. Muda (Refer to Fig. 5.1 for alignment option)

Refer to Figure 5.4

Refer to Figure 5.5

Final Discharge Point to Sungai Gajah for surface run-off (5°41'47.98"N, 100°37'36.67"E)

Final Discharge Point of STP Pre-treafed sewage effluent to be pumped to the IETS for recycle and reuse

Block A Wood Flooring Factory Excluded

KE BUKIT SELAMBAU >>>>

JALAN BUKIT SELAMBAU K152 (41.224KM)

SERVICE ROAD 15.24M

SIMPANAN JALAN SEDIADA (K17)

JALAN SUNGAI LALANG

SIMPANAN JALAN 100' (30.48m) SEDIADA

SIMPANAN JALAN 20.116M SEDIADA

ROAD RESERVE 20.116M

CADANGAN SIMPANAN JALAN 20.116M

KAWASAN PERINDUSTRIAN BUKIT SELAMBAU

1 OKA CONCRETE INDUSTRIES SDN. BHD.

2

3

4

5 ENSOON TIMBER SDN. BHD.

6

3212 3213 3214 3299 933 1048 1049 1050 1051 1052 1053 1054 1056 3297 3958 3870 3389 PUSAT KEMAJUAN PELADANG KECIL 884 KILANG SEDIADA 3389 UNIT KAWALAN KESELAMATAN 1670 2419 1671 1688 1343 1344 3118 2593 2230

Phase 2 & Phase 3 Waste Paper Storage Warehouse F1 (9405m²)

Phase 2 & Phase 3 Bale Breaking Workshop F1 (3775m²)

Phase 2 & Phase 3 Pulping Workshop F2 (4230m2x2)

Phase 3 Corrugated Medium Paper Paper Making Workshop (6006m²)

Phase 2 Kraft Paper Board Paper Making Workshop (6006m²)

Phase 1 Waste Paper Storage Warehouse F1 (9360m²)

Phase 1 Pulping Workshop F2 (2850m² x 2)

Industrial Effluent Treatment System (IETS) 2000m³/d (18363m²)

Phase 3 Corrugated Medium Paper Finished Product Storage Warehouse (7535m²)

Phase 2 Kraft Paper Board Finished Product Storage Warehouse (7536m²)

Fuel Material Storage (6060m²)

Phase 3 75t/d Boiler

Phase 2 30t/26t/d Boiler

Phase 1 25t/d Boiler

Finished Product Storage (2662m²)

Paper Making Workshop Phase 3 (2304m²)

Phase 1 Paper Making Workshop (2304m²)

Air Vents

Finished Product Storage (2662m²)

Flocculation Sedimentation Pond

clean water pond

Office Building 3

Electrical Room

White Water Towers

Slurry Towers

DETENTION POND (0.546 AC)

Facility Workshop

SEWERAGE TREATMENT PLANT (0.124 AC)

PPU (45M X 45M)

KOLAM TAKUNGAN AIR (0.698 EK)

DETENTION POND

LONG 100° 37' 34.80" LAT 5° 42' 00.30" S 29300.461 W 1250.698

S 29243.816 W 635.495

S 29503.224 W 635.860

LALUAN KENDERAAN 9.144M

LALUAN KENDERAAN DALAMAN 9.144M

LALUAN KENDERAAN DALAMAN 7.62M

LALUAN KENDERAAN 21M

LALUAN KENDERAAN 12M

DRIVEWAY 9.144M

LANDSCAPE / CAR PARK

CAR PARK

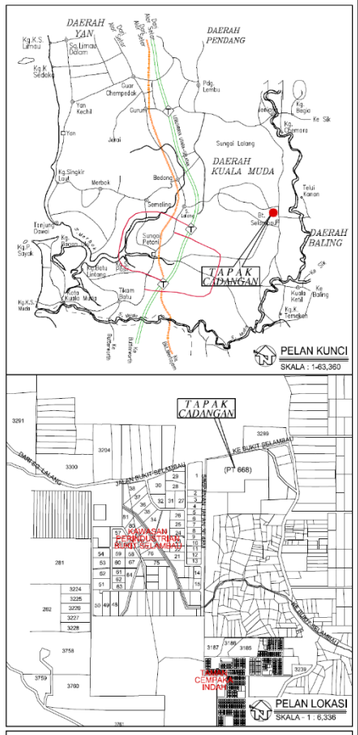
TANDAS

SIMPANAN PARIT 10 METER

DRAIN RESERVE TO METER

SUNGAI GAJAH

DARI PEKAN BUKIT SELAMBAU



Akta SPRM (Akta 694) 2009

Seksyen 18 : Kesalahan Dengan Maksud Untuk Memperdayakan Prinsipal Oleh Ejen.

"Seseorang melakukan kesalahan jika dia memberi seseorang ejen, atau seorang ejen dia menggunakan, dengan niat hendak memperdayakan prinsipalnya, apa-apa resit, akaun atau dokumen lain yang berkenaan dengannya prinsipal itu mempunyai kepentingan, dan yang dia mempunyai sebab untuk mempercayai mengandungi apa-apa penyataan yang palsu atau silap atau tidak lengkap tentang apa-apa butiran matan, dan yang dimaksudkan untuk mengelirukan prinsipalnya".

Jabatan Keselamatan dan Kesihatan Pekerjaan (DOSH)

"Pemaju dan kontraktor yang dilantik hendaklah memastikan keselamatan, kesihatan dan kebajikan orang-orang lain selain daripada pekerja yang mungkin terseluruh semasa aktiviti pemajuan dijalankan sebagaimana yang ditetapkan di bawah Akta Keselamatan dan Kesihatan Pekerjaan 1994 serta peraturan-peraturan yang dibuat dibawahnya, dan Akta Kilang dan Jentera 1967 serta peraturan-peraturan yang dibuat dibawahnya, dan perlu menyediakan sumber bagi mencapai tujuan tersebut."

JADUAL PENGIRAAN TEMPAT LETAK KENDERAAN

KOMPONEN PEMBANGUNAN	PIAWAIAN PERANCANGAN	TEMPAT LETAK KERETA	
		DIPERLUKAN	DISEDIAKAN
(3) BLOK KILANG SETINGKAT = 39,921.11 MP	- 1 TLK / 250 MP RUANG LANTAI - 1 TLM / 250 MP RUANG LANTAI - TAMBAHAN 1 PETAK TEMPAT LETAK LORI / 2000 MP RUANG LANTAI	160 TLK 160 TLM 20 TLL	170 TLK / OKU 171 TLM 20 TLL
PEJABAT 2 TINGKAT = 246.40 MP X 2 TINGKAT = 496.80 MP	- 1 TLK / 50 MP RUANG PENTADBIRAN - 1 TLM / 50 MP RUANG PENTADBIRAN	10 TLK 10 TLM	
JUMLAH KESELURUHAN = 40,417.91 MP		170 TLK 170 TLM 20 TLL	170 TLK / OKU 171 TLM 20 TLL

JADUAL PENGIRAAN KAWASAN LANSKAP

ANGGARAN LUAS RUANG LANTAI	PIAWAIAN PERANCANGAN	KAWASAN LANSKAP	
		DIPERLUKAN	DICADANGKAN
(3) BLOK KILANG SETINGKAT = 39,921.11 MP	5% DARIPADA KELUASAN RUANG LANTAI 0.05 X 40,417.91 MP = 2,020.90 MP	2,020.90 MP	4,710.66 MP
PEJABAT 2 TINGKAT = 496.80 MP			
JUMLAH = 40,417.91 MP		2,020.90 MP	4,710.66 MP

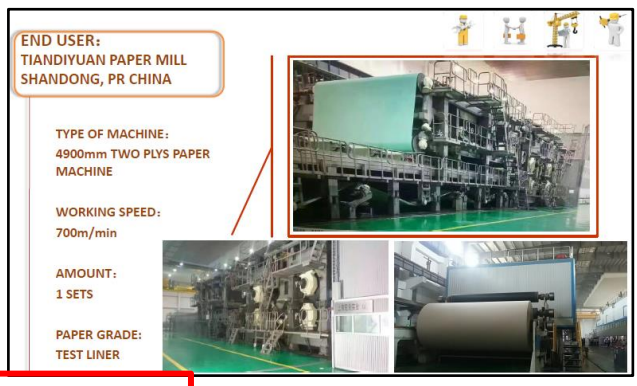
PENGIRAAN KAWASAN 'PLINTH'

KOMPONEN PEMBANGUNAN	KAWASAN 'PLINTH'	
	DIBENARKAN	DICADANGKAN
(3) BLOK KILANG SETINGKAT & PEJABAT 2 TINGKAT = 40,417.91 MP	60%	40,417.91 MP / 73,678.73 MP X 100
JUMLAH = 40,417.91 MP		= 54.857 %

CADANGAN PELAN SUSUNATUR

PROJECT COMPONENTS IN THREE (3) PHASES OF CONSTRUCTION

Category	Name	Scale	Remarks
Phase 1, Phase 2 & Phase 3			
Main production area	Stock preparation plant	980t/d AOCC Line	Single floor, some two floors
		482t/d（A）OCC Line	
		632t/d Local Waste Line	
	Wood fiber plant	210t/d Wood pulp Line	Single floor
	Phase 1 papermaking plant	294t/d Core Board paper (Bobbin Paper board) PM Line 1	Single floor
	Phase 2 papermaking plant	735t/d Kraft paper board PM Line 2	two floors
	Phase 3 papermaking plant	294t/d Core board paper (Bobbin Paper board) PM Line 3 & 735t/d Corrugated medium paper PM Line4	two floors for Corrugated medium paper Line
Auxiliary production area	Finished product warehouse	~17,733 m^2	
	Integrated warehouse	~340m^2	Spare parts warehouse included
	Solid Waste yard	~4600 m^2	
	Waste paper yard	~19,944 m^2	
	Machine repair workshop	~425 m^2	
Boiler	Biomass boilers	1 x25 t/hr 3X25 t/hr 1 x75t/hr (Stand by)	
Environmental protection area	Industrial Effluent treatment station (IETS)	~25,000m^3/d	wastewater from production process
	Ceramic Dust Collector + Bag Filter + one 60m chimney	1 x25 t/hr 3X25 t/hr 1 x75t/hr (Stand by)	Air emission from production process
Water intake and water treatment area	Water intake pumping house	~27,153m^3/d	Water abstract from Sungai Muda at 900m downstream of Bukit Selambau Intake Point
	Water treatment plant (WTP)	~28,000m^3/d	
Administration area	Integrated office building	Land Area = 15,000m^2	Including office building, R&D center, Parking, Green area.
	Canteen		



Example Paper Machine

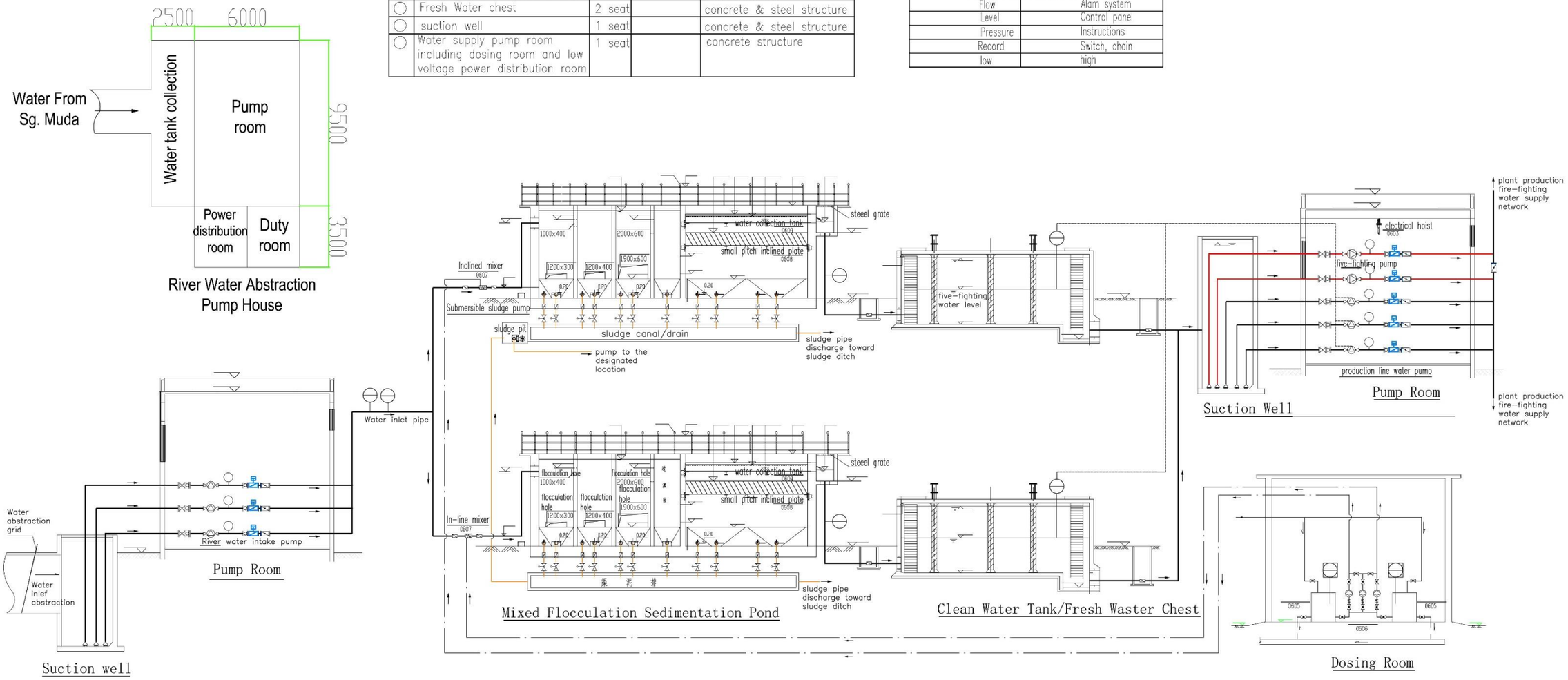
OVERVIEW LAYOUT PLAN OF THE WATER TREATMENT PLANT (WTP) AND FLOWCHART

List of structures

No	Name	Quality	Specification	Structure type
○	Flocculation sedimentation tank	2 seat		steel structure
○	Fresh Water chest	2 seat		concrete & steel structure
○	suction well	1 seat		concrete & steel structure
○	Water supply pump room including dosing room and low voltage power distribution room	1 seat		concrete structure

Instrument legend

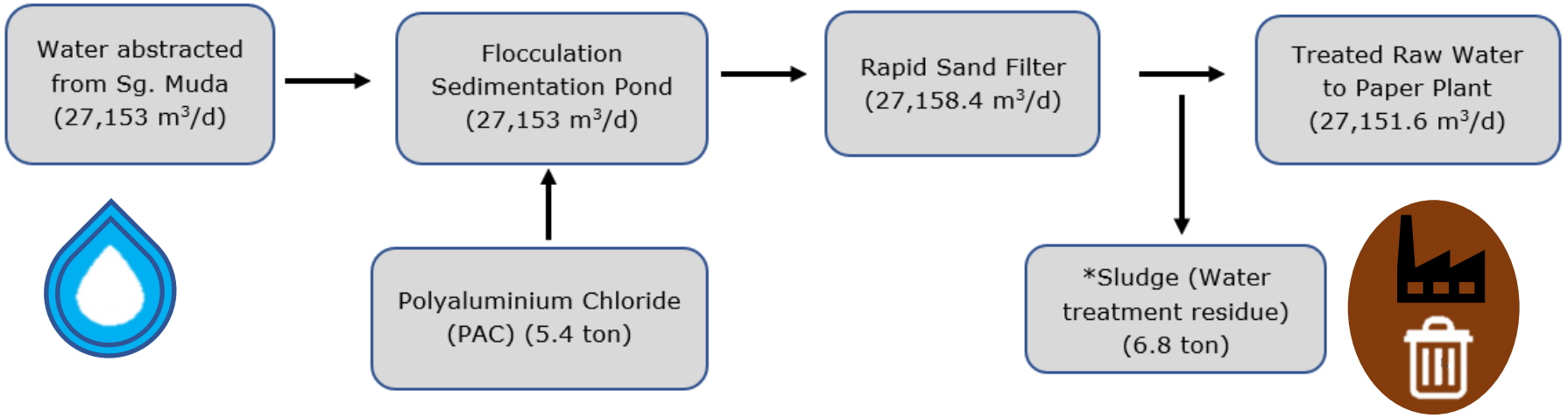
Instrument code			
○	Local instrument	⊟	Central control panel
Characters of instrument function			
Flow		Alarm system	
Level		Control panel	
Pressure		Instructions	
Record		Switch, chain	
low		high	



Description:

1. The elevation in the plan is measured in meter with relative high elevation with out door ± designed to be at ±0.00
2. The production line pond also used as a fire-fighting pond in order to prevent fire-fighting water from being used passively, once the water level of the fresh water chest drop until fire-fighting water level, then the production line pump will stop.

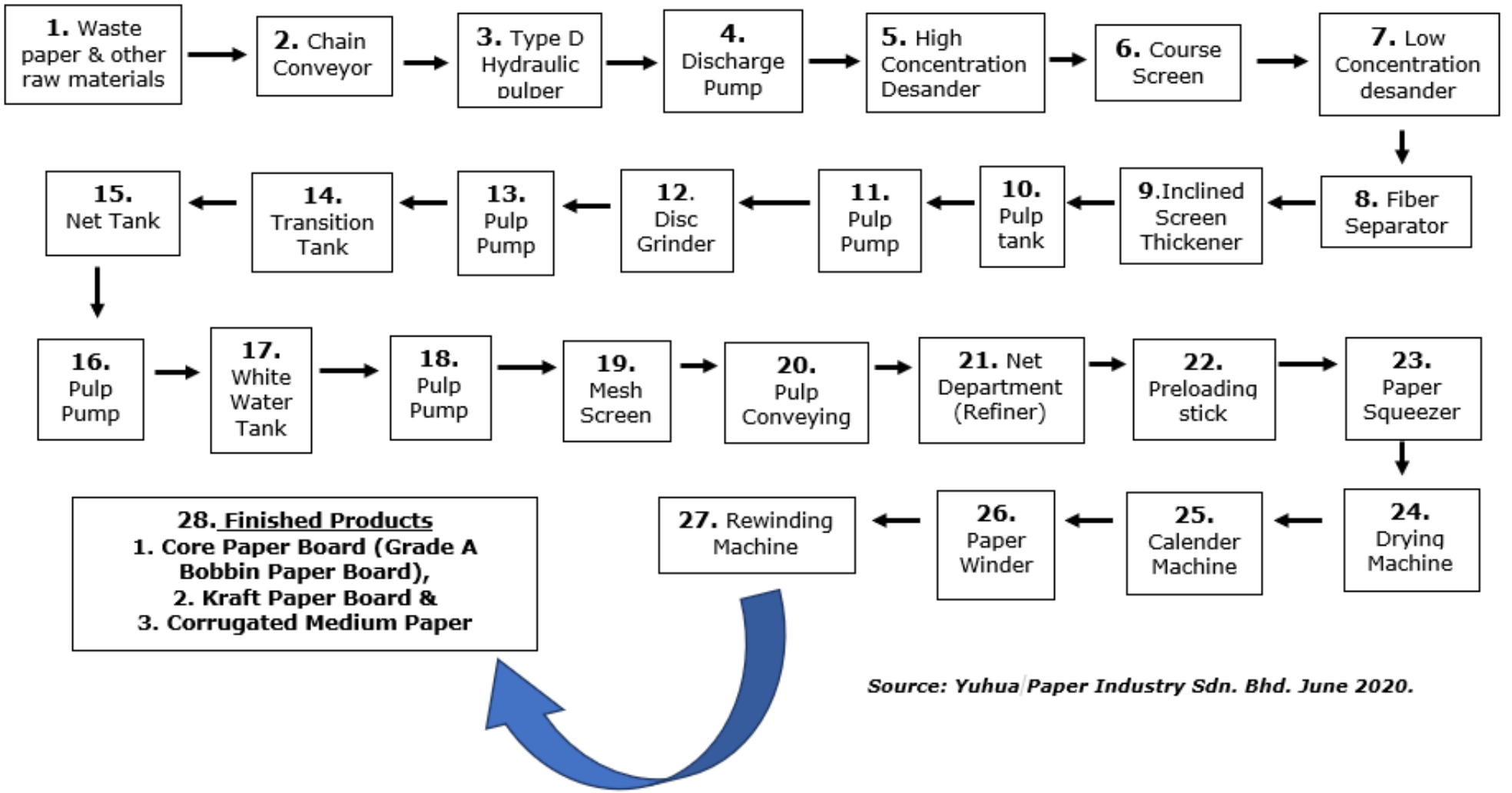
MASS BALANCE FOR THE PROPOSED WATER TREATMENT PLANT



***Sludge (SW204) is estimated at 6.8 ton/day from water treatment plant processes and will be disposed to Semeling Landfill in Sungai Petani, Kedah upon approval of special management of scheduled wastes under Section 7, Environmental Quality (Scheduled Wastes) Regulations, 2005.**
**** Conversion of 1 m³ water = 1 ton water**

Source: Yuhua Paper Industry Sdn. Bhd. September 2020.

OVERVIEW PRODUCTION AND PAPER MAKING PROCESS



Source: Yuhua Paper Industry Sdn. Bhd. June 2020.

OVERALL FLOW CHART DIAGRAM FOR PAPERMAKING PROCESS

Diagram 5.1(b): Overall Flow Chart Diagram for Papermaking Process

Flue Gas (PM, NO_x, SO_x & CO) compliance with Environmental Quality (Clean Air) Regulations 2014 under Third Schedule [Regulation 13]

(***Refer Diagram 5.8 – 5.9, Table 5.19-5.21***)

CEMS Monitoring

Disposal to legal landfill (To apply for special management of wastes under Section 7, Environmental Quality (Scheduled Wastes) Regulations 2005)

or

Comprehensive utilization as fertilizer for surrounding oil palms and rubber estates.

Biomass Boilers

(***Refer Diagram 5.9***)

i) Phase 1: One (1) biomass boiler (25t/h)
ii) Phase 2: Three (3) biomass boilers (25t/h)
iii) Phase 3: One (1) biomass boiler (75t/h)

Air Pollution Control System (APCS)

(***Refer Diagram 5.9***)

i) Phase 1: One (1) Ceramic Dust Collector & Bag Filter [18,885cfm]
ii) Phase 2: Three (3) Ceramic Dust Collector & Bag Filter [18,885cfm x 3]
iii) Phase 3: One (1) Ceramic Dust Collector & Bag Filter [56,655cfm]

10,213t/yr Ash & Slag from Boilers (3 Phases)

(***Refer Diagram 5.9, Table 5.23***)

& 5sets/yr Spent Rag Bags

(3 Phases)

Disposed by Licensed Scheduled Waste Contractor

27.153 MLD water abstraction 100m downstream of the final discharge point in Sg. Muda

28 MLD Water Treatment Plant (WTP)

(***Refer Diagram 5.5 & Figure 5.3***)

Production & Paper Making Process

(***Refer Diagram 5.1 - 5.4***)

i) **Phase 1 & 3**: Core Paper Board (Bobbin Paper Board) for Line 1 and Line 2 (100,000 ton/year/line)
ii) **Phase 2:** Kraft Paper Board (250,000 ton/year)
iii) **Phase 3:** Corrugated Medium Paper (250,000 ton/year)

Industrial Effluent Treatment System (IETS) [25,000m^3/day]

(***Refer Diagram 5.6 – 5.7 & Figure 5.4***)

24.815 MLD final discharge Complied with DOE Standard A / EIA Standard Limits

6.8 MT/day SW204 Sludge

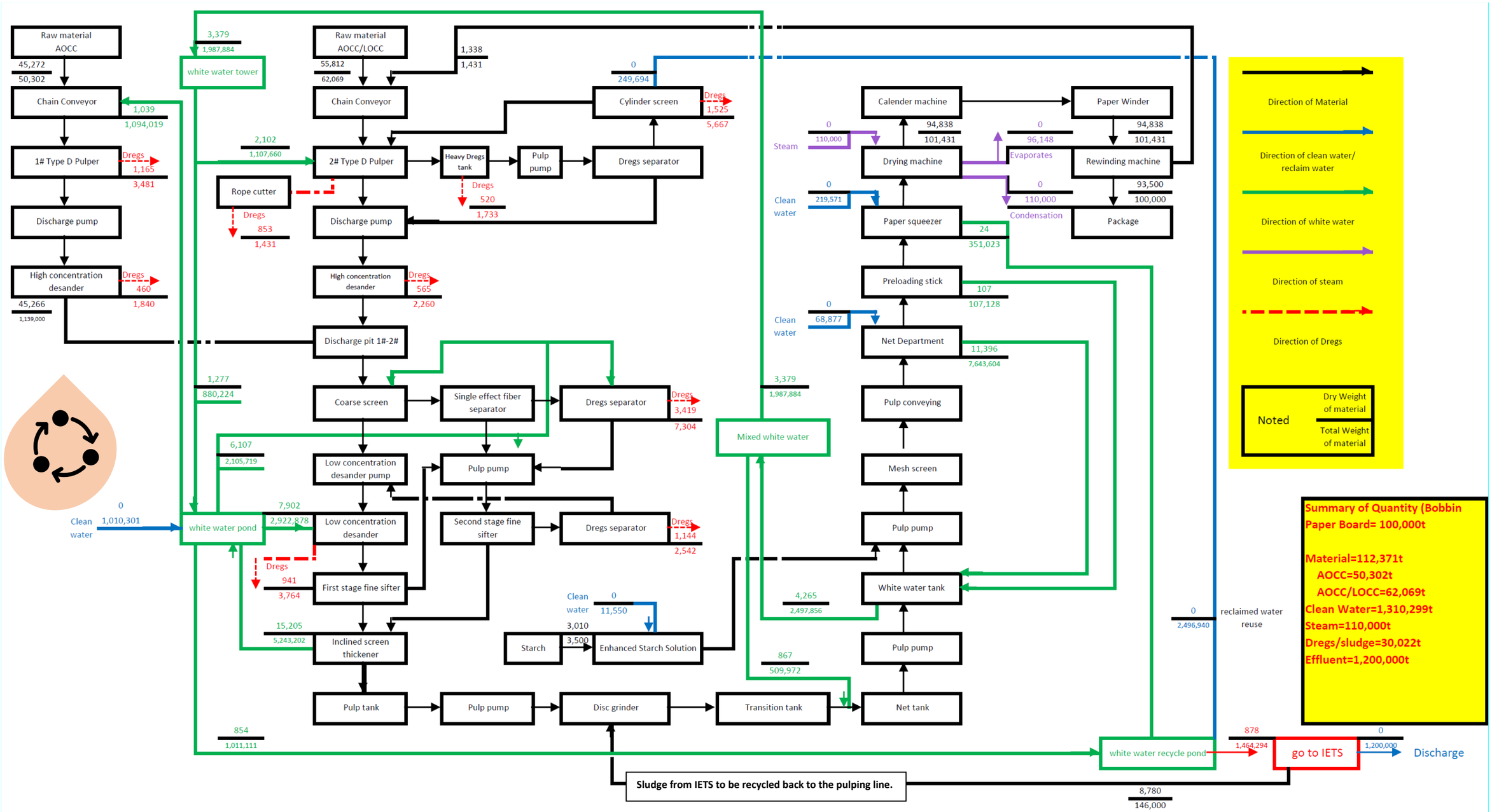
(to apply Special Waste Management approval for disposal to Semeling Landfill, Sg. Petani, Kedah.

Sewage Treatment Plant (SSTS / STP) [189PE]

(***Refer Diagram 5.7 & Figure 5.2***)

295.68 MT/day sludge (recycling for Pulping & Paper Making Line thru Disc grinder, Transition tank and core pulp pump. Please refer to **Diagram 5.2 – 5.4**). 74m^3/d filter press water to be transferred back to IETS for treatment.

MASS BALANCE OF CORE PAPER BOARD (BOBBIN PAPER BOARD) FOR LINE 1-PHASE 1 AND LINE 2-PHASE 3 (100,000 TONNES / YEAR /LINE)



Total material (Raw Material + Water + Sludge)					
Input	Input	Output	Output	Internal cycle	
AOCC	50,302	Wet Residue	30,022	Steam	110,000
AOCC/LOCC	62,069	Effluent	1,200,000	Paper trimmings	1,431
Raw starch	3,500	Steam	96,148	Reclaimed water	249,694
Clean water	1,310,299	Paper Product	100,000	Sludge	14,600
0	1,426,170	0	1,426,170	0	375,725

Total Material (Dry Material)					
Input	Input	Output	Output	Internal cycle	
AOCC	45,272	Dry Residue	10,594	Steam	0
AOCC/LOCC	55,812	Effluent	0	Paper trimmings	1,338
Raw starch	3,010	Steam	0	Reclaimed water	0
Clean water	0	Paper Product	93,500	Sludge	878
0	104,094	0	104,094	0	2,216

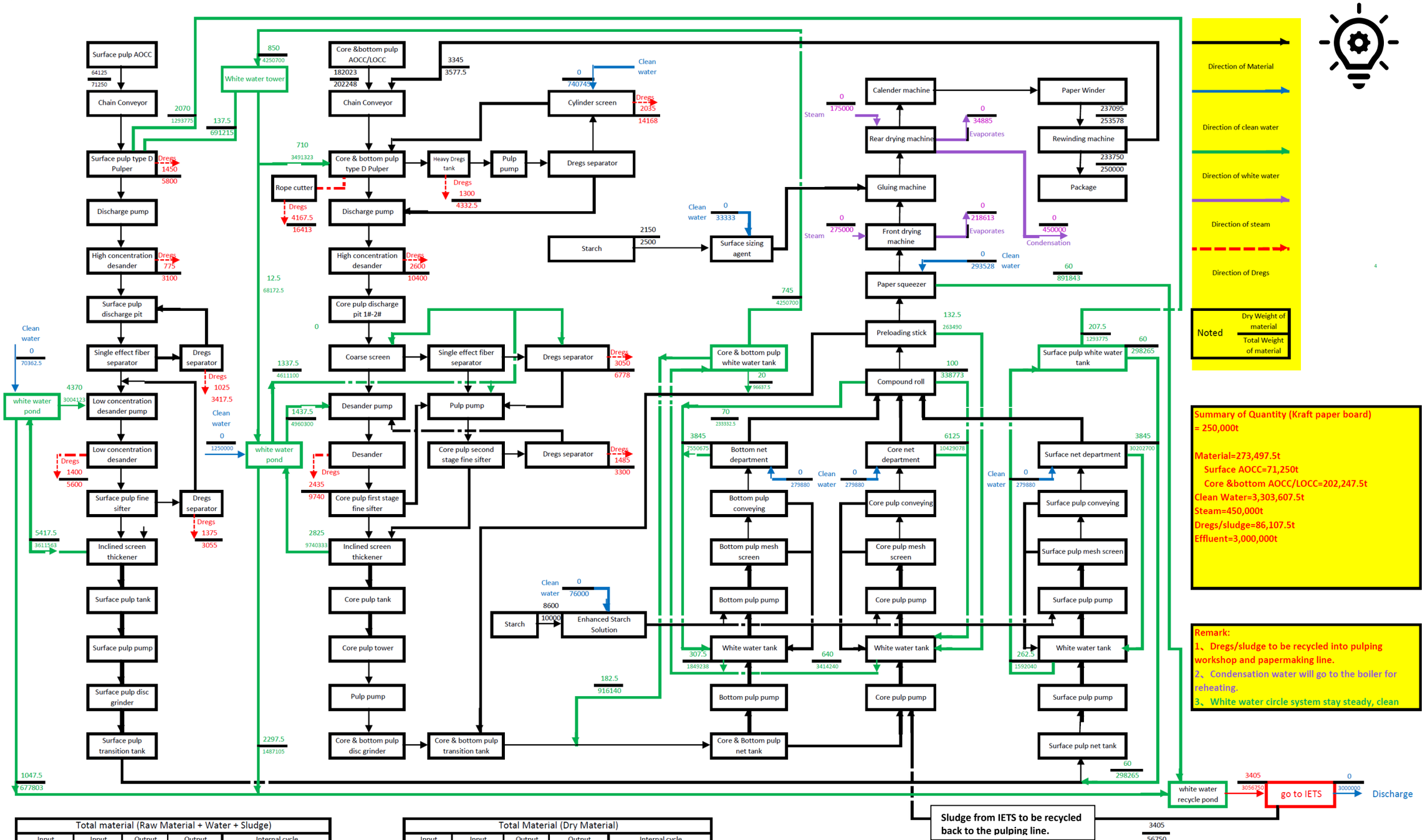
Remark:

1、Dregs/sludge to be recycled into pulping workshop and papermaking line.

2、Condensation water will go to the boiler for reheating.

3、White water circle system stay steady, clean water comes and industrial effluent leaves.

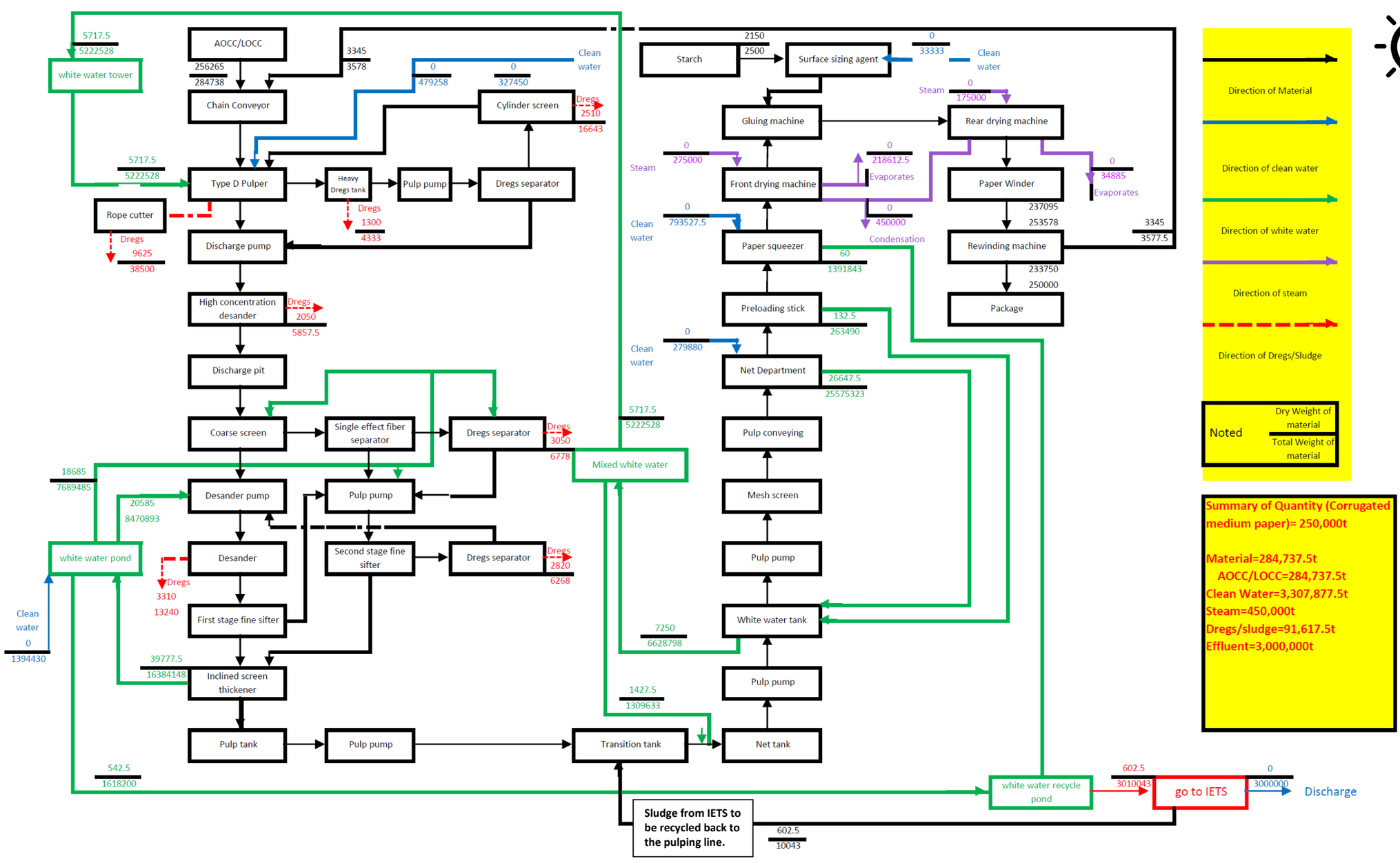
MASS BALANCE OF KRAFT PAPER BOARD (PHASE 2) - (250,000 TONNES / YEAR)



Total material (Raw Material + Water + Sludge)					
Input	Input	Output	Output	Internal cycle	
AOCC	71250	Wet Residue	86107.5	Steam	450000
AOCC/LOCC	202247.5	Effluent	3000000	Paper trimmings	3577.5
Raw starch	12500	Steam	253497.5	Reclaimed water	0
Clean water	3303607.5	Paper Product	250000	Sludge	56750
/	3589605	/	3589605	/	510327.5

Total Material (Dry Material)					
Input	Input	Output	Output	Internal cycle	
AOCC	64125	Dry Residue	23147.5	Steam	0
AOCC/LOCC	182022.5	Effluent	0	Paper trimmings	3345
Raw starch	10750	Steam	0	Reclaimed water	0
Clean water	0	Paper Product	233750	Sludge	3405
	256897.5	0	256897.5	0	6750

MASS BALANCE OF CORRUGATED MEDIUM PAPER (PHASE 3) - (250,000 TONNES / YEAR)



Total material (Raw Material + Water + Sludge)

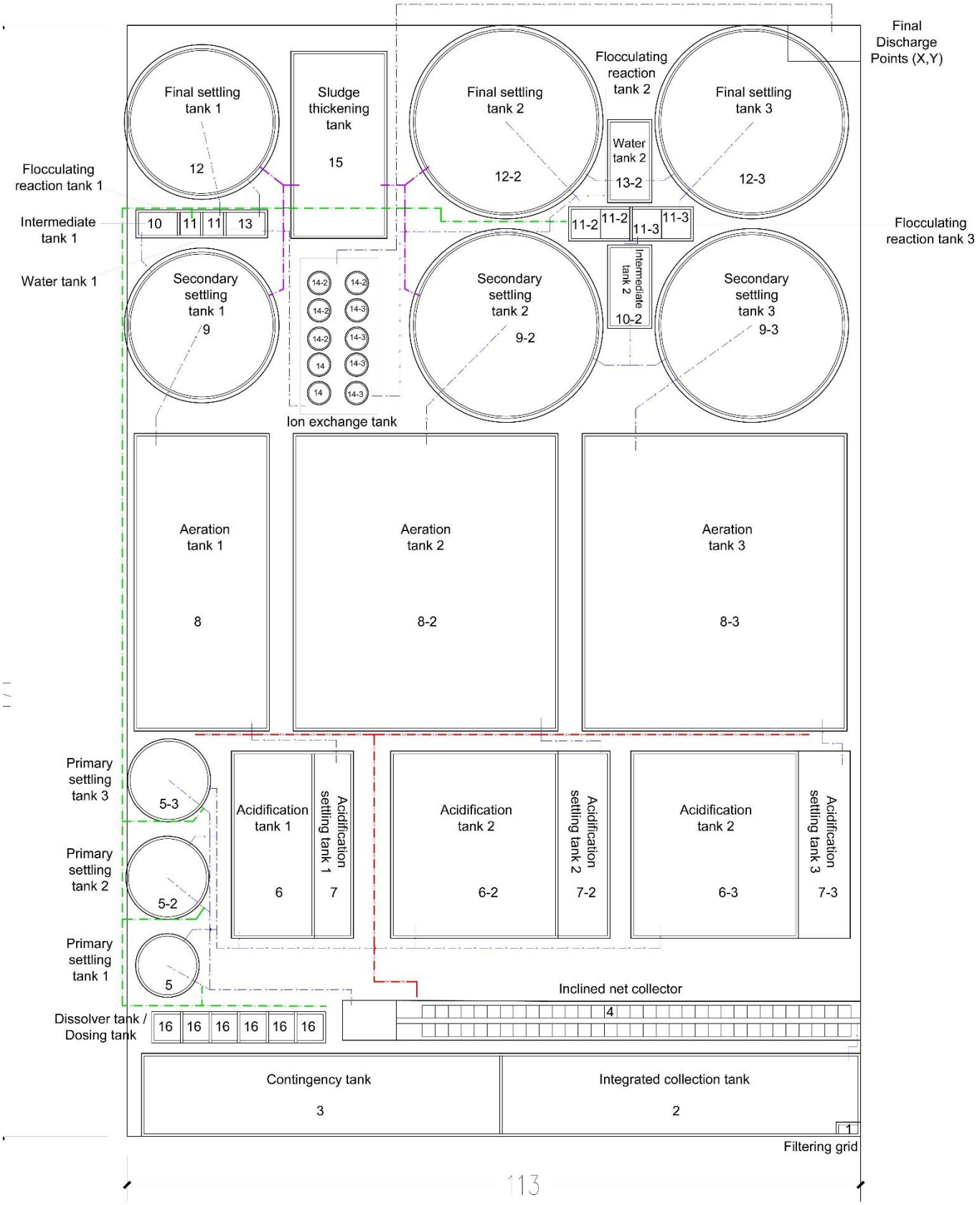
Input	Input	Output	Output	Internal cycle	
AOCC	0	Wet Residue	91,617.5	Steam	450,000
AOCC/LOCC	284,737.5	Effluent	3,000,000	Paper trimmings	3,577.5
Raw starch	2,500	Steam	253,497.5	Reclaimed water	0
Clean water	3,307,877.5	Paper Product	250,000	Sludge	10,050
/	3,595,115	/	3,595,115	/	463,627.5

Total Material (Dry Material)

Input	Input	Output	Output	Internal cycle	
AOCC	0	Dry Residue	24,665	Steam	0.0
AOCC/LOCC	256,265	Sewage	0	Paper trimmings	3,345.0
Raw starch	2,150	Steam	0	Reclaimed water	0.0
Clean water	0	End Product	233,750	Sludge	602.5
/	258,415	/	258,415	/	3,947.5

Remark:
1、Dregs/Sludge to be recycled into pulping workshop and papermaking line.
2、Condensation water will go to the boiler for reheating.
3、White water circle system stay steady, clean water comes and industrial effluent leaves.

OVERVIEW LAYOUT OF INDUSTRIAL EFFLUENT TREATMENT SYSTEM (IETS)



No.	Drawing	Name
1		Wastewater pipeline
2		Sludge pipeline
3		Dissolver pipeline
3		Air pipeline

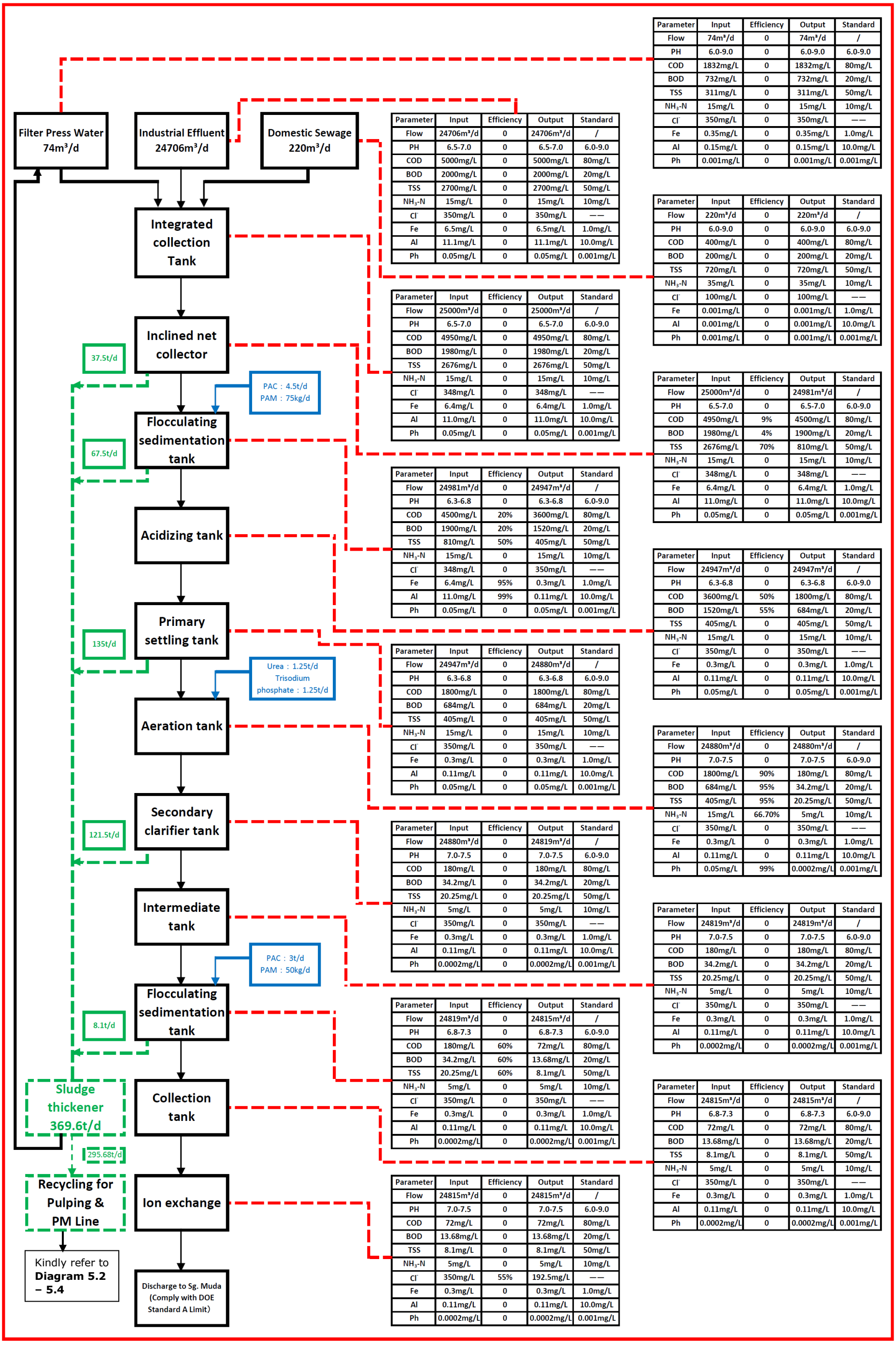
MAJOR PARAMETERS OF THE IETS PROCESS

No.	Parameter	*Raw Effluent Characteristics	*Treated Effluent Characteristics	DOE Standard A limit
1.	pH	6.0-9.0	7.51	6.0 – 9.0*
2.	Chemical Oxygen Demand, COD (mg/L)	5000	72	80*
3.	Biochemical Oxygen Demand, BOD_5 (mg/L)	2000	13.68	20*
4.	Total Suspended Solids, TSS (mg/L)	2700	8.1	50*
5.	Ammoniacal Nitrogen (mg/L)	15	5	10*
6.	Mercury (mg/L)	0.00045	<0.0004	0.005*
7.	Cadmium (mg/L)	0.005	<0.005	0.01*
8.	Chromium, hexavalent(mg/L)	0.004	<0.004	0.05*
9.	Arsenic (mg/L)	0.003	0.0003	0.05*
10.	Cyanide (mg/L)	0.004	<0.004	0.05*
11.	Lead (mg/L)	0.10	0.02	0.10*
12.	Copper (mg/L)	0.05	<0.01	0.20*
13.	Manganese (mg/L)	0.005	<0.005	0.20*
14.	Nickel (mg/L)	0.005	<0.005	0.20*
15.	Tin (mg/L)	0.01	0.01	0.20*
16.	Zinc (mg/L)	0.5	0.005	2.0*
17.	Boron (mg/L)	0.3	0.005	1.0*
18.	Iron (mg/L)	6.5	0.3	1.0*
19.	Silver (mg/L)	0.005	0.003	0.1*
20.	Aluminium (mg/L)	11.1	0.11	10.0*
21.	Selenium (mg/L)	0.005	0.003	0.02*
22.	Barium (mg/L)	0.005	0.003	1.0*
23.	Fluoride (mg/L)	0.005	0.003	2.0*
24.	Formaldehyde (mg/L)	0.86	0.1	1.0*
25.	Phenol (mg/L)	0.05	0.0002	0.001*
26.	Free Chlorine (mg/L)	0.05	0.05	1.0*
27.	Sulphide (mg/L)	0.3	0.01	0.5*
28.	Colour (mg/L)	50	10	100*
29.	Dissolved Oxygen (mg/L)	≤2.45	≥5	-
30.	Total Nitrogen (mg/L)	20	10	-
31	Total Phosphorus (mg/L)	1	0.5	-
32.	Chloride (mg/L)	350	200	-
33.	Total Organic Carbon (mg/L)	1650	24	-

Source: Yuhua Paper Industry Sdn. Bhd. 2020

*** First Schedule, Acceptable Conditions for Discharge of Industrial Effluent or Mixed Effluent of Standards A, Environmental Quality (Industrial Effluent) Regulations 2009.**

MASS BALANCE OF THE PROPOSED IETS (25,000 M³/D X 340D/Y)



Parameter	Input	Efficiency	Output	Standard
Flow	74m³/d	0	74m³/d	/
PH	6.0-9.0	0	6.0-9.0	6.0-9.0
COD	1832mg/L	0	1832mg/L	80mg/L
BOD	732mg/L	0	732mg/L	20mg/L
TSS	311mg/L	0	311mg/L	50mg/L
NH_3-N	15mg/L	0	15mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.35mg/L	0	0.35mg/L	1.0mg/L
Al	0.15mg/L	0	0.15mg/L	10.0mg/L
Ph	0.001mg/L	0	0.001mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	24706m³/d	0	24706m³/d	/
PH	6.5-7.0	0	6.5-7.0	6.0-9.0
COD	5000mg/L	0	5000mg/L	80mg/L
BOD	2000mg/L	0	2000mg/L	20mg/L
TSS	2700mg/L	0	2700mg/L	50mg/L
NH_3-N	15mg/L	0	15mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	6.5mg/L	0	6.5mg/L	1.0mg/L
Al	11.1mg/L	0	11.1mg/L	10.0mg/L
Ph	0.05mg/L	0	0.05mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	220m³/d	0	220m³/d	/
PH	6.0-9.0	0	6.0-9.0	6.0-9.0
COD	400mg/L	0	400mg/L	80mg/L
BOD	200mg/L	0	200mg/L	20mg/L
TSS	720mg/L	0	720mg/L	50mg/L
NH_3-N	35mg/L	0	35mg/L	10mg/L
Cl^-	100mg/L	0	100mg/L	——
Fe	0.001mg/L	0	0.001mg/L	1.0mg/L
Al	0.001mg/L	0	0.001mg/L	10.0mg/L
Ph	0.001mg/L	0	0.001mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	25000m³/d	0	25000m³/d	/
PH	6.5-7.0	0	6.5-7.0	6.0-9.0
COD	4950mg/L	0	4950mg/L	80mg/L
BOD	1980mg/L	0	1980mg/L	20mg/L
TSS	2676mg/L	0	2676mg/L	50mg/L
NH_3-N	15mg/L	0	15mg/L	10mg/L
Cl^-	348mg/L	0	348mg/L	——
Fe	6.4mg/L	0	6.4mg/L	1.0mg/L
Al	11.0mg/L	0	11.0mg/L	10.0mg/L
Ph	0.05mg/L	0	0.05mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	25000m³/d	0	24981m³/d	/
PH	6.5-7.0	0	6.5-7.0	6.0-9.0
COD	4950mg/L	9%	4500mg/L	80mg/L
BOD	1980mg/L	4%	1900mg/L	20mg/L
TSS	2676mg/L	70%	810mg/L	50mg/L
NH_3-N	15mg/L	0	15mg/L	10mg/L
Cl^-	348mg/L	0	348mg/L	——
Fe	6.4mg/L	0	6.4mg/L	1.0mg/L
Al	11.0mg/L	0	11.0mg/L	10.0mg/L
Ph	0.05mg/L	0	0.05mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	24981m³/d	0	24947m³/d	/
PH	6.3-6.8	0	6.3-6.8	6.0-9.0
COD	4500mg/L	20%	3600mg/L	80mg/L
BOD	1900mg/L	20%	1520mg/L	20mg/L
TSS	810mg/L	50%	405mg/L	50mg/L
NH_3-N	15mg/L	0	15mg/L	10mg/L
Cl^-	348mg/L	0	350mg/L	——
Fe	6.4mg/L	95%	0.3mg/L	1.0mg/L
Al	11.0mg/L	99%	0.11mg/L	10.0mg/L
Ph	0.05mg/L	0	0.05mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	24947m³/d	0	24947m³/d	/
PH	6.3-6.8	0	6.3-6.8	6.0-9.0
COD	3600mg/L	50%	1800mg/L	80mg/L
BOD	1520mg/L	55%	684mg/L	20mg/L
TSS	405mg/L	0	405mg/L	50mg/L
NH_3-N	15mg/L	0	15mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.05mg/L	0	0.05mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	24947m³/d	0	24880m³/d	/
PH	6.3-6.8	0	6.3-6.8	6.0-9.0
COD	1800mg/L	0	1800mg/L	80mg/L
BOD	684mg/L	0	684mg/L	20mg/L
TSS	405mg/L	0	405mg/L	50mg/L
NH_3-N	15mg/L	0	15mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.05mg/L	0	0.05mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	24880m³/d	0	24880m³/d	/
PH	7.0-7.5	0	7.0-7.5	6.0-9.0
COD	1800mg/L	90%	180mg/L	80mg/L
BOD	684mg/L	95%	34.2mg/L	20mg/L
TSS	405mg/L	95%	20.25mg/L	50mg/L
NH_3-N	15mg/L	66.70%	5mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.05mg/L	99%	0.0002mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	24880m³/d	0	24819m³/d	/
PH	7.0-7.5	0	7.0-7.5	6.0-9.0
COD	180mg/L	0	180mg/L	80mg/L
BOD	34.2mg/L	0	34.2mg/L	20mg/L
TSS	20.25mg/L	0	20.25mg/L	50mg/L
NH_3-N	5mg/L	0	5mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.0002mg/L	0	0.0002mg/L	0.001mg/L

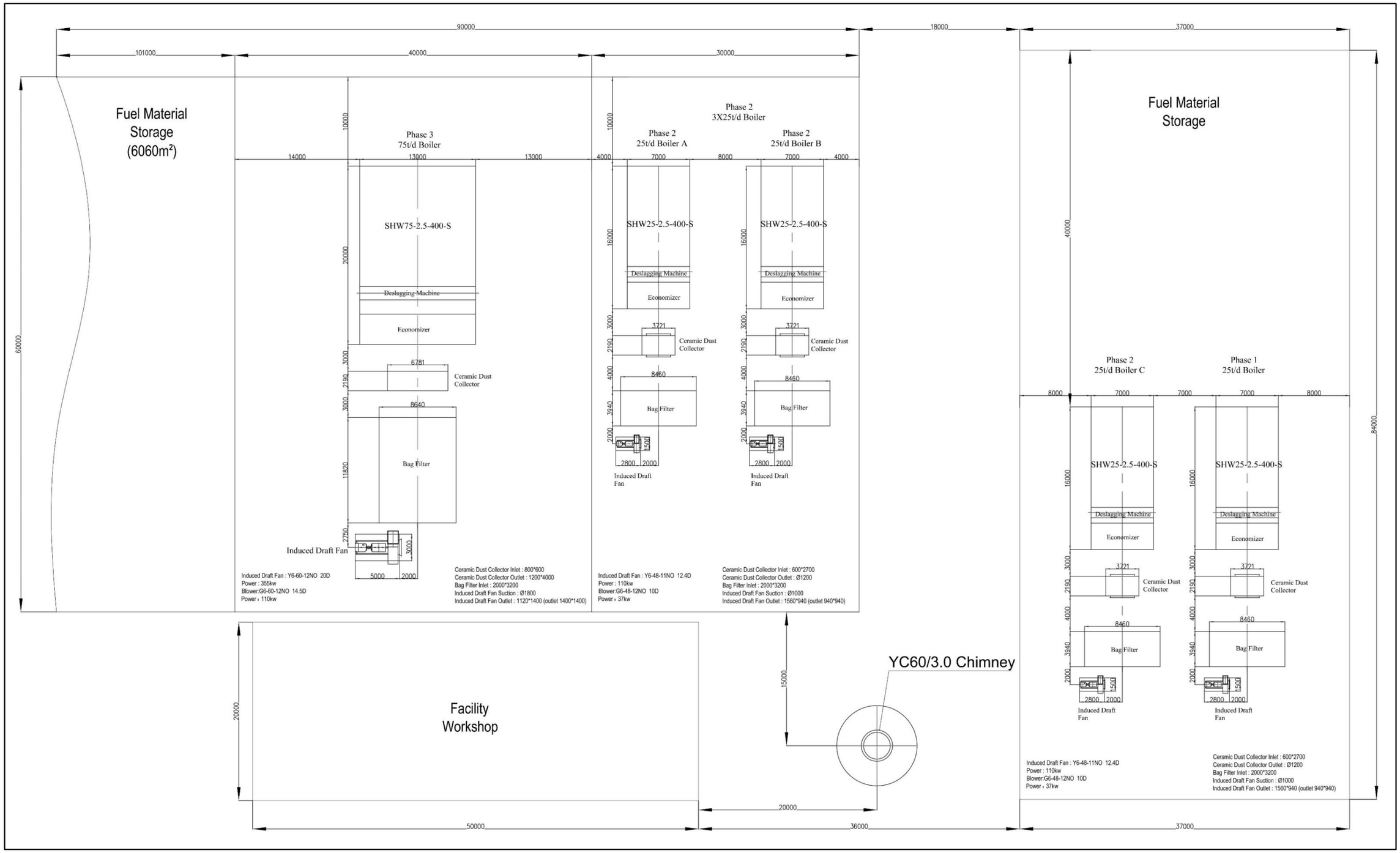
Parameter	Input	Efficiency	Output	Standard
Flow	24819m³/d	0	24819m³/d	/
PH	7.0-7.5	0	7.0-7.5	6.0-9.0
COD	180mg/L	0	180mg/L	80mg/L
BOD	34.2mg/L	0	34.2mg/L	20mg/L
TSS	20.25mg/L	0	20.25mg/L	50mg/L
NH_3-N	5mg/L	0	5mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.0002mg/L	0	0.0002mg/L	0.001mg/L

Parameter	Input	Efficiency	Output	Standard
Flow	24819m³/d	0	24815m³/d	/
PH	6.8-7.3	0	6.8-7.3	6.0-9.0
COD	180mg/L	60%	72mg/L	80mg/L
BOD	34.2mg/L	60%	13.68mg/L	20mg/L
TSS	20.25mg/L	60%	8.1mg/L	50mg/L
NH_3-N	5mg/L	0	5mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.0002mg/L	0	0.0002mg/L	0.001mg/L

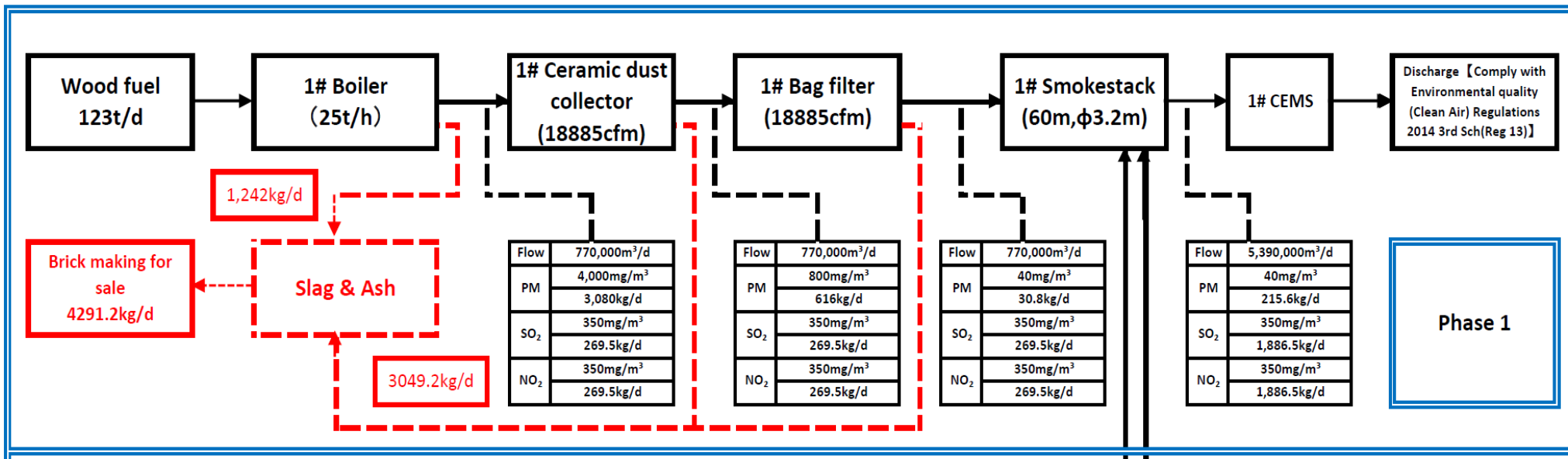
Parameter	Input	Efficiency	Output	Standard
Flow	24815m³/d	0	24815m³/d	/
PH	6.8-7.3	0	6.8-7.3	6.0-9.0
COD	72mg/L	0	72mg/L	80mg/L
BOD	13.68mg/L	0	13.68mg/L	20mg/L
TSS	8.1mg/L	0	8.1mg/L	50mg/L
NH_3-N	5mg/L	0	5mg/L	10mg/L
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.0002mg/L	0	0.0002mg/L	0.001mg/L

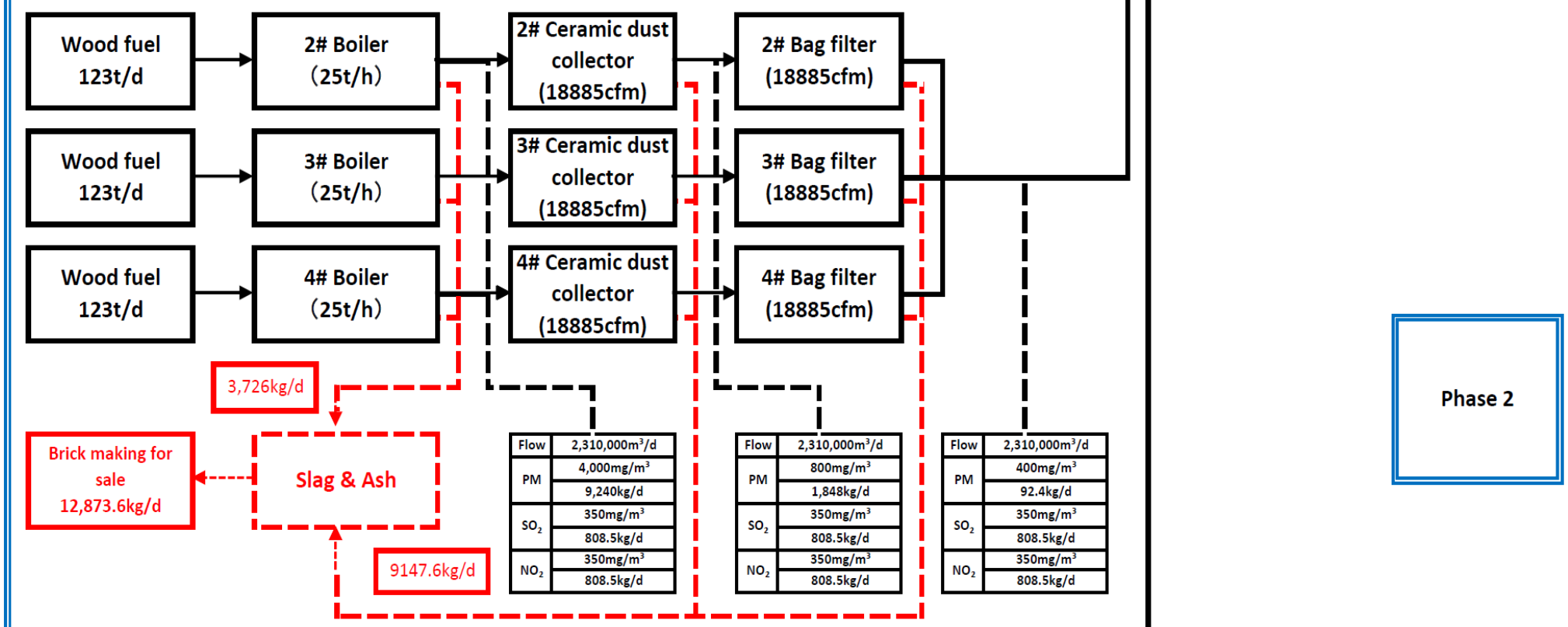
Parameter	Input	Efficiency	Output	Standard
Flow	24815m³/d	0	24815m³/d	/
PH	7.0-7.5	0	7.0-7.5	6.0-9.0
COD	72mg/L	0	72mg/L	80mg/L
BOD	13.68mg/L	0	13.68mg/L	20mg/L
TSS	8.1mg/L	0	8.1mg/L	50mg/L
NH_3-N	5mg/L	55%	192.5mg/L	——
Cl^-	350mg/L	0	350mg/L	——
Fe	0.3mg/L	0	0.3mg/L	1.0mg/L
Al	0.11mg/L	0	0.11mg/L	10.0mg/L
Ph	0.0002mg/L	0	0.0002mg/L	0.001mg/L

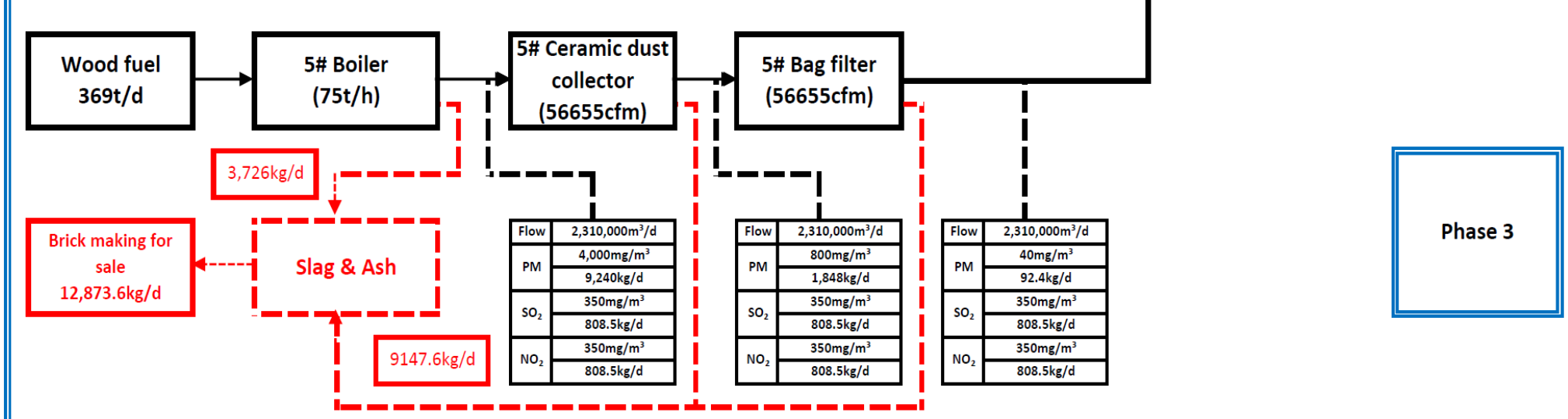
OVERVIEW LAYOUT FOR BOILER AND AIR POLLUTION CONTROL SYSTEM (APCS)



AIR POLLUTION CONSTROL SYSTEM (APCS) AND MASS BALANCE





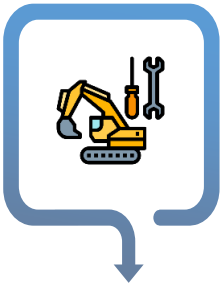
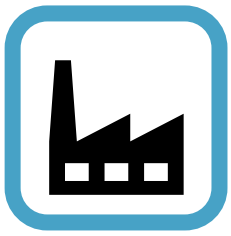


Fuel Type	Time	Fuel Consumption	Total Waste Generation (3 Phases)				
			Boiler Slag	Particulate Matter (PM)		Sulfur Oxides (SO_2)	Nitrogen Oxides (NO_2)
				Collected=Ash	Discharged		
Wood	Daily	861,000kg/d	8,694kg/d	21,344kg/d	215.6kg/d	1,886.5kg/d	1,886.5kg/d
Wood	Yearly	292,740t/a	2,955.96t/a	7,256.96t/a	73.30t/a	641.41t/a	641.41t/a

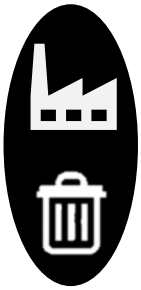
Remark :
The boilers will operate 24 hours per day and 340 days per year.

For Total 3 Phases

PROJECT ACTIVITIES

<table>
<tr><td rowspan="2">  </td><td colspan="2">PRE-CONSTRUCTION STAGE</td></tr>
<tr><td>✓ Land Survey
✓ River Survey
✓ Subsurface Investigation
✓ Water Availability Survey</td><td>✓ Social Impact Assessment Survey
✓ Environmental Studies
✓ Engineering Studies
✓ Air Quality Modelling</td></tr>
<tr><td rowspan="2">  </td><td colspan="2">CONSTRUCTION STAGE</td></tr>
<tr><td colspan="2">• Site Preparation and Vegetation Clearing;
• Mobilization of Workers and Equipment;
• Construction of Papermaking and pulping workshops;
• Construction of IETS, APCS, Chimney, boilers;
• Piping works from Paper Plant to Sungai Muda;
• Staff Accommodation and Site Office;
• Landscaping and Re-vegetation;
• Waste Generation, Management and Disposal.</td></tr>
<tr><td rowspan="2">  </td><td colspan="2">OPERATION STAGE</td></tr>
<tr><td colspan="2">• Pulping and Papermaking activities;
• Water abstraction from Sungai Muda;
• Discharge of treated industrial effluent to Sungai Muda;
• Emission from chimney (APCS and boilers process);
• Waste Generation, Management and Disposal.</td></tr>
<tr><td>  </td><td colspan="2">• Maintenance works for LTP;
• Maintenance works for IETS;
• Maintenance works for APCS;
• Disposal of solid wastes to Semeling Landfill
• Disposal of scheduled wastes (SW 204 - water treatment residues) to approved dumpsite or licensed facility.
• Comprehensive usage of ash and slag as fertilizer to oil palm and rubber estate.</td></tr>
</table>

ESTIMATED UTILITIES DEMAND & GENERATION

CONSTRUCTION STAGE		OPERATIONAL STAGE
		Maximum electricity demand 32,000,000 Kwh/y for Phase 1, 125,000,000 Kwh/y for Phase 2; and 119,500,000 Kwh/y for Phase 3.
		**Total water abstraction and demand** from Sungai Muda 27.152 MLD (27,153 m^3/d).
Sewage generation is 22,500 L/day (100 PE)		**Full Operations of the STP** The sewage generation is expected to be 42,525 L/day for189 PE (630 workers). Maximum sewage generated is estimated at 220$m^{3.}$ Including all other staff personnel.
Generation solid waste is 100 kg/day (100 PE)		**Generation of solid waste** It is estimated at 189 kg/day (189 PE – for 630 workers)
		**Treated Effluent from IETS** Generation of 24.815 MLD final discharge complied with Standard A / EIA Standard to Sungai Muda.
		**Sludge from Water Treatment Plant (WTP)** Generation of waste is 6.8 MT/day (SW204) – to apply Special Waste Management approval from DOE Malaysia fr disposal to Semeling Landfill, Sg. Petani, Kedah.
		**Sludge from Industrial Effluent Treatment System (IETS)** Generation of waste is 369.68 MT/day (SW204) – recycling for pulping and paper making line.
		**Ash & Slag from Boilers** - Disposal to legal landfill (To apply for special management of wastes under Section 7, Environmental Quality (Scheduled Wastes) Regulations 2005) - or comprehensive utilization as fertilizer for surrounding oil palms and rubber estates. or - or sell to brick making factory

EXISTING ENVIRONMENT

PHYSICAL ENVIRONMENT

TOPOGRAPHY

The Project Site is characterised by nearly flat platforms with a majority elevation ranging from RL26.0m to RL36.0m above mean sea level (msl). The highest point (approximately RL37.55m) is located on the slope at the northeastern boundary whilst the lowest point (approximately RL24.35m) lies in the southern boundary of the Project Site.

HYDROLOGY

The Project site is located within Sg. Gajah catchment that has a catchment area of about 28 km^2 at its confluence with Sg. Muda.

There are 18 potable water supply intakes and 20 JPS paddy irrigation intakes located within Sg. Muda basin. The nearest potable water supply intake point is Bukit Selambau which is located 1.2 km upstream of Yuhua Paper Plant's proposed intake at the right bank of Sg Muda. Other potable water supply intake such as Kulim Hi-Tech, Sg. Petani and Pinang Tunggal are located about 50 km downstream of Project Site.

FLOOD HAZARD

From the review of flood records (JPS Kedah Flood Report from Year 2013 to 2017), the Project Site is not affected by flood thus far.

GENERAL GEOLOGY

The Project Site is underlain by metasediments of schists rock type namely Sungai Patani Formation which consists of argillaceous sequence of shale and mudstone.

SOIL INVESTIGATION

Based on the soil investigation (SI) conducted a total of four (4) numbers of exploratory borehole namely as BH1 – BH4.

Based on the borehole logs, the top soil consists of sandy SILT of approximately 5.7m to 16.2m thick with a SPT-N value of up to 20 blows/300mm, followed by subsoil layer of sandy/clayey SILT approximately 1.2m to 7.2m thick with a SPT-N value of 20 to 50 blows/300mm. SPT-N values generally increase with depth and hard layer (SPT-N > 50) of clayey SILT was encountered at the depth between 5.7 to 14.70 meters below existing ground level.

Based on the Reconnaissance Soil Map of Peninsular Malaysia (*Pindaan* 2002), the soil within the Project Site is classified as Gajah Mati-Munchong-Melaka Association.

HYDROGEOLOGY & GROUNDWATER

The Project Site is located on high potential aquifer regime of this region.

LANDUSE

Agricultural areas are the prevalent land use, with a total area of 19,471.29 acres (89.33% of the impact area). The main cultivated crops are rubber and oil palm which cover approximately 7,210.89 acres (33.08%) and 10,924.64 acres (50.12%).

BIOLOGICAL ENVIRONMENT

ENVIRONMENTAL SENSITIVE AREA (ESA)

- ✓ Based on Local Plan 2020 and Draft Local Plan 2035 of Majlis Daerah Kuala Muda, the proposed Project Site is not listed as **Environmental Sensitive Area (ESA)**.
- ✓ The nearest ESAs are:-
  - ✓ **Sungai Muda and Bukit Selambau Water Treatment Plant/ Water Intake** (ESA Rank 1 & 3) – 2.3km east of the Project Site.

FLORA AND FAUNA

- ✓ Project Site is located within a cleared site the fairly disturbed area, only shrubs, grasses and ornamental trees are observed within the project site area.
- ✓ No fauna encountered within the Project Site except Long-tailed Macaques, Monitor Lizard, rats, cows, and estate-oriented avifauna in the neighbouring oil palm and rubber estates.

IMPORTANT BIRDS AND BIODIVERSITY AREA (IBA)

- ✓ The Project Site is not located within the Important Birds Area (IBA).
- ✓ The nearest IBA area to the Project Site is Bintang Range (MY004) and Ulu Muda (MY002), approximately 27km southeast and 32km east from the Project Site.

FISHERIES RESOURCES

- ✓ Common fishes from the fish ponds within Kuala Muda and Sungai Muda are Tilapia Merah, Tilapia Hitam, Kelim Siakap and Pacu.
- ✓ Fishes sampled from the confluence of Sungai Muda and Sungai Ketil during field sampling are Baung, Lampam Sungai, Lampam Jawa and Patong.

SOCIO-ECONOMIC AND HUMAN ENVIRONMENT

SOCIO-ECONOMY SURVEY

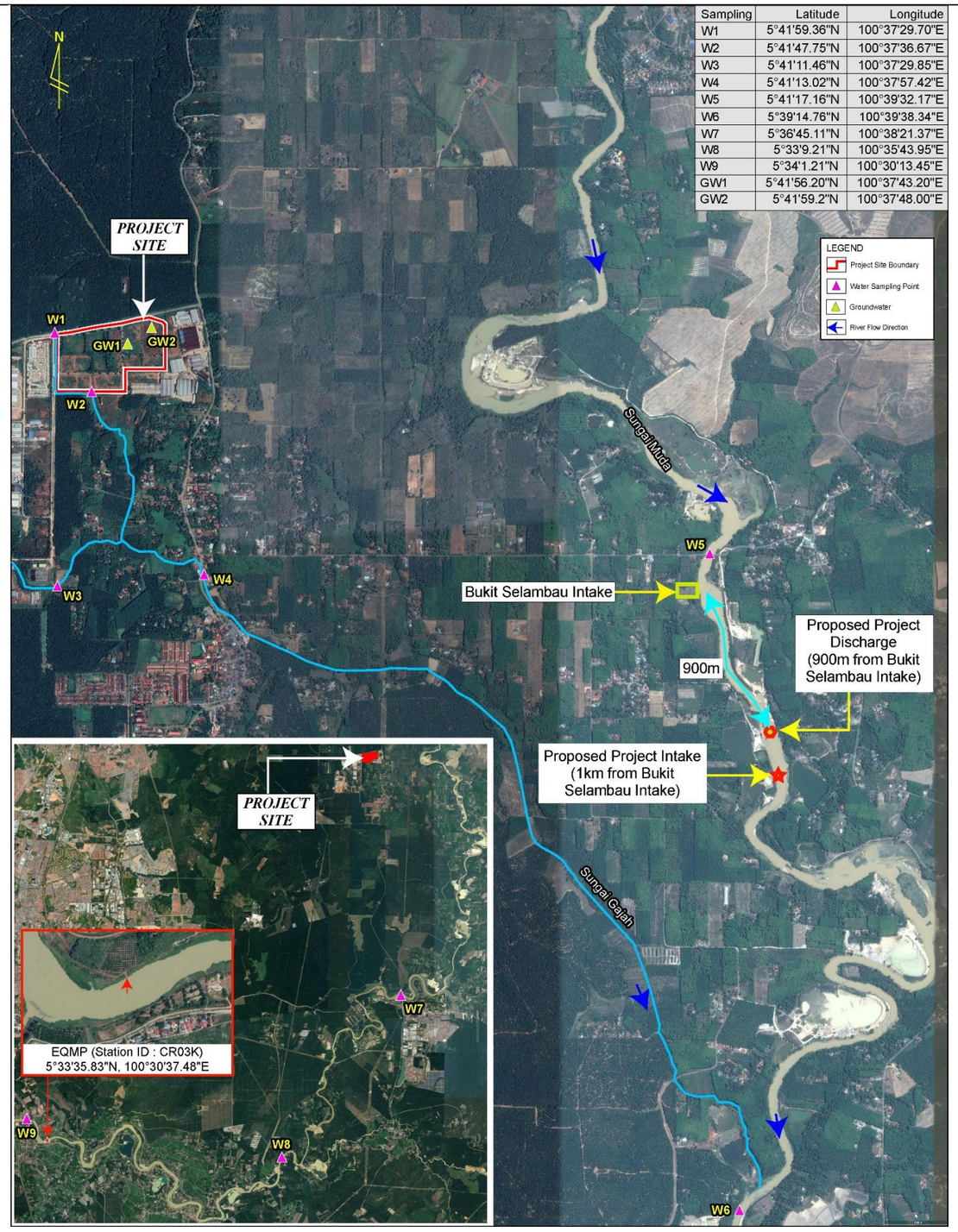
Socio-economy study entails the study on demographic profile of receptors within the zone of influence. Total 400 samples within ZOI had been surveyed.

Almost 60% of the respondents were moderately supportive towards the Project with concerns that the Project could cause similar adverse impacts in terms of air and water pollution from the existing factories located in Bukit Selambau Industrial Area. However, they were also hopeful that the Project would spur economic activities in the area with the increase of job and business opportunities to the locals.

TOTAL POPULATION (Population and Housing Census of Malaysia, 2018 – Kuala Muda)

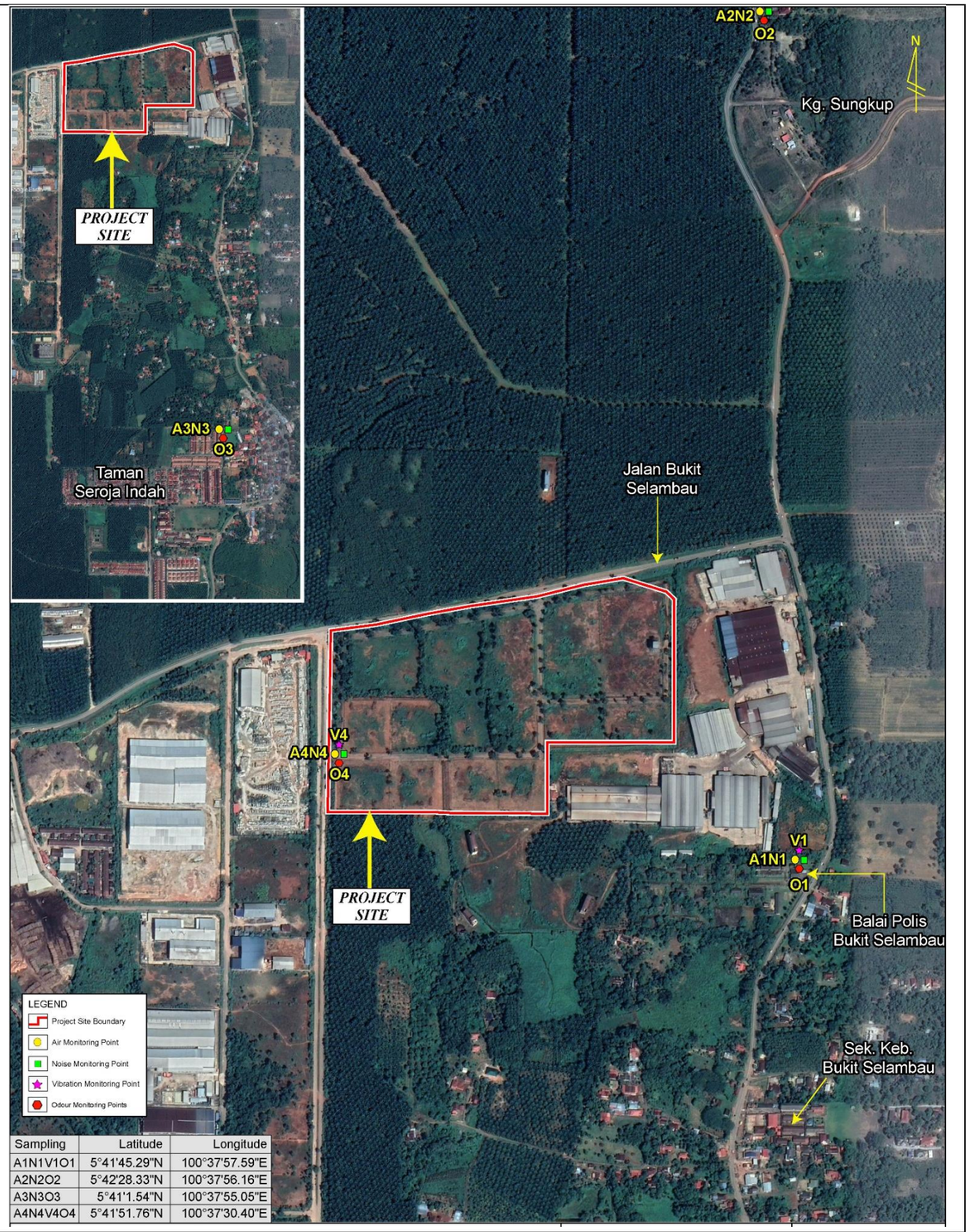
- ❑ Total population estimation is 514,000.
- ❑ Ethnic composition:- Bumiputera 326,800 people, Chinese 90,700 people, Indian 66,500 people, other 1,100 people and Non-Malaysian, 29.400. The remaining 29,400 people were non-Malaysians found to be residing in District of Kuala Muda.

BASELINE ENVIRONMENTAL SAMPLING



Sampling	Latitude	Longitude
W1	5°41'59.36"N	100°37'29.70"E
W2	5°41'47.75"N	100°37'36.67"E
W3	5°41'11.46"N	100°37'29.85"E
W4	5°41'13.02"N	100°37'57.42"E
W5	5°41'17.16"N	100°39'32.17"E
W6	5°39'14.76"N	100°39'38.34"E
W7	5°36'45.11"N	100°38'21.37"E
W8	5°33'9.21"N	100°35'43.95"E
W9	5°34'1.21"N	100°30'13.45"E
GW1	5°41'56.20"N	100°37'43.20"E
GW2	5°41'59.2"N	100°37'48.00"E

BASELINE SAMPLING FOR WATER AND GROUNDWATER.



Sampling	Latitude	Longitude
A1N1V1O1	5°41'45.29"N	100°37'57.59"E
A2N2O2	5°42'28.33"N	100°37'56.16"E
A3N3O3	5°41'1.54"N	100°37'55.05"E
A4N4V4O4	5°41'51.76"N	100°37'30.40"E

BASELINE SAMPLING FOR AIR, NOISE, VIBRATION AND ODOUR.

BASELINE RESULTS

WATER QUALITY

- Most of the WQ parameters were within the Class II limits, except COD, BOD, TSS, AN, Manganese, Turbidity, Iron, Colour and Phosphorus.
- COD exceeded the limit at W3 @ 29th September morning, W5 @ 29th September morning, W9 @ 29th September morning and W8 @ 28th, 29th September afternoon.
- BOD exceeded the limit at W1 @ 29th September morning, W3 @ 29th September (both sessions), W5 @ 29th September (both sessions), W8 @ 28th, 29th September afternoon and W9 @ 29th September morning.
- TSS exceeded the limit at most of the locations except W1, W2, W3 and W4. For AN, the limit exceeded at most of the locations except W1 and W2.
- Manganese exceeded the limit at all locations except W6.
- Turbidity exceeded the limit at most of the locations except W1, W2, W3 and W4.
- Iron exceeded the limit at most of the locations except W2 and W4.
- Colour is within the Class II limit except for W5 and W6.
- Phosphorus exceeded the limit at most of the locations except W1.

Sampling Point	WQI Classification			
	DAY1-AM	DAY1-PM	DAY2-AM	DAY1-PM
W1	89.17, Class II	89.66, Class II	85.32, Class II	84.82, Class II
W2	91.36, Class II	91.80, Class II	91.90, Class II	89.31, Class II
W3	86.04, Class II	84.33, Class II	74.52, Class III	77.37, Class III
W4	82.75, Class II	84.76, Class II	81.58, Class II	80.55, Class II
W5	81.24, Class II	81.41, Class II	74.34, Class III	79.86, Class II
W6	86.66, Class II	84.88, Class II	80.61, Class II	80.66, Class II
W7	79.23, Class II	73.60, Class III	80.48, Class II	80.87, Class II
W8	75.01, Class III	69.41, Class III	76.64, Class II	71.35, Class III
W9	83.06, Class II	75.84, Class III	65.02, Class III	79.44, Class II

AIR QUALITY

- Complies to Malaysian Ambient Air Quality Standards 2013, Standard 2020.

NOISE QUALITY

- Within the permissible limits of The Planning Guidelines for Environmental Noise Limits & Control, Department of Environment, Third Edition, 2019 except N1 during nighttime.

VIBRATION QUALITY

- Within the Recommended Limits for Damage Risk in Building from Steady State Vibration, Schedule 1; Annex A: Schedule of Recommended Vibration Limits.

ODOUR LEVEL

- the perceived odour concentration which **ranging from 0 D/T [Neutral] to 2 D/T [Noticeable]** are typical smell of rural setting with industrial and agricultural activities.

GROUNDWATER QUALITY

- Most of the parameters were within the National Groundwater Quality Standard for Industry (2017) and MOH's National Drinking Water Quality Standards except pH, Fe, Mn and Suspended Solids.

Impact Assessment & Mitigation Measures During Construction Stage

Summary of Environmental Impacts and Mitigating Measures

All the impacts that are likely to be generated by the proposed Project is summarized in **Table A**. Mitigating measures specifically proposed for each of the impacts are also presented in a systematic manner in accordance to pre-construction, construction and operational phase. Hence, such data enable convenient identification of impacts along with their respective temporal (i.e., acute or residual) and spatial (i.e., magnitude) considerations.

Table A: Summary of Environmental Impacts and Mitigating Measures for the Proposed Project

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
A. <u>Pre-Construction Phase</u>						
Reconnaissance study of the Project Site. Detailed study of the existing condition.	• Preparation of documentations and plans of the proposed development. • Field survey and site investigation by engineering and environmental consultants.	• The activity is rather localized and not expected to generate any disturbances to the existing environment. • Some form of beneficial impacts such as job opportunities (i.e., surveying works, associated labourers and analytical laboratories) may be possible.	None.	Short-term.	The pre-construction stage basically involves documentation, legal approval from the relevant authorities, building construction design and development planning, field survey as well as site investigation.	7-1 & 8-1

Impact Assessment & Mitigation Measures During Construction Stage

Continue.

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
B. <u>Construction Phase</u>						
Construction of the access road Main Access route to Project Site	• Provision for proper transportation routes is given foremost consideration in any developmental project. This is to ensure convenience to the workers as well as enabling smooth transportation of construction materials and heavy machinery. • Transportation of machineries, equipment and construction material to the site is via Jalan Sungai Lalang-Bukit Selambau (K152) or Jalan Jeniang (K17) before entering the Project Site.	• Main impact is in terms of noise and dust disturbances. • Increment of traffic risks especially by heavy vehicles plying Jalan Sungai Lalang-Bukit Selambau (K152) or Jalan Jeniang (K17). • Spillage of raw construction material onto public roads.	• Regular sweeping / cleaning of access roads to ensure all fallen debris from construction vehicles (i.e., sand, aggregates, etc.) removed by workers to ensure traffic safety. • Installation of spillage boxes for all concrete trucks employed within the site; to prevent accidental spillage onto public roads. • Flagmen must be stationed at the access road junctions to control and direct traffic. • Vehicles will have to observe speed limits and any damage done to the transportation routes should be repaired. • Proper warning signs, signals or warning light and barricade are recommended to ensure safety and smooth flow of traffic.	Short-term within the duration of the proposed Project.	The contractor should ensure that the transportation of heavy machineries, equipments and construction material adhere to specific guidelines from relevant authorities.	7-2 & 8-2

Impact Assessment & Mitigation Measures During Construction Stage

Continue.

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
B. <u>Construction Phase</u>						
Access Route within project site	• Existing earthen routes within the project site.	• As the access route has been established within the Project area, the magnitude of disturbance unto the physical environment may be considered as nominal.	• One (1) wash trough will be constructed to avoid dirtying the public road. • Establishment of tarred road or compacted crusher run roads • Constant wetting of work tracks to minimize dust dispersion.	Short-term within the duration of the proposed Project.	The contractor should ensure that the transportation of heavy machineries, equipments and construction material adhere to specific guidelines from relevant authorities.	7-3 & 8-2
Site Clearing and Biomass Disposal.	• Site clearing involve the removal of mainly of shrubs and grasses. • Biomass generation is approximately: →**~33.65 tons.**	• Loss of current vegetation and related habitats. • May lead to soil erosion and increase in surface runoff. • If not disposed off properly, can lead to water quality deterioration and attract unwanted pests • Open burning of biomass or solid waste shall generate soot and dust.	• Site clearing will be conducted in three (3) phases to allow faunal migration. • Implementation of best management practices (BMPs) on-site (i.e., turfing, temporary earth drains and sediment basin). • Mulching of undergrowth / small woody plants on the slope / bare area to reduce soil erosion. • Biomass will be stockpiled at the designated area before disposal. • The residual materials will to be disposed off to the legal dumpsite (i.e., Semeling Landfill).	Short-term within the duration of the proposed Project.		7-3 to 7-4 & 8-3 to 8-6

Impact Assessment & Mitigation Measures During Construction Stage

Continue.

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
			• Stockpiled biomass must be covered so as to not leach TOC into the waterways. • Contractor should place heavy emphasis in soil conservation by adopting environmentally integrated measures to counter against soil erosion. • Sediment basin design must be based on "Urban Stormwater Manual for Malaysia, 2nd Edition or MASMA 2 (2012).			7-3 to 7-4 & 8-3 to 8-6
Mobilization on site	• Construction of workers camp. • Sewage to be generated during the construction stage is at 22,500 l/day[1] (~estimated 100 workers; which is equivalent to 100 PE).	• It is estimated that 100 workers shall be needed during construction stage. • Direct discharge of untreated sewage can cause water and air pollution.	• Workers quarters and the site office should be kept clean at all time. • Temporary toilets with septic tanks or SSTS (if PE>150) specified by SPAN (Suruhanjaya Perkhidmatan Air Negara) and should be desludged regularly. • No open-burning is allowed • Water logged areas at the base camps should be drained properly	Short-term within the duration of the proposed Project.		7-5 & 8-6 to 8-13

[1] Assumption during construction stage based on per worker with per capita discharge rate of 225l/day. Adapted from MS1228 Sewage Guidelines

Impact Assessment & Mitigation Measures During Construction Stage

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
	• Provision of maintenance yard/ workshop.	• Heavy machinery and equipment can generate oily waste. • Oil/ grease and hydraulic spill onto soil causing the soil and groundwater contamination.	• Maintenance yard located away from waterways / drainage system, must self-contained and well-bunded. • Proper skid tank storage to curtail the possibility of oil and grease contamination. • Generated spent oil and grease from the maintenance works have to be stored and handled as per the Environmental Quality (Scheduled Wastes) Regulations 2005.			7-5 & 8-6 to 8-13
Impact of earthworks.	• Cut and fill quantities for Project Site is approximated to cut **66,812 m^3** and total fill **55,391 m^3** respectively. • The excess cut of **11,421 m^3** will be used for earth filling compaction and the earth movements for this development will be within the project site.	• Main impact generated from earthworks activities is probably in the form of soil washout into the river especially during heavy rain. • Settlement of the underlying subsoil by the load imposed after filling. • If not properly compacted, fill areas is susceptible to erosion, slipping and subsidence. • If the cuttings are too steep and are not properly protected, stability problems may arise.	• One (1) earthwork phase for entire development. • Erosion control proposed is by work scheduling, turfing & hydroseeding. • Sediment Control proposed is sediment basin, sediment forebay and sediment fence/sand bag. • One (1) sediment basin with forebay is proposed. • Earth bund with sediment fence to be placed along the access road next to Jalan Sungai Lalang – Bukit Selambau (K152). • Runoff Management controls are Temporary Earth Drain, Earth bund, Drainage Outlet Protection and Temporary Waterway Crossing (TWC).	Short term		7-6 to 7-8 & 8-14 to 8-25

Impact Assessment & Mitigation Measures During Construction Stage

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Impact of earthworks.	• Excavation of higher grounds to form platforms, roads and other areas as shown in design drawings. • Filling to lower area to form embankments and platform to design levels.	• Leveling of ground and the use of heavy machinery for the compaction of the fill material during land development and construction activities will give rise to dust and noise pollution. • Internal access road within the site will be used as main access for earth transport.	• Tracking control proposed is the use of hoarding, stabilized construction access, construction Road stabilization, entrance / outlet wash trough, and wetting of ground. • One (1) wash trough is proposed. • Any sediment generated from the site shall be retained in the silt structure before being discharged into existing earth drain which drains to Sg. Gajah and eventually flow into Sg. Muda.			7-6 to 7-8 & 8-14 to 8-25
Hydrology	• Site clearing and earthwork activities will have a significant impact on the hydrological regime.	• Clearing of the existing vegetation will increase in discharge into existing earth drain which drain into Sg. Gajah and eventually flow into Sg. Muda.	• For this proposed development, two (2) sediment basins proposed for the overall development area. • Surface drainage needs to be constructed in order to reduce the infiltration and erosion caused by surface runoff especially during heavy rainstorms.	Short term	Temporary drainage system will be designed to comply with the procedures as outlined in the MASMA manual.	7-9 & 8-48

Impact Assessment & Mitigation Measures During Construction Stage

Continue.

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Soil Erosion	Site clearing and earthworks in the form of cut and fill activities. This activity will be only carried out at proposed built up area.	<u>Under worst case scenario</u> Soil Erosion rate for the overall earthworks Areas of the Project Site – 175.8 tons/ha/year. Total sediment yield for the overall Earthworks Areas of the Project Site - 1,245 tons per storm event (approximately 2 times higher than the existing condition of 706 tons per storm event) <u>With these erosion control mitigation measures</u> The average soil loss rate for the overall Earthworks Areas of the Project Site will be reduced to 2.6 tons/ha/year and the total sediment yield is 15 tons per storm event which is lower than the existing condition of 706 tons per storm event).	• Earthworks will be carried out in one (1) stage whilst construction works will be carried out in three (3) phases. • Provision of a sediment basin at appropriate location for sediment control purposes for overall Project Site. • Maintenance of the drainage network and sediment basin. • Biotechnical protection and mechanical practices to attend to the exposed soil. • Implementation of LD-P2M2.	Short term		7-41 to 7-47 & 8-14 to 8-25

Impact Assessment & Mitigation Measures During Construction Stage

Continue.

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Air Pollution	• Improper storage of raw construction materials such as cement, sand, gravels.	• Increased level of TSP/PM10 due to spillage or wind-blown dust from uncovered material which may have some effects on aesthetic value and health aspects. • Leveling of ground and the use of heavy machinery for the compaction of the fill material during earthwork and construction activities will give rise to dust pollution. • Traffic movement on dirt road will churn up the surface and may incite hazy condition especially during dry and windy periods. • Based on on-site examination, prevailing shall be from the east direction. • Anticipated immediate receptors are Kg. Haji Tok Nyan, Balai Polis Bukit Selambau, Pekan Bukit Selambau and road users of K152 Jalan Sungai Lalang – Bukit Selambau at the southern, southeastern and northern region of the Project Site.	• Provision of one (1) wash trough. • Constant wetting and cleaning of roads connecting the Site to external public roads. • Proposed road network within the site to be constructed and tarred • Proper covering of raw materials and topsoil stockpiles. • Traffic management trough speed limits and regular maintenance of vehicles / machinery • To erect hoarding along the eastern, northern and western boundary of the Project Site.	Short-term within the duration of the proposed Project.	The air pollution problem is considered to be short-term problem and localised within the working areas.	7-143 to 7-146 & 8-29 to 8-32

Impact Assessment & Mitigation Measures During Construction Stage

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Noise Pollution	• Earthworks	• Nearest residential receptor shall experience minimal noise level emitted from tractors, scrappers, trucks and, jackhammer/rock drills.	• Noisy construction activities should be done only during day-time to preserve tranquility of night-time and reduce level of nuisance to surrounding population.	Similarly, with air pollution, noise pollution is also localized and short term.		7-179 to 7-182 & 8-33
Paper Plant and Infrastructural Works	• Piling Activities	• High noise level will create nuisance and pose psychological effect to the receptors, and to some extend may cause physiological effect. • Based on the simulation shown that by using jack in pile and bored piling for WTP at the distance 315m from the receptors, the noise emission at 90 percentiles of the time is below than the limit of L_{90}=60. • Bored piling can be considered to be used for pulping workshop, paper making workshop, STP, boilers and IETS. • Improper disposal of construction debris (cement, pebbles, tiles) can clog drain and could impact project site's safety. • During construction phase, lorries and trucks delivering building materials, aggregate will increase traffic flow of the area especially at Jalan Sungai Lalang-Bukit Selambau (K152).	• Jack in pile is recommended to use at the area next to the receptors as it offer advantages in terms of low noise and vibration during pile installation. • Bored piling can also be considered to be used at the proposed water treatment plant, pulping workshop, paper making workshop and IETS, i.e., 315m, 356m, 337m away from the project boundary as based on the simulation shows that the noise emission at 90 percentiles of the time is below than the limit of L_{90}=60. • All domestic and building waste will be disposed off site to an approved dumpsite. • Traffic management is necessary to control traffic movements especially during peak hours.	Short-term within the duration of the proposed Project.		7-23, 7-38, 7-179 to 7-182 & 8-32, 8-34 to 8-35, 8-41 to 8-42
	• Solid Waste					
	• Traffic and Transportation Impact					

Impact Assessment & Mitigation Measures During Operation Stage

Continue….

PHASE OF DEVELOPMENT	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
C. <u>Operational Phase</u>						
Transportation of raw materials and chemicals	• Transportation of raw materials and chemicals by vehicles.	• The risk of spillage / leakage due to leaking / damaged containers that causes contamination to the nearby water bodies. • Incompatible raw materials and chemicals transported in the same vehicle will cause reaction to take place creating fumes or fire. • Increased probability of road accident by using undedicated road networks.	• The transport of raw materials and chemicals must follow relevant transport codes. • The transporting vehicle shall be equipped with the necessary PPE and spillage clean-up kit at all times. • Proper transportation schedule and follow dedicated road networks. • Avoid any incompatible type of material transported in a same vehicle.	Long-term.		7-17 & 8-44

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Handling of raw materials and chemicals	• Incoming chemicals. • Residue wastes or sludge generated from the operation process.	• Mislabeling or no labeling of residue waste or hazardous chemicals poses danger to the safety of the workers. • Direct impact towards worker's health when handling the hazardous chemicals.	• Recordkeeping should be maintained. • All drums and other storage containers must be properly and prominently labeled and tightly sealed. • Containers should be compatible with the stored material and free of leaks. • Suitable personal protective equipments (i.e., goggles, gloves and mask) have to be equipped all the time.	Long-term.		7-17 & 8-45

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Storage of raw materials and chemicals	• Incoming of raw materials and chemicals.	• Leaking / damaged containers, accidental spills could cause adverse effects to the workers and contaminate the air while liquid chemicals contaminate the water bodies. • Leaching caused by inadequate protection against rain and the effluent may run off into surface waters or seep into groundwater.	• Centralize responsibility for storing and distributing the hazardous chemicals • Store hazardous chemicals in a cool, dry well-ventilated place and avoid any area where the fire hazard may be acute. • Maintaining monthly inventory of chemicals. • The storage area should have an impervious surface and must be paved. • Containers used to store hazardous chemicals must be in good condition and free of leaks.	Long-term.		7-18 & 8-46

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Workers' Safety and Chemical Hazard	• Operation of machineries. • Maintenance of plant machineries. • Chemical hazard of the raw material.	• Accidents are prone to happen if without proper maintenance of the machinery and know-how skill of the workers for chemical hazards.	• Trainings cover emergency procedures should be provided to the workers. • The maintenance of plant machineries should also be conducted on a regular basis. • Material safety data sheet should be placed at the noticeable area when handling materials.	Long-term.		7-18 & 8-46 to 8-47

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
C. <u>Operational Phase</u>						
Stormwater Management		• Without a proper drainage planning and stormwater management, water quality and surface runoff will be disturbed as the landuse constituent of the Project Site will have gone through a major alteration.	• Project site is within one (1) major catchment area (Sg. Gajah catchment, one of the tributaries of the larger Sg. Muda river basin) and the surface water will gradually flow into 2 new detention ponds and 1 existing detention pond of the wood flooring factory. • Drainage system shall be provided within the project site to channel the storm water into the detention pond which will eventually flow into existing external drains before discharging into Sg. Gajah and eventually discharges into Sg. Muda.	It is anticipated that there will be no localized flooding upon construction of an efficient drainage system.		7-9 to 7-20 & 8-48

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Hydrology	• During the operational phase, 27.15 MLD of water will be abstracted from Sg Muda for the plant processing purposes. • Of the 27.15 MLD water abstraction, 24.81 MLD (91.4%) of the water used will be discharged back to Sg Muda as treated effluent discharge. • The net reduction in river flow will be only 2.34 MLD (8.6% of abstraction) when the plant is in operation.	• Analysis was carried out to assess the flow availability at the proposed Yuhua paper water intake and the impact of the water abstraction by the Project to the downstream water users in Sg Muda basin. • The computed flow duration curve (FDC) at the proposed intake shows that the 95th to 99th percentile natural low flow ranges from 126 MLD to 263 MLD. This is much higher than the Project requirement (27.15 MLD) and net reduction in river flow (2.34 MLD). • Impact assessment to the downstream flow regime and water users (involving 11 irrigation and 7 potable water supply intakes) for Pre- and during Project abstraction scenarios was carried out. The analysis shows that the Project's water abstraction has no impact to the water users along Sg Muda from flow quantity point of view.	• To comply with approval condition and requirement by respective authority. • To record river water abstraction and effluent discharge rates via installation of flow meter. • Periodic inspection and maintenance of all water pipelines. • Provision of protection works for the river banks, inlet and outlet structures.	Long-term.		7-48 to 7-56 & 8-48

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Hydrology		• The flow impact analysis has shown that currently Sg Muda flow will be insufficient to meet the downstream total potable water demand (1,747 MLD) at about 5% of time (equivalent to 18 days in a year). Whereas, if considering the total water demand for potable and irrigation (3,247 MLD), the water deficit days are about 32% of time (equivalent to 117 days in a year). It is to be highlighted that the water deficit in Sg Muda is an existing problem, and will not be aggravated by the proposed Yuhua paper operation. • With the nett reduction in Sg Muda flow due to the Project abstraction of 2.34 MLD, the computed deficit days are identical between "With" and "Without" the Project abstraction scenarios. This shows that with the abstraction by the Project, there is no significant impact to water abstraction activities along Sg Muda.		Long-term.		7-48 to 7-56 & 8-48

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Water Pollution	• Industrial effluent from paper plant IETS.	• **Low Flow Scenario** - Upon operation of the plant, effluent discharge will be released after the treatment from the IETS to Sg. Muda. Under the 7Q10 low flow condition, the summary of the simulated results for each parameter is shown in **Table A1** below. • For Sg. Muda under the low flow scenario, the WQ class of all the parameters remain unchanged except for AN between baseline and operation phases. • AN will deteriorate from baseline Class II to Class III under operation phase. • In order for AN to maintain as per baseline condition without affecting the current river class during low flow, the concentration quality for AN ≤ 5 mg/L.	• Effluent from the plant will be treated in the IETS to comply with Standard A limits under the Environmental Quality (Industrial Effluent) Regulations 2009. • AN will be treated to a level better than Standard A. • Periodic inspection and maintenance to be carried out for the pipelines to ensure there is no leakage since the effluent will be piped from the Project site to discharge into Sg. Muda. • In the event that the IETS fails, effluent will be contained in a Contingency Tank which has the capacity to retain the effluent up to 3.8 hours. The plant operation will be slowed down until the IETS operation is resumed as normal. If the IETS operation is unable to resume within the specified period, the whole production will be ceased.	Long-term.	• The IETS design needs to comply with the requirements of the Environmental Quality Act, 1974.	7-57 to 7-114 & 8-40 to 8-55 & 8-49 to 8-50

Impact Assessment & Mitigation Measures During Operation Stage

Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Water Pollution	• Industrial effluent from paper plant IETS.	• **Normal Flow Scenario** - Overall, WQ condition is better under the normal flow condition compared to low flow condition. The summary of the simulated results for each parameter is shown in **Table A2** below. • For Sg. Muda under the normal flow scenario, the WQ class of all the parameters remain unchanged between baseline and operation phases.	Same as above.	Long-term.	• The IETS design needs to comply with the requirements of the Environmental Quality Act, 1974.	7-57 to 7-114 & 8-40 to 8-55 & 8-49 to 8-50

Table A1: Summary of Simulated Results of WQ Parameters for Sg. Muda under the 7Q10 Low Flow Condition

WQ Parameters	Class/ mg/L	Baseline	Operation
pH	Class	II	II
DO	Class	II	II
BOD	Class	III	III
COD	Class	II	II
AN	Class	I-II	I-III
TSS	Class	II	II
NO_3	mg/L	0.05 - 0.45	0.05 - 0.45
TP	mg/L	0.18 - 0.20	0.18 - 0.21
Chloride	mg/L	4.93 - 4.95	4.95 - 10.12
TOC	mg/L	2.50 - 3.28	2.71 - 3.81

Table A2: Summary of Simulated Results for each Parameter for Sg. Muda under the Normal Flow Condition

WQ Parameters	Class/ mg/L	Baseline	Operation
pH	Class	II	II
DO	Class	I-II	I-II
BOD	Class	III	III
COD	Class	II	II
AN	Class	I	I-II
TSS	Class	III	III
NO_3	mg/L	0.25 - 0.70	0.26 - 0.70
TP	mg/L	0.26 - 0.28	0.26 - 0.28
Chloride	mg/L	2.59 - 2.61	2.60 - 4.07
TOC	mg/L	2.62 - 2.90	2.67 - 3.04

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PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Groundwater Quality		• Possibilities of groundwater contamination due to spillage or leakage oil/grease and scheduled waste from the paper plant.	• Proper handling of scheduled waste at site. • Groundwater sampling, and monitoring within the Project Site in accordance with the requirements of DOE Malaysia.	Impacts can be managed.	Long-term groundwater monitoring reveal changes to the groundwater system which differs with those predicted by the re-calibrated groundwater model; the model should again be verified and re-calibrated with all available monitoring data.	7-115 to 7-140 & 8-51 to 8-53

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PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Waste Management -Solid Waste	• Solid waste expected to be generated from the 630 workers on-site is **56.7 kg/day.** • Solid wastes such as plastic and metal generated from the stock preparation and pulping workshop.	• Improper disposal of solid waste may affect aesthetic quality, a source of water contamination and proliferation of disease vectors.	• Implementation of a proper and adequate waste collection system by the Local Authority. • Solid waste shall only be disposed at an approved dumpsite landfill under the jurisdiction of Majlis Perbandaran Sungai Petani (MPSPK). • The plastic and metal can be recycled and sell to the recycling contractors.	Long-term.	• Solid waste management is under the responsibility of local authority (Majlis Perbandaran Sungai Petani)	7-23 & 8-34 to 8-35
-Sullage and Kitchen Waste Management		• All drainage systems and piping will be clogged if the sullage and kitchen wastes are discharged without a proper trap.	• Grease traps must to be prepared for all kitchens in the workers dormitory to trap the Fat, Oil and Grease (FOG).	Long-term.		7-23 & 8-34 to 8-35

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PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Scheduled Wastes	• Sludge generation from the proposed pulping workshop, water treatment plant (WTP) and industrial effluent treatment system (IETS). • Fly ash and slag (bottom ash) from boilers and ESP.	• Scheduled waste (SW 204 Water treatment residue) generated during the operation phase is 6.8MT/day of solids from the raw river water pumping rate of 27.153MLD. • Scheduled waste (SW204 sludge from IETS) generated during the operation phase is 295.68 tons/day for 3 phases. • Scheduled waste (fly ash and slag-bottom ash) generated during the operation phase is 30.038 tons/day for 3 phases or 10,213 tons/year.	• Project Proponent has to apply for special management of scheduled wastes under Section 7, Environmental Quality (Scheduled Wastes) Regulations 2005. • Sludge or WTR from water treatment plant will be disposed of to the landfill. • Sludge of IETS will be reused for paper product and minimum sludge will be disposed to the landfill. • Ash and slag from APCS will be sold as fertilizer, if approved under special management of wastes.	Long-term.	The Project Proponent has to apply for special management of scheduled wastes under Section 7, Environmental Quality (Scheduled Wastes) Regulations 2005.	7-22 to 7-23 & 8-35, 8-54 to 8-57

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Continue.

PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Air and Noise	• Operation of process equipment and pollution control system. • Traffic flow to and from the Paper Plant for material loading and unloading.	• Gas emission from the chimney during the operation. • Fugitive emissions from the storage area and process area. • Air-operated driven pumps and gear motor noise from the paper pulping and making process. • The traffic emission of obnoxious gasses and excessive noise are considered nominal. • For Air Quality modelling refer to **Table A3(a-e)**, during Normal Operation, the calculated Ground level Concentration (GLCs) for identified criteria pollutants at the identified off-site ASRs i.e., **ASR1**, **ASR2** and **ASR3** met the Malaysian Ambient Air Quality Standards 2013 at 2020. • As for SO_2 with emission concentration of 500 mg/Nm^3 (CAR 2014), further assessment on the contribution based on 25% threshold shows non-compliance at ASR1 for both 1-hour averaging and 24-hours averaging with the predicted MAICs slightly exceeded the calculated threshold of 62.5 µg/m^3 and 20 µg/m^3 respectively. • During Abnormal Situation, the predicted 1-hour averaging time for PM_{10} is assessed to be elevated and have impact to the surrounding areas.	• Flue gas of the boiler is treated with high-efficiency ceramic dust collector. • Compliance to EQ (Clean Air) Regulations 2014. • Continuous emission monitoring system (CEMS) to be provided to monitor and record selected gas parameters to monitor the imminent breach of emission limit and is interlocked with control system to adjust various processes parameters to avoid such exceedance. • Regulatory procedures or control of traffic emissions to comply with the legislative limits. • Proposed heavy landscape buffer to be established at the southern and southeastern boundary adjacent to Kg. Haji Tok Nyan and Balai Polis Bukit Selambau as natural air and noise barrier.	Residual impacts	The air quality modeling showed most of the predicted Maximum Average Incremental Concentration for Identified pollutants (PM2.5, PM10, NOx, SOx) by normal scenario are within the Malaysian Air Quality Standards 2013 (Standard 2020)	7-141 to 7-183 & 8-28 to 8-32 & 8-64 to 8-67

Table A3(a): Predicted Maximum Average Incremental Concentration for Identified Pollutants (in μg/m³) Normal Scenario

Parameter	Averaging Time	Baseline Level (μg/m³)	Diagram	Concentration (μg/m³)									
				Highest MAIC	Off-site ASRs						On-site ASR		MAAQS 2013 (Standard [2020])
					ASR1: Nearby Bukit Selambau Police Station		ASR 2: Kampung Sungkup		ASR 3: Taman Seroja Indah		ASR4: Nearby Bukit Selambau Industrial Park *(For comparison purposes only)*		
					MAIC	GLC	MAIC	GLC	MAIC	GLC	MAIC	GLC	
Particulate matter sized 10 microns or less (PM_{10})	24-hours	**Off-site ASRs** A1: 48 A2: 53 A3: 46 **On-site ASR** A4: 41 (24-hours averaging time)	7.32	44	9.0	57.0	18.0	71.0	2.1	48.1	10.5	51.5	**100**
	Annual Average			4.43	1.6	-	1.1	-	0.2	-	3.0	-	**40**
Particulate matter sized 2.5 microns or less ($PM_{2.5}$)	24-hours	**Off-site ASRs** A1: 29 A2: 22 A3: 32 **On-site ASR** A4: 31 (24-hours averaging time)	7.33	16	4.0	33.0	6.6	28.6	0.8	32.8	3.8	34.8	**35**
	Annual Average			1.63	0.67	-	0.44	-	0.10	-	1.08	-	**15**
Carbon Monoxide (CO)	1-hour	**Off-site ASRs** A1: 1.3 mg/m³ / 1,300 μg/m³ A2: 1.0 mg/m³ / 1,000 μg/m³ A3: 0.7 mg/m³ / 700 μg/m³ **On-site ASR** A4: 1.1 mg/m³ / 1,100 μg/m³ (8-hours averaging time)	7.34	166	29.0	-	18.3	-	19.4	-	48.4	-	**30 mg/m³ or 30,000 μg/m³**
	8-hours			62	19.5	20.8	10.2	11.2	6.4	7.1	18.4	19.5	**10 mg/m³ or 10,000 μg/m³**
Nitrogen Oxides (NO_x) as 100% NO_2	1-hour	**Off-site ASRs** A1: <10 A2: <10 A3: <10 **On-site ASR** A4: <10 (1-hours averaging time)	7.35	**415**	72.7	-	45.9	-	48.4	-	121.1	-	**280**
	24-hours			59	22.1	-	10.9	--	7.0	-	15.9	-	**70**
Sulphur Dioxide (SO_2) (Emission concentration: 500 mg/Nm³) (CAR 2014)	1-hour	**Off-site ASRs** A1: <14 A2: <14 A3<14 **On-site ASR** A4: <14 (24-hours averaging time)	7.36	**415**	72.7	-	45.9	-	48.4	-	121.1	-	**250**
	24-hours			59	22.1	-	10.9	-	7.0	-	15.9	-	**80**

Parameter	Averaging Time	Baseline Level (µg/m³)	Diagram	Concentration (µg/m³)									
				Highest MAIC	Off-site ASRs						On-site ASR		MAAQS 2013 (Standard [2020])
					ASR1: Nearby Bukit Selambau Police Station		ASR 2: Kampung Sungkup		ASR 3: Taman Seroja Indah		ASR4: Nearby Bukit Selambau Industrial Park *(For comparison purposes only)*		
					MAIC	GLC	MAIC	GLC	MAIC	GLC	MAIC	GLC	
Sulphur Dioxide (SO_2) (Emission concentration: 400 mg/Nm³) (Design)	1-hour	**Off-site ASRs** A1: <14 A2: <14 A3<14 **On-site ASR** A4: <14 (24-hours averaging time)		**284**	54.4	-	37.6	-	42.9	-	94.7	-	**250**
	24-hours			42	16.2	-	8.5	-	5.8	-	12.2	-	**80**
Hydrogen Chloride (HCl)	8-hours	**Off-site ASRs** A1: NA A2: NA A3: NA **On-site ASR** A4: NA	7.37	31	9.7	-	5.1	-	3.2	-	9.2	-	-
	24-hours			12	4.4	-	2.2	-	1.4	-	3.2	-	20 (Health) (Ontario)
	Annual		-	1.51	0.54	-	0.32	-	0.12	-	0.23	-	-
Hydrogen Fluoride (HF)	8-hours	**Off-site ASRs** A1: NA A2: NA A3: NA **On-site ASR** A4: NA	-	4.67	1.46	-	0.77	-	0.48	-	1.38	-	-
	24-hours		7.38	**1.77**	0.66	-	0.33	-	0.21	-	0.48	-	0.86 (Vegetation)(Ontario)
	Annual			0.226	0.081	-	0.048	-	0.018	-	0.034	-	-
Mercury (Hg)	8-hours	**Off-site ASRs** A1: NA A2: NA A3: NA **On-site ASR** A4: NA	-	0.00934	0.0029	-	0.0015	-	0.0010	-	0.0275	-	-
	24-hours		7.39	0.00350	0.00132	-	0.00065	-	0.00042	-	0.00095	-	2 (Health)(Ontario)
	Annual			0.00045	0.00016	-	0.00010	-	0.00040	-	0.00070	-	-
Dioxin and Furan (PCDD/PCDF)	8-hours	**Off-site ASRs** A1: NA A2: NA A3: NA **On-site ASR** A4: NA	-	0.03113 pg TEQ/m³	0.00975 pg TEQ/m³	-	0.00511 pg TEQ/m³	-	0.00322 pg TEQ/m³	-	0.00917 pg TEQ/m³	-	-
	24-hours		7.40	0.00118 pg TEQ/m³	0.00441 pg TEQ/m³	-	0.00217 pg TEQ/m³	-	0.00141 pg TEQ/m³	-	0.00318 pg TEQ/m³	-	0.1 pg TEQ/m³ (Health)(Ontario)
	Annual			0.0015 pg TEQ/m³	0.00054 pg TEQ/m³	-	0.00032 pg TEQ/m³	-	0.00012 pg TEQ/m³	-	0.00023 pg TEQ/m³	-	-

Notes: ND – Not detected, ASRs – Air Sensitive Receptors
Ground Level Concentration = Baseline Level + Predicted MAIC
Baseline Ambient Air Quality Monitoring carried out from 26 to 30 September 2020
***BOLD** = Exceedance*

Table A3(b): Predicted Maximum Average Incremental Concentration for Identified Pollutants (in μg/m³) during Normal Scenario in Compliance of 25% Threshold

Parameter	Averaging Time	MAAQS (Standard 2020) (μg/m³)	Calculated 25% Threshold (μg/m³)	ASR	ASR Incremental (μg/m³)	Compliance with 25% Threshold
Particulate matter 10 microns or less (PM_{10})	24-hours	100	25	1: Nearby Bukit Selambau Police Station	9.0	**YES**
				2: Kampung Sungkup	18.0	**YES**
				3: Taman Seroja Indah	2.1	**YES**
	Annual	40	10	1: Nearby Bukit Selambau Police Station	1.6	**YES**
				2: Kampung Sungkup	1.1	**YES**
				3: Taman Seroja Indah	0.2	**YES**
Particulate matter 2.5 microns or less ($PM_{2.5}$)	24-hours	35	8.75	1: Nearby Bukit Selambau Police Station	4.0	**YES**
				2: Kampung Sungkup	6.6	**YES**
				3: Taman Seroja Indah	0.8	**YES**
	Annual	15	3.75	1: Nearby Bukit Selambau Police Station	0.67	**YES**
				2: Kampung Sungkup	0.44	**YES**
				3: Taman Seroja Indah	0.10	**YES**
Carbon Monoxide (CO)	1-hour	30,000	7,500	1: Nearby Bukit Selambau Police Station	29.0	**YES**
				2: Kampung Sungkup	18.3	**YES**
				3: Taman Seroja Indah	19.4	**YES**
	8-hours	10,000	2,500	1: Nearby Bukit Selambau Police Station	19.5	**YES**
				2: Kampung Sungkup	10.2	**YES**
				3: Taman Seroja Indah	6.4	**YES**

Table A3 (c): Predicted Maximum Average Incremental Concentration for SO_2 (in μg/m³) during Controlled Scenario in Compliance of 25% Threshold

Condition	Averaging Time	MAAQS 2013 (Standard 2020) (μg/m³)	Calculated 25% Threshold (μg/m³)	ASR	ASR Incremental (μg/m³)	Compliance with 25% Threshold
Sulphur Dioxide (SO_2) (Emission concentration: 500 mg/Nm³) (CAR 2014)	1-hour	250	62.5	1: Nearby Bukit Selambau Police Station	72.7	**NO**
				2: Kampung Sungkup	45.9	**YES**
				3: Taman Seroja Indah	48.4	**YES**
	24-hours	80	20	1: Nearby Bukit Selambau Police Station	22.1	**NO**
				2: Kampung Sungkup	10.7	**YES**
				3: Taman Seroja Indah	7.0	**YES**
Sulphur Dioxide (SO_2) (Emission concentration: 400 mg/Nm³) (Design)	1-hour	250	62.5	1: Nearby Bukit Selambau Police Station	54.5	**YES**
				2: Kampung Sungkup	37.6	**YES**
				3: Taman Seroja Indah	42.6	**YES**
	24-hours	80	20	1: Nearby Bukit Selambau Police Station	16.2	**YES**
				2: Kampung Sungkup	8.5	**YES**
				3: Taman Seroja Indah	5.8	**YES**

Table A3(d): Predicted Maximum Average Incremental Concentration for NO_2 (in μg/m³) during Normal Scenario in Compliance of 25% Threshold

Condition	Identified ASR	ASR Incremental (μg/m³) - NOx as 100% NO_2	ASR Incremental (μg/m³) - NOx as 10% NO_2	Compliance with 25% Threshold	ASR Incremental (μg/m³)- NOx as 35% NO_2	Compliance with 25% Threshold
1-hour Average Limit: 280 μg/m³ (MAAQS (Standard [2020]) **25% Threshold: 70 μg/m³**	1: Nearby Bukit Selambau Police Station	72.7	7.27	**YES**		
	2: Kampung Sungkup	45.9	4.59	**YES**		
	3: Taman Seroja Indah	48.4	4.84	**YES**		
24-hours Average Limit: 70 μg/m³ (MAAQS (Standard [2020]) **25% Threshold: 17.5 μg/m³**	1: Nearby Bukit Selambau Police Station	22.1			7.74	**YES**
	2: Kampung Sungkup	10.7			3.74	**YES**
	3: Taman Seroja Indah	7.0			2.45	**YES**

Table A3(e): Predicted Maximum Average Incremental Concentration for Identified Pollutants during Abnormal Situation (in μg/m³)

Parameter	Averaging Time	Baseline Level (μg/m³)	Diagram	Concentration (μg/m³)								
				Highest MAIC	Off-site ASRs						On-site ASR		MAAQS (Standard [2020])
					ASR1: Nearby Bukit Selambau Police Station		ASR 2: Kampung Sungkup		ASR 3: Taman Seroja Indah		ASR4: Nearby Bukit Selambau Industrial Park		
					Predicted MAIC	GLC	Predicted MAIC	GLC	Predicted MAIC	GLC	Predicted MAIC	GLC	
Particulate matter sized 10 microns or less (PM_{10})	1-hours	**Off-site ASRs** A1: 48 A2: 53 A3: 46 **On-site ASR** A4: 41 (24-hours averaging time)	7.41	**3,317**	604	-	373	-	388		977	-	**100 (24-hours averaging time)** *(For comparison purposes only)*

Notes: MAAQS, 2013 (2020) = Malaysian Ambient Air Quality Standard, 2013 at 2020
ASRs – Air Sensitive Receptors
Ground Level Concentration = Baseline Level + Predicted MAIC
Baseline Ambient Air Quality Monitoring carried out from 26 to 30 September 2020

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PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Traffic	• Increase in traffic activities would be a source of impact on both the air and noise quality.	• Jalan Sungai Lalang – Bukit Selambau (K152) and Jalan Jeniang (K17) are expected to receive the increased traffic volume from the proposed development.	• Designing the facilities on the trucks/vehicles to minimize the likelihood of spillage occurring; • Scheduling of the transportation trucks to ensure the truck turn-around time is not delayed and to prevent truck-waiting within the site, which will lead to a line-up of truck along the Jalan Sungai Lalang – Bukit Selambau. • Strict adherence to the relevant regulations pertaining to road transport.	Long-term.		7-38 & 8-41 to 8-42, 8-72
Biological Environment	• Enhance the aesthetic value of the Project Site with landscape programme.	• Biological impacts are basically upon re-planting of greeneries by landscaping. • This activity could further attract some fauna species to the Project Site. • Loss of the existing terrestrial biological environment during the establishment of a built development. • There will be reduction in both fish and prawn catches by recreational fishermen from the river due to water quality in Sg. Muda will be marginally impacted.	• Re-establish and diversify the flora and fauna species, albeit nominal in the Site. • Implementation of heavy landscape along the southern boundary of the Project Site adjacent to Kg. Haji Tok Nyan. • Final discharge of the IETS must comply with Standard A level for Environmental Quality (Industrial Effluent) Regulations 2009.	Long-term.		7-26 to 7-27 & 8-64 to 8-67

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PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Socio-economic Environment	• Potential positive impacts on the socio-economic environment are evident with the implementation of the proposed Project. • Occupational hazard and residual impacts such as noise, air emission, industrial effluent discharge during the operational phase.	• Increase current status of living of the local population residing nearby in terms of infrastructures and increase employment opportunities. • Occupational hazard during operational stage. • Residual impacts from the operation of the paper plant, i.e., noise, air emission, industrial effluent discharge.	• Final discharge of the IETS must comply with Standard A level for Environmental Quality (Industrial Effluent) Regulations 2009. • Compliance to EQ (Clean Air) Regulations 2014. • Aspect of safety should be given prime attention especially with regard to safe handling of equipment, raw material, exposure and fire (refer mitigation measures during the construction stage where applicable). • Management of foreign workers to avoid conflicts with local residents • Technical and vocational skills development program • Continual engagement and corporate social responsibility (CSR) by the Project Proponent with surrounding communities.	Long-term.		7-28 to 7-37 & 8-36 to 8-40 & 8-68 to 8-69

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PHASE OF OPERATION	ACTIVITIES	POTENTIAL IMPACTS	MITIGATING MEASURES	SIGNIFICANCE	REMARKS	REFERENCE PAGE
Environmental Management Plan (EMP)	• Monitoring, Reporting & Auditing			Long-term.		9-1 to 9-24
Competent Persons	Environmental Officer, Competent person for Industrial Effluent Treatment System (IETS), Air Pollution Control System and CePSWaM.					9-1 to 9-24 5-70 to 5-71, 5-94
Abandonment						7-16

STUDY FINDINGS

- In reviewing the proposed Project and its' anticipated integration with the existing environment of the Project Site, the main concerns are the process employed, the potential contamination (i.e., water, air and noise pollution) on the physical environmental and aspects of health and safety upon human during the operation phases of the proposed Green Technology Paper Plant.

- During the earthwork stage, it will be carried out within one (1) stage only and the Project Site should not commence without the implementation of the LD-P2M2 control. The appointed contractor should strictly adhere to the approved earthworks engineering plan and LD-P2M2 during the construction phase. In addition, based on the assessment carried out, it is recommended that the proposal of two (2) sediment basins for the development must be carried out in order to ensure that the surface run off is at a manageable level to ensure compliance to limits on surface quality control. Erosion control measures must be instituted as per the recommendations of the Land Disturbing Pollution Prevention and Mitigation Measures (LDP2M2).

- During the operational phase, the Project Proponent will abstract 27.15 MLD of water from Sg. Muda and return 24.81 treated effluent discharge to Sg. Muda. The nett reduction of 2.34 MLD in Sg. Muda flow has no significant impact to the river flow regime and the existing water users. Water abstraction shall be stopped when the water level is critically low and is below 9.1 mRL. The impact of Project operation to the water quality of Sg. Muda is insignificant if the effluent discharge is complying with industrial Standard A limits and with AN treated to ≤ 5 mg/L.

- Monitoring systems must be installed to measure the river water abstraction rate and the effluent discharge rate. The water quality of Sg. Muda and the Project effluent discharge must be regularly measured to prevent pollution. To prevent the failure of IETS and its impact to Sg. Muda, it is important to conduct regular system checks and develop the Emergency Response Plan (ERP). The ERP must ensure that in no event should raw effluent be discharged directly to Sg. Muda.

- In terms of industrial wastes, there will be sludge generation from the Water Treatment Plant (WTP) and Industrial Effluent Treatment System (IETS). As the water treatment residue (WTR) and sludge from IETS is classified as scheduled waste SW204, the Project Proponent will need to apply special management of scheduled waste approval from DOE Malaysia during the operational stage prior to disposal.

- In terms of Air Pollution control within the paper plant, the flue of the boiler to be treated with high-efficiency ceramic dust collector and bag filter and the boiler adopts low-nitrogen combustion technology to ensure that the outlet flue of the boilers meet the related requirements under the Third Schedule (Reg.13), Environmental Quality (Clean Air) Regulation 2014. The Project Proponent will also apply a special management of scheduled waste from DOE Malaysia for fly ash and slag (bottom ash) generated during the operational stage.

- For Air Quality modelling, during Normal Operation, the calculated Ground level Concentration GLCs for identified criteria pollutants at the identified off-site ASRs i.e., **ASR1**, **ASR2** and **ASR3** met the Malaysian Ambient Air Quality Standards at 2020. As for SO_2 with emission concentration of 500 mg/Nm^3 (CAR 2014), further assessment on the contribution based on 25% threshold shows non-compliance at ASR1 for both 1-hour averaging and 24-hours averaging with the predicted MAICs slightly exceeded the calculated threshold of 62.5 µg/m^3 and 20 µg/m^3 respectively. The recommended chimney height is 60m.

- Meanwhile, it is observed that at the Design specification emission concentration of 400 mg/m^3, compliance was observed at off-site ASRs. During Abnormal Situation, the predicted 1-hour averaging time for PM_{10} is assessed to be elevated at the surrounding areas.

- For groundwater assessment, the permeability of the layer should be decreased in the same value as during construction in the factory. The simulation result shows there is no changes in general pressure head and flow pattern in the factory area. The contaminant transport model indicates that leakage of the factory will intrude into the groundwater system, but its movement is confined in the factory area.

- For Social Impact Assessment, the findings correlated with the findings from perception survey as concerns over odour and air pollution as well as water pollution to Sg. Gajah and Sg. Muda were raised by the FGD participants. They highlighted the pollution issues caused by the existing factories in Bukit Selambau Industrial Area were a nuisance to the surrounding communities and affecting their health condition and lead to damages to commercial crops. Meanwhile, almost 60% of the respondents were moderately supportive towards the Project and they were also hopeful that the Project would spur economic activities in the area with the increase of job and business opportunities to the locals.

- For Quantitative Risk Assessment, the findings of the worst-case credible scenario (WCCS) for fire event and explosion event from catastrophic rupture of Biomass Fuel storage, the contour goes beyond the proposed project site boundary but still within industrial area.

- For Health Impact Assessment, the predicted water quality of Sg. Muda near the IETS effluent discharge point and at the Kuala Ketil water intake point during both normal and low flows conditions were found to be below their respective National Water Quality Standards NWQS (Class IIA/IIB) and National Standards of Drinking Water Quality (NSDWQ) guideline values. Of all the air pollutants identified (only dioxins and furans) and water pollutants identified (Pb, As, Cd, Cr and Ni), the total Lifetime Cancer Risk (LCR) for exposures to these carcinogens is within the acceptable LCR range.

- Based on the findings of the study and the deliberations put forth in mitigating any identified impacts, it can concluded that the proposed Green Technology Paper Plant development can be carried out within the context of a carefully planned and managed project that will be ultimately beneficial to contribute towards the social acceptability and job opportunity to the Sungai Petani and District of Kuala Muda, Kedah.