



# Jebel Ali Smelter

Public Summary Document – Operation Environmental Management Plan

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## Facility Description and Location

Emirates Global Aluminium (EGA) own and operate the Jebel Ali Smelter (JAS) facility that commenced operations in 1979. During 2008, an Environmental Impact Assessment (EIA) was undertaken to systematically identify and mitigate the potential environmental impacts relating to an expansion of aluminium production capacity at the Smelter. The EIA (SNC-Lavalin, 2008)<sup>1</sup> described the facility expansion activities as ‘*increasing aluminium production capacity to more than one million tonnes of aluminium per year (1,030,00 t Al/y). The expansion project will be executed by the addition of pots as well as through “production creep” in existing pots. The project also includes the start-up of a dedicated combined-cycle power plant, with an installed capacity of approximately 430 MW (ISO conditions) in 2007, as well as the start-up in Q3 2008 of a new gas turbine and HRSG that will deliver steam to other users (steam turbines and a desalination plant). The project includes the implementation of a new future small carbon plant to service the anodes required for the expansion.*’

In 2020, an EIA was also undertaken by 5Capitals (5Capitals, 2020)<sup>2</sup> for the H-Block Project. The Project was implemented to improve the efficiency of power generation at the EGA JAS facility, reducing the consumption of natural resources and associated environmental emissions. The Project provides a generational power output of 600 megawatts through the use of a natural gas powered combined cycle gas turbine (CCGT) power plant. The Project also provides security of water supply to the Jebel Ali Smelter for a further 2 decades through the replacement of aging seawater desalination infrastructure by Sea Water Reverse Osmosis (SWRO) desalination plant.

The facility is located within an existing EGA industrial complex approximately 5 km from the Jebel Ali Port (refer Figure 1 below).

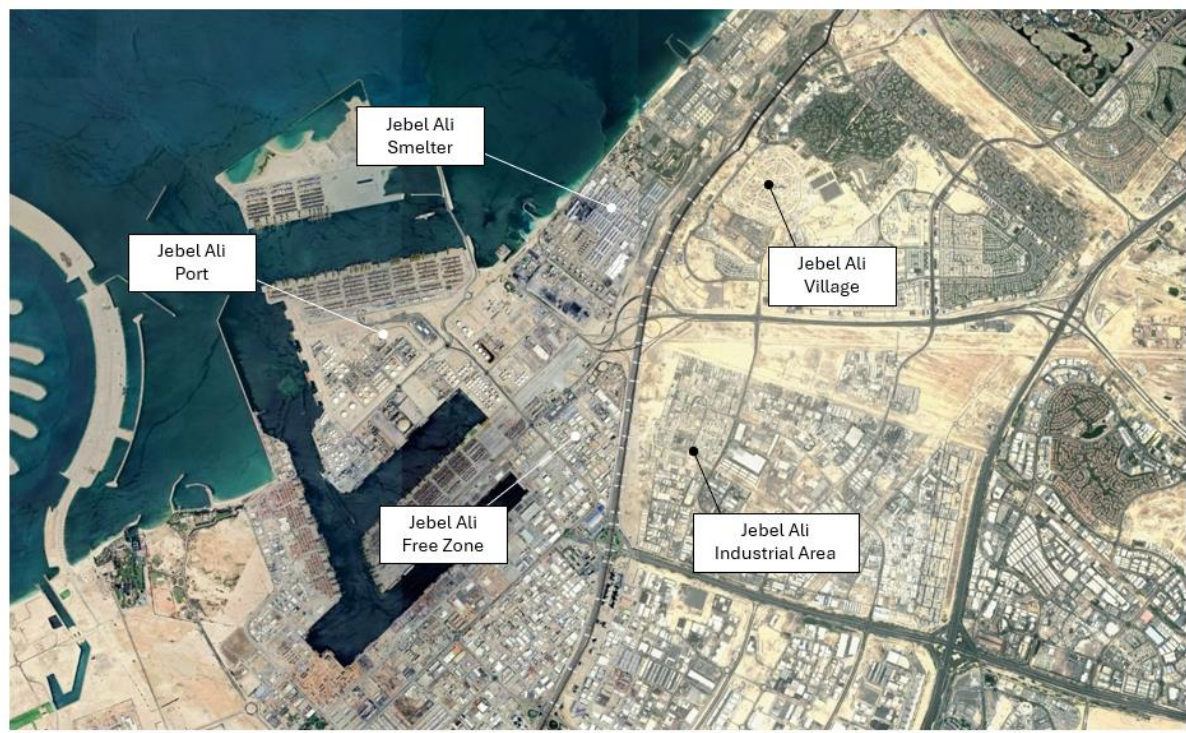


Figure 1: Facility Location

<sup>1</sup> Jebel Ali Smelter Expansion Environmental Impact Assessment, SNC-Lavalin 2008

<sup>2</sup> Jebel Ali H-Block Project Environmental Impact Assessment, 5Capitals 2020

EGA understands the risks associated with operating a smelter related to Greenhouse Gas (GHG) emissions, air and water pollution, resource consumption, noise/heat pollution and waste generation. As such, the measures and commitments defined within the EIAs and ISO 14001:2015 compliant corporate Environmental Management System (EMS) are implemented in the day to day operation of the Jebel Ali facility and routinely audited in order to promote safe working and a sustainable business. The EMS outlines the corporate environmental policy, related roles and responsibilities, corporate environmental objectives, and specific management plans and procedures to be implemented across the EGA facilities. The purpose of this document is to provide a summary of the environmental management and monitoring regime that is maintained by EGA in the operation of the Jebel Ali Smelter.

EGA has been a member of the Aluminum Stewardship Initiative (ASI) since 2017 and is committed to adhering to the ASI performance standards. This is discussed further in the sections below.

## Purpose of the EIA and Obligations

The EIAs were conducted in order to systematically evaluate the baseline conditions preceding the development of the facility, identify the potential environmental impacts of the facility construction and subsequent operations, ensure compliance with federal, local, and international regulations, and identify appropriate mitigation and management measures. The mitigation measures were designed to avoid or minimise potential environmental impacts and include environmental management and monitoring commitments. The EIAs were prepared in accordance with the requirements of Dubai Municipality Environmental Planning and Studies Section.

As the owner and operator of the facility, EGA is responsible for ensuring the implementation of the environmental management and monitoring commitments and ensuring suitable environmental performance of the facility.

## Receptors and Impacts in the Absence of Mitigation

The EIAs (SNC-Lavalin, 2008 and 5Capitals, 2020) identified the following adverse changes that may occur at the facility if no measures are put into place to mitigate the environmental and/or social impacts. The impacts have been ordered in terms of anticipated significance (from highest to lowest) although it is noted that this is not intended to be an exhaustive list. The receptors (i.e. that will be directly and/or indirectly impacted by the change) are presented in brackets in each instance.

### **Air Quality (human health & terrestrial environment)**

- The operation of the facility was predicted to cause an increase in HF, SO<sub>2</sub>, NO<sub>x</sub> and dust emissions and this has the potential to impact human health and the terrestrial environment (flora and fauna) that depend upon the quality of the air within the immediate surrounds;
- Vegetation species sensitive to HF were found within the study area (date palm trees) that may be impacted by the projected increase in concentrations due to facility operations.

### **Increases in Greenhouse Gases (human health)**

- GHG emissions were predicted to increase from the operation of the smelter complex. The facility power plant contributed around 76% of the project's GHG emissions while the smelter accounted for 24%. The SWRO and CCGT facilities were projected to contribute to greenhouse gas emissions; however, these emissions were expected to be lower due to the enhanced operational efficiencies of the facilities.

### **Soil, Groundwater and Surface Water (terrestrial and marine environment)**

- Facility operation was expected to result in an increase in operational vehicle use (including refuelling and maintenance), hazardous material usage and storage, stormwater run-off, solid and liquid waste handling and storage, and wastewater generation. Each of these activities has the potential to cause contamination to the underlying soils and groundwater through accidental spills and/or poor handling techniques.
- Operation of the intake and outfall structures required to supply and release seawater that is used for process water at the smelter complex has the potential to deteriorate the marine environment, including a change in the quality and temperature of the sea within the proximity of the discharge point.

### **Noise (human health)**

- Increases in noise were projected, attributed to operational equipment including (for example) fans and motors, CCGT, the addition of a ship unloader at the port, and the addition of approximately 100 trucks per day transporting materials and finished products between the port and the smelter complex.

### **Waste (human health)**

- Human health (odour nuisance) was predicted to be potentially affected by the generation of waste during operational phases of the facility.

### **Traffic (human health)**

- Impacts to human health attributed to increased traffic volume on existing road infrastructure were predicted, including a deterioration in air quality and noise, and an increase in the volume of traffic (i.e. resulting in localised disruption to existing users).

### **Socio-economic Benefits (workforce)**

- The net socio-economic benefits of the expansion and operation of the smelter complex were considered to be generally positive, increasing a demand for jobs and providing an opportunity for the local workforce to source employment within the facility.

### **Landscape and Visual (sight lines)**

- The facility was considered to have an adverse landscape and visual impact, adding to existing infrastructure on site, albeit established within an industrial backdrop.

# Operational Mitigation, Management and Monitoring of the Facility

Whilst no formal operation environmental management plan (OEMP) was implemented for the facility, the EIAs contained a number of management and monitoring commitments, and the EGA Environmental Management System (EMS<sup>3</sup>) is used to drive environmental management and monitoring at the facility. The commitments to environmental management and monitoring at the facility are summarised below.

## Air Quality and the Terrestrial Environment

- The design of handling facilities was intended to prevent spillage and dust emissions from raw bulk material. This was achieved by using automated suction-type unloaders, gallery-enclosed belt conveyors, dust collectors at transfer points and silos, and specialised truck fittings;
- Vehicular maintenance is regularly undertaken in order to ensure emissions are minimised;
- Pot gases are collected and treated in alumina injection fume treatment plants;
- Low NO<sub>x</sub> burners are used in the gas turbines and casthouse furnaces; and
- Continuous Emissions Monitoring System (CEMS) is in place for Power Plant Gas Turbine 24, with periodic GT exhaust testing being done for the rest currently, ensuring maintained compliance with applicable emission standards.

## Climate (GHG)

- Process controls are in place which limit the frequency and duration of anode effects thus reducing GHG emissions; and
- Regular inspections and maintenance services of equipment and monitoring devices in accordance with manufacturer's instructions are undertaken to ensure equipment is operating in most effective manner.

## Soil and Groundwater Quality

- The smelter complex is equipped with bunding protection in order to contain hazardous materials in the event of an accidental spill;
- All internal roads, parking lots and outside storage areas are paved in order to avoid erosion, avoid any infiltration of liquids and minimise dust mobilisation;
- Machinery and equipment are maintained in good working order and maintenance is carried out in designated areas;
- Petroleum products (gas, used oil) are stored in drums and tanks with confinement measures (bundling);
- Sufficient quantities of absorbing materials (spill kits) are on the site at all times for recovering hydrocarbon residues and wastes;
- In the case of a spill, the site environmental officer is called immediately and appropriate measures are implemented e.g. containment and remediation using spill kits; and
- Contaminated soil and the absorbing materials used are sent to waste sites approved by the Dubai Municipality for disposal.

<sup>3</sup> EGA Environmental Management System, Revision 4, 30<sup>th</sup> November 2021.



## **Marine Environment**

- Antiscalant and antifoaming agents which are used by the facility are selected to avoid polyphosphate formation;
- Safe and secure procedures for unloading of liquid pitch, connecting and disconnecting pitch piping are established and closely followed;
- Operation of the wastewater treatment plant to treat wastewater prior to discharge to the marine environment to ensure compliance with Dubai Municipality marine discharge standards; and
- Operational monitoring that includes thermal discharge monitoring at several depths within the marine environment in order to assess thermal mixing and sea temperature change (including seasonal fluctuations).

## **Human Health (Air)**

- Continuous air monitoring is carried out to provide information on current ambient air quality. This monitoring covers SO<sub>2</sub>, NO<sub>2</sub>, HF, and PM<sub>10</sub> and includes SO<sub>2</sub> monitoring in Jebel Ali village.

## **Human Health (Noise)**

- A noise reduction of 10 dB(A) at the facility limit has been imposed to comply with the Dubai Municipality industrial area night limit;
- The sound level at the baking furnace fume treatment plant (FTP) has been reduced to 106 dB(A) with a silencer at the fan outlet; and
- Industrial components generating excessive noise are housed in appropriate structures with suitable noise attenuating enclosures.

## **Waste Management Facilities**

- Waste management collection, handling and transportation for smelters and refinery is outsourced to Dubai Municipality approved carriers for safe disposal; and
- The dross treatment facility was implemented in order to ensure a salt free dross treatment by 2010.

## **Traffic**

- Operational traffic is managed using convoys of heavy and oversized vehicles outside of peak traffic hours; and
- Loads (including obtrusive/oversize cargo) at times of the day when traffic volumes are likely to be reduced e.g. at night.

## **Socio-economic Benefits**

- An Emiratisation hiring policy is implemented on site, including the proportion of senior management hired from the local community.

## **Landscape and Visual**

- Landscaping using native species is used on all sites; and
- Lighting provisions are not excessive/unnecessary and directional, as deemed appropriate for use and intended areas of illumination.

## Environmental Awareness and Training

EGA has established a procedure to ensure that all staff are trained and competent to perform their work in line with the environmental commitments of the facility EMS. All staff and contractors involved in the operation of the facility receive suitable environmental inductions and training. Training programs are developed to provide clear understanding of the following:

- The importance of compliance with environmental laws, regulations and policies;
- The environmental aspects of their activities and the benefits of improved environmental performance;
- Specific roles and responsibilities in implementing environmental management measures;
- The environmental management and monitoring programs developed for operation of the facility; and
- The potential consequences of non-compliance with regulatory requirements, and environmental management and monitoring activities.

In addition to the structured training activities outlined above, training on work-specific requirements is provided via regular toolbox talks. Training records are maintained for each staff member.

Where applicable, competency assessments are undertaken after training sessions and / or on a periodic basis to identify refresher training requirements. The EMS includes procedures and programs related to competence requirements, particularly for key environmental roles and functions.

Environmental awareness and training also extends to the EGA supply chain. Qualifications, track record and evidence of a working environmental management system are key considerations in selecting contractor(s) and service providers.

## Incident Reporting

The EMS requires that all reported hazards, incidents and near misses are promptly reported and investigated. EGA has committed to notify DM and other relevant authorities as soon as practicable of incidents that have resulted, or have the potential to result, in significant adverse environmental impacts. Incidents to be reported include, but are not limited to, the following:

- Fuel or chemical spills;
- System failures or malfunctions;
- Control failures or malfunctions;
- Other emergencies (e.g. natural disasters); and
- Other events constituting non-compliance with environmental regulatory standards or requirements.

Written details of major incidents are provided to the DM within 3 days of the incident, while all incidents are reported via email to Dubai municipality on quarterly basis (including near-miss incidents). Internal reporting of environmental or work-related incidents is undertaken within the Systems Application and Products (SAP) based Environmental Management System (EMS) portal.



## Non-Compliance

In the event that non-compliances are identified during environmental inspections and audits, they are formally reported via the internal auditor or inspection team member. The facility EMS requires all non-compliances to be reviewed to determine the causes and possibility of their existence posing a possible risk to other areas of the operation. Appropriate corrective actions are taken and evaluated for their effectiveness.

## Grievance Management

EGA has developed a complaints process and maintains a grievance management mechanism for the facility as a tool to help address external stakeholder concerns promptly and facilitate a trustworthy and constructive relationship. The purpose of a grievance mechanism is to demonstrate responsiveness to stakeholder concerns. This is a mechanism through which the communities and individuals affected by the facility can formally communicate their concerns and grievances to EGA and facilitate resolutions that are mutually acceptable by the parties, within a reasonable timeframe.

EGA Website: <https://www.ega.ae/en/contact-us/>

If you live near our facilities in Jebel Ali or Al Taweelah and have any questions or comments, please call +971 2 509 4535 or send an email to [csr@ega.ae](mailto:csr@ega.ae).

## ASI and ISO14001:2015 Compliance Audits

As a member of the Aluminium Stewardship Initiative (ASI) guided by the ASI performance standards (version 3), and as an ISO14001:2015 accredited business, the facility is subject to stringent standards of environmental compliance. Third party annual audits are undertaken to determine compliance against ASI performance standards and ISO14001:2015. EGA also commissions periodic audits to assess the effectiveness and compliance of environmental management and monitoring at the facility. These audits include quarterly internal audits using a self-assessment tool, and contractor audits to assess compliance of contractors/service providers with EGA environmental management procedures.

## Environmental Management and Monitoring – Continuous Improvement

The environmental management and monitoring of the facility is delivered under the auspice of the EGA (and facility) EMS which is regularly reviewed, amended (as necessary), and communicated in order to meet the corporate commitments set out within the ASI performance Standards, the ISO14001:2015 certification, and the commitments defined in the 2008 and 2020 EIAs (SNC-Lavalin and 5Capitals).

The management and monitoring of the facility is a dynamic process that requires continual improvement, achieved through regular environmental auditing and monitoring which will continue to be undertaken to ensure compliance with these corporate obligations.

## Glossary

Al	Aluminium
ASI	Aluminium Stewardship Initiative
CO <sub>2</sub>	Carbon Dioxide
dB(A)	A-weighted Decibel
DM	Dubai Municipality
EGA	Emirates Global Aluminium
EIA	Environmental Impact Assessment
EMS	Environmental Management System
FTP	Fume Treatment Plant
HRSG	Heat Recovery Steam Generator
HF	Hydrogen Fluoride
HSE	Health, Safety and Environment
GHG	Greenhouse Gases
ISO	International Organization for Standardization
JAS	Jebel Ali Smelter
MW	Megawatt
NO <sub>x</sub>	Nitrogen Oxides
OEMP	Operation Environmental Management Plan
PM	Particulate Matter
SAP	System Applications and Products
SO <sub>2</sub>	Sulphur Dioxide
t	tonne
y	year

## Chronology of EGA Environmental Reports

Date	Author	Type	EGA Summary Document No.	Description
<b>Al Taweelah Alumina (ATA) Refinery</b>				
2014	GHD	EIA	-	EIA (to national standards) to assess the initial development of the Al Taweelah Alumina (ATA) Refinery, referred to as Project Shaheen
2017	GHD	EIA Addendum	3	Environmental Report (to national standards) developed as an addendum to the 2014 EIA to assess modifications to the design and operation of the Al Taweelah Alumina Refinery, including: <ul style="list-style-type: none"> <li>- the expansion of the Smelter power plant and desalination plant;</li> <li>- the construction and operation of upgraded conveyor systems and a covered stockpiles;</li> <li>- the addition of 2 thermal oxidisers;</li> <li>- modification to the types and volumes of generated wastes; and</li> <li>- improvements to the haulage route from the ATA Refinery to the Bauxite Residue Storage Area (BRSA).</li> </ul>
2017	GHD	OEMP	1	The EIA (2014 and 2017) commitments included the provision of an Operation Environmental Management Plan (OEMP) in order to provide a systematic framework to manage and monitor the environmental performance of the ATA Refinery and BRSA facility.
2018	GHD	EIA Addendum	4	Environmental Report (to national standards) developed as a further addendum to the 2014 EIA to assess modifications to the design and operation of the Al Taweelah Alumina Refinery, including the construction and subsequent operation of a strategic bauxite stockpile (SBS).
<b>Al Taweelah Smelter</b>				
2009	Various	EIA(s)	-	Environmental Impact Assessments (to national standards) to assess the initial development of the Smelter in 2009 (Phase I) and 2014 (Phase II) respectively.
2016	GHD	EIA	-	Environmental Impact Assessments (to national standards) to assess the following operational modifications to the Al Taweelah Smelter: <ul style="list-style-type: none"> <li>- the Al Taweelah Alumina Interface Project (ATAIP), i.e. expansion of the Al Taweelah Smelter power and desalination plant;</li> <li>- a new fuel pipeline to serve as operational contingency in the event of any disruption of supply;</li> <li>- increased anode production for the Jebel Ali Smelter;</li> <li>- a Spent Pot Lining (SPL) Storage Facility to manage solid waste produced from the Al Taweelah and Jebel Ali Smelters; and</li> <li>- a new building complex including facilities for a reception, exhibition area, recreation area, mosque, emergency response, EHS training area, mobile equipment training area, and district cooling system.</li> </ul>
2018	MWH	OESMP	7	The EIA (2016) commitments included the provision of an Operation Environmental & Social Management Plan (OESMP) in order to provide a systematic framework to manage and monitor the environmental performance of the Al Taweelah Smelter
2019	Hatch	Environmental Report	6	Environmental Report (to national standards) to assess the extension of Potlines 1, 2 and 3 in order to increase the production capacity of the Al Taweelah Smelter.
2023	Hatch	PER	8	Preliminary Environmental Review (PER) (to national standards) to assess the augmentation of the Al Taweelah Smelter to incorporate: <ul style="list-style-type: none"> <li>- an aluminium recycling facility that will recycle scrap aluminium to produce green billets;</li> <li>- an increase to the amperage in Potline 3 to increase the overall hot metal production (not implemented);</li> <li>- a new anode baking furnace to increase the facility's capacity for anode manufacturing (not implemented); and</li> <li>- a new ship unloader to expand the Al Taweelah facility's logistical capacity.</li> </ul>
<b>Jebel Ali Smelter</b>				
2008	SNC-Lavalin	EIA	-	EIA (to national standards) to assess the expansion in aluminium production capacity (Jebel Ali Smelter).
The current EGA summary document:				
Current	EGA	EMS	10	Environmental Management System (EMS) implemented to underpin the day to day operation of the Jebel Ali facility, in order to satisfy 2008 EIA commitments and adherence to ISO 14001:2015.
2019	5Capitals	EIA	9	EIA (to national standards) to assess the H-Block Project (i.e. improve the efficiency of power generation & reduce the consumption of natural resources)