



CHAPTER 2 TERMS OF REFERENCE

2.1 INTRODUCTION

The Terms of Reference (TOR) document was prepared for the Environmental Impact Assessment (EIA) Report for "The Proposed Tin Ore Smelting and Refining Plant on Lot PT 64536, PT 64537 and PT 64538 of 12.049 Acres, Jalan Perigi Nanas 6/1, Pulau Indah Industrial Park, Westport, Port Klang, 42920 Pulau Indah, Selangor Darul Ehsan. Hereinafter referred to as "The Project").

MSC intends to operate tin ore smelting and refining plant by refurbishing the existing facilities on Lot PT 64536, Lot PT 64537 and PT 64538 in Pulau Indah Industrial Park, Selangor.

The TOR document was endorsed with revision as indicated in the letter issued by DOE with reference JAS.37/209/101/089(13), dated 31st July 2018. The copy of the endorsement letter is attached in **Appendix 1**.

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The Terms of Reference (TOR) previously was formulated for the "Proposed Tin Ore Smelting and Refining on Lot PT 64536, PT 64537 and PT 64538 of 7.898 acres, Jalan Perigi Nanas 6/1, Pulau Indah Industrial Park, West Port, Klang, Selangor Darul Ehsan" (hereinafter referred to as "The Project").

The TOR document was endorsed with revision as indicated in the letter issued by DOE with reference JAS.37/209/101/089(13), dated 31st July 2018. The copy of the endorsement letter and Minutes of TORAC Meeting are attached in **Appendix 2a.**

The title of the project has been changed to state the actual project size of the proposed Project site as well as to indicate the actual lot according to the Land Title. The new title of the Proposed Project would be "The Proposed Tin Ore Smelting and Refining Plant on Lot PT 64536, PT 64537 and PT 64538 of





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12.049 Acres, Jalan Perigi Nanas 6/1, Pulau Indah Industrial Park, Westport, Port Klang, 42920 Pulau Indah, Selangor Darul Ehsan". Letter to notify the DOE Putrajaya on the change of the Proposed Project Title was sent on 18th June 2019 and 5th July 2019.

The Revised TOR document (Revision 2) was prepared and submitted to DOE on 18th July 2019 after receiving comment from DOE Putrajaya to amend the TOR to state the actual size of project area which is 12.049 acres. The Revised TOR should be read together with the Environmental Scoping Information (ESI), which provides elaboration to the TOR on identifying issues that are likely to be most importance during the EIA study. The comments from the TORAC committee has been taken into consideration during preparation of this EIA Report.

The TOR document was prepared in accordance with the EIA Guidelines in Malaysia, 2016. It should be read in conjunction with the Environmental Scoping Information (ESI), which provides elaboration to the TOR on identifying issues that are likely to be most importance during the EIA study. The comments from the TORAC committee has been taken into consideration during preparation of this EIA Report.

2.2.1 List of Consultants/ Study Team

The EIA consultants and assistant consultants included in the TOR are provided in **Table 2-1**.

For the EIA study, a new team of consultants are introduced. The list of team members is as tabulated in **Table 1-2** in Chapter 1.





Table 2-1: EIA Study Team Members

NAME	DOE REGISTRATION / PROFESIONAL CERTIFICATE NO.	ACADEMIC BACKGROUND	EXPERIENCE	AREA OF STUDY	DECLARATION (SIGNATURES)
Mohd Jamil bin Abdul Samad	- EIA Consultant: C0028 - CPESC: 6250 - CISEC: MY-0043	- B. Sc. Ecology (Hons) University of Malaya, 1986	26 Years	EIA Team LeaderOverall EIAImpact Assessment and Mitigation Measures	AM
Dato' Azemi bin Abu Bakar	- EIA Consultant: C0210	- B. Sc. Ecology (Hons) University of Malaya, 1988	27 Years	Scheduled WasteManagementImpact Assessment andMitigation Measures	£02
Savitri A/P S. Ramiah	- EIA Consultant: C0165	- MS in Technology (Environmental Management) University of Malaya, 2000 - B. Sc. (Environmental Science) Universiti Putra Malaysia, 1991	27 Years	- Project Option - Project Description - Impact Assessment and Mitigation Measures	Sonfa.
Wazfarina binti Abdul Wahid	- EIA Consultant C0087 - CISEC:MY-0143	- B. Sc (Hons) (Environmental Engineering), University Malaysia Sabah, 2003	15 Years	Noise Level Impact Assessment and Mitigation Measures	O
Norashikin binti Noraini	- EIA Consultant: C01026	- MS in Environmental Engineering, University Technology Mara, 2014 - B. Chemical Engineering, University Technology Petronas, 2007	10 Years	Solid Waste Management Environmental Management Plan Impact Assessment and Mitigation Measures	She





NAME	DOE REGISTRATION / PROFESIONAL CERTIFICATE NO.	ACADEMIC BACKGROUND	EXPERIENCE	AREA OF STUDY	DECLARATION (SIGNATURES)
Lim Sze Fook	- EIA Consultant : C0282	- B. Sc. (Hons) Physics, University of Malaya, 1977	40 Years	- Air Pollution Control (Air Quality) - Meteorology - Impact Assessment and Mitigation Measures	printer
Mohd Zulfahmie bin Mohamat Zawawi	- Team Member	- M. Phil (Geography), Universiti Kebangsaan Malaysia, 2015 - B. Sos. Sc. (Hons) (Geography) Universiti Kebangsaan Malaysia, 2011	7 Years	- Land Use Survey - Geographic Information System (GIS)	Figure
Mohammad Nizam bin Mohsin	- Team Member	- B. Sc. (Hons) Environmental Technology, Universiti Teknologi Mara, 2015	1 year	- TOR and ESI	4 .
Ku Mohd Kalkausar Ku Yusoff	- Team Member	- MSc. Environmental, Universiti Putra Malaysia - B.Sc. (Analytical Chemistry & Environmental) Universiti Putra Malaysia	1 year	- TOR and ESI	Greek





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2.1.2 Legal requirement

The proposed Project involves prescribed activities under the First and Second Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015. The prescribed activities pertaining to the Project are:

First Schedule

8. Mining

(a) Ore processing outside mineral tenement area including concentrating of aluminium, copper, gold, iron, tantalum or rare earth metal.

Second Schedule

6. Industry

- (a) Non-ferrous
- (ii) Primary smelting other non-ferrous (producing 50 tonnes product or more per day)

17. Radioactive Materials and Radioactive Waste

Any activity specified in the Second Schedule and the First Schedule using radioactive materials and generating radioactive wastes.

2.1.3 Project Concept

The proposed project involves tin ore smelting and refining operation in Pulau Indah Industrial Park. The proposed project will be carried out in a readily built premise which was previously used as a scheduled waste recovery facility.

The implementation of the proposed project will be divided into 4 stages i.e.:

Phase 1	Recovery of lead from lead slag to clear the backlog that was inherited from the previous owner.
Phase 2	Decontamination, refurbishment and conversion of existing equipment and machineries from lead recovery activity to suit future tin ore process
Phase 3	Installation of additional equipment such as electrolysis chambers, roasters, fumer and the additional air pollution control system for smelting and refining equipment.
Phase 4	Testing and commissioning of equipment and operation of Tin Ore Smelting and Refining process.





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2.1.4 Alternatives Consideration

Site Option

The project site is an existing industrial lot located in Pulau Indah Industrial Park. The present location a medium and heavy industrial area thus considered suitable for this proposed project.

Since the project proponent has acquired the premises, thus no other site was considered for the proposed project. The premises are also located within an industrial park with appropriates infrastructures such as access road, TNB line, water supply, gas supply pipeline and telecommunication line. Therefore, this proposed project site is considered as the best option for site location by the project proponent.

With Project Option

The build out option would mean that the proposed project will be materialised in accordance with project plan and schedule. This would increase investment and economic benefits and provides revenue to the state of Selangor.

The impacts associated with the project option such as air pollutants emission, abnormal incidence and accidental release of hazardous materials during operations would be mitigated with the adoption of high standards of environmental protection measures and strict adherence to the regulatory requirements.

No Project Option

The no project option would mean that the potential development to increase investment and generation of income to the State through taxes etc would not be realised.





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2.1.5 Significant Environmental Impact to Be Studied

The significant environmental impacts to be studied in the EIA are summarized in **Table 2-2**.

2.1.6 Possible Mitigation Measures

The pollution prevention and mitigation measures (P2M2) proposed to be implemented to address the identified significant impacts from construction and operational phases of the Project are as listed in **Table 2-3**





Table 2-2: Summary of Significant Environmental Impacts to be Studied

Phase	Activities	Environmental Component	Potential Impact			
		Air Emission	Air pollution from lead recovery are mainly the furnace where the air emission is released through a main stack.			
		Noise Level	Smelting and refining plant operation can cause minor noise emissions.			
		Water Quality	 Minor impact is anticipated as the process drainage and public perimeter drains are separated, and water from process (cooling water for slag granulation) is collected in recycle water pond and be reused in the process; as such there will not be any discharge from the process into the public waterways. 			
Phase 1	Recovery of lead from lead slag to clear the backlog (inherited from the previous owner) in lead recovery process.		Potential for groundwater contamination from the existing and future process could occur in the event there are seepages through unpaved surfaces.			
riidse i		Domestic Solid Waste Management	Minimal impact is anticipated following the small number of workers at site and with proper collection procedures in place.			
		Scheduled Waste	The by product from the process is classified as SW 501 which is any residues from treatment or recovery of scheduled wastes.			
		Management	 Minimal impact is anticipated due to proper adherence to the scheduled waste regulation 2005. 			
			D			Domestic Wastewater





Phase	Activities	Environmental Component	Potential Impact
		Occupational Safety & Health	 Over inhalation of smoke and dust from furnace and refiners within the plant. Accident due to operating mishap of smelter.
		Occupational Safety & Health	 Over inhalation of smoke and dust from furnace and refiners within the plant. Accident due to operating mishap of smelter.
		Noise Level	Smelting process and refining machinery installation can cause minor noise emissions.
		Air Quality	Air pollution due to smoke and dust dispersion from air stacks is a significant impact of the plant operation.
	conversion of existing equipment and machineries from lead recovery activity to suit future tin ore process.	Domestic Solid Waste Management	Minimal impact is anticipated due to small number of workers at site and with proper collection procedures in place.
Phase 2		Domestic Wastewater	 Minimal impact is anticipated due to small number of workers at site and with the existence of two existing septic tank at the existing plant. The estimated number of workers is approximately 200 with population equivalent of 60 PE will generate waste water estimated about 45.4m³/day.
		Socio-Economics	 Cultural and Aesthetic Effect Studies indicate that proposed site and immediate surrounding areas do not have any place, monument or artefact of historical significance.
		Risk Assessment	The facility that store and process scheduled waste materials having the potential to cause adverse impacts to the surrounding population, property and environment.





Phase	Activities	Environmental Component	Potential Impact
Phase 3	Closure or Ceased Operation of Lead Slag Recovery Plant (SW 104)		 Closure Plan for the existing Lead Process will be carried out prior to commencement of the tin processing. Closure Plan will include third party audit and compliance to all the license's conditions. The existing license will have to be terminated.
		Radioactive Waste	 Minimal impact is anticipated due to consideration that waste with economic value will be sold and waste that need to be disposed will be sent to the existing tin mining site with the approval and licensed from the Atomic Energy Licensing Board.
	Testing & Commissioning of equipment and Operation of Tin Ore & Refining Process	Air Emission	 Air pollution sources of the Tin Ore are mainly the furnaces and emission from these sources are released through stacks after being clean in Air pollution Control System (APCS).
		Noise Level	Smelting and refining plant operation can cause minor noise emissions.
Phase 4		Water Quality	 Minor impact is anticipated because the process drainage and public perimeter drains are separated, and water from process (cooling water for slag granulation) is collected in recycle water pond and be reused in the process; as such there will not be any discharge from the process into the public waterways.
		Domestic Solid Waste Management	Minimal impact is anticipated due to small number of workers at site and with proper collection procedures in place.
		Scheduled Waste Management	Minimal impact is anticipated due to proper adherence to the scheduled waste regulation 2005.





Phase	Activities	Environmental Component	Potential Impact
		Domestic Wastewater	 Minimal impact is anticipated due to small number of workers at site and with the existence of two existing septic tank at the existing plant. The estimated number of workers is approximately 200 with population equivalent of 60 PE will generate waste water estimated about 45.4m³/day.
		Occupational Safety & Health	 Over inhalation of smoke and dust from furnace and refiners within the plant. Accident due to operating mishap of smelter and refiners.





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Table 2-3: Pollution Prevention and Mitigation Measure (P2M2)

Phase	Project Activities	Environmental Component	Proposed Mitigation Measures
	Recovery of lead from lead	Air Emission	 Proper maintenance of existing APCS Consistent monitoring of bag filter to control dust and flue gas. If any complaints received, it shall be investigated as appropriate. Complaints, investigation and corrective action shall be documented.
		Noise Level	 Regular inspection and maintenance of machineries, (smelter and refiners) and all vehicles to avoid/minimize unwanted noise generated. Workers should appropriately be fitted out with protective gear, like ear mufflers and for occasional medical check-ups.
Phase 1	slag to clear the backlog (inherited from the previous owner) in lead recovery process.		 Wastes and scheduled wastes shall be collected and treated in proper manner to prevent water clogging and impact on quality of water. Regular desludging of the existing septic tank.
			 Scheduled waste management shall be performed prudently and responsibly. Illegal disposal of any solid or scheduled waste into perimeter drain
			to nearby water way will be prohibited. • Maintenance of drainage system shall be regularly carried out.





	Domestic Solid Waste Management	 General refuse generated on-site shall be stored in enclosed bins separate from hazardous wastes. Solid wastes generation from the plant is expected to be low and will be properly manage. Wastes to be stored in appropriate designated and marked areas.
		Scheduled Wastes (SW) management during production, storage and disposal should be in compliance with the Scheduled Waste Regulation 2005 which described Packaging, Labelling and Storage of scheduled wastes in Malaysia.
	Scheduled Waste Management	These scheduled wastes will be disposed by licensed contractors at approved locations.
		The residue from the process is classified as SW 501 which is any residues from treatment or recovery of scheduled wastes.
		This waste will be sent to Kualiti Alam for final disposal.
	Domestic Wastewater	 The sewage will be treated in two existing septic tanks at the existing plant. The estimated number of workers is approximately 200 with population equivalent of 60 PE will generate waste water estimated about 45.4m³/day.
	Occupational Safaty 8	The plant management shall ensure that health, safety and general welfare of the employees as stipulated under the "Occupational Safety and Health Act 1994 (Act 514)" are properly taken care off.
	Occupational Safety & Health	 residues from treatment or recovery of scheduled wastes. This waste will be sent to Kualiti Alam for final disposal. The sewage will be treated in two existing septic tanks at the existing plant. The estimated number of workers is approximately 200 with population equivalent of 60 PE will generate waste water estimated about 45.4m³/day. The plant management shall ensure that health, safety and general welfare of the employees as stipulated under the "Occupationa"
		Safety equipment or 'Personal Protective Equipment (PPE)', such as 'Heavy Duty Shoes, Helmet & Emergency Medical Kits' will be





			 provided for the workforce. The employer must provide information, instruction, training and supervision as is necessary to guarantee safety and health of its employees. Continual monitoring by 'Health & Safety Officer'.
		Air Emission	 Consistent monitoring of bag filter to control dust and smog. If any complaints received, it shall be investigated as appropriate. Complaints, investigation and corrective action shall be documented.
	Decontamination,	Noise Level	 Regular inspection and maintenance of machineries, (smelter) and all vehicles to avoid/minimize unwanted noise generated. Workers should appropriately be fitted out with protective gear, like ear mufflers and for occasional medical check-ups.
Phase 2	refurbishment and conversion of existing	Domestic Solid Waste Management	 General refuse generated on-site shall be stored in enclosed bins separate from hazardous wastes. Solid wastes generation from the plant is expected to be low and will be properly manage. Wastes to be stored in appropriate designated and marked areas.
		Scheduled Waste Management	 SW 104 from the smelting process in form of tin slag which contaminated with lead will be properly handled before it is further refined in the tins smelting process. Scheduled Wastes (SW) management during production, storage and disposal should be in compliance with the Scheduled Waste Regulation 2005 which described Packaging, Labelling and Storage of scheduled wastes in Malaysia.





Phase 3	Closure or Ceased Operation of Lead Slag Recovery Plant (SW 104)		 Carry out decontamination process according to the Approved Closure Plan prior to commencement of the tin ore Smelting and refining activities New operating licensed need to be obtained from local authority for Tin Ore Smelting and Refining Activities.
Phase 4	 Installation of new Equipment Testing & Commissioning of equipment 	Air Emission and Air Quality	 Install new additional Air Pollution Control System (APCS) to cater for additional load from tin ore smelting and refining plant Refurbish, upgrading and make good the existing APCS to ensure their efficiency Proper maintenance of existing and new APCS Frequent inspection and monitoring of bag filter, scrubbers, flue gas desulphurization system to control dust and flue gas. If any complaints received, it shall be investigated as appropriate. Complaints, investigation and corrective action shall be documented. Regular inspection and maintenance of machineries, (smelter and refiners) and all vehicles to avoid/minimize unwanted noise generated.
	Operation of Tin Ore & Refining Process	Noise Level	 Continual monitoring of noise level within plant. Comply with Occupational Safety and Health Act (OSHA) standard of permissible exposure noise level with is 90dBA in exposure duration of 8 hours. Workers should appropriately be fitted out with protective gear, like ear mufflers and for occasional medical check-ups.
		Water Quality	Wastes and scheduled wastes shall be collected and treated in





	T	
		proper manner to prevent water clogging and impact on quality of water.
		 Proper and Regular desludging of the existing septic tank. Regular servicing is required to ensure that the toilet is clean.
		 Open surface at ore and raw material storage area has to be covered to avoid splash and accumulation of rain water.
		 Illegal disposal of any solid or scheduled waste onto perimeter drain to nearby water way will be prohibited.
		Maintenance of drainage system shall be regularly carried out.
		General refuse generated on-site shall be stored in enclosed bins separate from hazardous wastes.
	Domestic Solid Waste Management	 Solid wastes generation from the plant is expected to be low and will be properly manage.
		Wastes to be stored in appropriate designated and marked areas.
	Scheduled Waste Management	Scheduled Wastes (SW) management during production, storage and disposal should be in compliance with the Scheduled Waste Regulation 2005 which described Packaging, Labelling and Storage of scheduled wastes in Malaysia.
	Ů	Scheduled wastes will be disposed by licensed contractors at approved locations.
		Waste (Tin Slag) that is considered radioactive which contains Tantalum will be sold to potential Buyers.
	Radioactive Waste	Waste which does not have economic value and will have to be disposed under the license from Atomic Energy Licensing Board. The potential disposal site is in the current mining site in RHT Mine in





		Perak.
	Domestic Wastewater	 The sewage will be treated in two existing septic tanks at the existing plant. The estimated number of workers is approximately 200 with population equivalent of 60 PE will generate waste water estimated about 45.4m³/day.
	Occupational Safety & Health	The plant management shall ensure that health, safety and general welfare of the employees as stipulated under the "Occupational Safety and Health Act 1994 (Act 514)" are properly taken care off.
		 Safety equipment or 'Personal Protective Equipment (PPE)', such as 'Heavy Duty Shoes, Helmet & Emergency Medical Kits' will be provided for the workforce.
		 The employer must provide information, instruction, training and supervision as is necessary to guarantee safety and health of its employees.
		Continual monitoring by 'Health & Safety Officer'.
	Socio-Economics	 Employment It will create significant of jobs and make economic opportunities for the local people.