CHAPTER 1

INTRODUCTION

1.1 TITLE OF PROJECT

The title of the project for this Environmental Impact Assessment (EIA) (First Schedule) study is "The Construction And Completion Of A Metals from Spent Catalyst Recovery Facility (SCaRF) at Gebeng Industrial Estate (GIE), Kuantan, Pahang, Malaysia." herein after referred to as the Proposed Project.

1.2 DETAILS OF THE PROJECT PROPONENT

The project proponent for the Proposed Project is **Taiyo Koko** of Tokyo, (herein after referred to as the Project Proponent). The landowner is Taiyo Koko of Tokyo.

1.2.1 Project Proponent

Address	:	TAIYO KOKO CO., LTD.
		c/o Toyo Engineering & Construction Sdn Bhd
		Level 25, Menara Haw Par
		Jalan Sultan Ismail, 50250 Kuala Lumpur
Telephone/Fax	:	Mobile : +81 80 8946 9684
Contact Person (Japan)	:	Mr Masahiro Yamamoto
Contact Person (Malaysia) : Ms Lim Kah Eng (Mobile: 012		Ms Lim Kah Eng (Mobile: 012-2701815)
1.2.2 Landowner		
Landowner	:	TAIYO KOKO CO., LTD.
Address	:	c/o Toyo Engineering & Construction Sdn Bhd
		Level 25, Menara Haw Par
		Jalan Sultan Ismail, 50250 Kuala Lumpur
Telephone/Fax	:	Mobile : +81 80 8946 9684
Contact Person (Japan)	:	Mr Masahiro Yamamoto
Contact Person (Malaysia)	:	Ms Lim Kah Eng (Mobile: 012-2701815)
Please see the land Sales and Purch	ase	Agreement in Appendix 1

1.3 EIA CONSULTING FIRM

The EIA consultant appointed by the Project Proponent to carry out the EIA study is **EnviroSource Sdn. Bhd.** The company address and details of the contact person are as follows:

Address	:	EnviroSource Sdn. Bhd.		
		Wisma Envirosource, 13A, Jalan Jernang Jaya 1, Taman Jernang Jaya,		
		43650 Bandar Baru Bangi, Selangor Darul Ehsan.		
Tel/Fax	:	+6012- 206 3354		
Contact Persor	n:	Prof. Emeritus Dr. Rakmi Abd. Rahman (Lead Project Consultant)		
Email	:	technical@envirosourcesb.com		

1.4 LOCATION OF THE PROJECT

The proposed project (The Construction and Completion of a Metals from Spent Catalyst Recovery Facility (SCaRF) in Gebeng Industrial Area, Kuantan, Pahang) is to be located on a lot belonging to the project proponent, at Lot 29132, in the Gebeng Industrial Estate (GIE), Kuantan, as shown in **Figure 1.4(1)** and **Figure 1.4(2)**. The Gebeng Industrial Estate (GIE) is planned under the Rancangan Tempatan Daerah Kuantan 2035 (Penggantian). GIE is one of the five main industrial areas gazetted in the Kuantan district. Other areas that have been gazetted as industrial areas are Tanjung Gelang Industrial area and Kuantan Port, Semambu Industrial area, Indera Mahkota Industrial area and Prima Kota Industrial area in Kuantan City.

The lot is located in planning zone BPK 3.1 (see **Section 6.2**) which can be for C3: Heavy Industries (communication with Ketua Cawangan Majlis Perbandaran Kuantan (Cawangan Gebeng). The PKNP website states: The Gebeng Industrial Area was clustered as a Chemical/Petrochemical Hub on 23 April 1997, when it witnessed the opening of the first Petrochemical-based factory, which was the MTBE/Polypropylene plant, in which PETRONAS played a role in attracting new Petrochemical-based investors to the Gebeng Industrial Area. Gebeng Industrial Estate is designated for heavy industries and largely for petrochemical and chemical industries. The proposed SCaRF will be processing a petrochemical industry waste.

The proposed SCaRF site is located across the road from the LYNAS Advanced Material plant (hereafter referred to as LYNAS) to its south and across the road from the RE Gebeng solar energy plant to its west, as shown in **Figure 1.4(3)**. The 5 km zone of impact (ZOI) for the SCaRF is shown in **Figure 1.4(1)**. The SCaRF site and immediate neighbours and immediate neighbours are shown in **Figure 1.4(4)**.

EIA for Construction and Completion of a Metals from Spent Catalyst Recovery Facility (SCaRF) At Gebeng Industrial Estate (GIE), Kuantan, Pahang.



Figure 1.4(1) Location of proposed SCaRF in Gebeng Industrial Estate and its 5km ZOI



EIA for Construction and Completion of a Metals from Spent Catalyst Recovery Facility (SCaRF) At Gebeng Industrial Estate (GIE), Kuantan, Pahang.



Figure 1.4(3) Location of proposed SCaRF across from LYNAS and RE Gebeng



Prepared SCaRF industrial site overgrown by secondary vegetation of low acacia trees



SCaRF next door site: the RE Gebeng solar farm Figure 1.4(4) The SCaRF site and immediate neighbours

1.5 LEGAL REQUIREMENT

The objective of the study is to present to the Department of Environment (DOE) the environmental assessment on the proposed project, and to obtain DOE's approval as required under section 34A of the Environmental Quality Act, 1974 (EQA, 1974) for activities prescribed in the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015. Under this legislation, an Environmental Impact Assessment (EIA) needs to be undertaken for the development of SCaRF:-

The proposed Project falls under the First Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 2015, the which covers:

First Schedule			
	Waste Treatment and Disposal		
Activity 14(a):	(a) Scheduled Waste		
	(i) Construction of recovery plant (off-site).		

1.6 QUALIFIED PERSONS

1.6.1 Qualified Person/EIA Team Members

The list of consultants involved in the study along with their respective fields of expertise are given in **Table 1.6(1)**

			Registration With DOE						
No	Name	Qualification	Category	Area/Field	ID. No.	Reg. Expiry	Study Area	Signature	
	A. EIA Study Team Leader								
1.	Prof. Emeritus Dr. Rakmi Abd. Rahman	B.Eng.(Chemical Eng); M. Eng Sc. (Chemical Environmental Engineering); PhD (Engineering)	EIA Consultant & Subject Specialist	Water Pollution Control & Waste Management.	CEP- CS 0366	31 May 2025	Industrial Process & Effluent Treatment, Waste Gas Treatment, Waste management, Water quality modelling	Ralia	
	B. EIA Study Team Member								
2.	Ts. Tan Poh Aun	B.Sc.(Chemistry); M. Tech.(Environ. Mgt)	EIA Consultant	Air Quality Modelling	CEP- C0019	31 May 2023	Climate & Air Quality modelling	Join Joy	
3.	Noraishah Md Zamani	B.Sc (Hons) (Environmental Sc.) M.Sc. Social Science (Social & EIA)	EIA Consultant	Socio Economic Studies Air Quality & Odour Water Quality	CEP- CS 100	31 May 2024	Socio Economic Studies	Aufter	
4.	Fennysharty Hazli	B.Tech. Environment	EIA Consultant	Waste Management Scheduled Waste	CEP- C0156	31 May 2024	Scheduled Waste	for	
5.	Shahrulnazri n Bin Samsudin	B.Sc (Ecology and Biodiversity)	EIA Consultant	Water Quality Monitoring & Assessment Soil Erosion and Sedimentation Analysis Air Quality	CEP- C0279	31 May 2024	Geology and soil quality & Erosion Prevention LD-P2M2 Water quality modelling	Y:	

EIA for Construction and Completion of a Metals from Spent Catalyst Recovery Facility (SCaRF) At Gebeng Industrial Estate (GIE), Kuantan, Pahang.

	C. EIA Study Supporting Team						
No	Name	Qualification & Reg.	Study Area	Supervised By	Signature		
6.	Muhammad Amir bin Norasikin	BEng (Civil -Transportation); Traffic Mgt. Officer (TMO) (CIDB)	Traffic	Prof Emeritus Dr. Rakmi Abd. Rahman	IMP		
7.	Nurul Aqilah Binti Alias	M. Sc (Environmental Technol.) B. Sc (Environmental Technology) CEP-AC0535 Air Quality & Odour Noise & Vibration	Air Quality Modeling Noise & Vibration	Tan Poh Aun	Ams		
8.	Arina Amintai	B.Arch. Sc. (Architecture) M. Architecture	Landuse	Fenny Sharty Hazli	Acia		
9.	Dr. Nur Iman Amin-Tai	BDDS	Public Health	Pn. Noraishah Md Zamani	Nief		
10.	Hj Abd. Ghani Tahir	Chartered Accountant	Socioeconom ics	Pn. Noraishah Md. Zamani	about 1-		

1.7 SCOPE OF PROJECT

1.7.1 Production

The proposed project (Metals from Spent Catalyst Recovery Facility (SCaRF) in Gebeng Industrial Area, Kuantan, Pahang) is for processing of spent catalyst from Petrochemical plants in Pengerang, Johor, as well as (in future) other petrochemical plants to recover valuable metals, thus saving a waste from being disposed. Recovered metal oxides will be refined in Japan. Residues are reused where possible (such as ceramic balls in cement production) or disposed as scheduled waste residuals. Thus, the plant's location in Gebeng is quite central to cater for future sources of spent catalysts, and for export of products to Japan. The project's aim is to recover two valuable, important metals from waste catalysts, these are Molybdenum (Mo) and Vanadium (V). The usefulness of these metals is as listed below:

Molybdenum (Mo):

- *Molybdenum (Mo)* has unique chemical properties, namely with respect to heat resistance, low thermal expansion and high thermal conductivity; thus, is used in steel alloys to increase strength, hardness, electrical conductivity and resistance to corrosion.
- Mo addition shows improvements in current lithium-ion battery capacity of 125 and 240 units to over 783 units. Addition of both molybdenum and graphite/graphene increase performance to over 1200 units which is 5 to 6 times that of current battery technology.
- With increase in lithium-ion battery capacity, Mo is fundamental to the construction of electric vehicles.

Vanadium (V):

- Vanadium is valuable in the manufacturing industry due to its malleable, ductile and corrosion-resistant qualities.
- It plays a critical role in several strategic industrial applications including steel production and probable widespread utilization in next-generation batteries.
- Vanadium (V) oxide is used as a catalyst and in producing superconducting magnets (thus in modern industries of electric cars, wind turbines, etc.) vanadium is being added to various lithium-based battery technologies to produce a car battery that can store more energy (which translates into a greater distance travelled on a single charge).
- It is usually added in the form of ferrovanadium; vanadium steel alloys are used in gears, axles and crankshafts. Titanium-aluminium-vanadium alloy is used in jet engines and for high-speed aircraft. Vanadium foil is used in cladding titanium to steel.
- Conventional uses of vanadium oxide include as a pigment for ceramics and glass.

1.7.2 Project Location and Landuse

The proposed project location is as shown before in **Section 1.4** and shown in **Figures** 1.4(1) to 1.4(4). Being in the Gebeng Industrial Estate (GIE), the general land use for the Gebeng Industrial Area is covered under the Rancangan Tempatan Daerah Kuantan 2035 (Penggantian). Gebeng Industrial Estate (GIE) is one of the five main industrial areas gazetted in the Kuantan district. Other areas that have been gazetted as industrial areas are Tanjung Gelang Industrial area and Kuantan Port, Semambu Industrial area, Indera Mahkota Industrial area and Prima Kota Industrial area in Kuantan City. The trend of industrial development for heavy industry is more concentrated in the GIE where the proposed project will be built. Indeed, more of the surrounding areas are zoned as for industries (see Section 6.2) and eventually most of the areas currently not covered by industries will be occupied by industries. GIE is rapidly developing partly due to the ECRL station at Kuantan Port (Figure 1.4(3)) which will facilitate exports of products from GIE, including from the proposed SCaRF, where recovered oxides of Mo and V will be exported to be refined in Japan. This growth will be further sinergised by plans for other major developments in Gebeng, a major one being the Kuantan International Airport and its metropolis (Section 6.2). As for the present, the sensitive areas are at least 2km away from the proposed site as shown in Figure 1.7(1).



Figure 1.7(1) ZOI and Sensitive receptors around proposed SCaRF project

1.8 EIA STUDY GUIDELINES AND COMPLIANCE

This EIA study and report is undertaken in accordance with the following guidelines issued by the DOE and other relevant publications including but not limited to:

- Environmental Impact Assessment Guidelines in Malaysia, Department of Environment, Malaysia, 2016;
- Guidelines for Prevention and Control of Soil Erosion and Siltation in Malaysia
- Guidance Document on Health Impact Assessment (HIA) Environmental Impact Assessment (EIA), Department of Environmental, Malaysia, 2009;
- Environment Quality Act, 1974 (EQA, 1974)
- Environment Quality (Industrial Effluent) Regulation 2009, EQ(IE)R2009.
- Environment Quality (Schedule Wastes Treatment and Disposal Facilities) Regulations 2005
- National Water Quality Standards for Malaysia (NWQS)
- Environmental Quality (Clean Air) Regulations 2014, CAR2014.
- Malaysian Ambient Air Quality Standards, 2020
- Guidelines for Environmental Noise Limits and Control 3rd Edition 2019
- The Planning Guidelines for Vibration Limits and Control in the Environment 2nd Edition 2007
- Urban Storm Water Management (MSMA) Manual for Malaysia 2nd Edition (DID, 2012).
- Soil Reconnaissance Map of peninsular Malaysia, 2002, published by Jabatan Pertanian Malaysia.
- Geological Map of Peninsular Malaysia, 8th Edition 1985, Geological Survey Department of Malaysia.
- Hydrological Procedure No. 15, Bahagian Parit dan Taliair, Kementerian Pertanian Malaysia (DID, 1976).
- Solid Waste and Public Cleansing Management Act, 2007;
- Buku Panduan Kawasan Sensitif Alam Sekitar, Department of Environment Malaysia, 1993;
- Environmental Quality (Amendment) Act 2012 and Subsidiary Legislations;
- Rancangan Tempatan Daerah Kuantan 2035 (Penggantian);
- Rancangan Struktur Negeri Pahang 2050;
- Road Traffic Volume Malaysia, JKR 2019

EIA for Construction and Completion of a Metals from Spent Catalyst Recovery Facility (SCaRF) At Gebeng Industrial Area, Kuantan, Pahang.

Chapter 1: Introduction

1.9 CORRESPONDENCES AND/OR APPROVALS

The DOE has been consulted as to the EIA requirement for this project, and the DOE Putrajaya had agreed that the EIA Schedule 1 should be submitted to DOE Pahang, as shown in **Section 2.3**.

No	Report/Letters	Authority	Reference No. and/or Details	Date
1.	EIA for proposed SCaRF to be	Jabatan Alam	SCaRF Project	5 th February
	submitted to DOE Pahang.	Sekitar Putrajaya	Presentation	2020

Table 1.9(1): Correspondences and/or Approvals

1.10 EIA S1 REPORT STRUCTURE

The EIA reports are structured as follows:

- Chapter 1: Introduction
- Chapter 2: Scoping and Terms of Reference
- Chapter 3: Statement of Need
- Chapter 4: Project Options
- Chapter 5: Project Description
- Chapter 6: Existing Environment
- Chapter 7: Evaluation of potential Impacts
- Chapter 8: Mitigation Measures
- Chapter 9: Environmental Management Plan (EMP)
- Chapter 10: Study Findings and Conclusion
- References
- Appendices