EXECUTIVE SUMMARY

1.0 Introduction

This EIA report is prepared for the project titled "**Proposed Development of Scheduled Waste Thermal Treatment Plant at Kg. Langkawit, Papar, Sabah for Sedafiat Sdn. Bhd."** (SWTTP). Throughout the report, the project will be referred to as the "Proposed Project" or "SWTTP Project".

During this pandemic, there is an increasing trend in the generation of scheduled waste due to the increase of new private health related establishments and hospitals, as the country is progressing towards a medical hub in this region. In addition, there is an increase in the population who are likely to seek more medical treatment from these establishments.

To date, a tremendous amount of health care waste generated due to the Covid-19 epidemic has taken its toll as there is more waste to be handled and disposed daily. Thus, the Proposed Project is only accepting the scheduled wastes that are generated from public and private healthcare facilities in Sabah and Federal Territory of Labuan to be treated at SWTTP.

The risks associated with scheduled waste and its management has gained attention across the world at various levels, local and international forums. However, the need for proper scheduled waste management continue to gain recognition due to the contagious disease burdens associated with poor practices, including exposure to infectious agents (e.g., Ebola and Covid-19 epidemic) and toxic substances.

Malaysia has effectively utilized thermal treatment plant to treat and disposal of scheduled wastes (i.e., scheduled waste and other scheduled waste). Nowadays, the establishment of advance technology and the new "State of the Art" thermal treatment plant will have better equipment's and control mechanism that is capable to meet stringent emission standards imposed by the DOE, which is clean, reliable, safe and environmentally friendly.

Even though current scheduled waste management practices vary from hospital to hospital, the problematic areas are similar for all scheduled waste units and at all stages of management, including segregation, collection, packaging, storage, transport, treatment and disposal. Improper scheduled related waste management can cause health risks impact. Thus, it is important to manage it effectively.

Under the concession agreement, Sedafiat Sdn. Bhd. (SSB) will provide services for all public hospitals and other related healthcare facilities in the Sabah region including Labuan. In anticipation of the continuous growth in the generation of scheduled waste from the public hospitals and healthcare facilities, SSB takes this positive step by proposing the construction of a new 12 MT/day thermal treatment plant for such Scheduled Waste at Kg. Langkawit, Papar, Sabah.

1.1 Project Proponent

The project proponent, Sedafiat Sdn. Bhd. (SSB) proposes to develop a scheduled waste thermal treatment plant in Plant at Kg. Langkawit, Papar, Sabah. SSB was established and incorporated as a private limited company. The correspondence address together with the telephone and facsimile number of the person to whom enquiries concerning the EIA is indicated as below:

Address	:	**Sedafiat Sdn Bhd** Lot 1-7, 2nd Floor, Block D, Metro Town, Jalan Bunga Ulam Raja, Off Tuaran Road, 88300, Kota Kinabalu.
Tel. No.	:	+6(08) 843 7000
Fax. No.	:	+6(08) 844 1328
Contact Person	:	Datuk AG Buhtamam AG Mahmun (Director)
Email	:	abam.sedafiat.com.my
Website	:	www.sedafiat.com.my

1.2 EIA Consulting Firm

The EIA consulting firm for the project is AMR Environmental Sdn. Bhd. (AMR). AMR provides environmental, industrial hygiene, remediation, engineering and laboratory services, providing solutions to various problems pertaining to the general and workplace environment, complying with the Department of Environment (DOE) requirements and standards. AMR has been established for 20 years since 2001, providing professional environmental consultancy services and it is accredited under ISO/IEC 17025 for Chemical Testing Laboratory. This EIA study is prepared by AMR Environmental Sdn. Bhd. (AMR), with the involvement of various specialized consultants in their areas of expertise. The

EIA study team comprises of professionals who are recognized EIA qualified person in their respective field of interest. The correspondence details and contact person of AMR are as below:

Address	:	**AMR Environmental Sdn. Bhd.(AMR)** **(Company Registration No.: 557909-P)** No. 166-1, Jalan S2 B22, Pusat Dagangan Seremban 2, 70300 Seremban, Negeri Sembilan.
Tel. No.	:	6(06) 601 4550
Fax. No.	:	6(06) 601 4560
Contact Person	:	Ir. Ammar Mohd Rashid (MD, EIA Project Team Leader)
Email	:	amr@amr.com.my
Website	:	www.amr.com.my

1.3 Legal Requirement of Prescribed Activity

Environmental Impact Assessment (EIA) is a statutory requirement for activities which have been prescribed under Section 34A of the EQA. Section 34A (2) of the Act stipulates that any person intending to carry out any of the prescribed activities is required to conduct an EIA study and submit a report to the Director General of Environment for prior approval.

A further detail of main prescribed activities to be built at the proposed SSB site according to the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 2015 are listed as follows:

1) Thermal Treatment Plant (Second Schedule of Prescribed Activity)

14. Waste Treatment and Disposal:
    (a) Scheduled Waste:
        (i) Construction of Thermal Treatment Plant

According to the Environmental Impact Assessment (EIA) Guidelines in Malaysia, 2016, the Proposed Development of Scheduled Waste Thermal Treatment Plant warrants the preparation of an Environmental Impact Assessment (EIA) report to be submitted and approved by the Director General of Department of Environment (DOE) [*Section 34A(2) of the Environmental Quality Act 1974 (Act 127)*]. The EIA study and report shall be undertaken in accordance with the Environmental Impact Assessment (EIA) Guideline in Malaysia 2016 published by the DOE.

2.0 TERMS OF REFERENCE OF EIA STUDY

The TOR report entitled "Proposed Development of Scheduled Waste Thermal Treatment Plant at Kg. Langkawit, Papar, Sabah for Sedafiat Sdn. Bhd." has been submitted to DOE Headquarter, Putrajaya on 2nd May 2019. A site visit was conducted by the DOE on 2019 to evaluate on the site conditions and related requirements which need to be taken into consideration prior to the preparation of EIA report. The TOR approval letter from the DOE (**Ref. No.: JAS 600-2/13/15 Jilid 2 (4)** dated 11th August 2020) which states the requirement and scope of an EIA study for the intended project as provided in **Chapter 2: Terms of Reference of EIA Study**.

The scopes of potential impacts to be study are as follow:

i. Air Quality
ii. Land Disturbing
iii. Health Impact
iv. Quantitative Risk Assessment
v. Waste Management
vi. Wastewater Quality
vii. Water Quality
viii. Process Review
ix. Noise Quality
x. Odour Quality

3.0 STATEMENT OF NEED

The development of proposed scheduled waste thermal treatment plant facilitates the transportation, storage and treatment of scheduled waste collected from public and private healthcare facilities in Sabah and Federal Territory of Labuan in the future.

SSB is targeting to treat eleven (11) scheduled waste codes of SW 403, SW 404, SW 405, SW 409, SW 410, SW 417, SW 421, SW 422, SW 423, SW 429, and SW 430 from public and private healthcare facilities where the wastes are collected, transported and treated at the proposed thermal treatment plant. The clinical wastes are placed in rigid containers or bags which are tagged in accordance with the requirements of the MOH so that waste can be tracked from its sources of generation to the point of its final disposal. The definition on the type of waste to be received by SSB as the Waste Acceptance Criteria is shown in **Table ES** below:

Table ES.1: Description of Scheduled Waste Code as the Waste Acceptance Criteria

No.	Scheduled Waste Code	Description
1.	SW403	Discarded drugs
2.	SW404	Clinical Waste
3.	SW405	Pharmaceutical waste
4.	SW409	Disposed containers
5.	SW410	Contaminated rags
6.	SW417	Inks from printer and photocopy machine
7.	SW421	A mixture of scheduled wastes
8.	SW422	A mixture of scheduled and non-scheduled wastes
9.	SW423	Chemicals used for X-ray (Fixer Developer)
10.	SW429	Discarded chemical
11.	SW430	Obsolete Laboratory Chemicals

The generation of wastes may present a threat to the environment and public health, but this depends on the type of waste and the way it is managed on a routine basis. Poor management of health care waste potentially exposes health care workers, waste handlers, patients, and community at risk to infection, toxic effects and injuries. Thus, it is essential that these health care wastes are segregated at the point of generation, appropriately handled, and safely disposed in the best manner. **Figure ES.** presents the summary of the statement of need for the proposed development of thermal treatment plant.

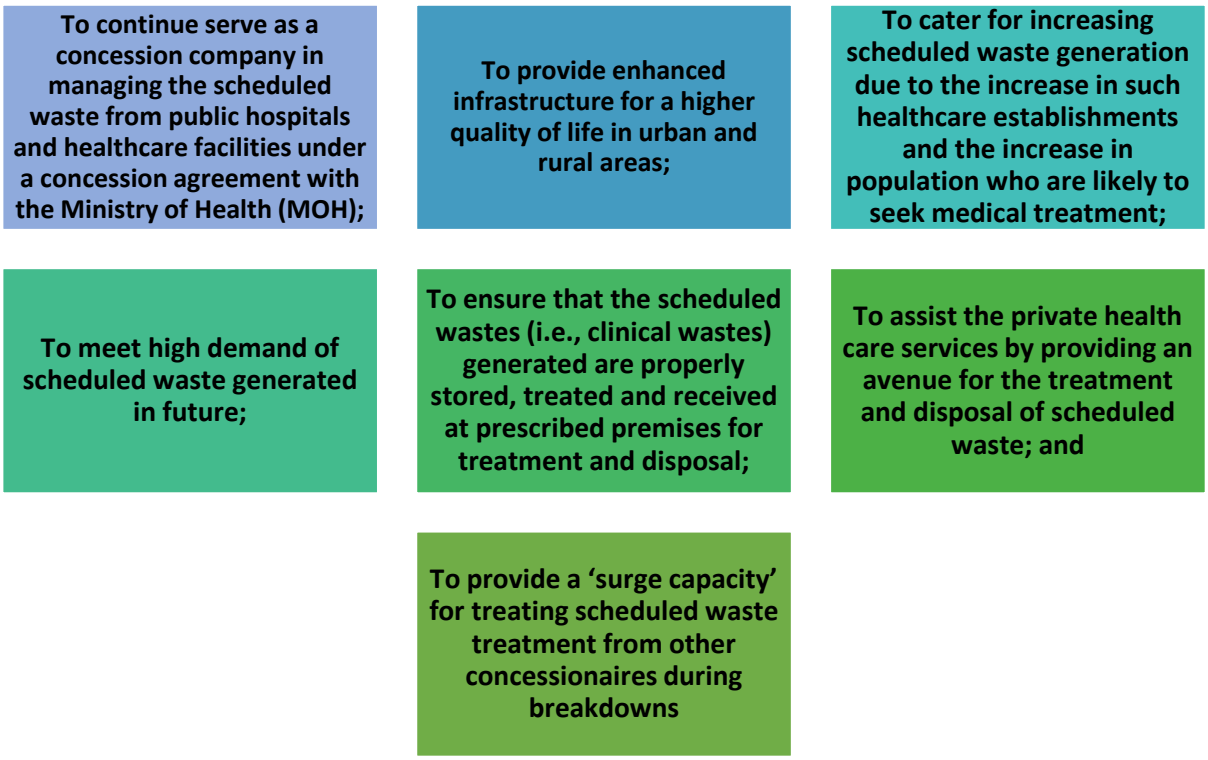


Figure ES.1: Summary on the Statement of Need for the Proposed Project

4.0 PROJECT OPTION

Chapter 4 outlines the available project options to address issues on the increasing trend in the generation of scheduled waste. The various project options being considered and evaluated are as follows:

Option 1: Site Option
Option 2: Technology Option
Option 3: No Project Option

Option 1: Site Option

The project site is currently a vacant land. If no development is undertaken, the existing land will be maintained as it is. With the proposed project, the site will be developed and into a well-planned industrial zone area. As stated, the location of the Proposed Project site is in line with Sabah Structure Plan 2033 that was published by JPBW Sabah. In the Sabah Structure Plan, it is stated that:

"The Government shall determine the viability of setting up a scheduled waste and electronic waste (e-waste) disposal facilities for the State. Possible site shall be in the areas between Beaufort and Sipitang" (Chapter 12, page 12-31, Sabah Structure Plan 2033**)**.

The important site selection criteria have been taken into consideration in the initial screening process. Both the environmental and social or public welfare are the dominant factors in the selection process. The details of the siting criteria for the proposed scheduled waste thermal treatment plant are as in **Table ES.2** below.

Table ES.2: Site Selection Criteria

No.	Considerations	Criteria
1.	**Size, Physical and Land Use**	
	a) Size including any potential expansion area.	The development of the project will be 2.56 acres land within the acquired 4.35 acres. The balance will be reserved for future plant expansion.
	b) Compatibility of land use.	The project site has been zoned as countryside by Sabah Structure Plan 2033. However, SSB is currently applying for the change of zoning of the site from the advice from Majlis Daerah Papar and Jabatan Perancang Bandar dan Wilayah (JPBW), Sabah. In summary, the project is supported by the Sabah state government as it is a necessity for the state. However, proper procedure will need to be made before the change of zoning is approved.
	c) Away from densely populated areas.	The nearest residential area is Kampung Langkawit located approximately 1.4 km away at the east of the proposed project site.
2.	**Environmental Constraints**	
	a) Avoidance of unique habitat, ecological value or scenic beauty areas.	There is no environmental constrains for the proposed project since there is no unique habitat, ecological value and scenic beauty. Additionally, the site is located next to the Kg. Langkawit Solid Waste Disposal site.
3.	**Economic Constraints**	
	a) Distance to be less than half day travel by lorries to the site	The waste transporting would not take more than half a day since the site has a good road network.
	b) Minimal transportation costs	The transportation costs to the proposed project site should be relatively low as the routes to the sites are accessible.
4.	**Social Constraints**	
	a) Distance from major settlements	The residential areas are located 2 – 3 km away from the proposed project site.
	b) Distance from public facilities	The public facilities such as schools, hospitals or clinics and mosque are located 2 – 5 km away from the proposed project site.

Option 2: Technology Option

There are two (2) main health care waste treatment technologies available either thermal treatment or non-thermal treatment technologies. The superiority of the thermal treatment method over non-thermal treatment methods for the disposal of health care waste is well documented and in most cases met the technical, environmental and regulatory requirements criteria. The advantages of thermal treatment are as follows:

- Fast detoxification process;
- Inert or stabilized end products;
- Tremendous mass and volume reduction; and
- Option for energy or steam recovery.

Thus, SSB have selected the stepped hearth type for the thermal treatment of its scheduled waste due to the good tract-record of this technology. Furthermore, testimonial of this technology worldwide has proven to be positive for this purpose as well as to meet the emission compliance to Clean Air Regulation, 2014. Further analysis of thermal treatment technologies is provided in **Chapter 4: Project Options** of this EIA report.

Option 3: 'No Project' Option

The "no – project" or "do nothing" option means that no action will be taken to address the critical issues of increasing amount of health care waste to be disposed or treated in Sabah. This could result in serious environmental and health implications to the State of Sabah. This will also contradict the Government's effort to ensure a safe handling and disposal of ever increasing of scheduled waste in the country especially with the current Covid-19 pandemic.

Poor or improper health care waste management practices will be at risk to human health and the environment. The waste generated from medical activities is hazardous, toxic and even lethal because of their high potential for diseases transmission. The hazardous and toxic parts of waste from healthcare establishments comprising infectious, medical and radioactive material as well as sharps constitute a grave risk to mankind and the environment, if these are not properly treated, disposed or are allowed to be mixed with other municipal waste.

Thus, with the "no-project" options of health care waste thermal treatment plant at Kg. Langkawit would mean that the disposal of the waste in Sabah will soon meet its end. A worst situation is when the disposal of scheduled waste will be halted for several days, weeks or even months, even if one of the concessionary incineration plants undergo forced or emergency plant shutdown due to unforeseen circumstances. This illustrates the dire need of such initiatives on the part of the project proponent and thus the development of scheduled waste thermal treatment plant is very necessary and renders the '"no project" option as irrelevant.

5.0 PROJECT DESCRIPTION

Sedafiat Sdn. Bhd. (SSB) is intended to undertake the planning, construction, and installation of a schedule waste thermal treatment plant with a design capacity of 12 TPD or 360 tons per month of waste. The treatment plant is equipped with two (2) chambers consisting of a primary and secondary combustion chamber. The later also known as afterburner is to complete destruction of combustible gases and particulate matter discharged from the primary chamber.

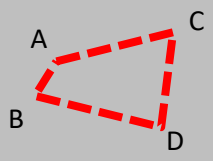
The plant will be sited at Kg. Langkawit, Papar, Sabah, incorporating the modern combustion technology with an effective Air Pollution Control System (APCS) and Continuous Emission Monitoring System (CEMS). SSB plays an important role to cater for the increasing generation of waste from public and private healthcare establishments (i.e., hospitals and clinics). In addition, SSB will also accept waste generated by healthcare facilities in the Federal Territory of Labuan.

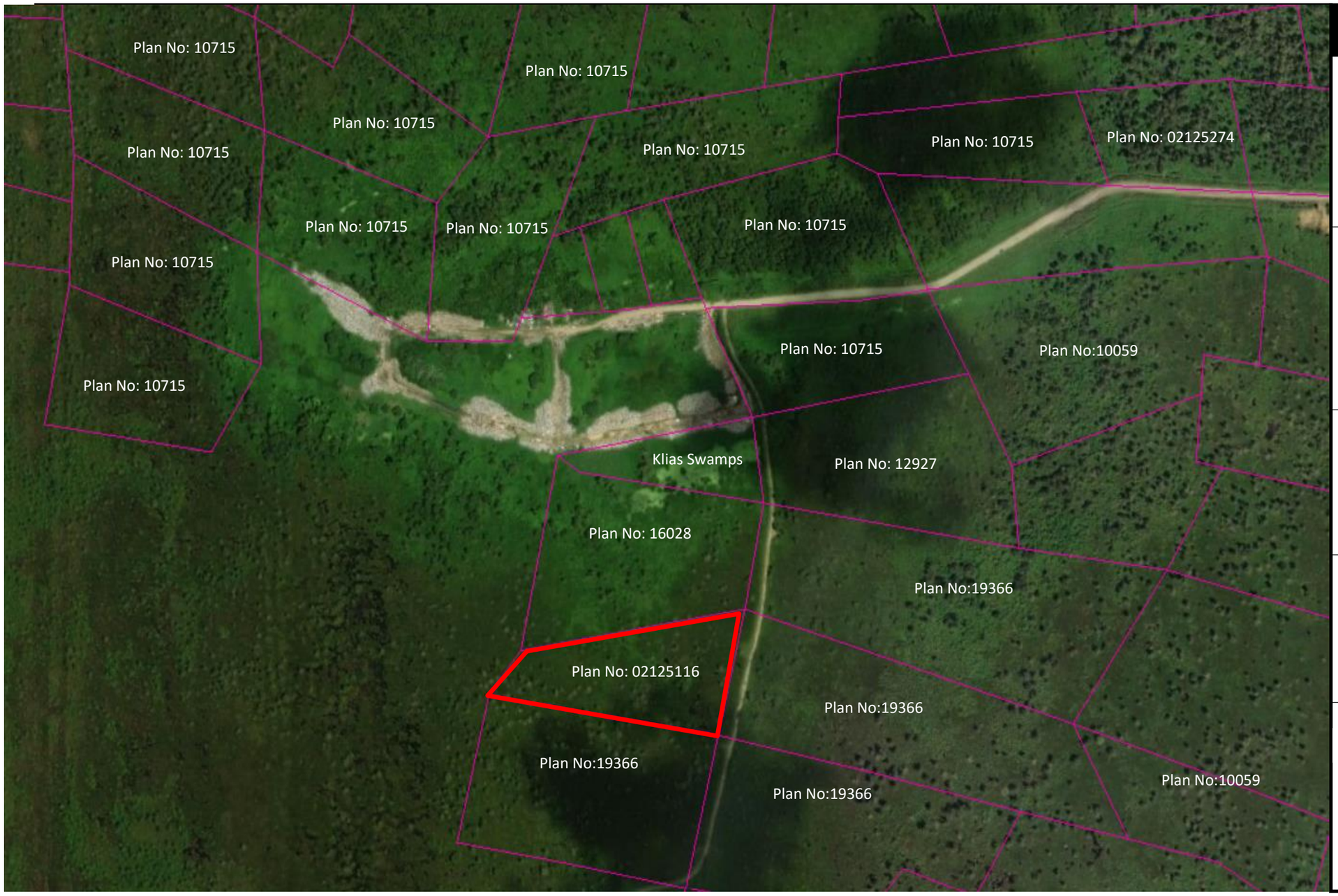
In Malaysia, the rapid growth of covid-19 cases has resulted in abundance of scheduled waste. Scheduled waste is a special category of scheduled waste because it poses a potential risk to the health and environment. The problematic areas are similar for all scheduled waste units and at all stages of management, including segregation, collection, packaging, storage, transport, treatment and disposal. Improper scheduled related waste management can cause health risks can cause health risks impact thus it is important to manage it effectively.

5.1 Project Location

The proposed scheduled waste thermal treatment plant will be built in Kg. Langkawit, Papar, Sabah. The project site consists of 4.35 acres (17,620 m^2) with its latitude and longitude coordinates presented in **Table ES.**. The plan number of the proposed project site is 02125116 registered under Sabah Lands and Survey Department. **Figure ES.2** shows the location and extent of project coverage of proposed project site.

Table ES.3: GPS Coordinate of the Proposed Project Site

Point* 	Latitude	Longitude
A	5°40'2.21"N	115°56'16.39"E
B	5°40'3.40"N	115°56'23.68"E
C	5°39'59.69"N	115°56'22.82"E
D	5°40'0.88"N	115°56'15.36"E



LEGEND

Proposed Project Site Boundary

N
W E
S

Scale:
1: 0.2 km

0.6 km

Title:
PROPOSED PROJECT SITE PLAN NUMBER AND ITS SURROUNDING LOTS

Prepared by:

Figure ES.2: Location of Proposed Project Site

5.2 Waste Acceptance Criteria

Only scheduled waste code of SW 403, SW 404, SW 405, SW 409, SW 410, SW 417, SW 421, SW 422, SW 423, SW 429 and SW 430 from public and private healthcare facilities to be received and treated at the proposed thermal treatment plant. All scheduled wastes are placed in rigid containers or bags which are tagged in accordance with the requirements of the MOH so that all wastes can be tracked from the sources of generation to the point of final disposal.

As a whole, the scheduled waste to be treated or accepted as the waste criteria for this project are those further defined by the Ministry of Health (MOH) Malaysia which includes;

i. Any waste which consists wholly or partly of human or animal tissue, blood or other body fluids, excretion, drugs or other pharmaceutical products, swabs and dressings, syringes, needles and other sharp instruments, being waste which unless rendered safe may pose hazardous to any person coming in contact with it, and
ii. Any other waste arising from medical, nursing, dental, veterinary, pharmaceutical, or similar practices, investigation, treatment, care, teaching or research, or the collection of blood for transfusion being waste, which may cause infection to any person coming in contact with it.

The source of scheduled waste to be accepted above are expected to be from over 492 potential government and private hospitals, clinics and healthcare as outlined in **Section 5.3.3**, **Chapter 5: Project Description** of this EIA report.

5.3 Thermal Treatment Process Description

Proposed project will have the following major activities:

- Collection and transportation of scheduled wastes from private clinics and hospitals to the proposed treatment facilities,
- Receiving and storing of the scheduled wastes at the cold room storage, and
- Processing and treatment of the scheduled wastes at the thermal treatment plant.

The entire facility will be divided into the following major areas:

- Dedicated transportation vehicles for the collection of scheduled wastes,
- Weighing of incoming waste carrying scheduled wastes to the proposed project site,
- Scheduled waste thermal treatment plant,
- General amenities such as administration offices, maintenance room, cold room storage, emergency exit gate, approach roads and landscaping, and
- Empty bin cleaning station.

This scheduled waste thermal treatment plant will include the following main unit operations:

1. Feeding System (Automatic Loader and Bin Tippler).
2. Primary Combustion Chamber (Stepped Hearth).
3. Ash Discharge Conveyor.
4. Secondary Combustion Chamber.
5. Waste Heat Recovery System.

6. Air Pollution Control (APC) System (To ensure the plant meets the requirement in the Environmental Quality (Clean Air) Regulation, 2014);
   - Emergency By-Pass Stack (Security).
   - Heat Exchanger.
   - Dry Reactors and Ceramic Filter System.
7. Chimney and Continuous Emission Monitoring System (CEMS) (To continuous monitor the emission and sending data to DOE every half hourly), and
8. Process Control and Safety.

The general process flow diagram of the scheduled waste thermal treatment plant at the proposed project site is presented in **Figure ES.3** as follow:

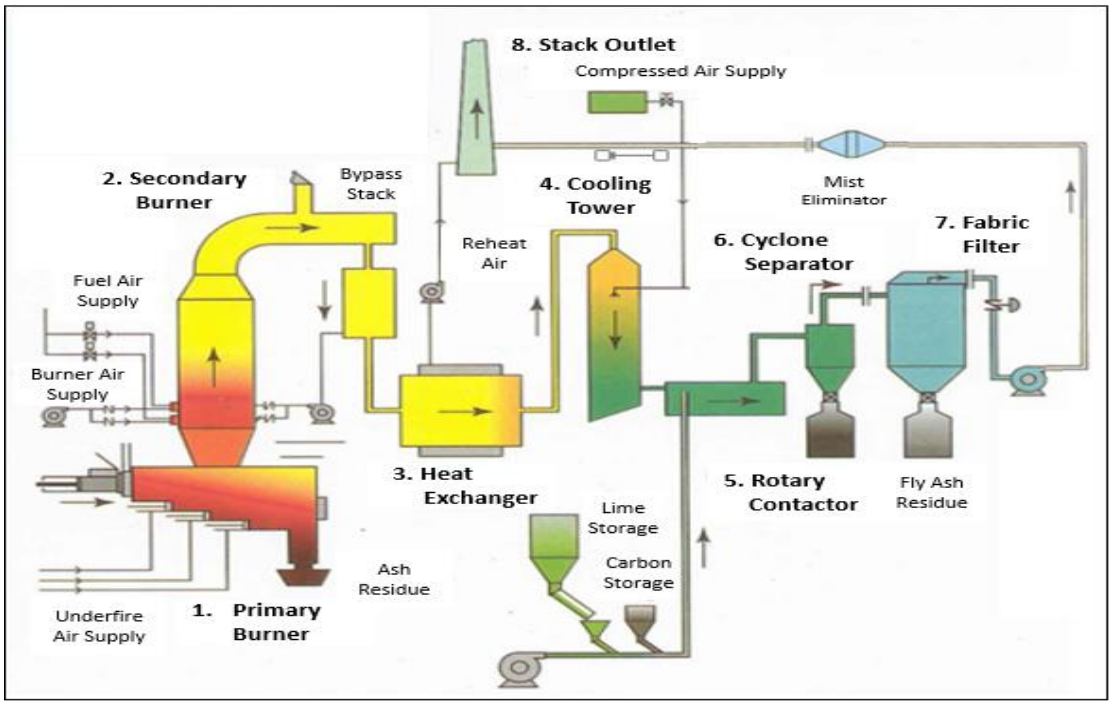


Figure ES.3: Process Flow Diagram of Scheduled Waste Thermal Treatment Plant

The thermal treatment unit operation as well as detail calculation is provided in **Section 5.5.1** of this EIA report. **Figure ES.4** shows the conceptual design of the scheduled waste thermal treatment plant that will be installed:

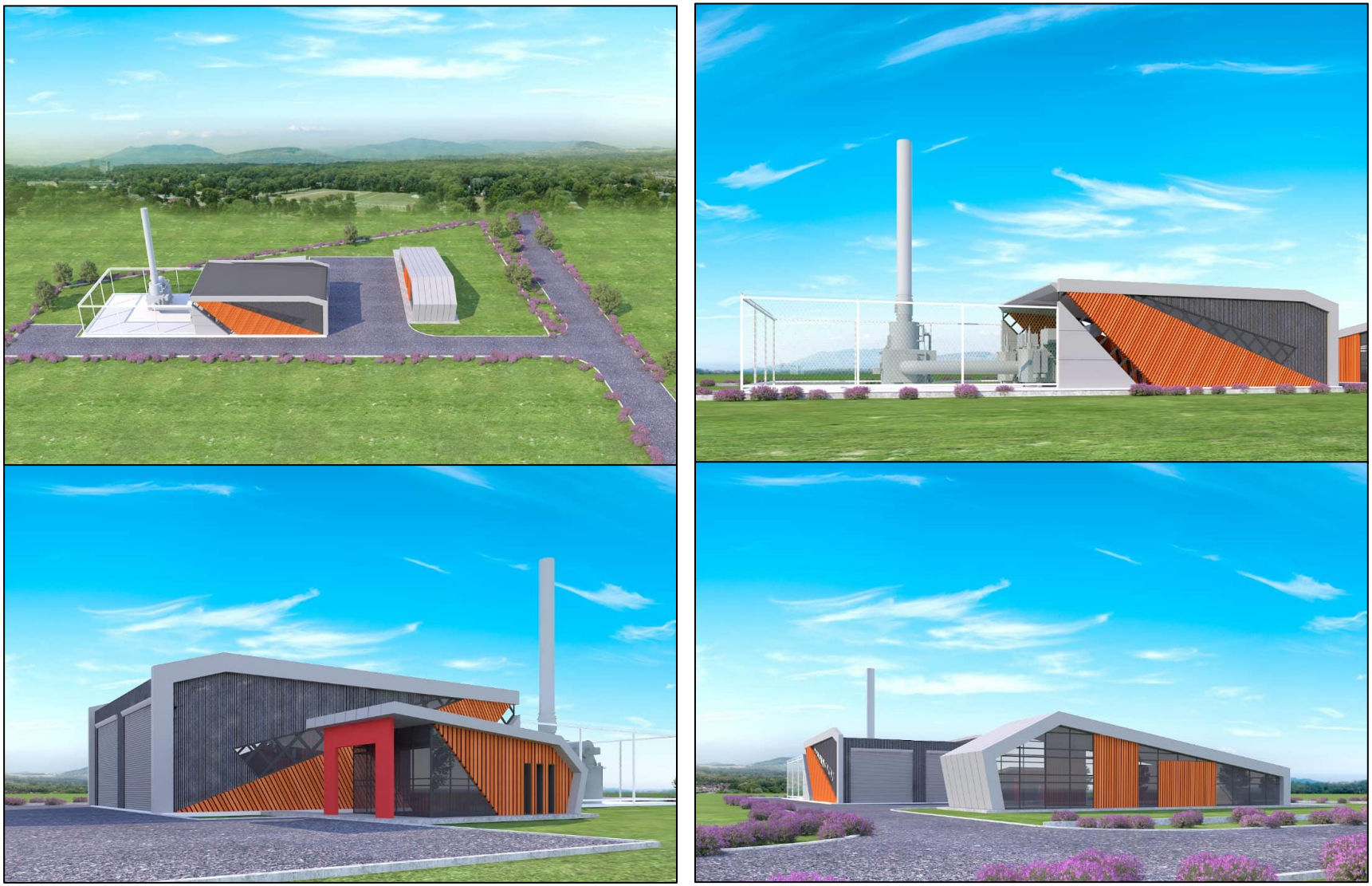


Figure ES.4: Conceptual design of Proposed Scheduled Waste Thermal Treatment Plant

5.4 Industrial Effluent Treatment System

The source of the wastewater from the internal washing activities which comprises of washing of storage bins and trucks wheel which are expected to be generated at approximately 60 m3/day. However, there might be additional load that reach maximum of 100 m3/day (or 5 m3/hr) allowable. The wastewater volume generated will be kept as minimum as possible.

The wastewater generated from the bin and truck washing activity will be collected and channelized to a Neutralizing Tank before it goes into an Equalization Tank (wastewater collection tank) to be treated at the designated IETS for a proper treatment process until it is fit for secondary purpose reuse such as general washing, cleaning and gardening.

Main components for the IETS to be built are as follow:

1) Neutralization Tank
2) Equalization Tank,
3) Electro-Contaminant Removal (ECR) system,
4) Flocculation Tank,
5) Dissolved Air Flotation (DAF) system,
6) Intermediate Holding Tank,
7) Integrated Biological Treatment system,
8) Sand Filter Feed Tank,
9) Sand Filter,
10) Carbon Filter,
11) UV System,
12) Treated Water Storage Pond,
13) Sludge Management System.

Detail calculation for IETS components is provided in **Section 5.6.2.3** of **Chapter 5**. Mass Balance of Industrial Effluent Treatment System (IETS) will be as **Figure ES.5**.

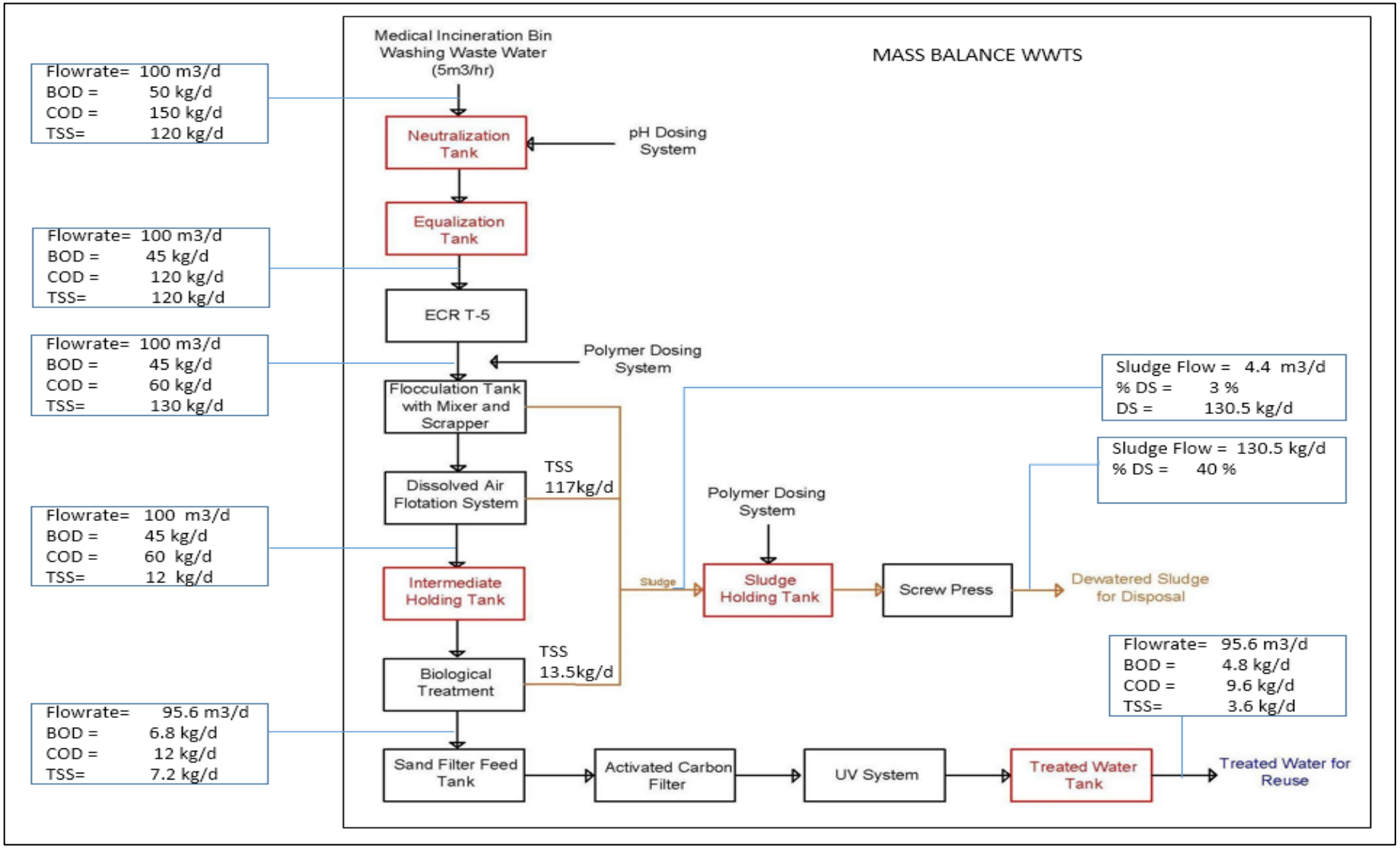


Figure ES.5: Mass Balance of Industrial Effluent Treatment System (IETS)

6.0 EXISTING ENVIRONMENT

6.1 Physical Environment

6.1.1 Topography and Natural Drainage

The proposed project site is a vacant undeveloped land that is located beside Kg. Langkawit Solid Waste Disposal site. The disposal site is under the authority of Majlis Daerah Papar and still in operation. Kinabatangan river basin is the largest covering an area of about 15,385 km^2. The SWTTP project site is located within a state land that does not contribute to any river basin. The nearest river to the proposed project site is Sungai Benoni that will flow directly to the sea.

Preliminary site assessment was carried out through walkthrough and flying an aerial drone to determine the drainage system and water flow pattern from the proposed project site to the sea. It is determined that the water flow from the natural surface runoff through seasonal rainfall that is accumulated by the vacant land of the project site. The natural water flow creates a pathway of earthed passage where the water flows to the monsoon drain to the north of the proposed project site. The water will then flow through a monsoon drain and will be discharged at Sungai Benoni later to the sea.

Most of the flood prone area are located near to a main river such as Sungai Kinabatangan and Sungai Papar where these areas are naturally a low laying area. The proposed project site is not located within the flood prone areas.

6.1.2 Zone of Study

Survey of the sensitive receptor from proposed project area and its surroundings is reported in the EIA. The information that is used in the EIA report is taken from site survey within 5 km Zone of Impact (ZOI). The mandatory 5 km of ZOI has been divided into radiuses of 0-1 km radius, 1-2 km radius, 2-3 km radius, 3-4 km radius and 4-5 km radius. A detailed analysis of the existing land use near the project site area within a radius of 5 km will be made through field survey and information gathered from local authorities as well as from remote sensing, if available. **Figure ES.6** shows the surrounding nearest residential areas and sensitive receptors.

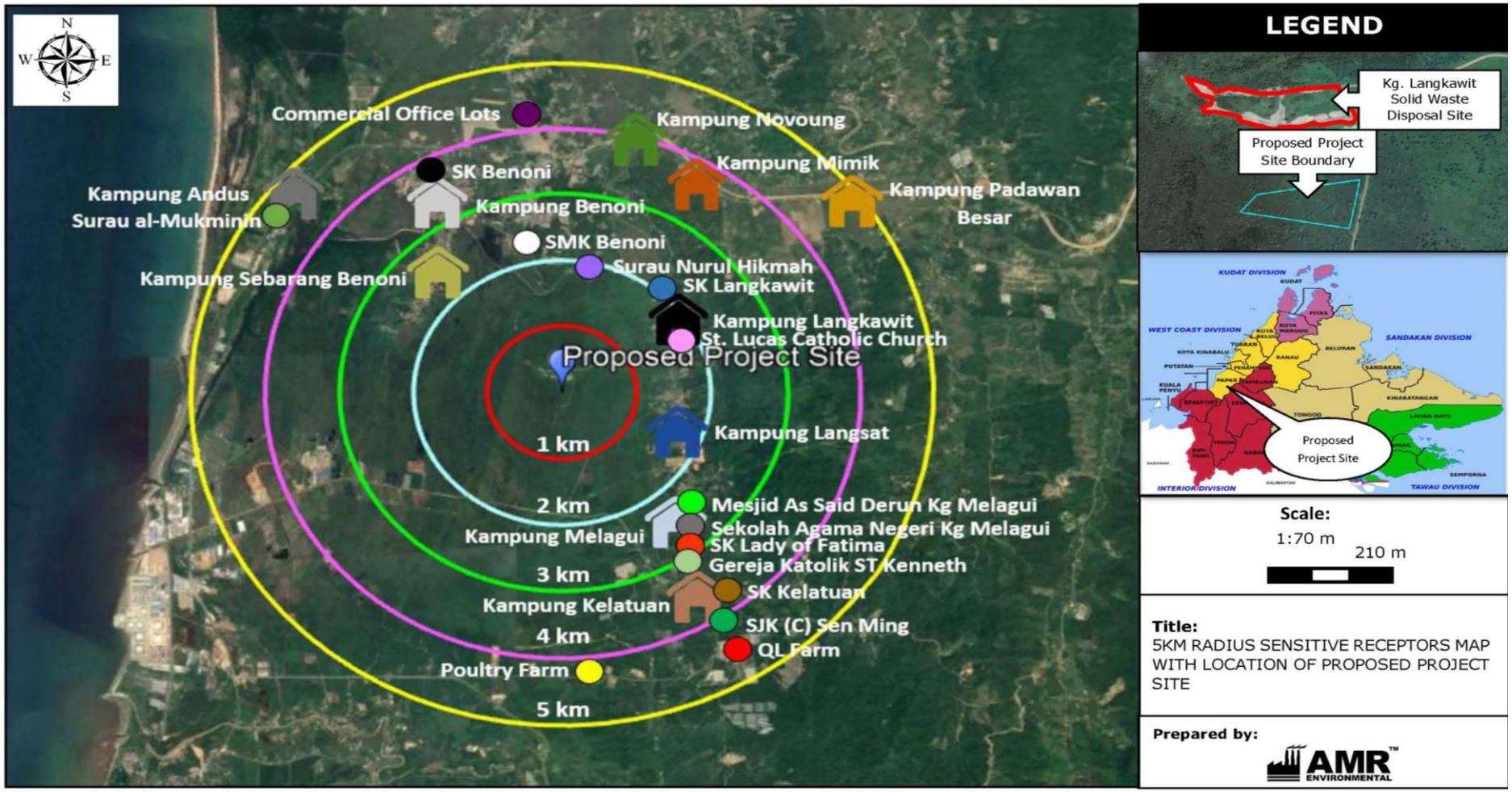
In general, **Table ES.** provides the list of these sensitive receptors of concern within the 5km radius vicinity the plant. The 5km radius is also known as Zone of Impact (ZOI) where sensitive receptors such as school, hospital, residential, comercial areas are found within distance to the proposed Project area. The baseline environmental monitoring results are compiled in **Chapter 6: Existing Environment** of this EIA report.

Table ES.4: Sensitive Receptors Vicinity of Proposed Project Site According to Distance

No.	Distance (km)	Sensitive Receptors	Location from Proposed Project Site
1.	0 – 1	-	-
2.	1 - 2	1. Kampung Langsat	E
		2. Kampung Langkawit	
		3. St. Lucas Catholic Church	
		4. Surau Nurul Hikmah	N
3.	2 - 3	1. SMK Benoni	N
		2. Kampung Sebarang Benoni	NW
		3. SK Langkawit	NE
		4. Kampung Melagui	SE
		5. Sekolah Agama Negeri Kg. Melagui	
		6. Mesjid As Said Derun Kg. Melagui	
		7. SK Lady of Fatima	
4.	3 - 4	1. Kampung Novoung	N
		2. Kampung Benoni	NW
		3. SK Benoni	
		4. Kampung Mimik	NE
		5. SK Kelatuan	SE
		6. Kampung Kelatuan	
		7. Gereja Katolik ST Kenneth	
5.	4 - 5	1. Commercial Office Lots	N
		2. Poultry Farm	S
		3. Surau al-Mukminin	NW
		4. Kampung Andus	
		5. Kampung Padawan Besar	NE
		6. QL Farm	SE
		7. SJK (C) Sen Ming	

Note:

N= North *S= South* *NE= Northeast* *NW= Northwest*
E= East *W= West* *SE= Southeast* *SW= Southwest*



Source: Google Earth

Figure ES.6: Surrounding Residential Areas and Sensitive Receptors of Project Site

6.2 Baseline Environmental Monitoring

6.2.1 Surface Water Quality

There are four (4) monitoring stations that were identified for water quality baseline monitoring namely SW1, SW2, SW3 and SW4. The monitoring will be carried out at four (4) stations located upstream and downstream of Sungai Benoni and one (1) station nearby Kg. Langkawit Solid Waste Disposal Site. Another six (6) stations (i.e., SW5, SW6, SW7, SW8, SW9, SW10) were put in place as additional modelling points. During the monitoring period, there was no water sample taken at monitoring point SW6 due to the access to SW6 have been blocked.

The Class III, National Water Quality Standard (NWQS) were used as the standard limit for this surface water quality baseline monitoring. Additionally, the Standard A of Environmental Quality (Industrial Effluent) Regulations, 2009 was used as a reference comparable limit. The list of parameters that were detected higher that the reference limits were summarized in **Table ES.5**.

Table ES.5: List of Exceeded Parameter based on Monitoring Stations

No.	Monitoring Station	Location	Exceeded Parameter	
			Standard A, IER 2009 (Reference)	Class III, NWQS
1.	SW1	Nearby Kg. Langkawit Solid Waste Disposal Site	• Ammoniacal Nitrogen • Colour pH Nat • Colour pH 7.6 • Iron • Manganese	• COD • Ammoniacal Nitrogen • Faecal Coliform • Total Coliform • Iron • Manganese
2.	SW2	Located at Sungai Benoni	• pH • Colour pH Nat • Colour pH 7.6 • Iron • Phenol	• BOD_5 • Total Coliform • Iron
3.	SW3	Located at downstream of Proposed Project Site	• Colour pH Nat • Colour pH 7.6 • Iron	• BOD_5 • Faecal Coliform • Total Coliform • Iron • Manganese
4.	SW4	Located at upstream of Proposed Project Site	• Colour pH Nat • Colour pH 7.6 • Iron • Phenol	• BOD_5 • Iron

No.	Monitoring Station	Location	Exceeded Parameter	
			Standard A, IER 2009 (Reference)	Class III, NWQS
5.	SW5	Near the proposed project site	• COD • BOD_5 • TSS • Ammoniacal Nitrogen • Colour pH Nat • Colour pH 7.6 • Copper • Iron • Manganese • Sulphide • Phenol	• COD • BOD_5 • Ammoniacal Nitrogen • Faecal Coliform • Total Coliform • Iron • Manganese
6.	SW7	Located at Kg Langkawit	• Iron	• Total Coliform • Iron
7.	SW8	Located at Kg Langkawit	• pH • Iron	• BOD5 • Iron • Manganese
8.	SW9	Located at upstream of Sungai Benoni	• pH • Colour pH Nat • Colour pH 7.6 • Iron	• BOD5 • Iron
9.	SW10	Located at downstream of Sungai Benoni	• Boron (Bo) • Iron • Fluoride	• Iron

In summary, the result of the surface water presents good river water quality at all monitored stations to be within the Class III river category except for station SW5 (Class V). Station SW5 is located near the project site and Kg. Langkawit solid waste disposal site. The result is believed to have been contributed from the solid waste disposal site leachate where associated parameters like COD, BOD, Ammoniacal Nitrogen, Total Coliform and Faecal Coliform recorded highest among other stations. Parameter of Iron and Manganese was observed to be exceeding the limits potentially due to natural soil mineral deposition.

The comparison of result with the Standard A, Industrial Effluent Regulations, 2009 was analyzed to observe the baseline surface water condition with respect to the limit as a reference purposes only. In general, the parameter of Color and Iron exceeded the standard A reference limit for most stations. Station SW5 presents the most parameter to have exceeded the Standard A limit which may potentially sourced by the leachate generated from the solid waste disposal site. The parameter of Boron and Fluoride was also recorded to have exceeded the limit which suggests that there might be a potential input at the downstream side of the river network not caused by the proposed project.

In conclusion, SSB shall build an IETS facility and the wastewater coming from the washing activities is treated first at IETS before being re-used internally for plant operation purposes. This process will further mitigate the potential contaminant input to the river.

6.2.2 Ambient Air Quality

Four (4) designated monitoring stations for the measurement of ambient air quality had been established. Ambient air quality sampling will be carried out at one (1) station inside the project boundary and three (3) stations located at the nearest sensitive receptor from the Project site (i.e., residential area). During the monitoring period, Global Positioning System (GPS) equipment will be used to determine the exact coordinate of the monitoring station.

Based on results, the Particulate Matter (i.e., PM_{10} and $PM_{2.5}$) for Station A2, A3 and A4 were recorded below their respective limits. The concentration of gaseous (i.e., CO, NO_2 and SO_2) were below detection limits except for station A2, the other parameters (i.e., Cd, TI, Hg, Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V) shows that these parameters were detected but still well below their respective limit.

For Station A1, the concentrations of Particulate Matter (i.e., PM_{10} and $PM_{2.5}$) were recorded at 42 $\mu g/m^3$ and 28 $\mu g/m^3$ respectively which were below its limit. The concentration of SO_2, NO_2, CO and O_3 were detected but still below their respective limits. While other parameters including heavy metals parameters cannot be detected at Station A1, A3 and A4. Overall, the ambient air quality at all monitored stations were observed well below the allowable standards limits imposed by the DOE.

6.2.3 Noise Quality Monitoring

Noise quality monitoring was carried out in the vicinity of the Project site to delineate the existing condition of noise levels and to obtain baseline data for the EIA report. Four (4) ambient noise level stations were selected. The noise measurements were performed using sound level meter (SLM). The noise levels were monitored for a period of 24 hours. The study was divided into two (2) periods, namely, day-time (7.00 am to 10.00 pm) and night-time (10.00 pm to 7.00 am).

The result of the analysis shows that the baseline L_{Aeq} ranged between 48.6 dBA to 58.6 dBA for day time. For night time, the L_{Aeq} ranged between 47.1 dBA to 55.2 dBA. In general, noise levels measured at countryside/rural area, N1 (i.e., boundary of project site) are lower than the permissible sound level, i.e., 70 dBA for day-time and 60 dBA for night-time. However, noise level at the nearest residential area- N2, N3, and N4 are lower than permissible sound level, i.e. 65 dBA for day-time and 55 dBA for night-time.

6.2.4 Odour Quality

The odour quality was conducted for a period of 24 hours at four (4) designated stations (O1, O2, O3 and O4) which located within the boundary proposed project site, SK Langkawit, Kampung Benoni and Kampung Langsat respectively. Based on the results of odour quality monitoring, the odour measured at all stations is classified as natural 'Earthy' where the D/T detected is <2.0 except for O1 shows a value of 4 D/T that categorized as discomfort odour sourced from the Kg. Langkawit solid waste disposal site. This illustrates that the odour within the Proposed Project Site is acceptable.

The category for odour quality monitoring is stated in **Table ES.6**.

Table ES.6: Category of Odour Associated with D/T Ratio

D/T	Word Category
0	Not detected
<2	Slightly noticeable
2	Noticeable
4	Discomfort
7	Objectionable
15	Nuisance
30	Nauseating
60	Very Nauseating

7.0 EVALUATION OF IMPACTS AND POLLUTION PREVENTION AND MITIGATION MEASURES (P2M2)

Several potential environmental impacts were identified from various activities of the proposed project. The discussion focusses on the following key environmental components of concerns are shown in **Figure ES.7**.

The development of the SWTTP project will be designated in three (3) main phases. The phases and are during pre-construction, construction and operation phase. For impact evaluation, the impacts will be identified based on these phases where project proponent can easily plan to implement the mitigation measures.

The impacts and mitigation measures according to the development of each facility are summarized in the matrix as shown in **Table ES.**. Further elaboration of the impacts and mitigation measures are presented in **Chapter 8: Mitigation Measures**.

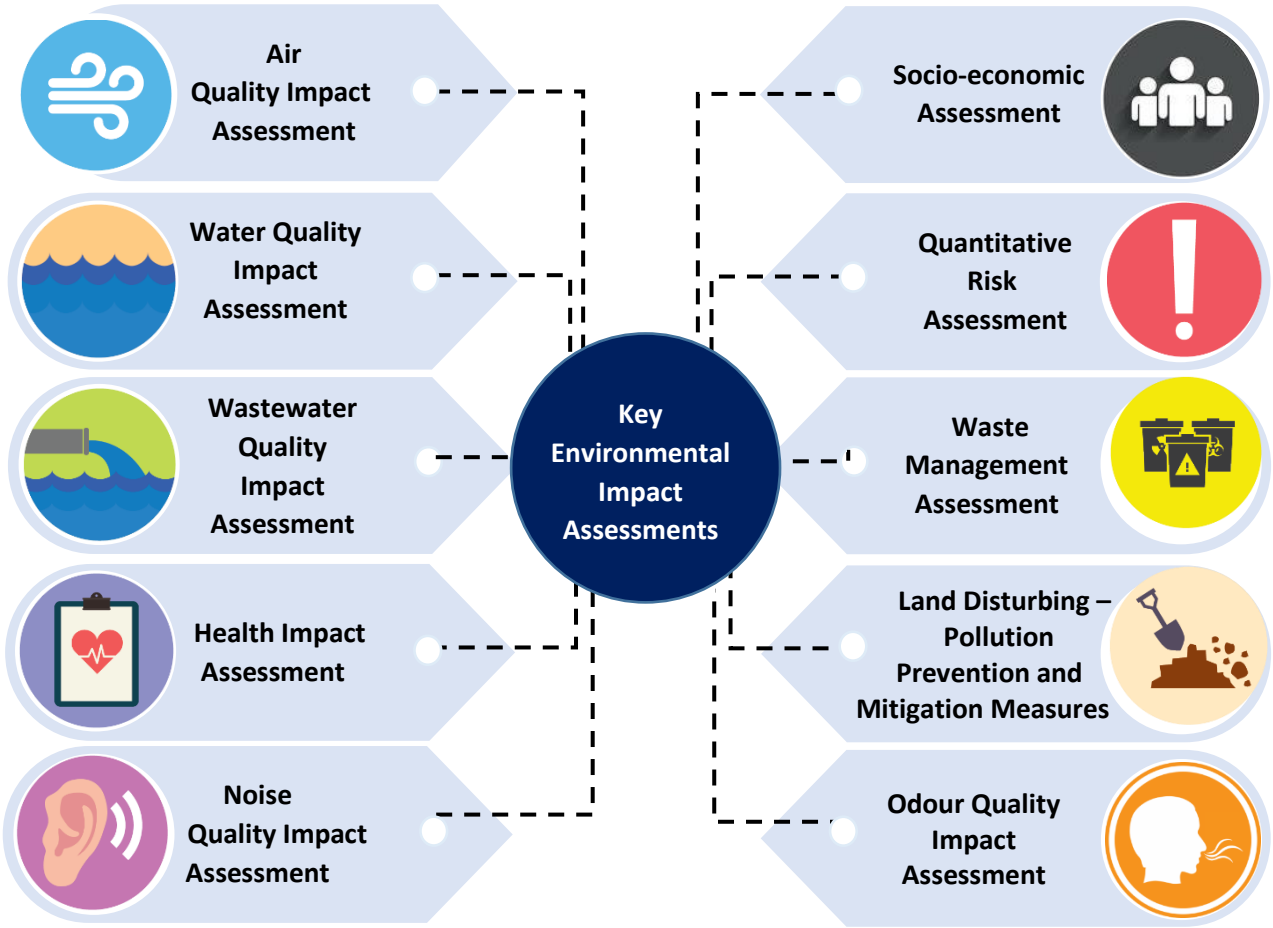


Figure ES.7: Key Environmental Impact Assessment Components

Table ES.7: Mitigation Measures Matrix

Section	Environmental Component	Facilities	Mitigation Measures		
			Pre-Construction Phase	Construction Phase	Operation Phase
8.1	Air Quality	Thermal Treatment Plant	NS	S	S
		Industrial Effluent Treatment System	NS	S	NS
8.2	Land Disturbing	Thermal Treatment Plant	NS	S	NS
		Industrial Effluent Treatment System	NS	S	NS
8.3	Health Impacts	Thermal Treatment Plant	NS	NS	S
		Industrial Effluent Treatment System	NS	NS	NS
8.4	Quantitative Risk Assessment	Thermal Treatment Plant	NS	NS	S
		Industrial Effluent Treatment System	NS	NS	NS
8.5	Waste Management	Thermal Treatment Plant	NS	NS	S
		Industrial Effluent Treatment System	NS	NS	S
8.6	Wastewater Quality	Thermal Treatment Plant	NS	NS	S
		Industrial Effluent Treatment System	NS	NS	S
8.7	Process Review	Thermal Treatment Plant	NS	NS	S
		Industrial Effluent Treatment System	NS	NS	S
8.8	Noise Quality	Thermal Treatment Plant	NS	S	S
		Industrial Effluent Treatment System	NS	S	NS
8.9	Odour Quality	Storage Area (Cold Room)	NS	NS	S

**NS: Not significant*

**S: Significant*

7.1 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) is recommended to be outlined in order to manage all the potential impacts identified in the report. EMP is a practical tool for the implementation of mitigation and protective measures identified in the EIA. The plan relates anticipated project activities to sensitive environmental factors, outlining policies and procedures for the protection of the environment. The outcome will minimize the risk of costly, time-consuming environmental issues, while maximizing productivity, bottom-line performance and goodwill.

The main elements of the EMP are:

i) Environmental mainstreaming tools and Guided Self-Regulation (GSR) element;
ii) Legislative and contractual requirements and conditions that need to be observed and complied with;
iii) An administrative setup (i.e. safety, health and environment unit) to be responsible for environmental management with well defined organization structure, manpower requirements, and responsibilities of personnel;
iv) Environmental monitoring requirements and compliance requirements;
v) Monitoring programmes during construction phase (i.e. ambient air, surface water, noise and silt trap discharge quality);
vi) Monitoring programmed during operation phase (i.e. stack emission, ambient air, surface water, effluent and noise quality);
vii) Environmental records and reporting requirements;
viii) Key environmental management action plan for the protection of environmental component identified; and
ix) Actions required and the reporting sequence for emergency responses during accidents or abnormal operations of the plant.

7.2 Proposed Monitoring Programme

Monitoring programme is an essential component in the overall EMP. It comprises of three (3) types of monitoring i.e., Performance Monitoring (PM), Compliance Monitoring (CM) and Impact Monitoring (IM). The monitoring programme will be periodically reviewed and revised by accredited laboratory when necessary to take into consideration the changes made during project development.

7.2.1 Performance Monitoring

Performance monitoring (PM) is a proactive and preventive monitoring of processes to ensure Air Pollution Control Systems (APCS) as well as Industrial Effluent Treatment System (IETS) are optimally operated and maintained during the operation phase. PM should be incorporated as a Standard Code of Practice (SOP) which must be implemented and strictly enforced. The performance monitoring shall be conducted by SSB project in accordance with the technical guidance published by the Department of Environment (DOE) as follow;

1. Technical Guidance on Performance Monitoring of Air Pollution Control Systems (APCS); and
2. Technical Guidance on Performance Monitoring of Industrial Effluent Treatment Systems (IETS).

The details for both Performance Monitoring of APCS and IETS are provided in **Chapter 9: Environmental Management Plan** of this EIA report.

7.2.2 Compliance Monitoring

Compliance monitoring (CM) will be conducted to ensure the emission and discharge from the proposed project complies with the local regulations and relevant standards. **Table ES.8** and **ES.9** shows the proposed compliance monitoring for the Proposed Project.

7.2.3 Impact Monitoring

Impact Monitoring (IM) will be only conducted to monitor the impact from effluent discharge from the proposed project towards the nearby sensitive receptors on a case to case basis when required. This is because the P2M2 is clearly identified and operation procedures are adequate.

Table ES.8: Proposed Compliance Monitoring (CM) Programme During Construction Phase

No.	Environmental Component	Compliance	Frequency/ Year	Monitoring Location	Parameters	Recommended Limit	Methods
1.	**CONSTRUCTION PHASE**						
1.1	Ambient Air Quality	Malaysian Ambient Air Quality Standards 2020	Quarterly	A1, A2, A3 and A4	Particulate Matter 10 (PM ≤10 micron)	100 µg/m^3 @ 24-hr	USEPA Method IO-2.2
					Particulate Matter 2.5 (PM ≤2.5 micron)	35 µg/m^3 @ 24-hr	USEPA Method IO-2.2
1.2	Surface Water Quality	Standard A, Environmental Quality (Industrial Effluent) Regulations, 2009 National Water Quality Standards, Malaysia (Class III)	Quarterly	SW1, SW2, SW3 and SW4	Temperature	40 °C	APHA 2550 B
					pH Value	6.0 – 9.0	APHA 4500 H+ B
					COD	80 mg/L	APHA 5220 C
					BOD_5	20 mg/L	APHA 5210 B
					TSS	50 mg/L	APHA 2540 D
					Oil & Grease	1.0 mg/L	APHA 5520 B
					Ammoniacal Nitrogen	10 mg/L	APHA 4500-NH_3 B & C
					Color	100 mg/L	NA
					Trivalent Chromium	0.20 mg/L	APHA 3010
					Hexalent Chromium	0.05 mg/L	*APHA 3500-Cr B
					Barium	1.0 mg/L	*APHA 3120 B
					Silver	0.1 mg/L	*APHA 3120 B
					Selenium	0.02 mg/L	*APHA 3120 B
					Boron	1.0 mg/L	APHA 3120 B
					Lead	0.10 mg/L	APHA 3120 B
					Nickel	0.20 mg/L	APHA 3120 B
					Zinc	2.0 mg/L	APHA 3120 B
					Arsenic	0.05 mg/L	APHA 3120 B
					Cadmium	0.01 mg/L	APHA 3120 B
					Copper	0.20 mg/L	APHA 3120 B
					Iron (Fe)	1.0 mg/L	APHA 3120 B

Table ES.8: Proposed Compliance Monitoring (CM) Programme During Construction Phase

No.	Environmental Component	Compliance	Frequency/ Year	Monitoring Location	Parameters	Recommended Limit	Methods
					Manganese	0.20 mg/L	APHA 3120 B
					Aluminum	10 mg/L	APHA 3030 & APHA 3030 F 2005
					Mercury	0.005 mg/L	In-House Method TM/WEP/012"
					Tin	0.20 mg/L	In-House Method TM/WEP/012"
					Free Chlorine	1.0 mg/L	HACH METHOD 8131
					Cyanide	0.05 mg/L	APHA 4500CN-C&E
					Sulphide	0.50 mg/L	APHA 4500S2-D
					Fluoride	2.0 mg/L	APHA 4500 F-D
					Formaldehyde	1.0 mg/L	IN-HOUSE METHOD (QWI-CH/17-33)
					Phenol	0.001 mg/L	APHA 5530B&D
					Ammoniacal Nitrogen	0.9 mg/L	*HACH 8155
					COD	50.0 mg/L	APHA 5220 C
					BOD	6.0 mg/L	APHA 5210 B
					DO	3.0-5.0 mg/L	APHA 4500-O C
					Turbidity	-	*HACH 2100Q
					Iron	1.0 mg/L	APHA 3120 B
					Manganese	0.2 mg/L	APHA 3120 B
					Phosphorus	0.1 mg/L	*HACH 8048
					Oil & Grease	N	APHA 5520 B
					TSS	150.0 mg/L	APHA 2540 D
					Faecal Coliform	5,000.0 (20,000.0)[a]	*APHA 9221 E

Table ES.8: Proposed Compliance Monitoring (CM) Programme During Construction Phase

No.	Environmental Component	Compliance	Frequency/ Year	Monitoring Location	Parameters	Recommended Limit	Methods
					Coliform	50, 000 mg/L	*APHA 9221 B
1.3	Noise Quality	Guidelines for Environmental Noise Limits and Control, Third Edition, 2019	Quarterly	N1	LAeq, Lmax, Lmin	≤70 dBA (day time) ≤65 dBA (night time)	BS 4142:1997
				N4	LAeq, Lmax, Lmin	≤60.0 dBA (day time) ≤55.0 dBA (night time)	
1.4	Silt Trap Discharge Quality	As per requirement by the DOE	Monthly	D1 (Silt Trap Effluent Discharge)	TSS	50 mg/L	APHA 2540D
					Turbidity	250 Nephelometric Turbidity Unit (NTU)	APHA 2130 B

Table ES.9: Proposed Compliance Monitoring (CM) Programme During Operation Phase

No.	Environmental Component	Compliance	Frequency/ Year	Monitoring Location	Parameters	Recommended Limit	Methods
2.	**OPERATION PHASE**						
2.1	Stack Emission Quality	Environmental Quality (Clean Air) Regulations, 2014	Quarterly	Stack 1	Total Particulate Matter	100 mg/m^3	USEPA Method 5/ MS 1596:2003
					NMVOC as total organic carbon	10 mg/m^3	USEPA Method 0030
					Hydrochloric Acid	40 mg/m^3	USEPA Method 26A
					Hydrofluoric Acid	1 mg/m^3	USEPA Method 26A
					Sulphur Dioxide	50 mg/m^3	USEPA Method 6C
					Nitrogen Oxides (expressed as NO2)	200 mg/m^3	USEPA Method 7E
					Carbon Monoxide	50 mg/m^3	USEPA Method 10
					Cadmium	Total 0.05 mg/m^3	USEPA Method 29
					Thallium		USEPA Method 29
					Mercury	0.05 mg/m^3	USEPA Method 29
					Antimony	Total 0.5 mg/m^3	USEPA Method 29
					Arsenic		USEPA Method 29
					Lead		USEPA Method 29
					Chromium		USEPA Method 29
					Cobalt		USEPA Method 29
					Copper		USEPA Method 29
					Manganese		USEPA Method 29
					Nickel		USEPA Method 29
					Vanadium		USEPA Method 29
			Bi-annually		PCDD/PCDF	0.1 ng TEQ/M^3	USEPA Method 23/1613A
2.2	Ambient Air Quality	Malaysian Ambient Air Quality	Quarterly	A1, A2, A3 and A4	Particulate Matter 10 (PM ≤10 micron)	100 µg/m^3 @ 24-hr	USEPA Method IO-2.2

Table ES.9: Proposed Compliance Monitoring (CM) Programme During Operation Phase

No.	Environmental Component	Compliance	Frequency/ Year	Monitoring Location	Parameters	Recommended Limit	Methods
		Standards, 2013 (standard 2020)			Particulate Matter 2.5 (PM ≤2.5 micron)	35 µg/m^3 @ 24-hr	USEPA Method IO-2.2
					Sulphur Dioxide	250 µg/m^3 @ 1-hr	ISC 704C
					Nitrogen Dioxide	280 µg/m^3 @ 1-hr	ISC 406
					Carbon Monoxide	30 mg/m^3 @ 1-hr	In house method AMR-AA01 Manufacturer's Measurement Procedures (Dräger)
					Ozone	180 µg/m^3 @ 1-hr	ISC 411
2.3	Effluent Quality	Standard A, Environmental Quality (Industrial Effluent) Regulations, 2009	Quarterly	Final Discharge Point	COD	80 mg/L	APHA 5220 C
					BOD	20 mg/L	APHA 5210 B
					TSS	50 mg/L	APHA 2540 D
					Oil & Grease	1.0 mg/L	APHA 5520 B
					Ammoniacal Nitrogen	10 mg/L	APHA 4500-NH_3 B & C
					pH	100	APHA 2120 F
					Colour	100 mg/L	APHA 2120 F
					Trivalent Chromium	0.20 mg/L	In-House Method TM/WEP/013'
					Hexalent Chromium	0.05 mg/L	*APHA 3500-Cr B
					Barium	1.0 mg/L	*APHA 3120 B
					Silver	0.1 mg/L	*APHA 3120 B

Table ES.9: Proposed Compliance Monitoring (CM) Programme During Operation Phase

No.	Environmental Component	Compliance	Frequency/ Year	Monitoring Location	Parameters	Recommended Limit	Methods
					Selenium	0.02 mg/L	*APHA 3120 B
					Boron	1.0 mg/L	APHA 3120 B
					Lead	0.10 mg/L	APHA 3120 B
					Nickel	0.20 mg/L	APHA 3120 B
					Zinc	2.0 mg/L	APHA 3120 B
					Arsenic	0.05 mg/L	APHA 3120 B
					Cadmium	0.01 mg/L	APHA 3120 B
					Copper	0.20 mg/L	APHA 3120 B
					Iron	1.0 mg/L	APHA 3120 B
					Manganese	0.20 mg/L	APHA 3120 B
					Aluminum	10 mg/L	APHA 3120 B
					Mercury	0.005 mg/L	In-House Method TM/WEP/012”
					Tin	0.20 mg/L	In-House Method TM/WEP/012”
					Free Chlorine	1.0 mg/L	*HACH 8021
					Cyanide	0.05 mg/L	HACH 8027
					Sulfide	0.50 mg/L	HACH 8131
					Fluoride	2.0 mg/L	HACH 8029
					Formaldehyde	1.0 mg/L	HACH 8110

Table ES.9: Proposed Compliance Monitoring (CM) Programme During Operation Phase

No.	Environmental Component	Compliance	Frequency/ Year	Monitoring Location	Parameters	Recommended Limit	Methods
2.4	Noise Quality	Guidelines for Environmental Noise Limits and Control, Third Edition, 2019	Quarterly	N1	LAeq, Lmax, Lmin	≤70 dBA (day time) ≤65 dBA (night time)	BS 4142:1997
				N4		≤60 dBA (day time) ≤55 dBA (night time)	

8.0 STUDY FINDINGS

Environmental assessment is a comparison of the existing environment and a prediction of alterations or changes to these existing conditions that result from the implementation of proposed project. All significant changes, whether negatively or positively affecting the existing environment, need to be described conclusively and the appropriate assessment methodology applied to verify conclusions.

The summary of environmental impact assessment help to determine the level of identified impacts that need to be assessed and to suggest suitable methodologies when conducting the EIA study. The environmental components on which assessment will need to be carried out to predict the scale of the impact will be project specific. **Table ES.10** shows summary of impact assessment that can be used to evaluate the scale and extent of environmental impacts on the key environmental components.

Based on the findings from all sub-studies in this EIA, the main concerns are the air quality issue. However, with the mitigation measures proposed in **Chapter 8** of the EIA complimented with the past experienced in managing the scheduled waste, it is expected that the proposed activity will not impose any significant adverse impact to the environment in the vicinity of the proposed site.

It can be concluded that, with planned mitigation and the implementation of best practices to avoid or minimize adverse environmental impacts, the environmental impacts including cumulative environmental impacts during all phases are not rated significant. This report has also clearly demonstrated general acceptability of the residual impacts and thus the environmentally sensitive receptors in the vicinity of the new project would be successfully protected.

Thus, it has been established that the development of the proposed SSB facility is predicted to not caused any severe residual impacts onto the environment if its operation strictly adheres to the standard guidelines. it is recommended that the proposed development of SSB facility to be approved on the basis that the project proponent will continuously adhere to the requirements of the environmental guidelines, employing mitigation measures to ensure compliance with statutory requirements and recommended criteria

Table ES.10: Summary of Impact Assessment

No.	Impacts	Method of Assessment	Evaluation Criteria	Reference	Study Findings
1.	Air Quality	AERMOD software, air dispersion modelling	Emission Limit Ambient Air Quality Standards	Environmental Quality (Clean Air) Regulations, 2014 Malaysia Ambient Air Quality Standard, 2013 (Standard 2020)	The predicted maximum pollutants concentrations in normal operation scenario were all below the recommended standard and guideline limit. The location of the Maximum Ground Level Concentration (MaxGLC) for main pollutants i.e. Particulate Matter, Heavy metals, Acid Mist and Dioxin Furan, occurs within 362m from the source i.e., the proposed stack location away from any sensitive receptors.
2.	Land Disturbing	Universal Soil Loss Equation (USLE) to assess the erosion risk Modified Universal Soil Loss Equation (MUSLE) for sediment Yield estimation	Soil Erosion and Sediment Risk	Urban Stormwater Management Manual for Malaysia (MSMA) (DID, 2015) Guideline of Erosion and Sediment Control in Malaysia (DID, 2010) Guidance Document for the Preparation of Land Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2) (DOE,2017).	The proposed project is designated on a cleared vacant land with minimal site preparation activity. Adequate mitigation measure is to be implemented to further minimize potential impact from land disturbing activities.

Table ES.10: Summary of Impact Assessment

No.	Impacts	Method of Assessment	Evaluation Criteria	Reference	Study Findings
3.	Health Impact Assessment	Health risk assessment (HRA) methodology	Acceptable lifetime carcinogenic risk range will be taken as a range between 10^{-6} to 10^{-4}	Guidance Document on Health Impact Assessment (HIA) in Environmental Impact Assessment (DOE, 2012)	The assessment on exposure to the PM10, NO_2, SO_2, acid gases, heavy metals and Dioxin-Furan during the normal and worst case scenarios showed that the calculated hazard quotient is below 1 (HQ<1), which indicates a non-carcinogenic risk to the local community. The cancer risks were recorded to be within the acceptable limit (i.e., between 10^{-4} to 10^{-6} as stipulated in Guidance Document on Health Impact Assessment (HIA) in EIA by the DOE, Malaysia).
4.	Quantitative Risk Assessment	QRA Individual Risk Modelling (CASQADE)	Criteria for QRA Individual Risk: • 1×10^{-6} fatality per year for residential areas • 1×10^{-5} fatality per year for neighbouring industry	UK Health and Safety Executives Criteria Asian Development Bank (ADB) DOE, Ministry of Natural Resources and Environment, Malaysia, Environmental Impact Assessment Guidelines for Risk Assessment, December 2004, Third Edition, October 2007, EG 1/04.	Individual Risk (IR) Contour based on the following description: • There is no 1×10^{-5} per year IR contour for the proposed project; and • The 1×10^{-6} per year IR contour of the proposed project goes beyond the proposed plant boundary but does not encompass involuntary recipients of industrial risks such as residential areas, schools, hospitals, and places of continuous occupancy, etc.

Table ES.10: Summary of Impact Assessment

No.	Impacts	Method of Assessment	Evaluation Criteria	Reference	Study Findings
5.	Wastewater Quality	Industrial Effluent Characteristic Study	DOE Discharge Limit, Standard A	Environmental Quality (Industrial Effluent) Regulations, 2009	Wastewater resulting from the internal washing activities including washing of storage bin and trucks that involved during the operation of SBB facility (called as effluent) will be treated first through the Industrial Effluent Treatment System (IETS) constructed at site. The treatment for the IETS designed will comply to Standard A of Environmental Quality (Industrial Effluent) Regulations, 2009. The treated water will be re-used inside the plant.
6.	Waste Management	Identification of waste generated and management of waste (i.e., scheduled, solid and biomass waste)	Waste (solid and scheduled) procedures as in the regulations	Environmental Quality (Scheduled Waste) Regulations, 2005	Waste generated is to be disposed in appropriate manner (i.e., designated location, container etc.). Some volume of residue will be generated from thermal treatment plant as well as the IETS. The residue including scheduled waste that cannot be treated at SSB is to be sent to other prescribed premises for treatment and final disposal.
7.	Socio-economic Assessment	Secondary Data: Literature Review Primary Data: Fieldwork	Locality of survey site, physical components, and people perceived within 5km radius.	Data available from relevant government agencies Social Impact Assessment Manual for Development Projects (2nd Edition) (Plan Malaysia (JPBD), 2017	Fieldwork during health assessment have gathered 278 respondents from 9 residential area within 5km radius from the project site and a Focus Group Discussion is conducted with the stakeholders and community leaders. The field survey presented majority accepted the proposed project. However, public concerns were raised

Table ES.10: Summary of Impact Assessment

No.	Impacts	Method of Assessment	Evaluation Criteria	Reference	Study Findings
		Stakeholder Consultation	Data from government agencies		during the Focus Group Discussion. The mitigation measures are well addressed in this report.
8.	Noise Quality	Noise modelling by using soundPLAN software	70 dBA (day time) and 65 dBA (night time) for designated industrial zone within proposed project site 60 dBA (day time) and 55 dBA (night time) for suburban residential at sensitive receptors	First schedule of Recommended Permissible Sound Level (LAeq) by Receiving Land Use for New Development stipulated in the Guidelines for Environmental Noise Limits and Control, 2019	Noise generated by transportation of construction materials is expected to be short-term impact. The site construction activities are expected not to cause any significant impact to the surrounding sensitive receptors as mitigating measures to reduce the noise level will be implement during the construction stage such as piling works during daytime only and enclosed machine that generate high noise level with soundproof housing or enclosures.
9.	Water Quality	Water Quality Modelling	Class III National Water Quality Standard Malaysia	National Water Quality Standard Malaysia Water Environment Partnership in Asia (WEPA)	Wastewater resulting from the internal washing activities including washing of storage bin and trucks that involved during the operation of SSB facility (called as effluent) will be treated first

Table ES.10: Summary of Impact Assessment

No.	Impacts	Method of Assessment	Evaluation Criteria	Reference	Study Findings
					through the Industrial Effluent Treatment System (IETS) constructed at site. The discharge limit for the IETS designed is following Standard A of Environmental Quality (Industrial Effluent) Regulations, 2009.
10.	Odour Quality	Modelling using AERMOD that utilizes the Gaussian plume air dispersion method	Odour Concentration Limit	The draft of odour regulation stipulated by the DOE dated April 2013	Based on the odour modelling exercise, it is concluded that there is no significant odour impact observed to the nearest residential or sensitive receptors due to the proposed development of SWTTP as the concentration predicted (i.e 0.6 OU/m^3) was well below the draft boundary limit of 7.0 OU/m^3. Maximum predicted GLOC of odour for 1-hour averaging time is approximately 40m from the source. Thus, it is anticipated that the day-to-day operation of the proposed SWTTP will not likely to cause any odour complaint from the public.