

Executive Summary

Project Fact Sheet / PD Summary

Project Information

| | |
|---|--|
| Name of Project | Proposed Scrap Recycling Steel Mill (Mini-Mill) Project |
| Location | Brgy. Telabanca, Concepcion, Tarlac |
| Project Proponent | SteelAsia Manufacturing Corporation (SAMC) |
| Principal Office Address | B2 Bldg., Bonifacio High Street, BGC, Taguig, Metro Manila |
| Contact Person and Details of Proponent's Authorized Representative | Mr. Roberto Cola Vice President Contact Details: +63917-867.5921 Email address: RMCola@steelasia.com |

Background and Nature of Project

The proposed Scrap Recycling Steel Mill (Mini-mill) Project is a new Project of Steel Asia Manufacturing Corporation (SAMC). It is called mini-mill because it is a facility which produces steel products from recycled scrap metal. Unlike integrated steel mills, which can make new steel from iron ore in a blast furnace, mini-mills melt and refine scrap steel using electric arc furnace (EAF) technology. This Project will be composed of a mini-mill using EAF and rolling mill which uses LSFO.

SAMC has been manufacturing steel for more than 51 years. The Philippines' largest steel company, SAMC is comprised of steel bar manufacturing companies and 1 melt shop. From 1966 to present, it has built and operated rolling mills across the archipelago. Currently, six SteelAsia Group rolling mills cover the major island groups of Luzon, Visayas and Mindanao with a combined manufacturing capacity of 2.3 million tons per year.

SAMC set the standard for modernization in the steel industry by being technologically at par with the best in the world. The SteelAsia Group's operation systems have been internationally certified to:

- ISO 9001 Quality Management
- ISO 14001 Environmental Management
- OHSAS 18001 Occupation Health and Safety
- ISO 17025 Testing Laboratory
- UK Certification Authority for Reinforcing Steel (UK CARES) British Standard

Being a new project, an Environmental Impact Statement (EIS) was required as per Procedural Manual of DENR Administrative Order No. 30 Series of 2003.

Project Description and Location

The Project is a rebar and wire-rod mill with a new generation scrap recycling mini-mill that SteelAsia will construct. The Scrap recycling will produce billets and ultimately, rebars which is an input to countless uses, such as building and construction of houses, infrastructure and different concreted works. SAMC will use "state of the art" technologies for this project because in the long run it will provide the lowest operating cost.

The project will be located within the 80 hectares (more or less) project area coverage of SAMC in Barangay Telabanca, Concepcion, Tarlac.

Size and Scale

1,200,000 MTPY rebar and wire rod mill and 1,200,000 MTPY new

Project Information

generation scrap recycling plant to be situated within the approximately 80 hectares project area coverage of SAMC.

Rationale

The steel industry in the Philippines is one of the most significant growth industries. Steel constitutes a basic industry prerequisite in a country's pursuit of development and industrialization. The central role of the industry stems from its linkages with numerous sectors, where its products serve as an essential input to countless uses, such as building and construction, automotive, shipbuilding and repair, electronics, packaging, etc. and it is equally important contributions to employment generation, growth, and promotion of industrial activity, etc. Therefore, ensuring a strong domestic steel and steel-based industry is vital in developing the competitive edge of a country in meeting the challenges of globalization.

With the boost in infrastructure industry in the country together with the rehabilitation activities in some parts of the country, there will be a bigger demand for reinforcing steel bars. Some of these infrastructure growth areas are in:

- Central Luzon and NCR seen in the coming years
- New infrastructure will spur additional growth in housing, retail, tourism and industrial construction
- New construction will require more steel products, best supplied by a local/ community steel mill.
- Supply of products for industrial use.

This project will also provide support to:

- Clark Green City
- Manila – Clark Rail way
- New Clark International Airport Terminal
- Building
- Central Luzon Link Expressway (CLLEX)
- North Luzon Expressway East (NLEE)
- San Rafael – Cabanatuan Expressway
- Bulacan Bulk water project

Project Components

Provided in tabulated form below is the project's components.

Table ES1: Project Components

| Component | Area allocation in sq. m. |
|---------------------------|---------------------------|
| MAJOR COMPONENTS | |
| Rebar Rolling Mill | 95,000 |
| Rebar Meltshop | 47,300 |
| Wire Rod Mill | 70,300 |
| Wire Rod Meltshop | 60,300 |
| SUPPORT FACILITIES | |
| Finish Goods Warehouse | 120,200 |
| Finish Goods Warehouse | 64,400 |
| Scrap Yard | 126,800 |
| Water Treatment Plant 1 | 14,670 |
| Water Treatment Plant 2 | 8,560 |
| Scale & Waste Area | 25,900 |
| Greenhouse | 7,800 |
| LPG Station | 6,100 |
| Reservoir | 87,680 |
| Offices | 30,000 |
| Truck Parking | 25,000 |

| | |
|--------------|---------|
| O2, N2 Plant | 19,600 |
| Total | 809,610 |

Manpower

During Construction, an estimated manpower of 1,000 workers for the project will be required where 3 are directly hired by SAMC while 997 will be employed by the Contractor.

During Scrap Recycling operations, another 1000 workers will be required which will be directly hired by SAMC in coordination with the Public Employment Service Office (PESO) of Concepcion.

During decommissioning, work will be outsourced to contractors supervised by the PCO, the Resident Manager and Plant Manager of SAMC.

The Company complies with the equal opportunity principle in hiring persons with disability (PWD) as well as women. This means that the Company gives employment opportunities to PWDs and women provided the person is qualified to the position. A qualified employee, whether a woman or with disability is subject to the same terms and conditions of employment and the same compensation, privileges, benefits, incentives and allowances as any qualified employee of the Company.

For plantilla-based/regular employees, monthly salaries or wages for services rendered by an employee are timely paid twice a month. Thirteenth month pay is also paid to all qualified employees in compliance with the relevant laws, rules and regulations. Qualified employees also enjoy vacation leaves, sick leaves, overtime pay, health insurance, health plan, separation pay, retirement plan and allowances, as well as safety provisions like Personal Protective Equipment (PPE) and personal emergency kits, contributions and remittances for SSS, Philhealth and PAG-IBIG fund and other welfare benefits. The Human Resources Department of SAMC is open to employees who have concerns or queries on the salaries or benefits they receive or are entitled to.

For SAMC contractors or manpower agencies who engage contractual workers, SAMC undertakes an accreditation process wherein contractors are required to submit documents to establish that they are duly registered with the Securities and Exchange Commission or Department of Trade and Industry and with the Bureau of Internal Revenue and that they have substantial capital and/or investments to ensure that they can perform the work to be done and are compliant with relevant laws and regulations, specifically on the prohibition against labor-only contracting. SAMC will not engage the services of the contractor without this accreditation to ensure compliance with all the rights and benefits under labor laws, rules and regulations.

SAMC gives priority for all of these manpower requirements, to qualified applicants from the host barangay and Concepcion as a whole. Job vacancies/openings are posted in the barangay and municipal bulletin boards for qualified locals to have an opportunity to work for SAMC.

Duration of Project

The project is expected to operate for a period of at least 40 years.

Project Schedule

Project operation will commence 19 months after securing all necessary permits, licenses and approvals.

Total Project Cost

Estimated at PhP 12,000,000,000.00.

Process Documentation of the Conduct of EIA

The EIA Team

SAMC engaged the services of Mediatrix Business Consultancy to conduct the EIA for the project, prepare the EIS Report and secure the Environmental Compliance Certificate (ECC). The EIA team (Table ES2), composed of professional experts with their respective fields together with the technical experts from the Project Proponent (Table ES2A), was organized based on the project's EIA needs.

Table ES2: EIA Team

| NAME | DESIGNATION | EIA Registration No. | EXPERTISE | PARTICIPATION |
|----------------------------------|-----------------------------------|----------------------|--|--|
| Matilde Fernando | Project Manager / EIA Team Leader | IPCO-035 | Legal Framework, Socio-Economics, Public Participation and Community engagement | Preparation of Study/ Report and consolidation of documents for the whole project study; conduct and facilitation of public participation and community engagement |
| Ria Caramoan | Assistant Team Leader | IPCO-106 | Air and water | Preparation of Project Description and water module |
| Reynaldo Tejada | Air Quality Expert | IPCO-036 | Air and water module | Preparation of Air and water modules including air dispersion and noise attenuation modeling |
| Alexis Fernando | Researcher | IPCO-034 | Research and community engagement | Gathering of secondary information |
| Juvinal Esteban | Social Worker | IPCO-091 | Socio-economics, community engagement and IEC | Preparation of socio module |
| Benjamin Francisco | | IPCO-038 | Identification of plankton community structure, presence of fish biota, macro-invertebrates, macro-benthos and fisheries resources | Preparation of Freshwater Ecology Module |
| Michael Chester Francisco | | IPCO-040 | | |
| Victor Pantaleon | | NA | | |
| Rowena Quimpo | | NA | | |
| Jose Rene Villegas | | NA | | |
| Hernani Bayani | Geologist | IPCO-58 | Geology and Geohazard | Preparation of Geology Module |
| Allyana Marie Bermudez | Research Assistant | NA | Community engagement | Conduct of perception survey |
| Patrick Kenneth Fernando | Admin. Assistant | NA | Field Assignments | Gathering of secondary information |

Table ES2A: Proponent Representatives assisting the EIA Team

| Technical Person from Proponent | Areas of Expertise |
|---------------------------------|---|
| Benjamin Magalong | Senior Vice President for Operations |
| Roberto Cola | Vice President for Industry Affairs |
| Ronald Magsajo | Project Manager |
| Eustaquio Alipio, Jr. | Chief Engineer |
| Reginald Nolido | Legal Counsel |
| Allan Christopher Agati | Legal |
| Anna Isabel Galvez | Legal |
| Janine Marie Soliman | Executive Assistant of the SVP for Operations |

EIA Study Period/Schedule

Mediatrix Business Consultancy was engaged by SteelAsia Manufacturing Corporation in July 2017. Coordination with the stakeholders on the proposed project especially with LGUs concerned proceeded including conduct of Information, Education and Communications (IEC) programs and stakeholder profiling. Public Scoping was held in Brgy. San Vicente Covered Court, Brgy. San Vicente, Concepcion, Tarlac on September 22, 2018 while the Technical Scoping was conducted on November 26, 2017. EIA baseline studies and impact assessments were conducted in August and the EIA Report was completed within three months.

Table ES3: EIA Milestone and Schedules

| EIA Activity/Stage | Date |
|---|-----------------------------------|
| EIA Planning, Project and Stakeholder Profiling | July to September 2017 |
| Preliminary IEC and consultation with the officials of Brgy. Telabanca, neighboring barangays and municipal officials | July to September 2017 and May 24 |
| Public Scoping | September 22, 2017 |
| Technical Scoping | November 26, 2017 |
| Baseline studies | August 2017 to November 2017 |
| EIA study, impact assessment and mitigation plan | |
| EIS Report Preparation | |
| Report Submission to EMB/Acceptance of EIS | August 8, 2018 |
| 1 st EIARC Review | September 7, 2018 |
| Public Hearing | |
| Final Review | |
| Complete Staff Work | |
| ECC Issuance | |

EIA Study Area

Provided in the succeeding page is Figure 0.1 is the Study Area where the project site is located.

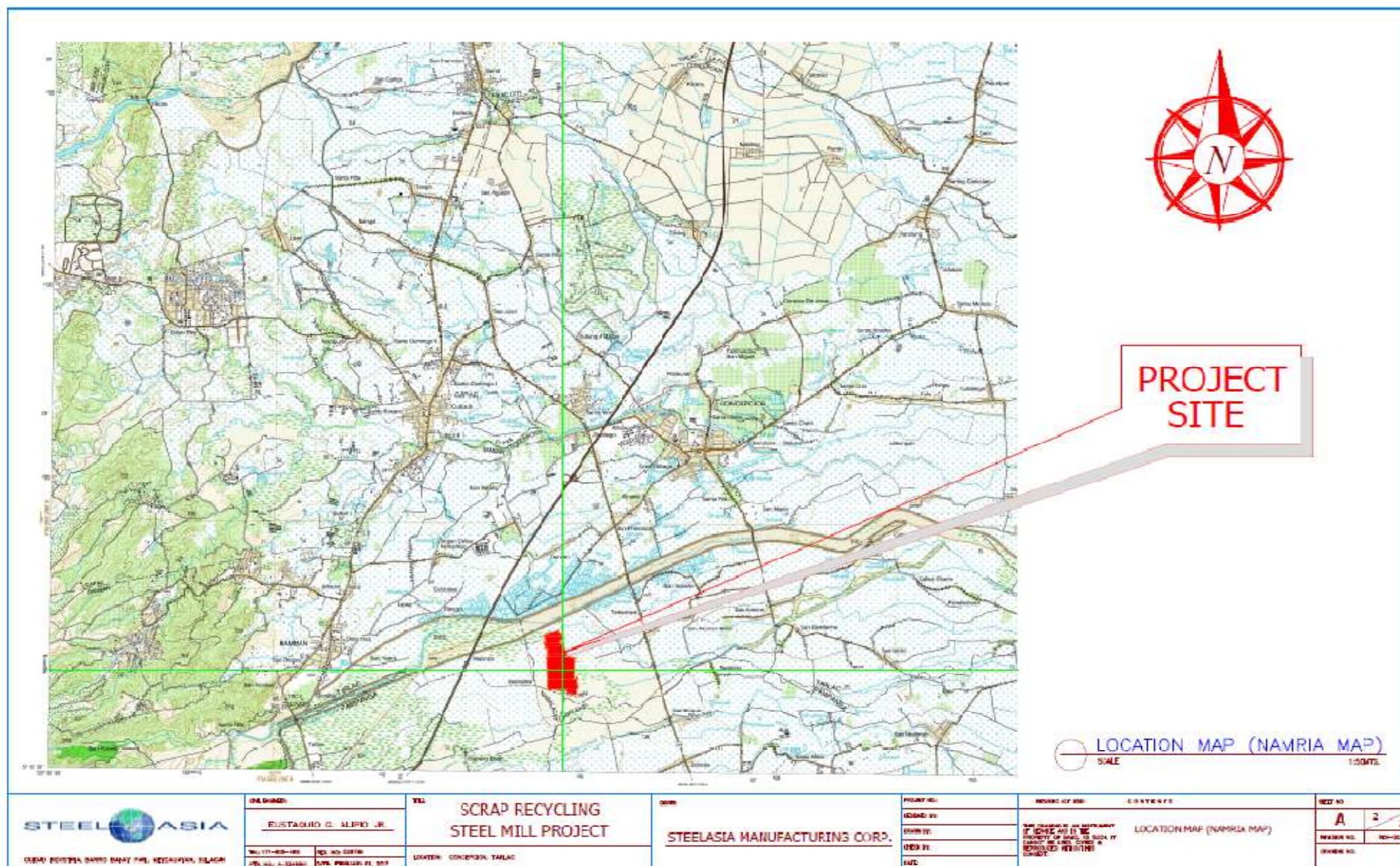


Figure 0.1: Study Area (source: NAMRIA)

EIA Methodology

The EIA was prepared in accordance with the prescribed standards and procedures under the Philippine Environmental Impact Statement System. Table below presents the detailed EIA methodology per environment sector/component.

Table ES4: EIA Methodology

| EIA Study Module | Parameters/Scope | Baseline Sampling and Methodology |
|--|--|---|
| <i>Land</i> | | |
| Geology/ Geomorphology, Pedology, Land Use & Classification | Reconnaissance, land use, land classification assessment, slope, soil types and classification, erosion | Secondary data, soil sampling and testing, review of geological reports and maps, soil site assessment |
| Terrestrial Biology – Wildlife and Vegetation | Flora and fauna species inventory, species endemism and conservation status, species abundance, frequency and distribution | Use of secondary data and inventory |
| <i>Water</i> | | |
| Hydrology/ Hydrogeology | Regional hydrogeology, catchment and drainage system | Spring & well inventory, flow measurements, use of secondary data, water balance analysis, flow duration and water flow analysis and groundwater recharge and production analysis, interviews |
| Water Quality | Physico-chemical and bacteriological characteristics of rivers, wells, springs, and coastal water | Primary data were secured through water sampling and laboratory analysis |
| Freshwater Ecology | Full accounting of all existing benthic habitats, species, composition, density, and diversity of sea grass resources and associated macro benthic algae in front of the project site, commercially-important macro invertebrates in the inter-tidal areas, plankton community | Use of primary and secondary data and interviews |
| <i>Air</i> | | |
| Air Quality | Ambient air quality | Primary data through sampling and laboratory analysis |
| Meteorology/Climatology | Monthly average rainfall, climatological normal and extremes, wind rose diagrams, and frequency of tropical cyclones | Use and review of secondary data |
| Air Dispersion Modeling | Worst case scenario identification, use of meteorological data | Use of AEROMOD Model |
| Noise | Noise levels | Ambient noise sampling |
| <i>Climate Change</i> | | |
| Temperature change | Seasonal Temperature increase (in °C) in 2020 and 2050 under medium range emission scenario in Tarlac Monthly Average Temperature without Climate Change Monthly Average Temperature with Climate Change (2006-2035) | Effects of Temperature Increase |
| Rainfall change | Seasonal rainfall change (in %) in 2020 and 2050 under medium range emission scenario in Tarlac | Effects of change in rainfall pattern |

| EIA Study Module | Parameters/Scope | Baseline Sampling and Methodology |
|---------------------------------------|---|--|
| | Monthly Average Rainfall without Climate Change (1980-2010) Monthly Average Rainfall with Climate Change (2006-2035) Monthly Average Rainfall with Climate Change (2006-2065) | |
| Greenhouse as Assessment | GHG Emissions based on IPCC 2006 Guidelines and USEPA Procedure | Bunker oil consumption vs GHG emissions |
| <i>People: Socio-Economic, Health</i> | | |
| Public health and Demography | Morbidity and mortality trends, Demographic data of impact area: - Number of households and household size - Land area, - Population, - Population density /growth - gender and age profile, - literacy rate, profile of educational attainment | Interviews with key elected officials of the barangays (from barangay captains to councilors and the social welfare barangay officers/ barangay health workers); analysis of secondary health data; Use of secondary data from RHU and NSO; Interviews with the locals; household-level survey |
| Socio-economics | Socioeconomic data: Main sources of Income, Employment rate/ profile, sources of livelihood, Poverty incidence, commercial establishments and activities, banking and financial institutions | Perception surveys, Interviews with municipal and barangay officials; analysis of secondary data; analysis of survey results Provision of traffic management flow in a traffic management plan |
| <i>Environmental Risk Assessment</i> | | |
| Risk Assessment | Safety risks and physical risks | Consequence and Frequency analyses to be undertaken using the methodology described in the Revised Procedural Manual for DAO 2003-30 |

Public participation, scoping and consultation in the conduct of the EIA Study

SAMC in coordination with the stakeholders on the proposed project especially with LGUs concerned proceeded in its consultation with concerned stakeholders including the conduct of Information, Education and Communications (IEC) programs and stakeholder profiling. Public Scoping was held in Brgy. San Vicente Covered Court, Brgy. San Vicente, Concepcion, Tarlac on September 22, 2017 while the Technical Scoping was conducted on November 26, 2017. Additional IEC was conducted on May 24, 2018 to include other barangays and groups not present in the first series of IEC's conducted. Community representations are also involved in the baseline data gathering and conduct of perception survey.

In the consultations conducted, the following attendees were represented:

1. One Concepcion and Kabayan Partylist
2. Members of the Sangguniang Bayan of Concepcion
3. Office of the Mayor and Vice Mayor
4. Barangay Councils and residents of the following barangays:
 - a. Telabanca
 - b. San Nicolas Balas
 - c. San Francisco
 - d. San Vicente
 - e. Dungan
 - f. San Nicolas Telabanca
5. EMB Region 3

6. DEPED

Although absent in the consultations conducted, the following were also invited:

1. Brgy. Alfonso
2. Rep. Noel Villanueva, 3rd Dist. Tarlac

Among the issues raised with the Proponent's responses were the following:

Table ES5: Public Scoping Issues and Concerns

| Issues | Proponent's Response |
|--|---|
| The heat to be generated by the scrap recycling facility may affect the neighboring barangays and climate change | The heat that will be generated will pass thru the electric arc furnace which is an enclosed facility and compliance to DENR standards will be strictly imposed. |
| Air emission | The project will use LSFO for its equipment in the rolling mill; lowest emission will be guaranteed by the high level of technological automation thru the air recuperator embedded in the equipment which is low in fuel consumption and low mechanical maintenance. |
| Project's similarity with those smelting plants in San Simon, Pampanga | Those projects of other companies are different from the Plants that SteelAsia has constructed and operated and will construct because SteelAsia's Plants are more modern and environmentally-sound. |
| Comparison with TIPCO operations which allegedly caused roof melting as allegedly experienced by some neighboring residences | The Project will not use acids which cause corrosion. Electric arc furnace will be used for the project operations. |
| Water effluent | The project has no effluent or zero effluent because all water will be recycled and reused thru the wastewater treatment facility. |
| Effects to agricultural lands causing it to be unproductive | Based on existing operations of other SAMC Plants, the project has no adverse effects to farming or agriculture. |
| Odor | The only odor that may be generated for this kind of operation may come from fuel combustion which is insignificant because the stack is high for proper air dispersion and LSFO will be used. |
| Employment recommendation | The municipality of Concepcion will be given the priority for employment as what SAMC does in all of its Plants nationwide. |

Full details of the IEC and Public Scoping Reports are attached in Annex E.

Description of Key EIA Methodologies

Summary of Baseline Characterization

Information below summarizes the salient findings of the baseline information/data for the land, water, air and people components.

Table ES6: Summary of Findings

| Environmental component | Key Findings |
|----------------------------------|---|
| Physical Environment—Land | The land classification of the project area as per NAMRIA is Alienable and Disposable (A&D). As per LGU reclassification based on Ordinance No. 003-18, it is now industrial. |
| Physical Environment—Air | <p><i>Climate</i> The climate at the proposed Project site falls under the category of Type 1 based on the Modified Coronas Climate Classification of Philippine Climate Type I climate is characterized by two (2) pronounced seasons, dry from November to April and wet from May to October with maximum period from June to September. Areas under this type of climate are generally exposed to the southwest monsoon during rainy season and get a fair share of rainfall as brought about by the tropical cyclones occurring during the maximum rainy period.</p> <p><i>Temperature Change</i> The historic average annual ambient air temperature of Tarlac is 26.9°C. The data indicate that there is little monthly or seasonal variation in the average temperatures. On a daily time-step, temperatures can vary by 5°C to 8°C on the average during a day, peaking above 30s and dropping to the low 20s overnight.</p> <p>The climate change scenario for the Philippines as published by PAGASA in February 2011 indicates that the province of Tarlac will have an increased temperature.</p> <p>It is projected that the average monthly temperature over the period of 2006–2035 will increase by 1.0°C to 1.1°C while temperatures for the period of 2036–2065 will increase by 1.9°C to 2.2°C. The annual average temperature covering the period of 2006–2035 will rise to 29.7°C while 2036–2065 will rise to 30.8°C. Table 2-3, Figures 2-6 and 2-7 present the projected monthly average temperature with climate change ($T_{ave\ CC}$) and without climate change ($T_{ave\ base}$). The typical effect of temperature increases in the plant operation is the decrease of power output leading to energy inefficiency. This is because an increase in air temperature reduces air density and the mass flow of air intake to the compressor, and creates a similar reduction in heat transfer efficiency of the air cooling system.</p> <p><i>Rainfall Change</i> The historic average annual rainfall of Tarlac is 2,026.8mm. Based from the climate change scenario for the Philippines as published by PAGASA in February 2011, the province of Tarlac will have an increased and decreased rainfall in 2020 and 2050. It is projected that the average monthly rainfall over the period of 2006–2035 will increase by 26% from December to February and it will decrease by 1.6 to 13.7% between March to November; while the rainfall for the period of 2036–2065 will increase by 8.8% from June to August and will decrease by 5.5 to 18.2% between September to February. The annual average rainfall covering the period of 2006–2035 will rise to 43.1 mm in December and will decrease to 30.4mm in May; while the rainfall for the period of 2036–2065 will rise to 467.2mm in August and will decrease to 40.4mm in May. Table 2-5 and Figure 2-8 present the projected the monthly average rainfall with climate change scenario for 2006–2035; and the monthly average rainfall with climate</p> |

| Environmental component | Key Findings |
|--|---|
| | change scenario for 2036-2065. |
| Air and noise quality | An ambient air quality monitoring programme was conducted in five (5) sampling locations within the project site and vicinity. The collected ambient air and noise data from the established stations will be used to represent the baseline data of the project. The ambient TSP, PM ₁₀ , SO ₂ , and NO ₂ concentrations were measured at the identified sampling points. The selection of the sampling stations was based on the locations of receptors, source, and prevalent wind direction. Methods for sampling and analysis conformed to the methods prescribed in Sec. 1(b) Rule VII Part II of the Clean Air Act IRR. The resulting ambient air concentrations were compared with the National Ambient Air Quality Guidelines Values (NAAQGV), Rule VII, Part II and the National Ambient Air Quality Standards for Source Specific Air Pollutants (NAAQSSAP) from Industrial Sources/Operations Section 1 Rule XXVI Part VII of the Clean Air Act IRR. |
| Air dispersion modeling | Based on the overall summary of the predicted concentrations, i.e. maximum modeled concentrations in the air dispersion modeling conducted, the predicted peak 1-hour and 24-hour emissions of TSP, PM ₁₀ , SO ₂ , NO ₂ , and CO are within the CAA limit. The highest ground level concentrations of modeled parameters in the whole modeling domain occurred in an inhabited area of Barangay Sto. Nino, Bamban Tarlac at coordinates 236027.01 m E; 1690535.84 m N. at a distance of about 8,400 meters west of the Project. The highest ground level concentrations predicted were for sulfur dioxide followed by oxides of nitrogen from the proposed sources. |
| Contribution in Terms of Greenhouse Gas Emissions (or GHG Mitigation Potential) | The total estimated CO ₂ emission from the operation of the furnace based on IPCC 2006 is 42,505 MT/yr. The Philippines Second National Communication (SNC) on Climate Change has projected 100,402,000 MT of CO ₂ for 2020. Using the projection of SNC, the Project operation is expected to contribute an approximately 0.061% of the total CO ₂ emission. Globally, the projected CO ₂ emission for 2020 under the United States Environmental Protection Agency (USEPA) Sectoral Trend in Global Energy Use and Greenhouse Gas Emissions, Climate Protection Division, Office of Air and Radiation, the estimated contribution of the Project is 0.000047%. Moreover, the Project will establish a "green buffer zone" to mitigate some of the potential effect of emissions of the proposed Scrap Recycling Steel Mill Project. |
| Water | <p><i>Hydrology</i></p> <p>The hydrological characteristics of the area are defined by the Pampanga River Basin which is the fourth largest basin in the Philippines with an aggregate area of 10,434 square kilometer. It is broadly divided into three (3) sub-basins namely: Pampanga Main River basin, Pasac River basin (or alternatively known as the Pasac-Guagua Allied river basin) and the Angat River basin. The headwaters of these three basins originate from different mountain areas with separate river channels draining into the Manila Bay.</p> <p><i>Hydrogeology</i></p> <p>Based on the 1997 Groundwater Availability Map of the Philippines, the Project Site falls under local and less productive aquifers. This classification is attributed to the low-level wells in the area. The classification is attributed to the</p> |

| Environmental component | Key Findings |
|-------------------------|---|
| | <p>scarcity of productive wells in the area. The groundwater occurs under unconfined conditions within the interstices of consolidated pyroclastics and tuffaceous sedimentary rocks. The water table occurs at the estimated depth range of 6 m near and within valleys and flat areas to 15 m at the lower and middle slopes. The thickness of the aquifer is not known. The aquifer in these segments is tapped by shallow wells which are pumped manually or with the aid of low capacity centrifugal pumps.</p> <p><i>Groundwater</i> The depth of the wells ranges from 7m to 31m. The structures were built as early as 1960 to recent 2017. The usage varies from community drinking water supply and use for cooking, bathing, and watering in residential and commercial garden. As such, drinking water generally comes from the commercial "mineral" water or from the local water utility.</p> <p>Collectively, there is a high 85% conformance of the nine sampling sites with 19 parameters covered by PNSDW and 24 parameters covered by DENR Class C guidelines. Out of 124 measurements, only 19 or 13% cases of varying non-conformance by water sample are attributed to metals.</p> <p>Domestic water is the main uses of water in the project area with ground water as the main source. Domestic water supply in Concepcion Tarlac is provided for by Concepcion Water District. As of December 31, 2016, the District was serving 30 barangays of Concepcion with water delivered to every household 24 hours a day, without interruption. The water supply system of the District is supported by 11 pumping stations, which are strategically located and serving a total of 12,784 active concessionaires classified as residential, domestic, commercial, and industrial.</p> <p><i>Water Usage and Water Source.</i> The project will require about 60 m3/hr make up water system; 576 m3/hr fire protection water system; 1200 m3/hr for indirect cooling water system; and 1700 m3/hr direct cooling water system. A deepwell will be drilled to a depth of 50 to 90 meters and designed not to extract water from the shallow aquifers that are utilized by the surrounding communities. A permit from the NWRB will be secured.</p> <p><i>Circulating Wastewater Treatment Plant.</i> The project will invest extensively in the water treatment system that aims to recirculate all process water. Zero wastewater discharge is envisaged.</p> <p><i>Water Catchment Pond.</i> A water catchment pond will be constructed by the project to collect rain water to minimize usage of potable water in the cooling system. The collecting pond has a volume of 35,000 m3. Its main purpose is to provide make up water for the evaporation losses within the plant operation. The storm drainage is connected to the water catchment pond for storing rainwater.</p> <p>Steel Asia is already practicing a water catchment pond system in their existing steel mill plants e.g. Davao Plant. With the use of circulating wastewater treatment plant and water catchment pond, depletion of wastewater resources and competition with its use is not expected as a result of the project.</p> |

| Environmental component | Key Findings |
|-------------------------------|---|
| Freshwater Ecology | <p>River ecology assessment was conducted in three stations in the Sacobia River, the major surface water body nearest to the Steel Asia project site in Barangay Telabanca, Concepcion, Tarlac and a fourth station in a water canal running through Barangay San Francisco on 20 August 2017. The Sacobia River is intensely smothered with lahar from the eruption of Mt. Pinatubo, and movement of lahar and volcanic particulates are still vividly occurring. The Barangay itself was overrun with lahar deposits at the time of the volcano's eruption, and with unproductive lands, most households have left the Barangay ever since.</p> <p>The Sacobia-Bamban River is moderately flowed at 10 cm deep which is heavily affected by mudflow. The river alignment has changed drastically; heavy siltation of lahar is seen along the river. Lahar excavation is still on-going and expected it will last for the next 100 years.</p> |
| Biological Environment | <p>The project area is not situated in an ecologically critical area like national parks in Capas, Tarlac (Capas Death March Monument) and Arayat & Magalang, Pampanga (Mt. Arayat). Land use of the entire property is an open/cultivated land. No quadrats sampling was done in the sampling sites for reason that most of the open areas are formerly cultivated areas previously planted with sugarcane and some small portion of the site are still presently planted with sugarcane at the time of the field investigation. Observations conducted in the project sites showed uniform occurrence of plant species.</p> <p><i>Flora</i> Based on ocular inspection, sugarcane is the dominant species. The weeds species encountered in the sugarcane plantation are mostly Talahib or <i>Saccharum spontaneum</i>, <i>Imperata cylindrical</i>, <i>Themeda</i> sp., <i>Paspalum conjugatum</i>, Carabao grass (<i>Axonopus compressus</i>), <i>Ageratum conyzoides</i>, <i>Eleusine indica</i>, cogon, napier, herbs/ shrubs (such as Hagonoi and Coronitas) and <i>Datura metel</i>. Some "pioneering" trees such as Ipil-ipil and Datiles (in solitary distribution) are forming a new ecological succession in the area. The "without the project scenario" or no physical intervention in the existing environment, such area could form into a new ecosystem in the long term. This can be said a brushland ecosystem dominated with pioneering trees and grasses.</p> <p>Floral species surveyed inside the sugarcane plantation can also be used as wood materials, food and medicine ingredients and ecological balance. Majority of the observed species are very common and widely distributed in the country. The species take the habit form of trees, shrubs, herbs, and grasses. No rare, endangered and threatened species of flora were observed or recorded in these lahar areas.</p> <p><i>Fauna</i> During the site investigation, a frog (<i>Bufus marinus</i>) has been observed. Few small rodents were also seen crossing the fields. Red ants especially <i>Aphis maydis</i> were observed colonizing a few broad leaf species found among the open grassy area. No critical species of fauna were found that will be impacted by the proposed project. All are ecologically important but common and widely distributed in the country.</p> |
| Socioeconomic | Actual visits with residents through household perception survey from 04-08 |

| Environmental component | Key Findings |
|---------------------------------|---|
| and Cultural Environment | August 2017. A total of 530 households were randomly interviewed and surveyed for Brgys. Telabanca, Dungan, San Francisco, San Vicente and San Nicolas Balas. Perception survey areas are those in color purple/violet shades. It may be noted that the project area, Brgy. Telabanca is almost a no-people barangay because it has been abandoned since Mt. Pinatubo eruption in 1991. |

Impact, Mitigation and Monitoring Summary

Provided below is the Impact, Mitigation and Monitoring Summary.

Table ES7: Impact, Mitigation and Monitoring Summary

| Major Activities Description/Details key environmental aspects or activities | Potential Impact, nature and estimate of major emissions | Impact mitigation, built-in management measures and facilities planned |
|--|--|---|
| Preconstruction Phase | | |
| Land | Restriction on the land use classification of Project site | The land use is classified as industrial. Provided in Annex C is the LGU of Concepcion Ordinance No. 003-18 reclassification of the area from agricultural to industrial. |
| Construction Phase | | |
| Generation of domestic wastewater | Contamination of water quality | Provision of septic tanks and implementation of septage management. |
| Solid waste generation | Accumulation of solid wastes | Provision of Material Recovery Facility (MRF) |
| Hazardous waste generation | Contamination of land | <ul style="list-style-type: none"> • Securing of Hazardous Waste Generation ID • Provision of hazardous waste storage area • Treatment and disposal with Certificate of Treatment by DENR-accredited third party treaters |
| Use of domestic water | Water resource use of competition | Provision of water from water utility |
| Construction of the steel mill complex | Air emission (TSP, PM10, PM2.5, SOX, NOX) and noise pollution from equipment and vehicles. | <ul style="list-style-type: none"> • Training on power equipment and vehicle use and speed • Proper maintenance, designation of no idling zone • Good house keeping • Water sprays, use of enclosures, barriers and buffer zones • Implementation of Reforestation and Carbon-sink Program: tree planting within the perimeter |
| | Potential health and safety hazards for construction workers | <ul style="list-style-type: none"> • Health and safety policies • Employee safety inspections and toolbox meetings • Regular APE and use of PPEs • First aid training |
| Operations Phase | | |
| Scrap recycling and Rebar operation | Effect on public health due to dust and emissions brought about by the project | Installation of dust collectors, recuperator system, high stack, dust mitigation, buffer zone at carbon sink and reforestation program |
| | Generation of mill | Scales are collected and to be exported for recycling in |

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| | scales | sinter plants |
| | Generation of EAF dust and slags | <ul style="list-style-type: none"> Slags will be stored and for disposal to 3rd party buyers who use slag as raw material e.g. for cement manufacturing EAF Dust collection will be undertaken and will be stored and sealed in tonner bags and placed in the hazardous storage facility. Disposal methods include re-charging in the melt shop for recycling and/or local disposal through DENR-accredited TSD facility and/or being exported for recycling after stabilization |
| | Water pollution | <ul style="list-style-type: none"> Zero effluent Provision of Rain catchment reservoir Provision of Water Treatment Facility for process water Scheduling of excavation activities during dry season will be applied to reduce impact of soil erosion and sedimentation of waterways. A surface water and effluent quality monitoring will be conducted during construction. |
| | Air emission and noise pollution | <ul style="list-style-type: none"> Training on power equipment and vehicle use and speed Water sprays, use of enclosures, barriers, and buffer zones. Proper maintenance, designation of no idling zone 65 meters stack height Routine plant maintenance and good house keeping Use of low sulfur fuel (LSFO) or mixing with Diesel Training on proper equipment use and speed |
| | Employment generation | Preference will be given to qualified Brgy. Telabanca and Concepcion residents |
| | Increase in economic opportunities through associated incomes and taxes | These are predominantly positive effects, no mitigation measures necessary. |
| Storage, handling and transport of rebars | Accumulation of solid wastes due to solid waste generation | Provision of Material Recovery Facility (MRF) |
| | Health and safety hazards (e.g. heat and hot liquids) | <ul style="list-style-type: none"> Health and safety policies Installation of proper ventilation Implementation of safety buffer zones to separate areas where hot materials are handles and stored. Employee safety inspections and toolbox meetings. Regular APE for employees Use of PPEs First aid training Provision of 24-Hour Clinic Provision of Ambulance Spills containment of fuel |
| | Traffic and road accidents | <ul style="list-style-type: none"> Implementation of Traffic Management Plan Provision of proper road signages. |

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| | | <ul style="list-style-type: none"> • Designation of marshalling/holding area offsite • Observe traffic rules and load limit requirement |
| | CO ₂ emissions | <ul style="list-style-type: none"> • Utilize thermally-efficient heating process equipment • Explore the viability of using inline Electric Induction heating process after the reheating furnace • Engage in carbon sequestration projects such as tree planting and use of electricity from renewable energy sources such as geothermal, etc. |
| | Noise | <ul style="list-style-type: none"> • AC motors • Enclosed facility • Tree buffer zone • Insulate structures |
| | Water collection and operational treatment | <ul style="list-style-type: none"> • Zero water discharge • Water is recycled and re-circulated within the Water Treatment Facility, which consists of grease/oil skimming, scale inhibitors, filtering and bio/algaecide. |
| Abandonment Phase | | |
| <ul style="list-style-type: none"> • Removal of wastes and oil spills if any • Removal of all equipment, • Actual Rehabilitation | <ul style="list-style-type: none"> • Change in land use • Loss of jobs and community programs | <ul style="list-style-type: none"> • Turnover of the facilities which can still be used by the new project especially drainage system and rain collection • Adaptation to the industrial land use of the new project • Grading and drainage stabilization works including leveling of sediment trap and settling ponds • Soil conditioning • Planting or reforestation of endemic species • Retrenchment package • Labor support programs |

Key Monitoring Plans

Provided below is the matrix of Environmental Monitoring Plan.

Table ES8: Environmental Monitoring Plan

| Monitoring Objectives | Potential Impact | Parameters | Limit Level for Compliance | S sampling | |
|--|--|---|---|--|---|
| | | | | Station/Location | Frequency |
| Monitor the water quality and the project's impact to ambient water quality | Surface water quality degradation or pollution | TSS Oil and grease Cr ⁶⁺ Pb Hg T. coliform Fecal coliform DO pH BOD | DAO 2016-08: • 80 mg/L • 2 • 0.01 • 0.05 • 0.002 • 5000 • 200 • 5 • 6.5-9.0 • 7 | <ul style="list-style-type: none"> Surface Water Downstream of Sacobia River Surface Water Upstream of Sacobia River | Quarterly during construction and operation |
| | Groundwater quality degradation | TDS Cr ⁶⁺ Oil and grease Pb Hg T. coliform Fecal coliform pH | 500 0.01 1 0.01 0.001 0.01 <1.1 6.5-8.5 | | Quarterly during construction and operation |
| Monitor the air quality as well as the noise and the impact of the scrap recycling plant and protect the ambient air quality | Possible degradation of the air quality in the areas | TSP / PM ₁₀ SO ₂ NO ₂ Sound levels | 230 ug/ncm (TSP) /150 ug/ncm (PM10) 180 ug/ncm 150 ug/ncm Daytime: 70 dB (Class C) Morning/ Evening: 65 dB (Class C) Nighttime: 60 dB (Class C) | <ul style="list-style-type: none"> Stn. 1: In front of Multi-Purpose Hall, Brgy. San Vicente, Concepcion Stn. 2: Beside the house of Mr. Jun Suizo, Brgy. Dungan Concepcion Stn. 3: At the back of barangay hall of Brgy. San Nicholas Balas, Concepcion Stn. 4: Calle Onse, Brgy. San Nicholas Balas, Concepcion Stn. 4: Highway View Hacienda Subdivision, Brgy. Santo Rosario, Magalang Pampanga | Quarterly |
| Ensure the safety and health of the workers | Effects on human health and safety | Injury, Accidents, or safety reports statistics and medical records or reports Safety performance | 0 fatality | Work areas | Quarterly |
| Monitor the socio- | Increase in economic | Household income, | Increase by | Community, | Annually |

| Monitoring Objectives | Potential Impact | Parameters | Limit Level for Compliance | S sampling | |
|---|---|--|--|--------------------|-----------|
| | | | | Station/Location | Frequency |
| economic, cultural and Health impact of the project | activities and development, increase in number of employed locals, increase skills and capacity among locals, increase in the average monthly or salary of the households | Literacy and employment statistics, Number of economic activities, Taxes generated and basic services, Health statistics | 0.5% or more of the baseline value of some economic indicators in the municipality | Barangay Telabanca | |

Environmental Monitoring Fund (EMF) and Environmental Guarantee Fund (EGF) Commitments

The establishment of the appropriate EMF and EGF schemes will be in accordance with the prescribed guidelines and procedures of the DENR Administrative Order No. 2003-30 and its procedural manual as amended by DAO2017-15. The amount of the EGF will be based on the risk and hazards associated with the project's implementation and will be negotiated between SAMC and the DENR-EMB Central office. The proposed EGF amount will be Php500,000.00 Trust Fund and Php500,000.00 Cash Fund which is the current EGF baseline amount for similar SAMC projects.

The EMF to be established immediately after the Memorandum of Agreement (MOA) which is based on the activities and programs of the Multi-partite Monitoring Team (MMT), is around Php300,000.00. The EMF can be replenished once the amount of Php300,000.00 is less than 50%.

EIA Summary

Summary of Alternatives Considered in terms of Siting, Technology Selection/Operation Processes and Design

Following were the criteria used:

Technology Selection/Operation Processes

The technology and the processes to be used in the proposed SAMC Scrap Recycling Steel Mill (Mini-Mill) will be the most modern among its other existing plants in the country and in SouthEast Asia. With this criterion, SAMC will use the latest new generation scrap recycling mini-mill technology from the best equipment suppliers in the world.

Resources

In terms of water source, the best option to consider is rainwater collection to avoid resource use competition with the community. For this Project, it can be predicted that there will be enough rainwater for collection because the climate at the proposed Project site falls under the category of Type 1 based on the Modified Coronas Climate Classification of Philippine Climate. Type I climate is characterized by two (2) pronounced seasons, dry from November to April and wet from May to October with maximum period from June to September. Areas under this type of climate are generally exposed to the southwest monsoon during rainy season and get a fair share of rainfall as brought about by the tropical cyclones occurring during the maximum rainy period.

Also, it is projected that the average monthly rainfall over the period of 2006–2035 will increase by 26% from December to February and it will decrease by 1.6 to 13.7% between March to November; while the rainfall for the period of 2036-2065 will increase by 8.8% from June to August and will decrease by 5.5 to 18.2% between September to February. The annual average rainfall covering the period of 2006-2035 will rise to 43.1 mm in December and will decrease to 30.4mm in May; while the rainfall for the period of 2036-2065 will rise to 467.2mm in August and will decrease to 40.4mm in May. SAMC may grab this

opportunity to use engineering design to capture this excess water to avoid localized flooding, river swelling and overflowing of floodplains.

In terms of power supply, TARELCO II will supply the required power. Standby generator sets with a capacity equivalent to the mill's cranes and critical water pump power requirement will be installed.

Logistics

Steel manufacturing is essentially a transportation business as it requires a lot of moving & handling for its raw materials and finished goods. The plant should be sited near the port, major highways and customers to optimize the logistics cost. The port to be used is Subic Port in Subic Freeport.

Manpower Availability

Scrap Recycling Mini Mill needs around 1,000 direct employees hired thru the local PESO and 5,000 indirect vocational and technical personnel to run and maintain the facilities 24/7. The direct and indirect employees need not be professionals as 80% of the manpower requirement of SteelAsia is vocational and technical personnel who are at least highschool graduates.

Land

The land area must accommodate all the facilities needed in a contiguous manner. In addition it should not require a long time for land conversion and expensive site development. It should have sufficient elevation for flooding.

Carbon footprint

The proponent's policy is to adopt practices to minimize fuel use and use low sulfur fuel oil (LSFO) or mix with diesel. These include optimized trip planning/routing to increase fuel efficiency, reducing the number of kilometers each truck travels daily and minimizing travel time.

The following locations below were evaluated using these criteria.

- Mabalacat, Pampanga
- Magalang, Pampanga
- Concepcion, Tarlac

Environmental Impacts of Each Alternative

In terms of land criteria, the Mabalacat and Magalang sites did not qualify with the Proponent's criteria for land because both areas require a longer time for land reclassification and conversion.

Environmental characteristics of the project site were also considered in the site selection. The proposed location in Concepcion is considerably clear and flat area. Being in a topographically flat area, hazards associated with slope instability, erosion and mass wasting are expected to be nil.

The project's potential impact to people, biodiversity, water (ground water and surface water), air and noise were also considered. In terms of biodiversity, the project site chosen has insignificant impact because only cogon grasses are present in the area. There is no marine environment in or near the project area. Sacobia River may be tapped as resource to supply make-up water.

The proposed location of the project facilities was also evaluated in terms of geohazard susceptibility based on information from government agencies such as the Mines and Geosciences Bureau (MGB) and the Philippine Institute of Volcanology and Seismology (PHIVOLCS). Generally, the project area's susceptibility to earthquake-triggered slope failure and rainfall-triggered slope failure are low. With regard to seismic vulnerability and liquefaction potential, the potential ground-shaking and liquefaction susceptibility of the project site is also low. The impacts are discussed and summarized in the next two chapters.

No Project Option

If the proposed scrap recycling steel mill project will not materialize, employment opportunities and social development such as livelihood projects, skills training, scholarship programs and medical assistance for the residents of Brgy. Telabanca and its neighboring barangays and in the municipality of Concepcion in particular will not be realized. Also, the prospective LGU increase in revenue, multiplier effect of the project such as business opportunities, support to basic services like infrastructure and medical assistance and other opportunities for the community and LGU will likely lose when the project is not pursued.

Concise integrated summary of the main impacts and residual effects after applying mitigation

The Project's major impact given in a worst case scenario of drought is water resource use competition. However, when that time comes, the Project will be forced to stop its operations because it will not be feasible to operate in such worst case scenario.

Risks and Uncertainties relating to the findings and implications for decision-making

Among the risks of the project which could be a potential show stopper or could have a material or significant impact on the decision making of the government as well as the project proponent is the uncontrolled release of particulate matters from the dust collectors. To avoid this, a strict contract and monitoring of the Contractors will be undertaken as what are being undertaken in SAMC's other Plants.